



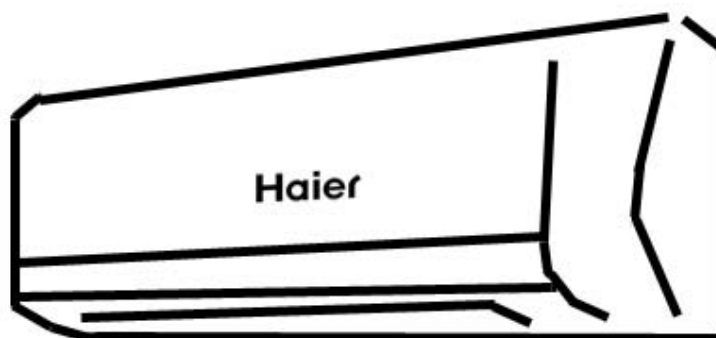
Domestic Air conditioner

SERVICE MANUAL

HSU18VH7

CAUTION

- READ THIS MANUAL CAREFULLY TO DIAGNOSE TROUBLE CORRECTLY BEFORE OFFERING SERVICE.
- THIS MANUAL IS USED BY QUALIFIED APPLIANCE TECHNICIANS ONLY.
- HAIER DOES NOT ASSUME ANY RESPONSIBILITY FOR PROPERTY DAMAGE OR PERSONAL INJURY FOR IMPROPER SERVICE PROCEDURES DONE BY ONE UNQUALIFIED PERSON.



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1. General information

This Service Manual describes the operation, disassembly, troubleshooting, and repair of Haier Room Air Conditioners, etc. It is intended for use by authorized services who troubleshoot and repair these units.

It is assumed that users of this manual are familiar with the use of tools and equipment used to troubleshoot and repair electrical, mechanical, and refrigeration systems; and understand the terminology used to describe and discuss them.

Haier urges you read and follow all safety precautions and warnings contained in this manual. Failure to comply with safety information may result in severe personal injury or death.

Related Publications

This is a base service manual, covering a range of similar models. It is intended to be used in conjunction with the Parts Manual and Technical Sheet covering specific model being serviced.

NOTE: General Precautions and Warnings

WARNING

To avoid risk of personal injury or death due to electrical shock, disconnect electrical power to unit before attempting to service the unit.

WARNING

To avoid risk of personal injury or death due to electrical shock, DO NOT, under any circumstances, alter the grounding plug. Air conditioner must be grounded at all times. Do not remove warning tag from power cord. If a two-prong (non-grounding) wall receptacle is encountered, contact a qualified electrician and have the receptacle replaced with a properly grounded wall receptacle in accordance with the National Electrical Code.

WARNING

To avoid risk of heat exposure, which may cause death or severe illness, air conditioner must be monitored when malfunctions or shuts down.

WARNING

To avoid risk of personal injury or death due to electrical shock, grounding wires and wires colored like grounding wires are NOT to be used as current carrying conductors. The standard accepted color coding for ground wires is green or green with a yellow stripe. Electrical components such as the compressor and fan motor are grounded through an individual wire attached to the electrical component and to another part of the air conditioner. Grounding wires should not be removed from individual components while servicing, unless the component is to be removed and replaced. It is extremely important to replace all removed grounding wires before completing service.

MODEL: HSU18VH7



Product Features

- TEMP
- SIGNAL SENDING
- FAN SPEED
- SLEEP
- HEALTH
- POWER ON/OFF

Main Specification

- Cooling Capacity: 18000/17800 BTU
- Rated Power/Current(cooling): 1580/1560W/7/7.5A
- SEER:13.0/13.0

- Heating Capacity: 18000/18000 BTU
- Rated Power/Current(heating): 1520/1480W/6.7/7.2A
- HSPF:7.7/7.7

- Air Volume: 500 CFM
- Power: 1PH 230/208V ~ 60Hz

2. Specification

		HSU18VH7	
Power		1 PH 230/208V / 60Hz	
Climate Type		T1	
Cooling	Cooling Capacity		18000/17800 BTU
	Rated Power/Current:		1580/1560W/7/7.5A
	Max Power/Current		/
	SEER		13.0/13.0
Heating	Heating Capacity		18000/18000 BTU
	Rated Power/Current:		1520/1480W/6.7/7.2A
	Max Power/Current:		/
	HSPF		7.7/7.7
Starting Current		---	
Operating temp. range		-7°C~43°C	
Indoor Velocity	H		1350rpm
	M		1260rpm
	L		1180rpm
Outdoor Velocity	H		900/830rpm
Air Volume (High/Med/Low)	Indoor	500/480/450CFM	
Class of electric Shock Protection		I	
Class of Water Proof		IP24	
Moisture Removal		5.2 Pints/hr	
Remote Controller Model		YR-H24	
Power Cord	Model × Sectional Area		3G2.5mm ²
Compressor Manufacture/Type		Toshiba/PA160X2CS-3KUU	
Compressor Oil Charge		750ml	
Refrigerant	Type/Net Charge		R410A/67.4Oz
	Charge if over standard pipe length		50g
Noise Level (dB)	Indoor(H/M/L)		47/46/44 47/45/44
	Outdoor		60/62
Length/Diameter of Drain Hose		Φ16mm	
Low pressure at cool side		600Psig	
Max. pressure at warm side		600Psig	
Drainage pipe material diameter		Φ16mm	
Refrigerant Pipe	Liquid / Gas pipe Diameter		Φ6.35/12.7mm
	Standard length		7m
	Min / Max length		3/15m
Weight	Indoor	Net	33.6lbs
		Gross	40lbs
	Outdoor	Net	116lbs
		Gross	124lbs
Dimension	Indoor	Net	8 13/16*45 15/32*12 1/8
		Package	28 3/4*33 27/32*10 1/2
	Outdoor	Net	9 13/16*40 3/8*14 1/8
		Package	26 3/4*32 5/8*13 15/16

3. Electrical control

3.1 Basic Function

No.	Function	Description of function
1	Cooling	Set temperature 60°F-86°F
2	Drying	Set temperature 60°F-86°F
3	Heating (heat pump type)	Set temperature 60°F-86°F
4	Emergency run	Over 23°C cooling and set 26°C less 23°C heating and set 23°C
5	Test run	Set force cooling
6	Anti-cold wind (heat pump type)	When temperature of the heating pipe coil is low, low fan speed or without airflow
7	Fan speed adjustment	Auto, high, middle, low four level fan speeds
8	Timer switch	24hours timer on, timer off, on-off, off-on
9	High load protection (heat pump type)	When heating in high ambient temperature to protect compressor
10	Anti-freezing of the indoor unit	When heating in low ambient temperature to protect system
11	Defrosting run (heat pump type)	When heating in low ambient temperature to defrost for the outdoor unit in order to make the system have a better efficiency
12	Self trouble shooting	Check the system trouble and give an alarm
13	Over current protection(heat pump type)	When working in high power to protect system

3.2 . Introduction to electrical control functions

Including brief introduction to air conditioners of series models and electric control function.

Brief introduction to electric control function

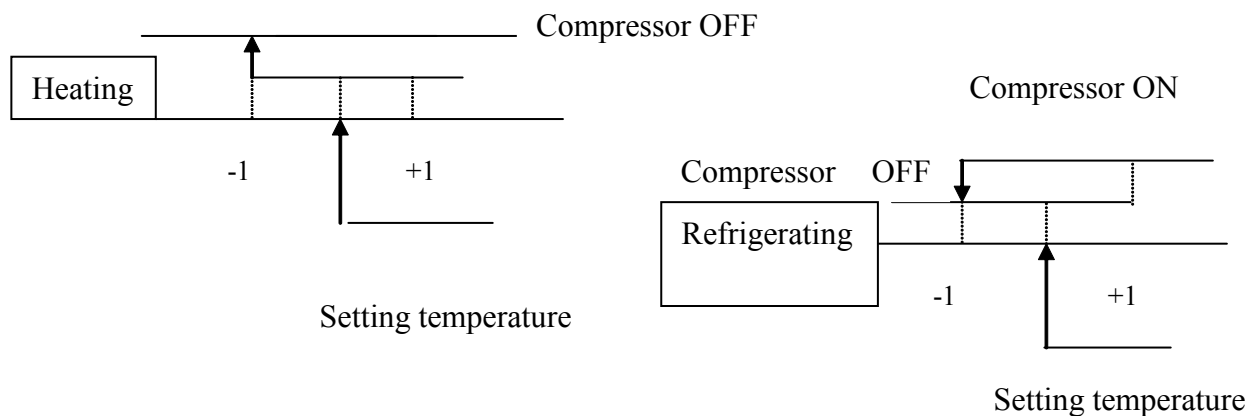
3.2.1 Automatic running (applicable to fan-coil model)

When the running mode is turned to automation after starting the system, the system will first determine the running mode according to the current room temperature and then will run according to the determined mode. Tr in the following selection conditions means room temperature, Ts means setting temperature, Tp means temperature of indoor coil pipe

- | | | |
|-------------------------------|----------------------------|--------------------------|
| a. $Tr \geq 23^\circ\text{C}$ | running refrigerating mode | $T_s = 26^\circ\text{C}$ |
| b. $Tr < 23^\circ\text{C}$ | running heating mode | $T_s = 23^\circ\text{C}$ |

After turning to the automation mode, the running mode can be switched between refrigerating mode, fan mode and heating mode according to the change of the indoor ambient temperature. But the automatic conversion between refrigerating mode and heating mode must be conducted after 15 minutes.

3.2.2 Indoor temperature control

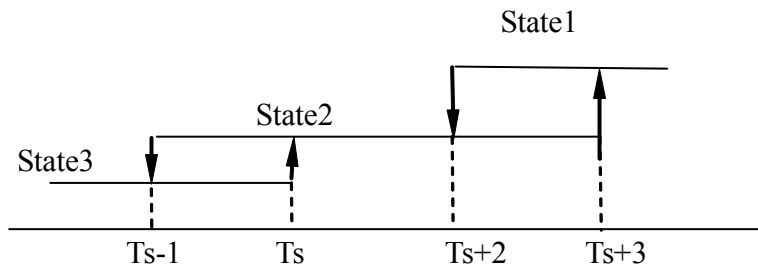


Compressor ON

3.2.3 Dehumidification running

The compressor, outdoor fan and indoor fan will run as per the following working pattern so as to realize the refrigerating running of dehumidification:

- 3.2.3.1 $Tr > T_s + 2^\circ\text{C}$, compressor, outdoor fan run continuously, indoor fan runs as per setting wind speed (State 1);
- 3.2.3.2 $T_s + 2^\circ\text{C} \geq Tr \geq T_s$, compressor, outdoor fan run intermittently with 10 minutes ON, 6 minutes OFF. (Compressor and outdoor fan are synchronous) indoor fan runs in fixed lower wind speed, and will cease at the stand-by time of 3 minutes (State 2)
- 3.2.3.3 $Tr < T_s$, compressor, outdoor fan ceases, indoor fan runs in lower wind speed. (State 3)



3.2.4 Warm start (preventing cold wind when heating running begins, applicable to fan-coil model))

When heating running begins, indoor fan will conduct the following fan control:

- If the temperature of indoor coil pipe is $\geq 23^{\circ}\text{C}$, start lower wind speed;
- If the temperature of indoor coil pipe is $\geq 38^{\circ}\text{C}$ or the running time of compressor ≥ 4 minutes, turn to setting wind speed.

3.2.5 Control of indoor fan under heating OFF state (applicable to fan-coil model)

Under heating state, the compressor will cease; if the indoor coil pipe's temperature $T_p \geq 23^{\circ}\text{C}$, indoor fan will run in lower wind speed.

3.2.6 Defrosting control (applicable to fan-coil model)

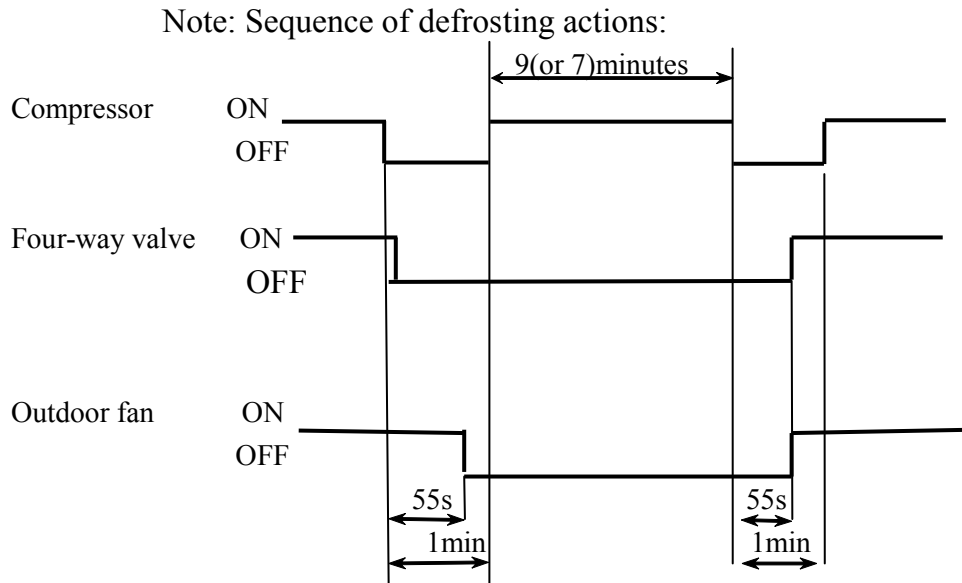
Defrosting beginning condition:

- a. After the state of $T_p - T_r < 16^{\circ}\text{C}$ is continued for 5 minutes, the accumulated running time of the compressor exceeds 45 minutes, the continuous running time of the compressor exceeds 20 minutes;
- b. The accumulated running time of the compressor exceeds 3 hours, the continuous running time of the compressor exceeds 20 minutes, indoor unit's $T_p < 38^{\circ}\text{C}$;
- c. The continuous running time of the compressor exceeds 20 minutes, the temperature of indoor coil pipe decreases 1°C every 6 minutes, which lasts for more than 3 times, indoor unit's $T_p < 38^{\circ}\text{C}$;
- d. When the indoor unit is in the state of overload protection and the outdoor unit ceases, when the rerunning time of outdoor unit exceeds 10 minutes, the accumulated running time of the compressor exceeds 45 minutes, the continuous running time of the compressor is over 20 minutes, and $T_p < 38^{\circ}\text{C}$.

Defrosting will begin if one of the above conditions is met.

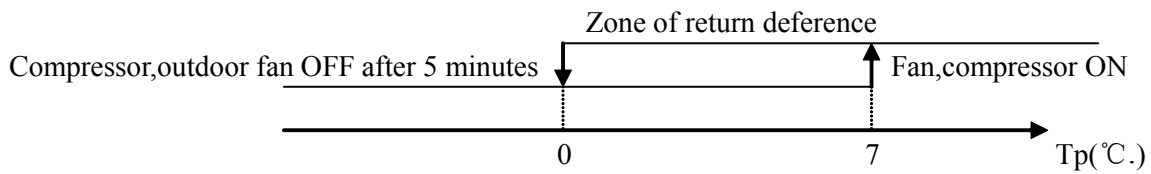
Defrosting finishing condition:

If the defrosting time exceeds 9 (for 12 models) or 7 (for 07,09 models) minutes, the original heating state will be resumed;



3.2.7 Freezing prevention function

Under refrigerating and dehumidifying state, the air conditioner will control the outdoor fan as per the temperature T_p of the indoor coil pipe according to the following conditions:



3.2.8 3 minutes stand-by time

When the compressor ceases due to the sensor OFF, unit On or OFF or fault, it will maintain pause for 3 minutes.

3.2.9 Overload protection during heating running

Temperature protection of indoor coil pipe: Under heating state, the air conditioner will control the running of the fan as per the temperature T_p of the indoor coil pipe and according to the following conditions:

- $58^{\circ}\text{C} \leq T_p$, outdoor fan ceases; $T_p \leq 54^{\circ}\text{C}$, outdoor fan resumes; the time from ceasing to resuming is about 45 seconds;
- $68^{\circ}\text{C} \leq T_p$, outdoor fan of compressor ceases after 5 seconds; $T_p \leq 47^{\circ}\text{C}$, compressor resumes after 3 minutes.

Current protection (different models have different protection currents):

- When $13.0\text{A} \leq$ current of compressor, outdoor fan cease; current of compressor $\leq 11.7\text{A}$, outdoor fan resume;

3.2.10 Compensatory function of power failure

If the unit is suddenly off during running due to power failure, or closed for maintenance or troubleshooting, it will restart to run after the power resumes with the original condition before the unit is off

Note: a. Function setting: Pressing the SLEEP button on the remote control unit for 10 times until hearing 4 sounds from the buzzer on the panel.

b. Memory content: Running mode, setting wind speed, setting

temperature, sleep state, flap state.

C. Cancellation of function: Pressing the SLEEP button on the remote control unit for 10 times until hearing 2 sounds from the buzzer on the panel.

3.2.11 Trial run function

When the air conditioner is in OFF state, press the emergency switch for 5 seconds till hearing 2 sounds of click from the buzzer, then the air conditioner will turn to the trial run state. The unit will run in the refrigerating mode and the indoor fan will run in high wind speed mode.

3.2.12 Emergency running mode

When the air conditioner is in stand-by state, press the emergency switch till hearing a sound from the buzzer, then the air conditioner will turn to the emergency run state. The rules of emergency run are as follows:

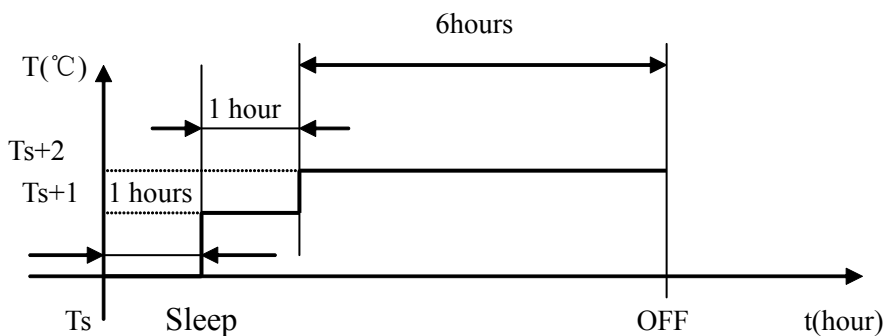
- a. $T_r \geq 23^\circ\text{C}$, running refrigerating mode, $T_s = 26^\circ\text{C}$;
- b. $T_r < 23^\circ\text{C}$, running heating mode, $T_s = 23^\circ\text{C}$.

3.2.13 Temperature compensation.

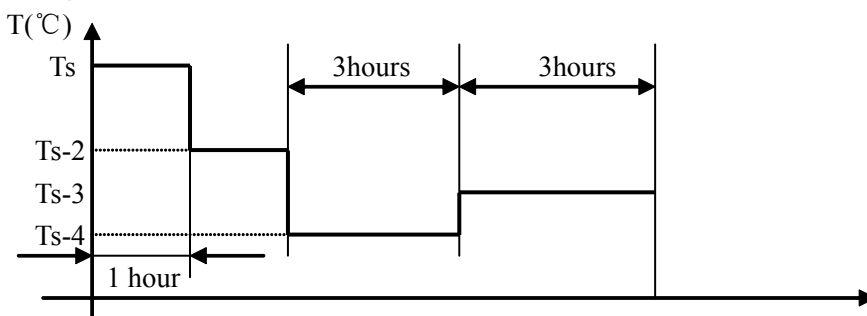
There is the function of automatic temperature compensation when heating, with heating temperature setting = $T_s(\text{remote setting}) + 4^\circ\text{C}$.

3.2.14 Sleeping function

a. After setting the sleeping function, the refrigerating mode and dehumidification mode will run as per the following rules:



b. After setting the sleeping function, the heating mode will run as per the following rules:



As shown in the above diagram, after running for 1 hour under refrigerating mode and dehumidification mode, the setting temperature will increase 1°C ; after

running for 1 hour under heating mode, the setting temperature will decrease 2°C, after another 1 hour, it will decrease the 2°C again, and after 3 hours, it will increase 1°C, and after other 3 hours, it will cease.

MODEL	PCB	The SW2 select "25" OR "35"
HSU18VH7	0010403861	25

4. Trouble shooting

Before asking for service, check the following first.






	Phenomenon	Cause or check points
Normal Performance inspection	<p>The system does not restart immediately.</p> 	<ul style="list-style-type: none"> • When unit is stopped, it won't restart immediately until 3 minutes have elapsed to protect the system. • When the electric plug is pulled out and reinserted, the protection circuit will work for 3 minutes to protect the air conditioner.
	<p>Noise is heard</p> 	<ul style="list-style-type: none"> • During unit operation or at stop, a swishing or gurgling noise may be heard. At first 2-3 minutes after unit start, this noise is more noticeable. (This noise is generated by refrigerant flowing in the system.) • During unit operation, a cracking noise may be heard. This noise is generated by the casing expanding or shrinking because of temperature changes. • Should there be a big noise from air flow in unit operation, air filter may be too dirty.
	<p>Smells are generated.</p>	<ul style="list-style-type: none"> • This is because the system circulates smells from the interior air such as the smell of furniture, cigarettes.
	<p>Mist or steam are blown out.</p> 	<ul style="list-style-type: none"> • During COOL or DRY operation, indoor unit may blow out mist. This is due to the sudden cooling of indoor air.
Multiple check	<p>Does not work at all.</p> 	<ul style="list-style-type: none"> • Is power plug inserted? • Is there a power failure? • Is fuse blown out?
	<p>Poor cooling</p> 	<ul style="list-style-type: none"> • Is the air filter dirty? Normally it should be cleaned every 15 days. • Are there any obstacles before inlet and outlet? • Is temperature set correctly? • Are there some doors or windows left open? • Is there any direct sunlight through the window during the cooling operation?(Use curtain) • Are there too much heat sources or too many people in the room during cooling operation?

Table for Wrong Codes

Wrong express	reasons	Ways and means	solutions	tools
power timing operating ★ ■ ■	indoor ambient temperature sensor abnormal	Check the sensor of indoor ambient temperature,if the resistance value is 0 or ∞ , the sensor is abnormal.	see the following flow chart 1	Multimeter
★ □ □	indoor pipe temperature sensor abnormal	Check the sensor of indoor coilpipe ,if the resistance value is 0 or ∞ , the sensor is abnormal.	see the following flow chart 1	Multimeter
■ □ ★	Indoor fan motor don't feed back	Check whether indoor PCB or motor is abnormal	see the following flow chart 2	Multimeter
★ □ ★	Data error or no EEPROM	Check whether the EEPROM is installed properly	Change the indoor PCB	Multimeter
□ on ★ flash ■ off				

chart 1: SENSOR MALFUNCTIONS

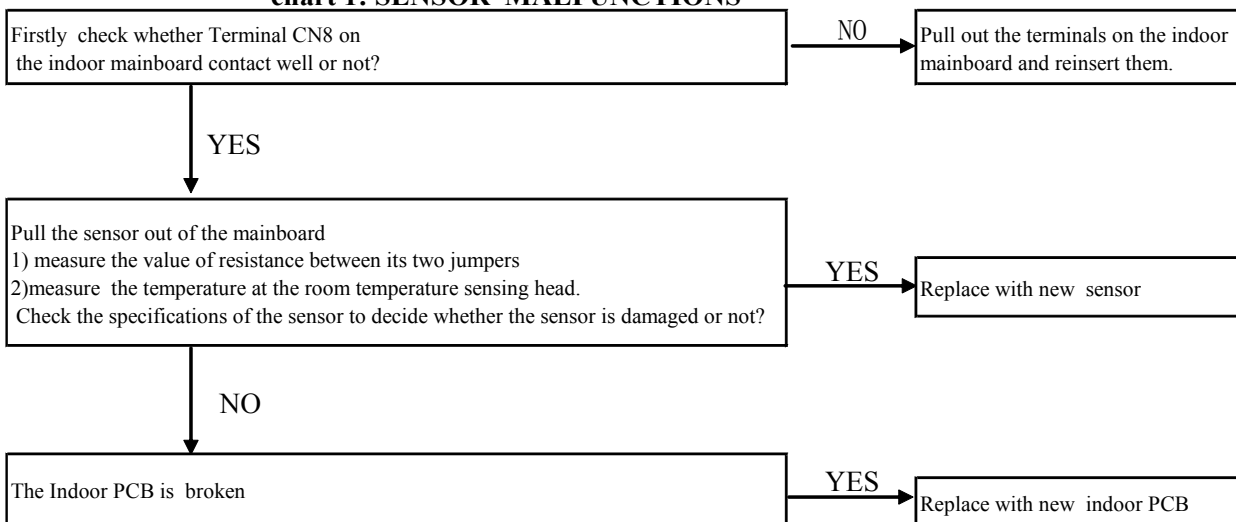
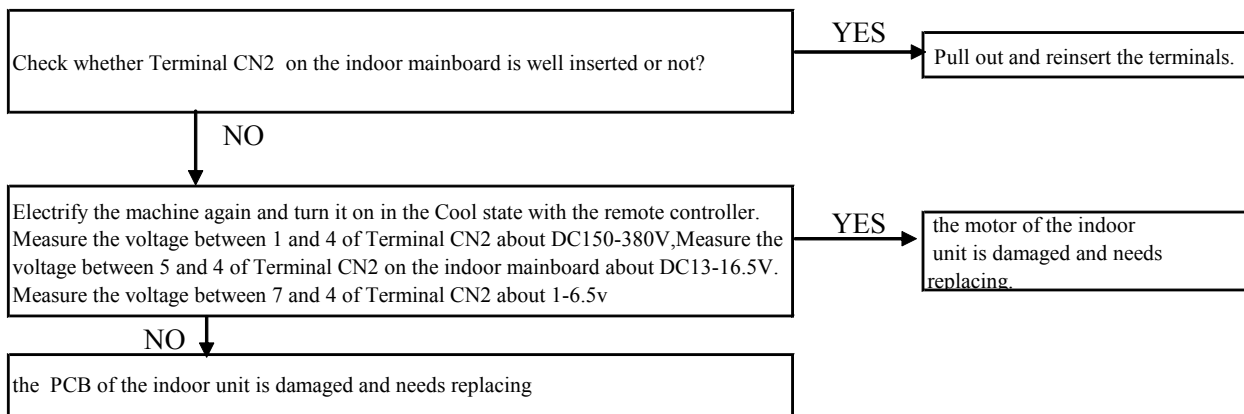


chart 2 Indoor fan motor malfunction



5. Installation


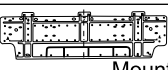





- Read this manual before installation.
- Explain sufficiently the operating means to the user according to this manual.

- | | | | |
|-----------------------|----------------------------------|--|-------------------|
| 1.Driver | 5.Spanner(14,17,19 and 24mm) | 9.Knife | 12.Measuring tape |
| 2.Hacksaw | 6.Torque wrench (17mm,22mm,24mm) | 10.Nipper | 13.Reamer |
| 3.Hole core drill | 7.Pipe cutter | 11.Gas leakage detector or soap-and-water solution | |
| 4.Hexagon wrench(5mm) | 8.Flaring tool | | |

Drawing for the installation of indoor and outdoor units

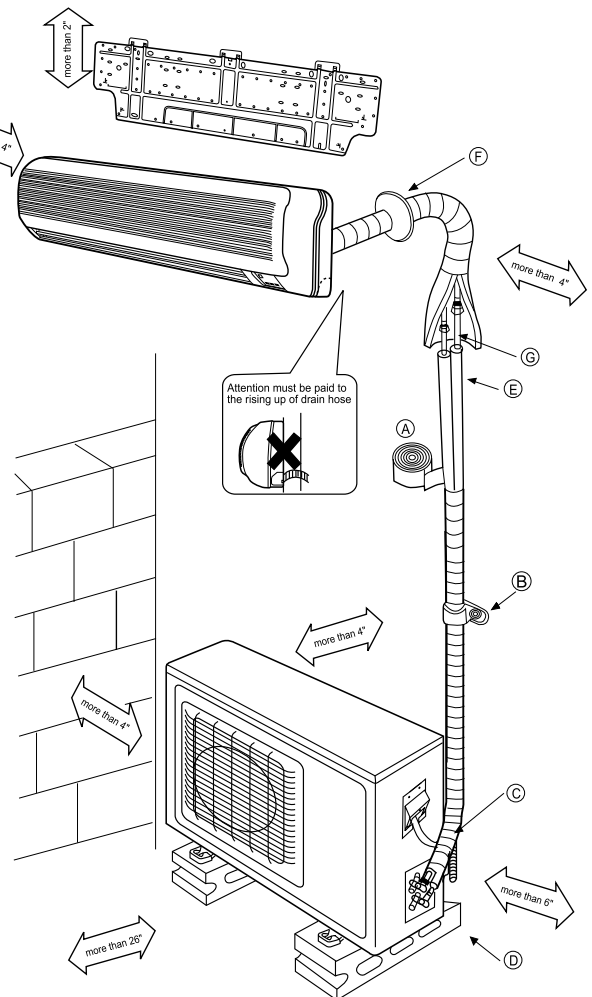
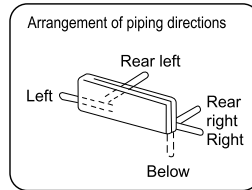
The appearance is different by models.

Accessory parts

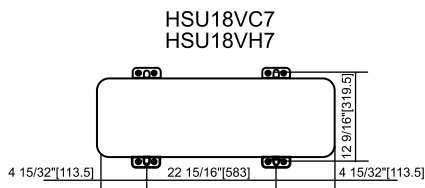
No.	Accessory parts	Number of articles
①	Remote controller	1
②	 R-03 dry battery	2
③	 Mounting plate	1
④	 Drain hose	1
⑤	 Ø4X50 Steel nail, cement	6
⑥	 Ø4x25 Screw	4
⑦	 Cover	1
⑧	 Cushion	4

Optional parts for piping

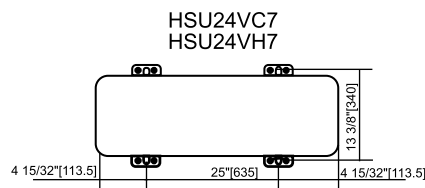
Mark	Parts name
(A)	Non-adhesive tape
(B)	Saddle(L.S)with screws
(C)	Connecting electric cable for indoor and outdoor
(D)	Drain hose
(E)	Heat insulating material
(F)	Piping hole cover
(G)	Main pipes



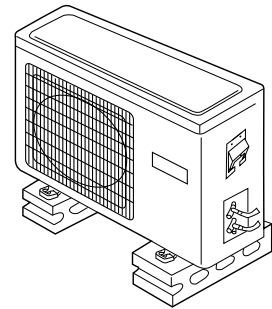
- ※The marks from (A) to (G) in the figure are the parts' numbers
- ※ The distance between the indoor unit and the floor should be more than 2m.



Floor fixing dimensions of the outdoor unit
Unit : inch [mm]



Floor fixing dimensions of the outdoor unit
Unit : inch [mm]



Fixing of outdoor unit

- Fix the unit to concrete or block with bolts(ϕ 10mm)and nuts firmly and horizontally.
- When fitting the unit to wall surface, roof or rooftop, fix a supporter surely with nails or wires in consideration of earthquake and strong wind.
- If vibration may affect the house, fix the unit by attaching a vibration-proof mat.

Indoor Unit

Selection of Installation Place

Outdoor Unit

- Place, robust not causing vibration, where the body can be supported sufficiently.
- Place, not affected by heat or steam generated in the vicinity, where inlet and outlet of the unit are not disturbed.
- Place, possible to drain easily, where piping can be connected with the outdoor unit.
- Place, where cold air can be spread in a room entirely.
- Place, nearby a power receptacle, with enough space around. (Refer to drawings).
- Place where the distance of moer than 1m from televisions, radios, wireless apparatuses and fluorescent lamps can be left.
- In case of fixing the remote controller on a wall, place where the indoor unit can receive signals when the fluorescent lamps in the room are lightened.
- Place, which is less affected by rain or direct sunlight and is sufficiently ventilated.
- Place, possible to bear the unit, where vibration and noise are not increased.
- Place, where discharged wind and noise do not cause a nuisance to the neighbors.
- Place, where a distance marked \longleftrightarrow is available as illustrated in the above figure.

Power Source

- Bofore inserting power plug into receptacle, check the voltage without fail. The power source is the same as the corresponded name plate.
- Install an exclusive branch circuit of the power.
- A receptacle shall be set up ina distance where the power cord can be reached. Do not extend the cord by cutting it.

Selection of Pipe

- To this unit, both liquid and gas pipes shall be insulated as they become low temperature in operation.
- Use optional parts for piping set or pipes covered with equivalent in sulation material.

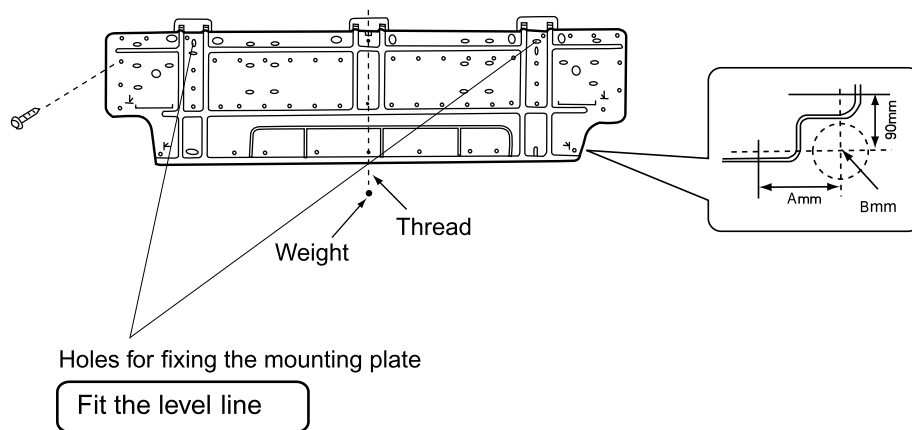
	HSU18VC7 HSU18VH7	HSU24VC7 HSU24VH7
Liquid pipe(ϕ)	1/4"[6.35mm]x1/32"[0.8mm]	9.52mm (3/8")X0.8mm
Gas pipe(ϕ)	1/2"[12.7mm]x1/32"[0.8mm]	15.88mm(5/8")X0.8mm

Indoor unit

1 Fitting of the Mounting Plate and Positioning of the Wall Hole

When the mounting plate is first fixed

- 1 Carry out, based on the neighboring pillars or lintels, a proper leveling for the plate to be fixed against the wall, then temporarily fasten the plate with one steel nail.
- 2 Make sure once more the proper level of the plate, by hanging a thread with a weight from the central top of the plate, then fasten securely the plate with the attachment steel nail.
- 3 Find the wall hole location A using a measuring tape.



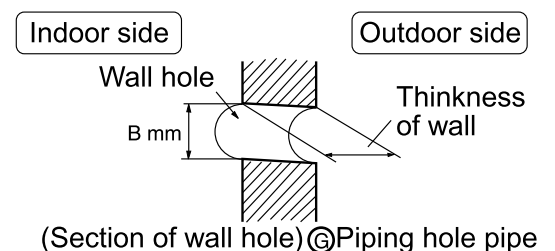
	Amm (inch)	Bmm (inch)
HSU18VC7 HSU18VH7	150(5.9")	Ø70(2.75")
HSU24VC7 HSU24VH7		

When the mounting plate is fixed to side bar and lintel

- Fix to side bar and lintel a mounting bar, which is separately sold, and then fasten the plate to the fixed mounting bar.
- Refer to the previous article, "**When the mounting plate is first fixed**" for the position of wall hole.

2 Making a Hole on the Wall and Fitting the Piping Hole Cover

- Make a hole of B mm in diameter, slightly descending to outside the wall.
- Install piping hole cover and seal it off with putty after installation.



Indoor unit

3 Installation of the Indoor Unit

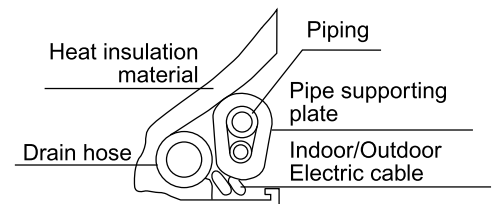
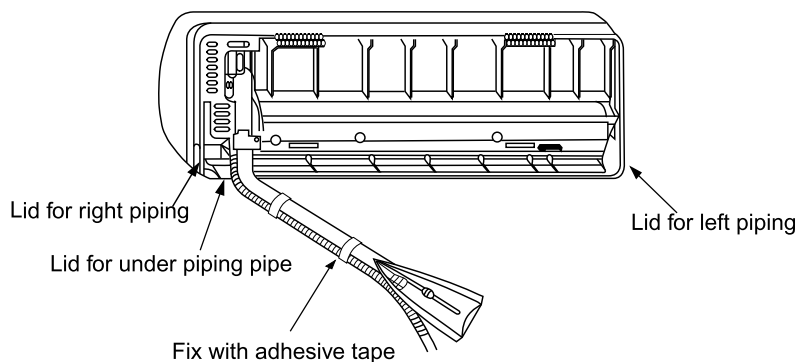
Drawing of pipe

[Rear piping]

- Draw pipes and the drain hose, then fasten them with the adhesive tape.

[Left, Left-rear piping]

- In case of left side piping, cut away, with a nipper, the lid for left piping.
- In case of left-rear piping, bend the pipes according to the piping direction to the mark of hole for Left-rear piping which is marked on heat insulation materials.
 1. Insert the drain hose into the dent of heat insulation materials of indoor unit.
 2. Insert the indoor/outdoor electric cord from backside of indoor unit, and pull it out on the front side, then connect them.
 3. Coat the flaring seal face with refrigerant oil and connect pipes. Cover the connection part with heat insulation materials closely, and make sure fixing with adhesive tape.



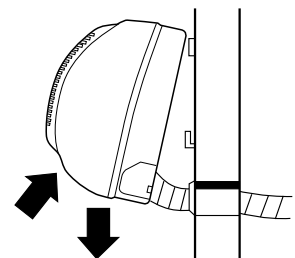
- Indoor/outdoor electric cord and drain hose must be bound with refrigerant piping by protecting tape.

[Other direction piping]

- Cut away, with a nipper, the lid for piping according to the piping direction and then bend the pipe according to the position of wall hole. When bending, be careful not to crash pipes.
- Connect beforehand the indoor/outdoor electric cable, and then pull out the connected to the heat insulation of connecting part specially.

Fixing the indoor unit body

- Hang surely the unit body onto the upper notches of the mounting plate. Move the body from side to verify its secure fixing.
- In order to fix the body onto the mounting plate, hold up the body aslant from the underside and then put it down perpendicularly.

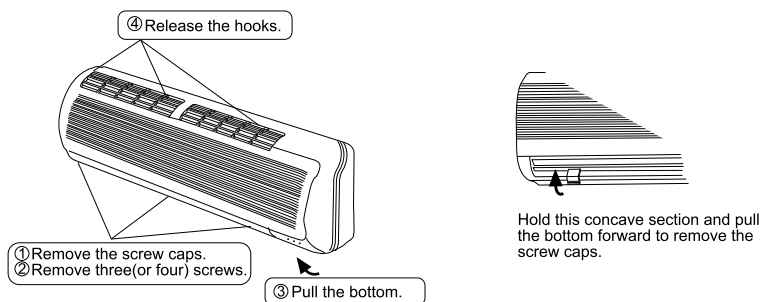


4 Connecting the indoor/outdoor Electric Cable

Removing the wiring cover

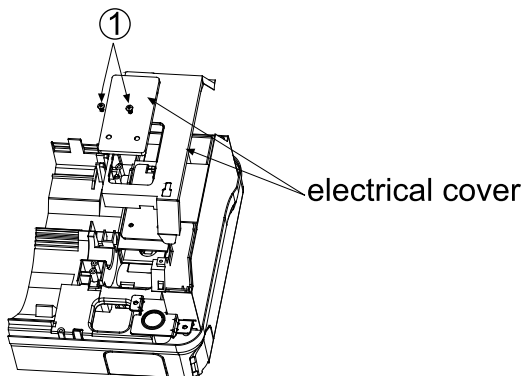
Indoor unit

1. Remove the front panel



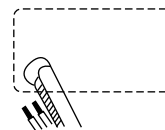
2. Remove the electrical cover

- ① Remove two screws.



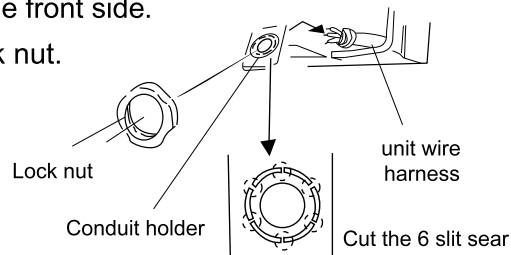
When connecting the cable after installing the indoor unit

1. Insert from outside the room cord into left side of the wall hole, in which the pipe has already existed.
2. Pull out the cord on the front side, and connect the cable making a loop for easy connection later.

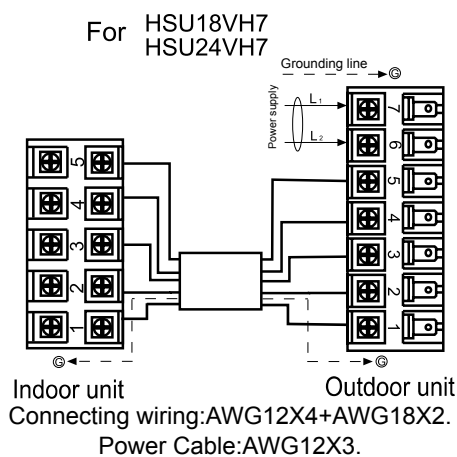
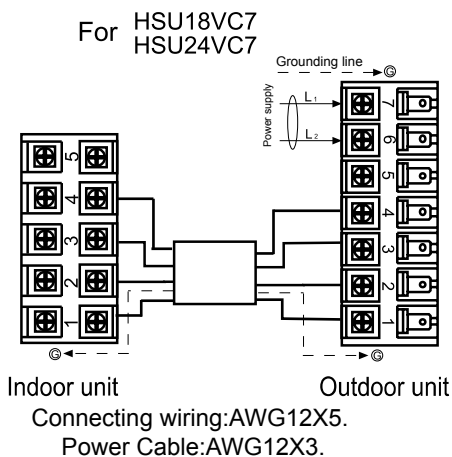


When connecting the cord before installing the indoor unit

- Insert the cord from the back side of the unit, then pull it out on the front side.
- Fasten the unit wire harness to the conduit holder using the lock nut.
- Position the Conduit holder to its original state using screw.



Note: When connecting the cord, confirm the total number of indoor and outdoor units.



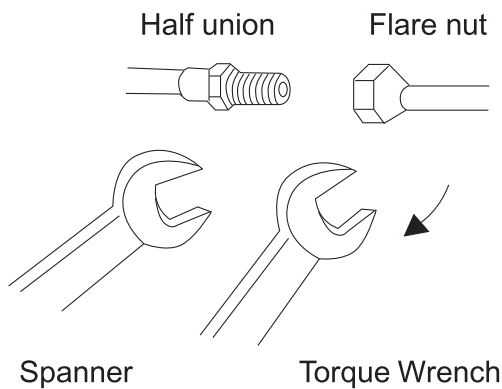
Outdoor unit

1 Installation of Outdoor Unit

Install according to **Drawing for the installation of indoor and outdoor units**

2 Connection of Pipes

- Apply refrigerant oil on half union and flare nut.
- To bend a pipe, give the roundness as large as possible not to crush the pipe.
- Connecting the pipe of gas side first makes working easier.



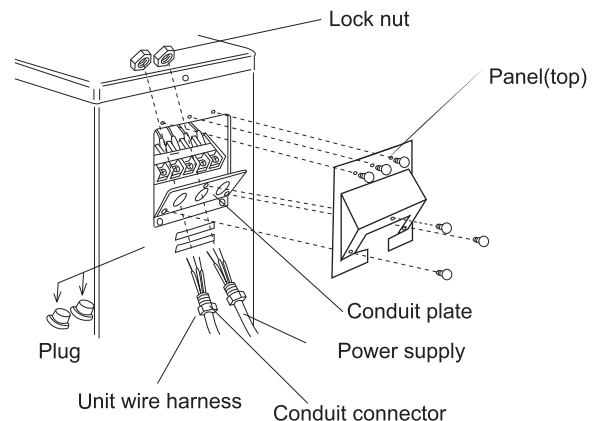
Forced fastening without careful centering may damage the threads and cause a leakage of gas.

Pipe Diameter(ϕ)	Fastening Torque
Liquid Side 9.52mm(3/8")	42N.m
Gas Side 15.88mm(5/8")	60N.m
Liquid Side 1/4"[6.35mm]	18N.m
Gas Side 1/2"[12.7mm]	50N.m

Be careful that foreign matters, such as wastes of mands, etc. shall not enter the pipe.

3 Connection

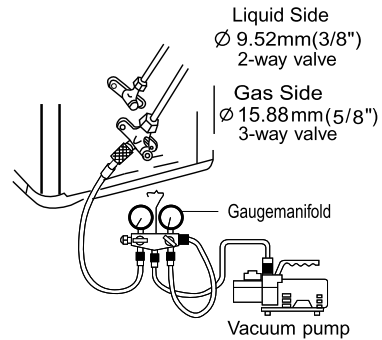
1. To take off the panel(top), remove the 6 screws.
2. Remove the plugs on the conduit plate.
3. Temporarily mount the conduit tubes on the conduit plate.
4. Properly connect both the power supply and inter-unit wire harness to the corresponding terminals on the terminal board.
5. Ground the unit in accordance local codes.
6. Be sure to size each wire allowing several inches longer than the required for wiring.
7. Use lock nuts to secure conduit tubes.



Outdoor unit

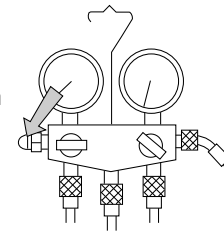
4 Purging Method: To use vacuum pump

① Detach the service port's cap of 3-way valve, the valve rod's cap for 2-way valve and 3-way's, connect the service port into the projection of charge hose (low) for gaugemanifold. Then connect the projection of charge hose (center) for gaugemanifold into vacuum pump.



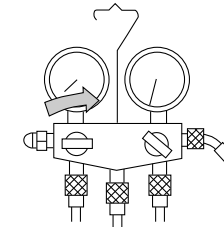
② Open the handle at low in gaugemanifold, operate vacuum pump. If the scale-moves of gauge (low) reach vacuum condition in a moment, check ① again.

② Open Open

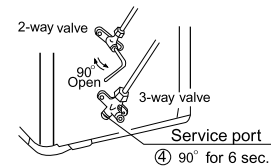


③ Vacuumize for over 15min. And check the level gauge which should read -0.1 MPa (-76 cm Hg) at low pressure side. After the completion of vacuumizing, close the handle 'Lo' in gaugemanifold and stop the operation of the vacuum pump. Check the condition of the scale and hold it for 1-2min. If the scale-moves back in spite of tightening, make flaring work again, the return to the beginning of ③.

③ Close



④ Open the valve rod for the 2-way valve to an angle of anticlockwise 90 degrees. After 6 seconds, close the 2-way valve and make the inspection of gas leakage.

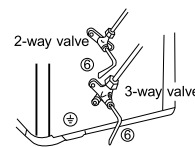


⑤ No gas leakage?

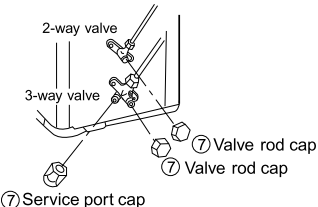
In case of gas leakage, tighten parts of pipe connection. If leakage stops, then proceed ⑥ steps.

If it does not stop gas leakage, discharge whole refrigerants from the service port. After flaring work again and vacuumize, fill up prescribed refrigerant from the gas cylinder.

⑥ Detach the charge hose from the service port, open 2-way valve and 3-way. Turn the valve rod anticlockwise until hitting lightly.



⑦ To prevent the gas leakage, turn the service port's cap, the valve rod's cap for 2-way valve and 3-way's a little more than the point where the torque increases suddenly.



⑧ After attaching the each caps, check the gas leakage around the caps.

- When connecting pipe exceeds 7 meters (23 feet), 30g(1.06oz) refrigerant shall be added per exceeding meter. Charge according to the following list.

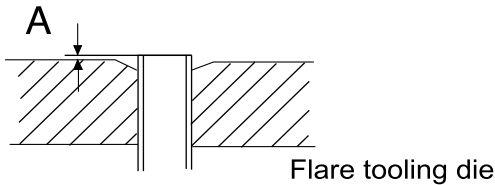
Piping length	7m (23 feet)	9m (30 feet) Gas pipe Ø15.88mm	12m (40 feet) Gas pipe Ø15.88mm
Additional amount	No need	60g(2.12oz)	150g(5.29oz)

1 Power Source Installation

- The power source must be exclusively used for air conditioner. (Over 10A)
- In the case of installing an air conditioner in a moist place, please install an earth leakage breaker.
- For installation in other places, use a circuit breaker as far as possible.

2 Cutting and Flaring Work of Piping

- Pipe cutting is carried out with a pipe cutter and burs must be removed.
- After inserting the flare nut, flaring work is carried out.

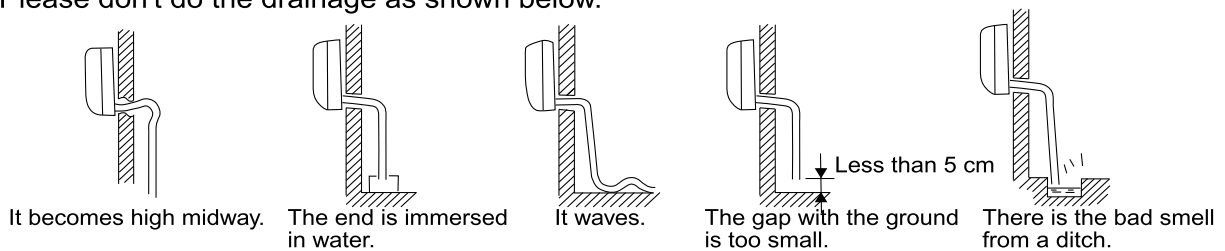


	Pipe diameter \varnothing	Size A (mm)
Liquid side	9.52mm(3/8")	1.0~1.8
Gas side	15.88mm(5/8")	1.2~2.0

Correct	Incorrect				
	Lean	Damage of flare	Crack	Partial	Too outside

3 On Drainage

- Please install the drain hose so as to be downward slope without fail.
- Please don't do the drainage as shown below.



- Please pour water in the drain pan of the indoor unit, and confirm that drainage is carried out surely to outdoor.
- In case that the attached drain hose is in a room, please apply heat insulation to it without fail.

Check for Installation and Test Run

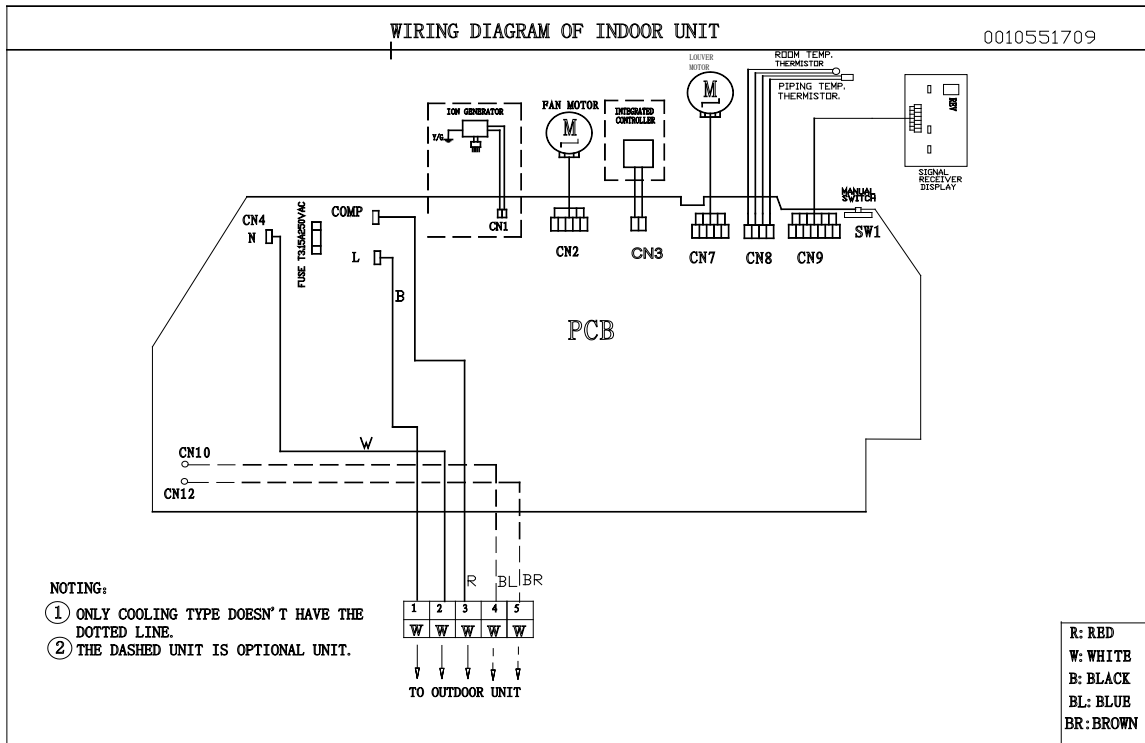
- Please kindly explain to our customers how to operate through th instruction manual.

Check Items for Test Run

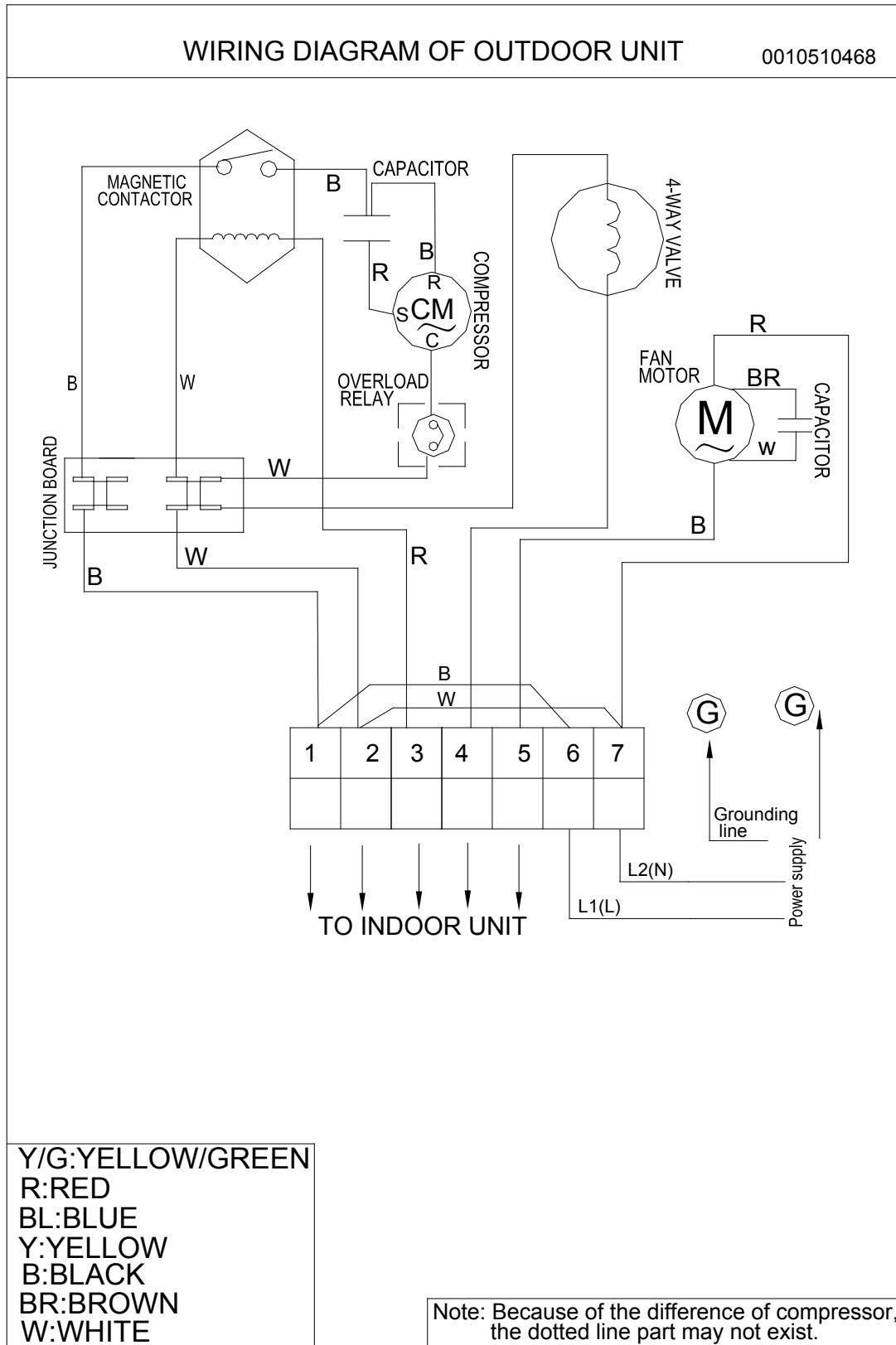
Put check mark \checkmark in boxes

- | | | |
|--|--|---|
| <input type="checkbox"/> Gas leaks from pipe connecting? | <input type="checkbox"/> Is drainage securely carried out? | <input type="checkbox"/> Is the lamp normally lightening? |
| <input type="checkbox"/> Heat insulation of pipe connecting? | <input type="checkbox"/> Is the earth line securely connected? | <input type="checkbox"/> Are cooling and heating(When in heatpump)performed normally? |
| <input type="checkbox"/> Are the connecting wirings of indoor and outdoor firmly inserted to the terminal block? | <input type="checkbox"/> Is the indoor unit securely fixed? | <input type="checkbox"/> Is the operation of room temperature regulator normal? |
| <input type="checkbox"/> Is the connecting wiring of indoor and outdoor firmly fixed? | <input type="checkbox"/> Is power source voltage abided by the code? | |
| | <input type="checkbox"/> Is there any noise? | |

6. WIRING DIAGRAM INDOOR UNIT



OUTDOOR UNIT



7. Thermistor resistance chart

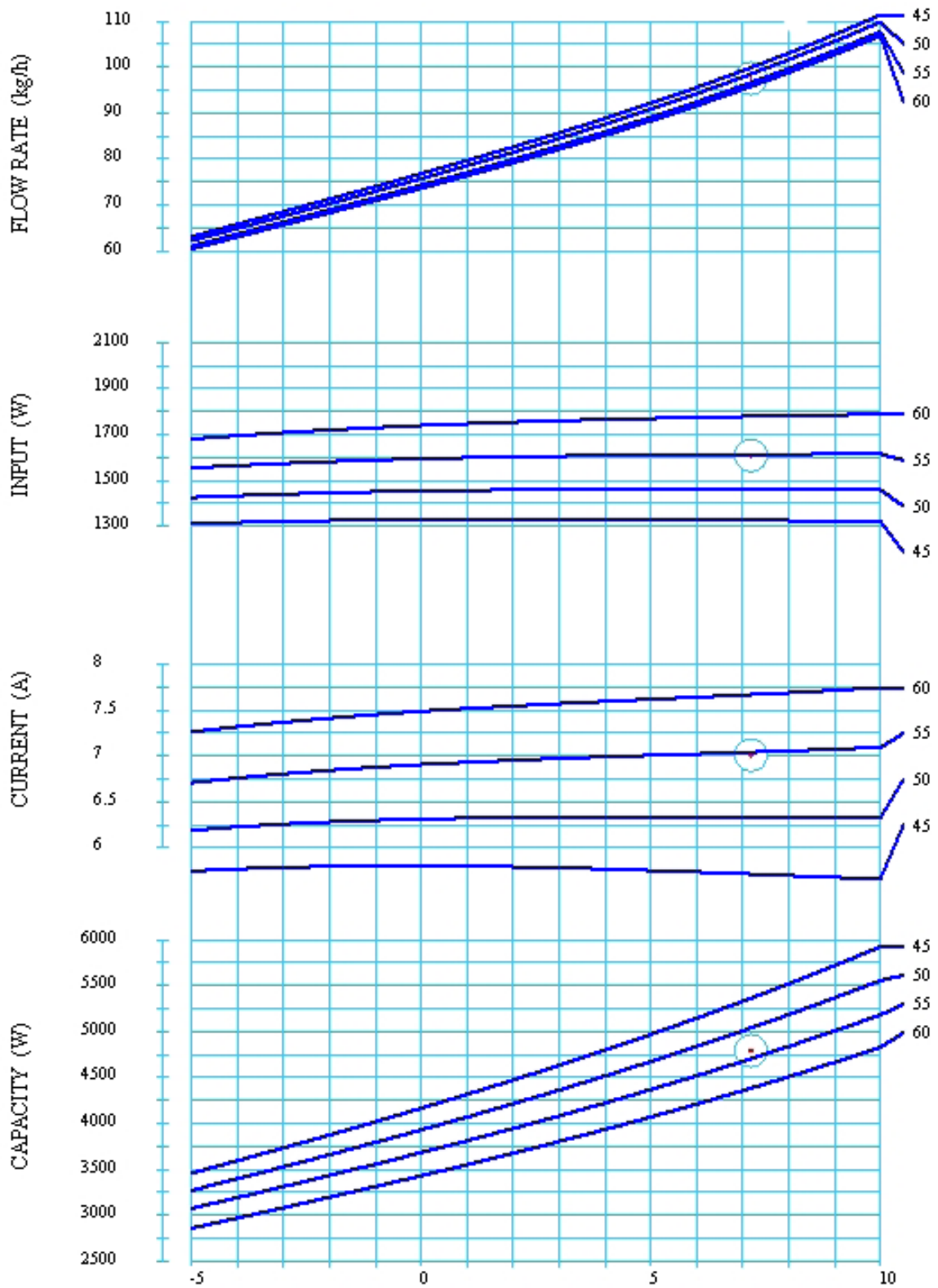
Room temperature sensor

T (°C)	R (K Ω)	T (°C)	R (K Ω)	T (°C)	R (K Ω)
-20°C	251.8	14°C	38.95	48°C	8.441
-19°C	236.9	15°C	37.08	49°C	8.103
-18°C	223.1	16°C	35.31	50°C	7.78
-17°C	210.1	17°C	33.63	51°C	7.472
-16°C	197.9	18°C	32.04	52°C	7.178
-15°C	186.5	19°C	30.53	53°C	6.897
-14°C	175.9	20°C	29.1	54°C	6.628
-13°C	165.9	21°C	27.75	55°C	6.371
-12°C	156.5	22°C	26.47	56°C	6.125
-11°C	147.7	23°C	25.25	57°C	5.889
-10°C	139.5	24°C	24.1	58°C	5.664
-9°C	131.8	25°C	23	59°C	5.449
-8°C	124.5	26°C	21.96	60°C	5.243
-7°C	117.7	27°C	20.97	61°C	5.046
-6°C	111.3	28°C	20.03	62°C	4.857
-5°C	105.3	29°C	19.14	63°C	4.676
-4°C	99.63	30°C	18.3	64°C	4.502
-3°C	94.3	31°C	17.49	65°C	4.336
-2°C	89.3	32°C	16.73	66°C	4.177
-1°C	84.58	33°C	16	67°C	4.024
0°C	80.14	34°C	15.3	68°C	3.878
1°C	75.96	35°C	14.65	69°C	3.738
2°C	72.02	36°C	14.02	70°C	3.603
3°C	68.31	37°C	13.42	71°C	3.474
4°C	64.81	38°C	12.85	72°C	3.35
5°C	61.51	39°C	12.31	73°C	3.231
6°C	58.39	40°C	11.79	74°C	3.117
7°C	55.45	41°C	11.3	75°C	3.008
8°C	52.68	42°C	10.83	76°C	2.903
9°C	50.06	43°C	10.39	77°C	2.802
10°C	47.58	44°C	9.96	78°C	2.705
11°C	45.24	45°C	9.553	79°C	2.611
12°C	43.02	46°C	9.165	80°C	2.522
13°C	40.93	47°C	8.794		

Indoor pipe temperature sensor

T(°C)	R(KΩ)	T(°C)	R(KΩ)	T(°C)	R(KΩ)	T(°C)	R(KΩ)
-30°C	155.4	0°C	30.88	30°C	8.141	60°C	2.666
-29°C	146.4	1°C	29.42	31°C	7.819	61°C	2.577
-28°C	138.1	2°C	28.03	32°C	7.511	62°C	2.491
-27°C	130.2	3°C	26.72	33°C	7.217	63°C	2.408
-26°C	122.9	4°C	25.48	34°C	6.936	64°C	2.329
-25°C	116	5°C	24.3	35°C	6.668	65°C	2.253
-24°C	109.5	6°C	23.18	36°C	6.411	66°C	2.179
-23°C	103.5	7°C	22.12	37°C	6.166	67°C	2.108
-22°C	97.77	8°C	21.12	38°C	5.931	68°C	2.04
-21°C	92.44	9°C	20.17	39°C	5.707	69°C	1.975
-20°C	87.42	10°C	19.26	40°C	5.492	70°C	1.912
-19°C	82.71	11°C	18.4	41°C	5.287	71°C	1.851
-18°C	78.29	12°C	17.59	42°C	5.09	72°C	1.793
-17°C	74.12	13°C	16.81	43°C	4.902	73°C	1.737
-16°C	70.21	14°C	16.08	44°C	4.722	74°C	1.682
-15°C	66.52	15°C	15.38	45°C	4.549	75°C	1.63
-14°C	63.06	16°C	14.71	46°C	4.383	76°C	1.58
-13°C	59.79	17°C	14.08	47°C	4.225	77°C	1.531
-12°C	56.71	18°C	13.48	48°C	4.073	78°C	1.484
-11°C	53.81	19°C	12.91	49°C	3.927	79°C	1.439
-10°C	51.08	20°C	12.36	50°C	3.788	80°C	1.395
-9°C	48.5	21°C	11.84	51°C	3.654	81°C	1.353
-8°C	46.07	22°C	11.35	52°C	3.525	82°C	1.313
-7°C	43.77	23°C	10.88	53°C	3.402	83°C	1.274
-6°C	41.6	24°C	10.43	54°C	3.283	84°C	1.236
-5°C	39.55	25°C	10	55°C	3.17	85°C	1.2
-4°C	37.62	26°C	9.592	56°C	3.061	86°C	1.164
-3°C	35.79	27°C	9.204	57°C	2.956	87°C	1.13
-2°C	34.06	28°C	8.833	58°C	2.855	88°C	1.098
-1°C	32.43	29°C	8.479	59°C	2.759	89°C	1.066
						90°C	1.035

8.COMPRESSOR PERFORMANCE DIAGRAM HSU18VH7



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