SERVICE MANUAL

ON/OFF

Wall mounted Type Arc-Series

HSU-24C03/Z

HSU-24H03/Z

Haier

Inspired living

Table of Contents

1. Introduction

1.1 Safety Cautions

Be sure to read the following safety cautions before conducting repair work.

The caution items are classified into “Warning” and “Caution”. The “Warning” items are especially important since they can lead to death or serious injury if they are not followed closely. The “Caution” items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.

About the pictograms

△ This symbol indicates an item for which caution must be exercised.
The pictogram shows the item to which attention must be paid.

○ This symbol indicates a prohibited action.
The prohibited item or action is shown inside or near the symbol.

● This symbol indicates an action that must be taken, or an instruction.
The instruction is shown inside or near the symbol.

After the repair work is complete, be sure to conduct a test operation to ensure that the equipment operates normally, and explain the cautions for operating the product to the customer.

1.1.1 Caution in Repair

Warning	
Be sure to disconnect the power cable plug from the plug socket before disassembling the equipment for a repair. Working on the equipment that is connected to a power supply can cause an electrical shook. If it is necessary to supply power to the equipment to conduct the repair or inspecting the circuits, do not touch any electrically charged sections of the equipment.	
If the refrigerant gas discharges during the repair work, do not touch the discharging refrigerant gas.The refrigerant gas can cause frostbite.	
When disconnecting the suction or discharge pipe of the compressor at the welded section, release the refrigerant gas completely at a well-ventilated place first. If there is a gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it can cause injury.	
If the refrigerant gas leaks during the repair work, ventilate the area. The refrigerant gas can generate toxic gases when it contacts flames.	
The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. Be sure to discharge the capacitor completely before conducting repair work.A charged capacitor can cause an electrical shock.	
Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug. Plugging or unplugging the power cable plug to operate the equipment can cause an electrical shock or fire.	

Warning	
Do not repair the electrical components with wet hands. Working on the equipment with wet hands can cause an electrical shock.	
Do not clean the air conditioner by splashing water. Washing the unit with water can cause an electrical shock.	
Be sure to provide the grounding when repairing the equipment in a humid or wet place, to avoid electrical shocks.	
Be sure to turn off the power switch and unplug the power cable when cleaning the equipment. The internal fan rotates at a high speed, and cause injury.	
Do not tilt the unit when removing it. The water inside the unit can spill and wet the furniture and floor.	
Be sure to check that the refrigerating cycle section has cooled down sufficiently before conducting repair work. Working on the unit when the refrigerating cycle section is hot can cause burns.	
Use the welder in a well-ventilated place. Using the welder in an enclosed room can cause oxygen deficiency.	

1.1.2 Cautions Regarding Products after Repair

Warning	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools can cause an electrical shock, excessive heat generation or fire.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment can fall and cause injury.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation can cause the equipment to fall, resulting in injury.	For integral units only
Be sure to install the product securely in the installation frame mounted on a window frame. If the unit is not securely mounted, it can fall and cause injury.	For integral units only

Warning	
Be sure to use an exclusive power circuit for the equipment, and follow the technical standards related to the electrical equipment, the internal wiring regulations and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work can cause an electrical shock or fire.	
Be sure to use the specified cable to connect between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections can cause excessive heat generation or fire.	
When connecting the cable between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section can cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cable can cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable can damage the cable.	
Do not mix air or gas other than the specified refrigerant (R-410A / R22) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leak and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leak cannot be located and the repair work must be stopped, be sure to perform pump-down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it can generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	
When replacing the coin battery in the remote controller, be sure to disposed of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	

Caution	
Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.	
Do not install the equipment in a place where there is a possibility of combustible gas leaks. If a combustible gas leaks and remains around the unit, it can cause a fire.	
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water can enter the room and wet the furniture and floor.	For integral units only

1.1.3 Inspection after Repair

Warning	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet all the way. If the plug has dust or loose connection, it can cause an electrical shock or fire.	
If the power cable and lead wires have scratches or deteriorated, be sure to replace them. Damaged cable and wires can cause an electrical shock, excessive heat generation or fire.	

Warning	
Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it can cause an electrical shock, excessive heat generation or fire.	

Caution	
Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections can cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame can cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding can cause an electrical shock.	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 M ohm or higher. Faulty insulation can cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage can cause the water to enter the room and wet the furniture and floor.	

1.1.4 Using Icons

Icons are used to attract the attention of the reader to specific information. The meaning of each icon is described in the table below:

1.1.5 Using Icons List

Icon	Type of Information	Description
 Note:	Note	A “note” provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.
 Caution	Caution	A “caution” is used when there is danger that the reader, through incorrect manipulation, may damage equipment, loose data, get an unexpected result or has to restart (part of) a procedure.
 Warning	Warning	A “warning” is used when there is danger of personal injury.
	Reference	A “reference” guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.

2. List of Functions

Category	Functions	HSU-24C03/Z HSU-24H03/Z
Healthy negative ion	make your room full of an abundance natural negative ions.	N
Left&right flow	With specialized motor and flaps, the airflow can be adjusted .	N
DRY function	Make dehumidifying in the room when the unit is working in the "DRY" mode	Y
Child lock	Avoid the child's wrong operation on the remote controller	Y
3D air flow	The 3D airflow is able to deliver the airflow horizontally and vertically.	N
24Hour timer	Use the timer function to set on,or off,or from on to off,or from off to on	Y
Auto restart	automatic return to previous operation conditions after asundden power blackout	Y
Easy clean design	The panel is easy to wash and the airflow vents can be detached easily	Y
Intelligent air	With twin-blade technology ,the airflow can be adjusted not to blow directly	N
Anti-mold filter	Catches most small particles and remove unpleasant odors effectively.	N
Sleep mode	The setting temprature and the indoor noise can be adjusted to a more comfortable level when you set the "sleep mode"during night sleep	Y
O2 refresh	bring fresh air in and take unpleasant air out without tempreture and humidity loss	N
4 Fan setting	Slect the fan speed LO,MED,HI,AUTO	Y
Entire auto mode	You can set a tempreture value,with which the unit can be adjusted the operation mode automatically	N
O2 fresh	It can bring the fresh air in when the machine is running in O2 fresh mode.	N
Healthy UV ray	UV ray generator can eliminate and prevent bacteria in air effectively	N
Bacteria-killing medium	3-in-1 effect:Anti-Allergen , Anti-Bactetia	
AIP	Purify the room by producing high voltage electric filed to absorb dusts	N
VC layer	Release Vitamin C to keep health to the skin expecially.	N
Auto mode	adjust the last fixed operation mode automatically.	Y
ESF filter	Trap harmful dust and remove unpleasant odors effectively	N
Power mode	Quick cooling or heating	N
Soft mode	lower noise operation condition	N
Negative ion filter	Generate negative ions by the filter.	N
Constant temperature dehumidification	Make dehumidifying in the room while keeping the constant temperature inside	N
Photocatalyst filter	Eminiates the air of a wide variety of odor-causing substances from cigarette smoke particles to chemical vapors	N

Note: Y: Holding Functions
N : No Functions

3. Specifications

Model			HSU-24C03/Z		HSU-24H03/Z	
			Cooling	Heating	Cooling	Heating
Capacity Rated		kW	6.8	---	6.8	7.6
		Btu/h	23，220	---	23,220	25,950
		kcal/h	5，850	---	5,850	8,600
Moisture Removal		L/h	3	---	3	---
Running Current (Rated)		A	12.4	---	12.5	13.4
Power Consumption Rated		W	2,600	---	2,700	2,900
Power Factor		%	95	---	95	95
COP Rated		W/W	2.62	---	2.52	2.62
Piping Connections (external diameter)	Liquid	mm	Φ9.52		Φ9.52	
	Gas	mm	φ 15.88		φ 15.88	
	Drain	mm	φ16.0		φ16.0	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Max. Piping Length		m	20		20	
Max. Level Difference		m	10		10	
Chargeless		m	10		10	
Amount of Additional Charge of Refrigerant		g/m	16		16	
Indoor Unit						
Front Panel Color			Mat Crystal White		Mat Crystal Silver	
Air Flow Rate	m³/min(cfm)	H	15.9 (560)	---	15.9 (560)	16.3(570)
		M	12.2 (430)	---	12.2 (430)	13.5 (480)
		L	11.9 (420)	---	11.9 (420)	13.0 (460)
		SL	11.3 (390)	---	11.3 (390)	12.3(430)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	35		35	
	Speed	Steps	5 Steps, Silent, Auto		5 Steps, Silent, Auto	
Air Direction Control			Right, Left, Horizontal, Downward			
Air Filter			Removable / Washable / Mildew Proof			
Run current（ rated ）		A	0.14	---	0.14	0.14
Power consumption		W	29	---	29	29
Power factor		%	90	---	90	90
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)		mm	1155x224x308		1155x224x308	
Packaged Dimensions (H×W×D)		mm	1231x300x372		1231x300x372	
Weight		kg	17		17	
Gross Weight		kg	20		20	
Operation Sound	H/M/L	dBA	47/45/443/40	---	48/47/43/40	48/47/45/43
Sound Power	H(cooling/heating)	dBA	57	---	58	58

Outdoor Unit						
Casing Color			Ivory White		Ivory White	
Compressor	Type		Rotary compressor		Rotary compressor	
	Model		SUBJECT THU33WC6-U		MITSUBISHI TH338VEEC	
	Motor Output	W	2650		2650	
	Oil Type		SUNISO 4GSI		SUNISO 4GSI	
	Oil Charge	L	1.05		1.05	
Refrigerant	Model		R22		R22	
	Charge	kg	2.2		2.3	
Air Flow Rate (H/L)	m³/min		45/40	---	36/34	39/34
	cfm		1584/1408	---	1267/1197	1372/1197
Fan	Type		Axial fan		Axial fan	
	Motor Output	W	35		35	
Runing current (rated)		A	12.4	---	12.5	13.4
Power Consumption (rated)		W	2330	---	2330	2270
Power Factor (Rated)		%	88.3	---	88.3	85.9
Starting Current		A	20	---	20.5	22
Dimensions (H×W×D) (stop valve, and bottom support is not included)		mm	865x335x732		865x335x732	
Packaged Dimensions (H×W×D)		mm	995x420x815		995x420x815	
Weight		kg	67		69	
Gross Weight		kg	75		77	
OperationSound	H	dBA	58	---	58	58
Sound Power	H(cooling/heating)	dBA	68	---	68	68

Note: The data are based on the conditions shown in the table below.

Cooling	Heating	Piping Length
Indoor:27°CDB/19°CWB Outdoor: 35°CDB/24°CWB	Indoor: 20°CDB Outdoor:7°CDB/6°CWB	7.5m

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3414
cfm=m³/min×35.3

4. Printed Circuit Board Connector Wiring Diagram

4.1 Indoor Unit

Connectors PCB1（control PCB）

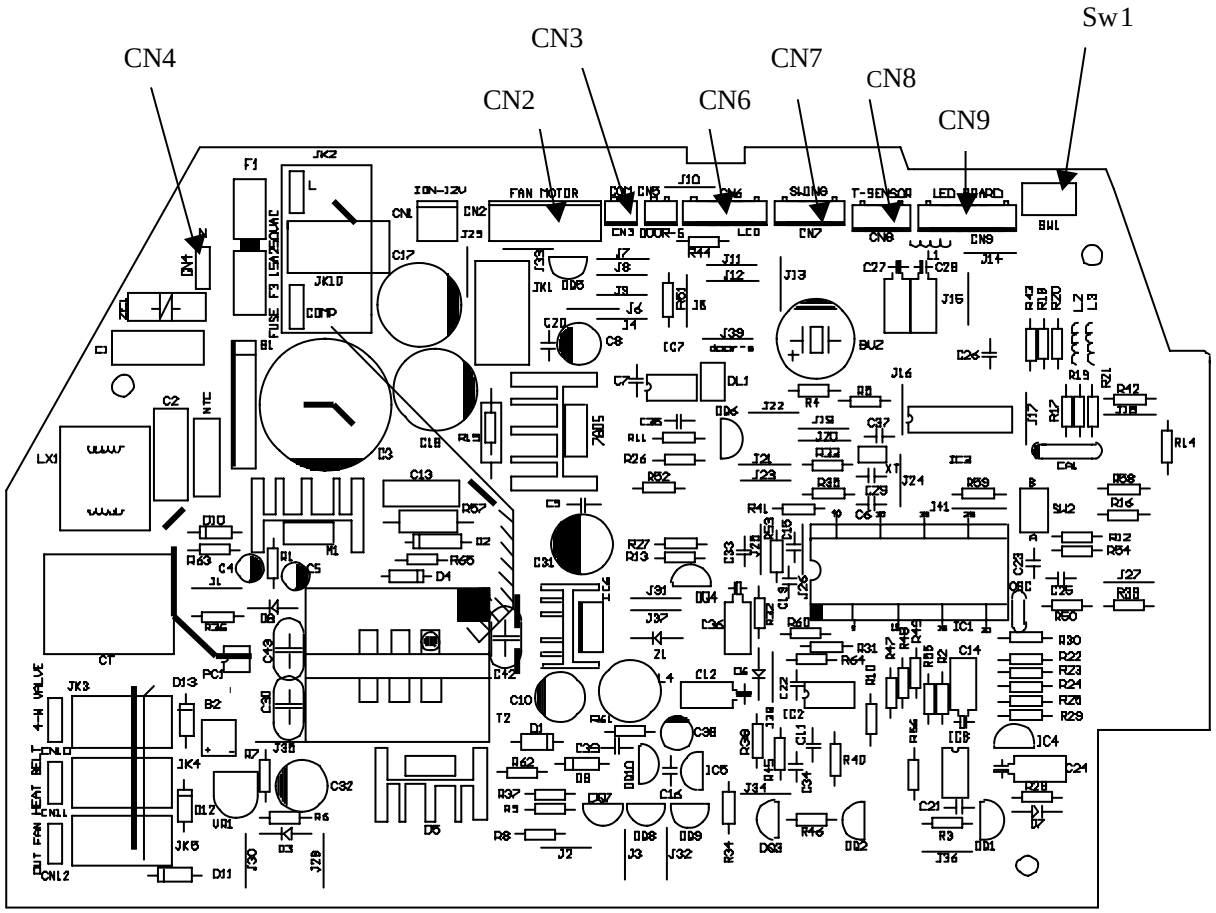
1) CN1 connector for ION unit
2) CN2 connector for DC fan motor
3) CN4 connector for N in the terminal block
4) CN7 connector for louver motor
5) CN8 connector for ambient temp. sensor and piping temp.sensor
6) CN9 connector for PCB2

PCB2

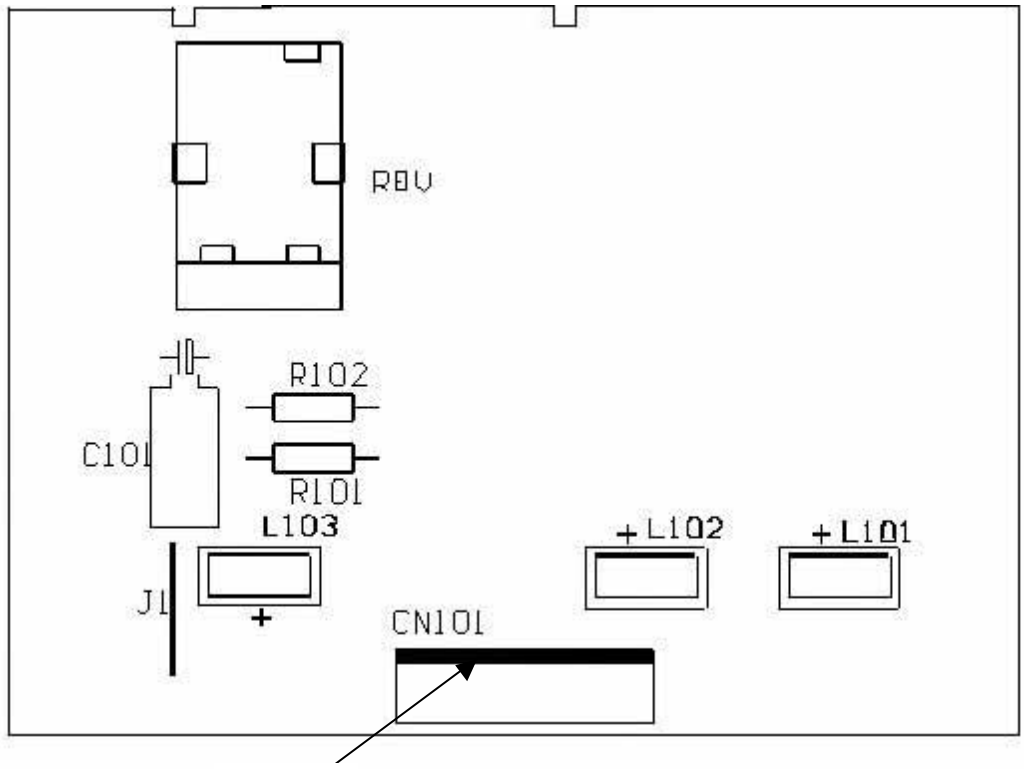
CN101 connector for CN9 of PCB1

Other designations：

1) SW1 in PCB1 is touch key.



PCB1



PCB2

5.1 main functions and control specifications

Run mode:(Tr: inlet air temperature,Ts : the set temperature)

5.1.1 automatic run mode

5.1.1.1 HSU-24C03/Z

When the system runs under "automatic" mode for the first time, it will determine the operating mode according to the follows,

Tr>= Ts+3 Choose Cooling mode

Tr<Ts-3 °C Choolse Blowing Mode

The system will shift its operating mode between the above mentioned two to changes of the indoor temperature. If the system is currently under cooling mode, it will switch to blowing mode when Tr<Ts-3 °C; if the system is currently under blowing mode, it will in turn switch to cooling mode when Tr > Ts+3° C .

5.1.1.2 HSU-24H03/Z

When the system runs under "automatic" mode for the first time, it will determine the operating mode according to the follows,

Tr=Ts-3 °C Choose Cooling Mode

Tr < Ts-3 °C Choose Heating Mode

The system will shift its operating mode between the above mentioned two to changes of the indoor temperature. If the system is currently under cooling mode, the compressor will stop functioning if the temperature lowers to such a degree that requires so; then it will recheck the temperature 15 minutes later: it will switch to the heating mode if the temperature is Tr < Ts-3° C,or it will still stay in cooling mode(including blowing mode). if the system is currently under heating mode, the compressor will stop running if the temperature lowers to such a degree that requires so, then it will recheck the temperature 15 minutes later: it will switch to the cooling mode if the temperature is Tr > Ts+3° C .

5.1.3 Dehumidification running

The compressor, outdoor fan and indoor fan will run as per the following

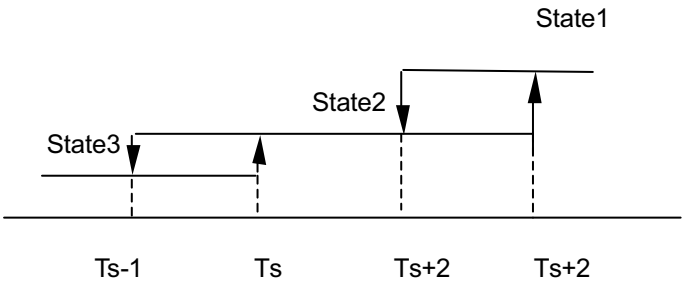
working pattern so as to realize the refrigerating running of dehumidification:

Tr> Ts+2 °C , compressor, outdoor fan run continuously, indoor fan runs as per setting wind speed (State 1);

Ts+2 °C =Tr=Ts, compressor, outdoor fan run intermittently with 10minutes 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)

Tr <Ts, compressor, outdoor fan ceases, indoor fan runs in lower windspeed. (State 3)



5.1.4 Warm start

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

If the temperature of indoor coil pipe is = 23 °C , start lower wind speed;
If the temperature of indoor coil pipe is = 38 °C or the running time of compressor= 4 minutes, turn to setting wind speed.

5.1.5 Control of indoor fan under heating OFF state

Under heating state, the compressor will cease; if the indoor coil pipe's temperature Tp=23° C, indoor fan will run in lower wind speed ; if the coil pipe's temperature Tp<21° C ,indoor fan will cease

5.1.6 Defrosting control

Defrosting beginning condition:

a. After the state of Tp-Tr<18° 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 Tp <42° 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 Tp <42° 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 exceeds10 minutes, the accumulated running time of the compressor exceeds 45 minutes, the continuous running time of the compressor is over 20 minutes, and Tp <42° C .

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

Defrosting finishing condition:

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

5.1.2 Indoor temperature control

5.1.2.1 HSU-24C03/Z

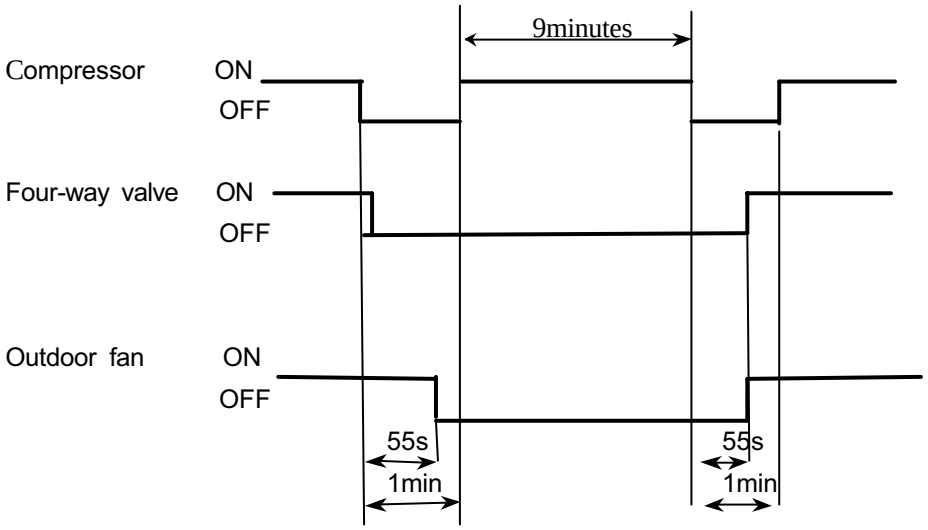
Temperature control range : 16° C —30 ° C
Temperature control precision: ±1 ° C
Compressor can't be controlled by temperature sensor within 2 minutes after it starts

When Tr> Ts, outdoor fan motor and compressor on, and indoor fan motor run at fixed wind speed. When Tr < Ts, outdoor fan motor and compressor off, and when Tr > Ts, outdoor fan motor and compressor are working again .If Tr=Ts, the indoor fan motor , outdoor fan motor and the compressor's state will not change.

5.1.2.2 HSU-24H03/Z

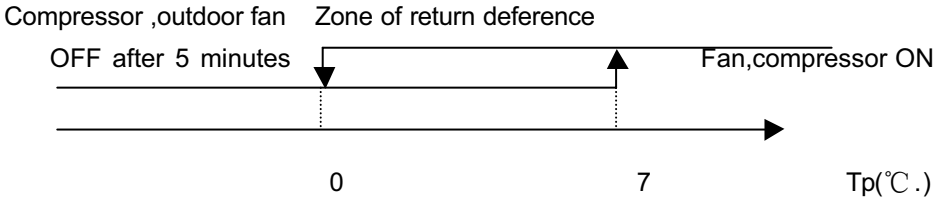
Temperature control range : 16 ° C —30 ° C
Temperature control precision: ±1 ° C
Compressor can't be controlled by temperature sensor within 2 minutes after it starts
Cooling mode:
When Tr> Ts, outdoor fan motor and compressor on, and indoor fan motor run at fixed wind speed. When Tr < Ts, outdoor fan motor and compressor off, and when Tr > Ts, outdoor fan motor and compressor are working again .If Tr=Ts, the indoor fan motor , outdoor fan motor and the compressor's state will not change.
Heating mode:
When Tr ≤ Ts, compressor, four-ways valve and outdoor fan motor is on, indoor fan motor runs as in cold blast avoidance mode, and 4° C of compensation is added after compressor is started.
When Tr>Ts+5 ° C , compressor is off, and the indoor fan motor runs as in cold blast avoidance mode.
When Tr<Ts+5 ° C , compressor, four-ways valve and outdoor fan motor is on, and the indoor fan motor runs as in the mode of avoiding cold blast.

Note: Sequence of defrosting actions:



5.1.7 Freezing prevention function

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



5.1.8 3minutes 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.

5.1.9 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 Tp of the indoor coil pipe and according to the following conditions:

a.. 65℃=Tp, outdoor fan ceases; Tp=60℃, outdoor fan resumes; the time from ceasing to resuming is about 45 seconds;

b. 72℃=Tp, outdoor fan of compressor ceases after 5 seconds; Tp=64℃, compressor resumes after 3 minutes.

5.1.10 Emergency running mode

HSU-24C03/Z

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:

Tr=23 °C , running refrigerating mode, Ts = 26 °C ;

Tr<23 °C , running Blowing mode, Ts = 23 °C .

HSU-24H03/Z

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:

Tr=23 °C , running refrigerating mode, Ts = 26 °C ;

Tr<23 °C , running heating mode, Ts = 23 °C .

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

2. Memory content: Running mode, setting wind speed, setting temperature, sleep state, flap state.

3. 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.

5.1.12 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.

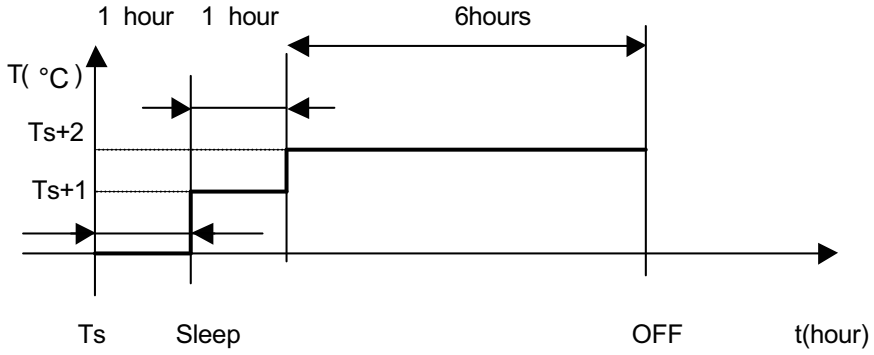
5.1.13 Temperature compensation

There is the function of automatic temperature compensation when heating,with heating temperature setting = Ts(remote setting) + 4°C .

5.1.14 Sleeping function

HSU-24C03

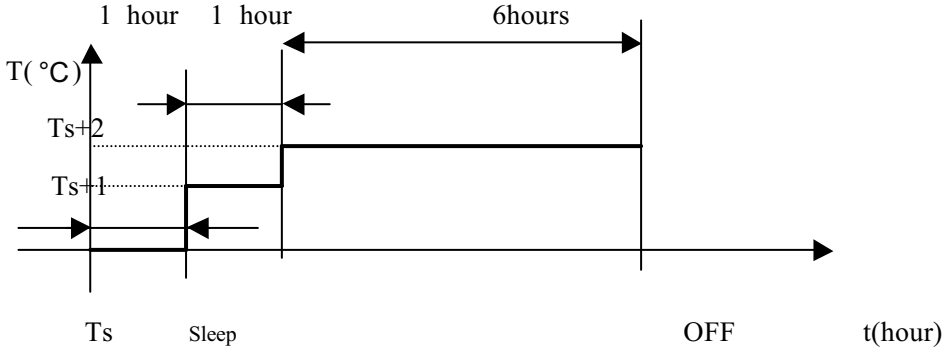
a. After setting the sleeping function, the refrigerating mode and dehumidification mode will run as per the following rules:



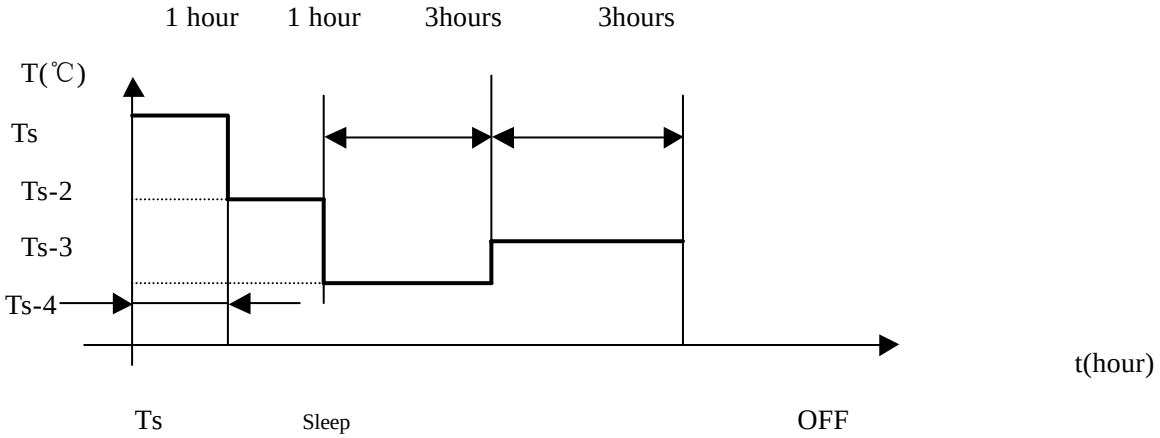
As shown in the above diagram, after running for 1 hour under refrigerating mode and dehumidification mode, the setting temperature will increase 1°C; after another 1 hour, it will increase 1°C again, and after 6 hours, it will cease;

HSU-24H03

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℃; after another 1 hour, it will increase 1℃ again, and after 6 hours, it will cease; after running for 1 hour under heating mode, the setting temperature will decrease 2℃, after another 1 hour, it will decrease the 2℃ again, and after 3 hours, it will increase 1℃, and after other 3 hours, it will cease.

5.1.15 Executive function after 2 seconds by remoter control:

After receiving remote control signal, the mainboard doesn't enter the corresponding instruction task until 2 seconds elapse.

5.1.16 Timer function:

You can set 24-hour timer on or timer off as required, and the minimum time unit is 1 minute. After setting, a pattern of clock displayed on the LED, and it is off when timer setting is completed. There are several timer mode as follows.

1) Timer on: The pattern of clock displayed on the LED,the background light is off, and unit behaves with halt status. Timer on is completed, and then unit starts running with the pattern of clock disappeared,and the background light is on. The unit starts with the last setting receiving timer signals, and sleep setting is not allowed.

2) Timer off: Unit working, the pattern of clock displayed on the LED; When reaching time setting, unit enters shutdown mode, and sleep function can be set. If timer off and sleep are set synchronously, the one which time is short run first. Executing shutdown instruction clear timer and sleep function.

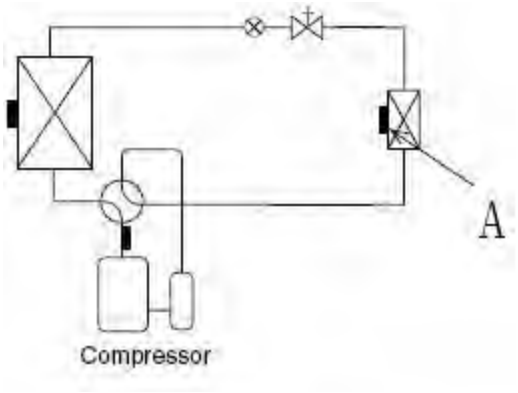
3) Timer on and timer off can be set synchronously.

5.1.17 Alarm from indoor fan motor:

120 seconds later after the indoor fan motor is charged, and the impulse from fan motor is not detected , then stop outputting voltage to indoor fan motor, send alarm signals.

5.2 Function of Main Thermistor

5.2.1 HSU-24C03/Z

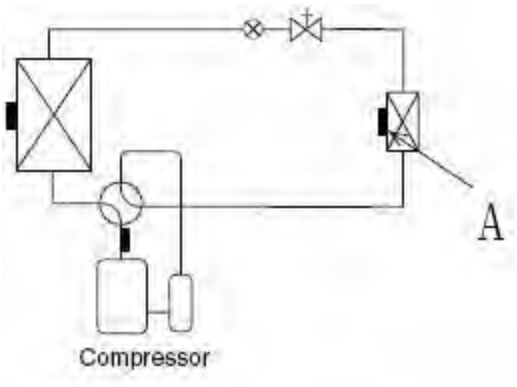


Note: A: Indoor heat-exchange sensor

Indoor heat-exchange sensor

The indoor heat exchanger thermistor is used for anti-icing control .During the cooling operation, if the heat exchanger temperature in the room where operation is halted becomes 0°C, it is assumed as icing.

5.2.2 HSU-24C03/Z



Note: A: Indoor heat-exchange sensor

Indoor heat-exchange sensor

1. The indoor heat exchanger thermistor is used for anti-icing control .During the cooling operation, if the heat exchanger temperature in the room where operation is halted becomes 0° C it is assumed as icing.

The indoor heat exchanger thermistor is used for preventing high temperature and high temperature expiration protection. During the heating operation , When the temp. of coil pipe is above 72° C, compressor and outdoor fan motor stop running 2 seconds later, and inlet air runs as the temp. sensor is off

5.3 Value of Thermistor

Room sensor

R25 °C =23KO± 3.5%

B25 °C /50 °C=4200K± 3%

Temp.(°C)	Max.(KO)	Normal(KO)	Min.(KO)	Tolerance(° C)	
-30	568.8372	501.0746	440.8435	-1.97	1.75
-29	530.9600	468.6491	413.1441	-1.95	1.74
-28	495.8488	438.5314	387.3645	-1.93	1.72
-27	463.2850	410.5433	363.3602	-1.91	1.71
-26	433.0683	384.5212	340.9980	-1.90	1.70
-25	405.0156	360.3153	320.1558	-1.88	1.69
-24	378.9588	337.7879	300.7211	-1.86	1.67
-23	354.7440	316.8126	282.5905	-1.84	1.66
-22	332.2300	297.2732	265.6686	-1.82	1.64
-21	311.2873	279.0627	249.8676	-1.80	1.63
-20	291.7969	262.0831	235.1067	-1.78	1.62
-19	273.6494	246.2437	221.3111	-1.76	1.60
-18	256.7445	231.4612	208.4122	-1.74	1.59
-17	240.9897	217.6590	196.3462	-1.72	1.57
-16	226.3000	204.7662	185.0545	-1.70	1.56
-15	212.5973	192.7176	174.4829	-1.68	1.54
-14	199.8093	181.4531	164.5813	-1.66	1.53
-13	187.8698	170.9169	155.3033	-1.64	1.51

-14	199.8093	181.4531	164.5813	-1.66	1.53
-13	187.8698	170.9169	155.3033	-1.64	1.51
-12	176.7176	161.0578	146.6059	-1.62	1.49
-11	166.2961	151.8284	138.4495	-1.60	1.48
-10	156.5532	143.1847	130.7973	-1.58	1.46
-9	147.4409	135.0863	123.6153	-1.56	1.44
-8	138.9148	127.4956	116.8717	-1.53	1.43
-7	130.9337	120.3778	110.5374	-1.51	1.41
-6	123.4597	113.7009	104.5852	-1.49	1.39
-5	116.4577	107.4349	98.9897	-1.47	1.38
-4	109.8953	101.5523	93.7278	-1.45	1.36
-3	103.7422	96.0274	88.7774	-1.43	1.34
-2	97.9708	90.8365	84.1185	-1.40	1.32
-1	92.5551	85.9574	79.7322	-1.38	1.30
0	87.4712	81.3697	75.6011	-1.36	1.29
1	82.6970	77.0544	71.7088	-1.34	1.27
2	78.2118	72.9937	68.0402	-1.31	1.25
3	73.9966	69.1712	64.5813	-1.29	1.23
4	70.0335	65.5716	61.3188	-1.27	1.21
5	66.3062	62.1807	58.2405	-1.24	1.19
6	62.7992	58.9853	55.3351	-1.22	1.17
7	59.4984	55.9729	52.5917	-1.20	1.15
8	56.3905	53.1320	50.0006	-1.17	1.13
9	53.4631	50.4521	47.5523	-1.15	1.11
10	50.7048	47.9230	45.2384	-1.13	1.09
11	48.1049	45.5355	43.0505	-1.10	1.07
12	45.6534	43.2808	40.9813	-1.08	1.04
13	43.3410	41.1509	39.0236	-1.05	1.02
14	41.1592	39.1381	37.1708	-1.03	1.00
15	39.0998	37.2355	35.4167	-1.00	0.98
16	37.1553	35.4363	33.7555	-0.98	0.96
17	35.3186	33.7344	32.1818	-0.95	0.94
18	33.5833	32.1240	30.6905	-0.93	0.91
19	31.9432	30.5997	29.2769	-0.90	0.89
20	30.3925	29.1565	27.9365	-0.88	0.87
21	28.9259	27.7895	26.6651	-0.85	0.84
22	27.5383	26.4944	25.4589	-0.83	0.82
23	26.2252	25.2670	24.3140	-0.80	0.80
24	24.9822	24.1034	23.2271	-0.78	0.77
25	23.8050	23.0000	22.1950	-0.78	0.77
26	22.7500	21.9499	21.1520	-0.78	0.78
27	21.7477	20.9536	20.1638	-0.82	0.81
28	20.7951	20.0081	19.2272	-0.86	0.85
29	19.8895	19.1104	18.3394	-0.89	0.88
30	19.0285	18.2581	17.4974	-0.93	0.92
31	18.2094	17.4484	16.6988	-0.97	0.95
32	17.4302	16.6792	15.9410	-1.00	0.99

33	16.6885	15.9480	15.2217	-1.04	1.02
34	15.9825	15.2530	14.5389	-1.08	1.06
35	15.3103	14.5920	13.8903	-1.12	1.09
36	14.6700	13.9632	13.2743	-1.16	1.13
37	14.0599	13.3650	12.6889	-1.20	1.16
38	13.4786	12.7957	12.1325	-1.23	1.20
39	12.9244	12.2537	11.6035	-1.27	1.24
40	12.3960	11.7375	11.1004	-1.31	1.27
41	11.8921	11.2459	10.6218	-1.35	1.31
42	11.4113	10.7775	10.1665	-1.39	1.34
43	10.9526	10.3311	9.7330	-1.43	1.38
44	10.5147	9.9056	9.3204	-1.48	1.42
45	10.0967	9.4999	8.9275	-1.52	1.45
46	9.6976	9.1130	8.5532	-1.56	1.49
47	9.3163	8.7439	8.1965	-1.60	1.53
48	8.9521	8.3916	7.8566	-1.64	1.57
49	8.6040	8.0554	7.5327	-1.68	1.60
50	8.2713	7.7345	7.2237	-1.73	1.64
51	7.9531	7.4280	6.9291	-1.77	1.68
52	7.6489	7.1353	6.6480	-1.81	1.72
53	7.3580	6.8556	6.3797	-1.85	1.76
54	7.0796	6.5884	6.1237	-1.90	1.79
55	6.8131	6.3329	5.8793	-1.94	1.83
56	6.5581	6.0887	5.6459	-1.99	1.87
57	6.3140	5.8552	5.4230	-2.03	1.91
58	6.0802	5.6318	5.2100	-2.07	1.95
59	5.8563	5.4181	5.0065	-2.12	1.99
60	5.6417	5.2136	4.8120	-2.16	2.03
61	5.4361	5.0178	4.6260	-2.21	2.07
62	5.2391	4.8304	4.4481	-2.25	2.11
63	5.0502	4.6510	4.2780	-2.30	2.15
64	4.8691	4.4791	4.1153	-2.35	2.19
65	4.6954	4.3145	3.9596	-2.39	2.23
66	4.5287	4.1567	3.8105	-2.44	2.27
67	4.3689	4.0055	3.6678	-2.49	2.31
68	4.2154	3.8605	3.5312	-2.53	2.35
69	4.0682	3.7216	3.4004	-2.58	2.39
70	3.9268	3.5883	3.2750	-2.63	2.43
71	3.7910	3.4605	3.1549	-2.68	2.48
72	3.6606	3.3378	3.0398	-2.73	2.52
73	3.5353	3.2201	2.9294	-2.77	2.56
74	3.4150	3.1072	2.8237	-2.82	2.60
75	3.2993	2.9987	2.7222	-2.87	2.64
76	3.1881	2.8946	2.6249	-2.92	2.68
77	3.0812	2.7946	2.5316	-2.97	2.73
78	2.9785	2.6986	2.4420	-3.02	2.77

79	2.8796	2.6063	2.3560	-3.07	2.81
80	2.7845	2.5176	2.2735	-3.12	2.86
81	2.6931	2.4324	2.1943	-3.17	2.90
82	2.6050	2.3505	2.1182	-3.22	2.94
83	2.5203	2.2717	2.0451	-3.28	2.99
84	2.4388	2.1960	1.9749	-3.33	3.03
85	2.3602	2.1231	1.9075	-3.38	3.07
86	2.2846	2.0530	1.8426	-3.43	3.12
87	2.2118	1.9856	1.7803	-3.48	3.16
88	2.1416	1.9207	1.7204	-3.54	3.20
89	2.0740	1.8582	1.6628	-3.59	3.25
90	2.0089	1.7981	1.6074	-3.64	3.29
91	1.9461	1.7402	1.5541	-3.70	3.34
92	1.8856	1.6844	1.5028	-3.75	3.38
93	1.8272	1.6307	1.4535	-3.80	3.43
94	1.7709	1.5789	1.4060	-3.86	3.47
95	1.7166	1.5291	1.3603	-3.91	3.52
96	1.6643	1.4810	1.3163	-3.97	3.56
97	1.6138	1.4347	1.2739	-4.02	3.61
98	1.5650	1.3900	1.2331	-4.08	3.66
99	1.5180	1.3470	1.1937	-4.13	3.70
100	1.4726	1.3054	1.1559	-4.19	3.75
101	1.4287	1.2654	1.1194	-4.24	3.80
102	1.3864	1.2268	1.0842	-4.30	3.84
103	1.3455	1.1895	1.0503	-4.36	3.89
104	1.3060	1.1535	1.0176	-4.42	3.94
105	1.2679	1.1188	0.9860	-4.47	3.98
106	1.2310	1.0853	0.9556	-4.53	4.03
107	1.1954	1.0529	0.9263	-4.59	4.08
108	1.1610	1.0217	0.8980	-4.65	4.13
109	1.1277	0.9915	0.8707	-4.70	4.17
110	1.0955	0.9624	0.8443	-4.76	4.22
111	1.0644	0.9342	0.8189	-4.82	4.27
112	1.0344	0.9070	0.7943	-4.88	4.32
113	1.0053	0.8807	0.7706	-4.94	4.37
114	0.9771	0.8553	0.7478	-5.00	4.41
115	0.9499	0.8307	0.7256	-5.06	4.46
116	0.9235	0.8070	0.7043	-5.12	4.51
117	0.8980	0.7840	0.6837	-5.18	4.56
118	0.8734	0.7618	0.6637	-5.24	4.61
119	0.8495	0.7404	0.6445	-5.30	4.66
120	0.8263	0.7196	0.6258	-5.36	4.71

Pipe Sensor

R25℃=10KΩ±3%

B25℃/50℃=3700K±3%

Temp.((℃))	Max.(KO)	Normal(KO)	Min.(KO)	Tolerance(℃)	
-30	165.2170	147.9497	132.3678	-1.94	1.75
-29	155.5754	139.5600	125.0806	-1.93	1.74
-28	146.5609	131.7022	118.2434	-1.91	1.73
-27	138.1285	124.3392	111.8256	-1.89	1.71
-26	130.2371	117.4366	105.7989	-1.87	1.70
-25	122.8484	110.9627	100.1367	-1.85	1.69
-24	115.9272	104.8882	94.8149	-1.83	1.67
-23	109.4410	99.1858	89.8106	-1.81	1.66
-22	103.3598	93.8305	85.1031	-1.80	1.64
-21	97.6556	88.7989	80.6728	-1.78	1.63
-20	92.3028	84.0695	76.5017	-1.76	1.62
-19	87.2775	79.6222	72.5729	-1.74	1.60
-18	82.5577	75.4384	68.8710	-1.72	1.59
-17	78.1230	71.5010	65.3815	-1.70	1.57
-16	73.9543	67.7939	62.0907	-1.68	1.55
-15	70.0342	64.3023	58.9863	-1.66	1.54
-14	66.3463	61.0123	56.0565	-1.64	1.52
-13	62.8755	57.9110	53.2905	-1.62	1.51
-12	59.6076	54.9866	50.6781	-1.60	1.49
-11	56.5296	52.2278	48.2099	-1.58	1.47
-10	53.6294	49.6244	45.8771	-1.56	1.46
-9	50.8956	47.1666	43.6714	-1.54	1.44
-8	48.3178	44.8454	41.5851	-1.51	1.42
-7	45.8860	42.6525	39.6112	-1.49	1.40
-6	43.5912	40.5800	37.7429	-1.47	1.39
-5	41.4249	38.6207	35.9739	-1.45	1.37
-4	39.3792	36.7676	34.2983	-1.43	1.35
-3	37.4465	35.0144	32.7108	-1.41	1.33
-2	35.6202	33.3552	31.2062	-1.38	1.31
-1	33.8936	31.7844	29.7796	-1.36	1.29
0	32.2608	30.2968	28.4267	-1.34	1.28
1	30.7162	28.8875	27.1431	-1.32	1.26
2	29.2545	27.5519	25.9250	-1.29	1.24
3	27.8708	26.2858	24.7686	-1.27	1.22
4	26.5605	25.0851	23.6704	-1.25	1.20
5	25.3193	23.9462	22.6273	-1.23	1.18
6	24.1432	22.8656	21.6361	-1.20	1.16
7	23.0284	21.8398	20.6939	-1.18	1.14
8	21.9714	20.8659	19.7982	-1.15	1.12
9	20.9688	19.9409	18.9463	-1.13	1.09
10	20.0176	19.0621	18.1358	-1.11	1.07
11	19.1149	18.2270	17.3646	-1.08	1.05

12	18.2580	17.4331	16.6305	-1.06	1.03
13	17.4442	16.6782	15.9315	-1.03	1.01
14	16.6711	15.9601	15.2657	-1.01	0.99
15	15.9366	15.2770	14.6315	-0.98	0.96
16	15.2385	14.6268	14.0271	-0.96	0.94
17	14.5748	14.0079	13.4510	-0.93	0.92
18	13.9436	13.4185	12.9017	-0.91	0.90
19	13.3431	12.8572	12.3778	-0.88	0.87
20	12.7718	12.3223	11.8780	-0.86	0.85
21	12.2280	11.8126	11.4011	-0.83	0.83
22	11.7102	11.3267	10.9459	-0.81	0.80
23	11.2172	10.8634	10.5114	-0.78	0.78
24	10.7475	10.4216	10.0964	-0.75	0.75
25	10.3000	10.0000	9.7000	-0.75	0.75
26	9.8975	9.5974	9.2980	-0.76	0.76
27	9.5129	9.2132	8.9148	-0.80	0.80
28	9.1454	8.8465	8.5496	-0.84	0.83
29	8.7942	8.4964	8.2013	-0.87	0.86
30	8.4583	8.1621	7.8691	-0.91	0.90
31	8.1371	7.8428	7.5522	-0.95	0.93
32	7.8299	7.5377	7.2498	-0.98	0.97
33	7.5359	7.2461	6.9611	-1.02	1.00
34	7.2546	6.9673	6.6854	-1.06	1.04
35	6.9852	6.7008	6.4222	-1.10	1.07
36	6.7273	6.4459	6.1707	-1.13	1.11
37	6.4803	6.2021	5.9304	-1.17	1.14
38	6.2437	5.9687	5.7007	-1.21	1.18
39	6.0170	5.7454	5.4812	-1.25	1.22
40	5.7997	5.5316	5.2712	-1.29	1.25
41	5.5914	5.3269	5.0704	-1.33	1.29
42	5.3916	5.1308	4.8783	-1.37	1.33
43	5.2001	4.9430	4.6944	-1.41	1.36
44	5.0163	4.7630	4.5185	-1.45	1.40
45	4.8400	4.5905	4.3500	-1.49	1.44
46	4.6708	4.4252	4.1887	-1.53	1.47
47	4.5083	4.2666	4.0342	-1.57	1.51
48	4.3524	4.1145	3.8862	-1.61	1.55
49	4.2026	3.9686	3.7443	-1.65	1.59
50	4.0588	3.8287	3.6084	-1.70	1.62
51	3.9206	3.6943	3.4780	-1.74	1.66
52	3.7878	3.5654	3.3531	-1.78	1.70
53	3.6601	3.4416	3.2332	-1.82	1.74
54	3.5374	3.3227	3.1183	-1.87	1.78
55	3.4195	3.2085	3.0079	-1.91	1.82
56	3.3060	3.0989	2.9021	-1.95	1.85
57	3.1969	2.9935	2.8005	-2.00	1.89
58	3.0919	2.8922	2.7029	-2.04	1.93

59	2.9909	2.7948	2.6092	-2.08	1.97
60	2.8936	2.7012	2.5193	-2.13	2.01
61	2.8000	2.6112	2.4328	-2.17	2.05
62	2.7099	2.5246	2.3498	-2.22	2.09
63	2.6232	2.4413	2.2700	-2.26	2.13
64	2.5396	2.3611	2.1932	-2.31	2.17
65	2.4591	2.2840	2.1195	-2.36	2.21
66	2.3815	2.2098	2.0486	-2.40	2.25
67	2.3068	2.1383	1.9803	-2.45	2.29
68	2.2347	2.0695	1.9147	-2.49	2.34
69	2.1652	2.0032	1.8516	-2.54	2.38
70	2.0983	1.9393	1.7908	-2.59	2.42
71	2.0337	1.8778	1.7324	-2.63	2.46
72	1.9714	1.8186	1.6761	-2.68	2.50
73	1.9113	1.7614	1.6219	-2.73	2.54
74	1.8533	1.7064	1.5697	-2.78	2.58
75	1.7974	1.6533	1.5194	-2.83	2.63
76	1.7434	1.6021	1.4710	-2.88	2.67
77	1.6913	1.5528	1.4243	-2.92	2.71
78	1.6409	1.5051	1.3794	-2.97	2.75
79	1.5923	1.4592	1.3360	-3.02	2.80
80	1.5454	1.4149	1.2942	-3.07	2.84
81	1.5000	1.3721	1.2540	-3.12	2.88
82	1.4562	1.3308	1.2151	-3.17	2.93
83	1.4139	1.2910	1.1776	-3.22	2.97
84	1.3730	1.2525	1.1415	-3.27	3.01
85	1.3335	1.2153	1.1066	-3.32	3.06
86	1.2953	1.1794	1.0730	-3.38	3.10
87	1.2583	1.1448	1.0405	-3.43	3.15
88	1.2226	1.1113	1.0092	-3.48	3.19
89	1.1880	1.0789	0.9789	-3.53	3.24
90	1.1546	1.0476	0.9497	-3.58	3.28
91	1.1223	1.0174	0.9215	-3.64	3.33
92	1.0910	0.9882	0.8942	-3.69	3.37
93	1.0607	0.9599	0.8679	-3.74	3.42
94	1.0314	0.9326	0.8424	-3.80	3.46
95	1.0030	0.9061	0.8179	-3.85	3.51
96	0.9756	0.8806	0.7941	-3.90	3.55
97	0.9490	0.8558	0.7711	-3.96	3.60
98	0.9232	0.8319	0.7489	-4.01	3.64
99	0.8983	0.8088	0.7275	-4.07	3.69
100	0.8741	0.7863	0.7067	-4.12	3.74
101	0.8507	0.7646	0.6867	-4.18	3.78
102	0.8281	0.7436	0.6672	-4.23	3.83
103	0.8061	0.7233	0.6484	-4.29	3.88
104	0.7848	0.7036	0.6303	-4.34	3.92
105	0.7641	0.6845	0.6127	-4.40	3.97

106	0.7441	0.6661	0.5957	-4.46	4.02
107	0.7247	0.6482	0.5792	-4.51	4.07
108	0.7059	0.6308	0.5632	-4.57	4.12
109	0.6877	0.6140	0.5478	-4.63	4.16
110	0.6700	0.5977	0.5328	-4.69	4.21
111	0.6528	0.5820	0.5183	-4.74	4.26
112	0.6361	0.5667	0.5043	-4.80	4.31
113	0.6200	0.5518	0.4907	-4.86	4.36
114	0.6043	0.5374	0.4775	-4.92	4.41
115	0.5891	0.5235	0.4648	-4.98	4.45
116	0.5743	0.5100	0.4524	-5.04	4.50
117	0.5600	0.4968	0.4404	-5.10	4.55
118	0.5460	0.4841	0.4288	-5.16	4.60
119	0.5325	0.4717	0.4175	-5.22	4.65
120	0.5194	0.4597	0.4066	-5.28	4.70

6. System Configuration

6.1 System Configuration

After the installation and test operation of the room air conditioner have been completed, it should be operated and handled as described below. Every user would like to know the correct method of operation of the room air conditioner, to check if it is capable of cooling (or heating) well, and to know a clever method of using it.In order to meet this expectation of the users, giving sufficient explanations taking enough time can be said to reduce about 80% of the requests for servicing. However good the installation work is and however good the functions are, the customer may blame either the room air conditioner or its installation work because of improper handling. The installation work and handing over of the unit can only be considered to have been completed when its handling has been explained to the user without using technical terms but giving full knowledge of the equipment.

6.2 Instruction

Cautions

Disposal of the old air conditioner

Before disposing an old air conditioner that goes out of use, please make sure it's inoperative and safe. Unplug the air conditioner in order to avoid the risk of child entrapment.

It must be noticed that air conditioner system contains refrigerants, which require specialized waste disposal. The valuable materials contained in an air conditioner can be recycled .Contact your local waste disposal center for proper disposal of an old air conditioner and contact your local authority or your dealer if you have any question. Please ensure that the pipework of your air conditioner does not get damagedprior to being picked up by the relevant waste disposal center, and contribute to environmental awareness by insisting on an appropriate, anti-pollution method of disposal.

Disposal of the packaging of your new air conditioner

All the packaging materials employed in the package of your new air conditioner may be disposed without any danger to the environment.

The cardboard box may be broken or cut into smaller pieces and given to a waste paper disposal service. The wrapping bag made of polyethylene and the polyethylene foam pads contain no fluorochloric hydrocarbon.

All these valuable materials may be taken to a waste collecting center and used again after adequate recycling.

Consult your local authorities for the name and address of the waste materials collecting centers and waste paper disposal services nearest to your house.

Safety Instructions and Warnings

Before starting the air conditioner, read the information given in the User's Guide carefully. The User's Guide contains very important observations relating to the assembly, operation and maintenance of the air conditioner.

The manufacturer does not accept responsibility for any damages that may arise due to non-observation of the following instruction.

- Damaged air conditioners are not to be put into operation. In case of doubt, consult your supplier.

- Use of the air conditioner is to be carried out in strict compliance with the relative instructions set forth in the User's Guide.

- Installation shall be done by professional people, don't install unit by yourself.

- For the purpose of the safety,the air conditioner must be properly grounded in accordance with specifications.

- Always remember to unplug the air conditioner before openning inlet grill. Never unplug your air conditioner by pulling on the power cord. Always grip plug firmly and pull straight out from the outlet.

- All electrical repairs must be carried out by qualified electricians. Inadequate repairs may result in a major source of danger for the user of the air conditioner.

- Do not damage any parts of the air conditioner that carry refrigerant by piercing or performating the air conditioner's tubes with sharp or pointed items, crushing or twisting any tubes, or scraping the coatings off the surfaces. If the refrigerant spurts out and gets into eyes, it may result in serious eye injuries.

Cautions

• Do not obstruct or cover the ventilation grille of the air conditoner.Do not put fingers or any other things into the inlet/outlet and swing louver.

• Do not allow children to play with the air conditioner.In no case should children be allowed to sit on the outdoor unit.

Specifications

• The refrigerating circuit is leak-proof.

The machine is adaptive in following situation

1.Applicable ambient temperature range:

Cooling	Indoor	Maximum:D.B/W.B Minimum:D.B/W.B	32°C/23°C 18°C/14°C
	Outdoor	Maximum:D.B/W.B Minimum:D.B	43°C/26°C 18°C
Heating	Indoor	Maximum:D.B Minimum:D.B	27°C 15°C
	Outdoor	Maximum:D.B/W.B Minimum:D.B/W.B	24°C/18°C -7°C/-8°C

2. If the power supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similar qualified person.

3. If the fuse of indoor unit on PC board is broken,please change it with the type of T. 3.15A/ 250V. If the fuse of outdoor unit is broken,change it with the type of T.25A/250V

4. The wiring method should be in line with the local wiring standard.

5. After installation, the power plug should be easily reached.

6. The waste battery should be disposed properly.

7. The appliance is not intended for use by young children or infirm persons without supervision.

8. Young children should be supervised to ensure that they do not play with the applience.

9.Please employ the proper power plug, which fit into the power supply cord.

10 .The power plug and connecting cable must have acquired the local attestation.

11.In order to protect the units,please turn off the A/C first, and at least 30 seconds later, cutting off the power.

Cautions

Safety Instruction

- Please read the following Safety Instructions carefully prior to use.
- The instructions are classified into two levels, WARNING and CAUTION according to the seriousness of possible risks and damages as follows. Compliance to the instructions are strictly required for safety use.

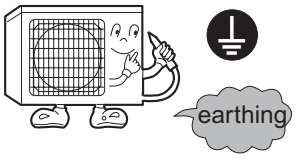
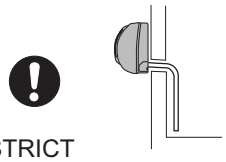
Installation

⚠WARNING

Please call Sales/Service Shop for the Installation.
Do not attempt to install the air conditioner by yourself because improper works may cause electric shock, fire, water leakage.

Installation in a inadequate place may cause accidents. Do not install in the following place.

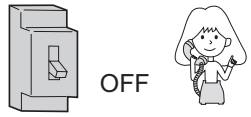
⚠CAUTION

Connect the earth cable.  	Do not install in the place where there is any possibility of inflammable gas leakage around the unit. PROHIBITION	Do not get the unit exposed to vapor or oil steam. PROHIBITION	Check proper installation of the drainage securely  STRICT ENFORCEMENT

Cautions

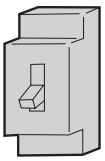
⚠ WARNING

When abnormality such as burnt-small found, immediately stop the operation button and contact sales shop.



STRICT ENFORCEMENT

Use an exclusive power source with a circuit breaker



Connect power supply cord to the outlet completely

STRICT ENFORCEMENT

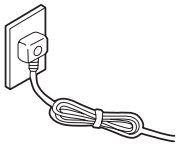
Use the proper voltage

STRICT ENFORCEMENT

Do not use power supply cord extended or connected in halfway

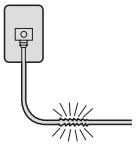
PROHIBITION

Do not use power supply cord in a bundle.



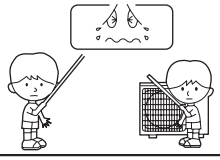
PROHIBITION

Take care not to damage the power supply cord.



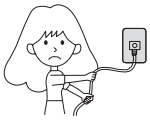
PROHIBITION

Do not insert objects into the air inlet or outlet.



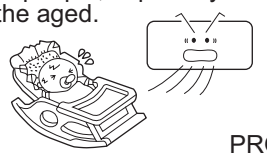
PROHIBITION

Do not start or stop the operation by disconnecting the power supply cord and so on.



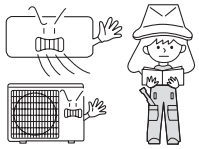
PROHIBITION

Do not channel the air flow directly at people, especially at infants or the aged.



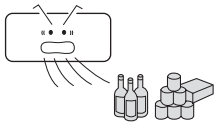
PROHIBITION

Do not try to repair or reconstruct by yourself.



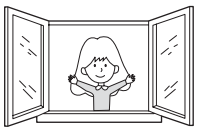
⚠ CAUTION

Do not use for the purpose of storage of food, art work, precise equipment, breeding, or cultivation.



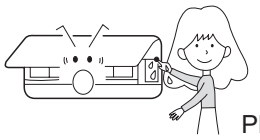
PROHIBITION

Take fresh air occasionally especially when gas appliance is running at the same time.



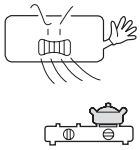
STRICT ENFORCEMENT

Do not operate the switch with wet hand.



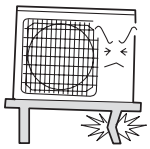
PROHIBITION

Do not install the unit near a fireplace or other heating apparatus.



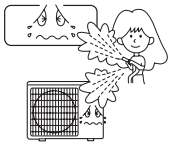
PROHIBITION

Check good condition of the installation stand



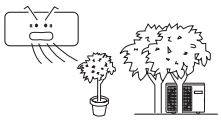
PROHIBITION

Do not pour water onto the unit for cleaning



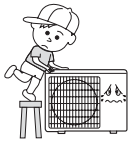
PROHIBITION

Do not place animals or plants in the direct path of the air flow



PROHIBITION

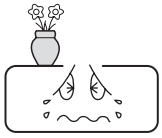
Do not place any objects on or climb on the unit.



PROHIBITION

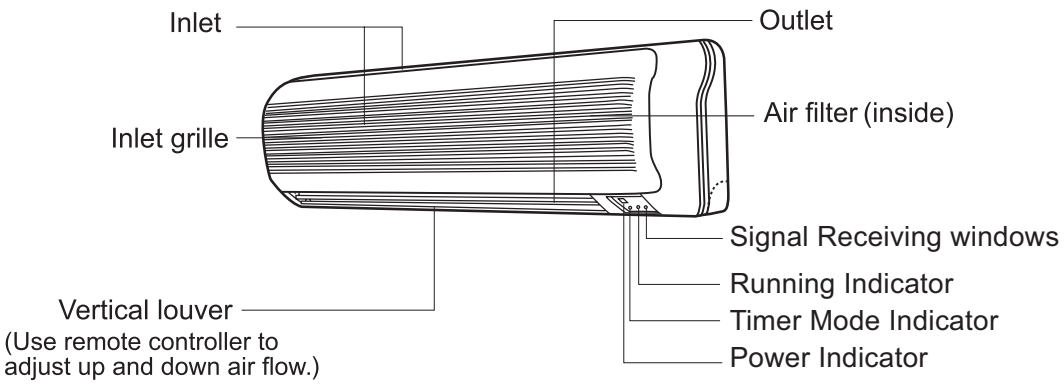
Do not place flower vase or water containers on the top of the unit.

PROHIBITION

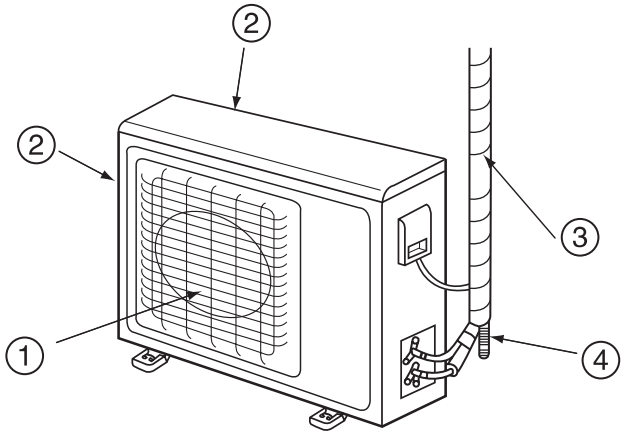


Parts and Functions

Indoor unit



Outdoor unit

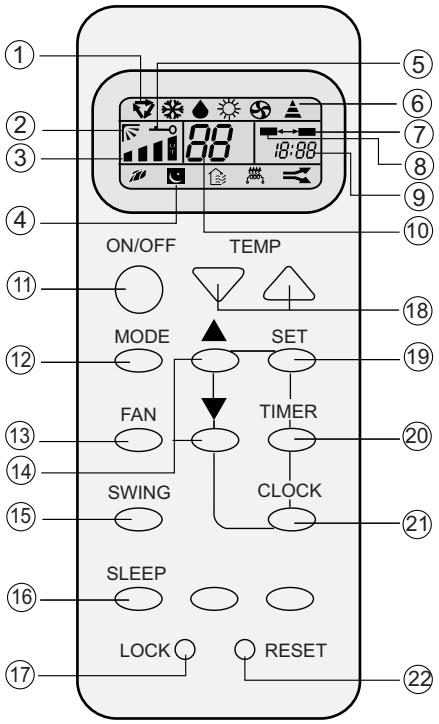


① OUTLET
② INLET
③ CONNECTING PIPING AND ELECTRICAL WIRING
④ DRAIN HOSE

Parts and Functions

Operation

Buttons and display of the remote controller.



1. Mode display
   AUTO
   COOL
   DRY
   HEAT
   FAN
2. SWING display
3. FAN SPEED display

4. SLEEP display
5. LOCK display
6. SIGNAL SENDING
7. TIMER OFF display
8. TIMER ON display
9. CLOCK display
10. TEMP display
11. POWER ON/OFF
    Used for unit start and stop.
12. MODE
    Used to select AUTO run, COOL, DRY, HEAT and FAN operation
13. FAN
    Used to select fan speed LO, MED, HI, AUTO
14. HOUR
    Used to set clock and timer setting.
15. SWING
    Used to set auto fan direction.
16. SLEEP
    Used to select sleep mode.
17. LOCK
    Used to lock buttons and LCD display.
18. TEMP.
    Used to select your desired temp.
19. SET
    Used to confirm timer and clock settings.
20. TIMER
    Used to select TIMER ON, TIMER OFF, TIMER ON-OFF
21. CLOCK
    Used to set correct time
22. RESET
    Used to reset the controller back to normal condition.

Clock set

When unit is started for the first time and after replacing batteries in remote controller, clock should be adjusted as follows:
Press CLOCK button, "AM" or "PM" flashes.
Press △ or ▽ to set correct time. Each press will increase or decrease 1min. If the button is kept depressed, time will change quickly.
After time setting is confirmed, press SET, "AM "and "PM" stop flashing, while clock starts working.

NOTE: Cooling only unit do not have displays and functions related with heating

Hints

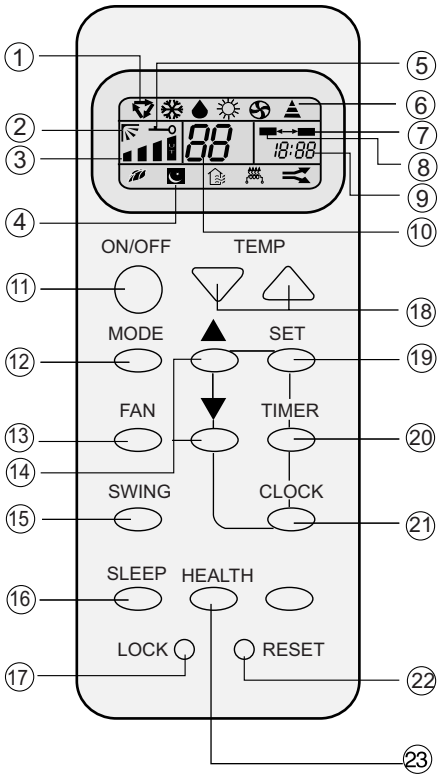
After replacing with new batteries, remote controller will conduct self-check, displaying all information on LCD. Then, it will become normal.

Parts and Functions

Operation

Buttons and display of the remote controller.

If the unit which you purchased has healthy function, Remote controller should like the following figure:



1. Mode display
   AUTO
   COOL
   DRY
   HEAT
   FAN
2. SWING display
3. FAN SPEED display 

4. SLEEP display
5. LOCK display
6. SIGNAL SENDING
7. TIMER OFF display
8. TIMER ON display
9. CLOCK display
10. TEMP display
11. POWER ON/OFF
    Used for unit start and stop.
12. MODE
    Used to select AUTO run, COOL, DRY, HEAT and FAN operation
13. FAN
    Used to select fan speed LO, MED, HI, AUTO
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17. LOCK
    Used to lock buttons and LCD display.
18. TEMP.
    Used to select your desired temp.
19. SET
    Used to confirm timer and clock settings.
20. TIMER
    Used to select TIMER ON, TIMER OFF, TIMER ON-OFF
21. CLOCK
    Used to set correct time
22. RESET
    Used to reset the controller back to normal condition.
23. HEALTH
    Used to set healthy operation

BRIEF INTRODUCTION TO HEALTH OPERATION

The anion generator in the air conditioner can generate a lot of anion to effectively balance the quantity of position and anion in the air and also to kill bacteria and speed up the dust sediment in the room and finally clean the air in the room.

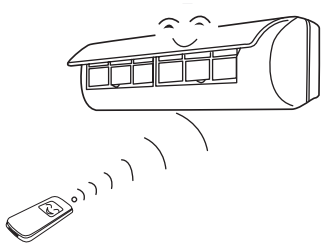
NOTE: Cooling only unit do not have displays and functions related with heating

Hints

After replacing with new batteries, remote controller will conduct self-check, displaying all information on LCD. Then, it will become normal.

Operation

Remote controller's operation



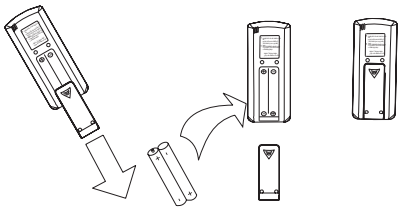
- When in use, put the signal transmission head directly to the receiver hole on the indoor unit.
- The distance between the signal transmission head and the receiver hole should be within 7m without any obstacle as well.
- Don't throw the controller, prevent it from being damaged.
- When electronic-started type fluorescent lamp or change-over type fluorescent lamp or wireless telephone is installed in the room, the receiver is apt to be disturbed in receivering the signals so the distance to the indoor unit should be shorter.

Loading of the battery

Load the batteries as illustrated. 2 R-03 batteries, resetting key (cylinder)

Remove the battery cover:

Slightly press "▼" and push down the cover.



Load the battery:

Be sure that the loading is in line with the" + "/"-" pole request as illustrated.

Put on the cover again

Confirmation indicator:

In disorderation, reload the batteries or load the new batteries after 6mins.

Note:

Use two new same-typed batteries when loading.
If the remote controller can't run normally or doesn't work at all, use a sharp pointed item to press the reset key.

Hint:

Remove the batteries in case unit won't be in usage for a long period.
If there are any display after taking-out just need to press reset key.

Power failure resume(please set and apply as necessary)

If sudden power failure occurs, the unit will resume original operation when power is supplied again.

Note: When sudden power failure happens during unit operation in power failure resume mode, if the air conditioner is not desired for use in a long period, please shut off the power supply in case that the unit automatically resume operation when power is re-supplied, or press ON/OFF to turn off the unit when power resumes.

Operation

Auto run, Fan operation

Enjoy yourself by just a gentle press.

(1) Unit start

Press ON/OFF button, unit starts.
Previous operation status appears on display.
(Not Timer setting)
Power indicator on indoor unit lights up.

(2) Select operation mode

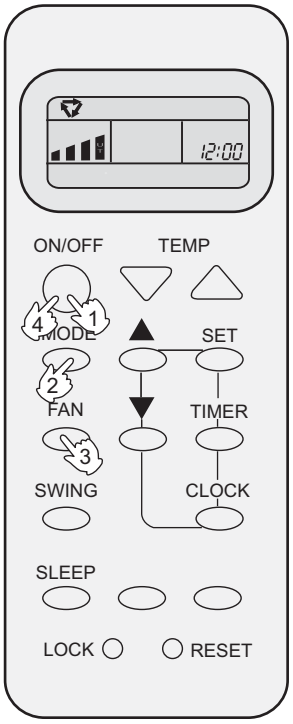
Press MODE button. For each press, operation mode changes as follows:

Unit will run in selected mode.
Stop display at " " AUTO or " " "FAN.

(3) FAN

Press FAN button. For each press, fan speed changes as follows:

Unit will run at selected fan speed.
Note:AUTO is not available in FAN mode.



(4) Unit stop

Press ON/OFF button.
Only time remains on LCD.
All indicators on indoor unit go out.
Vertical flap closed automatically.

Hints

Remote controller can memorize settings in each operation mode. To run it next time just select the operation mode and it will start with the previous setting.
No reelecting is needed.(TIMER ON/OFF needs reelecting)

Cautions:
On cooling only unit, heating mode is not available,
After replacing batteries, press ON/OFF, and display becomes as follows:
Operation mode: AUTO, Temp. No
Timer mode: No, Fan speed :AUTO

Note:
The above information is the explanation of the displayed information therefore varies with those displayed in actual operation.

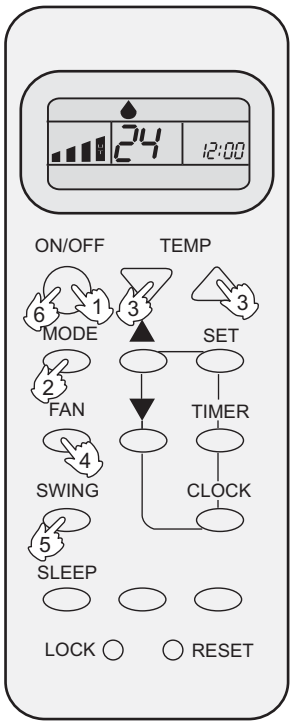
Operation

COOL,HEAT and DRY operation

Recommendations: • Use COOL in summer. • Use HEAT in winter
• Use DRY in spring, autumn and in damp climate.

(1) Unit start

Press ON/OFF button, unit starts.
Previous operation status appears on display. (Not Timer setting)
Power indicator on indoor unit lights up.



(2) Select operation mode

Press MODE button. For each press, operation mode changes as follows:

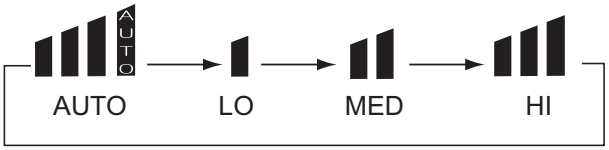
Unit will run in operation mode displayed on LCD.
Stop display at your desired mode.

(3) Select temp. setting

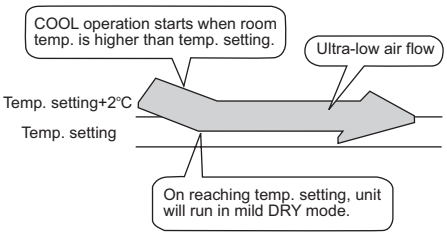
Press TEMR button.
△ Every time the button is pressed, temp. setting increases 1°C
▽ Every time the button is pressed, temp. setting decreases 1°C
Unit will start running to reach the temp. setting on LCD.

(4) Fan speed selection

Press FAN button. For each press, fan speed changes as follows:



Unit runs at the speed displayed on LCD.
In DRY mode, when room temp. becomes 2°C higher than temp. setting, unit will run intermittently at LO speed regardless of FAN setting.



Hints

On cooling only unit, heating mode is not available.
Remote controller can memorize each operation status. When starting it next time, just press ON/OFF button and unit will run in previous status.

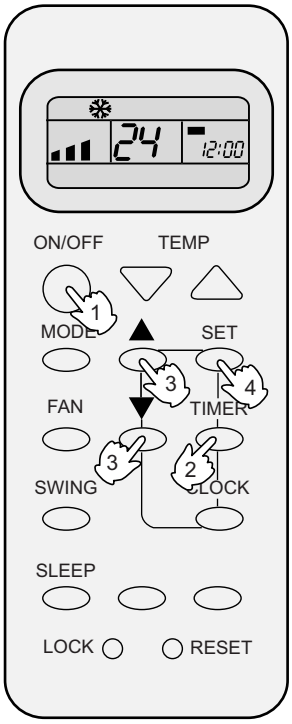
Operation

TIMER Operation

Set Clock correctly before starting Timer operation
You can let unit start or stop automatically at following times: Before you wake up in the morning, or get back from outside or after you fall asleep at night.

TIMER ON/OFF

(1)After unit start, select your desired operation mode.
Operation mode will be displayed on LCD.
Power indicator on indoor unit lights up.



(2)TIMER mode selection

Press TIMER button to change TIMER mode.
Every time the button is pressed, display changes as follows:

ON → OFF → ON ⏲ OFF → blank →
TIMER ON TIMER OFF TIMER ON-OFF

Select your desired TIMER mode (TIMER ON or TIMER OFF) ON or OFF will flash.

(3)Timer setting

Press HOUR△ / ▽ button.
△ Every time the button is pressed, time increases 10 min. If button is kept depressed, time will change quickly.
▽ Every time the button is pressed, time decreases 10 min. If button is kept depressed, time will change quickly. Time will be shown on LCD. It can be adjusted within 24 hours.

(4)Confirming your setting

After setting correct time, press SET button to confirm, "ON" or "OFF" stops flashing
Time displayed: Unit starts or stops at x hour x min. (TIMER ON or TIMER OFF).
Timer mode indicator on indoor unit lights up.

To cancel TIMER mode

Just press TIMER button several times until TIMER mode disappears.

Hints

After replacing batteries or a power failure happens, Time setting should be reset.
Remote controller possesses memory function, when use TIMER mode next time, just press SET button after mode selecting if timer setting is the same as previous one.

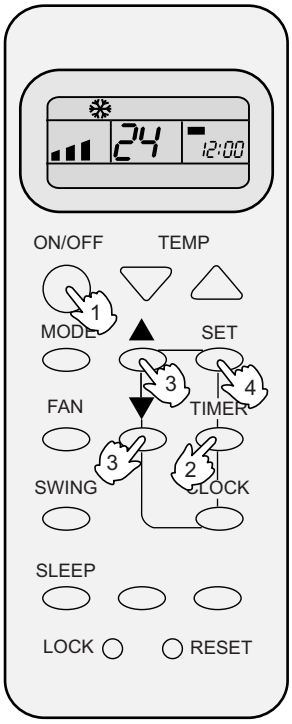
Operation

TIMER Operation

Set Clock correctly before starting Timer operation
You can let unit start or stop automatically at following times: Before you wake up in the morning, or get back from outside or after you fall asleep at night.

TIMER ON/OFF

(1)After unit start, select your desired operation mode.
Operation mode will be displayed on LCD.
Power indicator on indoor unit lights up.



(2)TIMER mode selection

Press TIMER button to change TIMER mode.
Every time the button is pressed, display changes as follows:

ON → OFF → ON ⏲ OFF → blank
TIMER ON TIMER OFF TIMER ON-OFF

Select your desired TIMER mode (TIMER ON or TIMER OFF) ON or OFF will flash.

(3)Timer setting

Press HOUR△ / ▽ button.
△ Every time the button is pressed, time increases 10 min. If button is kept depressed, time will change quickly.
▽ Every time the button is pressed, time decreases 10 min. If button is kept depressed, time will change quickly. Time will be shown on LCD. It can be adjusted within 24 hours.

(4)Confirming your setting

After setting correct time, press SET button to confirm, "ON" or "OFF" stops flashing
Time displayed: Unit starts or stops at x hour x min. (TIMER ON or TIMER OFF).
Timer mode indicator on indoor unit lights up.

To cancel TIMER mode

Just press TIMER button several times until TIMER mode disappears.

Hints

After replacing batteries or a power failure happens, Time setting should be reset.
Remote controller possesses memory function, when use TIMER mode next time, just press SET button after mode selecting if timer setting is the same as previous one.

Operation

TIMER ON-OFF

(1)After unit start, select your desired operation mode
Operation mode will be displayed on LCD.
Power indicator on indoor unit lights up.

(2) Press TIMER button to change TIMER mode.

Every time the button is pressed, display changes as follows:

Select TIMER ON-OFF. "ON" will flash.

(3)Time setting for TIMER ON

Press HOUR button.

△Every time the button is pressed, time increases 10 min.
If button is kept depressed, time will change quickly.
▽ Every time the button is pressed, time decreases 10 min.
If button is kept depressed, time will change quickly.

Time will be shown on LCD.
It can be adjusted within 24 hours.
AM refers to morning and PM to afternoon

(4) Time confirming for TIMER ON

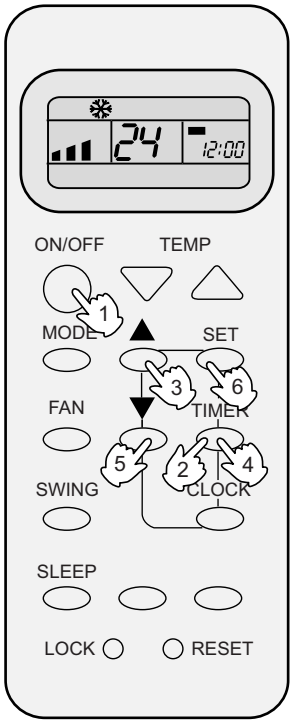
After time setting, press TIMER button to confirm.
"ON" stops blinking, While "OFF" starts blinking.
Time displayed: Unit starts at x hour x min.

(5)Time setting for TIMER OFF

Follow the same procedures in "Time setting for TIMER ON".

(6) Time confirming for TIMER OFF

After time setting, press SET button to confirm, "OFF" stops flashing
Time displayed: Unit stops at X hour X min.



To cancel TIMER mode

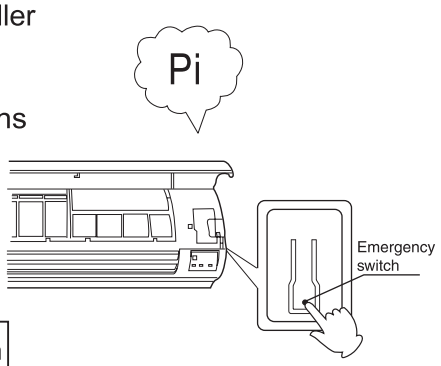
■ Just press TIMER button several times until TIMER mode disappears.

Operation

Emergency and Test operations

Emergency Operation:

- Use this operation only when the remote controller is defective or lost.
- When the emergency operation switch is pressed,the" Pi "sound is heard once, which means the start of this operation.
- In this operation, it is not possible to change the settings of temperature and air flow speed, it is also impossible to do an operation by the timer.
- Follow the requirements below.



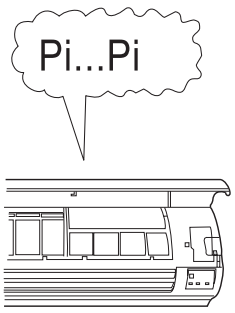
Room temperature	Designated temperature	Timer mode	Air flow speed	Operation mode
More than 23°C	26°C	CONTINUOUS	AUTO	COOL
Less than 23°C	23°C	CONTINUOUS	AUTO	HEAT

※ If an air conditioner is a model for both cooling and heating.
Cooling when the room temperature at the start of operation is above 23°C.
Heating when the room temperature at the start of operation is less 23°C.

Test operation:

Test operation switch is the same as emergency switch.

- Use this switch in the test operation when the room temperature is below 16°C, do not use it in the normal operation.
- Continue to press the test operation switch for more than 5 seconds. After you hear the "Pi" sound twice, release your finger from the switch: the cooling operation starts with the air flow speed "Hi".



Removal of the restriction of emergency or test operation

- Press the emergency operation switch once more, or manipulate through the remote controller; the "Pi" sound, the emergency or test operation is terminated.
- When the remote controller is manipulated, it gets the system back to the normaloperation mode.

Operation

Comfortable SLEEP

Before going to bed at night, you can simply press the SLEEP button and unit will bring you a sound sleep in selected mode.

In COOL mode

One hour after SLEEP mode starts, temp. will become 1°C higher than temp. setting. After running for another 1 hour, temp. rises by 1°C further. Unit will run for 6 hours then stops automatically. Temp. is higher than temp. setting so that room temp. won't be too low for your sleep.(As shown in Fig.I)

In HEAT mode

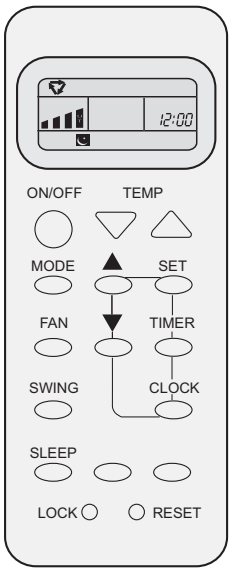
One hour after SLEEP mode starts, temp. will become 2°C lower than temp. setting. After running for another 1 hour, temp. decreases by 2°C further. Unit will run for 3 hours at this temp. then increases another 1°C and stops automatically 3 hours later. Temp. is lower than temp. setting so that room temp. won't be too high for your sleep.
(As shown in Fig .2)

Power Failure Resume Function

If the unit is started for the first time, the compressor will not start running unless 3 minutes have elapsed. When the power resumes after power failure, the unit will run automatically, the power indicator lights up, and 3 minutes later the compressor starts running with the indicator lighting up.

Note:

In AUTO mode, unit will run in SLEEP function according to operation mode.
In FAN mode, comfortable sleep is not available.



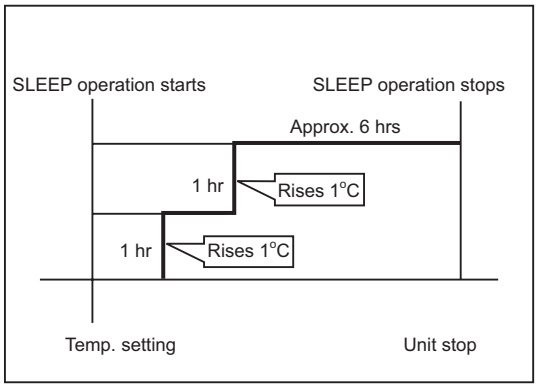


Fig.1

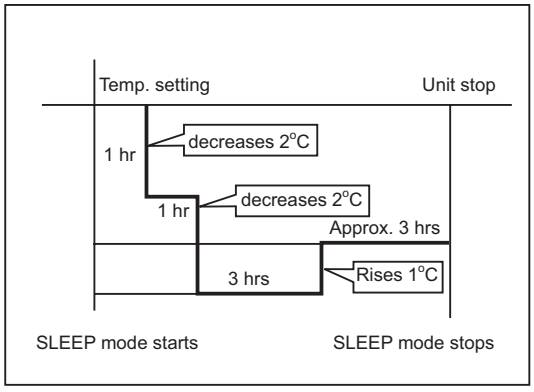
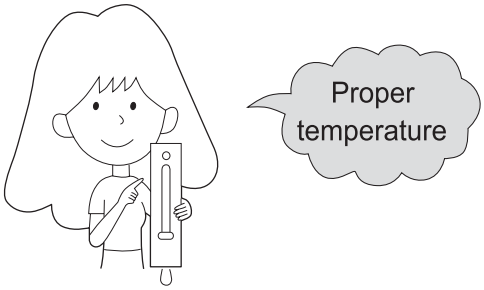


Fig.2

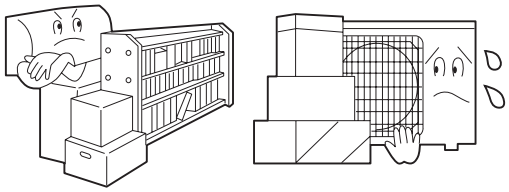
Maintenance

For Smart Use of The Air Conditioner

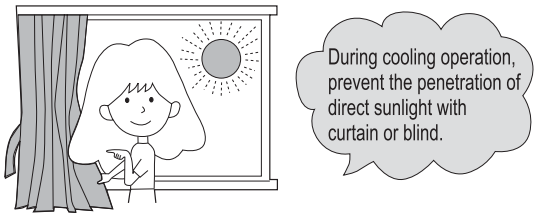
Setting of proper room temperature



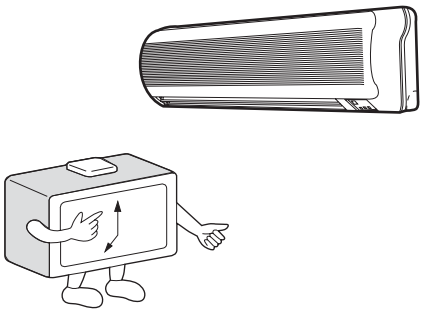
Do not block the air inlet or outlet



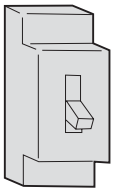
Close doors and windows during operation



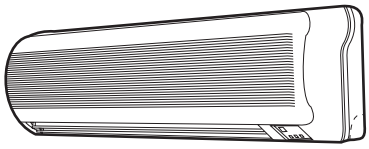
Use the timer effectively



If the unit is not to be used for a long time, turn off the power supply main switch.



Use the louvers effectively



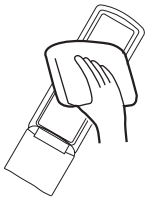
Maintenance

For Smart Use of The Air Conditioner

⚠ WARNING

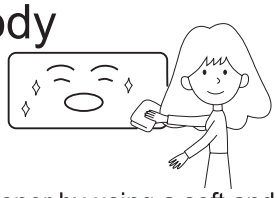
Before maintenance, be sure to turn off the system and the circuit breaker.

Remote Controller



Do not use water, wipe the controller with a dry cloth. Do not use glass cleaner or chemical cloth.

Indoor Body



Wipe the air conditioner by using a soft and dry cloth. For serious stains, use a neutral detergent diluted with water. Wring the water out of the cloth before wiping, then wipe off the detergent completely.

Do not use the following for cleaning

Gasoline,benzine, thinner or cleanser may damage the coating of the unit.

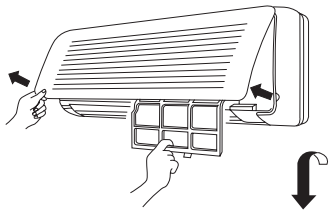
Hot water over 40°C (104°F) may cause discoloring or deformation.

Air Filter Cleaning

1 Open the inlet grille by pulling it upward.

2 Remove the filter.

Push up the filter's center tab slightly until it is released from the stopper,and remove the filter downward.

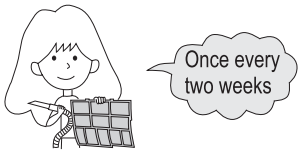


3 Clean the filter.

Use a vacuum cleaner to remove dust, or wash the filter with water. After washing,dry the filter completely in the shade.

4 Attach the filter.

Attach the filter correctly so that the "FRONT" indication is facing to the front.Make sure that the filter is completely fixed behind the stopper. If the right and left filters are not attached correctly,that may cause defects.



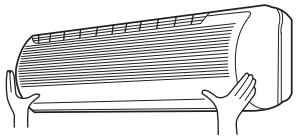
5 Close the inlet grille.

Maintenance

Replacement of Air purifying Filter

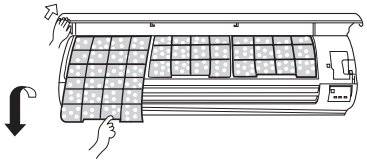
1.Open the Inlet grille

Open the inlet grille by pushing each ends of the inlet grille upward. (use thumbs to push up).



2.Detach the standard air filter

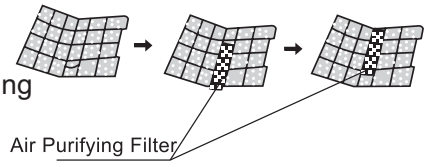
Slide the knob slightly upward to release the filter, then withdraw it.



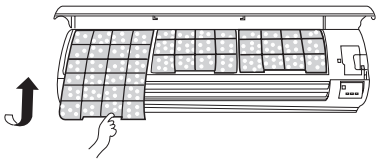
3.Attach new Air Purifying Filter

Put air purifying filter appliance into the frames.

Note: the white aspect of the electrostatic air purifying filter will face to the front.

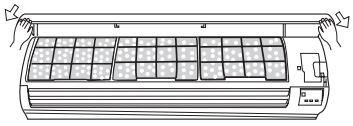


4.Install air purifying filter (Necessary installment)



5.Close the Inlet grille

Close the Grille surely.



NOTE:

- Please replace the air Purifying Filter when color of the filter become same level of sample attached in the indoor unit.
- Please replace the air Purifying Filter in 3-6 months as standard.
- Stuffed filter are not usable even washing.Please purchase new one at sales shop.

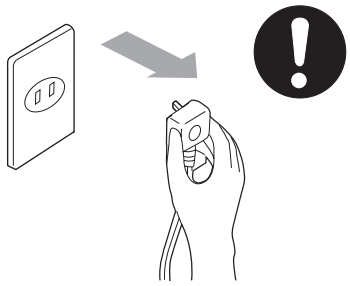
Maintanence

To Keep You Air conditioner in Good Condition after Season.

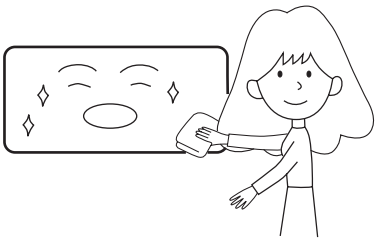
1 Operate in cooling mode for 2-3 hours.

To prevent breeding mold or bad smell, be sure to operate at the designated temperature of 30℃, cooling mode and High speed fan mode for 2-3 hours.

2 Put off the power supply cord.



3 Cleaning the body.



4 Take out the batteries from the wireless remote controller.

Maintanence

Before Setting in High Season

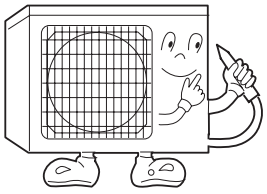
1 Cleaning the standard air filter.

Operation without filter may cause troubles. Be sure to attach both right and left filters prior to the operation. Each of them are of different shapes.

2 Connecting the earthing cable.

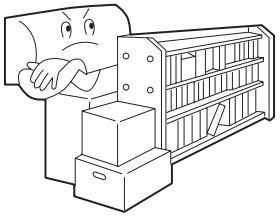
⚠ Caution

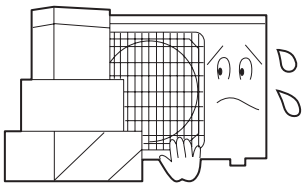
- Incomplete earthing may cause an electric shock.



EARTHING

3 Do not block the air inlet or outlet.





4 Plug-in

⚠ Caution

- After brush away dust at the plug, insert the plug of the power supply cord into the outlet completely. In case of using exclusive circuit breaker, switch on the circuit breaker.

NO WET HAND

Trouble shooting

Before asking for service, check the following first.

	Phenomenon	Cause or check points
Normal Performance inspection	The system does not restart immediately. 	● When unit is stopped, it won't restart immediately until 3 minutes have elasped 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.
	Noise is heard: 	● 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.
	Smells are generated.	● This is because the system circulates smells from the interior air such as the smell of furniture, cigarettes.
	Mist or steam are blown out.	● During COOL or DRY operation, indoor unit may blow out mist. This is due to the sudden cooling of indoor air.
Multiple check	Does not work at all.	● Is power plug inserted? ● Is there a power failure? ● Is fuse blown out?
	Poor cooling 	● 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?

7.service diagnosis

7.1.caution for diagnosis

1. The operation lamp flashes when any of errors is detected.
2. when a protection device of the indoor or outdoor unit is activated or when the thermistor malfunctions, disabling equipment operation.

7.2.Problem Symptoms and Measures

Symptom	Check Item	Details of Measure	Reference page
None of the units operates	Check the power supply.	Check to make sure that the rated voltage is supplied.	----
	Check the indoor PCB	Check to make sure that the indoor PCB is broken	----
Equipment operates but does not cool, or does not heat (only for heat pump)	Diagnosis by service port pressure and operating current.	Check for insufficient gas.	----
			----
Large operating noise and vibrations	Check the installation condition.	Check to make sure that the required spaces for installation (specified in the Technical Guide, etc.) are provided.	----

7.3 Trouble Shooting

7.3.1 error code description

	Code indication	Description	Reference page
	Power timer operate		
Indoor Malfunction	★ ■ ■	Room temperature sensor failure	50
	★ □ □	Heat-exchange sensor failure	50
	★ ■ □	Indoor fan motor malfunction	51
explanation	□on★flash■off	------	------

The code indication that is listed above is the main fault

7.3.2Thermistor or Related Abnormality (indoor unit)

Indoor Display

Power	timer	operate
★	■	■
★	□	□

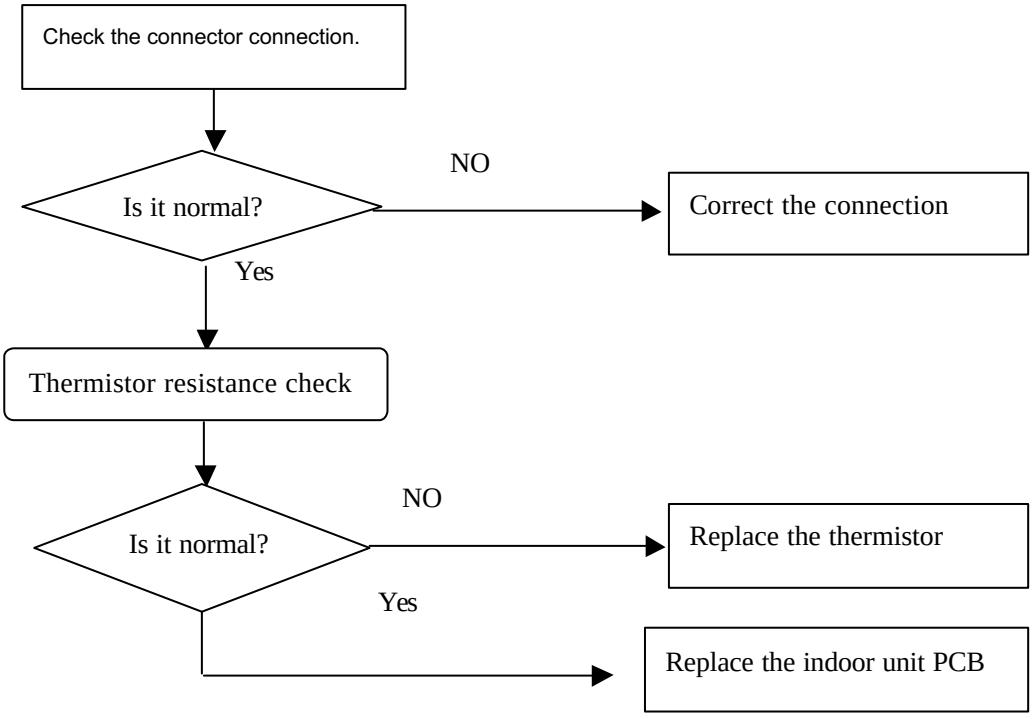
Method of Malfunction Detection: the temperatures detected by the thermistors are used to determine thermistor errors

Malfunction Decision Conditions: when the thermistor input is more than 4.92V or less than 0.08V during compressor operation.

* Note: The values vary slightly in some models。

Supposed Causes:
- ■ Faulty connector connection
- ■ Faulty thermistor
- ■ Faulty PCB

Troubleshooting * Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



notes:

Code indication			Description
Power	timer	operate	
★	■	■	Room temperature sensor failure
★	□	□	Heat-exchange sensor failure

7.3.3.Fan Motor(DC Motor) or Related Abnormality

Indoor Display

Code indication		
Power	timer	operate
★	■	□
□on	★flash	■off

Method of Malfunction Detection: The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation

Malfunction Decision Conditions: when the detected rotation feedback signal don't received in 2 minutes

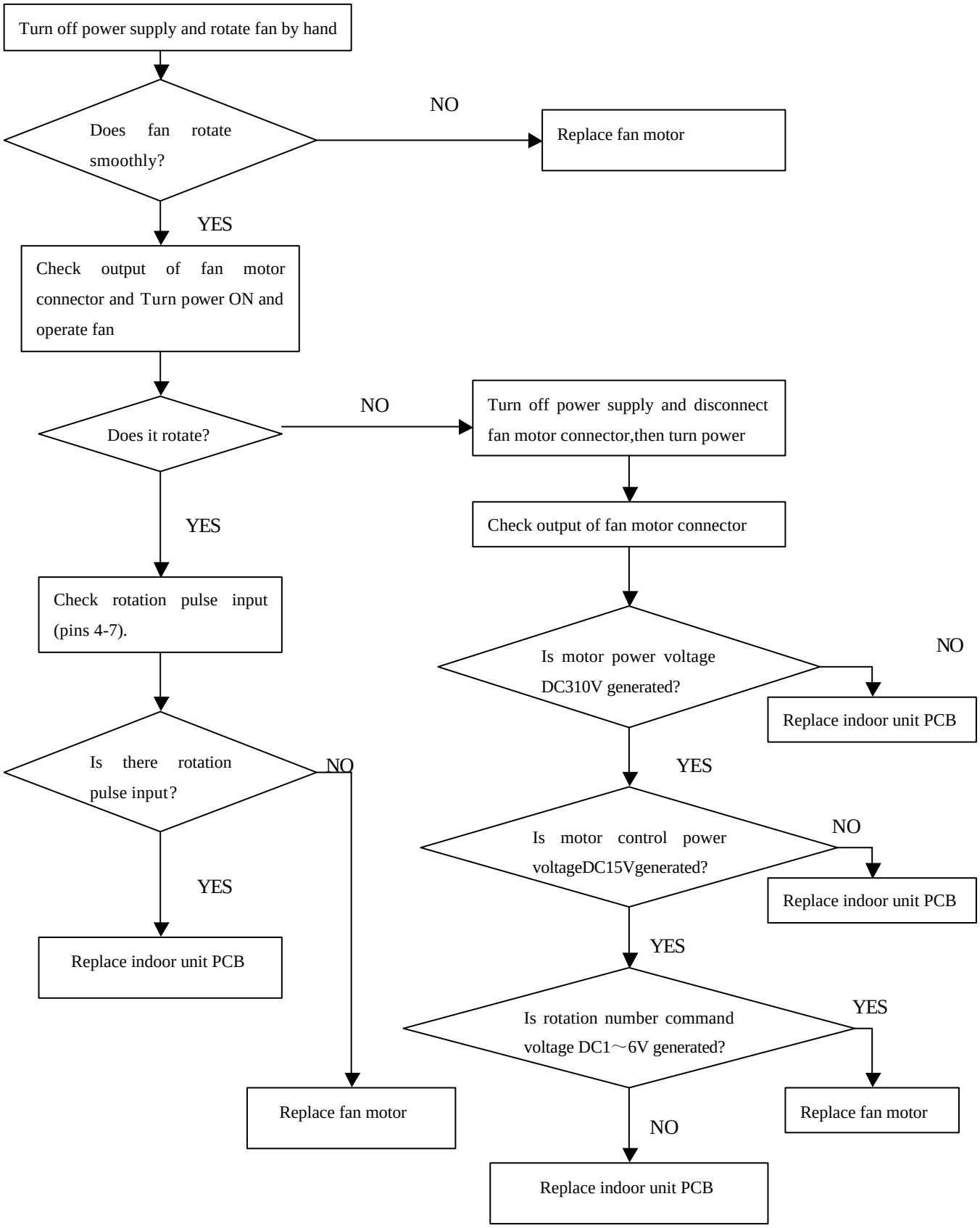
Supposed Causes:
- ■ Operation halt due to short circuit inside the fan motor winding.
- ■ Operation halt due to breaking of wire inside the fan motor .
- ■ Operation halt due to breaking of the fan motor lead wires
- ■ Detection error due to faulty indoor unit PCB

How to check Fan Motor (DC)

1. Check connector connection.
2. Check motor power supply voltage output (pins 4-7).
3. Check motor control voltage (pins 4-3).
4. Check rotation command voltage output (pins 4-2).
5. Check rotation pulse input (pins 4-1).

Notes:the a/c is electrifying,don't pull out or insert the terminals of the motor,else the motor would be damaged

Troubleshooting * Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.


Turn off power supply and rotate fan by hand
Does fan rotate smoothly?
NO
Replace fan motor
YES
Check output of fan motor connector and Turn power ON and operate fan
Does it rotate?
NO
Turn off power supply and disconnect fan motor connector,then turn power
YES
Check output of fan motor connector
Check rotation pulse input (pins 4-7).
Is motor power voltage DC310V generated?
NO
Replace indoor unit PCB
YES
Is there rotation pulse input?
NO
Is motor control power voltageDC15Vgenerated?
NO
Replace indoor unit PCB
YES
YES
Replace indoor unit PCB
Is rotation number command voltage DC1～6V generated?
YES
Replace fan motor
Replace fan motor
NO
Replace indoor unit PCB

8 Installations

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

Necessary Tools for Installation

1. Driver
2. Hacksaw
3. Hole core drill
4. Spanner (17,19 and 26 mm)
5. Torque wrench (17mm,22mm,26mm)
6. Pipe cutter
7. Flaring tool
8. Knife
9. Nipper
10. Gas leakage detector or soap-and-water solution
11. Measuring tape
12. Reamer

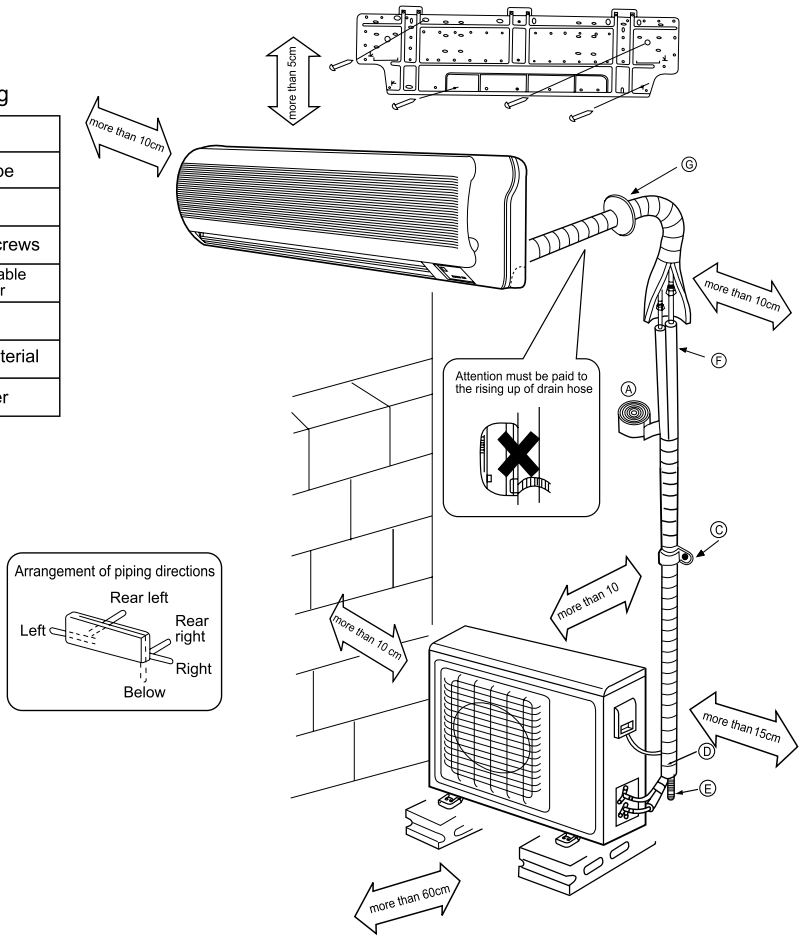
Drawing for the installation of indoor and outdoor units

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	ϕ4X50 Steel nail,cement	6
⑥	ϕ 4X25 Screw; Plastic cap	4
⑦	Drain-elbow	1
⑧	Cover	1
⑨	Cushion	4
⑩	Connecting cable	1

Optional parts for piping

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

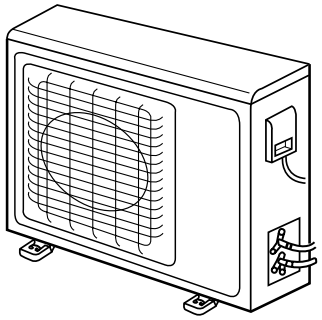


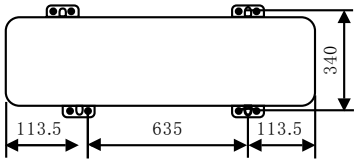
※ The marks from Ⓐ to Ⓖ in the figure are the parts' numbers

※ The distance between the indoor unit and the floor should be more than 2m.

Note:On cooling only unit, Drain-elbow is not available.

No.0010554542





Floor fixing dimensions of the outdoor unit (Unit:mm)

Fixing of outdoor unit

- Fix the unit to concrete or block with bolts (ϕ10mm) 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.

Selection of Installation Place

Indoor 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 more than 1m from televisions, radios, wireless apparatuses and fluorescent lamps can be left.
- In the 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.

Outdoor Unit

- 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 ⇔ is available as illustrated in the above figure.

Power Source

- Before 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 in a distance where the power cable can be reached. Do not extend the cable 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 insulation material.

Liquid pipe (ϕ)	9.52mm(3/8")
Gas pipe (ϕ)	15.88mm(5/8")

Indoor Unit

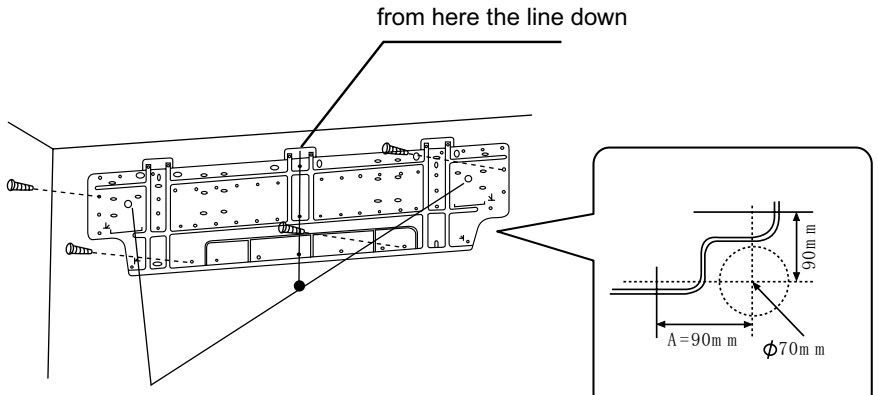
1 Fitting of the Mounting Plate and Positioning of the Wall Hole

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.



Holes for fixing the mounting plate

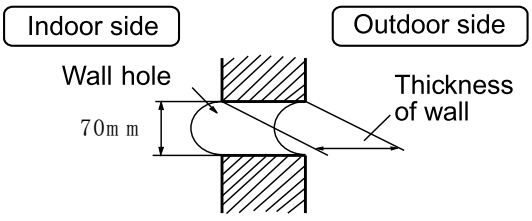
Fit the level line

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 70mm in diameter, slightly descending to outside the wall.
- Install piping hole cover and seal it off with putty after installation.



(Section of wall hole) Ⓖ Piping hole pipe

Indoor Unit

3 Installation of the Indoor Unit

Drawing of pipe

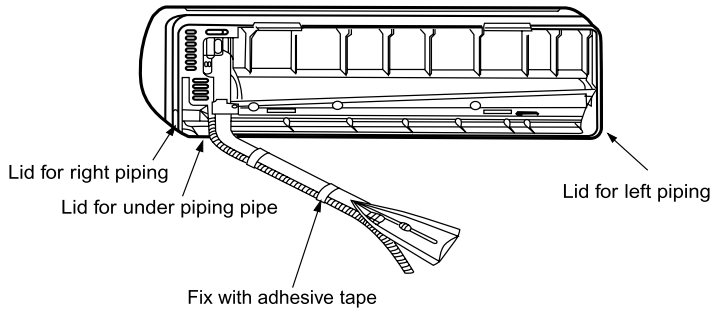
[Rear piping]

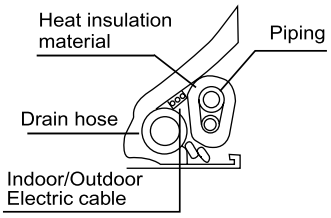
- Draw pipes and the drain hose, then fasten them with the adhesive tape.

[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 cable 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.





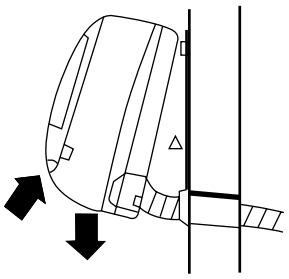
- Indoor/outdoor electric cable and drain hose must be bound with refrigerant piping by protecting tape.

[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

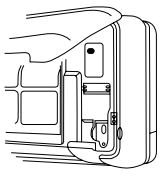
- Hang surely the unit body onto the upper notches of the mounting plate. Move the body from side to side toverify its secure fixing.
- In order to fix the body onto the mounting plate,hold up the body aslant from the underside and then put it down perpendicularly.



4 Connecting the indoor/outdoor Electric Cable

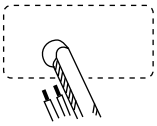
Removing the wiring cover

- Remove terminal cover at right bottom corner of indoor unit, then take off wiring cover by removing its screws.



When connecting the cable after installing the indoor unit

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



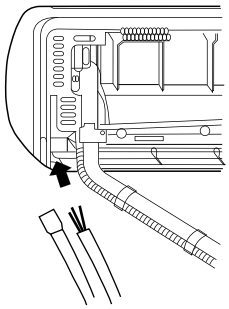
Indoor Unit

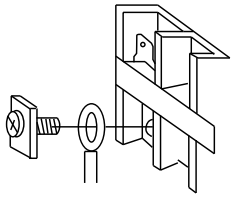
When connecting the cable before installing the indoor unit

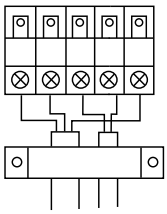
- Insert the cable from the back side of the unit, then pull it out on the front side.
- Loosen the screws and insert the cable ends fully into terminal block, then tighten the screws.
- Pull the cable slightly to make sure the cables have been properly inserted and tightened.
- After the cable connection, never fail to fasten the connected cable with the wiring cover.

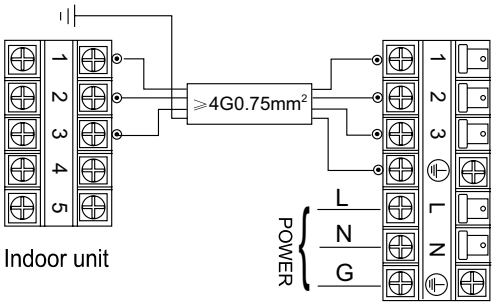
Note: When connecting the cable, confirm the terminal number of indoor and outdoor units carefully. If wiring is not correct, proper operation can not be carried out and will cause defect.

1. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similar qualified person. The type of connecting wire is H05/07RN-F.
2. If the fuse on PC board is broken please change it with the type of T.3.15A/250V.
3. The wiring method should be in line with the local wiring standard.
4. After installation, the power plug should be easily reached.

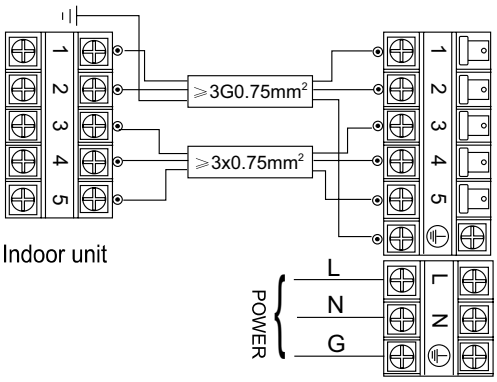








Cooling only unit Outdoor unit



Heating unit Outdoor unit

Power cable:⩾3G2.0mm²

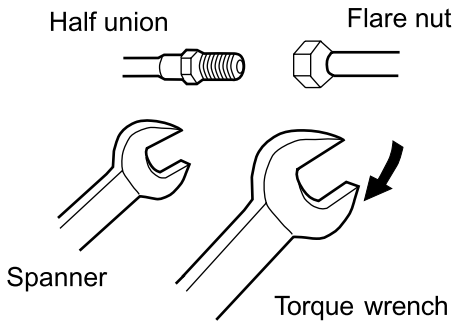
Outdoor Unit

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.

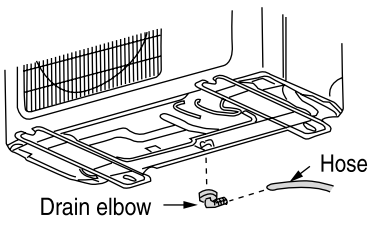
Pipe Diameter (ϕ)	Fastening Torque
Liquid Side 9.52mm(3/8")	42N.m
Gas Side 15.88mm(5/8")	60N.m

3 Connection

- Use the same method on indoor unit. Loosen the screws on terminal block and insert the plugs fully into terminal block, then tighten the screws.
- Insert the cable according to terminal number in the same manner as the indoor unit.
- If wiring is not correct, proper operation can not be carried out and controller may be damaged.
- Fix the cable with a clamp.

4 Attaching Drain-Elbow

- If the drain-elbow is used, please attach it as figure.



Outdoor Unit

5 Purging Method:

Push the air out of the indoor unit and piping as followes:

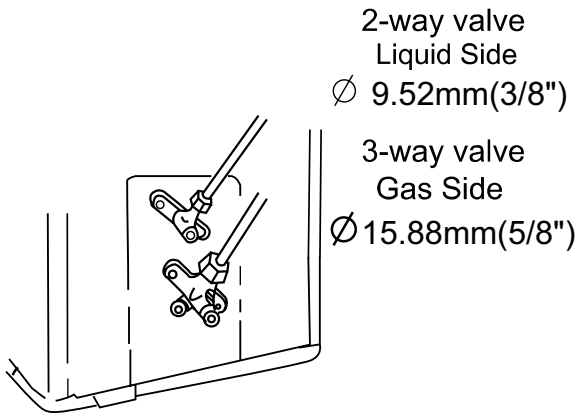
(1) Remove the valve cap on 2-way valve in outdooor unit.

(2) Loosen by 1/2 turn the flare nut of gas pipe, which is connected to 3-way valve.

(3) Loosen 2-way valve by 90° using hexagon wrench, and after approx. 6 sec tighten it up. Gas comes out through flare nut on wide pipe. If no gas is discharged, tighten flare nut with specified torque.

(4) Open 2-way and 3-way valves using specified torque.

(5) Tighten the caps on the valves with specified torque.



	Tighten torque N.m
Valve rod	7-9
Valve cap	20-25

- When connecting pipe exceeds 5 meters, 16g refrigerant shall be added per exceeding meter. Charge according to the following list.

Piping length	5m	7m	10m
Additional amount	No need	32g	80g

- Note: When extending pipng, air inside piping shall be removed by using external refrigerant gas, then discharge excess refrigerant by air purging.

  Brand new outdoor unit is charged 50g more refrigerant than regulated weight. Only for first installation, this extra 50g can be used to purge air in the pipes.

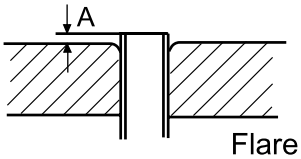
★ 1 During this procedure, 50g refrigerant will be discharged in piping. (This must be strictly controlled within 90° and 6 sec.)

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.

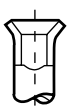
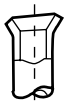
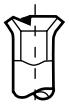
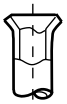
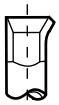
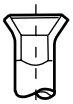
2 Cutting and Flaring Work of Piping

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



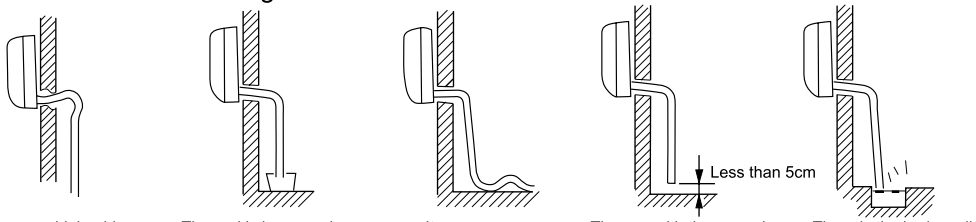
Flare tooling die

	Pipe diameter φ	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 donít do the drainage as shown below.



It becomes high midway. The end is immersed in water. It waves. The gap with the ground is too small. There is the bad smell from a ditch.

- 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 the instruction manual.

Check Items for Test Run

☐ Put check mark ✓ in boxes

☐ Gas leak from pipe connecting?
☐ Heat insulation of pipe connecting?
☐ Are the connecting wirings of indoor and outdoor firmly inserted to the terminal block?
☐ Is the connecting wiring of indoor and outdoor firmly fixed?
☐ Is drainage securely carried out?
☐ Is the earth line securely connected?
☐ Is the indoor unit securely fixed?
☐ Is power source voltage abided by the code?
☐ Is there any noise?
☐ Is the lamp normally lighting?
☐ Are cooling and heating (when in heat pump) performed normally?
☐ Is the operation of room temperature regulator normal?

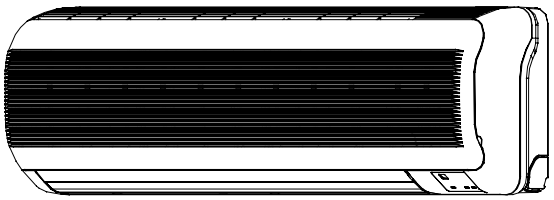
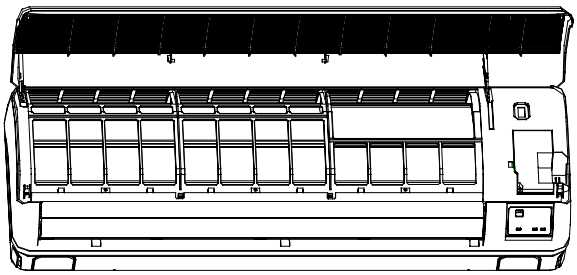
9. Removal Procedure

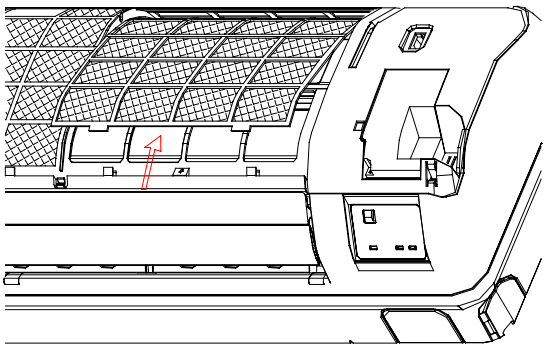
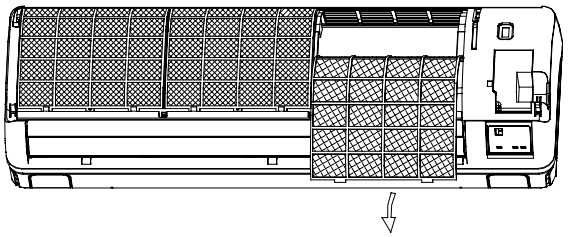
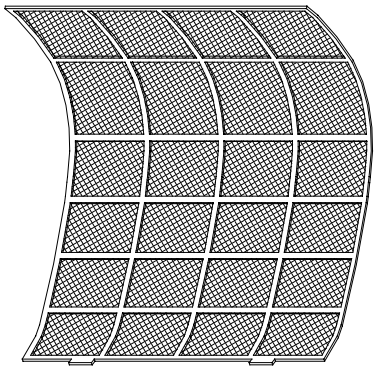
Indoor unit

9.1 Removal of Air Filter

Procedure

Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

Step	Procedure	Points
1. Features		
2. Remove the air filters.		
1 Hold the front panel by the tabs on the both sides and lift it until it stops with a click.		

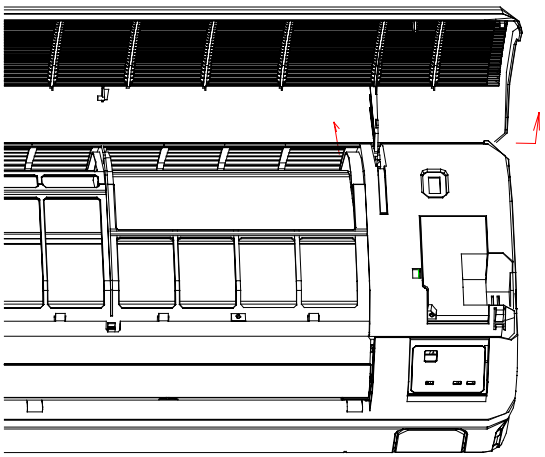
Step	Procedure		Points
2	Lift an air filter upwards slightly and then pull it out downwards.	  	■ Insert the air filters along grooves when installing. ■ When installing, insert 2 hooks of the air filter completely.

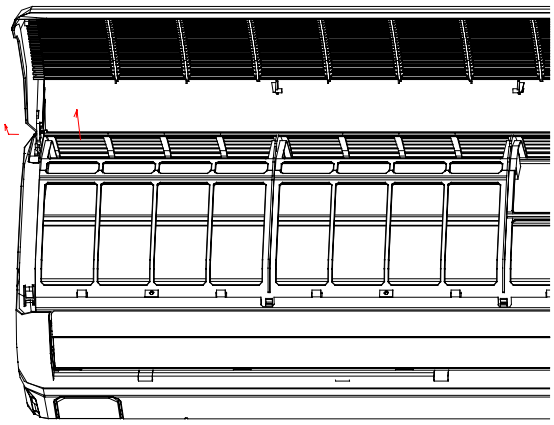
9.2 Removal of Front Grille

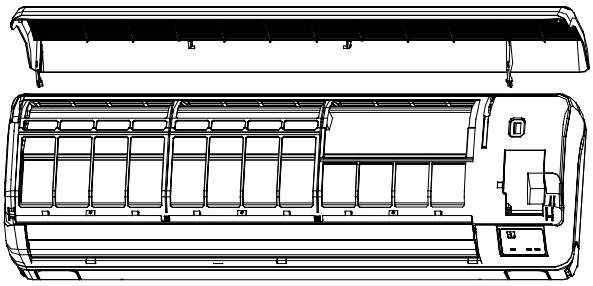
Procedure

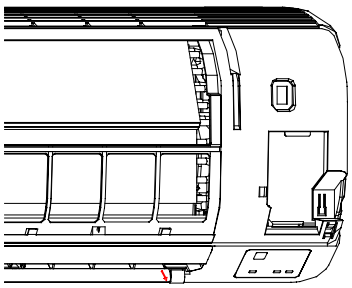
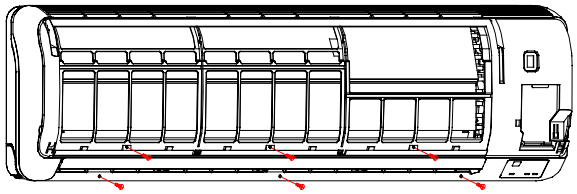
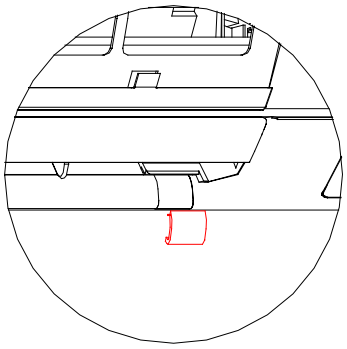
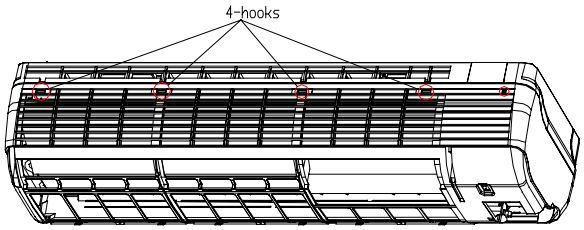
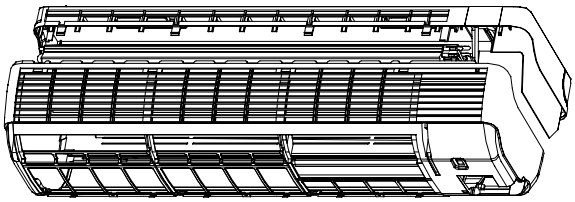
Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

Step	Procedure	Points
1. Remove the front panel.		
1	Open the front panel to the horizontal position. Release the both sides pivots and remove the front panel.	■ Start the removal procedure of front grille when the panels are closed. ■ Slide the front panel side to side to release each axis. ■ When assembling, align the right and left axes with grooves in turn and insert them to the end.





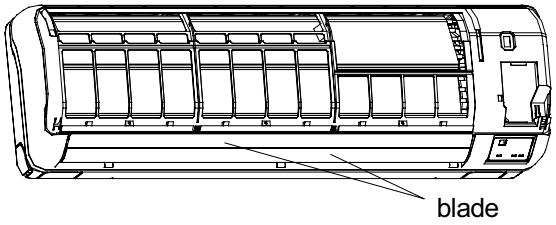
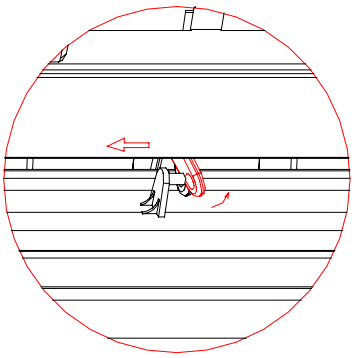
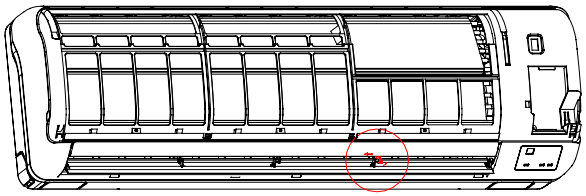
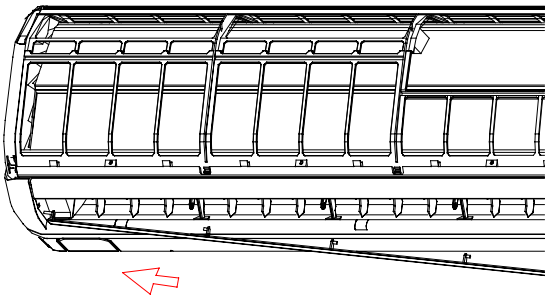
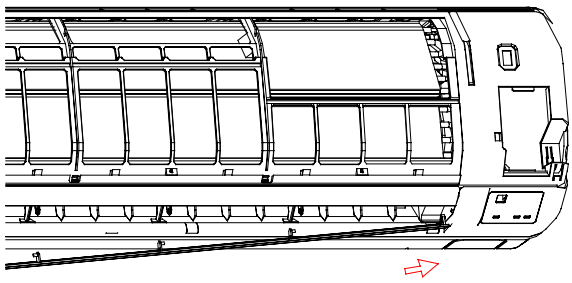


Step	Procedure	Points
2	Loosen the marked four screws	  
3	Release the marked four hooks.	
4	Pull the front grille out horizontally and remove it.	 ■ When assembling, install the front grille horizontally so as not to stuff the flap inside. ■ When assembling, make sure the three hooks are caught properly.

9.3 Removal of Horizontal Blade

Procedure

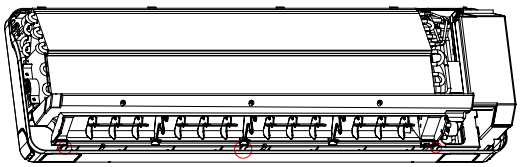
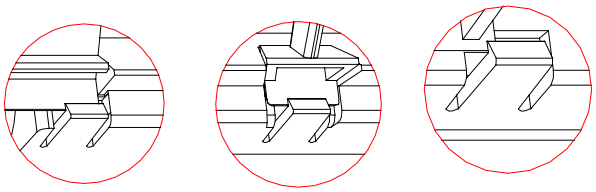
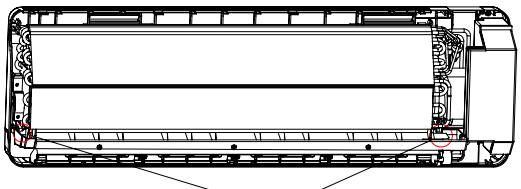
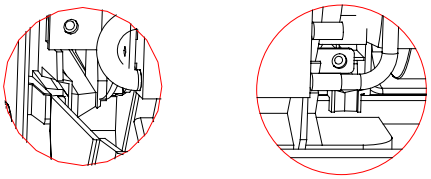
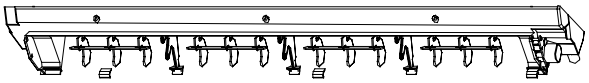
Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

Step	Procedure	Points
1. Remove the horizontal blade.		■ The horizontal blade is single.
1 Release the center pivot.		
		■ Installation procedure 1. Since key pattern hook is provided, rotate the blade and fit it to the left pivot first. 2. Fit the blade to the right pivot. 3. Fit the blade to the center pivot.
		
2 Bend the horizontal blade slightly and remove it.		

9.4 Removal of Drain pan

Procedure

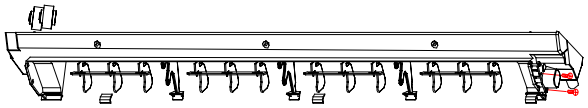
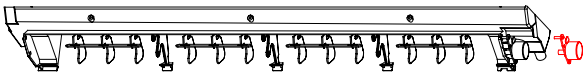
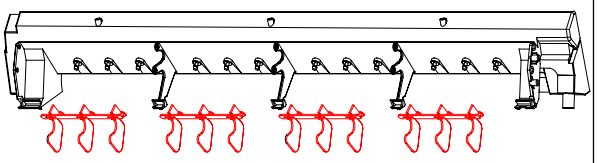
Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

Step	Procedure	Points
■ Remove the front grille. ■ Remove the assembly of the reduction motor.		
1. Remove the Drain pan.		
1 Loosen the marked screws under the screw covers		
2 Loosen the marked hooks	 	
3 Lift up and remove the drain pan.		

9.5 Removal of Vertical Blades and Swing Motor

Procedure

Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

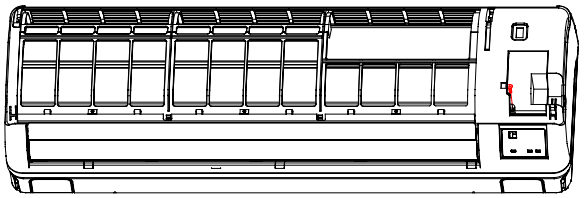
Step	Procedure		Points
1	Loosen the marked screws		
			
2	Push the hooks on the back of the vertical blades and remove.		
			

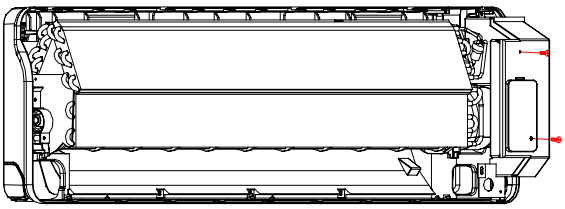
9.6 Removal of Electrical Box

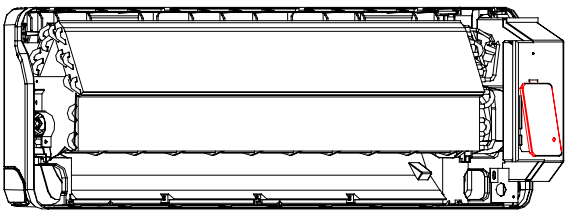
Procedure

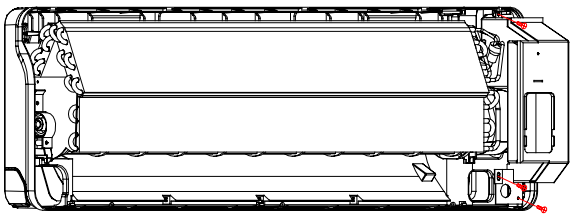
Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

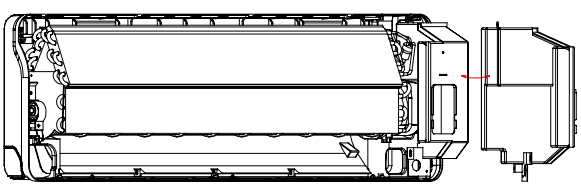
Step	Procedure	Points
■ Remove the front grille.		■ Discharge the static electricity from your body before touching the electrical parts like signal receiver PCB. It may cause malfunction of PCB.
1. Remove the electrical box.		
1	Loosen the screw of the drip proof plate.	
2	Lift and remove the drip proof plate.	

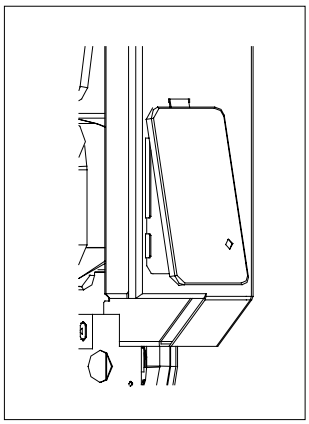








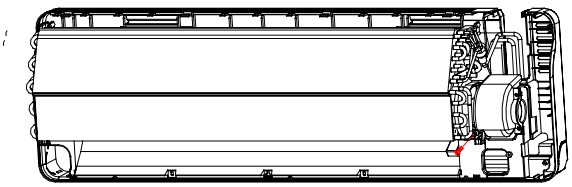
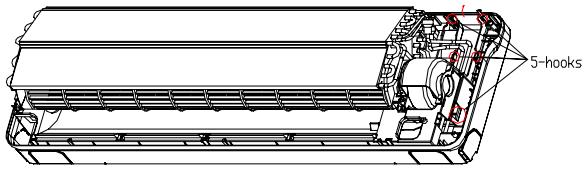
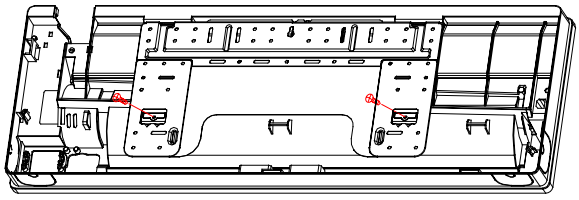
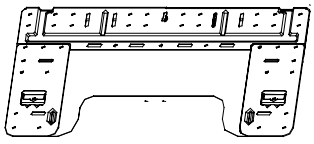
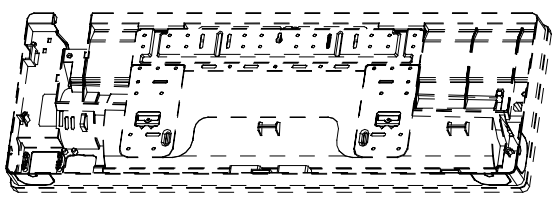


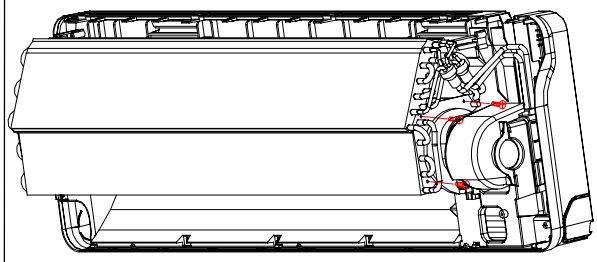
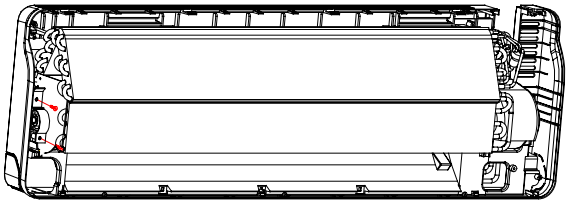
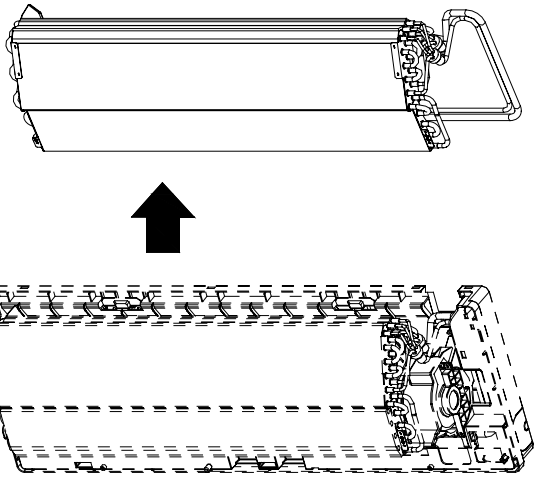


9.7 Removal of Heat Exchanger

Procedure

Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

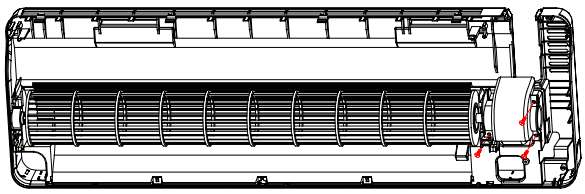
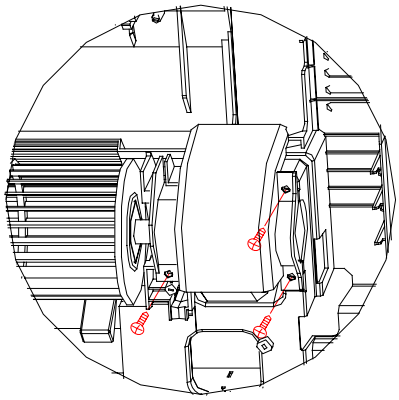
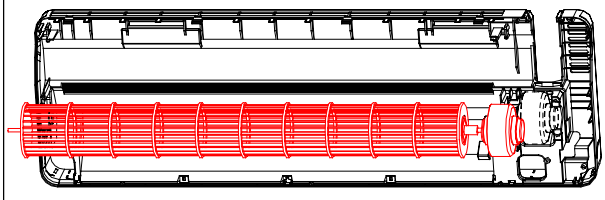
Step	Procedure	Points
		■ You can detach the indoor unit without removing the assembly of the outlet grille.
1	Loosen the screws fixed to the installation plate.	Caution If gas leaks, repair the spot of leaking, then collect all refrigerant from the unit. After conducting vacuum drying, recharge proper amount of refrigerant.
2	Loosen the marked hooks	 Caution Do not contaminate any gas (including air) other than the specified refrigerant (R410A), into refrigerant cycle. (Contaminating of air or other gas causes abnormal high pressure in refrigerating cycle, and this results in pipe breakage or personal injuries.)
3	Loosen the marked screws and remove mounting plate	   ■ Pay attention so that the residual water in the drain will not make the floor wet. ■ In case that a drain hose is buried inside a wall, remove it after the drain hose in the wall is pulled out. ■ Use two wrenches to disconnect pipes. ■ When disconnecting pipes, cover every nozzle with caps so as not to let dust and moisture in.

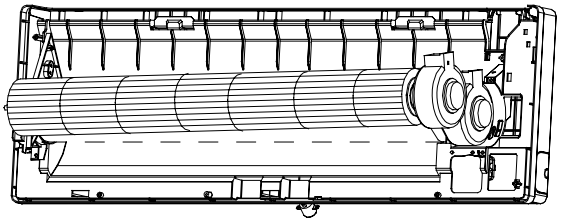
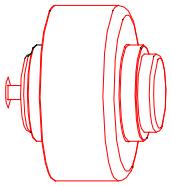
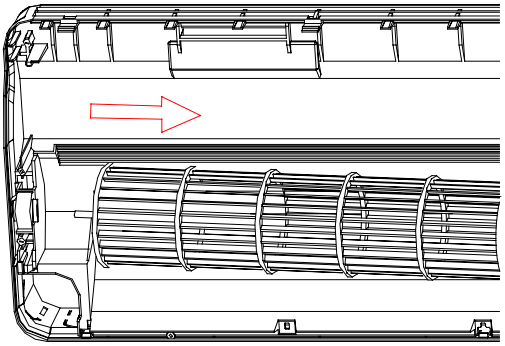
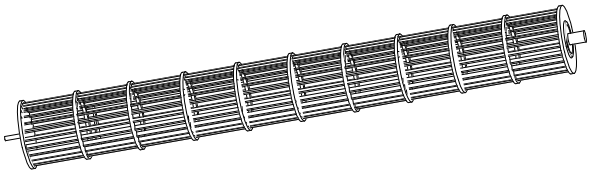
Step	Procedure	Points
1	Release the screws  	
2	Remove the heat exchanger 	

9.8 Removal of Fan and fan motor

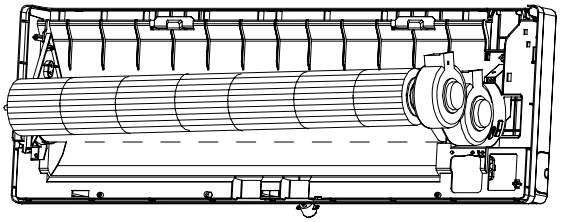
Procedure

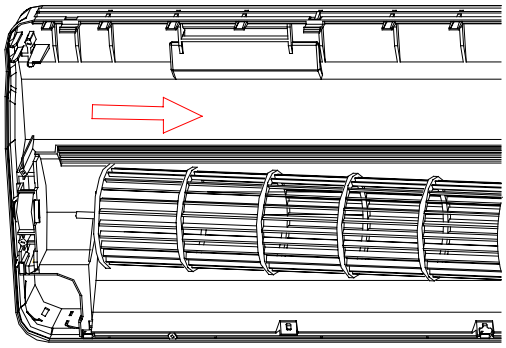
Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

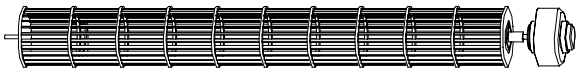
Step	Procedure		Points
1	Loosen the 2 screws.	 	
2	Remove the right side plate.		

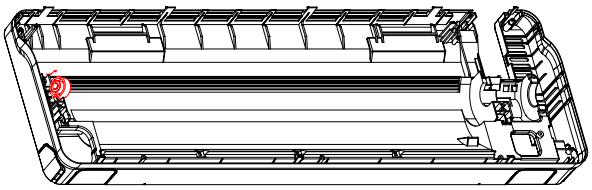
Step	Procedure	Points
3. Remove the bearing.		
1 Lift up the right part of the fan rotor and motor, and slide them to the rightward to remove.	   	

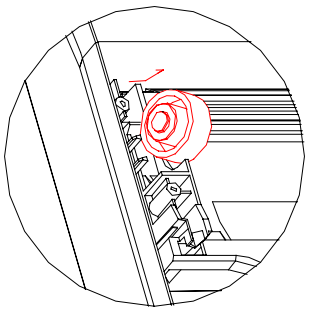
Step	Procedure	Points
3. Remove the bearing.		
1	Lift up the right part of the fan rotor and motor, and slide them to the rightward to remove.	









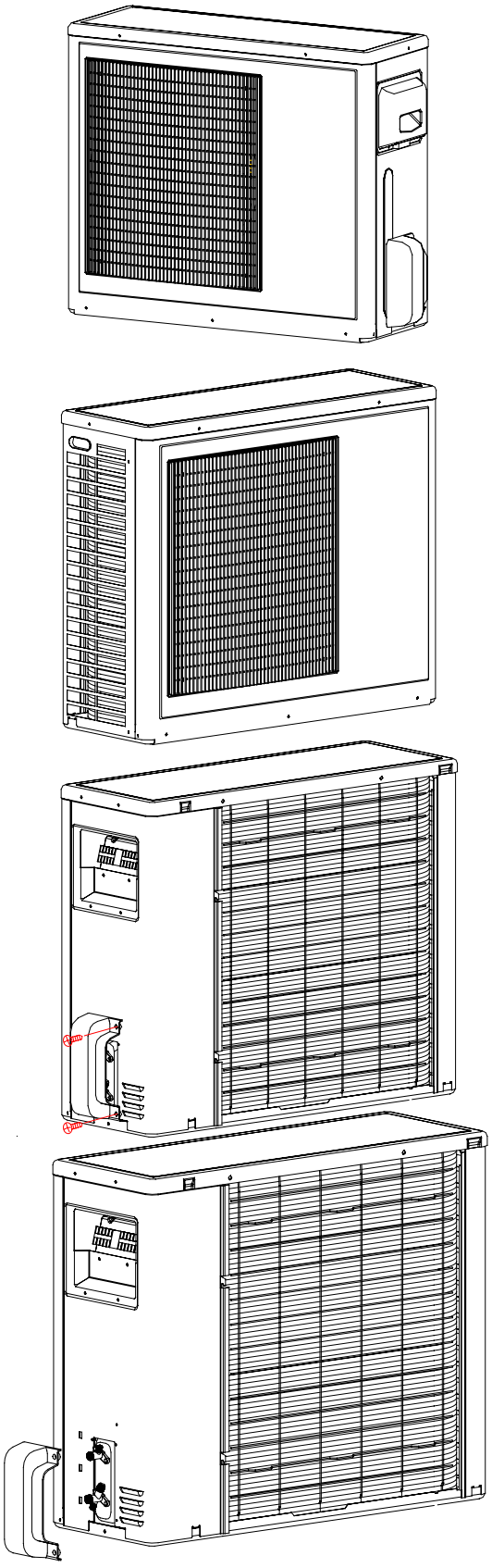


Outdoor unit

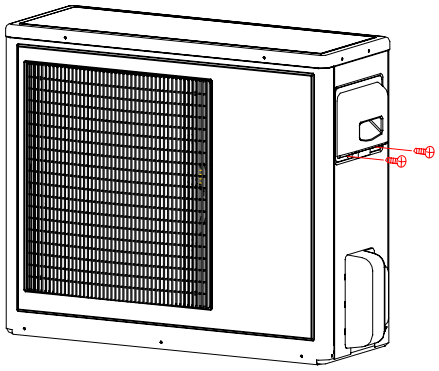
9.9 Removal of Outdoor panel

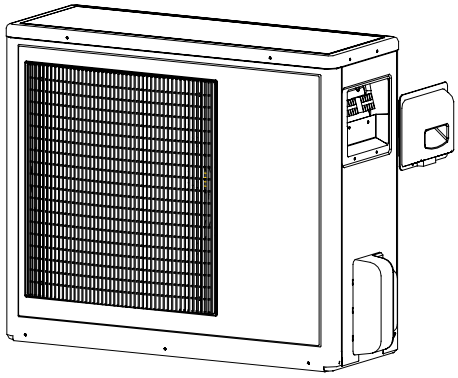
Procedure

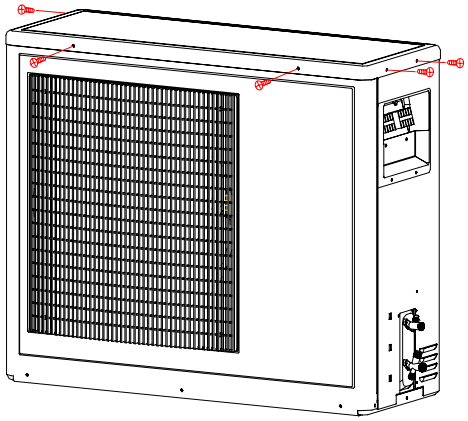
Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

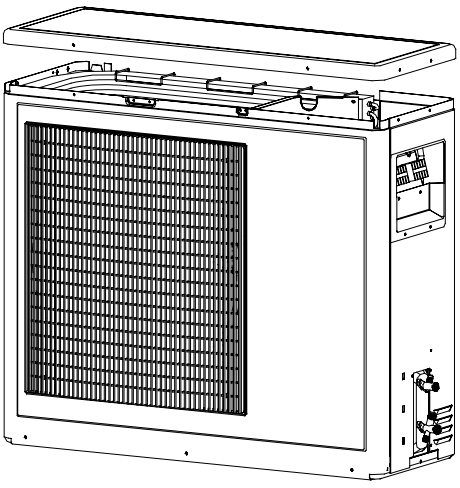
Step	Procedure	Points
1. Features		
1	Loosen the screw of the stop valve cover. Pull down the stop valve cover and remove it.	■ Be careful not to cut your finger by the fins of the heat exchanger. ■ The stop valve cover is united with the shelter. ■ When assembling, make sure to fit the 5 hooks.

Step	Procedure	Points
2. Remove the panels.		
1	Loosen the service cover screw and remove the service cover.	
2	Loosen the 4 screws and lift the top panel	

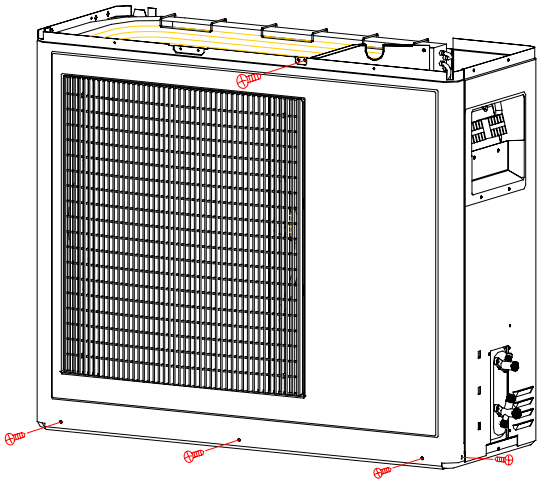


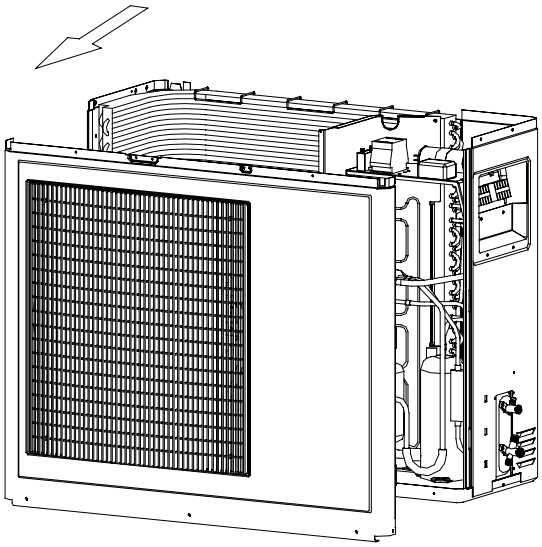


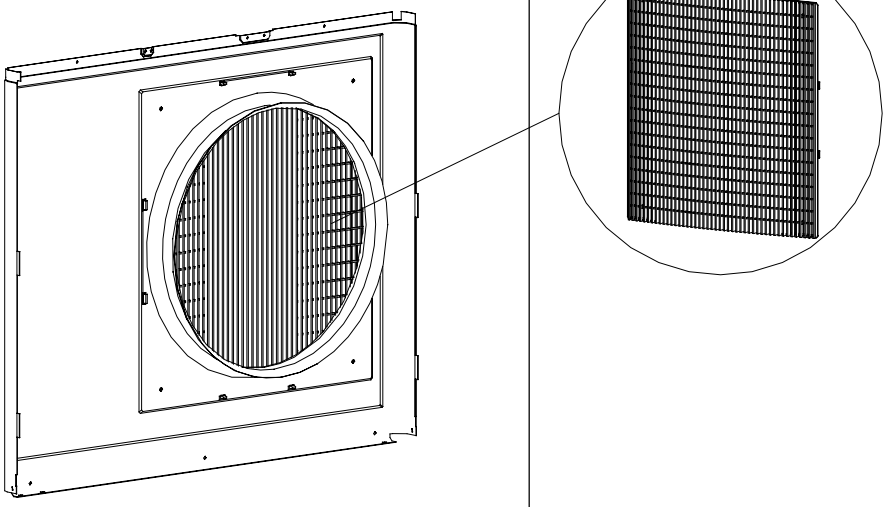




Step	Procedure	Points
3	Loosen the screws of the panel.	
4	Pull off the front panel	





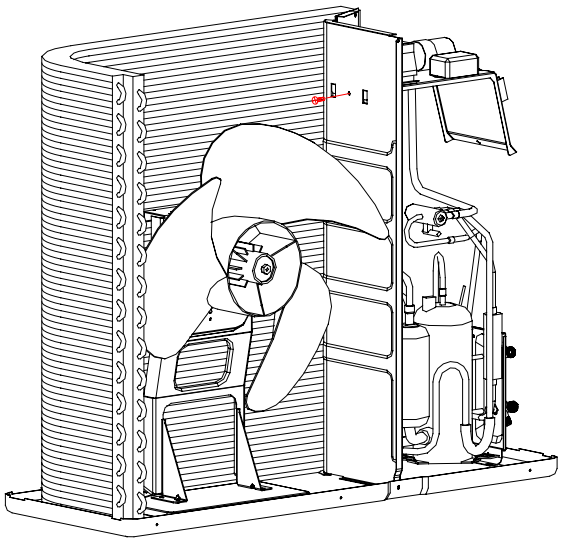


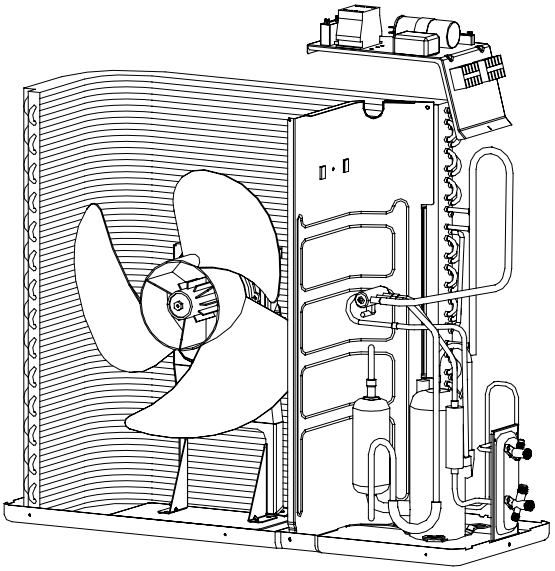
9.10 Removal of Electrical Box

Procedure

Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

Step	Procedure	Points
1	Remove the fixing screws Then lift the electrical box	

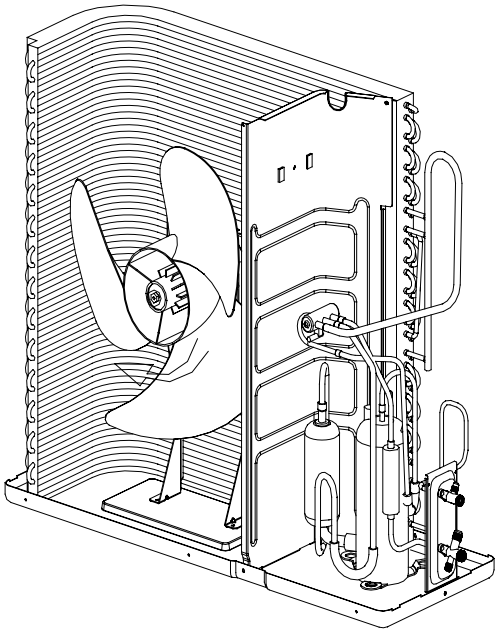
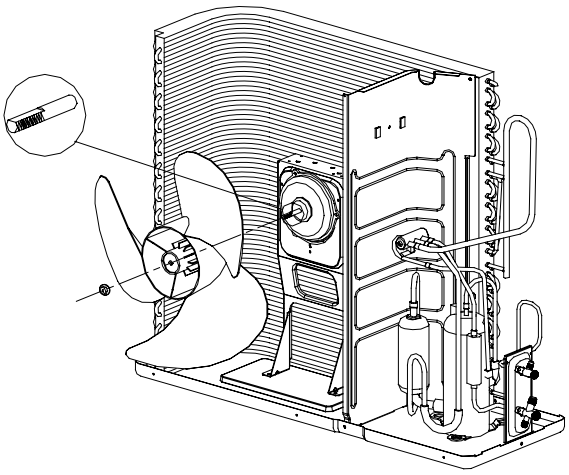
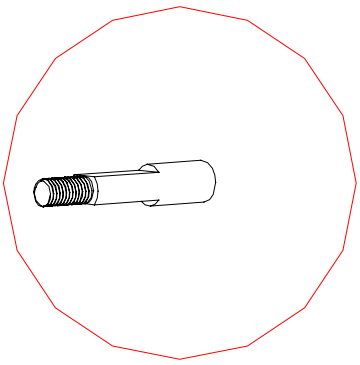




9.11 Removal of Fan Rotor and Fan Motor

Procedure

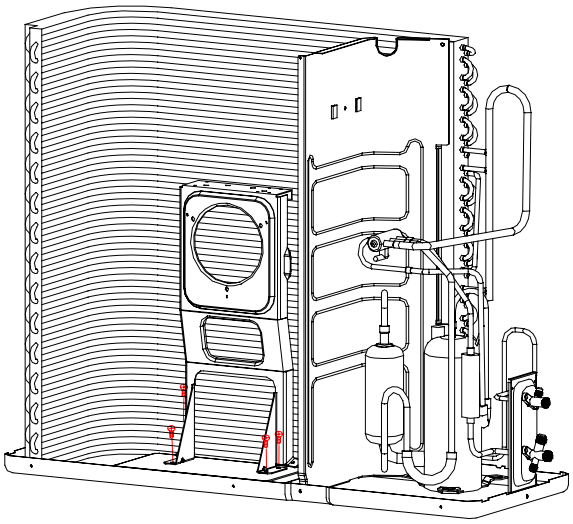
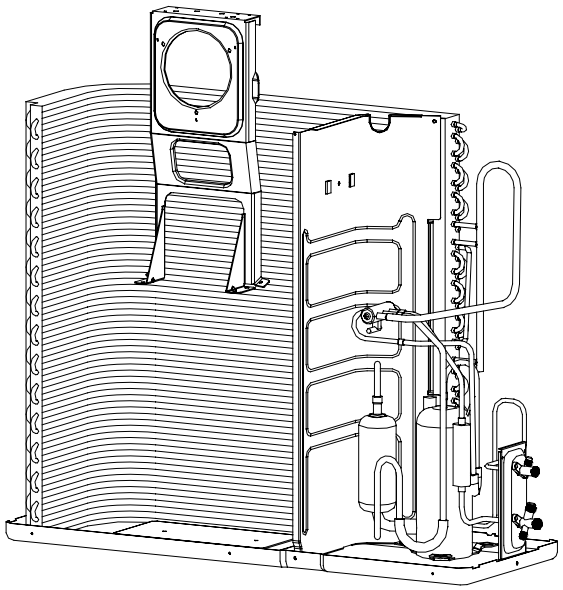
Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

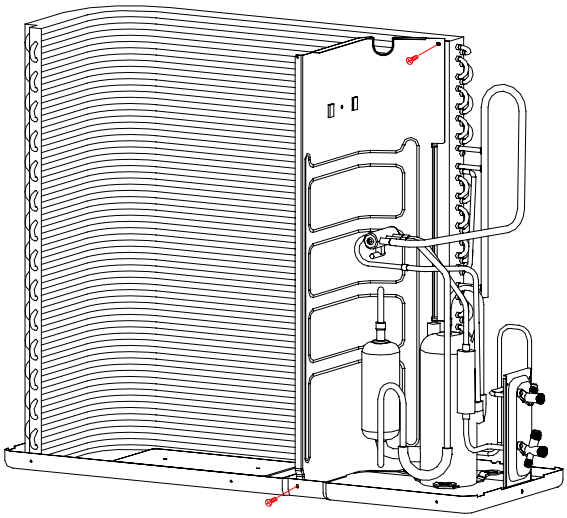
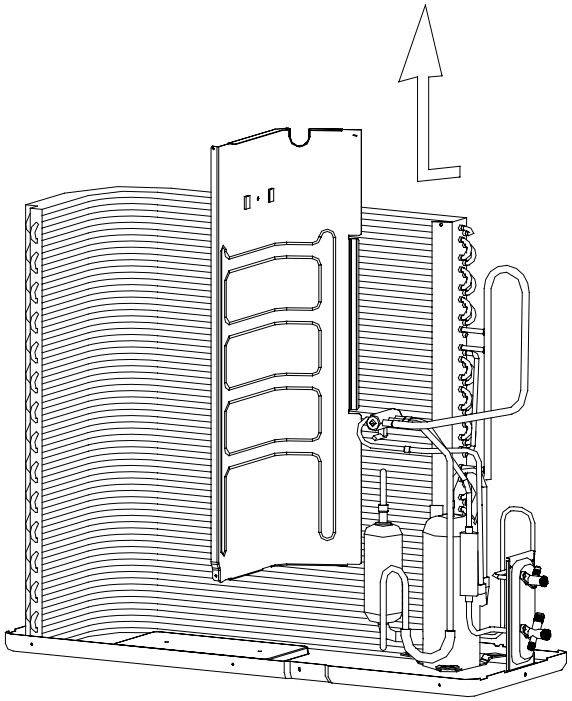
Step	Procedure		Points
1	Loosen the fixing screw and remove the fan	 	 ■ Put the lead wire through the back of the motor when assembling. (so as not to be entangled with the propeller fan)

9.12 Removal of fan motor bracket and partition

Procedure

Warning Be sure to wait 10 minutes or mo before disassembling work.

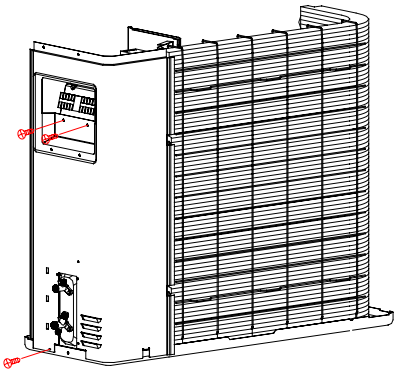
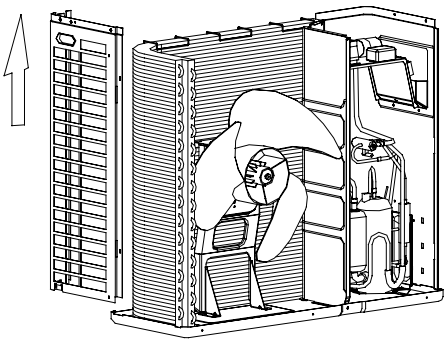
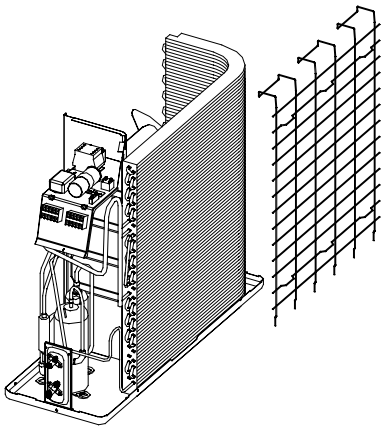
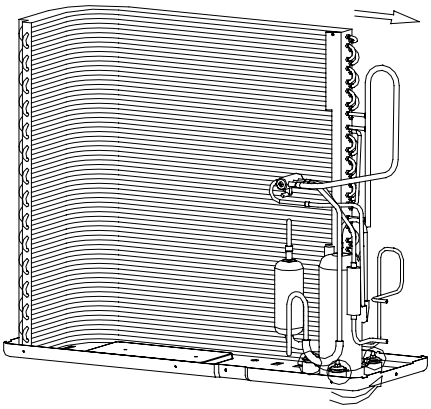
Step	Procedure	Points
1	Loosen the fixing screws and lift the fan motor bracket.  	

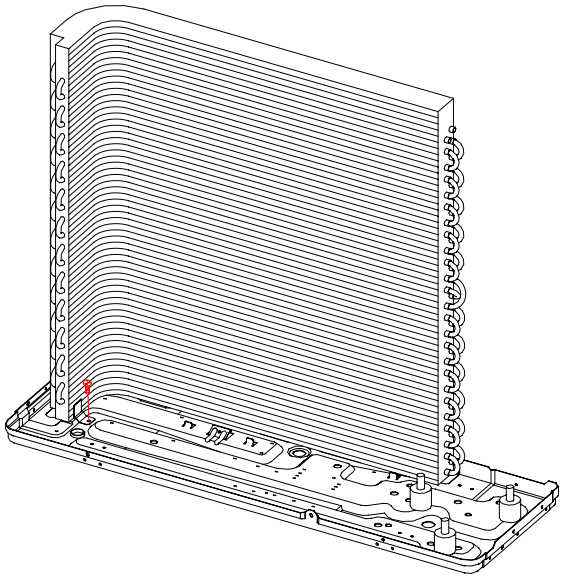
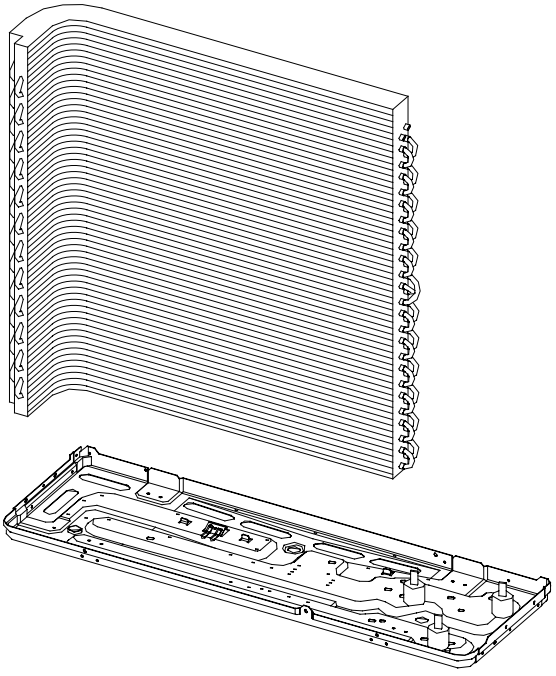
Step	Procedure		Points
3	Loosen the 2 screws		
4	The partition plate has a hook on the lower side.Lift and pull the partition plate to remove.		■ When assembling ,fit the lower hook into the bottom frame .

9.13 Removal of compressor and heat exchanger

Procedure

Warning Be sure to wait 10 minutes or more after tu
before disassembling work.

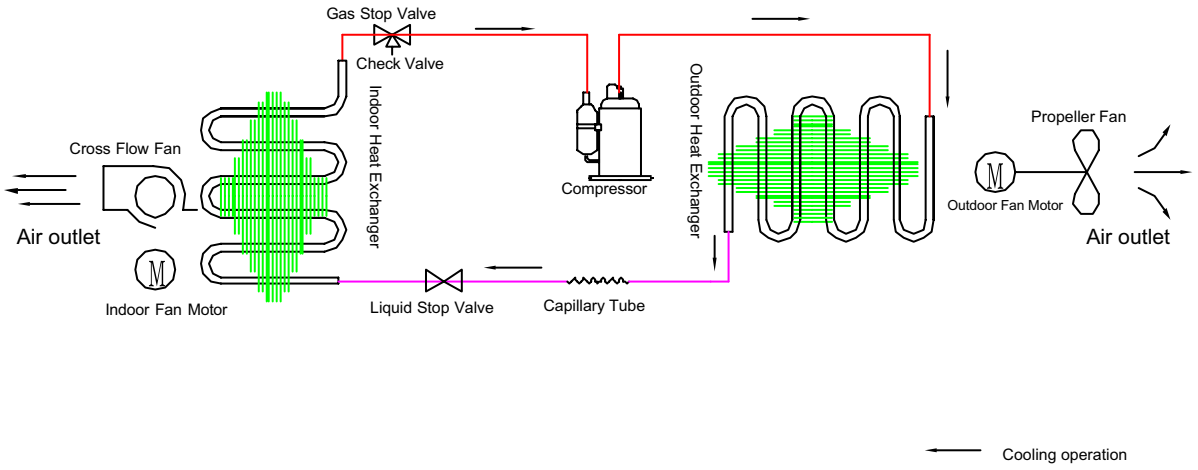
Step	Procedure	Points
1	Loosen the marked screw . 	
2	Cut down the conecting pipe and pull out the compressor and remove the valve bracket .   	

Step	Procedure	Points
3	Loosen the marked fixing screw . 	
4	Loosen the fixing hook and remove the heat exchanger . 	

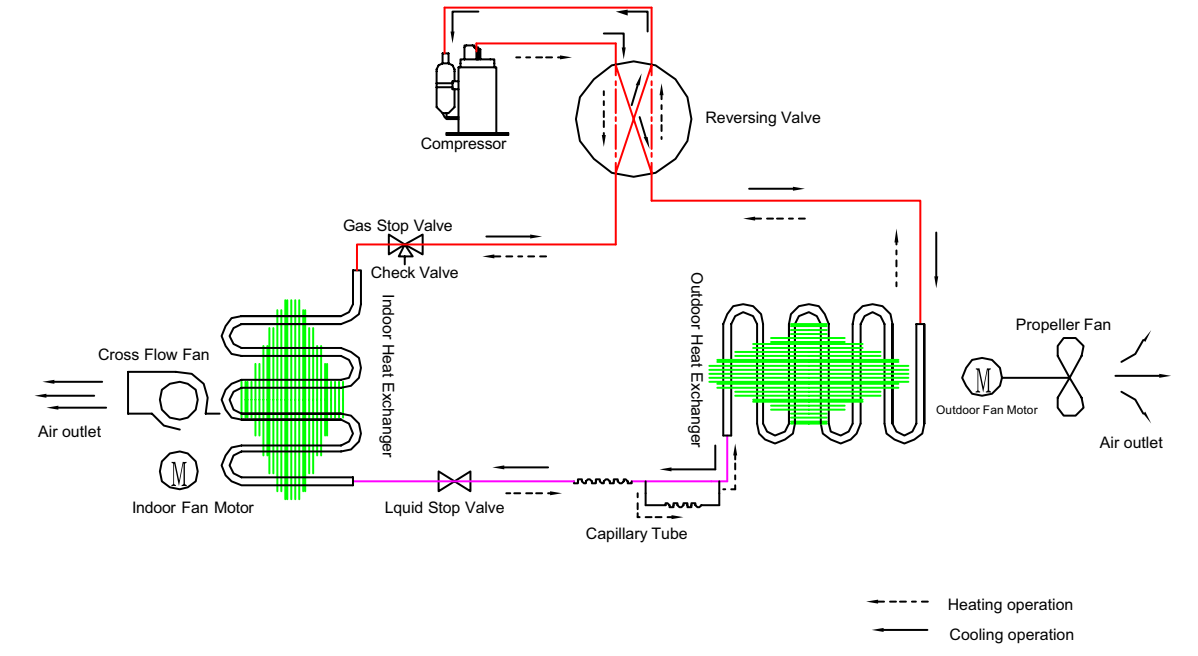
10. Appendix

10.1 Piping Diagrams

HSU-24C03

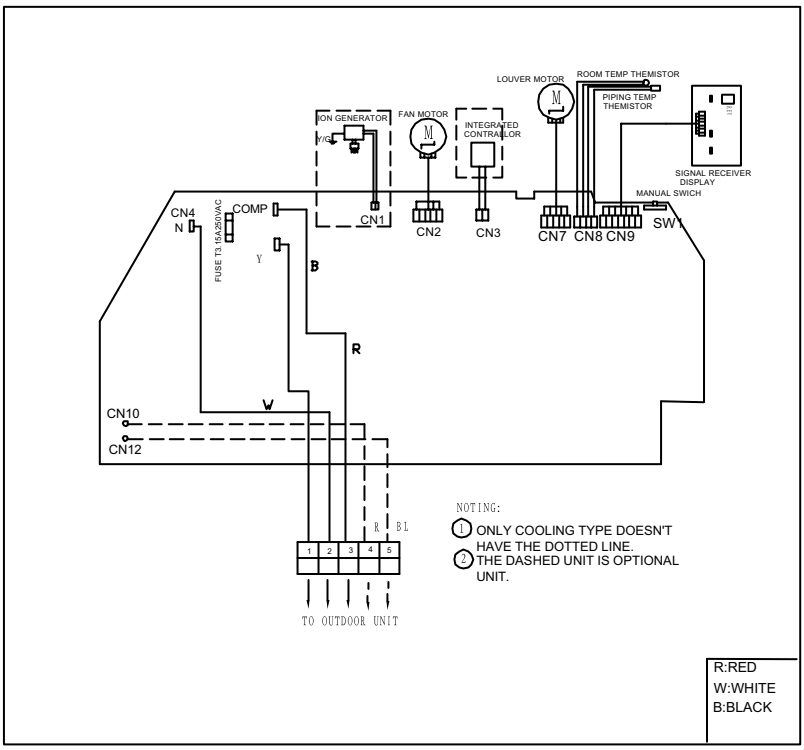


HSU-24H03

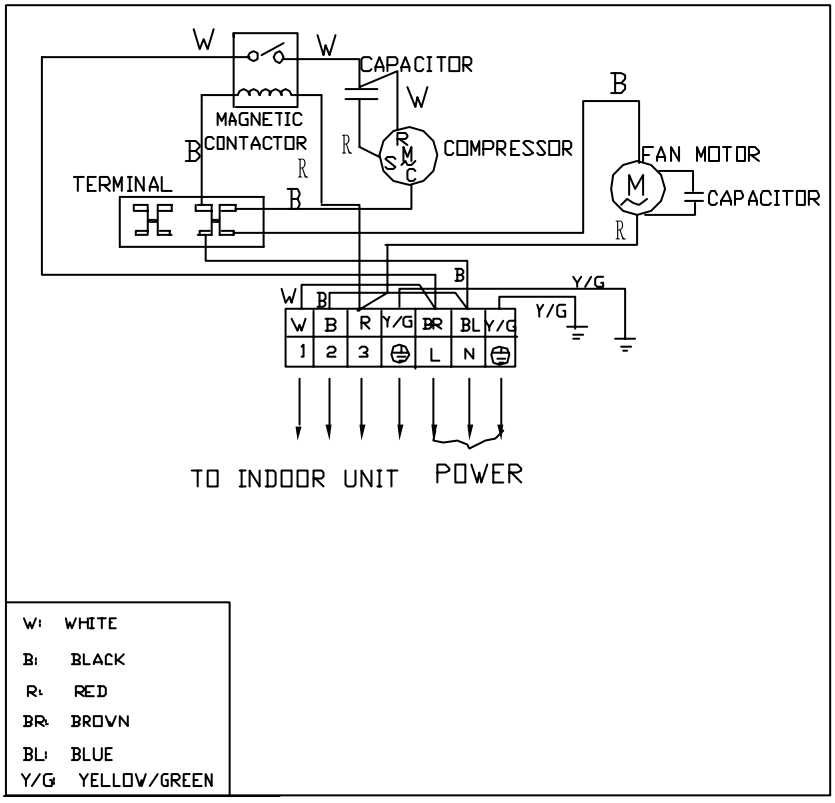


10.2 Wiring Diagrams

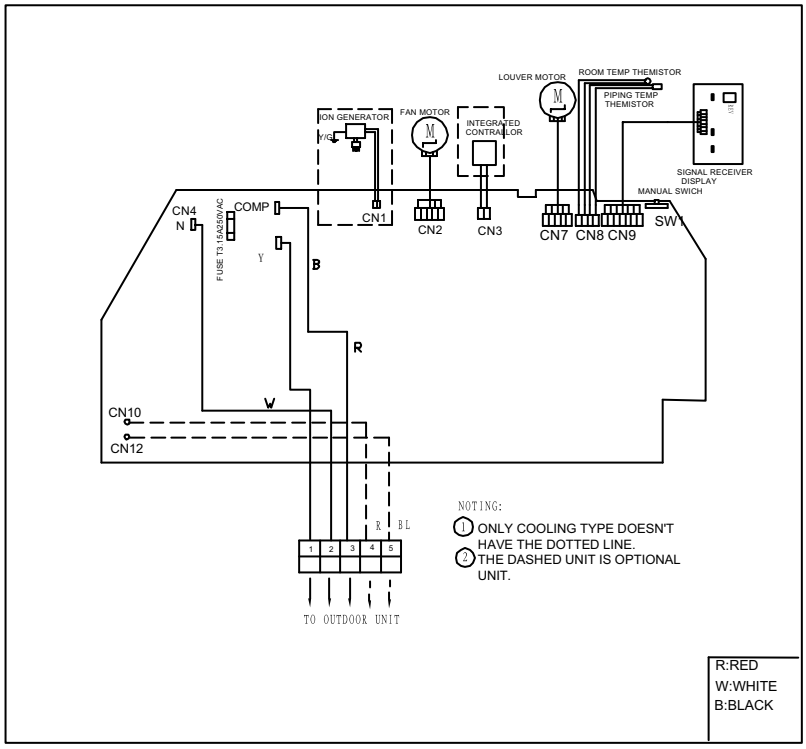
HSU-24C03/Z Indoor unit



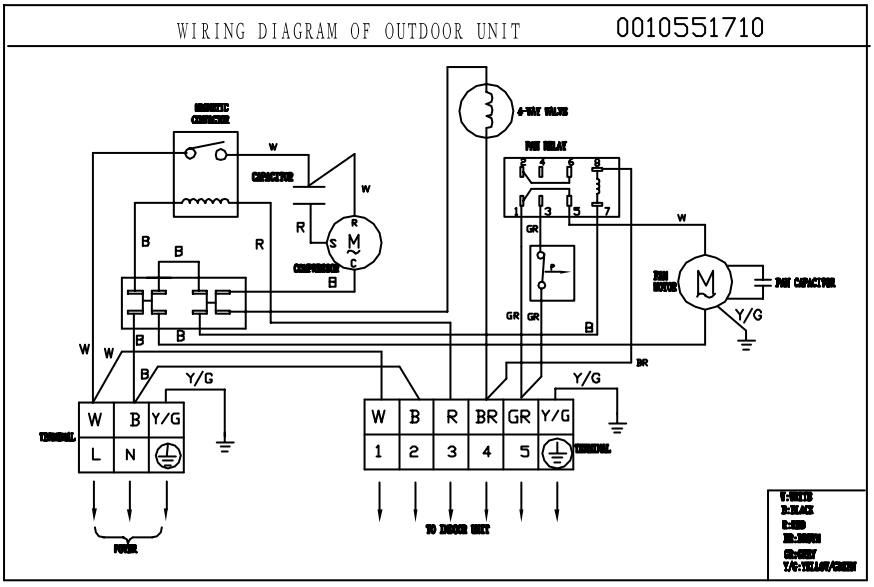
HSU-24C03/Z Outdoor unit



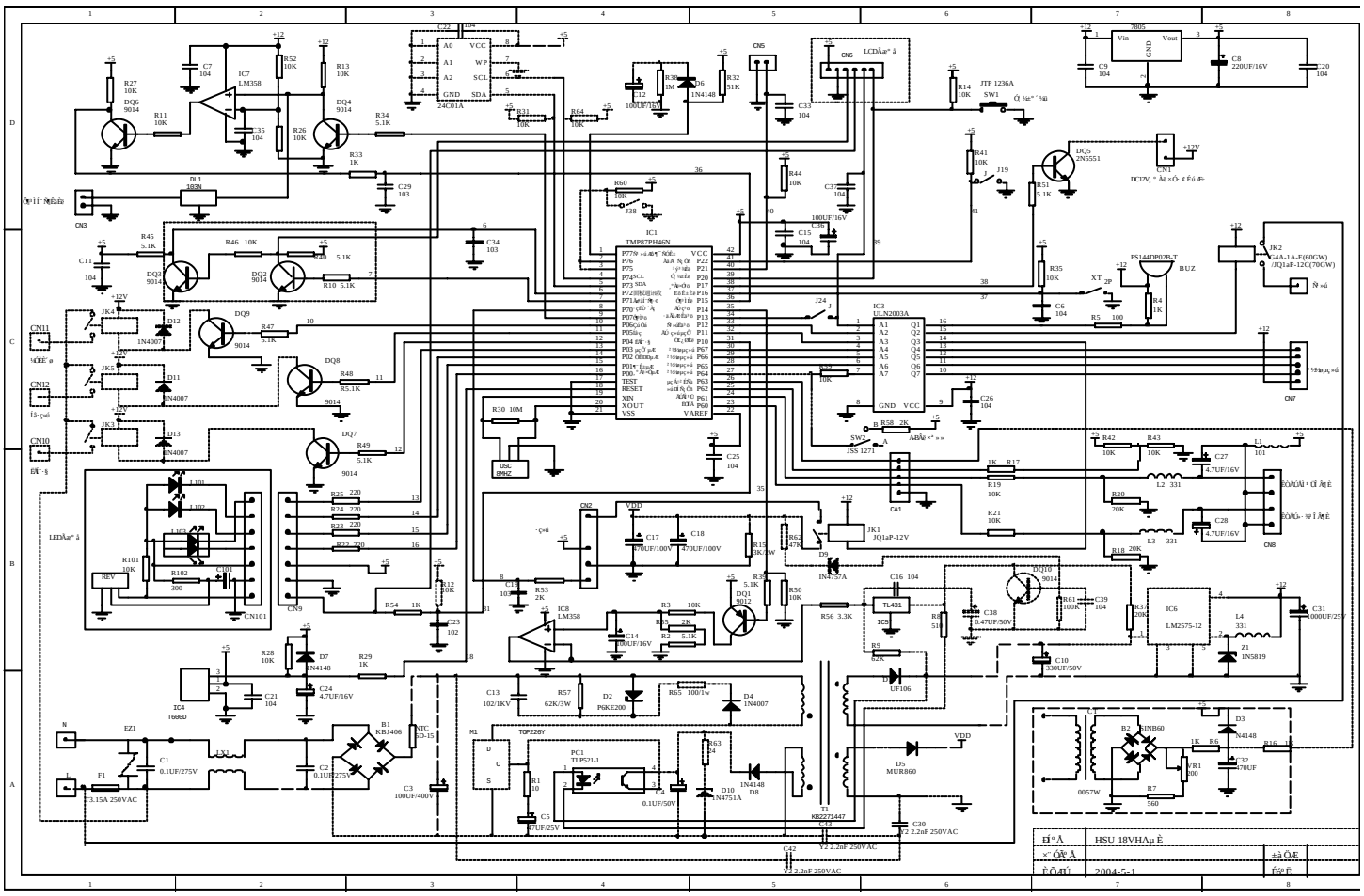
HSU-24H03/Z Indoor unit



HSU-24H03/Z Outdoor unit



10.3. circuit Diagram



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