Haier

Constant Air Volume Duct
Service Manual

SYJS-07-2017 REV.A Edition: 2017-07

CONTENTS

1. Feature

- DC constant air flow fan motor, getting higher efficiency and 0-200Pa auto adjusted ESP
- Capacity from 2.2kW to 16kW, suitable for variable demands.
- Built-in high lift drain pump
- Pre-set filter and fresh air inlet to improve indoor air quality.
- Only 280mm thickness makes it possible for installation in limited spaces

2. Specification

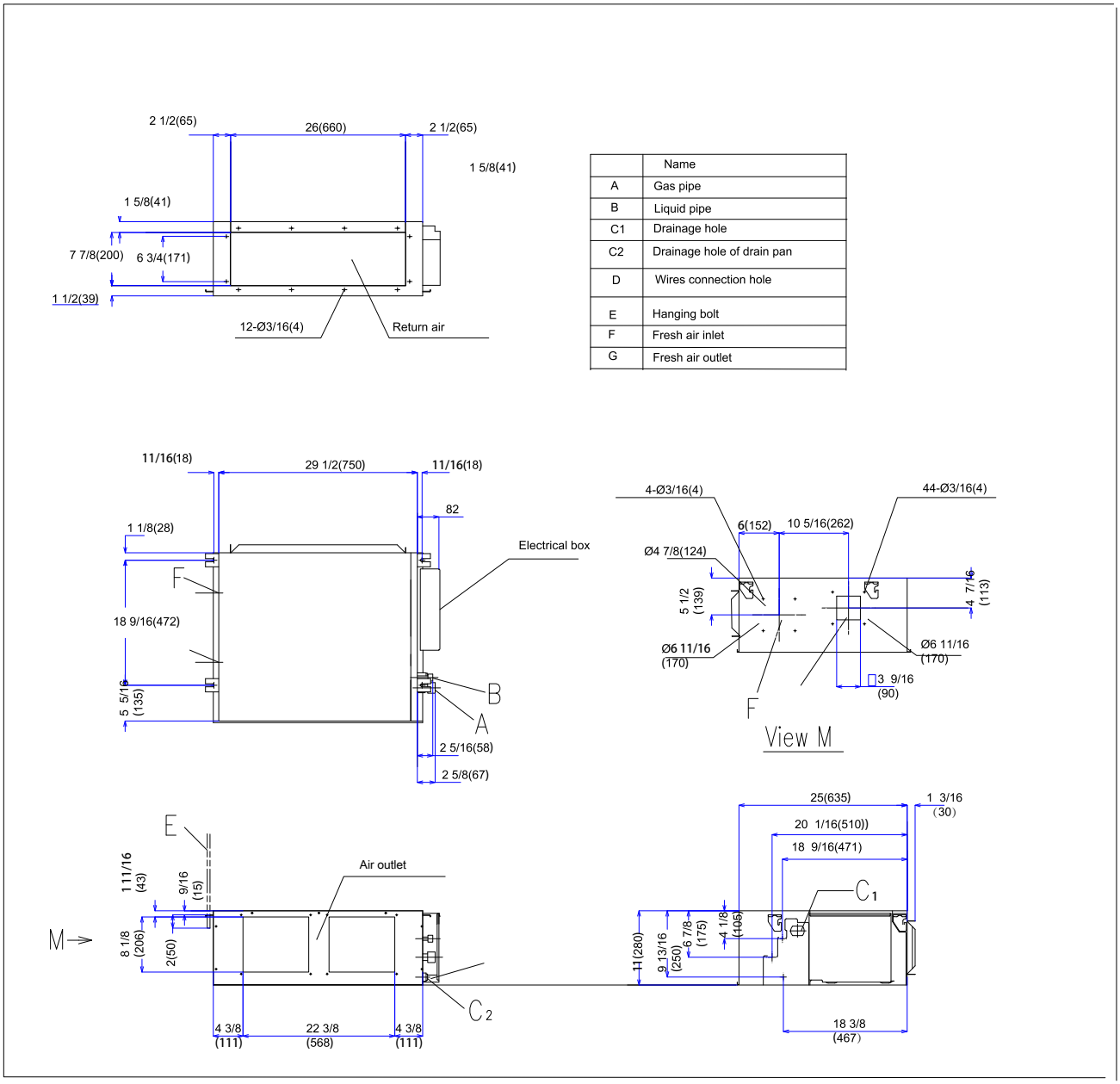
	MVAH018MV2AA	MVAH024MV2AA	MVAH030MV2AA
Rated Cooling Capacity Btu/hr	18,000	24,000	30,000
Rated Heating Capacity Btu/hr	20,000	27,000	34,000
Voltage,Cycle,Phase V/Hz/-	208/230-60-1	208/230-60-1	208/230-60-1
Fan Speed Stages	5+Auto	5+Auto	5+Auto
Airflow (Turbo/High/Med/Low/ Quiet) CFM	618/529/482/435/347	765/647/588/529/424	941/824/735/647/529
Motor Speed (Turbo/High/Med/ Low/Quiet) RPM	1178/1038/968/891/748	1015/864/786/720/626	1190/1077/990/864/720
Max. External Static Pressure in.W.G (Pa)	0.80(200)	0.80(200)	0.80(200)
Indoor Sound Level dB (Turbo/ High/Med/Low/Quiet)	45/40/38/36/32	41/38/35/33/30	44/42/40/38/34
Dimension: Height in (mm)	11 (280)	11 (280)	11 (280)
Dimension: Width in (mm)	29 1/2 (750)	37 3/8 (950)	37 3/8 (950)
Dimension: Depth in (mm)	25 (635)	25 (635)	25 (635)
Weight (Ship/Net)- lbs (kg)	75/63.9 (34/29)	86/75 (39/34)	86/75 (39/34)
Connections	Flare	Flare	Flare
Liquid O.D. in	1/4	3/8	3/8
Suction O.D. in	1/2	5/8	5/8
Drainpipe Size O.D. in	1	1	1
Internal Condensate Pump	Standard	Standard	Standard
Max. Drain-Lift height in(mm)	23 5/8 (600)	23 5/8 (600)	23 5/8 (600)

	MVAH036MV2AA	MVAH042MV2AA	MVAH048MV2AA
Rated Cooling Capacity Btu/hr	36,000	42,000	48,000
Rated Heating Capacity Btu/hr	40,000	47,000	54,000
Voltage ,Cycle,Phase V/Hz/-	208/230-60-1	208/230-60-1	208/230-60-1
Fan Speed Stages	5+Auto	5+Auto	5+Auto
Airflow (Turbo/High/Med/Low/ Quiet) CFM	1078/988/888/824/720	1200/1129/1047/953/860	1330/1235/1129/1047/960
Motor Speed (Turbo/High/Med/ Low/Quiet) RPM	1390/1193/943/823/721	1400/1200/950/830/728	1448/1250/1110/958/825
Max. External Static Pressure in.W.G (Pa)	0.80(200)	0.80(200)	0.80(200)
Indoor Sound Level dB (Turbo/ High/Med/Low/Quiet)	46/43/41/39/35	47/44/42/40/36	49/46/44/41/37
Dimension: Height in (mm)	11 (280)	11 (280)	11 (280)
Dimension: Width in (mm)	53 7/8 (1370)	53 7/8 (1370)	53 7/8 (1370)
Dimension: Depth in (mm)	29 1/8 (740)	29 1/8 (740)	29 1/8 (740)
Weight (Ship/Net)- lbs (kg)	136.7/119 (62/54)	136.7/119 (62/54)	136.7/119 (62/54)
Connections	Flare	Flare	Flare
Liquid O.D. in	3/8	3/8	3/8
Suction O.D. in	5/8	5/8	5/8
Drainpipe Size O.D. in	2	3	4
Internal Condensate Pump	Standard	Standard	Standard
Max. Drain-Lift height in(mm)	23 5/8 (600)	23 5/8 (600)	23 5/8 (600)

3. Dimension

MVAH018MV2AA dimension

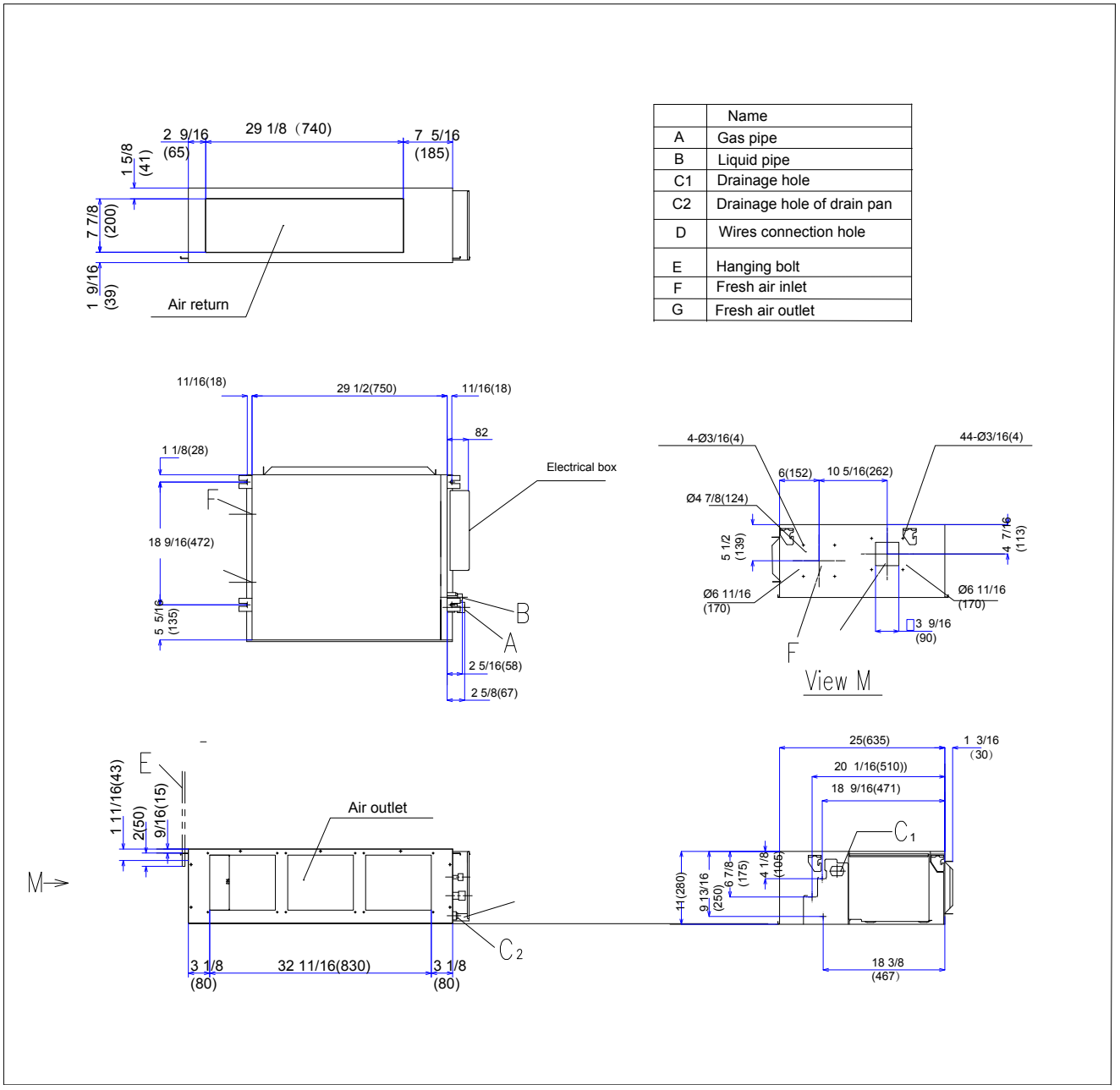
Unit:inch(mm)



	Name
A	Gas pipe
B	Liquid pipe
C1	Drainage hole
C2	Drainage hole of drain pan
D	Wires connection hole
E	Hanging bolt
F	Fresh air inlet
G	Fresh air outlet

MVAH024/302MV2AA dimension

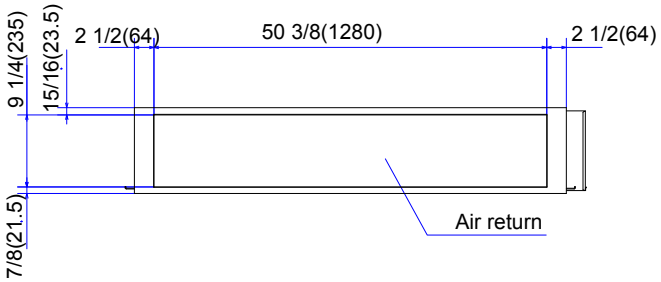
Unit:inch(mm)



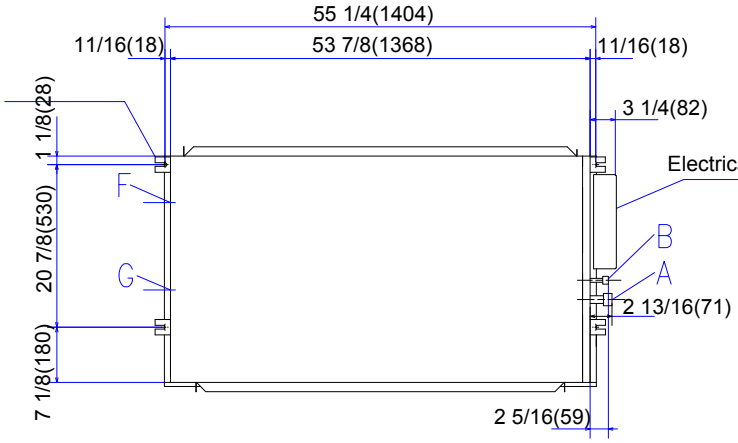
	Name
A	Gas pipe
B	Liquid pipe
C1	Drainage hole
C2	Drainage hole of drain pan
D	Wires connection hole
E	Hanging bolt
F	Fresh air inlet
G	Fresh air outlet

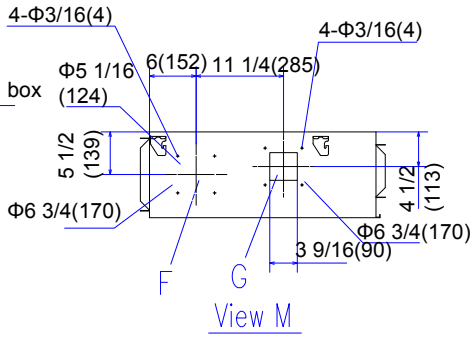
MVAH024/302MV2AA dimension

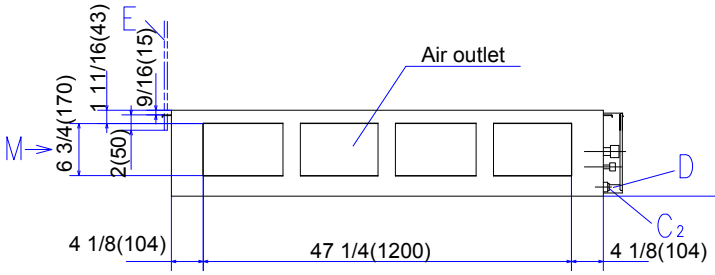
Unit:inch(mm)

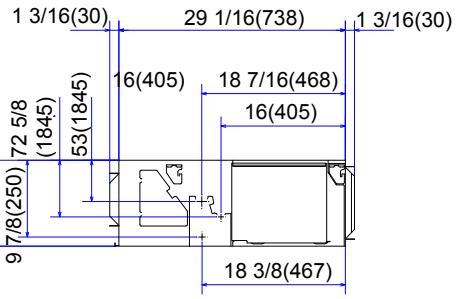


	Name
A	Gas pipe
B	Liquid pipe
C1	Drain hole
C2	Drain hole of drain pan
D	Wiring connector hole
E	Hanging bolt
F	Fresh air inlet
G	Fresh air outlet

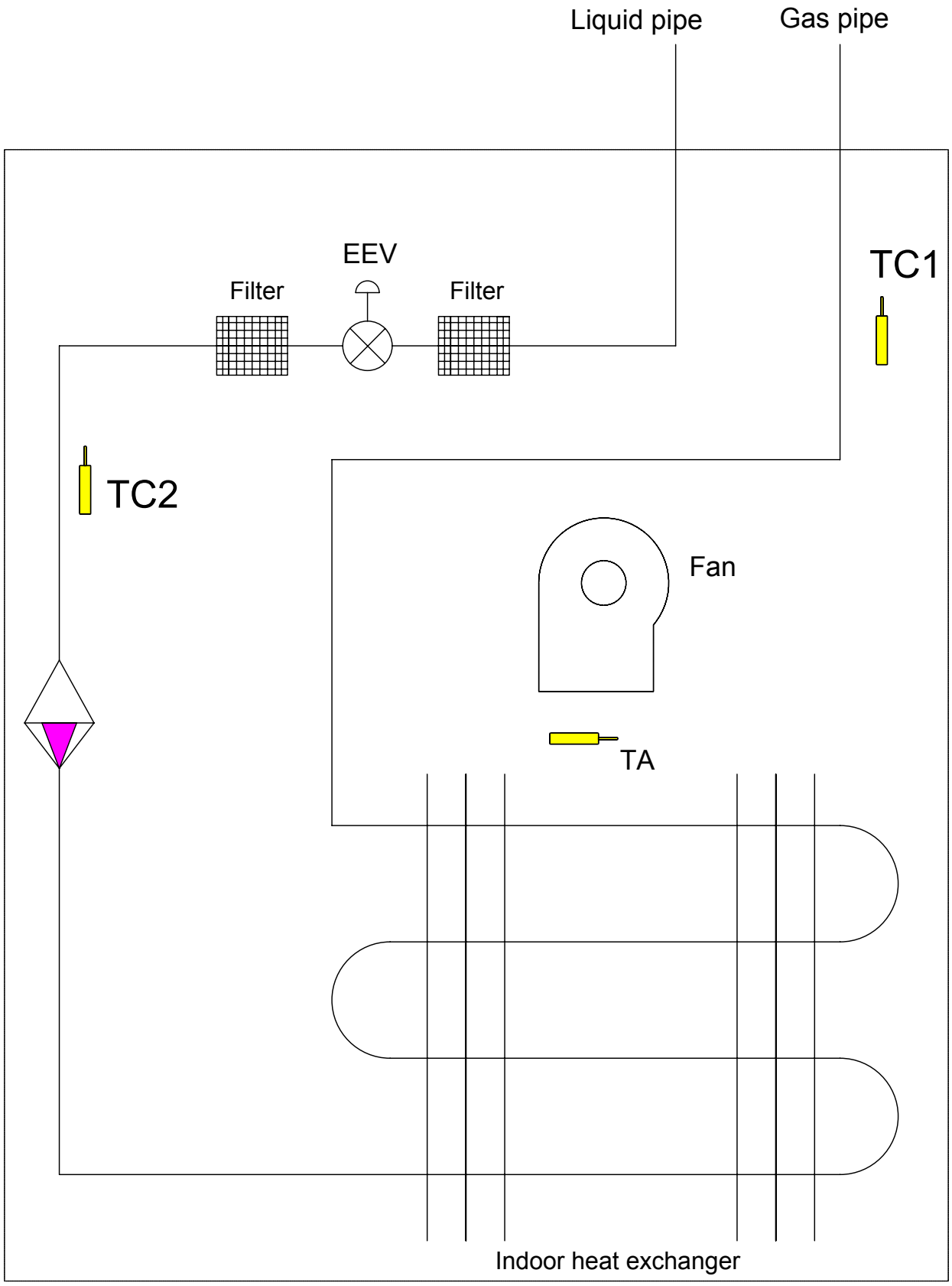






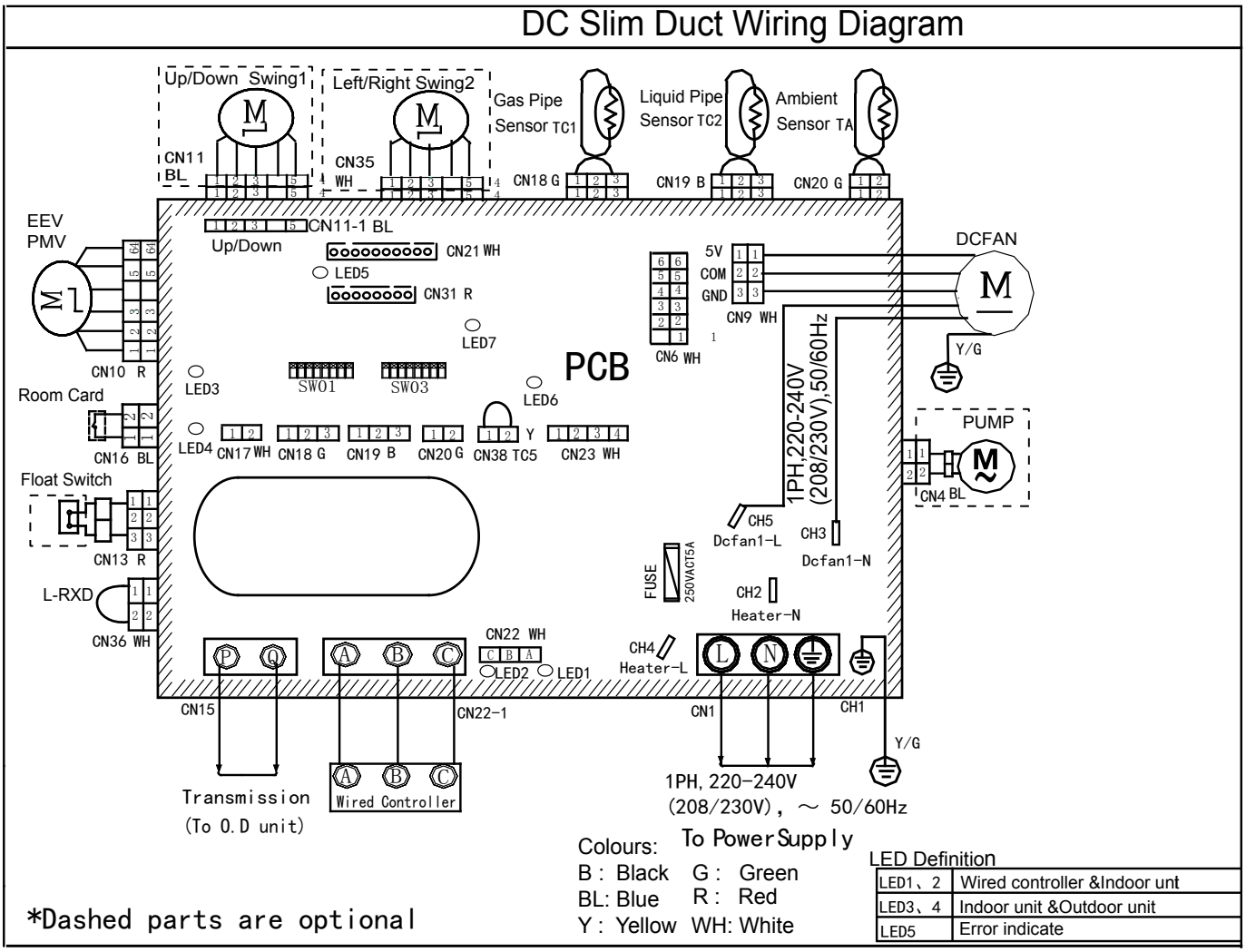


4. Piping diagram

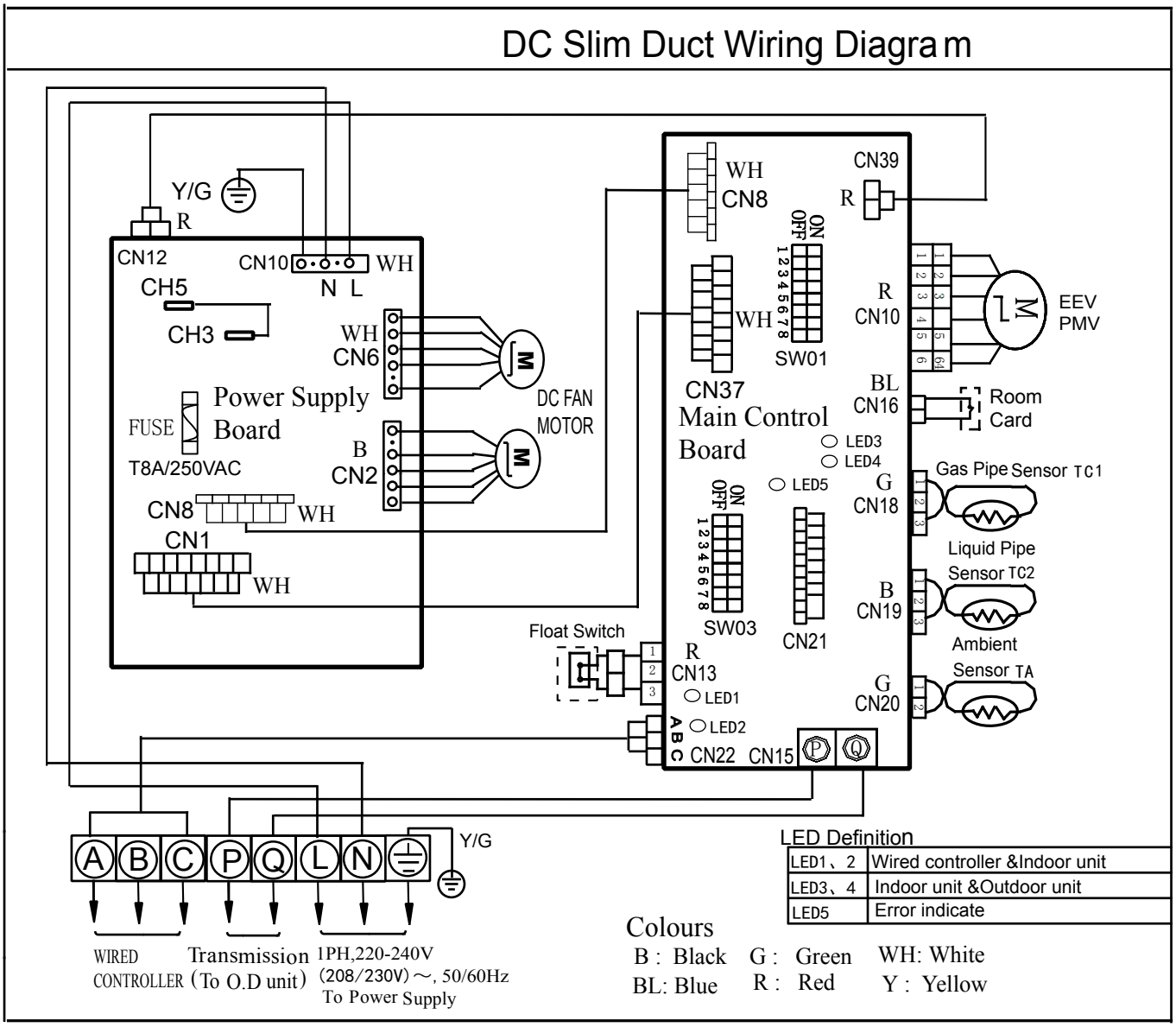


5. Wiring diagram

MVAH018/024/030MV2AA



MVAH036/042/048MV2AA

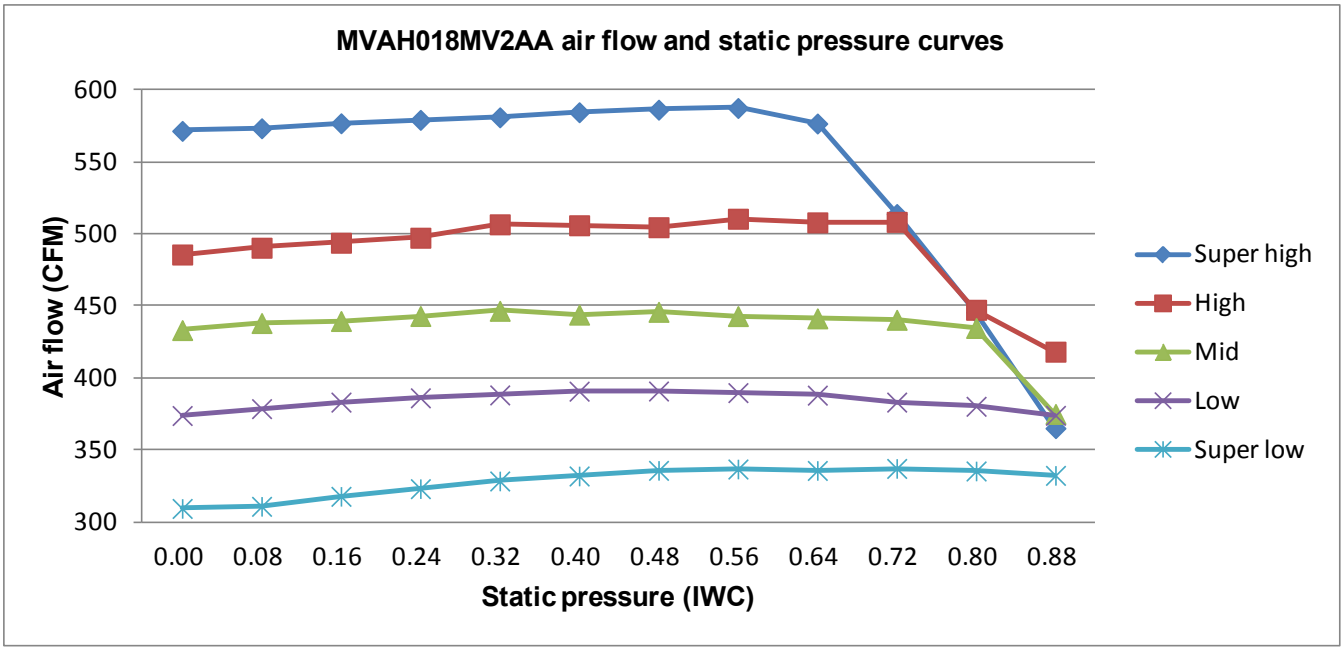


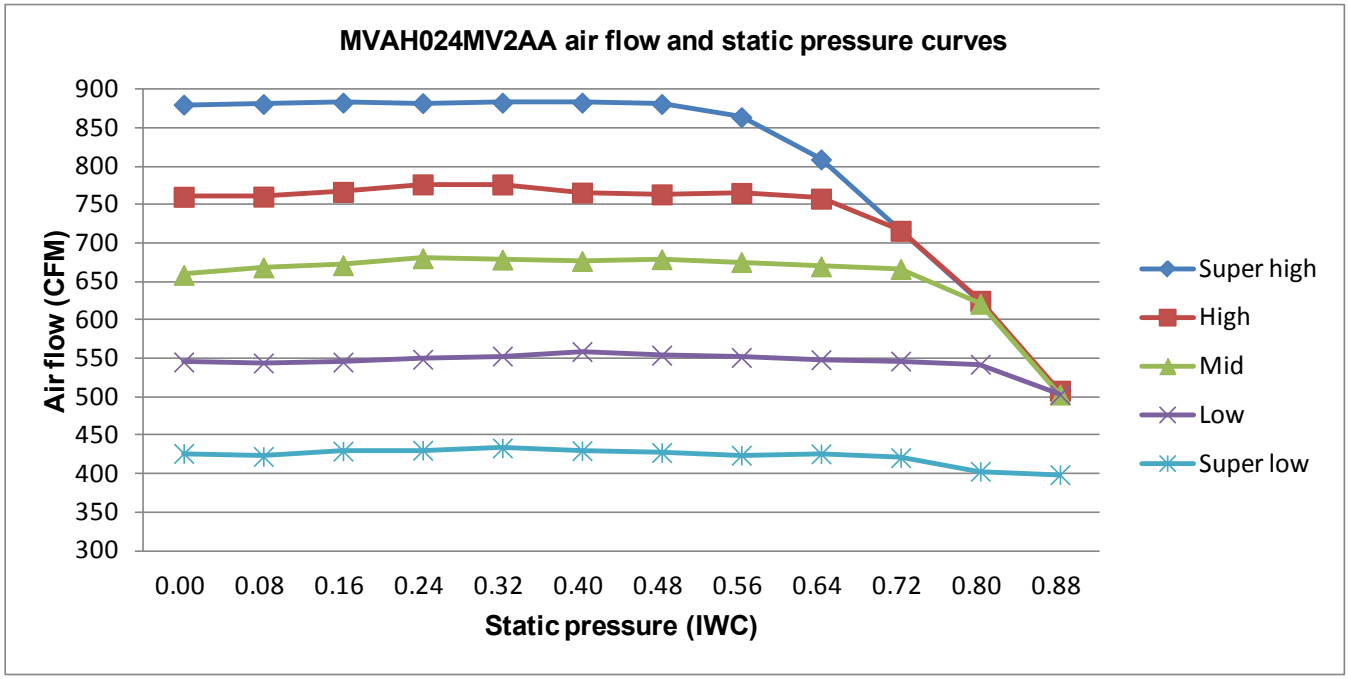
6. Electric characteristics

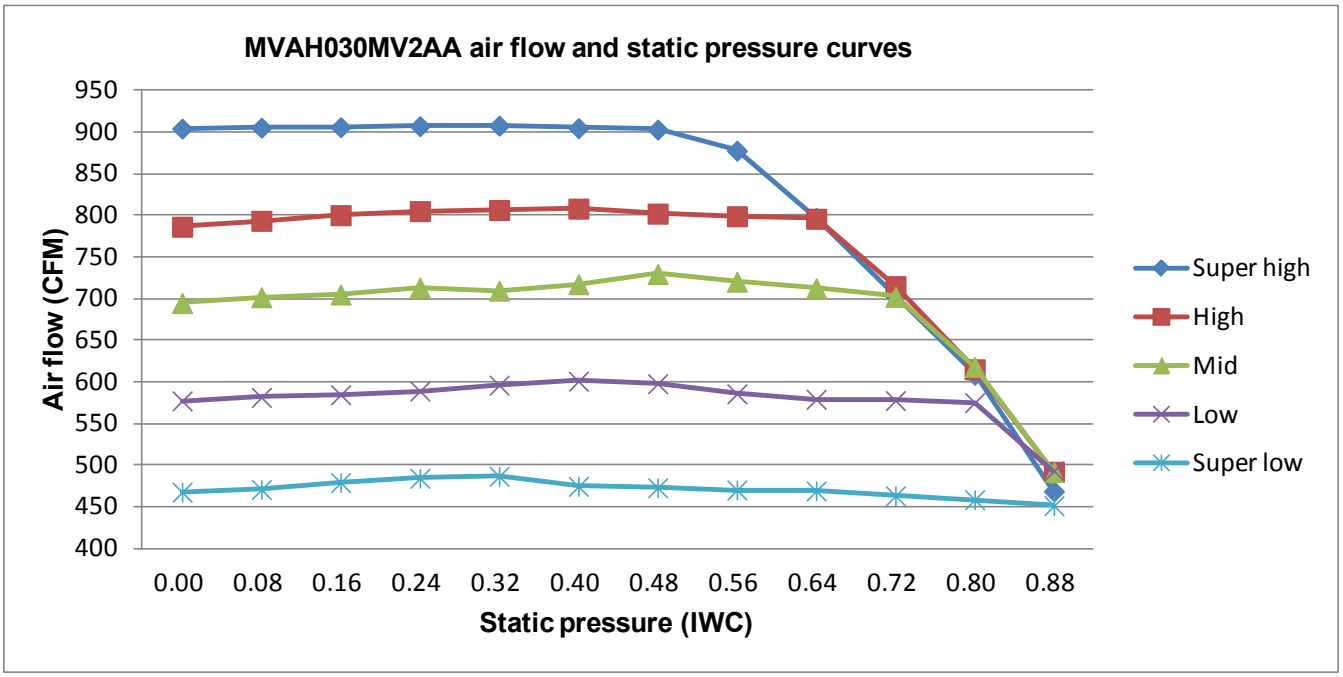
Units					Power supply		Indoor fan motor		Power input (W)	
Model	Phase	FQY	Voltage	Volt. range	MCA	MFA	Output (W)	FLA	Cooling	Heating
MVAH018MV2AA	1	50/60	220	198~242	1.93	6.16	186	1.54	181	181
MVAH024MV2AA	1	50/60	220	198~242	2.60	8.32	245	2.08	252.3	252.3
MVAH030MV2AA	1	50/60	220	198~242	2.68	8.56	245	2.14	259.3	259.3
MVAH036MV2AA	1	50/60	220	198~242	3.25	10.40	200	2.60	315.6	315.6
MVAH042MV2AA	1	50/60	220	198~242	3.25	10.40	200	2.60	315.6	315.6
MVAH048MV2AA	1	50/60	220	198~242	3.58	11.44	230	2.86	366.8	366.8

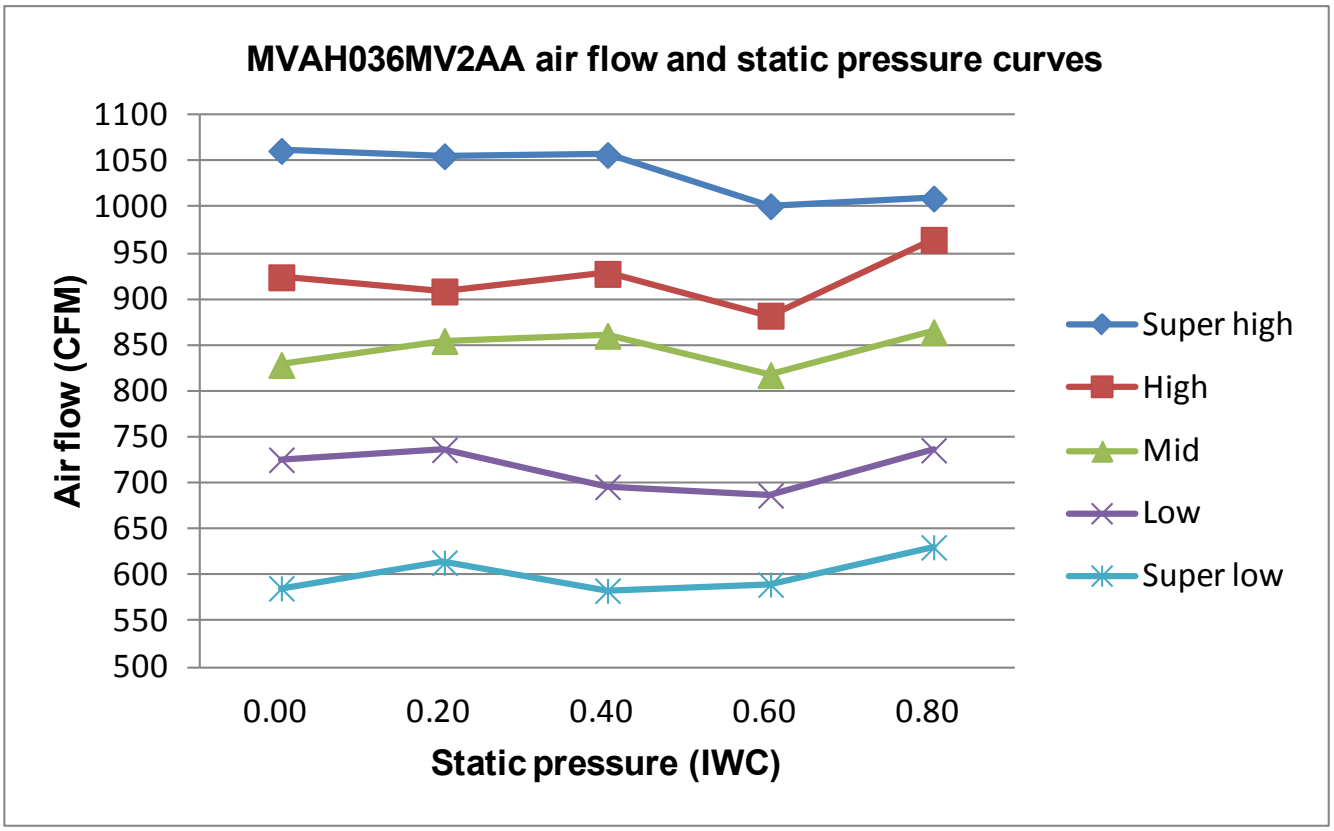
Symbols:
MCA: Min. circuit amps (A)
MFA: Max. fuse amps of circuit breaker Output: Fan motor rated output (w) FLA: Full load amps (A)
Notes:
1. Voltage range
The units are applicable for the electrical systems where voltage supplied to unit is in the range.
2. Maximum allowable voltage unbalance between phases is 2%.
*3. MCA=1.25*FLA MFA≤4*FLA.*
4. Power supply uses the circuit breaker.

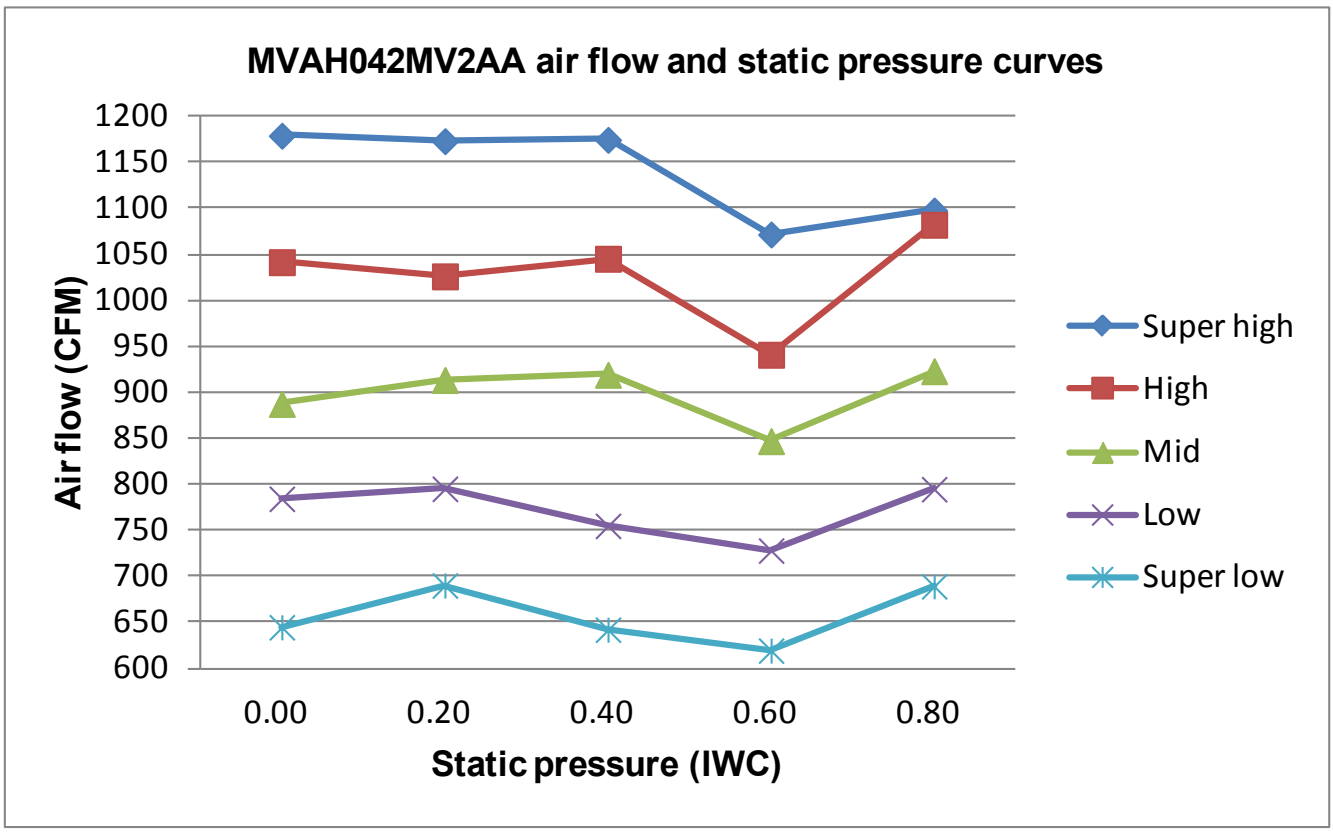
7. Airflow and static pressure curves

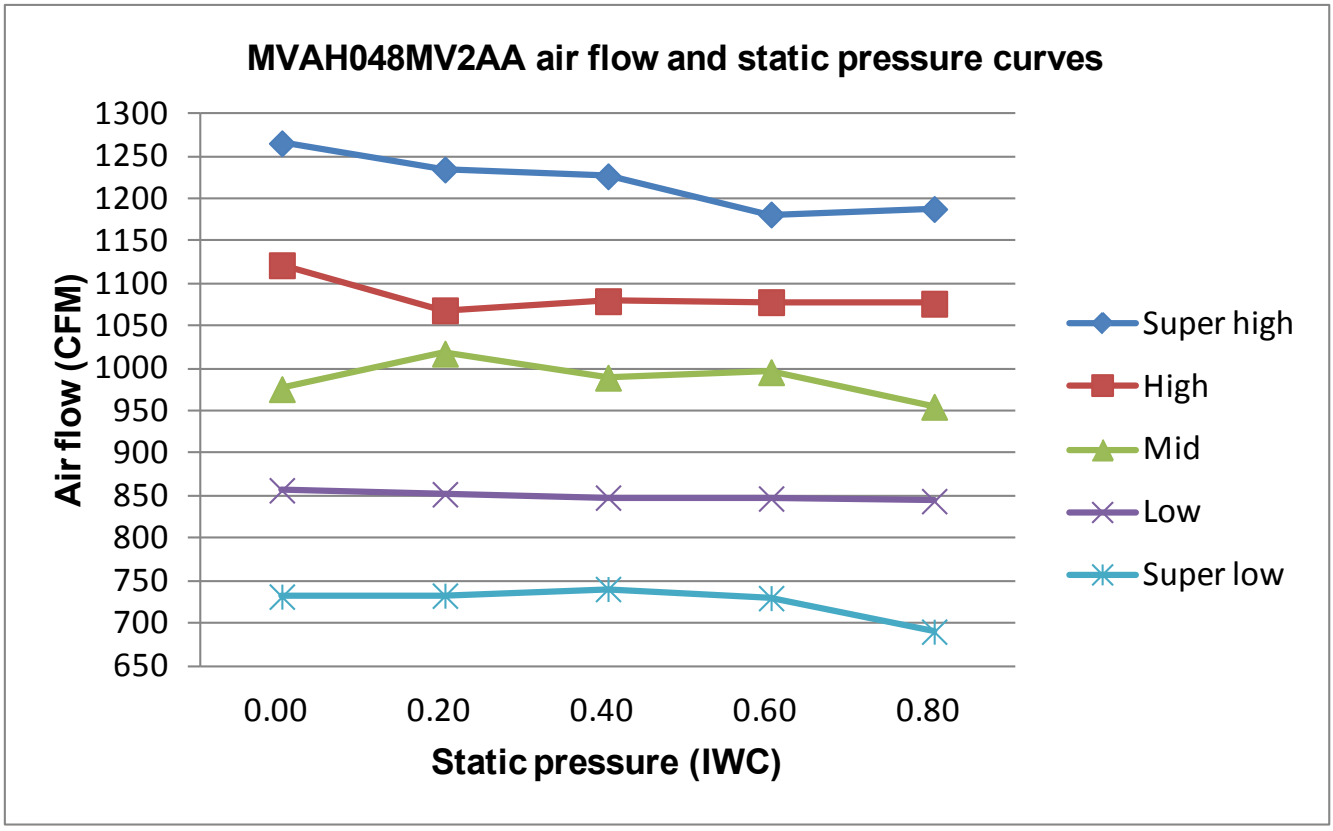





MVAH030MV2AA air flow and static pressure curves
Air flow (CFM)
950
900
850
800
750
700
650
600
550
500
450
400
0.00
0.08
0.16
0.24
0.32
0.40
0.48
0.56
0.64
0.72
0.80
0.88
Static pressure (IWC)
Super high
High
Mid
Low
Super low

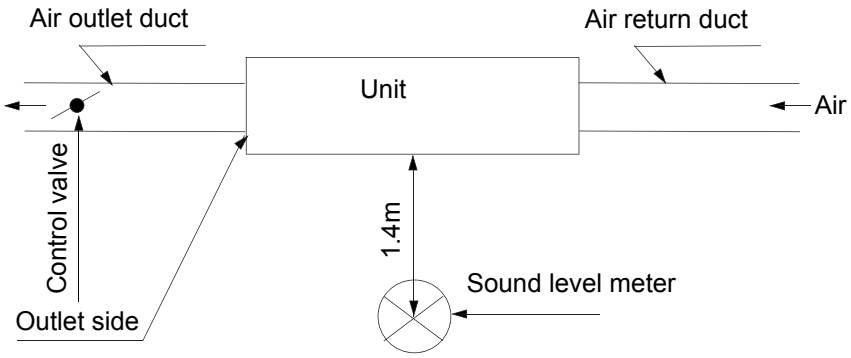

MVAH036MV2AA air flow and static pressure curves
Air flow (CFM)
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
0.00
0.20
0.40
0.60
0.80
Static pressure (IWC)
Super high
High
Mid
Low
Super low


MVAH042MV2AA air flow and static pressure curves
Air flow (CFM)
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
0.00
0.20
0.40
0.60
0.80
Static pressure (IWC)
Super high
High
Mid
Low
Super low


MVAH048MV2AA air flow and static pressure curves
Air flow (CFM)
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
0.00
0.20
0.40
0.60
0.80
Static pressure (IWC)
Super high
High
Mid
Low
Super low

8. Sound pressure level

(1) Testing illustrate:



Testing position just below the central of the unit

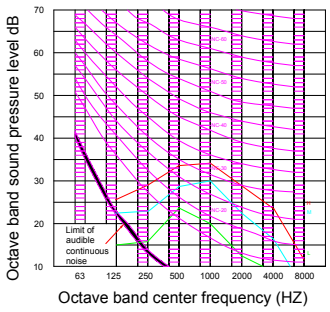
(2) Testing condition:

a. Unit running in the standard condition

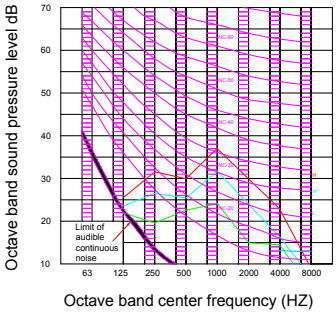
b. Test in the semi-anechoic chamber

c. Noise level varies from the actual factors such as room structure, etc.

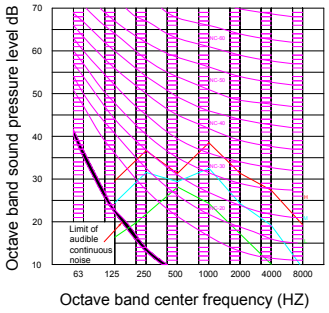
MVAH018MV2AA



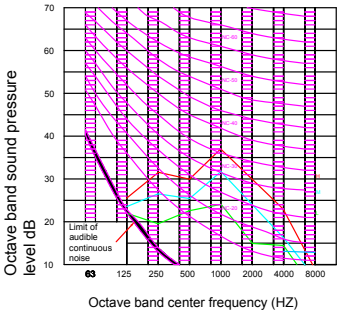
MVAH024MV2AA



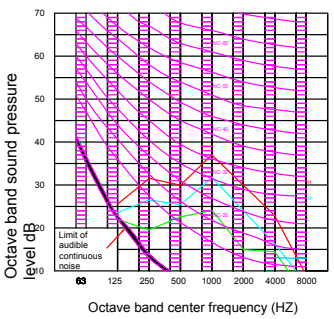
MVAH030MV2AA



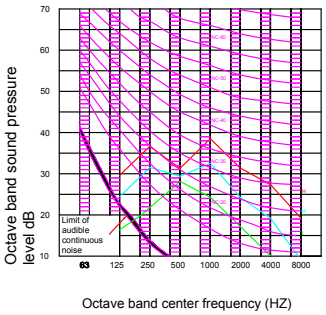
MVAH036MV2AA



MVAH042MV2AA



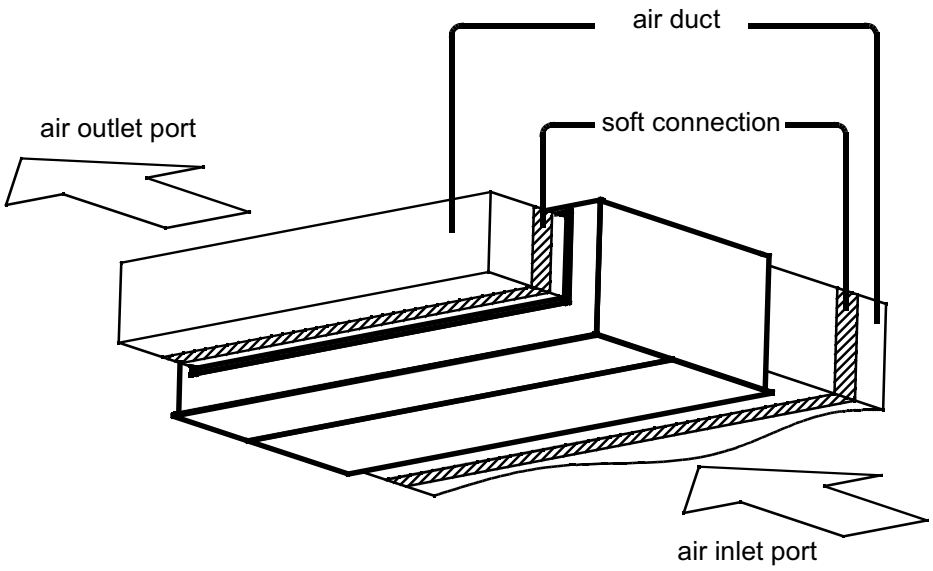
MVAH048MV2AA



9. Installation

9.1 Parts and functions

Indoor unit



9.2 Safety

- If the air conditioner is transferred to a new user, this manual shall be transferred to the user, together with the conditioner.
- Before installation, be sure to read Safety Considerations in this manual for proper installation.
- The safety considerations stated below is divided into " ⚠ Warning" and " ⚠ Attention". The matters on severe accidents caused from wrong installation, which is likely to lead to death or serious injury, are listed in "⚠Warning". However, the matters listed in " ⚠ Attention" are also likely cause the severe accidents. In general, both of them are the important items related to the security, which should be strictly abided by.
- After the installation, perform test run to make sure everything is in normal conditions, and then operate and maintain the air conditioner in accordance with the User Manual. The User Manual should be delivered to the user for proper keeping.

⚠ WARNING

- Please ask the special maintenance station for installation and repair. Water leakage, electric shocks or fire accidents might be caused from improper installation if you conduct the installation by your own.
- The installation should be conducted properly according to this manual. Water leakage, electric shocks or fire accidents might be caused from improper installation. Please make sure to install the air conditioner on the place where can bear the weight of the air conditioner.
- The air conditioner can't be installed on the grids such as the non-special metal burglar-proof net. The place with insufficient support strength might cause the dropdown of the machine, which may lead to personal injuries.
- The installation should be ensured against typhoons and earthquakes, etc. The installation unconformable to the requirements will lead to accidents due to the turnover of the machine.
- Specific cables should be used for reliable connections of the wirings. Please fix the terminal connections reliably to avoid the outside force applied on the cables from being impressed on the cables. Improper connections and fixings might lead to such accidents as heating or fire accidents.
- Correct shapes of wirings should be kept while the embossed shape is not allowed. The wirings should be reliably connected to avoid the cover and the plate of the electrical cabinet lipping the wiring. Improper installation might cause such accidents as heating or fire accidents.
- While placing or reinstalling the air conditioner, except the specific refrigerant (R410A), don't let the air go into the refrigeration cycle system. The air in the refrigeration cycle system might lead to the cracking or personal injuries due to abnormal high pressure of the refrigeration cycle system.
- During installation, please use the accompanied spare parts or specific parts. If not, water leakage, electric shocks, fire accidents or refrigerant leakage might be caused.
- Don't drain the water from the drainpipe to the waterspout where may exist harmful gases such as sulfureted gas to avoid the harmful gases entering into the room.
- During installation, if refrigerant leakage occurs, ventilation measures should be taken, for the refrigerant gas might generate harmful gases upon contacting the flame.
- After installation, check if any refrigerant leakage exists. If the refrigerant gas leaks in the room, such things as air blowing heaters and stoves, etc. may generate harmful gases.
- Don't install the air conditioner at the places where the flammable gases may leak. In case the gas leakage occurs around the machine, such accidents as fire disasters may be caused.
- The drainpipe should be properly mounted according to this manual as to ensure the smooth drainage. In addition, heat preservation should be taken to avoid condensation. Improper drainpipe mounting might cause water leakage, which will get the articles at home wet.
- The refrigerant gas pipe and liquid pipe should be heat insulated to preserve heat. For inappropriate heat insulation, the water caused from the condensation will drop to get the article at home wet.

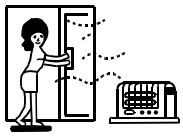
⚠ ATTENTION

- The air conditioner should be effectively grounded. Electric shocks may occur if the air conditioner is ungrounded or inappropriately grounded. The wire for earthing shouldn't be connected to the connections on the gas pipe, water pipe, lightning rod or telephone.
- The breaker for electricity leakage should be mounted. If not, accidents such as electric shocks may happen.
- The installed air conditioner should be checked for electricity leakage by being powered.
- If the ambient humidity bigger than 80%, when the water discharge hole be blocked or the filter becomes dirty, or airflow speed change, there maybe leads to condensing water drop down, and at the same time there maybe some drops of water spit out.

Notices during Operation

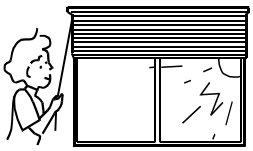
⚠ Attention

- It is not allowed to put any heating apparatus under the indoor units, for the heat may cause distortion of the units.
- Pay attention to the aeration condition to avoid anoxic symptom.



- Flammable apparatus should not be placed in the place where the air conditioner wind could reach directly, or incomplete burning of the apparatus may be caused.

- Check the mount table of the air conditioner for damage for a long period of operation. If placed on the damaged table, the unit may drop down causing damage.
- Plants and animals should not be put to the place where wind of the air conditioner blows directly, otherwise damage to them may be caused.
- It cannot be used for the preservation of food, living creature, precise instrument and artworks, etc, otherwise damage may occur.
- Use the fuse with proper capacity. Metal wires and copper wires, etc., may cause fire or other faults.
- Do not use water heater or like next to the indoor unit and the wired controller. Water/power leakage or short circuit may happen if the steam generating apparatus is working next to machine.
- Defrosting during heating
  To improve the heating effect, the outdoor unit will perform defrosting automatically when frost appears on the outdoor unit during heating (approximately 2-10 min). During defrosting, the fan of the indoor unit runs at a low speed or stops while that of the outdoor unit stops running.
- Power should be cut off when the air conditioner is left unused for a long period. Power will be consumed if the air conditioner is not powered off. The power switch of the outdoor unit switch should be powered on 12 hours in advance before operation to protect the unit after a long period of storage.
- 3-minute protection
  To protect the unit, compressor can be actuated with at least 3-minute delay after stopping.
- Close the window to avoid outdoor air getting in.
  Curtains or window shutters can be put down to avoid the sunshine.



- Do not touch the switch with the wet hand to avoid power shock.
- Stop running and switch off the manual power switch when cleaning the unit.
- During the operation of the control unit, don't switch off the manual power switch and the controller can be used. Please do not press the liquid crystal zone of controller to prevent damage.
- Cleaning the unit with water may cause electric shock.

- Do not put flammable spray close to the air conditioner.
  Don't inject flammable spray towards the air conditioner, which may cause fire.
- Stopping fan rotation
  The unit which stops operating will actuate the fan for a 2-8 min swing every 30-60 minutes for protecting the unit while other indoor unit are in the operating state.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.

9.3 Maintenance

* Only when the air cleaner is switched off and disconnected to the power supply can it be cleaned, or electric shock and injury may appear.

Cleaning the air outlet port and the shell:

⚠ Attention

- Don't use gasoline, benzene, diluents, polishing powder or liquid insecticide to clean them.
- Do not clean them with hot water of above 50°C to avoid fading or distorting.

- Wipe them with soft dry cloth.
- Water or neutral dry cleanser is recommended if the dust cannot be removed.
- The Wind Deflector can be dismantled to clean (as below).

Cleaning Wind Deflector:

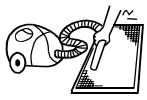
- Do not wipe the wind deflector with water forcibly to avoid falling off.

Cleaning Air Cleaner:

⚠ Attention

- Don't rinse the air cleaner with hot water of above 50°C to avoid fading and distorting.
- Don't put the air cleaner on the fire to dry to avoid catching fire.

- Wipe dust with water or dust collector.
  (A) Wipe dust with dust collector.



(B) Clean it with soft bush in mild detergent if there is too much dust on it

Throw off the water and airing it in the cool dry condition.

Maintenance before and after Operating Season

Before Operating Season:

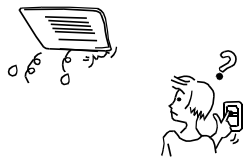
1. Please make the following checkup. If abnormal condition occurs, consult the after-service personnel.
- There is no blockage in inlet port and outlet port of outdoor and indoor units.
- The ground line and the wiring are in the proper state
2. After cleaning, the air cleaner must be mounted.
3. Switch on to the power.

After Operating Season:

1. In sunny days, blowing operation can be performed for half a day to make the inside of machine dry.
2. Electrical power should be cut down to economize electricity, or the machine will still consume power. Air cleaner and shell must be mounted after cleaning.

9.4 Fault checkup

Please check the following when consigning repair service:

	Symptoms	Reasons
All these are not problems	• Water flow sound	Water flow sound can be heard when starting operation, during operation or immediately after stopping operation. When it starts to work for 2-3 minutes, the sound may become louder, which is the flowing sound of refrigerant or the draining sound of condensed water.
	• Cracking sound	During operation, the air conditioner may make the cracking sound, which is caused from the temperature changes or the slight dilation of heat exchanger.
	• Terrible smell in outlet air	The terrible smell, caused from walls, carpet, furniture, clothing, cigarette and cosmetics, attaches on the conditioner.
	• Flashing operating indicator	When switching it on again after power failure, turn on the manual power switch and the operating indicator flashes.
	• Awaiting indication	It displays the awaiting indication as it fails to perform refrigerating operation while other indoor units are in heating operation. When the operator set it to the refrigerating or heating mode and the operation is opposite to the setting, it displays the awaiting indication.
	• Sound in shutdown indoor unit or white steam or cold air	To prevent oil and refrigerant from blocking the shutdown indoor units, refrigerant flows in the short time and make the sounds of refrigerant flowing. Otherwise, when other indoor units performs heating operation, white steam may occur; during refrigerating operation, cold air may appear.
	• Clicking sound when switching the air condition on	When the conditioner is powered on, the sound is made due to the resetting of the expansion valve.
Please make another check.	• Start or stop working automatically	Check if it is in the state of Timer-ON and Timer-OFF.
	• Failure to work 	Check if there is a power failure. Check if the manual power switch is turned off. Check if the supply fuse and breaker are disconnected. Check if the protective unit is working. Check if refrigerating and heating functions are selected simultaneously with the awaiting indication on line control.
	• Bad cooling & heating effects	Check if air intake port and air outlet port of outdoor units are blocked. Check if the door and windows are open. Check if the filtering screen of air cleaner is blocked with sludge or dust. Check if the setting of wind quantity is at low wind. Check if the setting of operation is at the Fan Operation state. Check if the temperature setting is proper.

Under the following circumstances, immediately stop the operation, disconnect the manual supply switch and contact the after-service personnel.

- When buttons are inflexible actuated;
- When fuse and breaker have been burnt over and over;
- When there are foreign objects and water in the refrigerator;
- When it cannot still be operated after removing the operation of protective unit;
- When other abnormal conditions occur.

9.5 Installation procedures

The standard attached accessories of the units of this series refer to the packing; prepare other accessories according to the requirements of the local installation point of our company.

1. Before installation [before finishing the installation, don't throw away the attached parts required for the installation]

- Determine the route to move the unit to the installation site;
- Don't tear the package open before moving the unit to the installation site. When unpacking is needed, a soft material or protector block with ropes can be used to lift the unit to avoid damaging or scraping of the unit.

2. Select the installation site

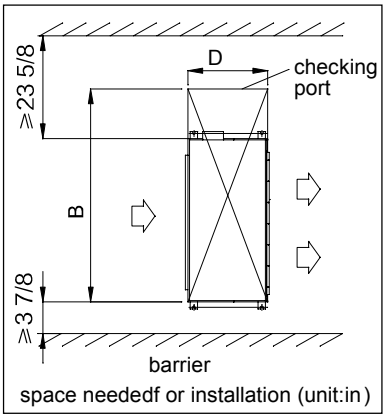
(1) The installation site should be selected according the following conditions, which should be approved by users.

- where an ideal air distribution can be ensured;
- where there is no blockage in the air passage;
- where the condensed water can be drained out properly;
- where the strength can bear the weight of the indoor unit;
- where enough space can be ensured for maintenance. The outside air should be input from the outdoor directly from the blast pipe. If the blast pipe can't be jointed, the air can't be input from the suspended ceiling.
- where the lengths of the piping between indoor units and outdoor units are within the allowable range (refer to Installation of Outdoor Units)
- where the distance of at least 1m between indoor units, outdoor units, mains supply, connecting wires and television or radio should be kept as to avoid the image disturbance and noises of the above electrical appliances. (Even if 1m can be ensured, noise might occur if there is strong electric wave.) Additionally, equipments, television or other valuables can't be put under the unit as to avoid the condensed water of the unit from dropping into the above articles, causing damaging.

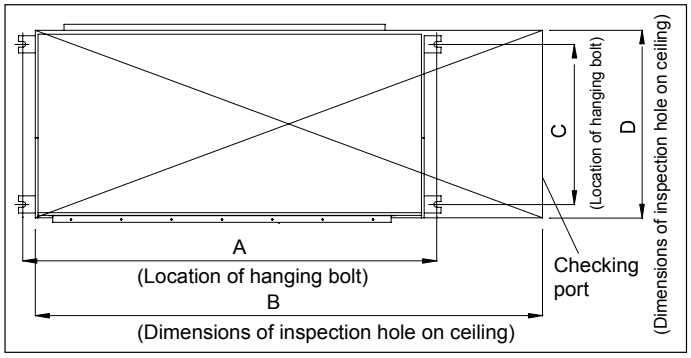
(2) Height of Ceiling:

The ceiling should be located at the place, where the central position of air outlet port is less than 3m high above the ground.

(3) Hoisting studs should be used during installation. Check if the location can bear the weight of the unit. Reinforce it before installation if necessary.



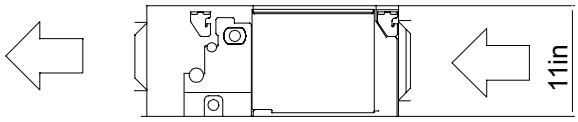
space neededf or installation (unit:in)



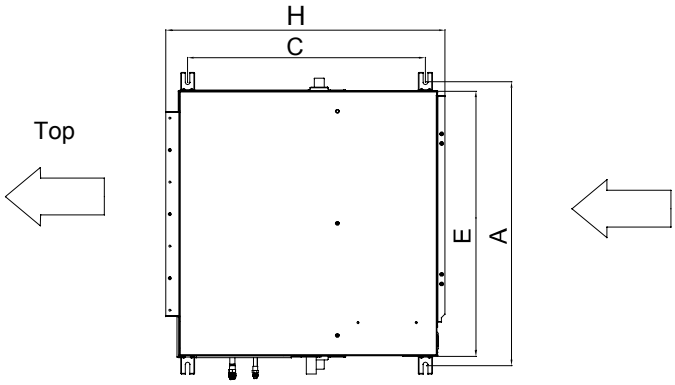
Model \ Size	A (in)	B (in)	C (in)	D (in)
MVAH009018MV2AA	31	13 1/4	18 5/8	25
MVAH024-030MV2AA	38 7/8	51 1/8	18 5/8	25
MVAH036-048MV2AA	55 1/4	67 3/4	20 7/8	29

3. Preparation before Installation

(1) Location relation between inspection hole on the ceiling and the unit and the hoisting studs (unit: in).



Size / Model	A (in)	C (in)	E (in)	H (in)
AD009-018MV2AA	31	18 5/8	29 1/2	27 3/8
AD024-030MV2AA	38 7/8	18 5/8	29 1/2	27 3/8
AD036-048MV2AA	55 1/4	20 7/8	53 7/8	31 3/8

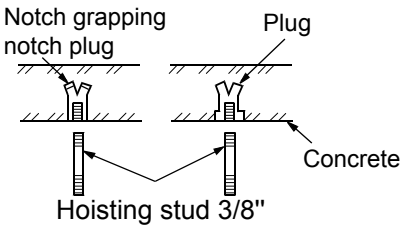


(2) If necessary, make a hole for installation and inspection on the ceiling. (used for the situation with a ceiling)

- For the size of the inspection hole on the ceiling, please refer to the above drawing.
- Before installation, finish all the preparations for all piping connected to indoor units (refrigerant, water drainage) and wiring (connection line of the line control, connection line between indoor units and outdoor unit) so that they can be connected with indoor units right after installation.
- For the inspection hole, the ceiling might be reinforced to keep the evenness of the ceiling and avoid the vibration of the ceiling. For details, please consult the construction contractor.

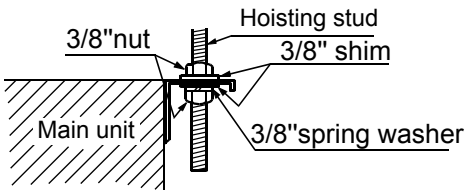
(3) Install the hoisting studs (3/8"bolts)

In order to support the weight of the unit, use barb bolts in the situation with a ceiling. In the situation with the new ceiling, use inlaid bolts, embedded bolts or other parts provided on site. Before proceeding the installation, adjust the gap between the bolt and the ceiling.



(4) Installation of Indoor Units

- Fix the indoor unit with the hoisting stud. If necessary, the machine can be hanged on the beam with bolts instead of the hoisting stud.



NB:

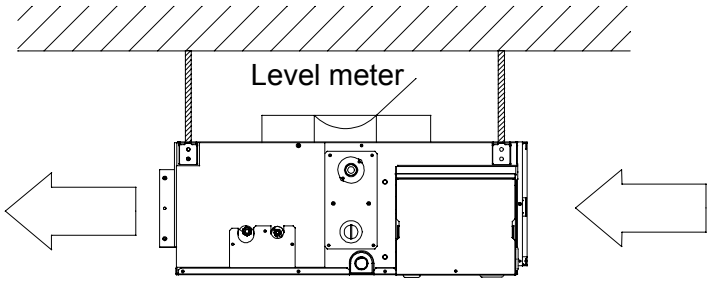
When the sizes of the main unit don't match the hole on the ceiling, regulate the slot on the hanging bracket.

Adjusting the level

Adjust the level with a level meter or according to the following ways:

Adjusting the level

- Make the adjustment as shown in the figure.



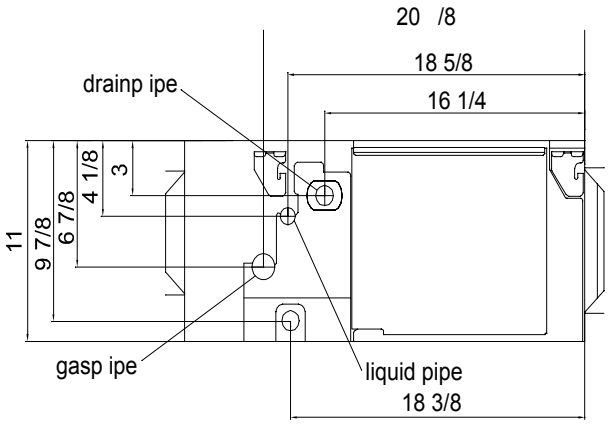
Static Pressure Range
unit: Pa

Static Pressure Range
0~200

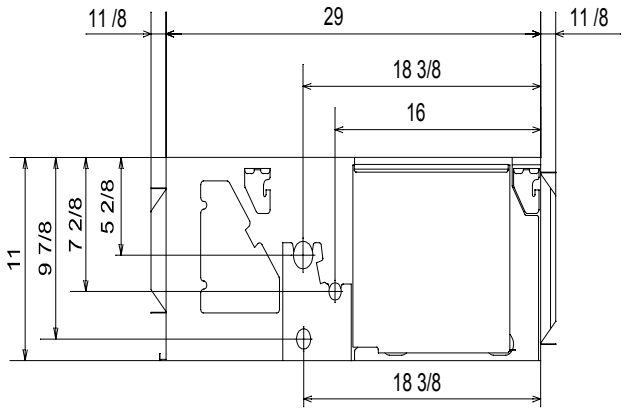
4. Drainpipes

MVAH009-030MV2AA

Unit:in

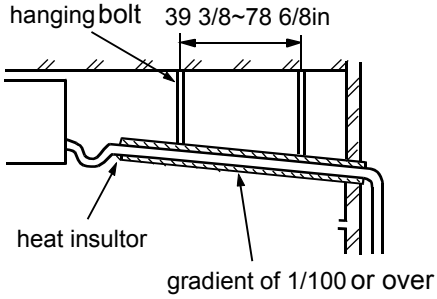


MVAH036-048MV2AA

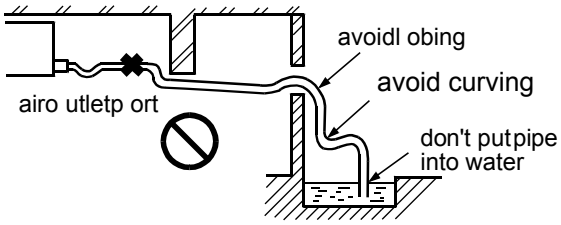


(a) Keep a gradient (1/50-1/100) of the drainpipes and avoid lobbing or curving.

• Proper Piping

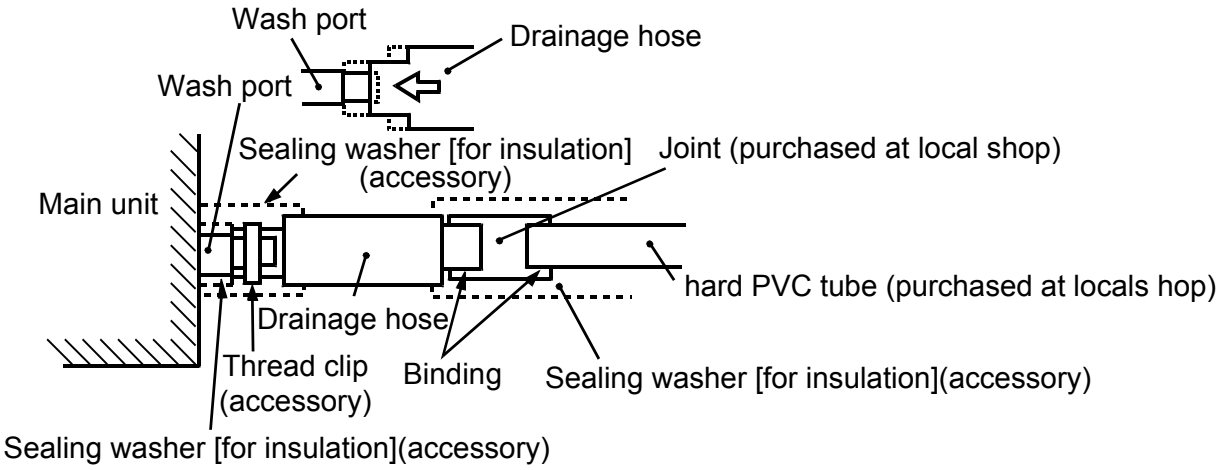


• Improper Piping

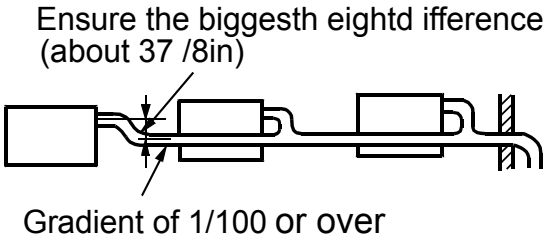


(b) When connecting the drainpipe to the equipment, don't apply too much force on one side of the equipment. Meanwhile, the piping should be positioned as close to the equipment as possible.

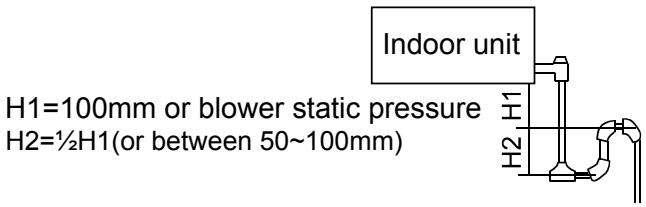
(c) For the drainpipe, the general purpose hard PVC tube can be purchased at local shops. During the connection, insert the end of PVC tube into the wash port and fasten it with drainage hose and thread clip. Binding agents shouldn't be used to connect the wash port and drainage hose.



(d) When the laid drain piping is used for multiple equipments, the public piping should be lower about 3 7/8in than the wash ports of equipments, as shown in the figure.
Thicker pipes should be used for this application.



(e) The hard PVC tube in the room must be provided with the heat insulating layer.
(f) Don't place the drainpipes at the places where there is irritant gas. Don't put the drainpipe directly into the sewer, where there might be gases with sulfur.
(g) Backwater bend
Because the drainage was laid in the position of binging Sub-atmospheric pressure easily, gain of elevation of water in the drain pan conduced Leakage water, for avoiding Leakage water , design a Backwater bend.
Configuration of Backwater bend can be cleaned, a " T " joint can be used in installing as shown as in the picture below.
Backwater bend was installed in the neighborhood of air conditioning
A backwater bend was designed in the middle of drain pipe s shown as in the picture below.

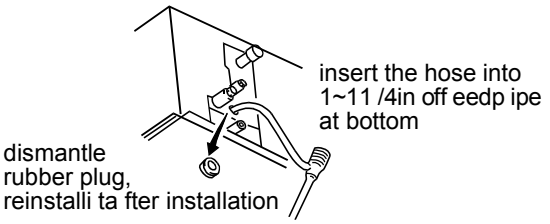


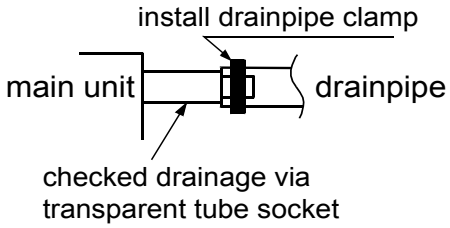
Testing Drainage System

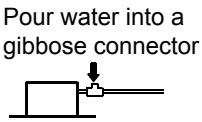
(a) After finishing the electrical system, test the drainage system.
(b) During testing, make sure that the water flow passes the piping correctly without any water leakage at the connection.
(c) In the condition of new house, test the drainage system before fitting up the ceiling.
(d) Even if it is installed in the season needed to heating, the testing should also be performed.

Procedures

(a) Provide about 1000cc of water to the equipment via air outlet port with the feed pump.
(b) During refrigerating operation, check the drainage system..



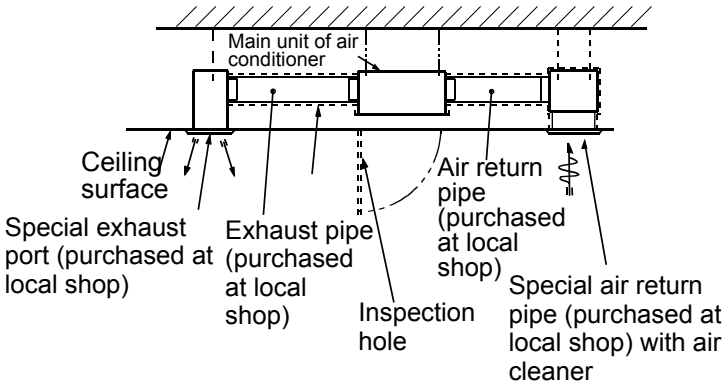




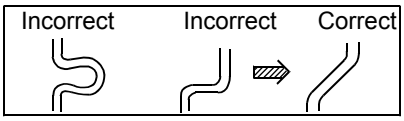
Before completing the electrical connection, a gibbose connector shall be installed on the drainpipe as to provide it with a water inlet port. Then, if any leakage exists in the piping, check it to make the water flow of the drainpipe smooth.

5. Installation of Air Return & Air Exhaust Pipes

For the choice and installation of air return port, air return pipe, air exhaust port and exhaust pipe, please consult service personnel of Haier company. Calculate the design chart and exterior static pressure, and select the exhaust pipe with appropriate length and shapes.

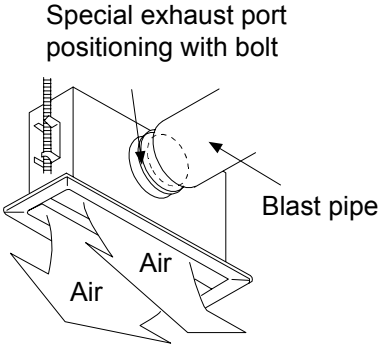


- The length difference between pipes should be limited to be less than 2:1;
- Make the piping as short as possible;
- Keep the min. elbow quantity;
- Wind the heat insulating material around the flange between the main unit and the exhaust pipe for heat insulation and sealing. Install the piping before fitting up the ceiling.
- At least 2 meters air duct is needed at air inlet and air outlet.
- Flexible connection is needed between indoor units and air duct.
- ESP should be lower than 200 Pa.



6. Cautions in Installation of Air Return Pipe & Exhaust Pipe

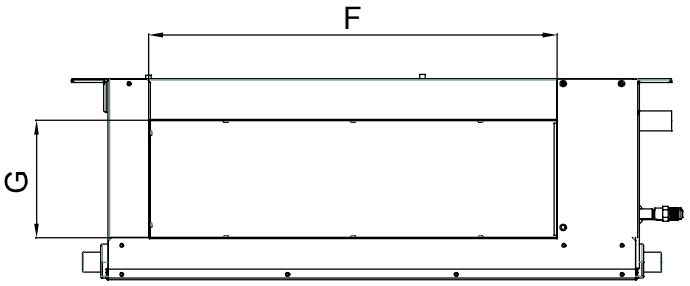
- It is recommended to use the blast pipes, which can be anti-condensation and absorb sound. (purchased at local shops)
- Complete the installation of the blast pipes before fitting up the suspended ceiling.
- Heat insulation should be made for the blast pipes.
- The special exhaust port should be arranged at the place where the air is distributed evenly.
- An inspection hole should be left on the surface of the ceiling for future maintenance.



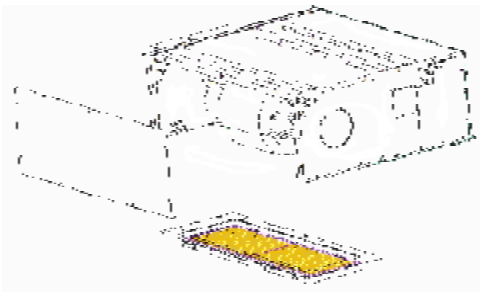
7.Connection of return air duct (setting back air return opening when leaving factory)

Remarks:

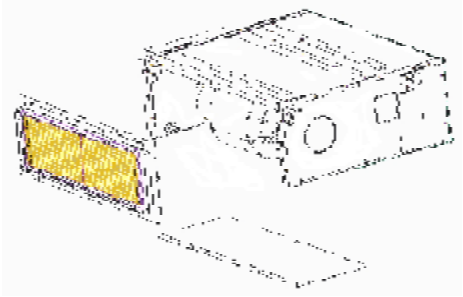
In installation, you can select the lower air return or back air return by adjusting the location of air inlet frame. Air return from bottom will influence the unit noise, so we suggest use rear return installation.



Model \ Size	F (in)	G (in)
MVAH009~018MV2AA	26	7 7/8
MVAH024~030MV2AA	29 1/8	7 7/8
MVAH036~048MV2AA	50 3/8	9 2/8



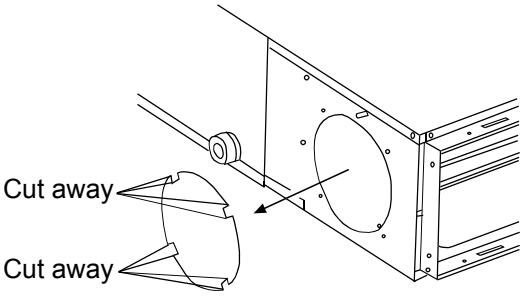
Back air return opening



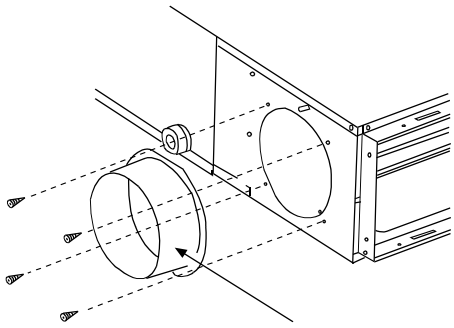
Below air return opening

8.Concatenation means of exchanging flesh air

(1) Cut away the nummular component of lateral board

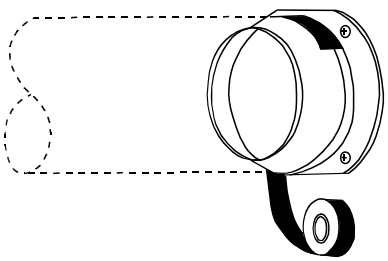


(2) Install the nummular air pipe (air pipe can be purchased in local district)



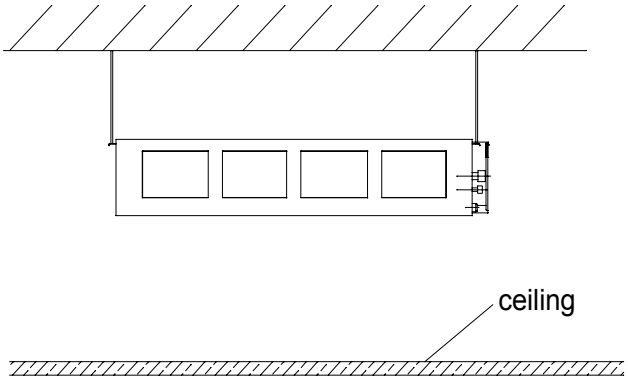
Nummular air pipe

(3) Airproof the joint by airproof cingulum avoiding



9.Install outlet flange

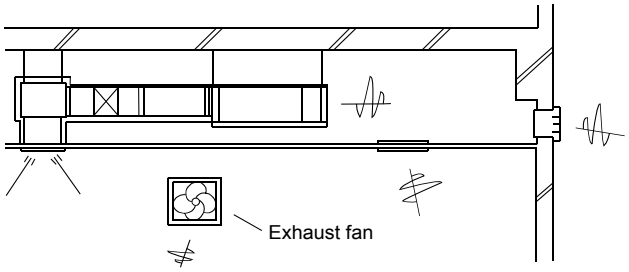
Install outlet flange according to the needs, the outlet flange is standard component, bolts are laid in accessories box.



Note: You can select not to connect with the flange. Instead of it, you can use the round plastic air outlet (purchased by user)

10. Examples for Bad Installation

- The unit is not equipped with the air return pipe and the inner side of the suspending ceiling is used as the blast pipe, causing the humidity increasing due to irregular air mass, strong wind or sunlight from the outside world.
- There might be condensate dropping down at the outer side of the blast pipe. The humidity is high, even if the inner side of the suspended ceiling isn't used as a blast pipe in new concrete buildings. At this time, the whole body should use the thermo wool for heat preservation (the thermo wool can be packed with a steel wire).
- It is operated under the conditions beyond the limits, leading to the overload of the compressor.
- Affected by the capacity of the exhaust fan, and the strong wind and wind direction in the outer flue, when the blowing quantity of the air conditioner exceeds the limits, the drained water of the heat exchanger will overflow, causing water leakage.



Example of bad installation

11. Static Pressure GradeSetting

For MVAH036~048MV2AA units, after installation need to preliminary estimates external static pressure, according to the external static pressuresetting the unit's static pressure grade by controller.

Note: the detail operation methods for setting the unit's static pressure grade refer to the controller manual.

The static pressure range of each gradeas follows:

Grade	Static pressure range
1	0~25pa
2	25~75pa
3	75~125pa
4	125~175pa
5	175~200pa

12. Refrigerant Tube

Tubing Permissible Length & Height Difference

Please refer to the attached manual of outdoor units.

Piping Materials & Heat Insulating Materials

As to prevent condensation, heat insulating treatment should be performed. The heat insulating treatment for gas and liquid piping should be done respectively.

Piping Material	Hard PVC tube VP1in(inner bore)
Heat Insulating Material	Vesicant polythene thickness: over 1/4in

Tubing Materials & Specifications

Model		MVAH009~018MV2AA	MVAH024~048MV2AA
Tubing Size	Gas pipe	Φ1/2	Φ5/8
	Liquid pipe	Φ1/4	Φ3/8
Tubing Material	Phosphor deoxybronze seamless pipe (TP_2) for air conditioner		

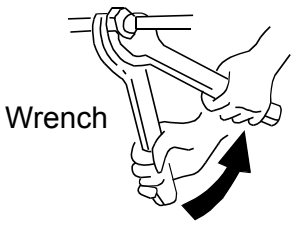
Refrigerant Filling Amount

Add the refrigerant according to the installation instruction of outdoor unit. The addition of R410A refrigerant must be performed with a measure gage to ensure the specified amount or compressor failure can be caused by filling too much or little refrigerant.

Connecting Procedures of Refrigerant Tubing

Proceed the flare tube connecting operation to connect all the refrigerant tubes.

- Dual wrenches must be used in the connection of indoor unit tubing.
- Mounting torque refers to the right table



Outer Diameter of Tubing	Mounting Torque
Φ1/4	11.8~13.7N.m
Φ3/8	32.7~39.9N.m
Φ1/2	49.0~53.9N.m
Φ5/8	78.4~98.0N.m
Φ3/4	97.2~118.6N.m

Cutting and Enlarging

Cutting or enlarging pipes should be proceeded by installation personnel according to the operating criterion if the tube is too long or flare opening is broken.

Vacuumizing

Vacuumize from the stop valve of outdoor units with vacuum pump. Refrigerant sealed in indoor machine is not allowed to use for vacuumization.

Open All Valves

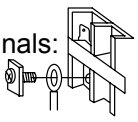
Open all the valves of outdoor units. [NB: oil balancing stop valve must be shut up completely when connected one main unit.]

Checkup for Air Leakage

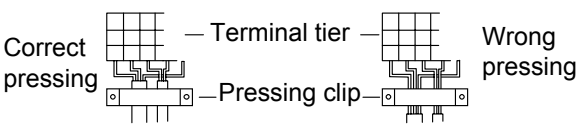
Check if there is any leakage at the connecting part and bonnet with hydrophone or soapsuds.

Connecting

Connecting circular terminals:



1. Connecting circular terminals:
The connecting method of circular terminal is shown in the Fig. Take off the screw, connect it to the terminal tier after heading it through the ring at the end of the lead and then tighten it.
2.Connecting straight terminals:
The connection methods for the circular terminals are shown as follows: loosen the screw before putting the line terminal into the terminal tier, tighten the screw and confirm it has been clamped by pulling the line gently.
3.Pressing connecting line
After connecting line is completed, press the connecting line with clips which should press on the protective sleeve of the connecting line.



9.6 Electrical wiring

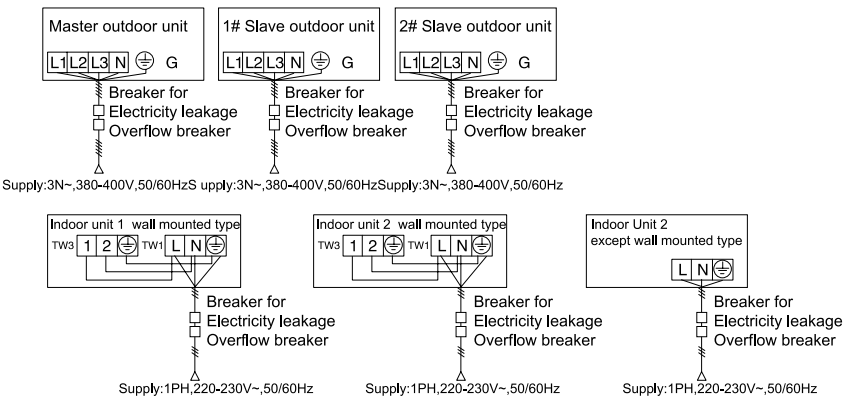
⚠ WARNING

- Electrical construction should be made with specific mains circuit by the qualified personnel according to the installation instruction. Electric shock and fire may be caused if the capacity of power supply is not sufficient.
- During arranging the wiring layout, specified cables should be used as the mains line, which accords with the local regulations on wiring. Connecting and fastening should be performed reliably to avoid the external force of cables from transmitting to the terminals. Improper connection or fastness may lead to burning or fire accidents.
- There must be the ground connection according to the criterion. Unreliable grounding may cause electrical shocks. Do not connect the grounding line to the gas pipe, water pipe, lightening rod and telephone line.

⚠ ATTENTION

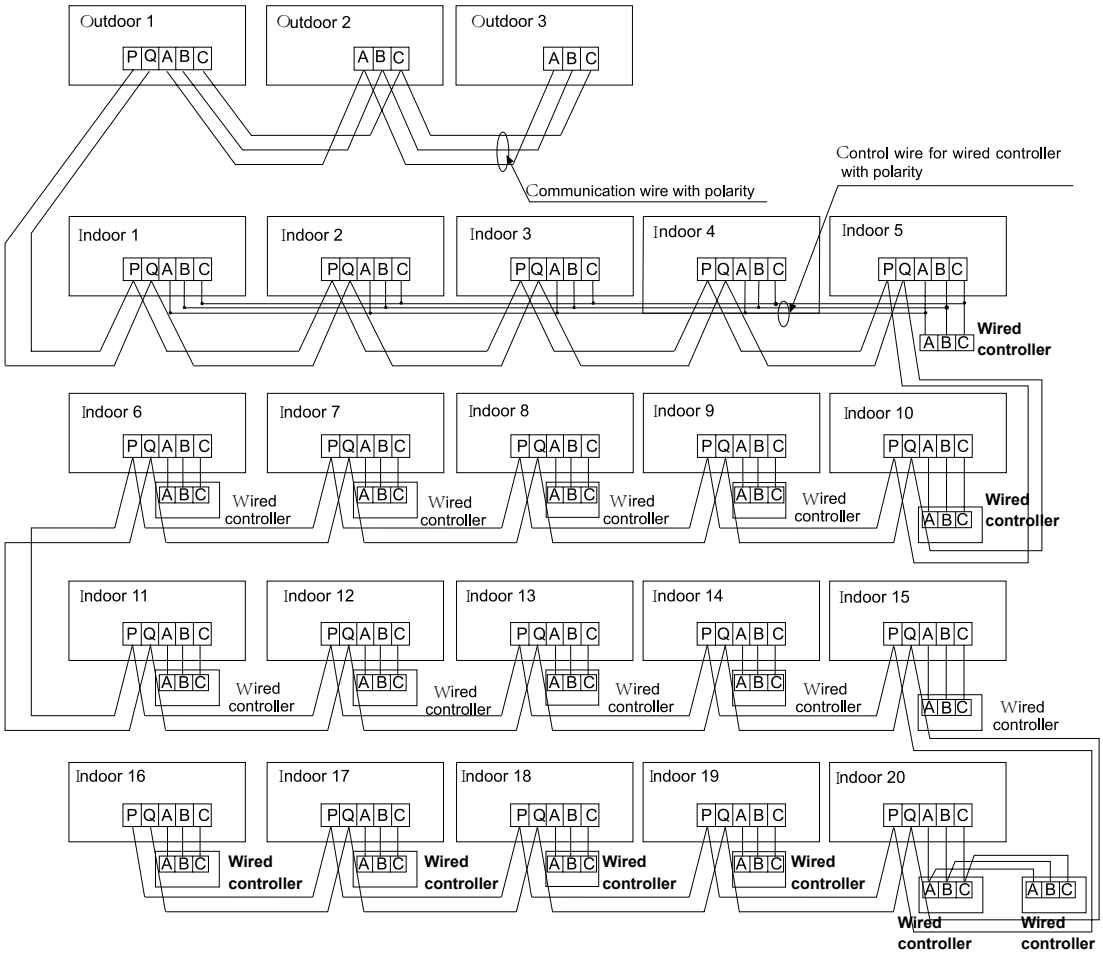
- Only copper wire can be used. Breaker for electric leakage should be provided, or electric shock may occur.
- The wiring of the mains line is of Y type. The power plug L should be connected to the live wire and plug N connected to null wire while ⏚ should be connected to the ground wire. For the type with auxiliary electrically heating function, the live wire and the null wire should not be misconnected, or the surface of electrical heating body will be electrified. If the power line is damaged, replace it by the professional personnel of the manufacturer or service center.
- The power line of indoor units should be arranged according to the installation instruction of indoor units.
- The electrical wiring should be out of contact with the high-temperature sections of tubing as to avoid melting the insulating layer of cables, which may cause accidents.
- After connected to the terminal tier, the tubing should be curved into be a U-type elbow and fastened with the pressing clip.
- Controller wiring and refrigerant tubing can be arranged and fixed together.
- The machine can't be powered on before electrical operation. Maintenance should be done while the power is shut down.
- Seal the thread hole with heat insulating materials to avoid condensation.
- Signal line and power line are separately independent, which can't share one line. [Note: the power line, signal line are provided by users. Parameters for power lines are shown as below: 3×(1.0-1.5) mm^2 ; parameters for signal line: 2×(0.75-1.25)mm^2 (shielded line)]
- 5 butt lines (1.5mm) are equipped in the machine before delivery, which are used in connection between the valve box and the electrical system of the machine. The detailed connection is displayed in the circuit diagram.

Supply Wiring Drawing



- Indoor units and outdoor units should be connected to the power source separately. Indoor units must share one single electrical source, but its capacity and specifications should be calculated. Indoor & outdoor units should be equipped with the power leakage breaker and the overflow breaker.

Signal Wiring Drawing



Outdoor units are of parallel connection via three lines with polarity. The master unit, central control and all indoor units are of parallel connection via two lines without polarity.

There are three connecting ways between wired controller and indoor units:

A. One line control controls multiple units, i.e. 8 indoor units, as shown in the above figure, (1-5 indoor units).The indoor unit 5 is the line-controlled main unit and others are the ine-controlled sub units. The wired control and the main unit (directly connected to the indoor unit of line control) are connected via three lines with polarity. Other indoor units and the main unit are connected via three lines with polarity.SW01 on the main unit of line control is set to 0 while SW01 on other sub units of line control are set to 1, 2, 3 and so onin turn.

B. One line control controls one indoor unit, as shown in the above figure(indoor unit 6-19). The indoor unitand the line control are connected via three lines with polarity.

C. Two wired controller control one indoor unit, as shown in the figure (indoor unit 20). Either of the wired controller can be set to be the master wired controller while the other is set to be the auxiliary wired controller. The master wired controller and indoor units, and the master and auxiliary wired controller are connected via three lines with polarity.

When the indoor units are controlled by the remote control, switch over the modes by Switching Mode of Line-Controlled Main Unit/ Line-Controlled Sub Units/ Remote-Controlled Types. The signal terminals needn't to be equipped with wires and connected to the line control.

Indoor power supply wiring & signal wiring between indoor and outdoor & signal wiring between indoor.

Items / Total Current of Indoor Unite(A)	Cross Section AWG(mm^2)	Length in.(m)	Rated Current of Overflow Breaker(A)	Rated current of residual Circuit Breaker(A) Ground Fault Interruptor(mA) Response time(S)	Cross Sectional Area of Signal Line	
					Outdoor-indoor AWG (mm^2)	Indoor-indoorAWG (mm^2)
<7	14(2.5)	65.6(20)	10	10 A, 30mA, 0.1S or below	2 cores×AWG18-AWG14(0.75-2.0 $mm^{2)}$ shielded line	
≥7 and <11	12(4)	65.6(20)	16	16 A, 30mA, 0.1S or below		
≥11 and <16	10(6)	82(25)	20	20 A, 30mA, 0.1S or below		
≥16 and <22	8(8)	98.4(30)	32	32 A, 30mA, 0.1S or below		
≥22 and <27	6(10)	131(40)	32	32 A, 30mA, 0.1S or below		

- The electrical power line and signal lines must be tightly.
- Every indoor unit must have the ground connection.
- The power line should be enlarged if it exceeds the permissible length.
- Shielded lays of all the indoor and outdoor units should be connected together, with the shielded lay at the side of signal lines of outdoor units grounded at one point.
- Signal lines should not exceed 3280ft(1000m)

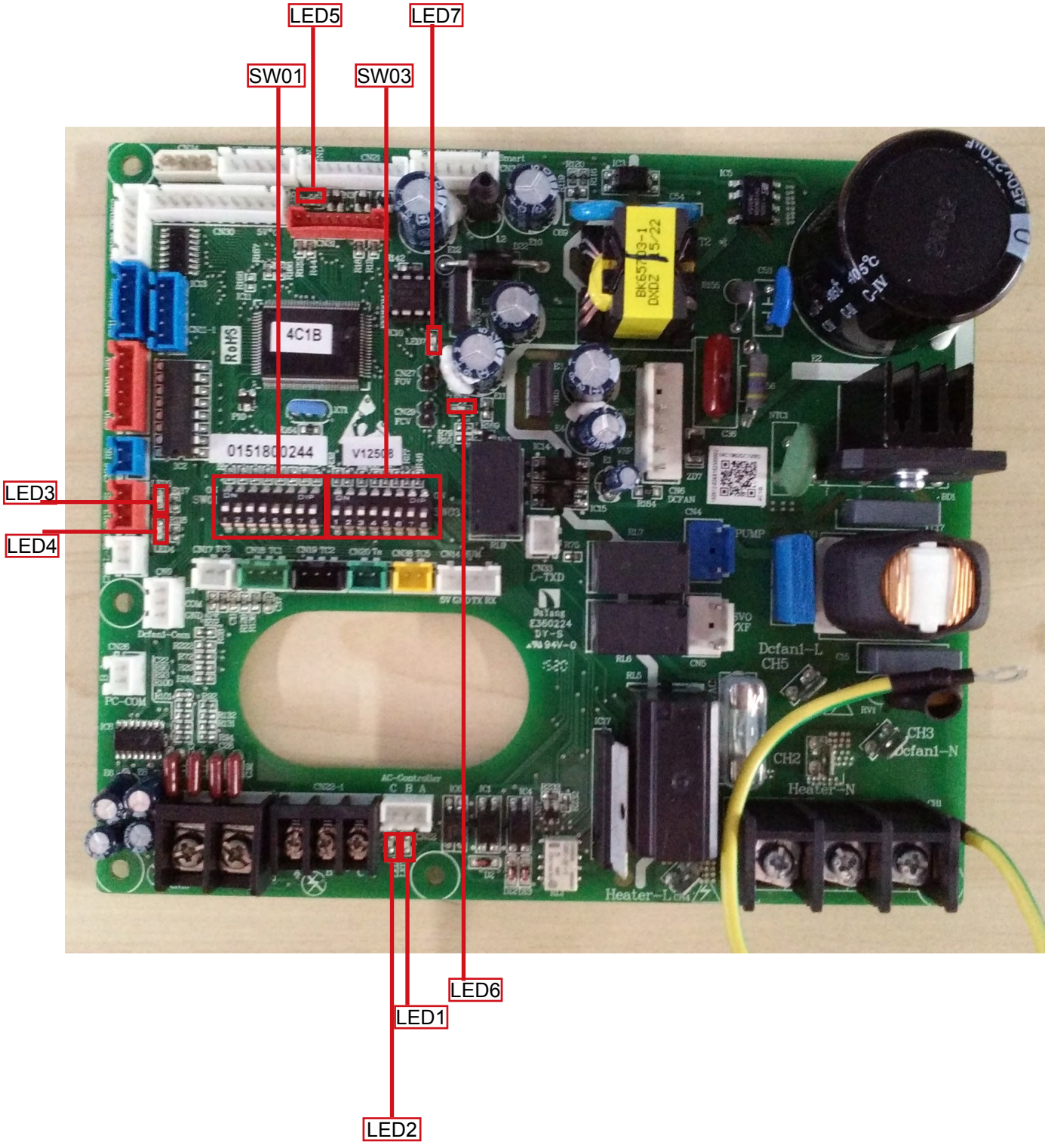
Signal Wiring of Wired controller

Length of Signal Line ft (m)	Wiring Dimensions AWG (mm^2)
<328(100)	22（0.3）×core shielding line
≥328(100)and <656(200)	20（0.5）×core shielding line
≥656(100) and <984(300)	18（0.754）×core shielding line
≥984(300) and <1312(400)	16（1.25）×core shielding line
≥1312(400)and <1968(600)	14（2）×core shielding line

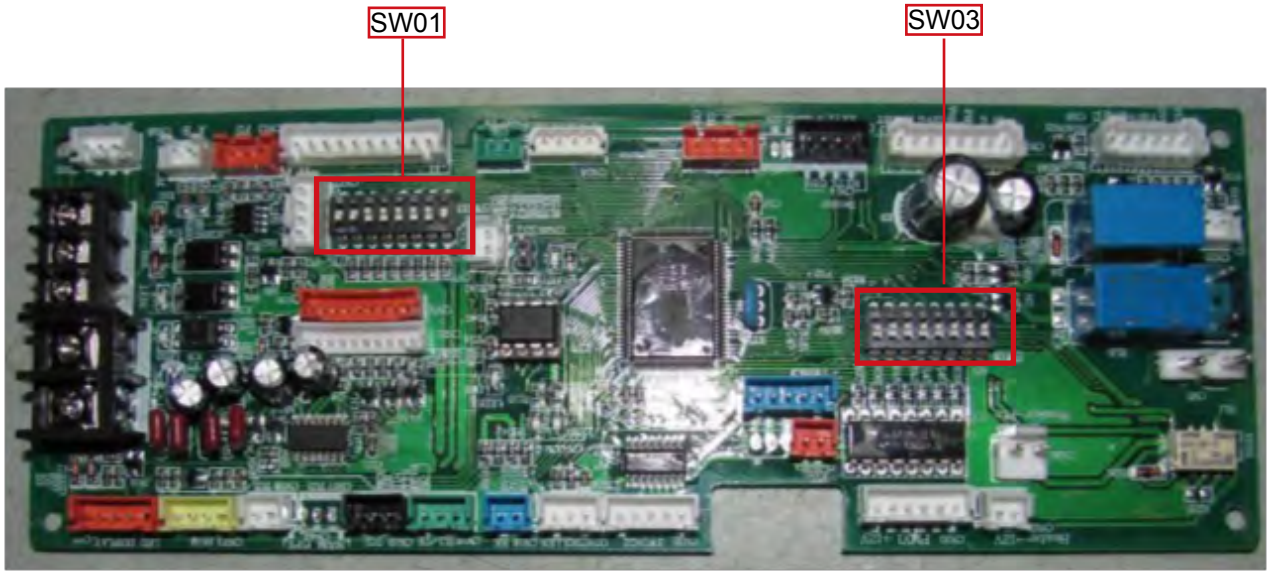
The shielding lay of the signal line must be grounded at one end.
The total length of the signal line shall not be more than 600m.

10. PCB Photo

PCB code:0151800244
(used for the unit: MVAH018MV2AA, MVAH024MV2AA, MVAH030MV2AA)



PCB code:0151800227A
(used for the unit: MVAH036MV2AA, MVAH042MV2AA, MVAH048MV2AA)



Power supply board code:0151800311A
(used for the unit: MVAH036MV2AA, MVAH042MV2AA, MVAH048MV2AA)

11. Dip switch setting

11.1 0151800244 PCB

SW01 is used to set wire controlled address of and set capabilities of master; SW03 is used to set indoor unit address (combine original communication address and address of centralized controller)

(A) Definition and description of SW01

SW01_1 SW01_2 SW01_3 SW01_4	Address of wire controlled indoor unit	[1]	[2]	[3]	[4]	Address of wire controlled indoor unit (group address)
		OFF	OFF	OFF	OFF	0# (wire controlled master unit) (default)
		OFF	OFF	OFF	ON	1# (wire controlled slave unit)
		OFF	OFF	ON	ON	2# (wire controlled slave unit)
		OFF	OFF	ON	ON	3# (wire controlled slave unit)
		…	…	…	…	……
		ON	ON	ON	ON	15# (wire controlled slave unit)
SW01_5 SW01_6 SW01_7 SW01_8	Capability of indoor unit	[5]	[6]	[7]	[8]	Capability of indoor unit
		OFF	ON	ON	OFF	18000BTU (MVAH018MV2AA)
		OFF	ON	ON	ON	24000BTU (MVAH024MV2AA)
		ON	OFF	OFF	ON	30000BTU (MVAH030MV2AA)

(B) Definition and description of SW03

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	Communication address	Central control address
SW03	Set the communication and central control address by dip switch (*Note 2)	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0 (default)	0 (default)
		ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	1	1
		ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	2	2
		…	…	…	…	…	…	…	…	…	…
		ON	OFF	ON	ON	ON	ON	ON	ON	63	63
		ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	0	64
		ON	ON	OFF	OFF	OFF	OFF	OFF	ON	1	65
		ON	ON	OFF	OFF	OFF	OFF	ON	OFF	2	66
		…	…	…	…	…	…	…	…	…	…
		ON	ON	ON	ON	ON	ON	ON	ON	63	127
		OFF	…	…	…	…	…	…	…	Set the address by wired controller or automatically (default)	

Note 2:

- Set the address by dip switch when connecting the centralized controller or gateway or charge system.
- Address of centralized controller =communication address + 0 or +64.
  SW03_ 2=OFF, address of centralized controller =communication address+0=communication address SW03_ 2=ON, address of centralized controller=communication address+64 (applies when centralized controller is used and there are more than 64 indoor units)

11.2 0151800227A PCB

SW01 is used to set wire controlled address of and set capabilities of master; SW03 is used to set indoor unit address (combine original communication address and address of centralized controller)

(A) Definition and description of SW01

SW01_1 SW01_2 SW01_3 SW01_4	Address of wire controlled indoor unit	[1]	[2]	[3]	[4]	Address of wire controlled indoor unit (group address)
		OFF	OFF	OFF	OFF	0# (wire controlled master unit) (default)
		OFF	OFF	OFF	ON	1# (wire controlled slave unit)
		OFF	OFF	ON	ON	2# (wire controlled slave unit)
		OFF	OFF	ON	ON	3# (wire controlled slave unit)
		…	…	…	…	……
		ON	ON	ON	ON	15# (wire controlled slave unit)
SW01_5 SW01_6 SW01_7 SW01_8	Capability of indoor unit	[5]	[6]	[7]	[8]	Capability of indoor unit
		ON	OFF	ON	OFF	36000BTU (MVAH036MV2AA)
		ON	OFF	ON	ON	42000BTU (MVAH042MV2AA) 48000BTU (MVAH048MV2AA)

(B) Definition and description of SW03

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	Communication address	Central control address
SW03	Set the communication and central control address by dip switch (*Note 2)	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0 (default)	0 (default)
		ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	1	1
		ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	2	2
		…	…	…	…	…	…	…	…	…	…
		ON	OFF	ON	ON	ON	ON	ON	ON	63	63
		ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	0	64
		ON	ON	OFF	OFF	OFF	OFF	OFF	ON	1	65
		ON	ON	OFF	OFF	OFF	OFF	ON	OFF	2	66
		…	…	…	…	…	…	…	…	…	…
		ON	ON	ON	ON	ON	ON	ON	ON	63	127
		OFF	…	…	…	…	…	…	…	Set the address by wired controller or automatically (default)	

Note 2:

• Set the address by dip switch when connecting the centralized controller or gateway or charge system.

• Address of centralized controller =communication address + 0 or +64.

SW03_ 2=OFF, address of centralized controller =communication address+0=communication address SW03_ 2=ON, address of centralized controller=communication address+64 (applies when centralized controller is used and there are more than 64 indoor units)

12. Indoor unit control

12.1 Cooling operation

Set temp. in cooling: Ts=set temp. wired controller;
After startup, indoor unit will send the request to outdoor according to the temp. difference between the set temp. and the room temp.

12.2 Heating operation

Set temp. in heating: Ts=set temp. wired controller + TA correcting value.
After startup, indoor unit will send the request to outdoor according to the temp. difference between the set temp. and the room temp.

12.3 Dry operation

Room temp. - set temp. > 2°C indoor operation is identical with the cooling operation, and send the cooling mode to outdoor;
Room temp. - set temp. ≤ 2°C indoor will send the dry signal to outdoor, and indoor fan motor will run at low speed compulsorily when compressor is running; when room temp. <16°C indoor stops and sends stop signal to outdoor.
In dry operation, the auto mode of indoor fan motor is identical with the cooling mode; EEV control mode is identical with the cooling operation.

12.4 Fan operation

Indoor fan motor will run at the speed set on the wired controller and sends stop signal to outdoor.

12.5 Abnormal operation

When the requested mode collides with the outdoor mode, the entering earlier will be in prior. After indoor receives the startup command from wired controller (remote controller), firstly judge the outdoor current mode. If it is normal mode, the indoor will run as the request of wired controller; if it is abnormal mode, the command can not be executed, and indoor keeps stop; wired controller displays standby mode (if in remote control type, the buzzer will sound twice and the remote controller can not receive the signal). Until the outdoor stops or the outdoor mode is accordant with the requested mode of wired controller (remote controller), the outdoor will work. COOL (including AUTO COOL), DRY, RECOVERY are regarded as the same mode;
HEAT, RECOVERY are as abnormal mode.

12.6 Fan speed control of indoor fan motor

a. Adjustment by hand
Set high/ mid/ low fan speed as the request.
b. Auto fan speed
Confirm the fan speed as the temp. difference between room temp. TA and the set temp.
c. Anti-cool air control
In heating mode, after compressor startup, the unit will control indoor fan motor state due to the indoor coil temp.
In anti-cool air period, indoor sends pre-heat signal to wired controller; in outdoor defrosting period, indoor fan motor will stop, and sends defrost signal to wired controller;
After being switched off in heating mode, indoor fan motor will run at low speed and 30 seconds later will stop.

12.7 Set EEV open angle by hand

When being switched off, short connect CN27 to open the valve fully compulsorily for 2 minutes; When being switched off, short connect CN29 to close the valve fully compulsorily for 2 minutes.

12.8 Anti-freeze protection

In cooling mode, execute the anti-freeze protection due to the measured indoor coil temp. to avoid the indoor heat exchanger causing frost or ice.

12.9 Swing motor control

Indoor will control swing motor ON/OFF due to the swing signal from wired controller.

12.10 Auxiliary electric heater control

In heating mode, if the below conditions can be met, the electric heater will work:
(1) Indoor fan motor and compressor are running;
(2) Air inlet temp. is no more than 22°C;
(3) Room temp. is lower over 2°C than the set temp.;
(4) Compressor has run for 5 seconds;
Either below condition is met, the electric heater will stop:
(1) Indoor fan motor or compressor not runs;
(2) Indoor air inlet temp. is over 23°C;
(3) Indoor air inlet temp. is higher over -1°C than the set temp.;
(4) Unit stops or quit the heating mode.

12.11 Filter cleaning

Check and memorize the running time of indoor fan motor, once arriving the requested time (set by SW07-6), indoor will send filter cleaning signal to wired controller; when indoor receives the filter reset signal from wired controller, if the time exceeds the requested time, the filter will reset.

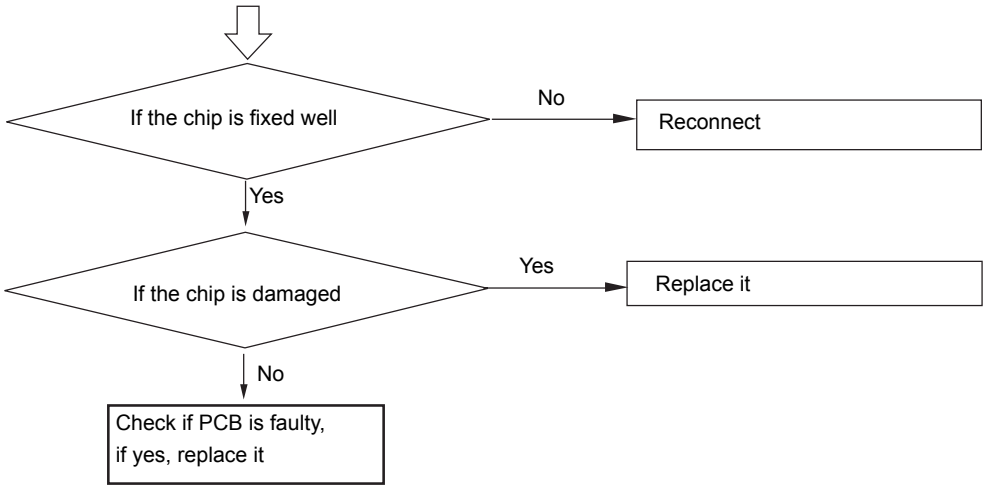
12.12 Compulsory defrosting

After indoor receives the compulsory defrosting signal from wired controller, it will send compulsory defrosting signal to outdoor continuously for 10 times. In the sending period, indoor will execute the normal defrost.

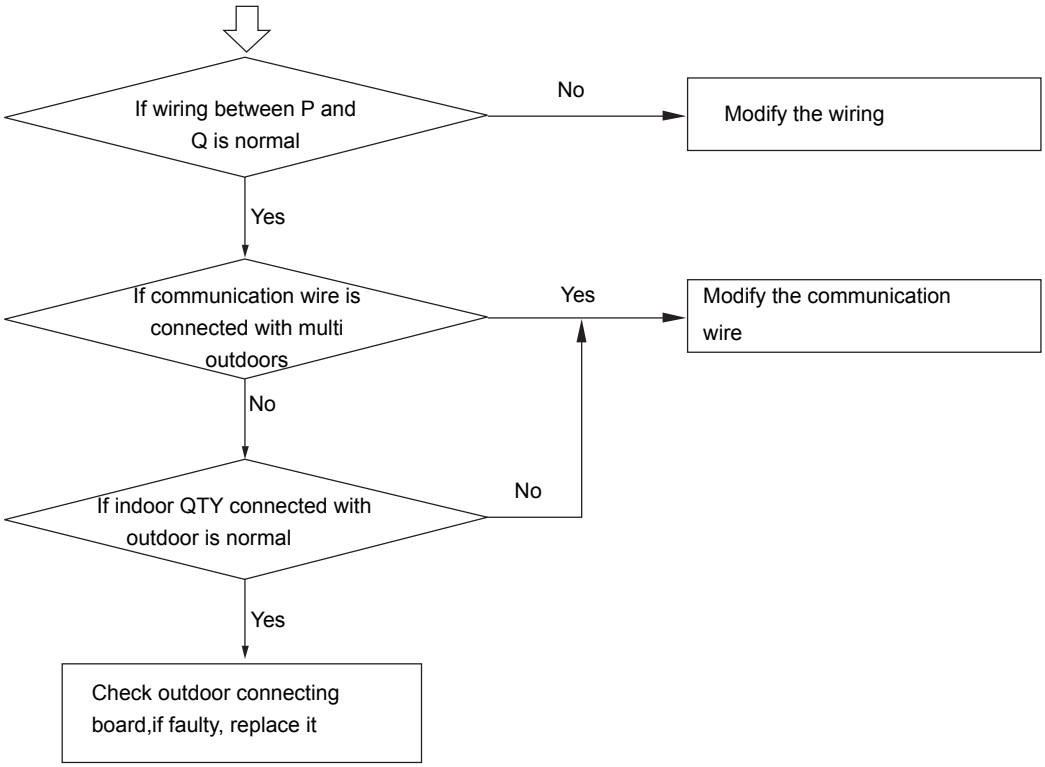
12.13 Trial operation

Set the mode as cooling (heating), press ON/OFF for 5 seconds to enter compulsory cooling (heating).
In compulsory cooling, display "LL" and COOL will flash;
In compulsory heating, display "HH" and HEAT will flash, fan speed is AUTO. At this time, only ON/OFF, TEMP +/- are valid.

[05] EEPROM failure



[09] Indoor address repeated



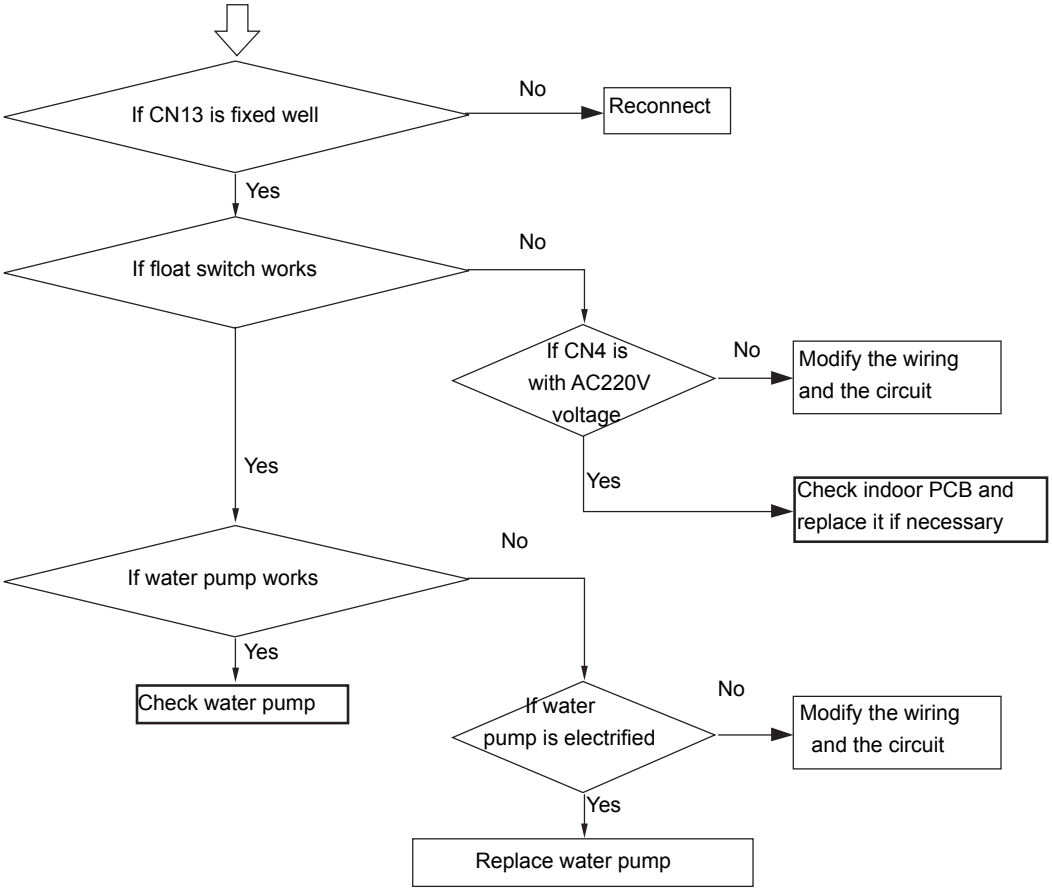
13. Failure code

Failure code at wired controller	PCB LED5(Indoor Units)/ Receiver Timer Lamp(Remote Controller)	Fault Descriptions
01	1	Indoor ambient temp. sensor TA failure
02	2	Indoor coil pipe temp. sensor TC1 failure
03	3	Indoor coil pipe temp. sensor TC2 failure
05	5	Indoor EEPROM failure
06	6	Communication between indoor and outdoor failure
07	7	Communication between indoor and wired controller failure
08	8	Indoor float switch failure
09	9	Indoor address repeated failure
12	12	Indoor unit 50Hz zero-crossing failure
13	13	DC motor model is wrong
14	14	DC motor failure
16	16	Communication between DC motor and PCB
18	18	The 4-way valve of 3-pipe valve box reversing failure
20	20	Outdoor failure code

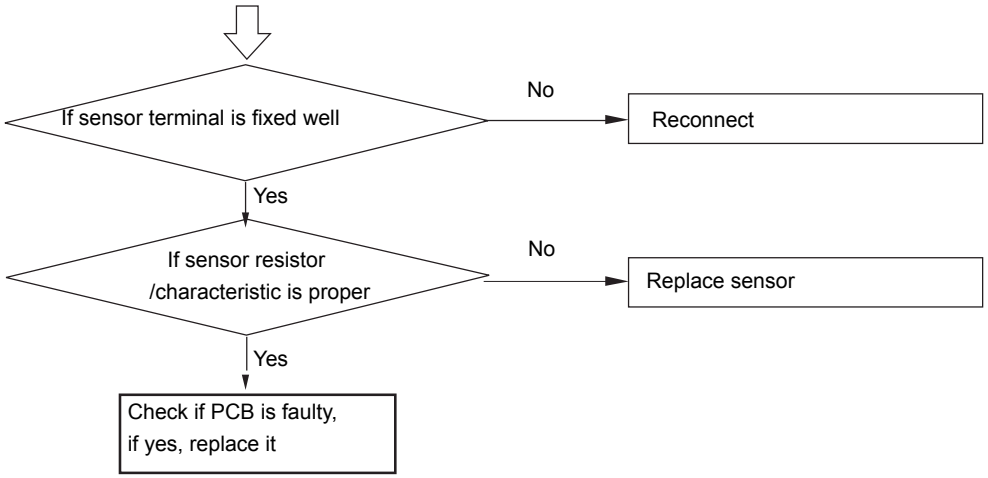
14. Troubleshooting

Indoor failure diagnose

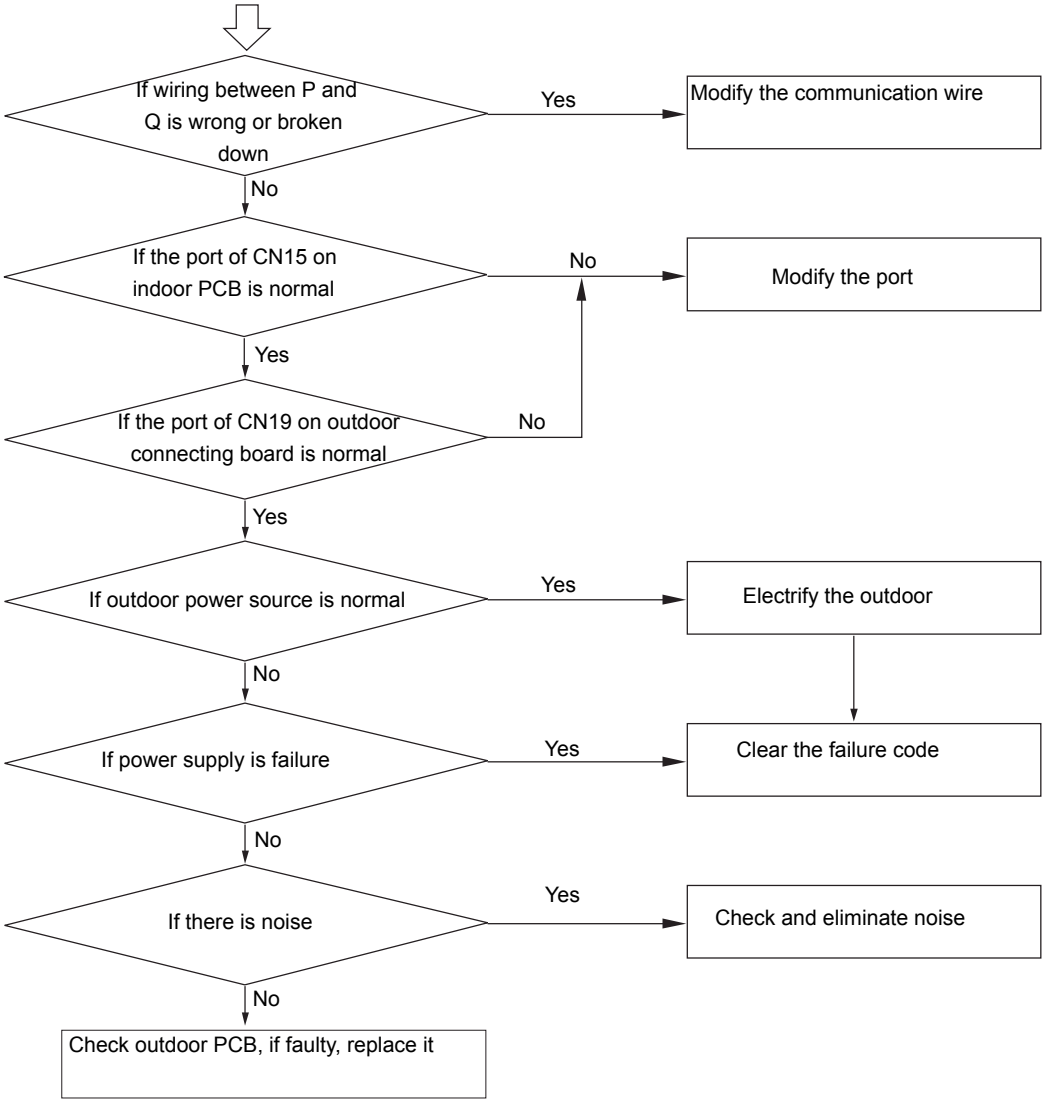
[08] Indoor drainage system failure/float switch circuit on indoor PCB failure



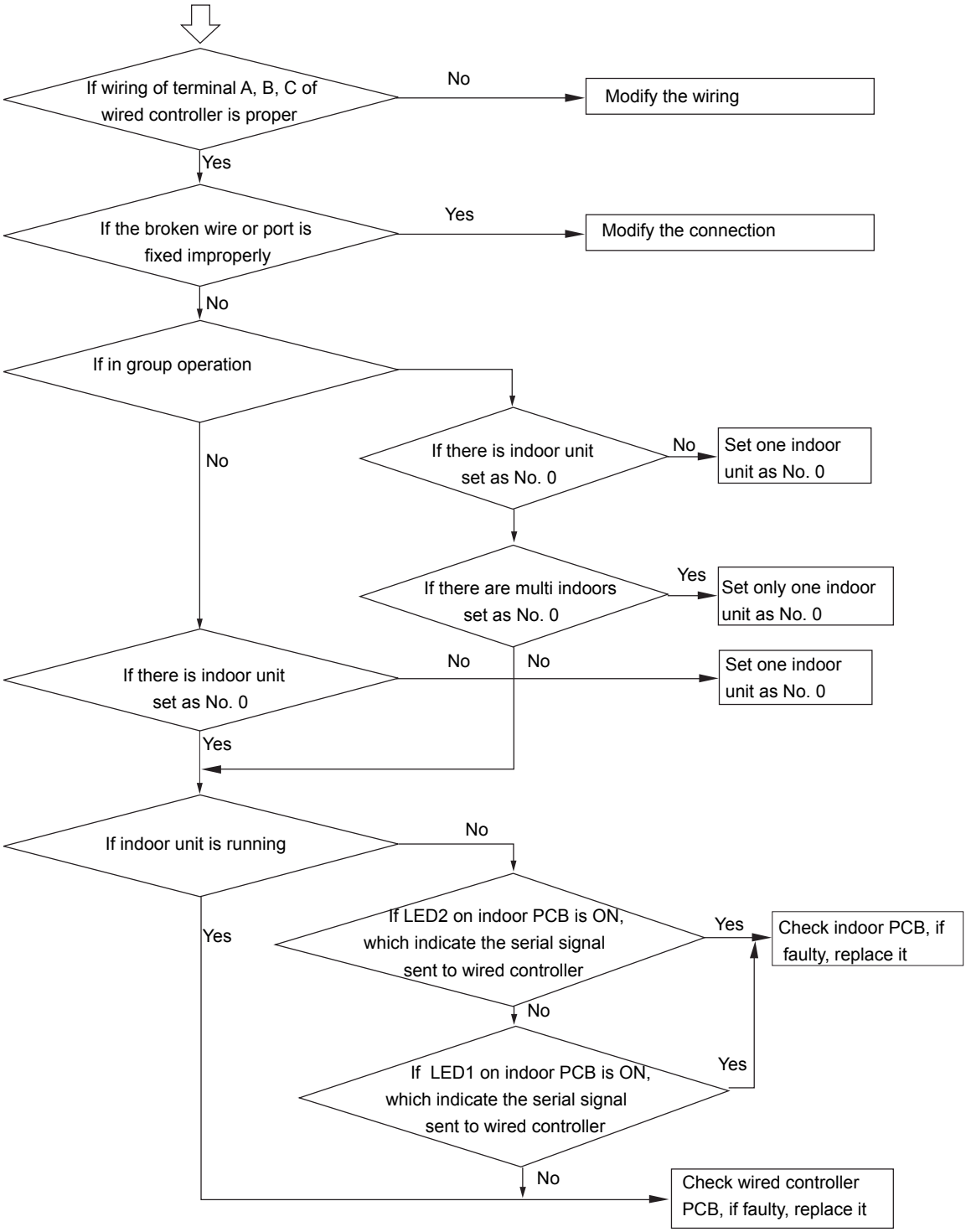
[1/2/3/4/15] Indoor sensor failure



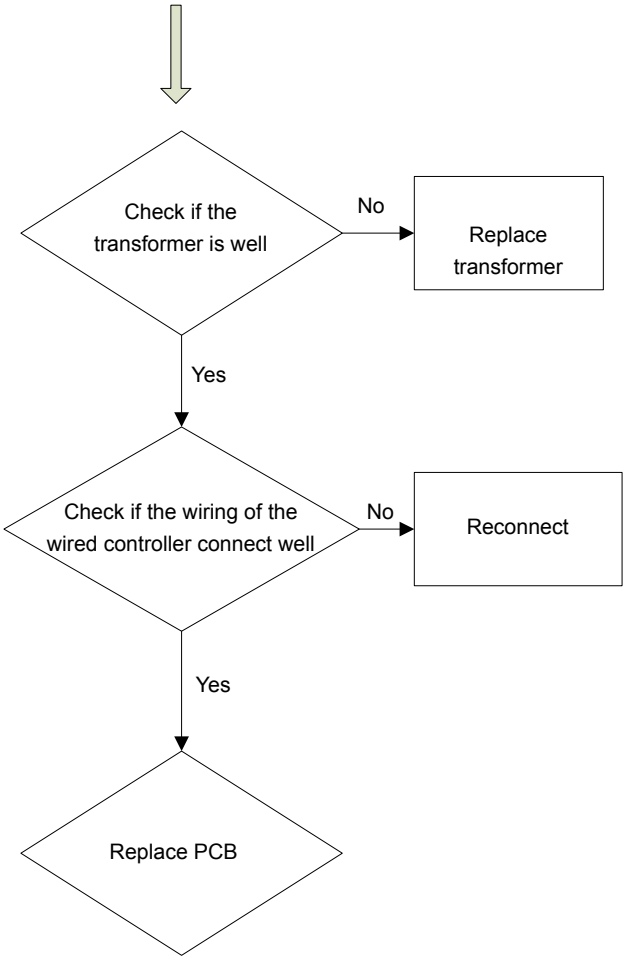
[06] Communication circuit between indoor and outdoor



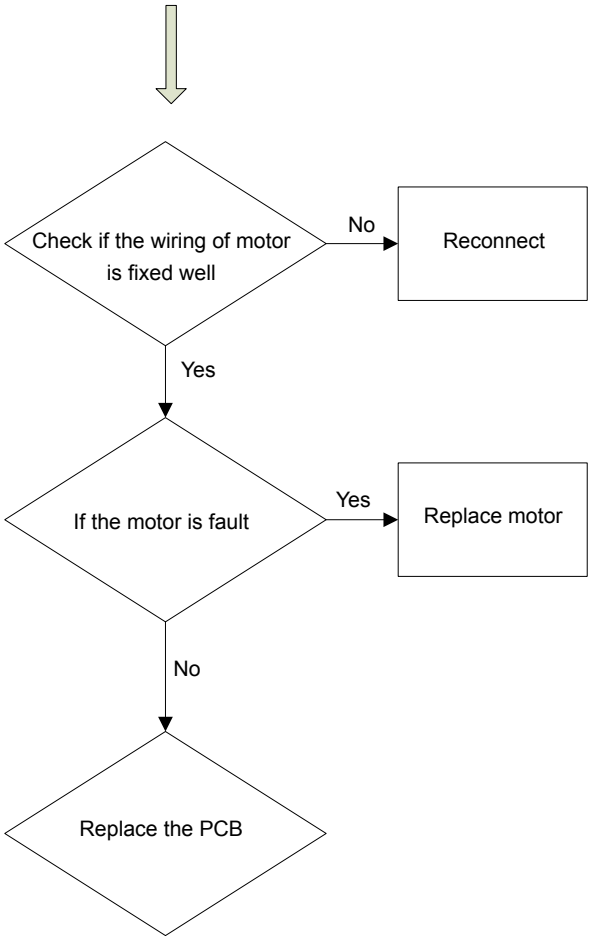
[07] Communication abnormal between indoor and wired controller



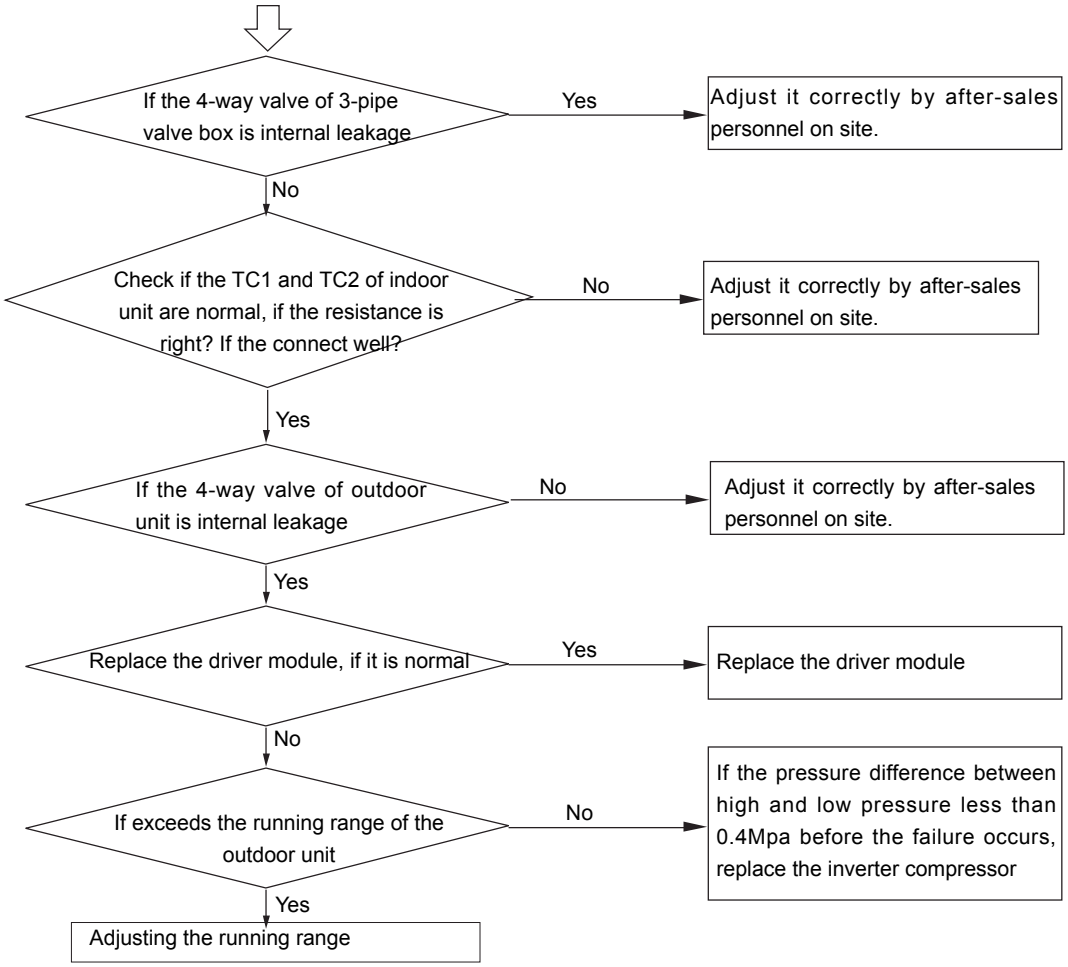
[12] No 50Hz zero passage signal



[14] DC motor failure



[18] The 4-way valve of 3-pipe valve box reversing failure



Note: abnormity confirmation conditions
For MRVIII-RC system, the outdoor unit is running normally, when the 4-way valve of valve box is power on and its connected heating indoor unit's parameter satisfy following conditions

- & • When 4-way valve of valve box is ON
  - • TC2 ≤ CT-20°C lasts for 5min
  - • or • TC1 ≤ 0°C lasts for 5min
    - • TC1 ≤ master unit Ps_temp+10°C lasts for 5min

16. Capacity

Cooling

CA: total capacity (Btu/h)
SHC: sensible heat capacity (Btu/h)

Model	Outdoor Temp.	Indoor Temp.													
		70.7°FDB		73.4°F DB		77°F DB		80.6°F DB		82.4°F DB		86°F DB		89.6°F DB	
		59°F WB		60.8°F WB		64.4°F WB		66.2°F WB		68°F WB		71.6°F WB		75.2°F WB	
	°F DB	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
MVAH018MV2AA	68	17679	12536	18000	12857	18643	12536	18964	12536	19286	12857	20250	12536	20893	12214
	72.5	17357	12536	17679	12536	18643	12536	18964	12536	19286	12857	19929	12536	20571	12214
	77	17357	12214	17679	12536	18321	12214	18643	12214	18964	12857	19929	12214	20571	11893
	81.5	17036	12214	17357	12536	18321	12214	18643	12214	18964	12536	19607	12214	20250	11893
	86	17036	12214	17357	12536	18000	12214	18321	12214	18643	12536	19286	12214	20250	11893
	90.5	16714	12214	17036	12214	17679	11893	18321	12214	18643	12536	19286	12214	19929	11893
	95	16714	11893	17036	12214	17679	11893	18000	11893	18321	12536	18964	12214	19929	11893
	99.5	16393	11893	16714	12214	17357	11893	17679	11893	18321	12214	18964	11893	19607	11571
	104	16071	11893	16714	12214	17357	11893	17679	11893	18000	12214	18643	11893	19286	11571
	109.4	16071	11571	16393	11893	17036	11571	17357	11893	17679	12214	18643	11893	19286	11571
MVAH024MV2AA	68	23662	17239	24000	17577	25014	17239	25352	17239	26028	17915	27042	17577	27718	16901
	72.5	23324	17239	23662	17577	24676	17239	25352	17239	25690	17915	26704	17239	27718	16901
	77	22986	16901	23662	17577	24338	16901	25014	17239	25352	17577	26366	17239	27380	16901
	81.5	22648	16901	23324	17239	24338	16901	24676	17239	25352	17577	26028	17239	27042	16563
	86	22648	16901	22986	17239	24000	16901	24338	16901	25014	17577	26028	16901	27042	16563
	90.5	22310	16563	22648	17239	23662	16563	24338	16901	24676	17577	25690	16901	26704	16563
	95	21972	16563	22648	16901	23662	16563	24000	16901	24338	17239	25352	16901	26366	16563
	99.5	21972	16563	22310	16901	23324	16563	23662	16563	24338	17239	25352	16901	26028	16225
	104	21634	16225	21972	16901	22986	16563	23662	16563	24000	17239	25014	16563	26028	16225
	109.4	21296	16225	21634	16563	22648	16225	23324	16563	23662	16901	24676	16563	25690	16225
MVAH030MV2AA	68	29333	20667	30000	21333	31333	20667	31667	20667	32333	21333	33667	20667	34667	20000
	72.5	29000	20667	29667	21000	31000	20667	31667	20667	32000	21333	33333	20667	34667	20000
	77	28667	20333	29333	21000	30667	20333	31333	20333	31667	21000	33000	20333	34333	20000
	81.5	28667	20333	29000	20667	30333	20333	31000	20333	31667	21000	32667	20333	34000	19667
	86	28333	20333	28667	20667	30000	20000	30667	20333	31333	20667	32333	20333	33667	19667
	90.5	28000	20000	28667	20333	29667	20000	30333	20000	31000	20667	32000	20000	33333	19667
	95	27667	20000	28333	20333	29333	19667	30000	20000	30667	20667	31667	20000	33000	19333
	99.5	27333	19667	28000	20000	29000	19667	29667	19667	30333	20333	31667	20000	32667	19333
	104	27000	19667	27667	20000	28667	19667	29333	19667	30000	20333	31333	19667	32333	19333
	109.4	26667	19333	27333	19667	28333	19333	29000	19667	29667	20000	31000	19667	32000	19000

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Model	Outdoor Temp.	Indoor Temp.													
		70.7°FDB		73.4°F DB		77°F DB		80.6°F DB		82.4°F DB		86°F DB		89.6°F DB	
		59°F WB		60.8°F WB		64.4°F WB		66.2°F WB		68°F WB		71.6°F WB		75.2°F WB	
	°F DB	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
MVAH036MV2AA	68	35357	27321	36000	27964	37286	27321	38250	27643	38893	28607	40179	27643	41786	27000
	72.5	35036	27000	35679	27643	36964	27000	37929	27321	38571	28286	39857	27643	41464	27000
	77	34714	26679	35357	27643	36643	27000	37286	27321	38250	28286	39536	27321	41143	26679
	81.5	34071	26679	35036	27321	36321	26679	36964	27000	37929	27964	39214	27321	40821	26679
	86	33750	26357	34714	27321	36000	26679	36643	27000	37286	27964	38893	27321	40179	26357
	90.5	33429	26357	34071	27000	35679	26357	36321	26679	36964	27643	38571	27000	39857	26357
	95	33107	26036	33750	27000	35357	26357	36000	26679	36643	27643	38250	27000	39536	26357
	99.5	32786	26036	33429	26679	35036	26036	35679	26357	36321	27321	37929	26679	39214	26036
	104	32464	25714	33107	26357	34714	26036	35357	26357	36000	27321	37286	26679	38893	26036
	109.4	31821	25714	32786	26357	34071	25714	34714	26357	35679	27000	36964	26679	38571	26036
MVAH042MV2AA	68	41328	31920	42336	32256	44016	31920	45024	32256	45696	33264	47376	32256	49056	31248
	72.5	40992	31584	42000	31920	43680	31584	44688	31920	45360	32592	47040	32256	48720	31248
	77	40656	31248	41664	31920	43344	31248	44016	31584	45024	32592	46704	31920	48384	30912
	81.5	40320	31248	41328	31584	42672	31248	43680	31248	44688	32256	46368	31584	48048	30912
	86	39984	30912	40992	31584	42336	30912	43344	31248	44016	32256	45696	31584	47376	30576
	90.5	39648	30576	40320	31248	42000	30576	42672	30912	43680	31920	45360	31248	47040	30576
	95	39312	30240	39984	31248	41664	30576	42000	30912	43008	31920	44352	31248	46704	30576
	99.5	38640	30240	39312	30912	41328	30240	41664	30576	42672	31584	44016	30912	46368	30240
	104	38304	29904	38976	30576	40656	30240	41328	30576	42336	31584	44016	30912	45696	30240
	109.4	37968	29568	38640	30576	40320	29904	40992	30240	42000	31248	43680	30576	45360	29904
MVAH048MV2AA	68	46971	35657	48000	36343	50057	35657	50743	36000	51771	37029	53829	36000	55543	34971
	72.5	46629	35314	47657	36000	49371	35314	50400	35657	51429	36686	53143	36000	55200	34971
	77	45943	34971	46971	36000	49029	34971	50057	35314	50743	36686	52800	35657	54857	34629
	81.5	45600	34971	46629	35657	48343	34971	49371	35314	50400	36343	52457	35657	54171	34629
	86	45257	34629	45943	35314	48000	34629	49029	34971	50057	36343	51771	35314	53829	34286
	90.5	44571	34286	45600	35314	47657	34629	48343	34971	49371	36000	51429	35314	53143	34286
	95	44229	34286	45257	34971	46971	34286	48000	34629	49029	36000	50743	34971	52800	33943
	99.5	43543	33943	44571	34629	46629	33943	47657	34629	48343	35657	50400	34971	52457	33943
	104	43200	33600	44229	34629	45943	33943	46971	34286	48000	35314	50057	34629	51771	33943
	109.4	42514	33257	43543	34286	45600	33600	46629	33943	47314	35314	49371	34286	51429	33600

Heating

SHC: sensible heat capacity

Model	Outdoor Temp.	Indoor Temp. (°F DB)			
		59	68.0	77.0	80.6
	°F WB	SHC (Btu/h)	SHC (Btu/h)	SHC (Btu/h)	SHC (Btu/h)
MVAH018MV2AA	5	13333	13333	13016	13016
	14	15238	15238	14921	13651
	23	17143	16825	15556	13651
	32	19048	18730	15556	13651
	36.5	20000	19683	15556	13651
	42.8	20317	20000	15556	13651
	43.7	20952	20000	15556	13651
	50	22540	20000	15556	13651
	54.5	23810	20000	15556	13651
	59.9	24127	20000	15556	13651
MVAH024MV2AA	5	18225	17888	17550	17550
	14	20588	20250	20250	18563
	23	23288	22950	20925	18563
	32	25650	25313	20925	18563
	36.5	27000	26663	20925	18563
	42.8	27338	27000	20925	18563
	43.7	28350	27000	20925	18563
	50	30375	27000	20925	18563
	54.5	32400	27000	20925	18563
	59.9	32738	27000	20925	18563
MVAH030MV2AA	5	22780	22440	22100	22100
	14	25840	25500	25160	23460
	23	29240	28900	26520	23460
	32	32300	31960	26520	23460
	36.5	34000	33660	26520	23460
	42.8	34340	34000	26520	23460
	43.7	35700	34000	26520	23460
	50	38080	34000	26520	23460
	54.5	40800	34000	26520	23460
	59.9	41140	34000	26520	23460

Model	Outdoor Temp.	Indoor Temp. (°F DB)			
		59	68.0	77.0	80.6
	°F WB	SHC (Btu/h)	SHC (Btu/h)	SHC (Btu/h)	SHC (Btu/h)
MVAH036MV2AA	5	26880	26240	26240	25920
	14	30720	30080	29760	27520
	23	34240	33920	31360	27520
	32	38080	37760	31360	27520
	36.5	40000	39680	31360	27520
	42.8	40000	40000	31360	27520
	43.7	42240	40000	31360	27520
	50	45120	40000	31360	27520
	54.5	48000	40000	31360	27520
	59.9	48320	40000	31360	27520
MVAH042MV2AA	5	31444	31113	30782	30451
	14	36077	35415	35085	32437
	23	40380	40049	36739	32437
	32	45014	44352	36739	32437
	36.5	47000	46669	36739	32437
	42.8	47662	47000	36739	32437
	43.7	49648	47000	36739	32437
	50	52958	47000	36739	32437
	54.5	56268	47000	36739	32437
	59.9	56930	47000	36739	32437
MVAH048MV2AA	5	36113	35775	35438	35100
	14	41175	40838	40163	37125
	23	46238	45900	42188	37125
	32	51638	50963	42188	37125
	36.5	54000	53325	42188	37125
	42.8	54675	54000	42188	37125
	43.7	56700	54000	42188	37125
	50	60750	54000	42188	37125
	54.5	64463	54000	42188	37125
	59.9	65475	54000	42188	37125

Haier Commercial Air Condition

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