MADE IN CHINA

TOSOT

Service Manual

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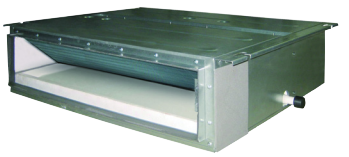
Part Ⅰ : Technical Information

1.Summary

Indoor Unit

TM09HEDI
TM12HEDI
TM18HEDI

TM09HFDI
TM12HFDI
TM18HFDI
TM24HFDI



TM12HKDI
TM18HKDI

TM24HKDI

TM09HTDI TM12HTDI
TM18HTDI TM24HTDI

Remote Controller:

YAA1FB1F

YT1FF(MOTO)

Model list:

No.	Model	Product Code	Remote Controller:
1	TM09HEDI	CV010N00900_L81561	YAA1FB1F
2	TM12HEDI	CV010N01000_L81561	
3	TM18HEDI	CV010N01100_L81561	
4	TM12HKDI	CN51000060_L81561	YT1FF(MOTO)
5	TM18HKDI	CN51000070_L81561	
6	TM24HKDI	CN51000080_L81561	
7	TM09HFDI	CN210N0070_L81561	
8	TM12HFDI	CN210N0060_L81561	
9	TM18HFDI	CN210N0080_L81561	
10	TM24HFDI	CN210N0100_L81561	
11	TM09HTDI	CN610N0060_L81561	
12	TM12HTDI	CN610N0070_L81561	
13	TM18HTDI	CN610N0050_L81561	
14	TM24HTDI	CN610N0080_L81561	

2.Specifications

2.1 Specification Sheet

Model		Console		
		TM09HEDI	TM12HEDI	TM18HEDI
Product Code		CV010N00900_L81561	CV010N01000_L81561	CV010N01100_L81561
Rated Voltage	V~	208-230	208-230	208-230
Rated Frequency	Hz	60	60	60
Phases		1	1	1
Cooling Capacity	W	2640	3520	5280
Heating Capacity	W	2780	3810	5800
Air Flow Volume (H/M/L)	m^3/h	560/480/370	650/550/450	800/650/530
Dehumidifying Volume	L/h	0.8	1.4	1.8
Fan Type		Centrifugal	Centrifugal	Centrifugal
Fan Diameter-height	mm	Φ370X80	Φ370X80	Φ370X80
Fan Motor Speed (SH/H/M/L)(Cool)	rpm	650/560/530/480/430/370/320	750/650/600/550/500/450/350	840/800/720/650/580/530/410
Fan Motor Speed (SH/H/M/L)(Heat)	rpm	650/560/530/480/430/370/320	750/650/600/550/500/450/350	900/840/760/690/620/570/450
Fan Motor Power Output	W	30	30	30
Fan motor running current	A	0.14	0.14	0.14
Evaporator Material		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
Evaporator Pipe Diameter	mm	Φ7	Φ7	Φ7
Evaporator Number of Rows		2	2	2
Evaporator Fin Pitch	mm	1.3	1.3	1.3
Evaporator Length(L) X Height(H) X Width(W)	mm	511X396X24	511X396X24	511X396X24
Motor Model		FN30F-ZL	FN30F-ZL	FN30F-ZL
Overload Protector		3.15	3.15	3.15
Motor Full Load Amp(FLA)	A	0.14	0.14	0.14
Sound Pressure Level (H/M/L)	dB(A)	38/33/26	40/37/32	46/41/35
Sound Power Level (H/M/L)	dB(A)	48/43/36	50/47/33	56/51/45
Outline Dimension (WXHXD)	mm	700X600X215	700X600X215	700X600X215
Package Carton Dimension (LXWXH)	mm	785X280X682	785X280X682	785X280X682
Package Dimension (LXWXH)	mm	788X283X697	788X283X697	788X283X697
Net Weight	kg	15	15	15
Gross Weight	kg	18	18	18
Liquid pipe	mm	Φ6	Φ6	Φ6
Gas Pipe(to indoor unit)	mm	Φ9.52	Φ9.52	Φ12

The above data is subject to change without notice. Please refer to the nameplate of the unit.

Model		Cassette		
		TM12HKDI	TM18HKDI	TM24HKDI
Product Code		CN51000060_L8156	CN51000070_L8156	CN51000080_L8156
Cooling Capacity	kW	3.5	4.5	6.682
Btu/h		12000	14400	22800
Heating Capacity	kW	4	5	8.03
Btu/h		13000	16000	27400
Air flow volume(H)	m^3/h	600	600	1180
CFM		353	353	694
Sound Pressure Level (H)	dB(A)	46	46	39
Sound Power Level (H)	dB(A)	56	56	49
Rated Voltage	V	208/230	208/230	208/230
Rated Frequency	Hz	60	60	60
Phases		1	1	1
Fan Type		Axial-flow	Centrifugal	Axial-flow
Motor Full Load Amp(FLA)	A	0.18	0.18	0.43
Fan Motor Speed	rpm	845/700/600/515	845/700/600/515	620/570/520/280
Fan Motor Power Output	W	11	11	50
Fan Motor Power Input	W	50	50	100
Fan motor running current	A	0.23	0.23	0.43
Fan Motor Capacitor	μF	1	1	3
Gas Pipe(to indoor unit)	mm	Φ9.52	Φ12	Φ16
Liquid pipe	mm	Φ6.35	Φ6	Φ9.52
Connection method		Flare Connection	Flare Connection	Flare Connection
Drain Connection (outer diameter)	mm	31	31	31
Dimension of Outline (WXDXH)	mm	570X570X230	570X570X230	840X840X240
Dimension of Carton Box (LXWXH)	mm	848X728X310	848X728X310	960X960X310
Dimension of Package (LXWXH)	mm	851X731X325	851X731X325	963X963X325
Net/Gross Weight	kg	18.0/23.0	18.0/23.0	30.0/38.0

The above data is subject to change without notice. Please refer to the nameplate of the unit.

Model		Duct Type		
		TM18HFDI	TM24HFDI	TM09HFDI
Product Code		CN210N0080_L81561	CN210N0100_L81561	CN210N0070_L81561
Cooling Capacity	kW	4.484	6.975	2.491
Btu/h		15300	23800	8500
Heating Capacity	kW	5.481	8.03	2.784
Btu/h		18700	27400	9500
Air flow volume(H)	m^3/h	700	1000	450
CFM		412	589	265
Sound Pressure Level (H)	dB(A)	41/37/33	42/38/34	37/34/31
Sound Power Level (H)	dB(A)	50/47/43	52/48/44	47/44/41
Rated Voltage	V	208/230	208/230	208/230
Rated Frequency	Hz	60	60	60
Phases		1	1	1
Fan Type		Centrifugal	Centrifugal	Centrifugal
Motor Full Load Amp(FLA)	A	0.41	0.5	0.28
Fan Motor Speed	rpm	1000/920/780/720	1160/985/800/680	1230/970/760/640
Fan Motor Power Output	W	75	22.5	40
Fan Motor Power Input	W	100	124	80
Fan motor running current	A	0.43	0.54	0.35
Fan Motor Capacitor	μF	3	3	1.5
Gas Pipe(to indoor unit)	mm	Φ12.7	Φ15.9	Φ9.52
Liquid pipe	mm	Φ6	Φ9.52	Φ6
Connection method		Flare Connection	Flare Connection	Flare Connection
Drain Connection (outer diameter)	mm	26	26	26
Drain Connection (outer diameter)	inch	1	1	1
Dimension of Outline (WXDXH)	mm	900X615X200	1100X615X200	700X615X200
Dimension of Carton Box (LXWXH)	mm	1123X743X305	1323X743X305	893X743X305
Dimension of Package (LXWXH)	mm	1126X746X320	1326X746X320	896X746X320
Net/Gross Weight	kg	36/27	41/31	27/22

The above data is subject to change without notice. Please refer to the nameplate of the unit.

Model		Floor Ceiling Type		
		TM24HTDI	TM18HTDI	TM12HTDI
Product Code		CN610N0080_L81561	CN610N0050_L81561	CN610N0070_L81561
Cooling Capacity	kW	6.68	5	3.5
Btu/h		22800	17000	11900
Heating Capacity	kW	8.03	5.5	3.85
Btu/h		27400	18700	13100
Air flow volume(H)	m^3/h	1250	950	650
CFM		736	559	383
Sound Pressure Level (H)	dB(A)	48/46/44	45/42/40	40/38/36
Sound Power Level (H)	dB(A)	58/56/50	55/52/50	50/48/46
Rated Voltage	V	208/230	208/230	208/230
Rated Frequency	Hz	60	60	60
Phases		1	1	1
Fan Type		Centrifugal	Centrifugal	Centrifugal
Motor Full Load Amp(FLA)	A	0.5	0.5	0.3
Fan Motor Speed	rpm	1160±30/985±30/800±35/680±35	1160±30/985±30/800±35/680±35	790±30/690±30/610±40/480±40
Fan Motor Power Output	W	40	20	15
Fan Motor Power Input	W	145	110	55
Fan motor running current	A	0.63	0.56	0.28
Fan Motor Capacitor	μF	3	2.5	1
Gas Pipe(to indoor unit)	mm	Φ16	Φ12	Φ9.52
Liquid pipe	mm	Φ9.52	Φ6	Φ6
Connection method		Flare Connection	Flare Connection	Flare Connection
Drain Connection (outer diameter)	mm	17	17	17
Dimension of Outline (WXDXH)	mm	1220X700X225	1220X700X225	1220X700X225
Dimension of Carton Box (LXWXH)	mm	1340X820X300	1340X820X300	1340X820X300
Dimension of Package (LXWXH)	mm	1343X823X315	1343X823X315	1343X823X315
Net/Gross Weight	kg	45.0/54.0	40.0/50.0	40.0/50.0

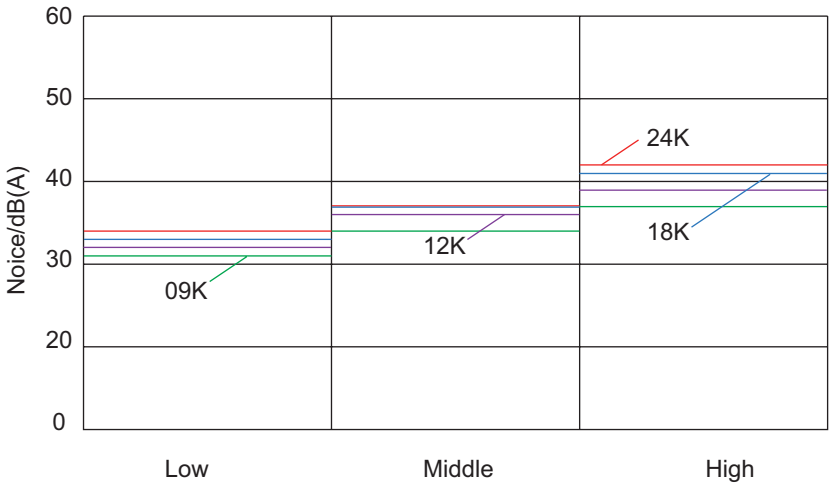
The above data is subject to change without notice. Please refer to the nameplate of the unit.

Model		Duct Type	
		TM12HFDI	TM09HTDI
Product Code		CN210N0060_L81561	CN610N0060_L81561
Cooling Capacity	kW	3.488	2.50
Btu/h		11900	8500
Heating Capacity	kW	3.839	2.80
Btu/h		13100	9500
Air flow volume(H)	m^3/h	500	650/550/450
CFM		294	383/324/265
Sound Pressure Level (H)	dB(A)	39/35/32	40/38/36
Sound Power Level (H)	dB(A)	49/45/42	50/48/46
Rated Voltage	V	208/230	208/230
Rated Frequency	Hz	60	60
Phases		1	1
Fan Type		Centrifugal	Centrifugal
Motor Full Load Amp(FLA)	A	0.3	0.3
Fan Motor Speed	rpm	1130/960/830/700	690/610/480
Fan Motor Power Output	W	49	15
Fan Motor Power Input	W	80	55
Fan motor running current	A	0.35	0.28
Fan Motor Capacitor	μF	3	1
Gas Pipe(to indoor unit)	mm	Φ9.52	Φ9.52
Liquid pipe	mm	Φ6	Φ6
Connection method		Flare Connection	Flare Connection
Drain Connection (outer diameter)	mm	26	17
Dimension of Outline (WXDXH)	mm	700X615X200	1220X700X225
Dimension of Carton Box (LXWXH)	mm	893X743X305	1340X820X300
Dimension of Package (LXWXH)	mm	896X746X320	1343X823X315
Net/Gross Weight	kg	23/29	40/50

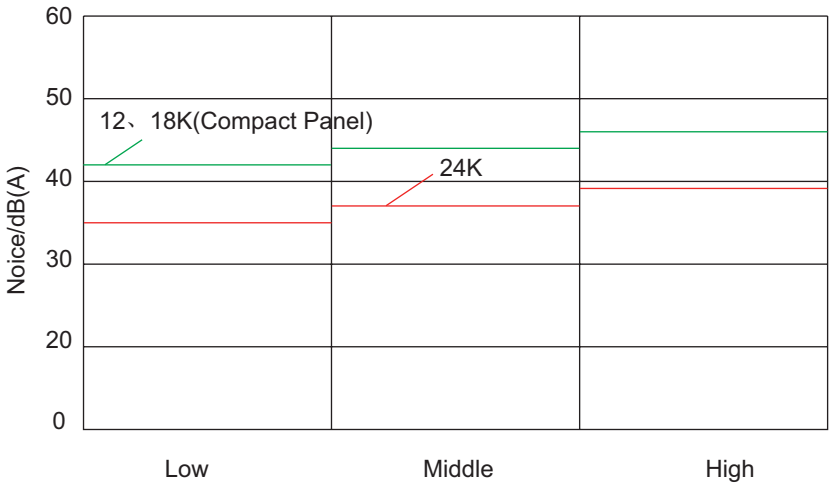
The above data is subject to change without notice. Please refer to the nameplate of the unit.

2.2 Noise Criteria Curve Tables for Both Models

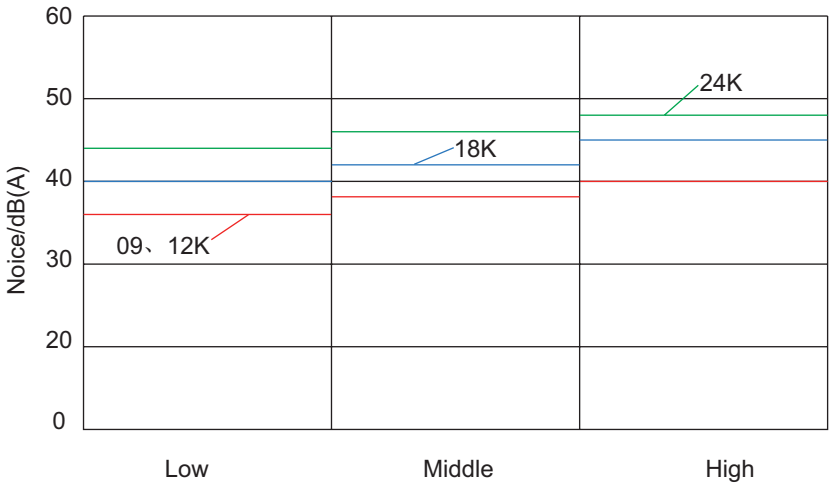
Duct Type



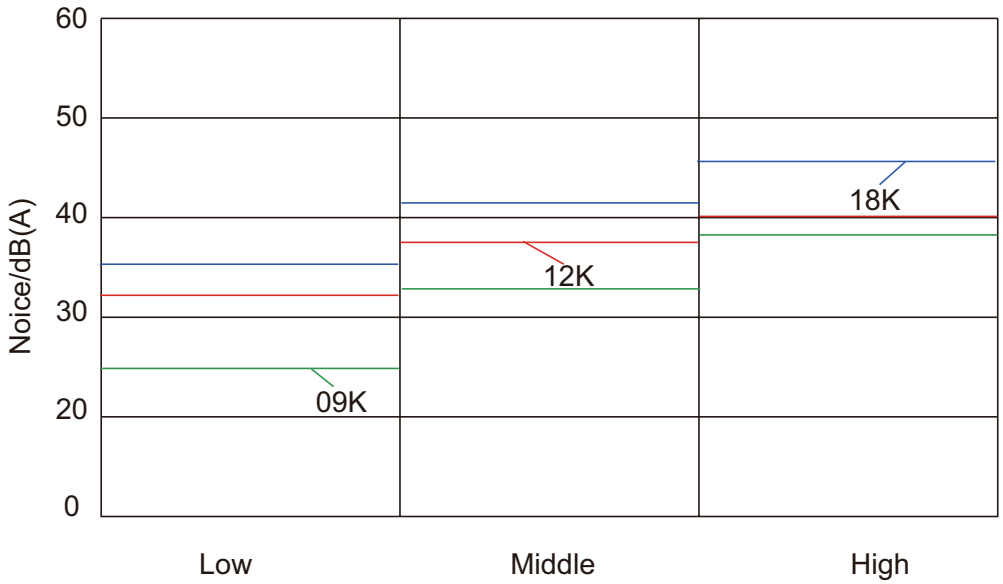
Cassette



Floor ceiling type



Console



3. Outline Dimension Diagram

Duct Type

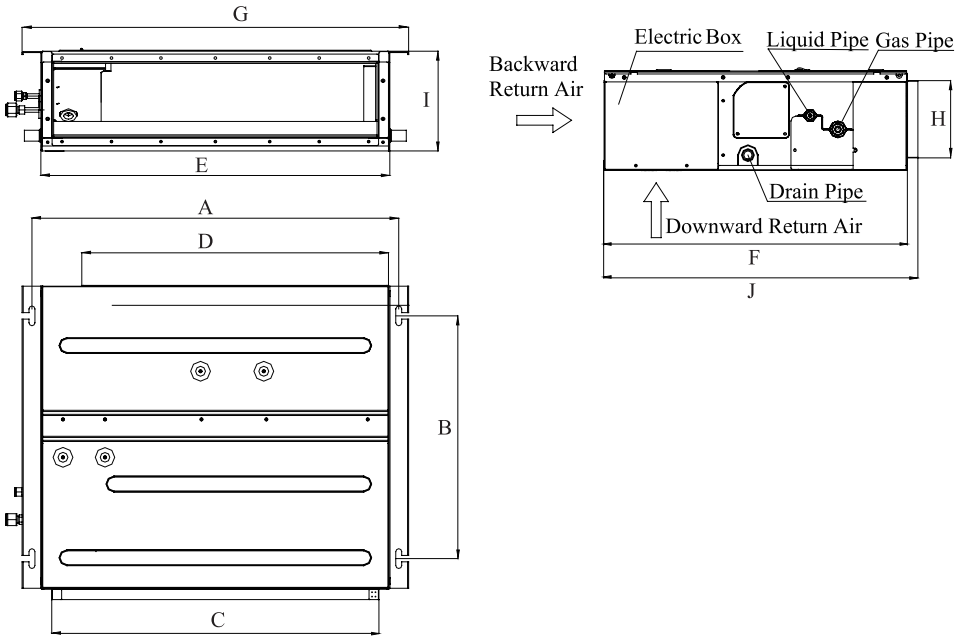
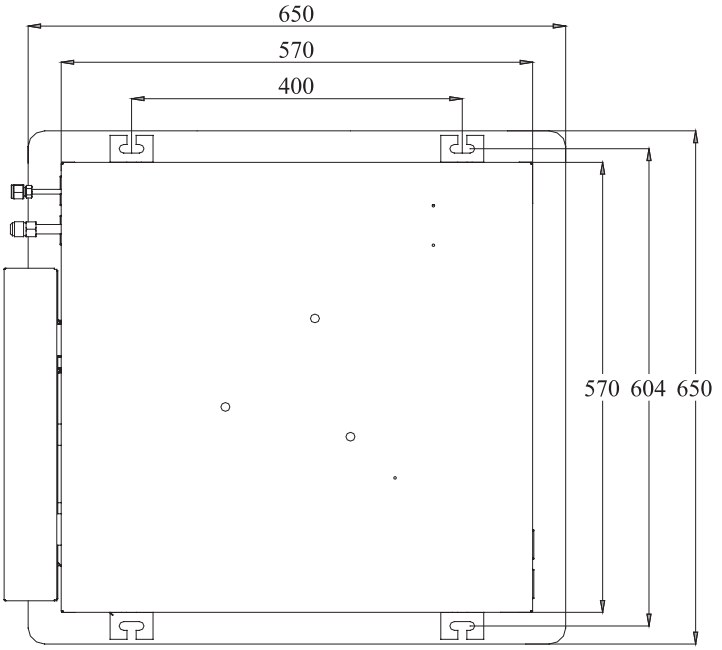


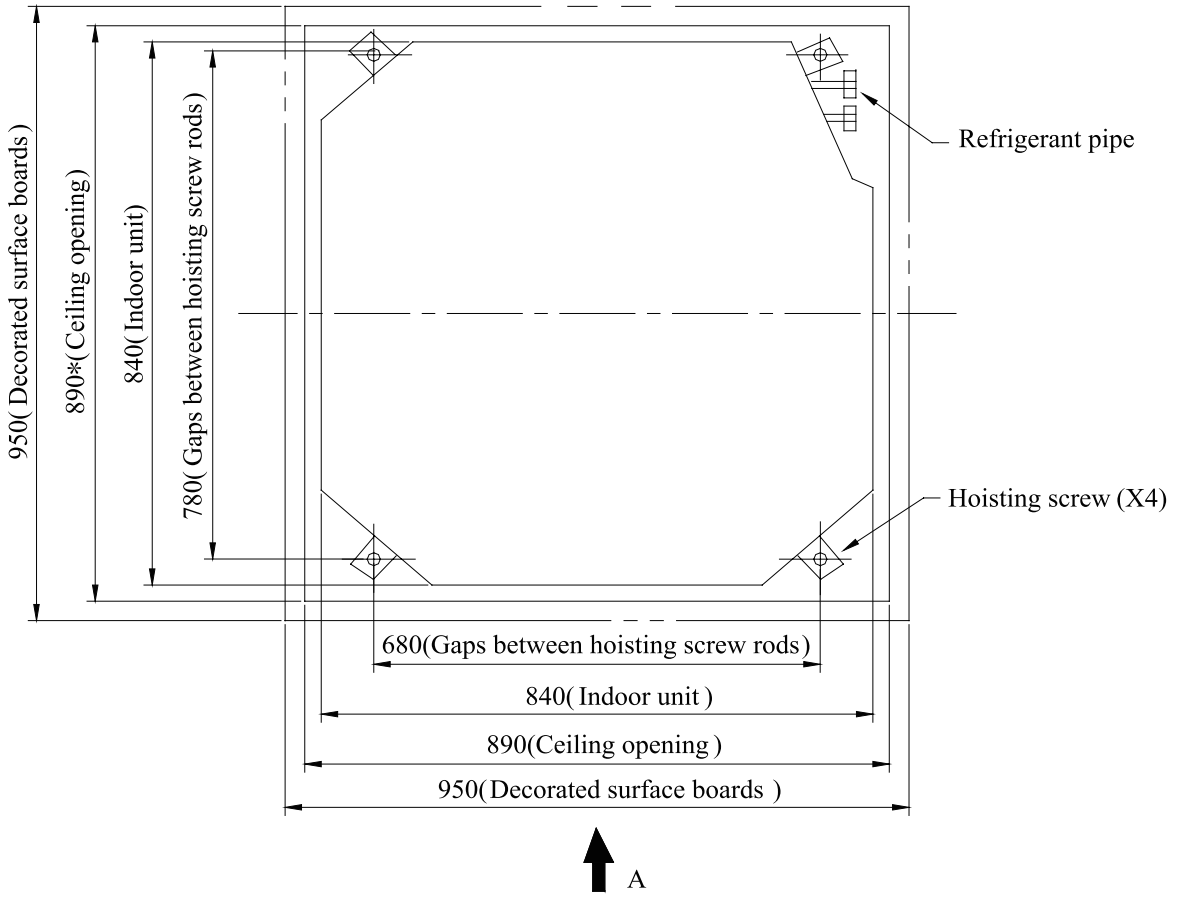
Table Outline Dimensions:

Unit:mm

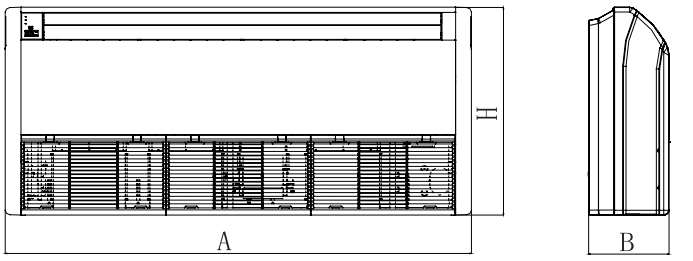
Item / Model	A	B	C	D	E	F	G	H	I	J
09K	742	491	662	620	700	615	782	156	200	635
12K										
18K	942	491	862	820	900	615	982	156	200	635
24K	1142	491	1062	1020	1100	615	1182	156	200	635

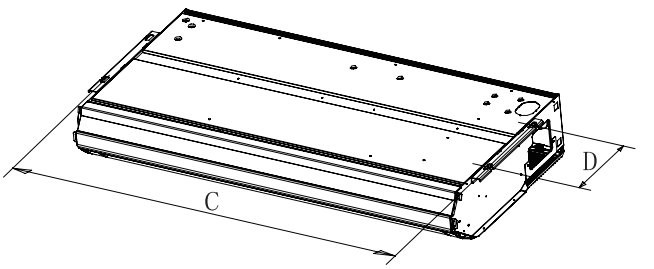
Cassette type





Floor ceiling type



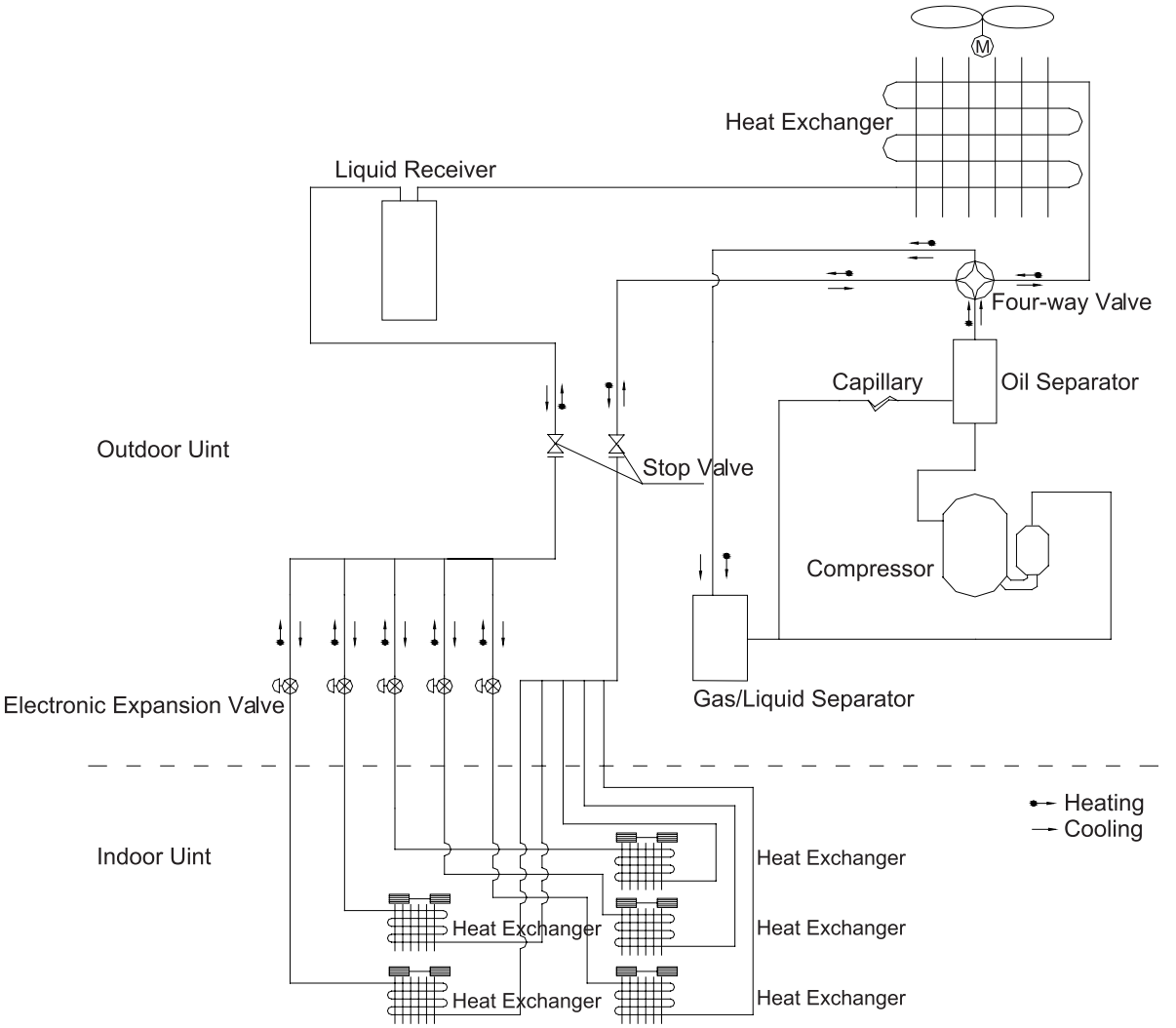


Unit:mm

Model	A	B	H	C	D
12K	1220	225	700	1158	280
18K					
24K					

4. Refrigerant System Diagram

Schematic Diagram of Free Match Series Inverter Heat Pump Multi VRF System



Schematic Diagram of Free Match Series Inverter Heat Pump Multi VRF System

The outdoor and indoor units start to work once the power is switched on. During the cooling operation, the low temperature, low pressure refrigerant gas from the heat exchanger of each indoor unit gets together and then is taken into the compressor to be compressed into high temperature, high pressure gas, which will soon go to the heat exchanger of the outdoor unit to exchange heat with the outdoor air and then is turned into refrigerant liquid. After passing through the throttling device, the temperature and pressure of the refrigerant liquid will further decrease and then go the main valve. After that, it will be divided and go to the heat exchanger of each indoor unit to exchange heat with the air which needs to be conditioned. Consequently, the refrigerant liquid become low temperature, low pressure refrigerant gas again. Such a refrigeration cycle goes round and round to achieve the desired refrigeration purpose. During the heating operation, the four-way valve is involved to make the refrigeration cycle run reversely. The refrigerant radiates heat in the heat exchanger of the indoor unit (so do the electric heating devices) and absorb heat in the heat exchanger of the outdoor unit for a heat pump heating cycle so as to achieve the desired heating purpose.

5. Electrical Part

5.1 Wiring Diagram

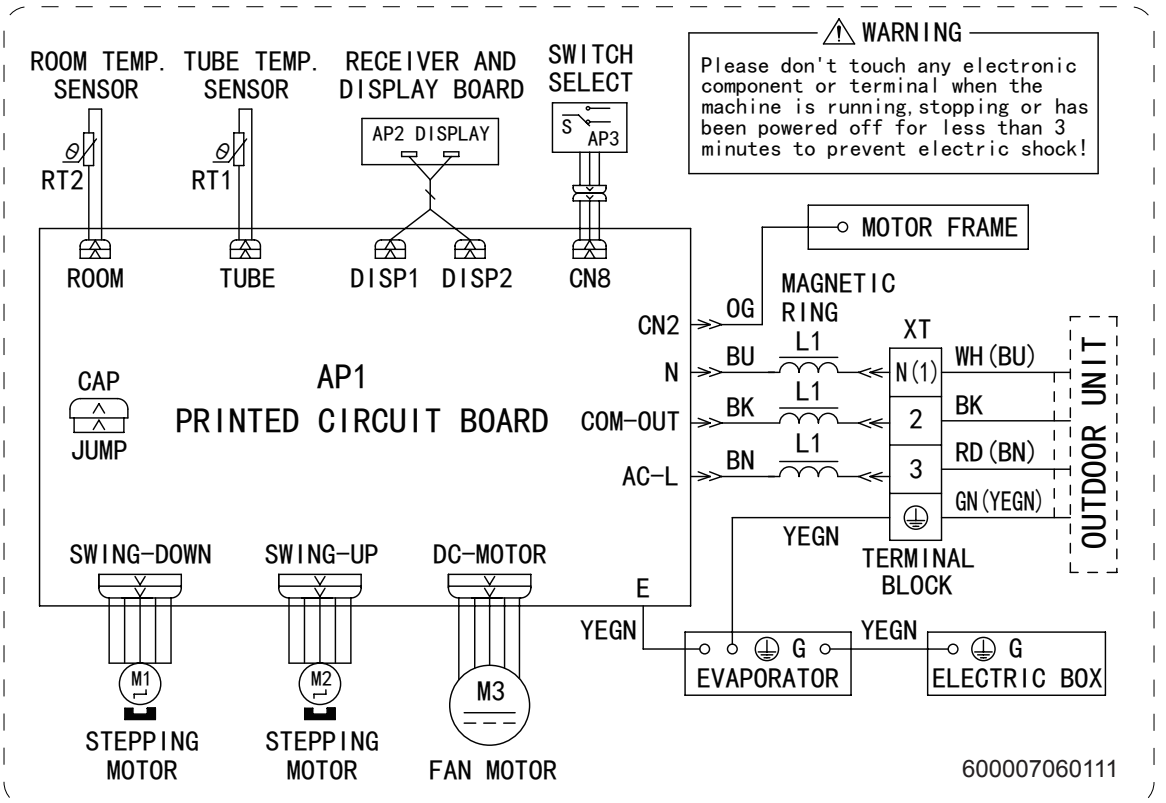
●Instruction

Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue	⏚	Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

Note: Jumper cap is used to determine fan speed and the swing angle of horizontal lover for this model.

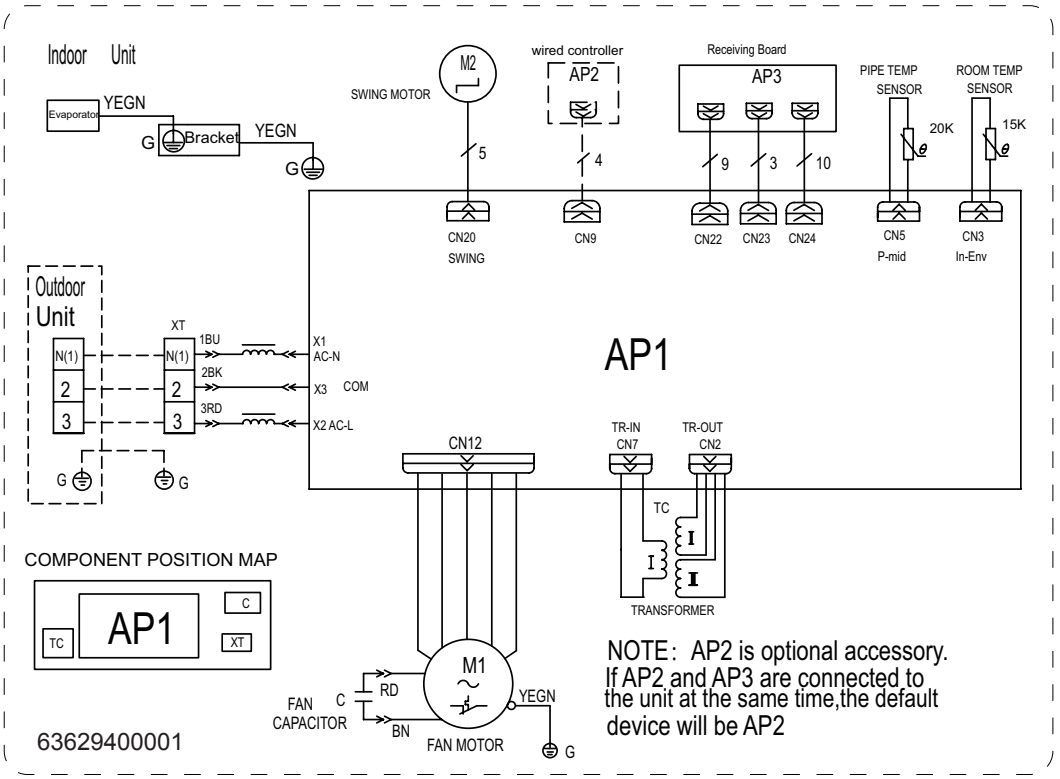
● Indoor Unit

TM09HEDI TM12HEDI TM18HEDI

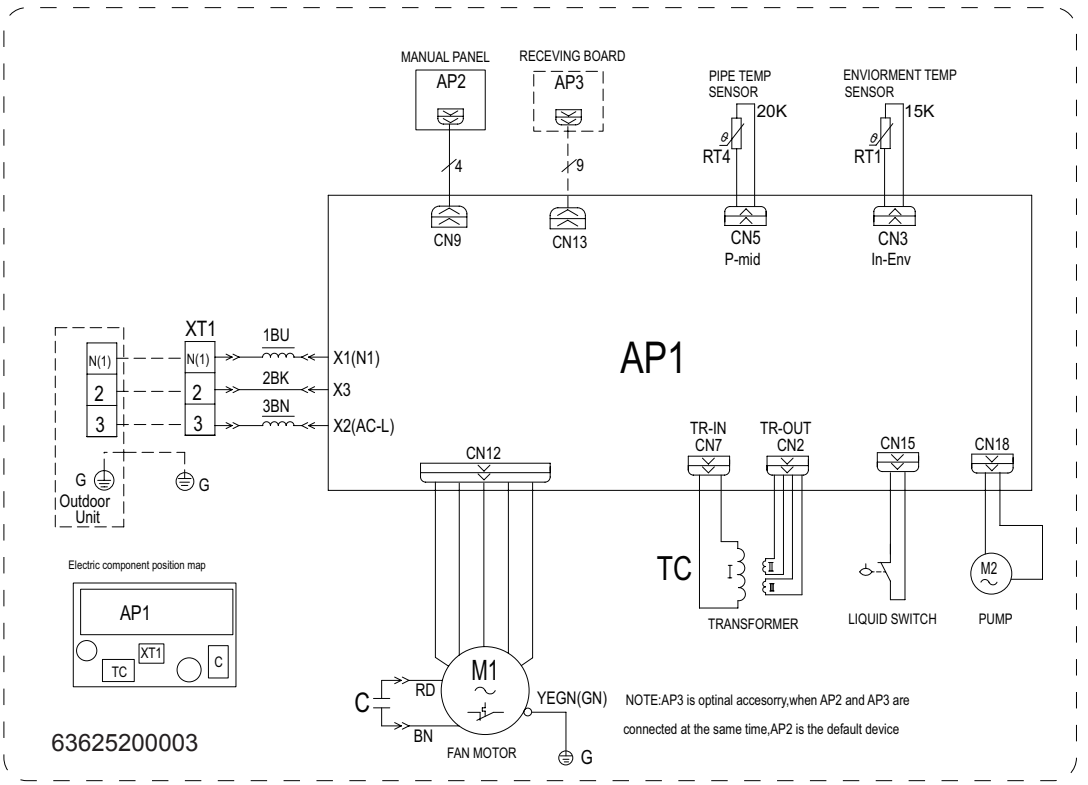


These wiring diagrams are subject to change without notice; please refer to the one supplied with the unit.

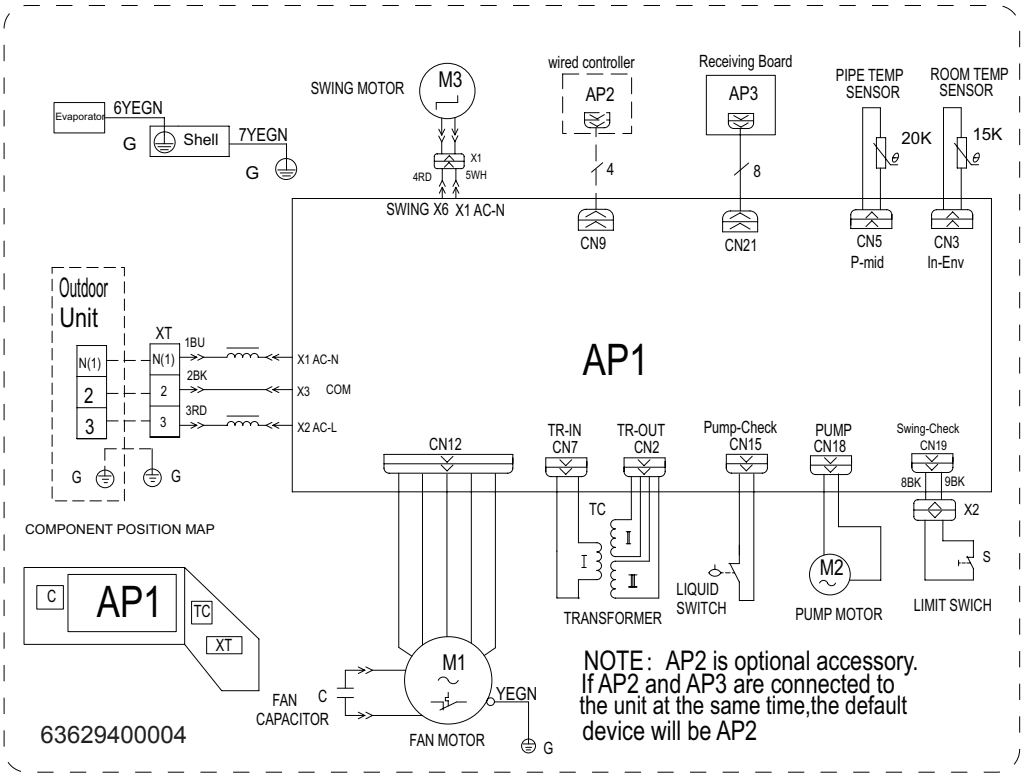
TM09HTDI TM12HTDI
TM18HTDI TM24HTDI



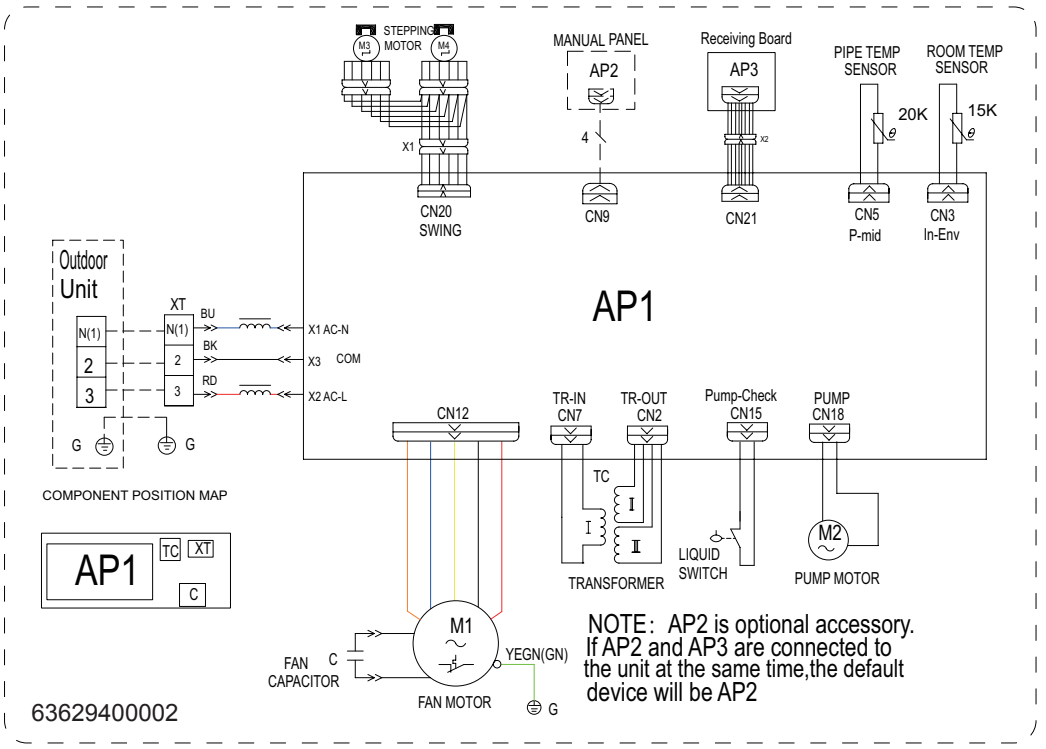
TM09HFDI TM12HFDI
TM18HFDI TM24HFDI



TM24HKDI



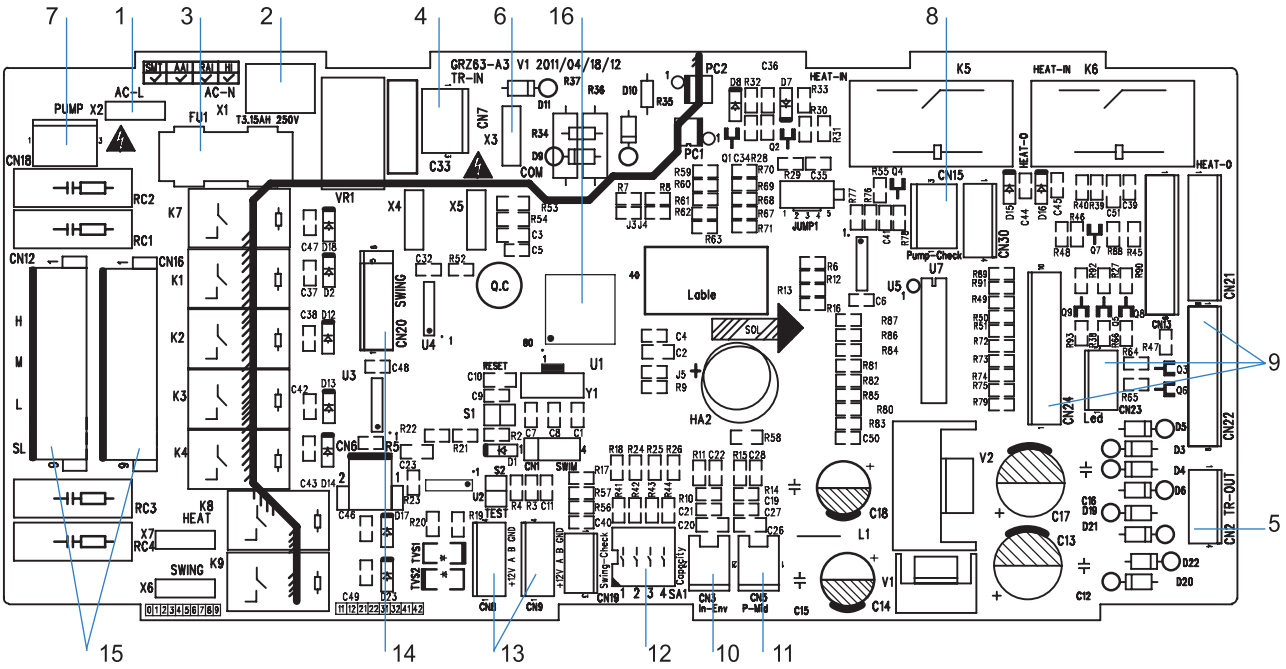
TM12HKDI
TM18HKDI



5.2 PCB Printed Diagram

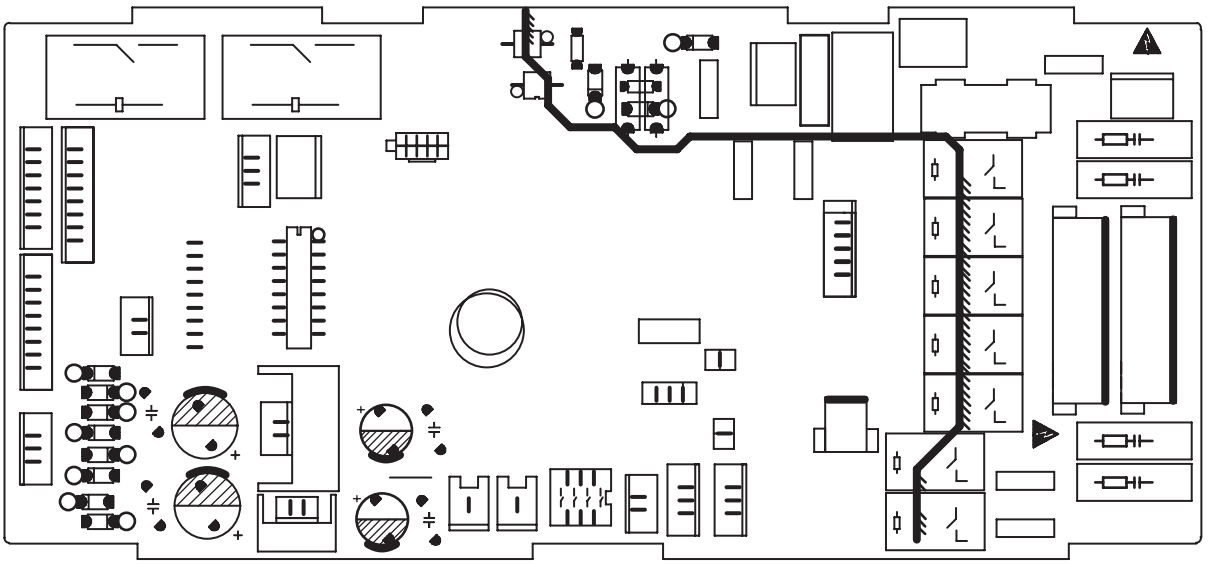
Floor ceiling type for 12/18/24K Unit

- Top view



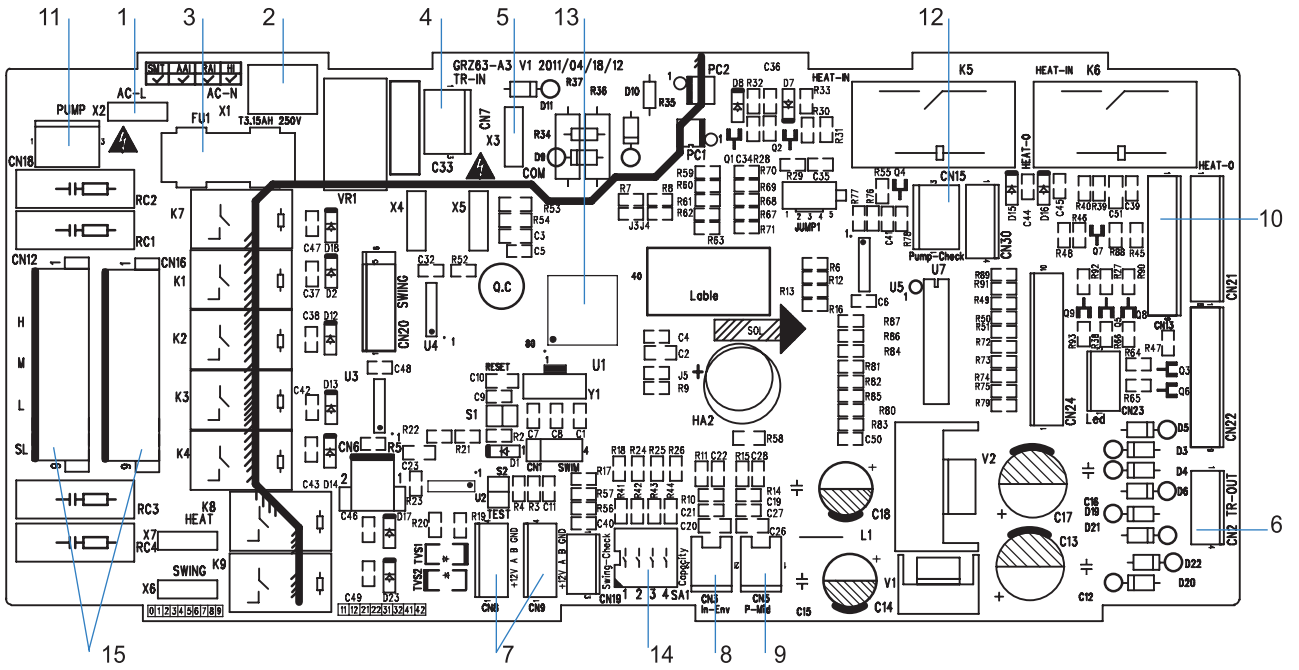
1	Live Line	9	Control Panel
2	Neutral Line	10	Indoor Temperature Sensor
3	Fuse	11	Evaporator Mid-Tube Temperature Sensor
4	Transformer (High Voltage)	12	DIP Switch
5	Transformer (Low Voltage)	13	Wired Controller
6	Communication Line	14	Fan Motor
7	Water Pump	15	Fan
8	Water Level Indicator	16	MCU

- Bottom view



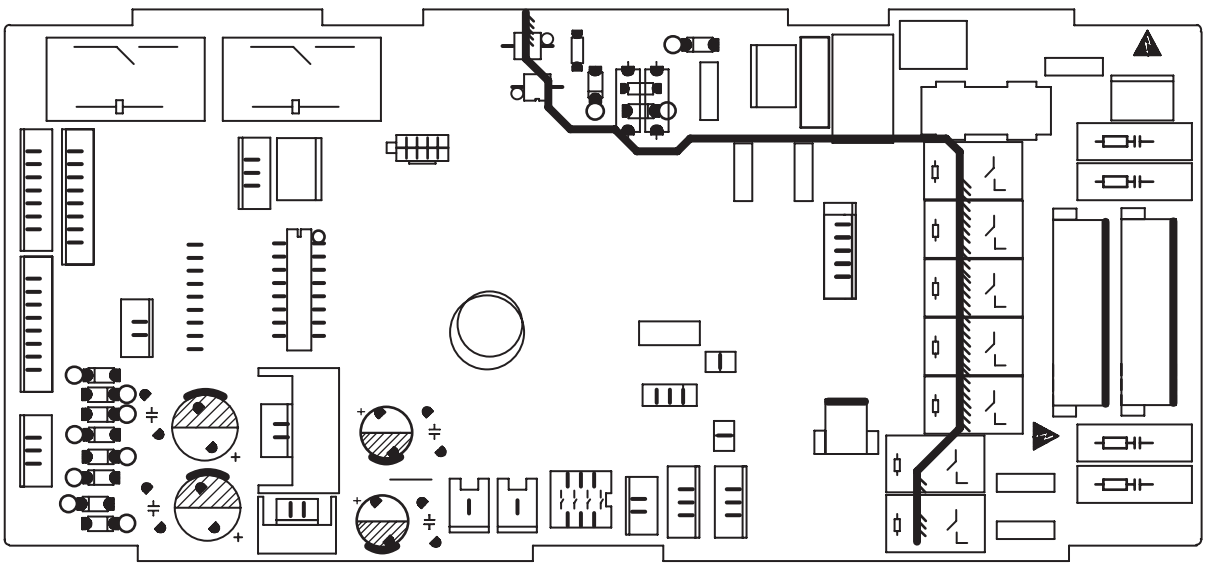
Duct Type for 09/12/18/24K Unit

- Top view



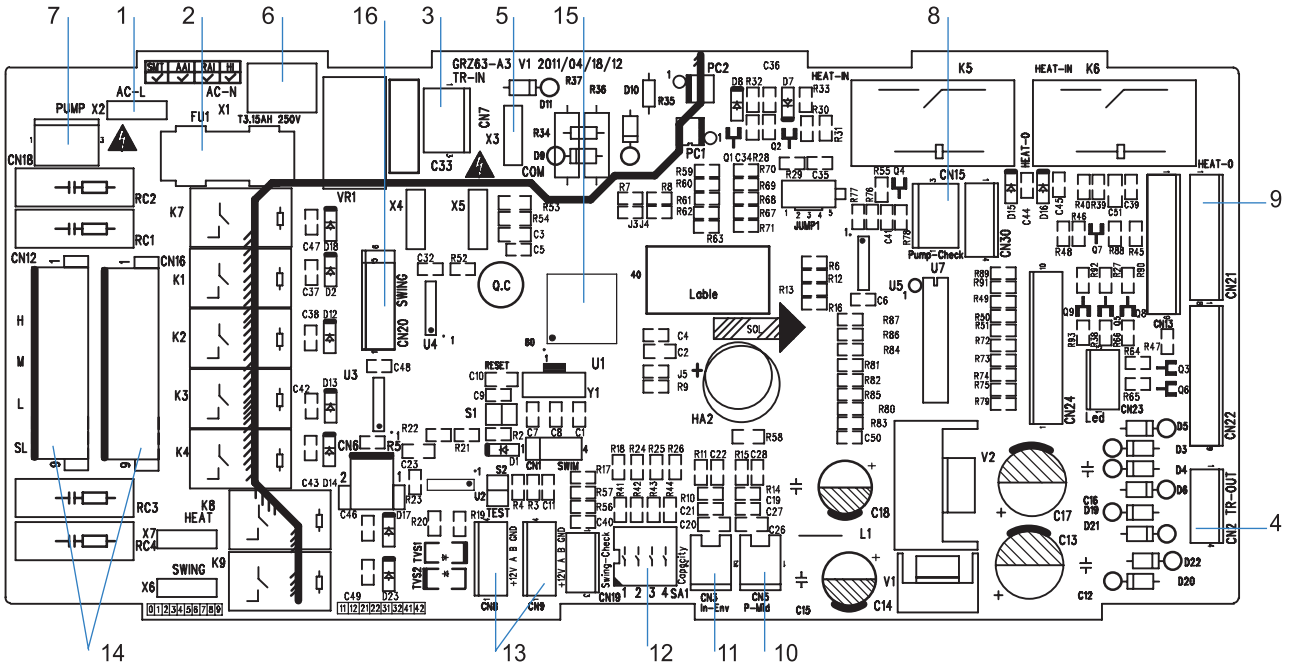
1	Live Line	9	Evaporator Mid-Tube Temperature Sensor
2	Neutral Line	10	Control Panel
3	Fuse	11	Water Pump
4	Transformer (High Voltage)	12	Water Level Indicator
5	Communication Line	13	MCU
6	Transformer (Low Voltage)	14	DIP Switch
7	Wired Controller	15	Fan
8	Indoor Temperature Sensor		

- Bottom view



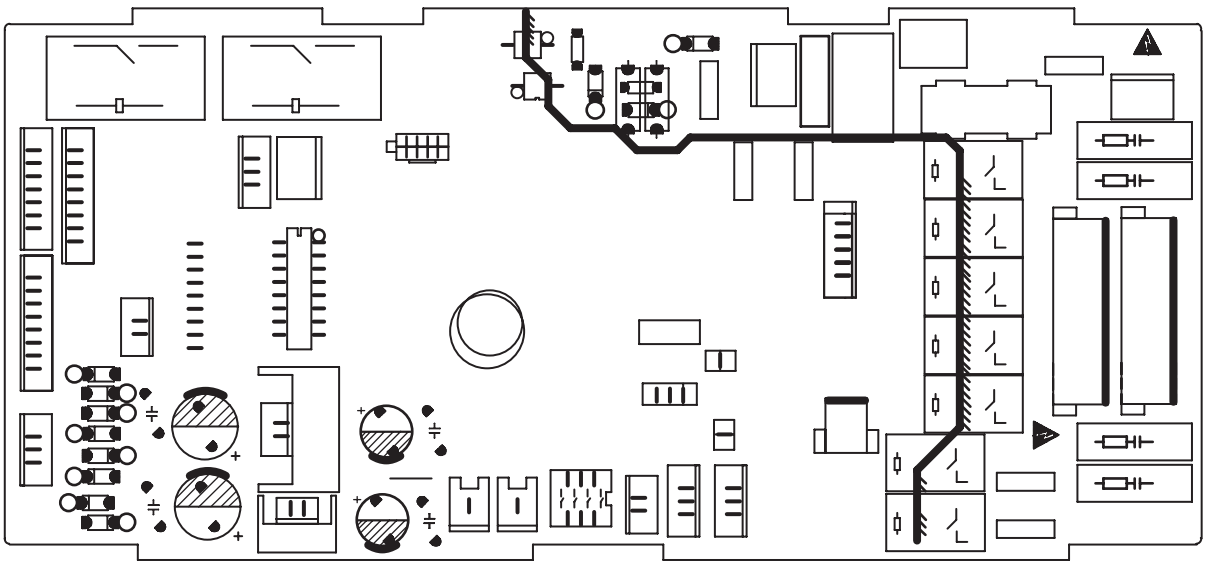
Cassette type for 12/18K Unit

- Top view



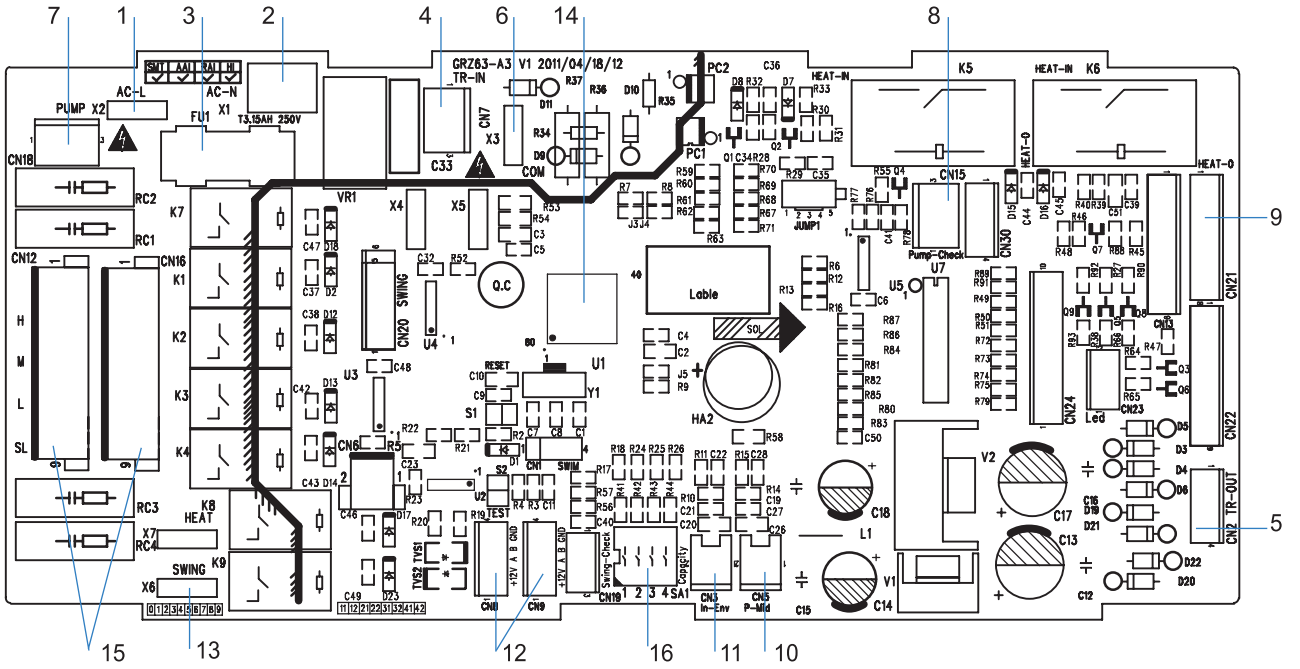
1	Live Line	9	Control Panel
2	Fuse	10	Evaporator Mid-Tube Temperature Sensor
3	Transformer (High Voltage)	11	Indoor Temperature Sensor
4	Transformer (Low Voltage)	12	DIP Switch
5	Communication Line	13	Wired Controller
6	Neutral Line	14	Fan
7	Water Pump	15	MCU
8	Water Level Indicator	16	Fan Motor

- Bottom view



Cassette type for 24K Unit

- Top view



1	Live Line	9	Control Panel
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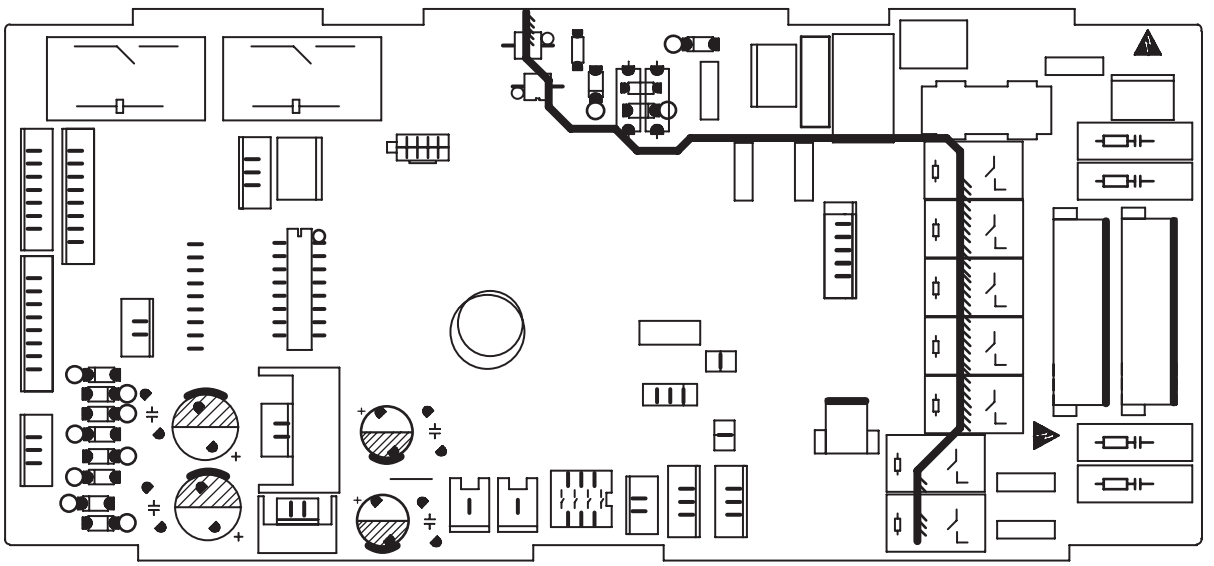
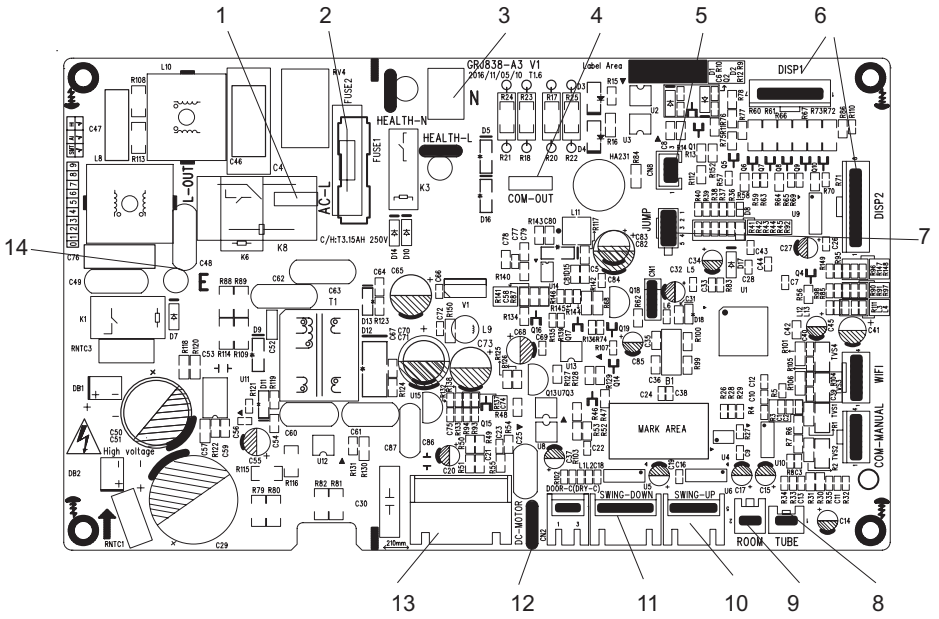
8	Water Level Indicator	16	DIP Switch

- Bottom view



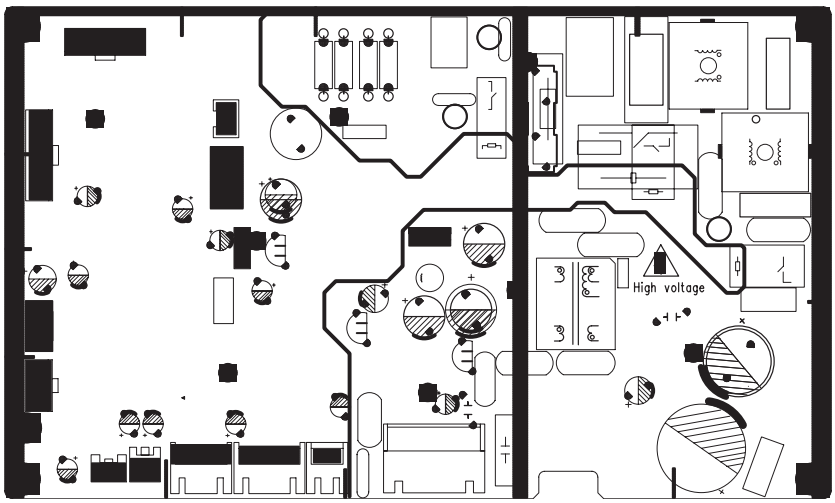
CONSOLE type for 09/12/18K Unit

●TOP VIEW



1	live wire
2	Fuse
3	neutral wire
4	Interface of indoor unit and outdoor unit communication
5	down swing
6	Interface of display
7	Jumper cap
8	tube temperature sensor
9	Ambient temperature sensor
10	Up swing
11	Down swing
12	Interface of shielding wire of motor cover
13	Interface of DC motor
14	Earthing wire

●BOTTOM VIEW



6. Function and Control

6.1 Remote Controller Introduction off YAA1FB1F

1 ON/OFF

Press it to start or stop operation.

2 - : Press it to decrease temperature setting.

3 + : Press it to increase temperature setting.

4 MODE

Press it to select operation mode (AUTO/COOL/DRY/FAN/HEAT).

5 FAN

Press it to set fan speed.

6 SWING

Press it set swing angle.

7 I FEEL

8 /

Press it to set HEALTH or AIR function.

9 SLEEP

10 TEMP

11 QUIET

Pressitto set QUIET function.

12 CLOCK

Press it set clock.

13 T-ON|T-OFF

Press it to setauto-off/auto-on timer.

14 TURBO

15 LIGHT

Press it to turn on/off the light.

16 X-FAN

1 ON/OFF :

Press this button to turn on the unit. Press this button again to turn off the unit.

2 —:

Press this button to decrease set temperature. Holding it down above 2 seconds rapidly decreases set temperature.
In AUTO mode, set temperature is not adjustable.

3 + :

Press this button to increase set temperat ure.Holding it down above 2 seconds rapidly increases set temperature.
In AUTO mode, set temperature is not adjustable.

4 MODE :

Each time you press this button,a mode is selected in a sequence that goes from AUTO,COOL,DRY, FAN,and HEAT*, as the following:

AUTO ▶ COOL ▶ DRY ▶ FAN ▶HEAT*

*Note:Only for models with heatingf unction.

After energization, AUTO mode is defaulted. In AUTO mode, the set temperature will not be displayed on the LED of the indoor, and the unit will automatically select the suitable operation mode in accordance with the room temperature to make indoor room comfortable.

5 FAN :

This button is used for setting Fan Speed in the sequence that goes from AUTO, , , , to , then back to Auto.

Auto → → → → → →

Low speed Low-Medium speed Medium speed

Medium-High speed High speed

6 SWING:

Press this button to set up &down swing angle, which circularly changes as below:

OFF

This remote controller is universal . If any command , or is sent out, the unit will carry out the command as

indicates the guide louver swings as:

7 I FEEL:

Press this button to turn on I FEEL function. The unit automatically adjust temperature according to the sensed temperature. Press this button again to cancel I FEEL function.

8 /

Press this button to achieve the on and off of healthy and scavenging functionsin operation status.Press this button for the first time to start scavenging function;LCD displays“”.Press the button for the second time to start healthy and scavenging functions simultaneously;LCD displays“” and “” .Press this button for the third time to quit healthy and scavenging functions simultaneously .Press the button for the fourth time to start healthyfunction;LCD display“”.Press this button again to repeat the operation above.

9 SLEEP :

- Press this button,can select Sleep1(1),Sleep2(2),Sleep3(3)and cancel the Sleep,circulate between these,after electrified,Sleep Cancel is defaulted.
- Sleep 1 is Sleep mode 1, in Cool,Drying modes:sleep status after run for one hour,the main unit setting temperature will increase 1℃,setting temperature in creased 2℃,the unit will run at this setting temperature;In Heat mode: sleep status after run for one hour, the setting temperature will decrease 1℃,2 hours,setting temperature will decrease 2℃,then the unit will run at this setting temperature.

- Sleep 2 is sleep mode 2, that is air condi tioner will run according to the prese tting a group of sleep tempera ture curve.
- Sleep 3- the sleep curve setting under Sleep mode by DIY:

(1)Under Sleep 3 mode,press"Turbo"button for along time,remote control enters into user individuation sleep setting status, at this time,the time of remote control will display"1 hour",the settingt emperature "88" will display the correspon ding temperature of last setting sleep curve and blink (The first entering will display according to the initial curve setting value of original factory);

(2) Adjust "+" and "-" button, could change the corresponding setting temperature,after adjusted,press "Trubo"button for confirmation;

(3) At this time, 1 hour will be automatically increased at the timer postion on the remote control, (that are "2 hours " or "3 hours " or "8 hours "), the place of setting temperature "88" will display the corresponding temperature of last setting sleep curve and blink;

(4)Repeat the above step(2)～(3)operation,until 8 hours temperature setting finished, sleep curve setting finished, at this time,the remote control will resume the original timer display;temperature display will resume to original setting temperature.

Sleep3- the sleep curve setting under SLEEP mode by DIY could be inquired:

- The user could accord to sleep curve setting method to inquire the presetting sleep curve, enter into user individuation sleep setting status, but donot change the temperature, press "Turbo" button directly for confirmation.

Note:In the above presetting or enquiry procedure,if continuously within10s,there is no button pressed,the sleep curve setting within10s,there is nobutton pressed,the sleep curve setting status will beautomatically quit and resume to display the original displaying.In the presetting or enquiry procedure,press "ON/OFF" button,"Mode" button,"Timer" button or"Sleep" button,the sleep curve setting or enquiry status will quit similarty.

10 TEMP:

Press this button,could select displaying the indoor setting temperature or indoor ambient temperature.When the indoor unit firstly power on it will display the setting temperature,if the tem perature's displaying status is changed from other status to" ",displays the ambient temperature, 5s later or within 5s,it receives other remote control signal that will return to display the setting temperature. if the users haven't set up the temperature displaying status,that will display the setting temperature.

11 QUIET:

Press this button,the Quiet status is under the Auto Quiet mode (display" "and "Auto"signal) and Quiet mode (display " " singal) and Quiet OFF (there is no signal of " " displayed), after powered on, the Quiet OFF is defaulted.

Note: the Quiet function cannot be set up in Fan and Dry mode;Under the Quiet mode(Display" "signal), the fan speed is not available.

12 CLOCK:

Press CLOCK button, blinking . Within 5 seconds,pressing +or - button adjusts the present time.Holding down either button above 2 seconds increases or decreases the time by 1 minute every 0.5 second and then by 10 minutes every 0.5 second. During blinking after setting, press CLOCK button again to confirm the setting,and then will be constantly displayed.

13 T-ON|T-OFF:

Press T-ON button to initiate the auto-ON timer. To cancel the auto-timer program, simply press this button again.After press of this button, disappears and "ON "blinks.00:00 is displayed for ON time setting.Within 5 seconds,press + or - button to adjust the time value.Every press of either button changes the time setting by 1 minute.Holding down either button rapidly changes the time setting by 1 minute and then 10 minutes.Within 5 Seconds after setting,press TIMER ON button to confirm.Press T-OFF button to initiate the auto-off timer. To cancel the auto-timer program, simply press the button again.TIMER OFF setting is the same as TIMER ON.

14 TURBO:

Press this button to activate / deactivate the Turbo function which enables the unit to reach the preset temperature in the shortest time.In COOL mode,the unit will blow strong cooling air at super high fan speed. In HEAT mode, the unit will blow strong heating air at super high fan speed.

15 LIGHT:

Press LIGHT button to turn on the display's light and press this button again to turn off the display's light. If the light is turned on , is displayed. If the light is turned off, disappears.

16 X-FAN:

Pressing X-FAN button in COOL or DRY mode,the icon is displayed and the indoor fan will continue operation for 10 minutes in order to dry the indoor unit even though you have turned off the unit.

After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO,FAN or HEAT mode.

17 Combination of "+" and "-" buttons: About lock

Press "+ " and "-" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked, is displayed. In this case,pressing any button, blinks three times.

18 Combination of" MODE " and " - " buttons: About switch between Fahrenheit and centigrade At unit OFF, press "MODE" and " - " buttons simultaneously to switch between ℃ and ℉.

19 Combination of "TEMP" and "CLOCK" buttons: About Energy-saving Function Press “TEMP” and “CLOCK” simultaneously in COOL mode to start energy-saving function.Nixie tube on the remote controller displays “SE”. Repeat the operation to quit the function.

20 Combination of "TEMP" and "CLOCK" buttons: About 8℃Heating Function Press “TEMP” and “CLOCK” simultaneously in HEAT mode to start 8℃Heating Function Nixie tube on the remote controller displays“$” and a selected temperature of “ 8℃” (46℉if Fahrenheit is adopted).Repeat the operation to quit the function.

21 About Back-lighting Function

The unit lights for 4s when energizing for the first time, and 3s for later press.

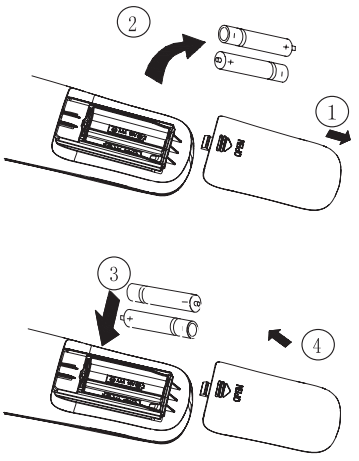
If “H1” is displayed on the remote controller while it’s not operated by the professional person/after-sales person, it belongs to the misoperation.
Please operate it as below to cancel it.Under the OFF status of remote controller, hold the MODE button for 5s to cancel “H1” display.
Note:
● If remote controller displays “H1”, it belongs to the normal function reminder. If the unit is defrosting under heating mode, it operates according to H1 defrosting mode. “H1” won’t be displayed on the panel of indoor unit;
● Once you set H1 mode, if you turn off unit by remote controller, H1 will display 3 times on the remote controller and then disappear;
● Also, when you set H1 mode, when you change to heating mode, H1 will display 3 times on the remote controller and then disappear.

Replacement of Batteries

1.Remove the battery cover plate from the rear of the remote controller.
(As shown in the figure)
2.Take out the old batteries.
3.Insert two new AAA 1.5V dry batteries, and pay attention to the polarity.
4. Reinstall the battery coverplate.

★ Notes:

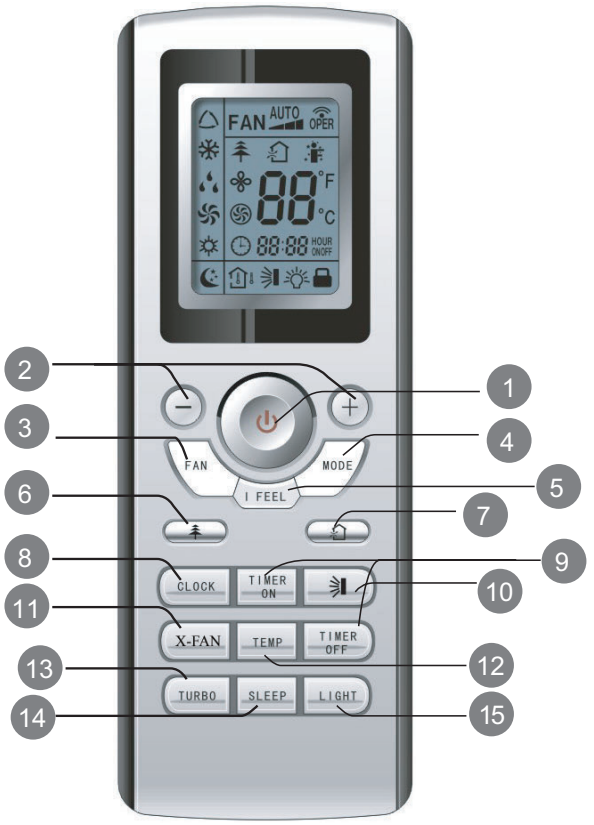
- When replacing the batteries, do not use old or different types of batteries, other wise, it may cause malfunction.
- If the remote controller will not be used for a long time, please remove batteries to prevent batteries from leaking.
- The operation should be performed in its receiving range.
- It should be kept 1m away from the TV set or stereo sound sets.
- If the remote controller does not operate normally, please take the batteries out and reinsert them after 30 seconds.If it still can't operate properly, replace the batteries.



Sketch map for replacing batteries

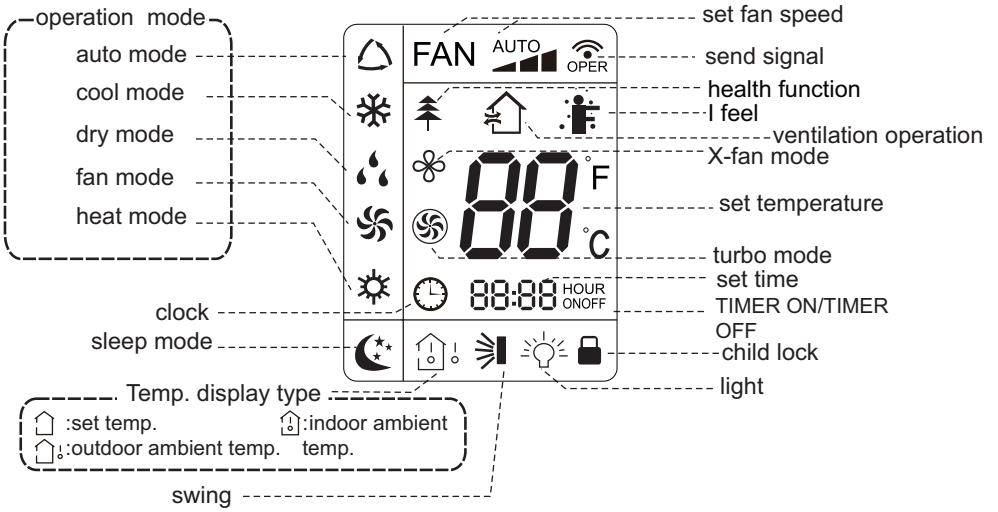
6.2 Remote Controller Introduction off YT1FF(MOTO)

Buttons on Remote Controller



1. ON/OFF button
2. +/- button
3. FAN button
4. MODE button
5. I FEEL button
6. button
7. button
8. CLOCK button
9. TIMER ON/TIMER OFF button
10. button
11. X-FAN button
    (Note:X-FAN is the same with BLOW)
12. TEMP button
13. TURBO button
14. SLEEP button
15. LIGHT button

Introduction for Icons on Display Screen



Introduction for Buttons on Remote Controller

Caution: After putting through the power, the air conditioner will give out a sound. Operation indictor "⏻" is ON (red indicator, the colour is different for different models). After that, you can operate the air conditioner by using remote controller.

1. ON/OFF button

Pressing this button can turn on or turn off the air conditioner. After turning on the air conditioner, operation indicator "⏻" on indoor unit's display is ON (green indicator. The colour is different for different models), and indoor unit will give out a sound.

2. "+" or "-" button

● Press “+” or “-“ button once increase or decrease set temperature 1°C.Holding "+" or "-" button, 2s later, set temperature on remote controller will change quickly. On releasing button after setting is finished, temperature indicator on indoor unit will change accordingly. (Temperature can’t be adjusted under auto mode)

● When setting TIMER ON, TIMER OFF or CLOCK, press "+" or "-" button to adjust time.(Refer to CLOCK, TIMER ON, TIMER OFF buttons) When setting TIMER ON, TIMER OFF or CLOCK, press "+" or "-" button to adjust time. (Refer to CLOCK, TIMER ON,TIMER OFF buttons)

3. FAN button

Pressing this button can set fan speed circularly as: auto (AUTO), low( ),medium( ),high( ).

4. MODE button

Press this button to select your required operation mode.

● When selecting auto mode, air conditioner will operate automatically according to ambient temperature . Set temperature can’t be adjusted and will not be displayed as well. Press“FAN” button can adjust fan speed. Press " " button can adjust fan blowing angle.

● After selecting cool mode, air conditioner will operate under cool mode. Cool indicator " "on indoor unit is ON.(red indicator, the colour is different for different models). Press "+" or "-" button to adjust set temperature.

Press "FAN" button to adjust fan speed. Press " " button to adjust fan blowing angle.

● When selecting dry mode, the air conditioner operates at low speed under dry mode. Dry indicator " " on indoor unit is ON.(red indicator , the colour is different for different models).Under dry mode, fan speed can’t be adjusted. Press " " button to adjust fan blowing angle.

● When selecting fan mode, the air conditioner will only blow fan, no cooling and no heating. all indicators are OFF, operation indicator on indoor unit is ON. Press "FAN" button to adjust fan speed. Press " " button to adjust fan blowing angle.

● When selecting heating mode, the air conditioner operates under heat mode. Heat indicator " " on indoor unit is ON. (red indicator, the colour is different for different models). Press "+" or "-" button to adjust set temperature,Press “FAN” button to adjust fan speed.

Press " " button to adjust fan blowing angle.(Cooling only unit won’t receive heating mode signal. If setting heat mode with remote controller, press ON/OFF button can’t start up the unit).

Note:

● For preventing cold air, after starting up heating mode, indoor unit will delay 1~5 minutes to blow air (actual delay time is depend on indoor ambient temperature).

● Set temperature range from remote controller: 16~30°C(61~86 ℉) ; Fan speed: auto, low speed,medium speed, high speed.

5. I FEEL button

Press this button to turn on I FEEL function. The unit automatically adjust temperature according to the sensed temperature. Press this button again to cancel I FEEL function.

6. button

Press this button to set HEALTH function ON or OFF. After the unit is turned on, it defaults to HEALTH function ON.

7. button (Only available for some models)

Press this button to select AIR function ON or OFF.

8. CLOCK button

Press this button to set clock time. " " icon on remote controller will blink. Pess "+" or "-" button within 5s to set clock time. Each pressing of "+" or "-" button, clock time will increase or decrease 1 minute. If hold "+" or "-" button, 2s later, time will change quickly. Release this button when reaching your required time. Press “CLOCK" button to confirm the time. " " icon stops blinking.

Note:

● Clock time adopts 24-hour mode.

● The interval between two operation can’t exceeds 5s. Otherwise, remote controller will quit setting status. Operation for TIMER ON/ TIMER OFF is the same.

9. TIMER ON/TIMER OFF button

● TIMER ON button

“TIMER ON” button can set the time for timer on. After pressing this button, " " icon disappears and the word “ON" on remote controller blinks. Press "+" or "-"button to adjust TIMER ON setting. After each pressing "+" or "-"button, TIMER ON setting will increase or decrease 1min. Hold "+" or "-"button, 2s later, the time will change quickly

until reaching your required time. Press “ TIMER ON”to confirm it. The word “ON" will stop blinking. " " icon resumes displaying.

Cancel TIMER ON: Under the condition that TIMER ON is started up, press “TIMER ON” button to cancel it.

● TIMER OFF button

"TIMER OFF" button can set the time for timer off. After pressing this button, " " icon disappears and the word "OFF" on remote controller blinks. Press "+" or "-" button to adjust TIMER OFF setting. After each pressing "+" or "-" button, TIMER OFF setting will increase or decrease 1min. Hold "+" or "-" button, 2s later, the time will change

quickly until reaching your required time. Press "TIMER OFF"word "OFF" will stop blinking. " " icon resumes displaying.

Cancel TIMER OFF. Under the condition that TIMER OFF is started up, press “TIMER OFF” button to cancel it.

Note:

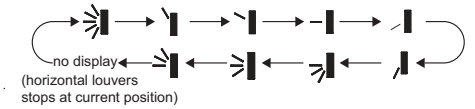
● Under on and off status, you can set TIMER OFF or TIMER on simultaneously.

● Before setting TIMER ON or TIMER OFF, please adjust the clock time.

● After starting up TIMER ON or TIMER OFF, set the constant circulating valid. After that, air conditioner will be turned on or turned off according to setting time. ON/OFF button has no effect on setting. If you don't need this function, please use remote controller to cancel it.

10. button

Press this button can select up&down swing angle. Fan blow angle can be selectedcircularly as below:



● When selecting " ", air conditioner is blowing fan automatically. Horizontal louver will automatically swing up & down at maximum angle.

● When selecting " ", air conditioner is blowing fan at fixed position. Horizontal louver will stop at the fixed position.

● When selecting " ", air conditioner is blowing fan at fixed angle. Horizontal louver will send air at the fixed angle.

● Hold " " button above 2s to set your required swing angle. When reaching your required angle, release the button.

Note:

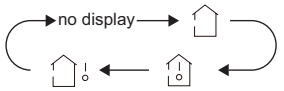
" " may not be available. When air conditioner receives this signal, the air conditioner will blow fan automatically.

11. X-FAN button

Press this button under cool and dry mode to start up x-fan function, and " " icon on remote controller will be displayed. Press this button again to cancel x-fan function, and " " icon will disappear.

12. TEMP button

By pressing this button, you can see indoor set temperature, indoor ambient temperature or outdoor ambient temperature on indoor unit's display. The setting on remote controlleris selected circularly as below:



When selecting " " or no display with remote controller, temperature indicator on indoor unit displays set temperature;

When selecting " " with remote controller, temperature indicator on indoor unit displays indoor ambient temperature;

When selecting " " with remote controller, temperature indicator on indoor unit displays outdoor ambient temperature.

Note:

● Outdoor temperature display is not available for some models. At that time, indoor unit receives" " signal, while it displays indoor set temperature.

● It's defaulted to display set temperature when turning on the unit.There is no display in the remote controller.

● Only for the models whose indoor unit has dual-8 display

13. TURBO button

Under COOL or HEAT mode, press this button to turn to quick COOL or quick HEAT mode. " " icon is displayed on remote controller. Press this button again to exit turbo function and " " icon will disappear.

14. SLEEP button

Under COOL, HEAT mode, press this button to start up sleep function." " icon is displayed on remote controller. Press this button again to cancel sleep function and " " icon will disappear.

15. LIGHT button

Pressing this button to turn off display light on indoor unit. " " icon on remote controller disappears. Press this button again to turn on display light. " " icon is displayed.

Function Introduction for Combination Buttons

Child lock function:

Press "+"and "-" simultaneously to turn on or turn off child lock function. When child lock function is on," " icon is displayed on remote controller. If you operate the remote controller, it won't send signal.

Temperature display switchover function:

Under OFF status, press "-" and "MODE" buttons simultaneously to switch temperature display between °C and °F .

Operation Guide

1. After putting through the power, press "ON/OFF" button on remote controller to turn on the air conditioner.
2. Press "MODE" button to select your required mode:AUTO,COOL,DRY,FAN,HEAT.
3. Press "+" or "-" button to set your required temperature. (Temperature can't be adjusted under auto mode).
4. Press "FAN" button to set your required fan speed: auto, low, medium and high speed.
5. Press " " button to select fan blowing angle.

If “H1” is displayed on the remote controller while it’s not operated by the professional person/after-sales person, it belongs to the misoperation. Please operate it as below to cancel it.Under the OFF status of remote controller, hold the “MODE” button and “X-FAN” buttons simultaneously for 5s to cancel “H1” display.

Note:

● If remote controller displays “H1”, it belongs to the normal function reminder. If the unit is defrosting under heating mode, it operates according to H1 defrosting mode. “H1” won’t be displayed on the panel of indoor unit;
● Once you set H1 mode, if you turn off unit by remote controller, H1 will display 3 times on the remote controller and then disappear;
● Also, when you set H1 mode, when you change to heating mode, H1 will display 3 times on the remote controller and then disappear.

Replacement of Batteries in Remote Controller

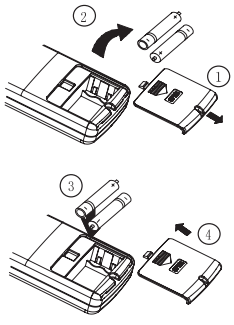
1.Press the back side of remote controller marked with“ OPEN ”as shown in the fig, and then push out the cover of battery box along the arrow direction.

2. Replace two 7# (AAA 1.5V) dry batteries, and make sure the position of “+” polar and “-“ polar are correct.

3. Reinstall the cover of battery box.

Note:

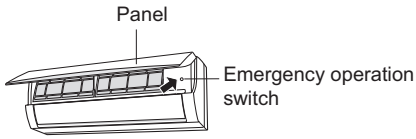
● During operation, point the remote control signal sender at the receiving window on indoor unit.
● The distance between signal sender and receiving window should be no more than 8m, and there should be no obstacles between them.
● Signal may be interfered easily in the room where there is fluorescent lamp or wireless telephone; remote controller should be close to indoor unit during operation.
● Replace new batteries of the same model when replacement is required.
● When you don’t use remote controller for a long time, please take out the batteries.
● If the display on remote controller is fuzzy or there’s no display, please replace batteries.



Sketch map for replacing batteries

Emergency Operation

If remote controller is lost or damaged, please use auxiliary button to turn on or turn off the air conditioner. The operation in details are as below: As shown in the fig. Open panel, press aux. button to turn on or turn off the air conditioner. When the air conditioner is turned on, it will operate under auto mode.



6.3 Brief Description of Modes and Functions

1) Mode Conflict Protection of indoor unit

When the setting mode is different of different indoor unit, the unit runs in below status:

a. The mode of the first operating indoor unit is the basic mode, then compare the mode of the other indoor units to see if there is a conflict. Cooling mode (dry mode) is in conflict with heating mode.

b. Fan mode is in conflict with heating mode and the heating mode is the basic mode. No matter which indoor unit operates first, the unit will run in heating mode.

2) Communication malfunction

Detection of the quantity of installed indoor units: After 3min of energizing, if the outdoor unit does not receive the communication data of certain indoor unit, the outdoor unit will judge that indoor unit is not installed and will treat it as it is not installed. If the outdoor unit receives the communication data of that indoor unit later, the outdoor unit will treat that unit as it is installed.

Control Function of Indoor Unit

1) Running Mode

1.COOL 2.DRY 3.HEAT 4.AUTO 5 FAN

2) Basic Functions of the System

a. COOL Mode

Under this mode, the fan and swing function goes as the set conditions, and the set temperature range is 16˚C ~30˚C .

b. DRY Mode

Under this mode, the fan will run at the low speed and the swing function is performed under the set conditions. The set temperature range is 16~30˚C .

c. FAN Mode

Under this mode, only the fan of the indoor unit runs. And if the auto speed is set, the fan will run under the same condition as the COOL mode.

d. HEAT Mode

a) Under this mode, the set temperature rang is 16˚C ~30˚C .

b) The defrosting symbol “H1” will be displayed when the defrosting signal is received from the outdoor unit.

e. AUTO Mode

a) When the ambient temperature is higher than 25˚C , the unit will run as the COOL mode.

b) For the cooling and heating unit, if the ambient temperature is or lower than22˚C , the unit will run as the HEAT mode.

c) When the indoor ambient temperature is higher than 22˚C but lower than 26˚C , the system will run at the FAN mode, and the set temperature is 24˚C . In this case, if other indoor unit runs at the HEAT mode, a mode conflict alarm will be raised.

3) Other Control

a. Beeper Control

When the controller is powered on or it receives a valid either press button signal or remote control signal, the beeper will utter a warning tone.

b. Auto Speed Control

a) Under the HEAT Mode: (Ambient temperature herein is the temperature without temperature compensation)

When the ambient temperature is or lower than the set temperature, the indoor unit runs at the high speed.

When the ambient temperature is higher than the set temperature but lower than the set temperature plus 2˚C , the indoor unit fan runs at the medium speed.

When the ambient temperature is or lower than the set temperature plus 2˚C , the fan runs at the low speed.

b) Under the COOL and FAN Modes

When the ambient temperature is or higher than the set temperature plus 3˚C , the indoor unit runs at high speed.

When the ambient temperature is higher than the set temperature plus 1˚C but lower than the set temperature plus 3˚C , the indoor unit fan runs at the medium speed.

When the ambient temperature is or lower than the set temperature plus 1˚C , the fan runs at the low speed.

c) Once the fan starts at a certain speed, it will keep running at this speed for no less than 30 seconds prior to any changeover stated above.

c. AUTO Press Button

The whole unit will run under the AUTO mode by pressing this button when the unit is off. In this condition, the fan of the indoor unit will run at the auto speed with the swing function activated. When the unit is on, it will be turned off by pressing this button. This button is unavailable to the floor/ceiling unit.

d. Sleep
Under this mode, the proper sleep curve will be adopted in accordance with different set temperatures. Under the COOL mode or the DRY mode, the temperature will go up by 1℃ after one hour and by another 1℃ after another hour, after that, the temperature will be kept on.
Under the HEAT mode, the temperature will go down by 1 ℃ after one hour and by another 1℃ after another hour, after that, the temperature will be kept on.
e. Timer
a)Timer On
When the unit is powered on but in the idle condition, it is available to set when to start the unit. Then, when the unit starts, it will run as the previously set mod. The set range of the timer is 0.5 ~ 24 hours with a interval of 0.5 hour.
b) Timer Off
When the unit is on, it is available to set when to stop the unit. The set range of timer is 0.5~ 24 hours with a interval of 0.5 hour.
f. Memory
a) Memorizing Objects: modes (AUTO, COO, DRY, FAN, HEAT), swing, set temperature, set fan speed, etc.
b) When the indoor unit works without the wired controller, it will resume the working condition as the power failure occurs after it is powered on again. When the indoor unit is with the wired controller, it is available to set the memory function by pressing the corresponding buttons of the wired controller.
c) When the indoor unit works without the wired controller, if the timer is not set for the last remote control instruction, the system will memorize this last instruction and works following it; if the timer is set, it will be canceled as the power failure occurs and will have to be reset.
d) When the indoor unit works with the wired controller, it will wok as the message sent by the wired controller after it is powered on again.
g. Selection of the Indoor Temperature Sensor
a) when the indoor unit works with the Control Panel (receiver device) :
① For the duct type indoor unit: Under the COOL, HEAT, DRY, or FAN mode, the return air temperature sensor is adopted; while under the HEAT mode, it is the receiver temperature sensor. Under the AUTO mode, the receiver temperature sensor is adopted. However, if this temperature sensor fails, the sensor located at the return air inlet will take the place.
② For the cassette type, floor/ceiling type indoor unit: Under all modes, the return air temperature sensor is adopted.
b) When the duct type, cassette type, or the floor/ceiling type indoor unit works with the wired controller, the ambient temperature sensor can be set in the following four ways:
① 01:The indoor temperature sensor is set for the return air.
② 02:The indoor temperature sensor is set for the wired controller.
③ 03:The indoor temperature sensor is set for the wired controller under the HEAT mode, and for the return air under any other mode.
④ 04:The indoor temperature sensor is set for the return air under the HEAT mode, and for the wired controller under any other mode.
c) Setting of the Ambient Temperature Sensor of the Wired Controller XK19.
When the unit is off, it is available to go to the debugging status by pressing the "Function" and "Timer" buttons for five seconds, and the corresponding code will be displayed on the temperature area of the wired controller. There are four kinds of codes which can be adjusted through the "▼" /"▲ "button.
The third one is the default code. The setting of the ambient temperature sensor of the wired controller should be memorized.
The "Enter/Cancel" button shall be pressed to confirm and leave the setting. If there is no response to the last button press within 20 seconds, then the system will quit the setting and go to the normal "Off" status but with the setting still saved.
h. Switchover of the Defrosting Mode
On condition that the unit is off, if "H1" is not displayed on the wireless controller, then the unit will go to the setting status of the "Defrosting Mode 1"as it is turned on through the wired controller. Then, once the indoor unit receives this signal, it will soon send it to the outdoor unit. In contract, if "H1"is displayed, the unit will go the setting status of the "Defrosting Mode 2", and the indoor unit also will send this signal to the outdoor unit as soon as it receives it.
On condition that the unit is off, it is available to switch over the "Defrosting Mode 1" and "Defrosting Mode 2" by pressing the "MODE" and "BLOW" buttons simultaneously.
i. Turbo

As soon as the controller receives the “Turbo” instruction, the fan of the indoor unit will run at the high speed .

j. Blow

Blow Function:It is a function to automatically blow off the moist inside the exchanger of the indoor unit to prevent mould growing after the unit is shut off.

a) On condition that this function is activated, when the “On/Off” press button is operated, the fan of the indoor unit will still run for ten minutes (with the symbol “BLOW” displayed). At this time, the fan will stop as this function is deactivated.

b) This function is unavailable under the AUTO, FAN, and HEAT modes.

Part Ⅱ : Installation and Maintenance

7. Notes for Installation and Maintenance

Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.
The following contents are very important for installation and maintenance.

Please follow the instructions below.

●The installation or maintenance must accord with the instructions.
●Comply with all national electrical codes and local electrical codes.
●Pay attention to the warnings and cautions in this manual.
●All installation and maintenance shall be performed by distributor or qualified person.
●All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.
●Be caution during installation and maintenance. Prohibit incorrect operation to prevent electric shock, casualty and other accidents.

Warnings

Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air condition must apply specialized circuit and prohibit share the same circuit with other appliances.
3. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Have the unit adequately grounded. The grounding wire can't be used for other purposes.
6. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
7. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
8. The power cord and power connection wires can't be pressed by hard objects.
9. If power cord or connection wire is broken, it must be replaced by a qualified person.
10. If the power cord or connection wire is not long enough, please get the specialized power cord or connection wire from the manufacture or distributor. Prohibit prolong the wire by yourself.
11. For the air conditioner without plug, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.
12. Make sure all wires and pipes are connected properly and the valves are opened before energizing.
13. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.
14. Replace the fuse with a new one of the same specification if it is burnt down; don't replace it with a cooper wire or conducting wire.
15. If the unit is to be installed in a humid place, the circuit breaker must be installed.

Installation Safety Precautions:

1. Select the installation location according to the requirement of this manual.(See the requirements in installation part)
2. Handle unit transportation with care; the unit should not be carried by only one person if it is more than 20kg.
3. When installing the indoor unit and outdoor unit, a sufficient fixing bolt must be installed; make sure the installation support is firm.
4. Ware safety belt if the height of working is above 2m.
5. Use equipped components or appointed components during installation.
6. Make sure no foreign objects are left in the unit after finishing installation.

Refrigerant Safety Precautions:

1. Avoid contact between refrigerant and fire as it generates poisonous gas; Prohibit prolong the connection pipe by welding.
2. Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture or other hazards.
3. Make sure no refrigerant gas is leaking out when installation is completed.
4. If there is refrigerant leakage, please take sufficient measure to minimize the density of refrigerant.
5. Never touch the refrigerant piping or compressor without wearing glove to avoid scald or frostbite.

Improper installation may lead to fire hazard, explosion, electric shock or injury.

To ensure safety, please be mindful of the following precautions.

●When installing or relocating the unit, be sure to keep the refrigerant circuit free from air or substances other than the specified refrigerant.

Any presence of air or other foreign substance in the refrigerant circuit will cause system pressure rise or compressor rupture, resulting in injury.

●When installing or moving this unit, do not charge the refrigerant which is not comply with that on the nameplate or unqualified refrigerant.Otherwise, it may cause abnormal operation, wrong action, mechanical malfunction or even series safety accident.

●When refrigerant needs to be recovered during relocating or repairing the unit, be sure that the unit is running in cooling mode. Then, fully close the valve at high pressure side (liquid valve).About 30-40 seconds later, fully close the valve at low pressure side (gas valve), immediately stop the unit and disconnect power. Please note that the time for refrigerant recovery should not exceed 1 minute.

If refrigerant recovery takes too much time, air may be sucked in and cause pressure rise or compressor rupture, resulting in injury.

●During refrigerant recovery, make sure that liquid valve and gas valve are fully closed and power is disconnected before detaching the connection pipe.

If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.

●When installing the unit, make sure that connection pipe is securely connected before the compressor starts running.

If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.

●Prohibit installing the unit at the place where there may be leaked corrosive gas or flammable gas.

If there leaked gas around the unit, it may cause explosion and other accidents.

●Do not use extension cords for electrical connections. If the electric wire is not long enough, please contact a local service center authorized and ask for a proper electric wire.

Poor connections may lead to electric shock or fire.

●Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the wires so that their terminals receive no external stresses.

Electric wires with insufficient capacity, wrong wire connections and insecure wire terminals may cause electric shock or fire.

Main Tools for Installation and Maintenance

1. Level meter, measuring tape 	2. Screw driver 	3. Impact drill, drill head, electric drill 
4. Electroprobe 	5. Universal meter 	6. Torque wrench, open-end wrench, inner hexagon spanner 
7. Electronic leakage detector 	8. Vacuum pump 	9. Pressure meter 
10. Pipe pliers, pipe cutter   	11. Pipe expander, pipe bender  	12. Soldering appliance, refrigerant container  

8. Installation

8.1 Precautions for Installation

8.1.1 Precautions for Installation

As soon as the controller receives the "Turbo" instruction, the fan of the indoor unit will run at the high speed .

j. Blow

Blow Function:It is a function to automatically blow off the moist inside the exchanger of the indoor unit to prevent mould growing after the unit is shut off.

a) On condition that this function is activated, when the "On/Off" press button is operated, the fan of the indoor unit will still run for ten minutes (with the symbol "BLOW" displayed). At this time, the fan will stop as this function is deactivated.

b) This function is unavailable under the AUTO, FAN, and HEAT modes.

◆ To ensure correct installation, please make sure to read the Safety Considerations thoroughly before starting the installation works.

◆ The considerations stated below are classified into ⚠WARNING and ⚠CAUTION. Those that might cause death or severe injury in case of wrong installation are identified in ⚠WARNING. However, those that are stated in ⚠CAUTION may also cause severe accidents sometimes. Therefore, both of them relate to important safety considerations and must be strictly followed.

◆ After completing the installation and test run and confirming that all are normal, please introduce to the client on how to use and repair the machine according to the Operating Instructions. Besides, please deliver the considerations herein to the clients together with the Operating Instructions, and ask them to keep properly.

⚠ WARNING!

◆ The installation shall be performed by the vendor or professional dealer from which you buy the machine. If you install by yourself, any improper installation might cause water leakage, electric shock or fire accident.

◆ The installation shall be done correctly according to installation instructions. Improper installation may cause water leakage, electric shock or fire.

◆ To install a large air-conditioning system in a small room, please make sure to take measures to prevent that the refrigerant will not exceed the limit concentration in case of leakage. For the measures to prevent the refrigerant from exceeding the limit concentration, please consult your dealer. If no proper measures, it might cause human suffocation in case of refrigerant leakage.

◆ Please install at a position that is strong enough to support the weight of machine. If the installing position is of low strength, the machine may drop down and thus cause human injury.

◆ Please carry out installation in accordance with the rules for preventing the typhoon or earthquake. The machine may tip over if the installation does not comply with the requirements.

◆ The electrical cabling shall be carried out by qualified electricians in accordance with the Safety Code for Electrical Equipment, relevant local rules and the installation instructions. Make sure to use the special-purpose circuit. If the power circuit capacity is low or the construction is improper, it might cause electric shock or fire accidents.

◆ Please use suitable cables and connect them securely. Please fix the terminal joints securely. The terminal connection shall not be affected due to any external force applied onto the cable. Improper connection and fixing may cause heating and fire accidents.

◆ Keep the cables in correct shape and prevent them from protruding upward. Please protect them securely with repair board. Improper installation may cause heating and fire accidents.

◆ When erecting or relocating the air conditioner, do not let any air enter into cooling circulation system except the specified refrigerant. If any air is mixed, abnormal high pressure will occur in the cooling circulation system, thus causing crack or human injury accidents.

◆ During installation, please always use the attached parts or designated parts. Failure to use the designated parts may cause water leakage, electric shock, fire or refrigerant leakage.

⚠ CAUTION:

◆ Please earth securely. Do not connect the earth wires to gas pipe, water pipe, lightning rod or telephone line. Improper earthling might cause electric shock.

◆ Leakage circuit breaker must be installed at some place. No installation of leakage circuit breaker might cause electric shock.

◆ Do not install at a place where inflammable gas might leak. Gas leakage and despot around the machine might cause fire accidents.

◆ To ensure correct drainage of water, the drainage pipe shall be installed according to the installation instructions. Also the heat insulation shall be provided to avoid condensing. Improper installation of the pipe might result in water leakage and lead to possible wetting of the articles in the room.

7.1.2 Key Points of Installation

Installation Procedures	Description and Acceptance Criteria
Material Selection and Equipment Inspection	The materials specified on the engineering drawing shall be purchased as specified (e.g. copper tube, thermal insulation tube, PVC pipe, power cables, air switch, etc). The materials not specified on the engineering drawing shall be purchased according to the actual quantity of works (e.g. hanger frame, cable duct, etc). Check if the outdoor unit, indoor unit, communication wires and accessories are complete.

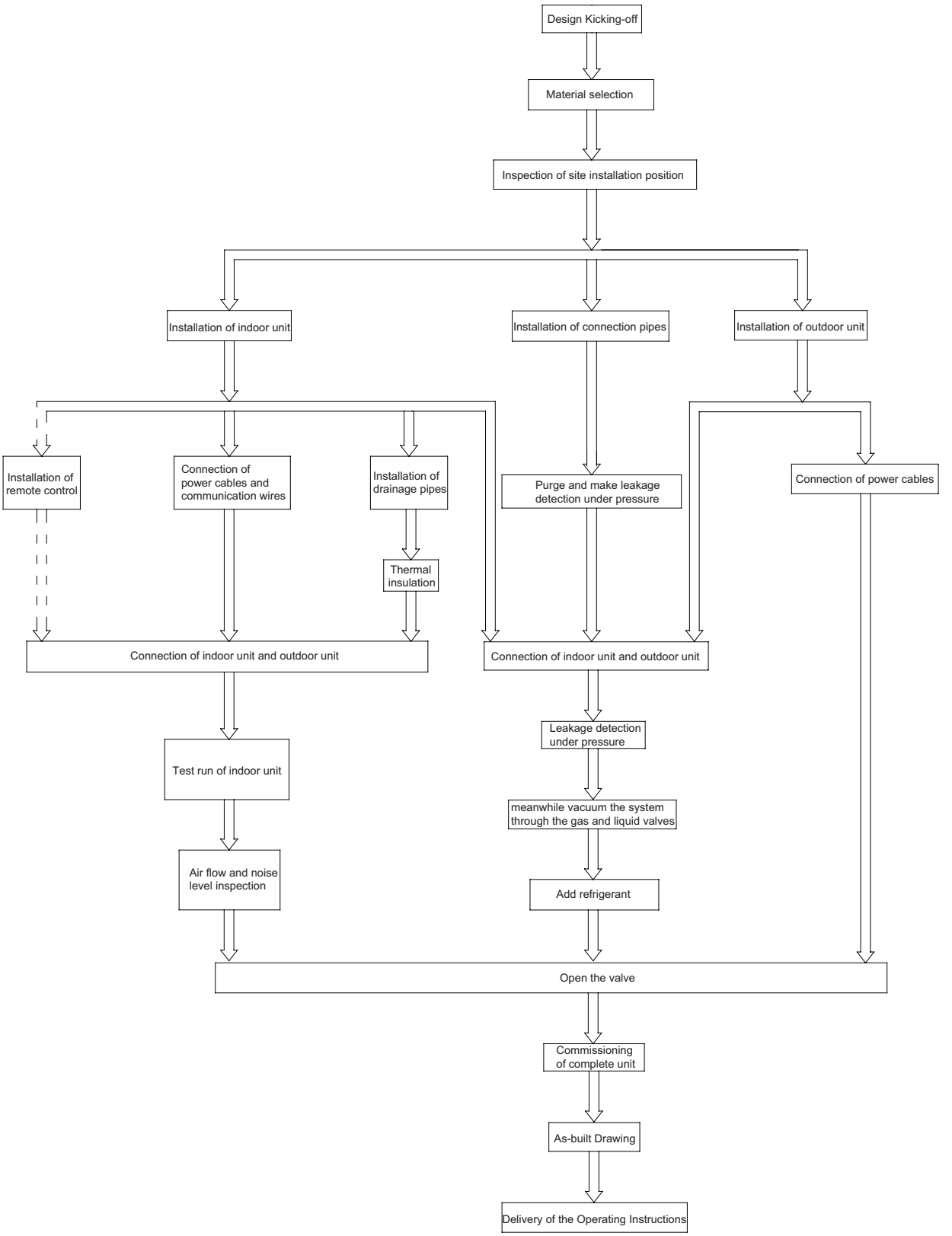
Installation of indoor unit	Communication wire	Connection	The power cables shall be separated from communication wires at a least distance of 10cm. To avoid breaking the communication wires, please do not use strong force. For multiple units, please mark them properly. Switch on indoor and outdoor unit, and ensure there is no display of “Communication Wire Error E6”.
		Address dial code	Each indoor unit under the same system has a unique address dial code. The wired controller and its corresponding indoor unit have the same address dial code.
	Remote Control		Select the remote control mode. The centralized controller and communication module shall be installed free from the source of interference.
	Power cord		The power cable must meet the specifications. The indoor units under the same system must be arranged under unified power supply.
	Drainage Pipe	Installation	The PVC pipes must meet the specifications. A specific gradient must be provided along the water flow direction. Carry out water detection after installation. Carry out thermal insulation to the drainage pipe only after the water detection is accepted.
		Thermal insulation	The thermal insulation tube must meet the specifications. Seal between the thermal insulation pipes to avoid air entry.
	Installation of Air Duct (when with high static pressure duct-type unit)		Design the length of air duct according to static pressure; The air inlet shall be optimally designed to avoid too small size
Installation of connection pipes	Welding		The copper tube must meet the specifications. Ensure it is dry and clean inside the tube. Make sure to charge nitrogen as required for protection when welding the tubes. Please keep to the welding process and ensure the system free of leakage. Add a dual-way filter on liquid pipe side For multiple systems, please mark them properly. Carry out leakage detection under pressure after welding.
	Purge and make leakage detection under pressure		Purge the system clean. Keep the pressure for 24 hours Except for the influence by temperature, it is deemed acceptable if pressure drop is within 0.02MPa. (With the temperature change by 1 ℃ , the pressure will change by approx. 0.01MPa)
	Thermal insulation		The thermal insulation tube must meet the specifications. Seal between the thermal insulation pipes to avoid air entry.
Installation of outdoor unit			Select the installing position correctly. Build the foundation according to the anchor bolt position and the dimension of outdoor unit Build the damping device properly. Avoid sharp knock when handling the outdoor unit. The inclination angle shall not be higher than 15°.
Connection of indoor unit and outdoor unit			Tighten the nuts. Provide proper protection to the outdoor connection pipe, communication wires and power supply.
Leakage detection under pressure			Keep the pressure for 24 hours. Except for the influence by temperature, it is deemed acceptable if pressure drop is within 0.02MPa. (With the temperature change by 1℃ , the pressure will change by approx. 0.01MPa).
Vacuuming			Establish vacuum simultaneously in the gas pipe and liquid pipe; The vacuuming time shall be long enough. Put still for 1 hour after vacuuming. It is deemed acceptable if the pressure will not rise.
Add refrigerant			Add refrigerant according to the volume as specified on the engineering drawing.
Open the valve of outdoor unit			
Commissioning of complete unit			

Remarks:

a. Described above are general working procedures. The procedures might vary with the site conditions.

b. For detailed installation rules, please see the description in each chapter.

7.2 Flow Chart of Installation



7.3 Install Indoor Unit

7.3.1 Installation of Duct Type

1) Before Installation

Check if there is any damage to the indoor unit, and the wireless controller and other part and components

are prepared completely.

2) Installation Site

● The selection of the installation place of the air conditioner unit

> The installation must accord with the national and local safe criterion.
>
> Since the quality of installation would affect the operation directly, user should contact the seller and have the conditioner installed and tested by the professional install personnel according to the install instruction instead of install by himself/herself.
>
> Only connect the power after all the installation works are finished.

● The selection of the installation place of the indoor unit

◆ Prevent direct sun burn.

◆ Make sure that the top steeve, ceiling, and the structure of the construction etc. is strong enough to bear the weight of the unit.

◆ The drainage pipe is easy to drain.

◆ The air flow is not blocked at the outlet and intake vents.

◆ The connecting pipe indoor and outdoor can by lead to outside conveniently.

◆ The unit cannot be installed in the place where stored the flammability, easy exploded thing or the place where would have leakage of flammability and exploded gas.

◆ The unit cannot be installed in the place where has the corrupt gas and serious dust, saline fog, lampblack and huge humidity.

⚠**Note:**

The air conditioner unit installed in the following place may have malfunction, if the malfunction cannot prevent, please contact the Nominated Repair Center Of Gree Electric Appliances, Inc. Of Zhuhai.

a. The place with greasy all around.

b. The seashore place with salinity and alkali.

c. The place with vulcanized gas(such as vulcanized hot spring).

d. The place with high frequency equipment (such as wireless equipment, electric welding machine and medical treatment equipment).

e. The place with special environment.

3) Caution for Installation

◆ Ensure the hanger is strong enough to withstand the weight of the unit.

◆ The drainage of the drain pipe is easy.

◆ No obstacle is in the inlet/outlet and the air circulation is in good condition.

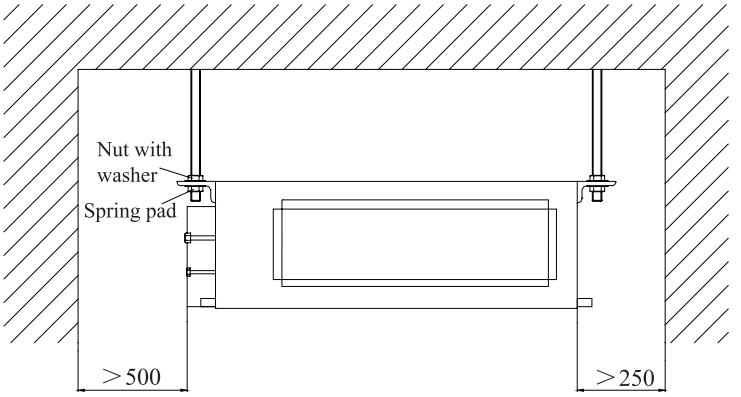
◆ Ensure the installation space is left for the access to maintenance.

◆ It should be far away from where there is heat source, leakage of inflammable, explosive substances, or smog.

◆ It is the ceiling type unit (concealed in the ceiling).

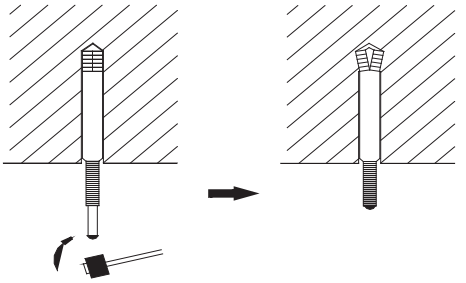
◆ The power cords and connection lines of the indoor and outdoor units must be at least 1m away from the TV set or radio to avoid the image interference and noise (even if 1m is kept, the noise may be produced due to the strong electric wave).

4) Installation Clearance Data

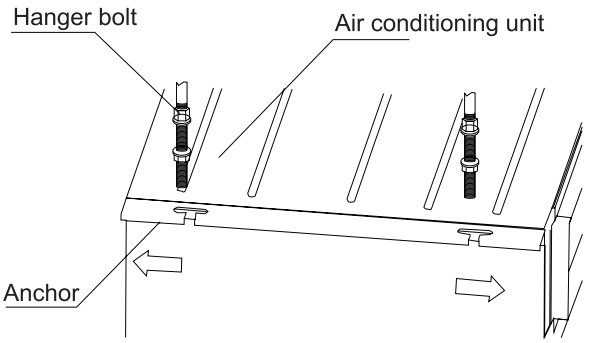


Installation of the Indoor Unit

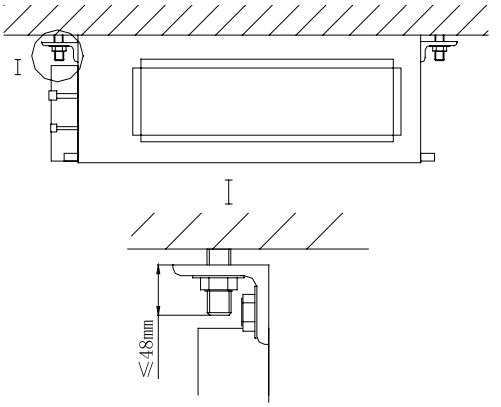
Insert the M10 expansion bolt into the hole, and then knock the nail into the bolt. Refer to the Outline Dimension Drawings of the Indoor Unit for the distance between holes and see Fig.3 for the installation of the expansion bolt.



Install the hanger on the indoor unit:



Install the indoor unit on the ceiling:



⚠CAUTION:

a. Prior to the installation, please make a good preparation for all piping (refrigerant pipe, drain pipe) and wiring (wires of the wired controller, wires between the indoor and outdoor unit) of the indoor unit to make the further installation much easier.

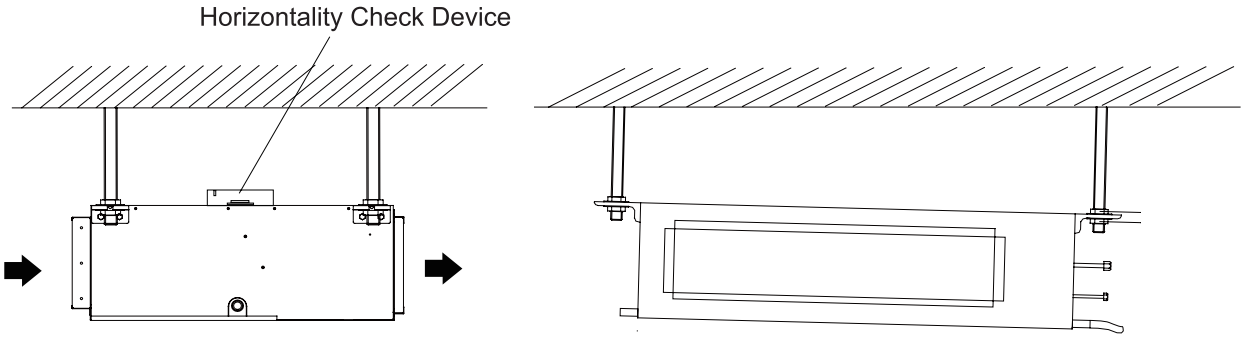
b. If there is an opening in the ceiling, it is better to reinforce it to keep it flat and prevent it vibrating. Consult the user and builder for more details.

c. If the strength of the ceiling is not strong enough, a beam made of angle iron can be used and then fix the unit on it.

d. If the indoor unit is not installed in the air conditioning area, please use sponge around the unit to prevent condensing. The thickness of the sponge depends on the actual installation environment.

4) Horizontality Check of the Indoor Unit

After the installation of the indoor unit, its horizontality must be checked to make sure the unit keep horizontal fore and aft and keep an inclination of 5° toward the drain pipe right and left.



7.3.2 Installation of Cassette Type

1) Before Installation

Check if there is any damage to the indoor unit, and the wireless controller and other part and components are prepared completely.

2) Installation Site

Select install location of the indoor unit

a. Obstruct should put away from the intake or outlet vent of the indoor unit so that the airflow can be blown though all the room.

b. Make sure that the installation had accord with the requirement of the schematic diagram of installation spaces.

c. Select the place where can stand 4 times of the weight of the indoor unit and would not increase the operating noise and oscillate.

d. The horizontally of the installation place should be guaranteed.

e. Select the place where easy drain condensated coagulated water, and easy connect with outdoor unit.

f. Make sure that there are enough space for care and maintenance. Make sure that the weight between the indoor unit and ground is above 1800mm.

g. When installing the steeve bolt, check if the install place can stand the weight 4 times of the unit's. If not, reinforce before installation. (Refer to the install cardboard and find where should be reinforced)

⚠Note!

There will be lots of lampblack and dust stick on the acentric, heat exchanger and water pump in dining room and kitchen, which would reduce the capacity of heat exchanger, lead water leakage and abnormal operation of the water pump.

The following treatment should be taken under this circumstance:

a. Ensure that the smoke trap above cooker has enough capacity to obviate lampblack to prevent the indraft of the lampblack by the air conditioner.

b. Keep the air conditioner far from the kitchen so that the lampblack would not be indraft by the air conditioner.

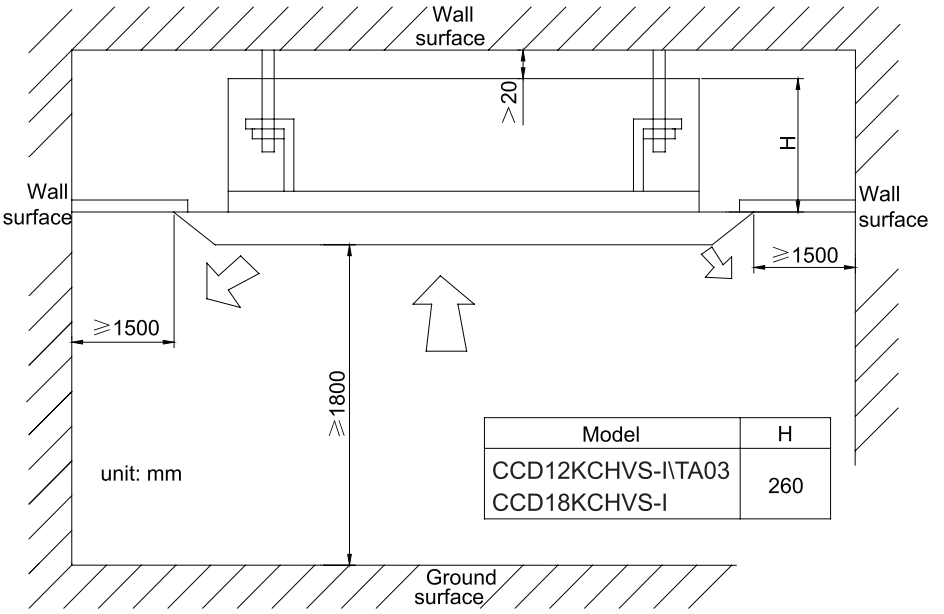
★ Important notice:

◆ To guarantee the good performance, the unit must be installed by professional personnel according with this instruction.

◆ Please contact the local Gree special nominated repair department before installation. Any malfunction caused by the unit that is installed by the department that is not special nominated by GREE would not deal with on time by the inconvenience of the business contact.

3) Installation Clearance Data

12/18K



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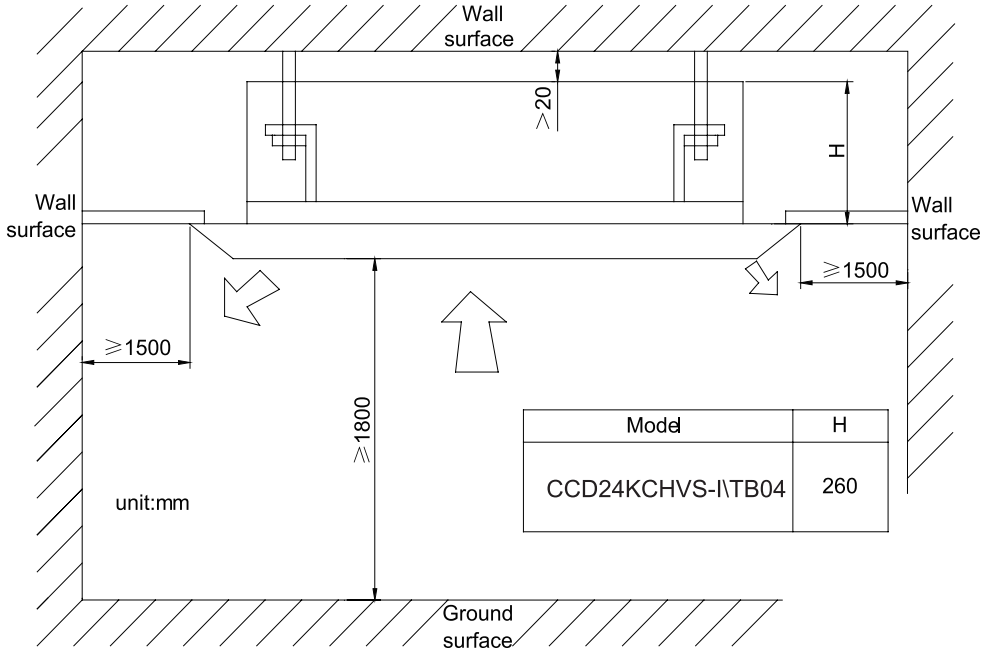


★ **Main body of hoisting air conditioner**

a. The primary step for install the indoor unit.

◆ When attach the hoisting stand on hoisting screw, do use nut and gasket individually at the upper and lower of the hoisting stand to fix it. The use of gasket anchor board can prevent gasket break off.

b. Use install cardboard

◆ Please refer to the install cardboard about the dimension of ceiling opening.

◆ The central mark of the ceiling opening is marked on the install cardboard.

◆ Install the install cardboard on the unit by bolt (3 piece), and fix the angle of the drainage pipe at the outlet vent by bolt.

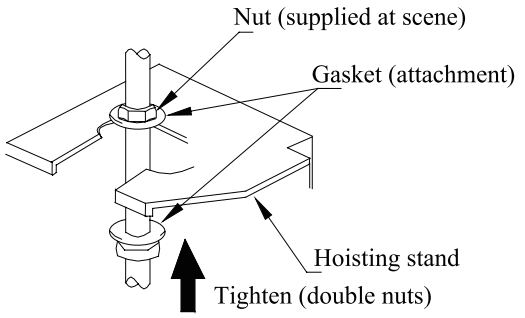
c. Adjust the unit to the suitable install place.

d. Check if the unit is horizontal.

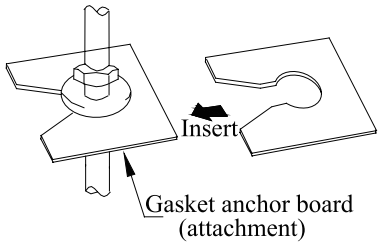
◆ Inner drainage pump and bobber switch are included in the indoor unit, check if 4 angle of every unit are horizontal by water lever. (If the unit is slant toward the opposite of the coagulate water flow, there may be malfunction of the bobber switch and lead water drop.)

e. Backout the gasket anchor board used to prevent gasket break off and tighten the nut on it.

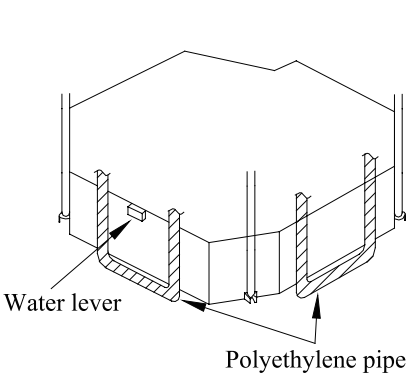
f. Backout the install cardboard.

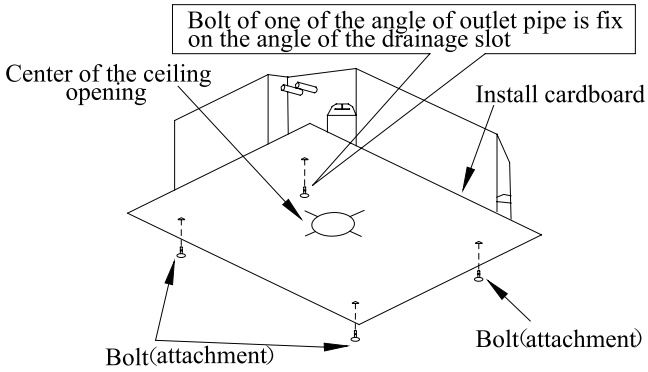


[Fix the hoisting stand firmly]



[Fix the gasket firmly]





[Fix the install cardboard]

⚠Note!

- Please do tighten the nuts and bolts to prevent air conditioner break off.

★ Connection of the refrigerant pipe

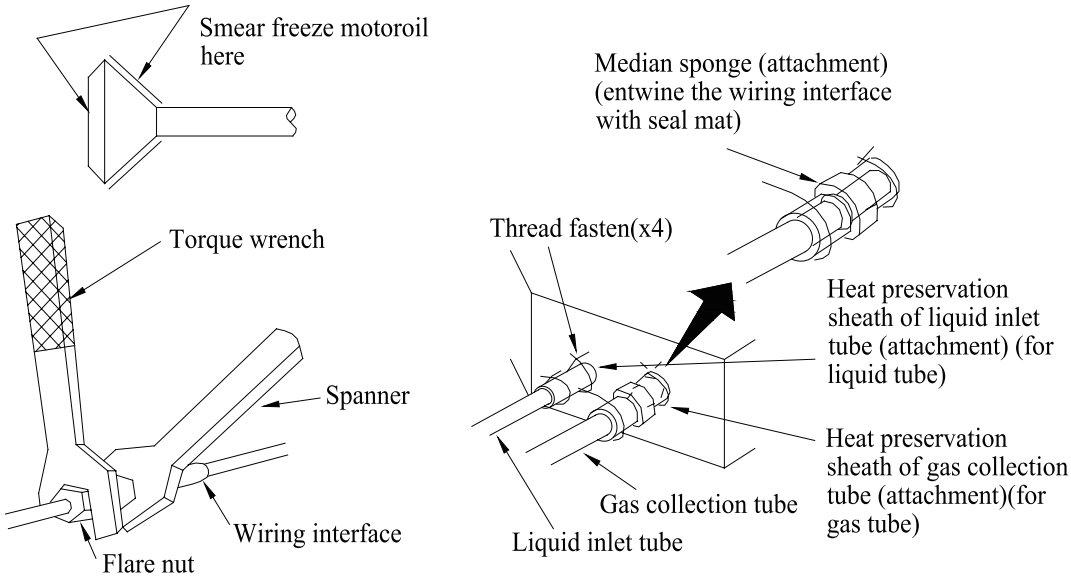
◆ When connect the pipe to the unit or backout it from the unit, please do use both spanner and torque wrench.

◆ When connect, smear both inside and outside of the flare nut with freeze motor oil, screw it by hand and then tighten it with spanner.

◆ Refer to form 1 to check if the wrench had been tightened (too tight would mangle the nut and lead leakage).

◆ Examine the connection pipe to see if it had gas leakage, then take the treatment of heat insulation.

◆ Only use median sponge to entwine the wiring interface of the gas pipe and heat preservation sheath of the gas collection tube.



Form 1: The tightening torque needed for tightening nut

Diameter(Inch)	Surface thickness(mm)	Tightening torque (N·m)
φ1/4”	⩾ 0.5	15-30 (N·m)
φ3/8”	⩾ 0.71	30-40 (N·m)
φ1/2”	⩾ 1	45-50 (N·m)
φ5/8”	⩾ 1	60-65 (N·m)
φ3/4”	⩾ 1	70-75 (N·m)

★ Drainage hose

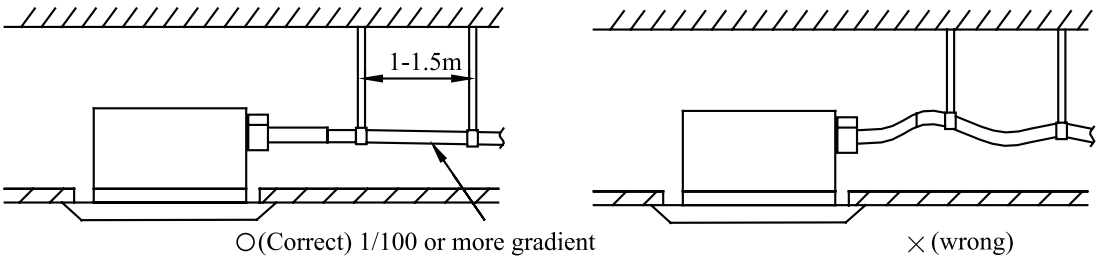
a. Install the drain hose

◆ The diameter of the drain hose should be equal or bigger than the connection pipe's. (The diameter o polythene pipe: Outer diameter 25mm Surface thickness ⩾ 1.5mm)

◆ Drain hose should be short and drooping gradient should at less 1/100 to prevent the formation of ai bubble.

◆ If drain hose cannot has enough drooping gradient, drain raising pipe should be added.

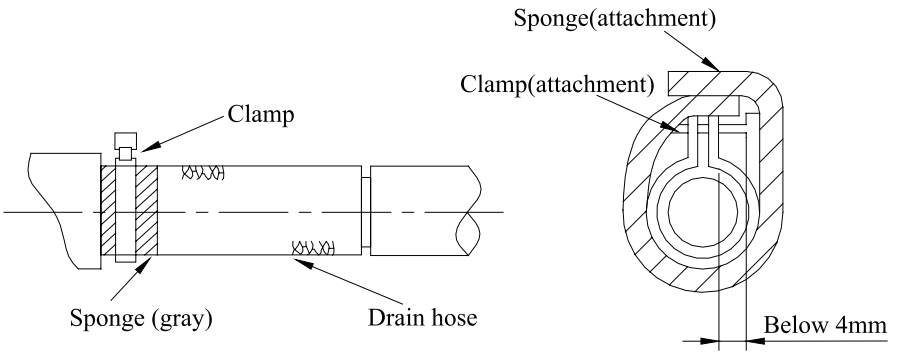
◆ To prevent bent of the drain hose, the distance between hoisting stand should is 1 to 1.5m.



◆ Use the drain hose and clamp attached. Insert the drain hose to the drain vent, and then tighten the clamp.

◆ Entwine the big sponge on the clamp of drain hose to insulate heat.

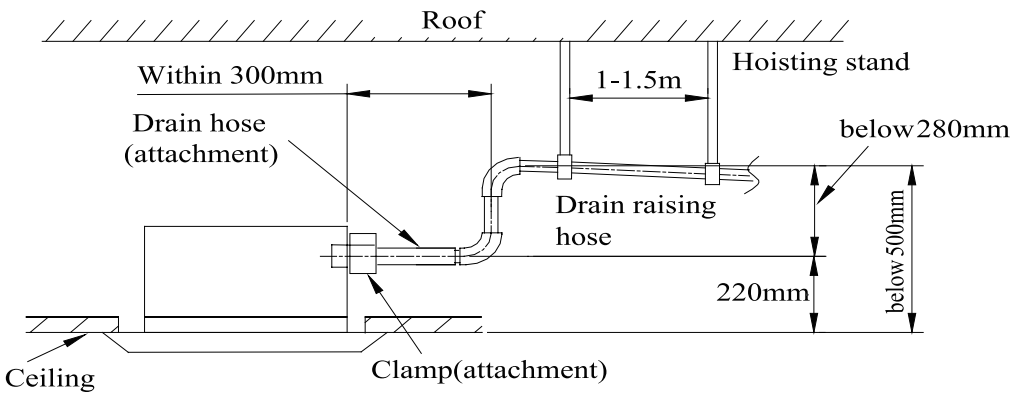
◆ Heat insulation should be done to indoor drain hose.



Drain stepup pipe note

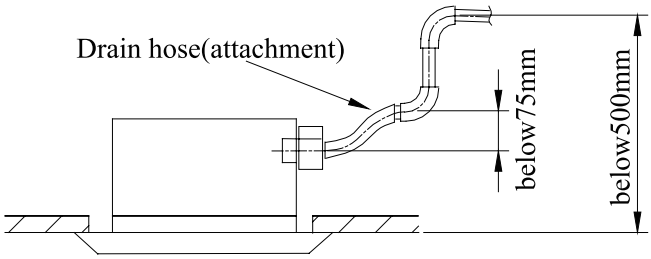
◆ The install height of the drain raising pipe should less than 280mm.

◆ The drain raising pipe should form a right angle with the unit, and distance to unit should not beyonc 300mm.

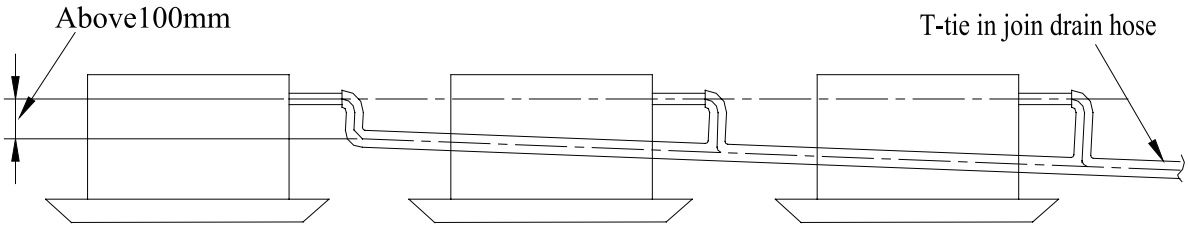


Instruction

◆ The slant gradient of the attached drain hose should be within 75mm so that the drain hole doesn't has to endure the unnecessary outside force.



◆ Please install the drain hose according to the following process if several drain hoses join together.

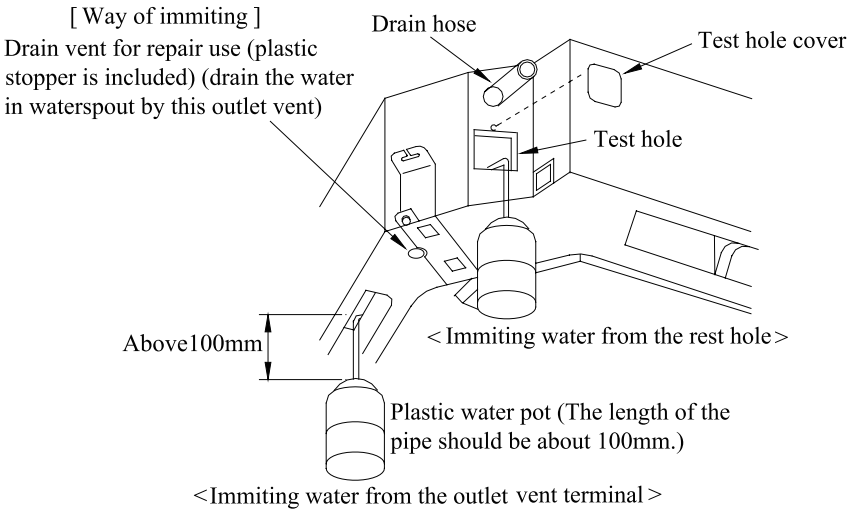


The specs of the selected join drain hose should fits the running capacity of the unit.

b. Check the smoothness of drain after installation.

◆ Check the drain state by immitting 600cc water slowly from the outlet vent or test hole.

◆ Check the drain in the state of refrigerating after installation of the electric circuit.



7.3.3 Installation of Floor Ceiling Type

1) Before Installation

Check if there is any damage to the indoor unit, and the wireless controller and other part and components are prepared completely.

2) Installation Site

Selection of Installation Location for Air Conditioner Unit

> The installation of air conditioner unit must be in accordance with national and local safety codes.
>
> Installation quality will directly affect the normal use of air conditioner unit. The user is prohibited from installation by himself. Please contact your dealer after buying this machine. Professional installation workers will provide installation and test services according to installation manual.
>
> Do not connect to power until all installation work is completed.

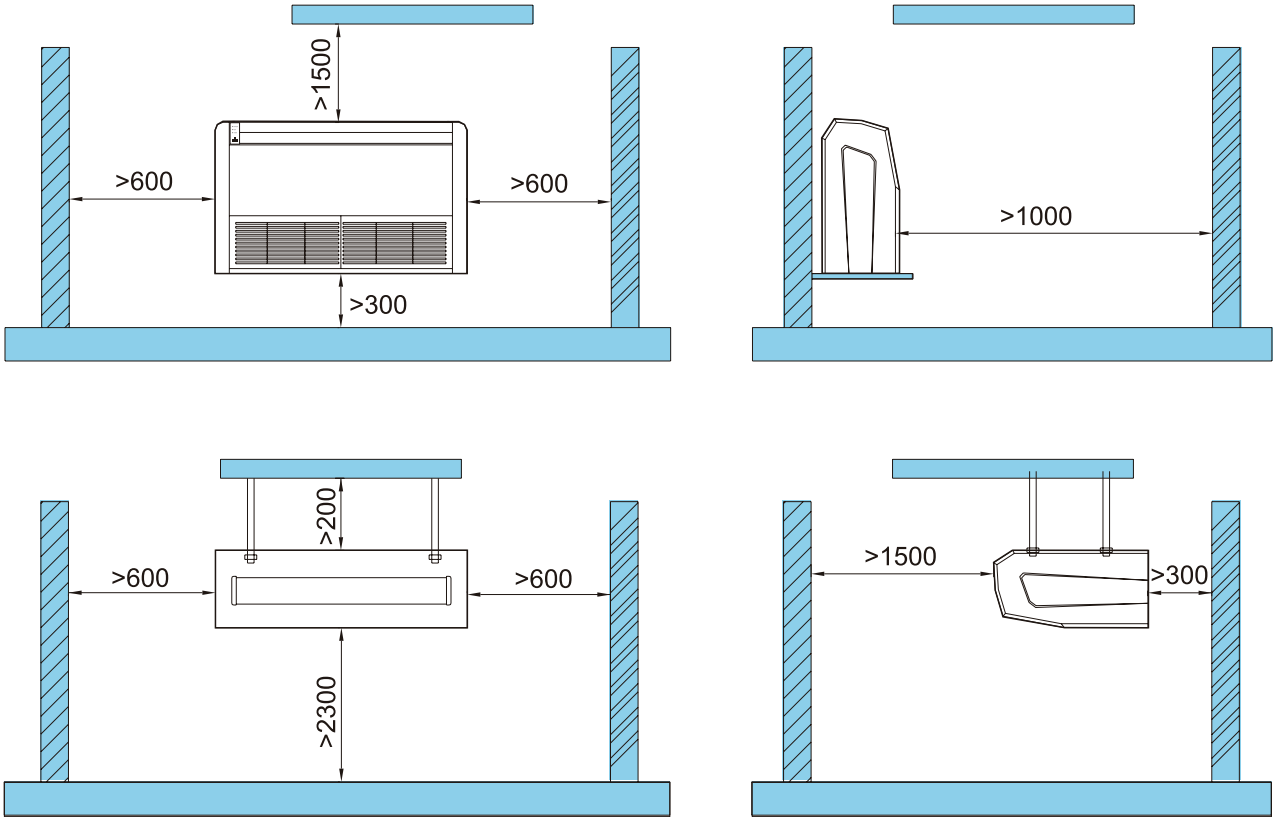
Selection of Installation Location

◆ Such a place where cool air can be distributed throughout the room.
◆ Such a place where is condensation water is easily drained out.
◆ Such a place that can handle the weight of indoor unit.
◆ Such a place, which has easy access for maintenance.
◆ Such a place where is permitting easy connection with the outdoor unit.
◆ Such a place where is 1m or more away from other electric appliances such as television, audio device, etc.
◆ Avoid a location where there is heat source, high humidity or inflammable gas.
◆ Do not use the unit in the immediate surroundings of a laundry, a bath, a shower or a swimming pool.
◆ Be sure that the installation conforms to the installation dimension diagram.

3) Installation Clearance Data

a. Space dimension for installation of the unit

The space around the unit is adequate for ventilation .



b. Important Notice

◆ The unit must be installed by the professional personnel according to this install instruction to ensure the well use.

Please contact the local Gree special nominated repair department before installation. Any malfunction caused by the unit that is installed by the department that is not special nominated by Gree would not deal with on time by the inconvenience of the business contact.

◆ It should be done by professional personnel when the air conditioner unit is moved to other place.

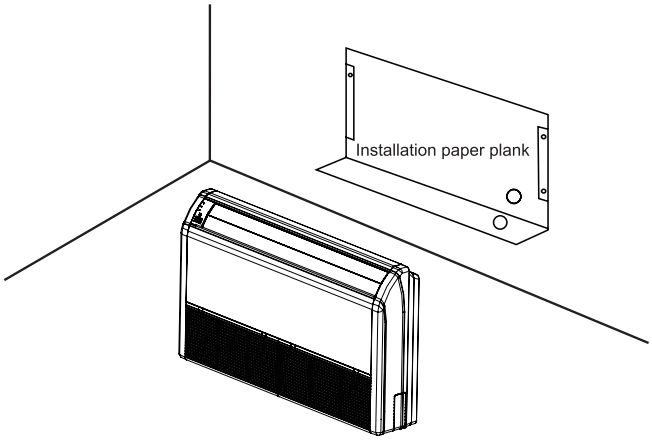
c. There are 2 styles of installation

＊ Ceiling type

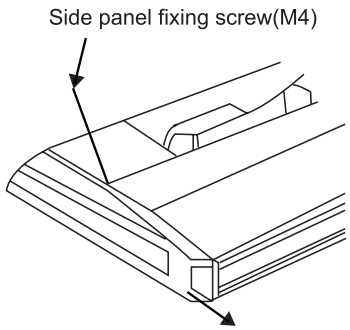
＊ Floor type

(1) Each type is similar to the other as follows:

Determine the mounting position on ceiling or wall by using paper pattern to indicate indoor frame. Mark the pattern and pull out the paper pattern. (Refer to ①)



①



②

(2) Remove the return grill, the side panel and the hanger bracket from the indoor unit as per procedure bellow.

◆ Press the fixing knob of the air intake grills, the grilles will be opened wider and then pull them out from the indoor.

◆ Remove the side panel fixing screw and pull to the front direction (arrow direction) to remove. Side panel fixing screw (Refer to ②).

◆ Loosen two hanger bracket setting bolts (M8) on eath side for less than 10mm. Remove two hanger bracket fixing bolts (M6) on the rear side. Detach the hanger bracker by pulling it backward (Refer to ④).

(3) Set the suspension bolt. (Use W3/8 or M10 size suspension bolts)

Adjust the distance from the unit to the ceiling slab beforehand. (Refer to ③)

(4) Fix the hanger bracket to the suspension bolt.

⚠**Warning**!

◆ Make sure that extended suspension bolt from the ceiling stays inside the arrowed position. Readjust the hanger bracket when it is outside the arrowed position. (Refer to ⑤)

◆ Suspension bolt stays inside the cap of indoor unit. Never remove the cap.

(5) Lift the unit and slide forward unit the dent. (Refer to ⑥)

(6) Screw tightly both hanger bracket-setting bolts (M8). (Refer to ④)

(7) Screw tightly both hanger bracket-fixing bolts (M6) to prevent the movement of the indoor unit. (Refer to ④)

(8) Adjust the height so that rear side of the drainpipe slightly inclines to improve drainage.

⚠**Caution**!

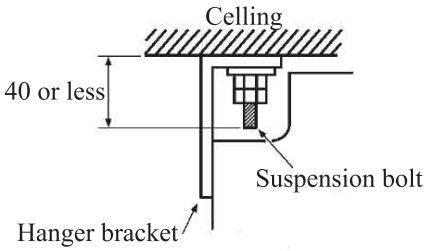
◆ Adjust the height by turning the nut with a spanner.

◆ Insert the spanner from the hanger bracket opening. (Refer to ⑦)

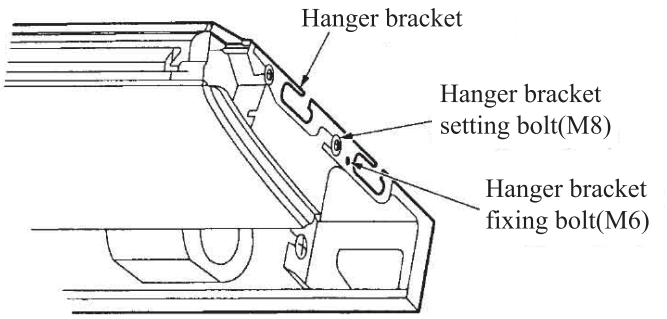
In case of hanging

It is possible to install using inward facing hanger brackets by not removing the brackets from the indoor unit. (Refer to ⑧)

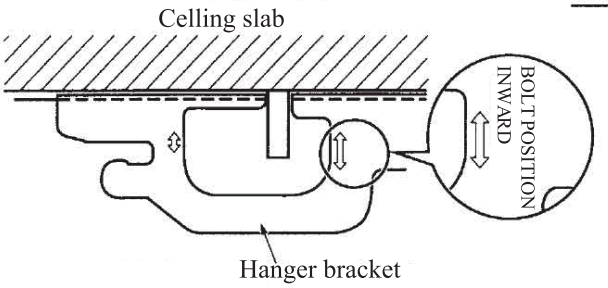
Be sure to use only the specified accessories and parts for installation work.


Celling
40 or less
Suspension bolt
Hanger bracket

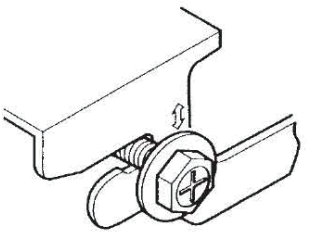
③


Hanger bracket
Hanger bracket
setting bolt(M8)
Hanger bracket
fixing bolt(M6)

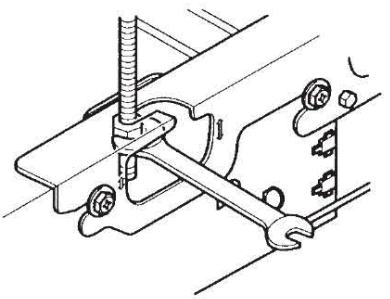
④


Celling slab
BOLT POSITION
INWARD
Hanger bracket

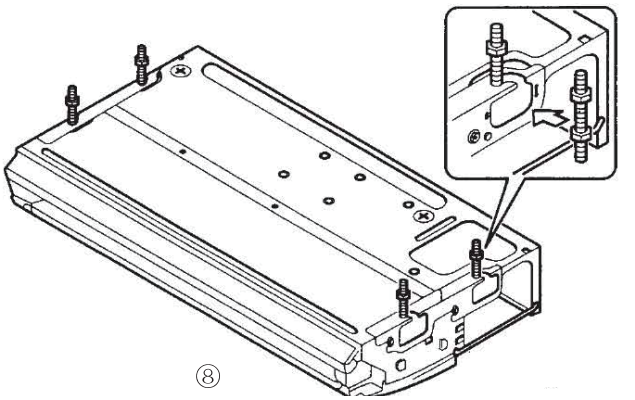
⑤



⑥



⑦



⑧

9. Maintenance

9.1 Trouble Table

⚠WARNING!

a. In the event of abnormal conditions (like, stinky smell), please shut off the main power supply immediately and then contact the GREE appointed service center; otherwise the continuous abnormal running would damage the air conditioning unit and also would cause electric shock or fire hazard etc.

b. Do not repair the air conditioning personally but instead contact the professionally skilled personnel at the GREE appointed service center, as the incorrect repair would cause electric shock or fire hazard etc.

1) Please check the following items before contact the maintenance serviceman

Conditions	Causes	Corrective Actions
The unit does not run	Broken fuse or opened breaker	Change the fuse or close the breaker
	Power off	Restart the unit when power on
	Loosened power supply plug.	Plug the power supply properly.
	Insufficient batteries voltage of the remote controller	Change new batteries
	Remoter controller out of the control scope	Keep the control distance within 8 meters.
The unit stops soon after it starts	Clogged inlet/outlet of the indoor/outdoor unit	Clear the obstacle
Cooling/Heating is abnormal	Clogged inlet/outlet of the indoor/outdoor unit	Clear the obstacle
	Improperly set temperature	Adjust the setting of the remote or wired controller.
	Too low set fan speed	Adjust the setting of the remote or wired controller.
	Incorrect air direction	Adjust the setting of the remote or wired controller.
	Opened door and window	Close the door and window
	Direct sunlight	Hang a curtain or blinds over the window.
	Too much people in the room	
	Too much heat sources in the room	Reduce the heat sources
	Dirty filter screen	Clean the filter screen

Note:

If the air conditioner still runs abnormally after the above check and handling, please contact the maintenance serviceman at the local appointed service center and also give a description of the error occurred as well as the model of the unit

2) The conditions listed below are not classified into errors

Conditions		Causes
The unit does not run	When restart the unit soon after it is stopped.	The overload protection switch of the unit let the startup delayed for three minutes.
	As soon as power is on.	The unit will stand by for approximate one minute.
The unit blows out mist	When the cooling operation starts.	The hi-humidity air indoor is cooled quickly.
The unit generates noise	The unit “clatters” as soon as it starts running.	It is the sound generated during the initialization of the electronic expansion valve.
	The unit “swishes” during the cooling operation.	It the sound when the refrigerant gas runs inside the unit.
	The unit “swishes” when it is started or stopped.	It is the sound when the refrigerant gas stops running.
	The unit “swishes” when in it is and after the running.	It is the sound when the draining system is operating.
	The unit “squeaks” when it is in and after the running.	It is the sound of frication generated by the skin plate etc which swells due to the temperature change.
The unit blows out dust.	When the unit restarts after it is not used for a long time.	The dust inside the unit is blown out again.
The unit emits odors.	When the unit is running.	The odors absorbed in are blown out again.

3) Error description

If some error occurs when the unit is running, the error code will be displayed on the wired controller and the main board of the outdoor unit.See the table before for more details about the meaning of each error.

Error & Status Display List						Indoor Unit (Floor/ Ceiling) 88 Display	Wired Controler Display	Indoor and/or Outdoor Unit Error
Errors of Residential Air Conditioners	Errors of Commercial Air Conditioners	Outdoor Unit 88 Display	Indicating LED Flashing Times					
			Running LED	Cooling LED	Heating LED			
/	Defrosting Mode 1	08	/	/	/	/	/	Outdoor
/	Defrosting Mode 2	0A	/	/	/	/	/	Outdoor
/	Whole Unit Running Normally	ON	/	/	/	/	/	Outdoor
Short/open circuit of the liquid valve temperature sensor	(Liquid Valve) Inlet Tube Temp Sensor Error	See Table 2	/	Flash 19 times	/	b5	B5	Outdoor
Short/open circuit of the gas valve temperature sensor	(Air Valve) Outlet Tube Temp Sensor Error	See Table 2	/	Flash 22 times	/	b7	B7	Outdoor
Refrigerant insufficiency or blockage protection (available for the residential outdoor unit)	/	F0	/	Flash 10 times	/	F0	F0	Outdoor
Short/open circuit of the indoor ambient temperature sensor	Indoor Ambient Temp. Sensor Short/Open-Circuit	See Table 2	/	Flash once	/	F1	F1	Indoor
Short/open circuit of the indoor evaporator	Indoor Evaporator Temp Sensor Short/Open-Circuit	See Table 2	/	Flash twice	/	F2	F2	Indoor
Short/open circuit of the of the outdoor ambient temperature sensor	Outdoor Ambient Temp Sensor Error	F3	/	Flash 3 times	/	F3	F3	Outdoor
Short/open circuit of the temperature sensor at the midway of the condenser coil (for the commercial unit)	Outdoor Mid-Coil Temp Sensor Error	F4	/	Flash 4 times	/	F4	F4	Outdoor
Short/open circuit of the outdoor discharge temperature sensor	Outdoor Discharge Air Temp Sensor Error	F5	/	Flash 5 times	/	F5	F5	Outdoor
Oil returning in cooling	Oil Return for Cooling	F7	/	/	/	/	/	Outdoor
System high pressure protection	High Pressure Protection	E1	Flash once	/	/	E1	E1	Outdoor
Anti-freezing protection	Shutdown for Whole Unit Anti-Freeze Protection	E2	Flash twice	/	/	E2	E2	Indoor
System low pressure protection (reserved)	Low Pressure Protection	E3	Flash 3 times	/	/	E3	E3	Outdoor
Compressor discharge high temperature protection	High Discharge Temp Protection	E4	Flash 4 times	/	/	E4	E4	Outdoor
Communication error between the indoor and outdoor units	Communication Error	See Table 2	Flash 6 times	/	/	E6	E6	Outdoor & Indoor
Mode conflict	Mode Conflict	See Table 2	Flash 7 times	/	/	E7	E7	Indoor
Overload protection	Overload Protection	E8	Flash 8 times	/	/	E8	E8	Outdoor
Anti cold blow protection	/	E9	/	/	/	/	/	Indoor
	Indoor Unit Water Full Error		/	Flashing	Flashing	E9	E9	Indoor
Trial run/trial operation	Trial Run	dd	Quick Flashing	Quick Flashing	Quick Flashing	dd	dd	Outdoor
Refrigerant recovery mode	Refrigerant Recovery Mode	Fo	Quick Flashing	Quick Flashing	/	Fo	Fo	Outdoor
Drive module resetting(for the commercial unit)	IPM Reset	P0	Flash 3 times	Flash 3 times	Flash 3 times	P0	P0	Outdoor
Phase over-current protection	Compressor Current Protection	P5	/	/	Flash 15 times	P5	P5	Outdoor

Drive board communication error(for the commercial unit)	Communication Error between the Inverter Drive and the Main Controller	P6	Flash 16 times	/	/	P6	P6	Outdoor
Short/open circuit of the of the module temperature sensor	Radiator Temp Sensor Error	P7	/	/	Flash 18 times	P7	P7	Outdoor
Module temperature protection	Radiator Overheat Protection	P8	/	/	Flash 19 times	P8	P8	Outdoor
AC contact protection (for the commercial unit)	AC Contactor Protection	P9	Flash 3 times	Flash 3 times	Flash 3 times	P9	P9	Outdoor
Circuit sensor error	Current Sensor Error	Pc	Flash 3 times	Flash 3 times	Flash 3 times	Pc	Pc	Outdoor
Transducer connection protection (for the commercial unit)	Sensor Connection Protection	Pd	Flash 3 times	Flash 3 times	Flash 3 times	Pd	Pd	Outdoor
AC current protection(input side)	AC Current Protection (Input Side)	PA	Flash 3 times	Flash 3 times	Flash 3 times	PA	PA	Outdoor
Temperature drift protection (for the commercial unit)	Temp Drift Protection	PE	Flash 3 times	Flash 3 times	Flash 3 times	PE	PE	Outdoor
Drive board ambient temperature sensor error (for the commercial unit)	Drive Board Ambient Temp Sensor Error	PF	Flash 3 times	Flash 3 times	Flash 3 times	PF	PF	Outdoor
DC link high voltage protection	Low Voltage Protection	PL	Flash 3 times	Flash 3 times	Flash 3 times	PL	PL	Outdoor
DC link low voltage protection	Over Voltage Protection	PH	Flash 3 times	Flash 3 times	Flash 3 times	PH	PH	Outdoor
/	AC Input Voltage Anomaly	PP	Flash 3 times	Flash 3 times	Flash 3 times	PP	PP	Outdoor
Capacitor charging error	Charging Circuit Error	PU	/	/	Flash 17 times	PU	PU	Outdoor
Defrosting or oil returning in heating	Oil Return for Heating or Defrosting	H1	/	/	Flash once	H1		Outdoor
/	Forced Defrosting	H1	Quick Flashing	/	/	H1	H1	Outdoor
Compressor thermal overload protection.	Compressor Overheat Protection	H3	/	/	Flash 3 times	H3	H3	Outdoor
Modulecurrent protection(namely IPM protection)	IPM Protection	H5	/	/	Flash 5 times	H5	H5	Outdoor
Compressor desynchronizing	Motor Desynchronizing	H7	/	/	Flash 7 times	H7	H7	Outdoor
PFC Protection	PFC Error	Hc	/	/	Flash 6 times	Hc	Hc	Outdoor
Too high power protection (available for the residential outdoor unit)	/	L9	Flash 20 times	/	/	L9	L9	Outdoor
Compressor startup failure	Startup Failure	Lc	/	/	Flash 11 times	Lc	Lc	Outdoor
Compressor phase failure/ reverse protection	Phase Loss	Ld	Flash 3 times	Flash 3 times	Flash 3 times	Ld	Ld	Outdoor
Compressor rotation failure(for the commercial unit)	Compressor Stalling	LE	Flash 3 times	Flash 3 times	Flash 3 times	LE	LE	Outdoor
Over speed (for the commercial unit)	Over-Speed	LF	Flash 3 times	Flash 3 times	Flash 3 times	LF	LF	Outdoor
Short/open circuit of the temperature sensor at the inlet of the condenser coil (for the commercial unit)	/	A5	Flash 3 times	Flash 3 times	Flash 3 times	oE	A5	Outdoor
Short/open circuit of the temperature sensor at the outlet of the condenser coil (for the commercial unit)	/	A7	Flash 3 times	Flash 3 times	Flash 3 times	oE	A7	Outdoor
Memory card error	/	EE	/	/	/	/	/	Outdoor

Frequency limitation/ degradation for module circuit protection (for phase circuit)	/	En	Flash 3 times	Flash 3 times	Flash 3 times	En	En	Outdoor
Frequency limitation/ degradation for module temperature protection	/	EU	/	Flash 6 times	Flash 6 times	EU	EU	Outdoor
Frequency limitation/ degradation for overload	/	F6	/	Flash 6 times	/	F6	F6	Outdoor
Frequency limitation / degradation for circuit protection of the whole unit	/	F8	/	Flash 8 times	/	F8	F8	Outdoor
Frequency limitation/ degradation for module circuit protection (for phase circuit)	/	F9	/	Flash 9 times	/	F9	F9	Outdoor
Frequency limitation/ degradation for anti-freezing protection	/	FH	/	Flash twice	Flash twice	FH	FH	Outdoor
Compressor demagnetizing protection	/	HE	/	/	Flash 14 times	HE	HE	Outdoor
Indoor and outdoor units unmatched	/	LP	Flash 19 times	/	/	LP	LP	Outdoor & Indoor
Compressor phase circuit detection error	/	U1	/	/	Flash 12 times	U1	U1	Outdoor
DC link voltage drop error	/	U3	/	/	Flash 20 times	/	/	Outdoor
Communication Line Misconnected or Expansion Valve Error	Communication Line Misconnected or Expansion Valve Error	dn	Flash 3 times	Flash 3 times	Flash 3 times	dn	dn	Outdoor

The words in gray means the corresponding function is unavailable.

Table 2

Code	Error	Code	Error
11	Unit A Communication Error	35	Indoor Unit C Ambient Temp Sensor Error
12	Indoor Unit A Mid-Tube Temp Sensor Error	36	Unit C Mode Conflict
13	Indoor Unit A Outlet Tube Temp Sensor Error	37	Unit C Freeze Protection
14	Indoor Unit A Inlet Tube Temp Sensor Error	41	Unit D Communication Error
15	Indoor Unit A Ambient Temp Sensor Error	42	Indoor Unit D Mid-Tube Temp Sensor Error
16	Unit A Mode Conflict	43	Indoor Unit D Outlet Tube Temp Sensor Error
17	Unit A Freeze Protection	44	Indoor Unit D Inlet Tube Temp Sensor Error
21	Unit B Communication Error	45	Indoor Unit D Ambient Temp Sensor Error
22	Indoor Unit B Mid-Tube Temp Sensor Error	46	Unit D Mode Conflict
23	Indoor Unit B Outlet Tube Temp Sensor Error	47	Unit D Freeze Protection
24	Indoor Unit B Inlet Tube Temp Sensor Error	51	Unit E Communication Error
25	Indoor Unit B Ambient Temp Sensor Error	52	Indoor Unit E Mid-Tube Temp Sensor Error
26	Unit B Mode Conflict	53	Indoor Unit E Outlet Tube Temp Sensor Error
27	Unit B Freeze Protection	54	Indoor Unit E Inlet Tube Temp Sensor Error
32	Indoor Unit C Mid-Tube Temp Sensor Error	55	Indoor Unit E Ambient Temp Sensor Error
33	Indoor Unit C Outlet Tube Temp Sensor Error	56	Unit E Mode Conflict
34	Indoor Unit C Inlet Tube Temp Sensor Error	57	Unit E Freeze Protection

9.2 Flow Chart of Troubleshooting

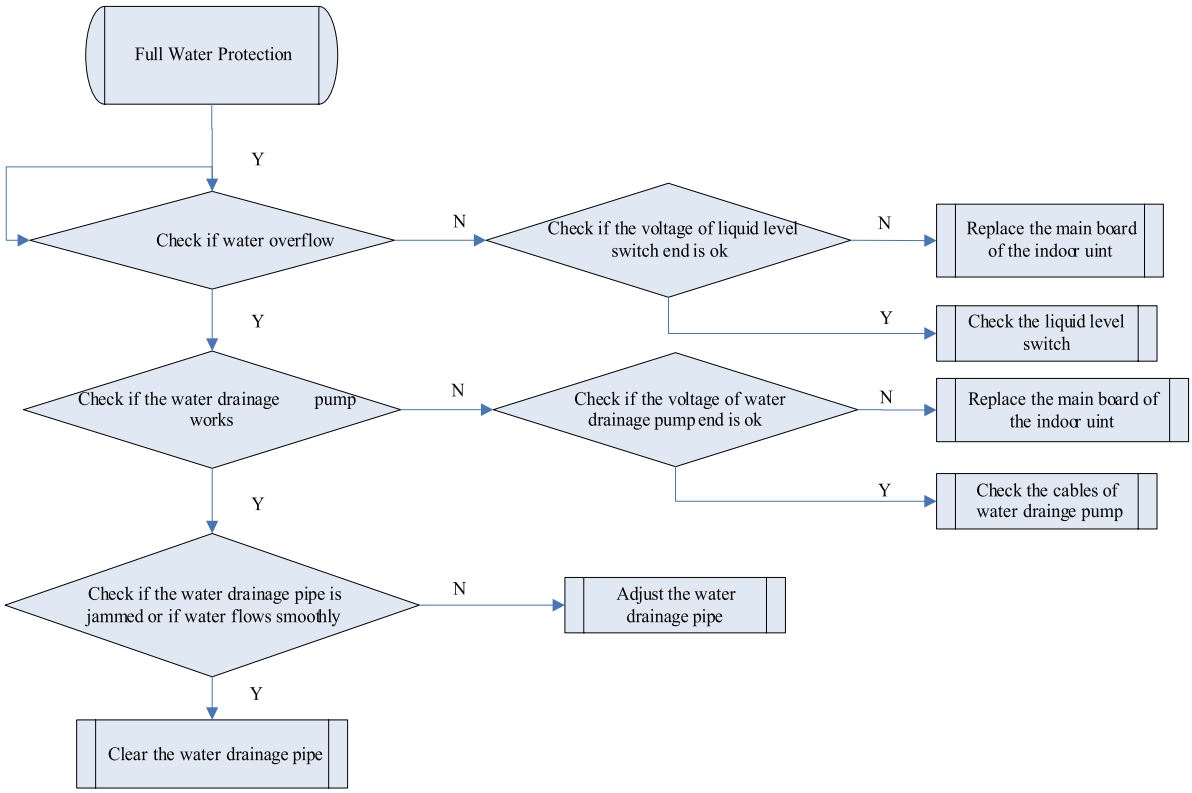
Service personnel shall collect the malfunction information as much as possible and research them thoroughly, list these electrical parts which may cause malfunction, service personnel shall be able to determine the specific reason and solve the faulted parts.

Observe the status of the complete device and do not observe the partial

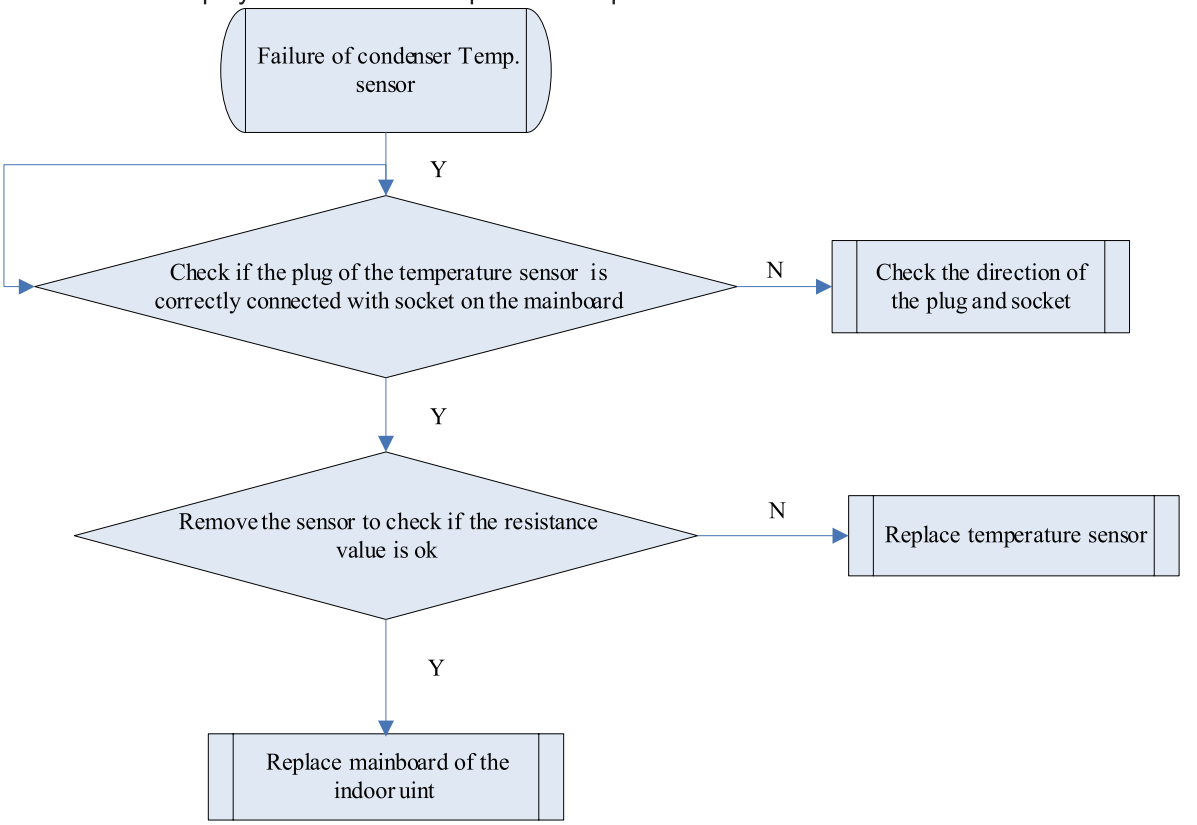
It is advised to start from the simple operation during analyzing ,judging and confirming malfunction reason, then conduct the complicated operations such removal of device, part replacement and refrigerant filling.

Find the malfunction reason carefully as unit may occur several malfunction at the same time and one malfunction may develop into several malfunction, so entire system analysis shall be established to make the judged result exact and credible.

◆ Malfunction display: E9 Full Water Protection



◆ Malfunction display: F2 Failure of Evaporator Temp. Sensor



9.3 Maintenance Method for Normal Malfunction

1. Air Conditioner Can't be Started up

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
No power supply, or poor connection for power plug	After energization, operation indicator isn't bright and the buzzer can't give out sound	Confirm whether it's due to power failure. If yes, wait for power recovery. If not, check power supply circuit and make sure the power plug is connected well.
Wrong wire connection between indoor unit and outdoor unit, or poor connection for wiring terminals	Under normal power supply circumstances, operation indicator isn't bright after energization	Check the circuit according to circuit diagram and connect wires correctly. Make sure all wiring terminals are connected firmly
Electric leakage for air conditioner	After energization, room circuit breaker trips off at once	Make sure the air conditioner is grounded reliably Make sure wires of air conditioner is connected correctly Check the wiring inside air conditioner. Check whether the insulation layer of power cord is damaged; if yes, place the power cord.
Model selection for air switch is improper	After energization, air switch trips off	Select proper air switch
Malfunction of remote controller	After energization, operation indicator is bright, while no display on remote controller or buttons have no action.	Replace batteries for remote controller Repair or replace remote controller

2. Poor Cooling (Heating) for Air Conditioner

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Set temperature is improper	Observe the set temperature on remote controller	Adjust the set temperature
Rotation speed of the IDU fan motor is set too low	Small wind blow	Set the fan speed at high or medium
Filter of indoor unit is blocked	Check the filter to see it's blocked	Clean the filter
Installation position for indoor unit and outdoor unit is improper	Check whether the installation postion is proper according to installation requirement for air conditioner	Adjust the installation position, and install the rainproof and sunproof for outdoor unit
Refrigerant is leaking	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit's pressure is much lower than regulated range	Find out the leakage causes and deal with it. Add refrigerant.
Malfunction of 4-way valve	blow cold wind during heating	Replace the 4-way valve
Malfunction of capillary	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit't pressure is much lower than regulated range. If refrigerant isn't leaking, part of capillary is blocked	Replace the capillary
Flow volume of valve is insufficient	The pressure of valves is much lower than that stated in the specification	Open the valve completely
Malfunction of horizontal louver	Horizontal louver can't swing	Refer to point 3 of maintenance method for details
Malfunction of the IDU fan motor	The IDU fan motor can't operate	Refer to troubleshooting for H6 for maintenance method in details
Malfunction of the ODU fan motor	The ODU fan motor can't operate	Refer to point 4 of maintenance method for details
Malfunction of compressor	Compressor can't operate	Refer to point 5 of maintenance method for details

3. Horizontal Louver Can't Swing

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Stepping motor is damaged	Stepping motor can't operate	Repair or replace stepping motor
Main board is damaged	Others are all normal, while horizontal louver can't operate	Replace the main board with the same model

4. Oudoor fan Motor Can't Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of the ODU fan motor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the capacity of fan
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Motor of outdoor unit is damaged	When unit is on, cooling/heating performance is bad and ODU compressor generates a lot of noise and heat.	Change compressor oil and refrigerant. If no better, replace the compressor with a new one

5. Compressor Can't Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of compressor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the compressor capacitor
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Coil of compressor is burnt out	Use universal meter to measure the resistance between compressor terminals and it's 0	Repair or replace compressor
Cylinder of compressor is blocked	Compressor can't operate	Repair or replace compressor

6. Air Conditioner is Leaking

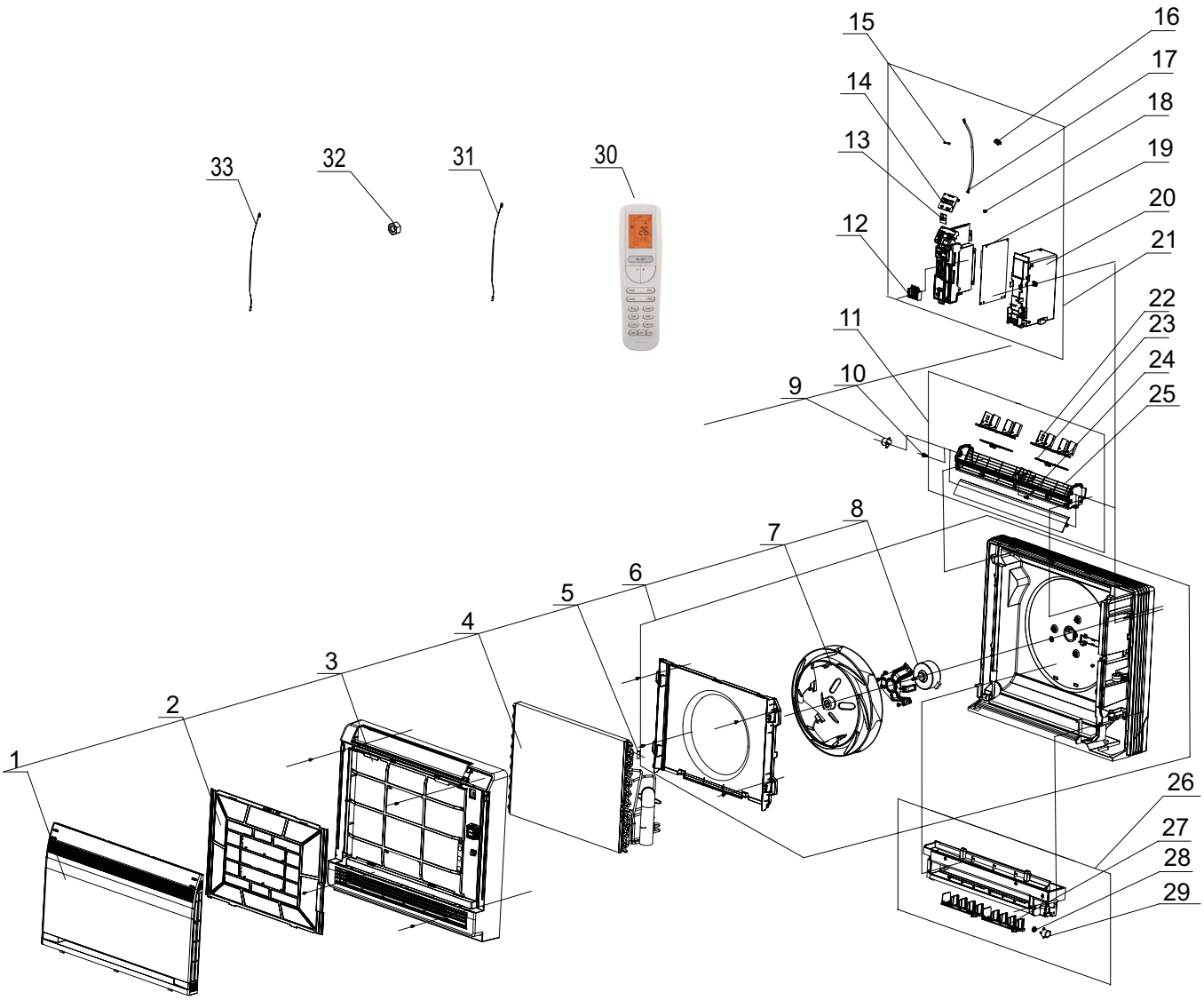
Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Drain pipe is blocked	Water leaking from indoor unit	Eliminate the foreign objects inside the drain pipe
Drain pipe is broken	Water leaking from drain pipe	Replace drain pipe
Wrapping is not tight	Water leaking from the pipe connection place of indoor unit	wrap it again and bundle it tightly

7. Abnormal Sound and Vibration

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
When turn on or turn off the unit, the panel and other parts will expand and there's abnormal sound	There's the sound of "PAPA"	Normal phenomenon. Abnormal sound will disappear after a few minutes.
When turn on or turn off the unit, there's abnormal sound due to flow of refrigerant inside air conditioner	Water-running sound can be heard	Normal phenomenon. Abnormal sound will disappear after a few minutes.
Foreign objects inside the indoor unit or there're parts touching together inside the indoor unit	There's abnormal sound fro indoor unit	Remove foreign objects. Adjust all parts' position of indoor unit, tighten screws and stick damping plaster between connected parts
Foreign objects inside the outdoor unit or there're parts touching together inside the outdoor unit	There's abnormal sound fro outdoor unit	Remove foreign objects. Adjust all parts' position of outdoor unit, tighten screws and stick damping plaster between connected parts
Short circuit inside the magnetic coil	During heating, the way valve has abnormal electromagnetic sound	Replace magnetic coil
Abnormal shake of compressor	Outdoor unit gives out abnormal sound	Adjust the support foot mat of compressor, tighten the bolts
Abnormal sound inside the compressor	Abnormal sound inside the compressor	If add too much refrigerant during maintenance, please reduce refrigerant properly. Replace compressor for other circumstances.

10. Exploded View and Parts List

TM09HEDI TM12HEDI

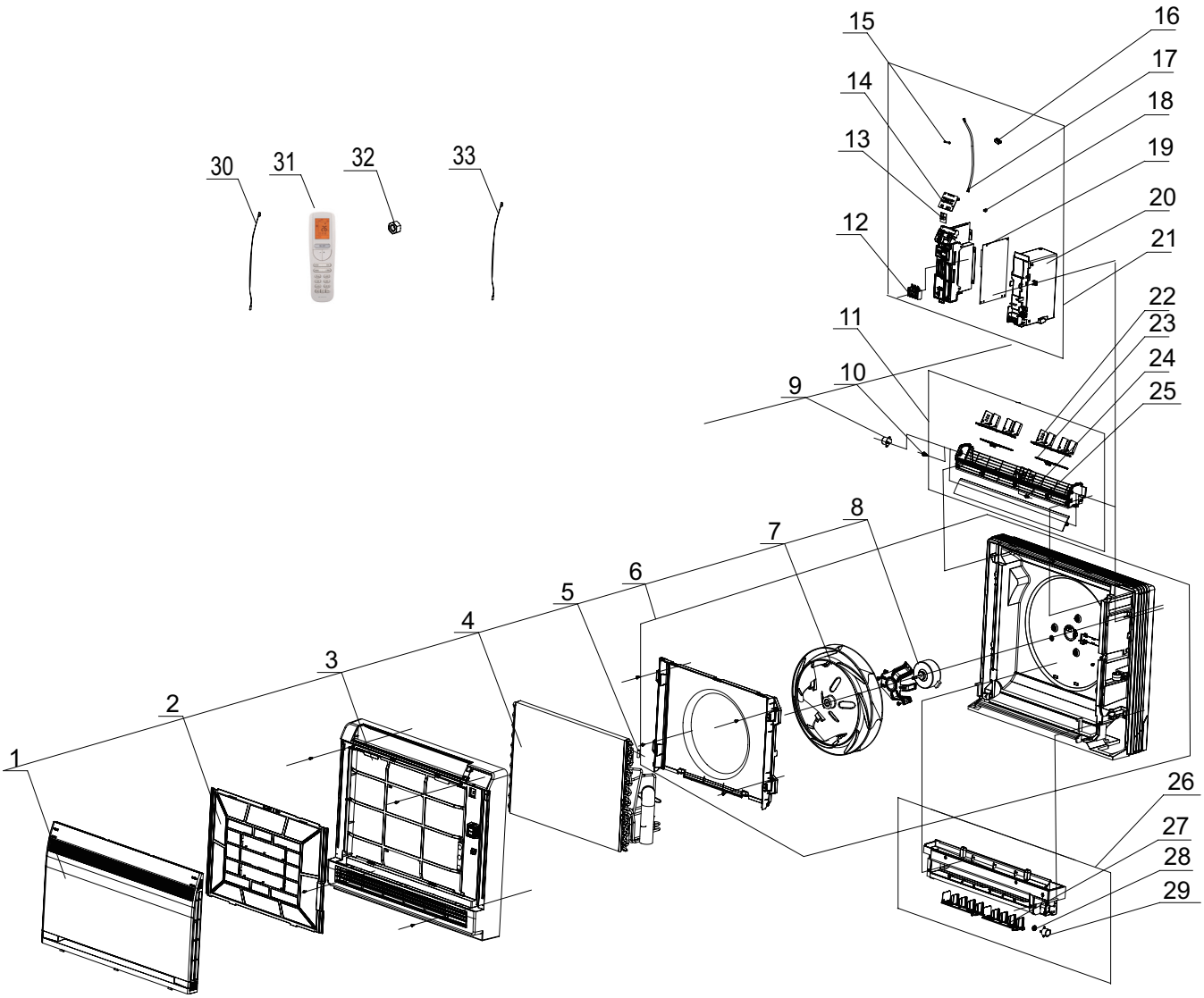


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code		Qty
		TM09HEDI	TM12HEDI	
	Product Code	CV010N00900_L81561	CV010N01000_L81561	
1	Front Panel Assy	20012756_L81561	20012756_L81561	1
2	Filter Sub-Assy	11122119	11122119	1
3	Front Case Assy	20012601	20012601	1
4	Evaporator Assy	01002634	01002626	1
5	Temp Sensor Sleeving	05212423	05212423	1
6	Rear Case assy	22202462	22202462	1
7	Centrifugal Fan	10312005	10312005	1
8	Fan Motor	1570410001201	1570410001201	1
9	Step Motor	1521210101	1521210101	1
10	Crank	73012005	73012005	1
11	Swing Assy	10102042	10102042	1
12	Terminal Board	422000000022	422000000022	1
13	Switch Board	30112007	30112007	1
14	Display Board	30568131	30568131	1
15	Fuse	46010055	46010055	1
16	Radiator	49010252	49010252	1
17	Signal Wire	4003004202	4003004202	1
18	Jumper	4202300101	4202300102	1
19	Main Board	30138613	30138613	1
20	Electric Box	20112116	20112116	1
21	Electric Box Assy	2020262201	2020262101	1
22	Air Louver (upper)	10512143	10512143	2
23	Swing Lever	10582096	10582096	2
24	Shaft of Guide Louver	10542020	10542020	2
25	Rear Grill	01472024	01472024	1
26	Water Tray Assy	20182141	20182141	1
27	Air Louver (lower)	10512144	10512144	2
28	Axis (lower step motor)	10542034	10542034	1
29	Stepping Motor	1521210805	1521210805	1
30	Remote Controller	30510135_TOSOT	30510135_TOSOT	1
31	Ambient Temperature Sensor	390000453	390000453	1
32	Pipe Connection Nut Accessories	06320020	06320020	1
33	Tube Sensor	390000591	390000591	1

Above data is subject to change without notice.

TM18HEDI

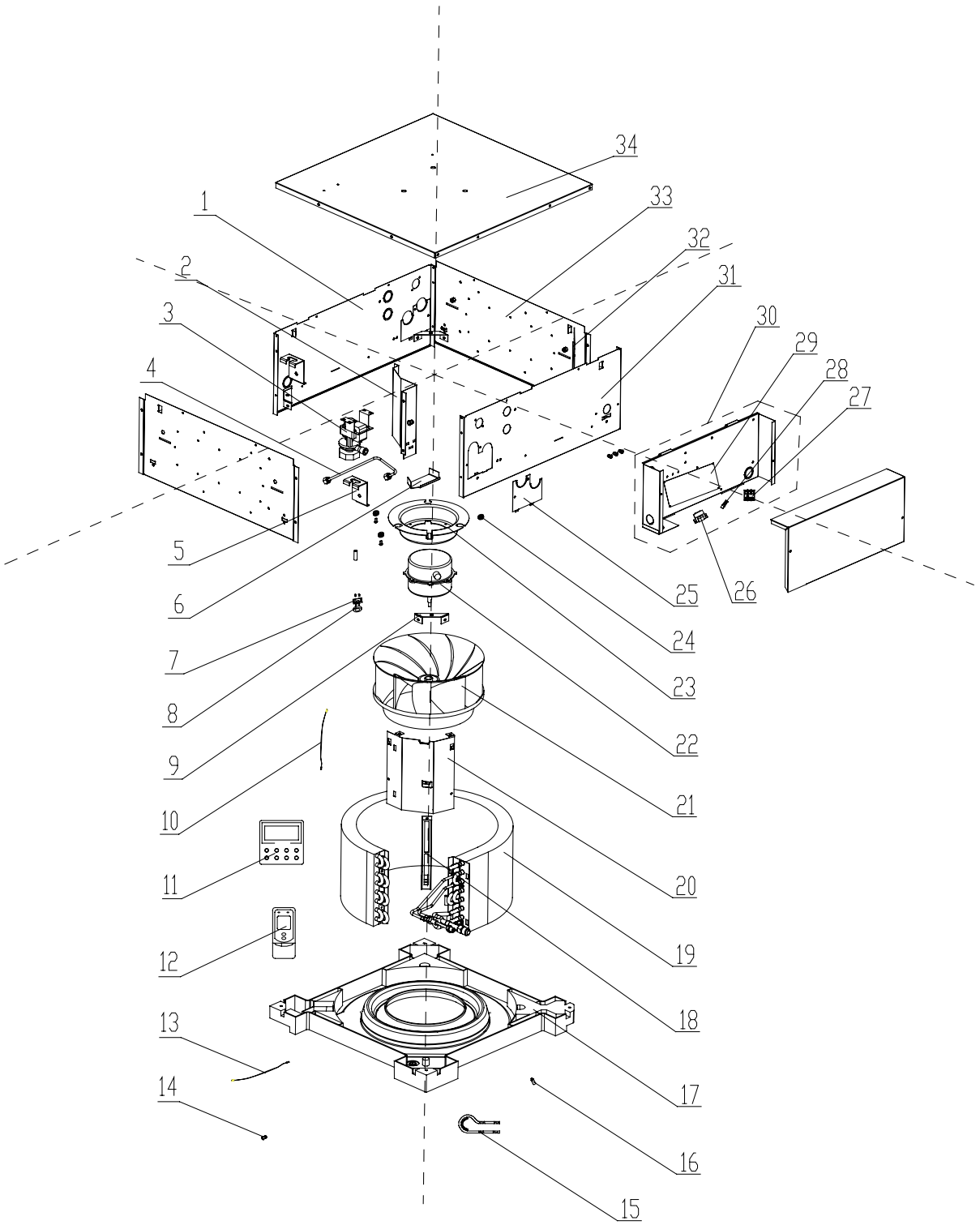


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code	Qty
		TM18HEDI	
	Product Code	CV010N01100_L81561	
1	Front Panel Assy	20012756_L81561	1
2	Filter Sub-Assy	11122119	1
3	Front Case Assy	20012601	1
4	Evaporator Assy	01002608	1
5	Temp Sensor Sleeving	05212423	1
6	Rear Case assy	22202462	1
7	Centrifugal Fan	10312005	1
8	Fan Motor	1570410001201	1
9	Step Motor	1521210805	1
10	Crank	73012005	1
11	Swing Assy	10102042	1
12	Terminal Board	422000000022	1
13	Switch Board	30112007	1
14	Display Board	30568131	1
15	Fuse	46010055	1
16	Radiator	49010252	1
17	Signal Wire	4003004202	1
18	Jumper	4202300103	1
19	Main Board	30138613	1
20	Electric Box	20112116	1
21	Electric Box Assy	2020242301	1
22	Air Louver (upper)	10512143	2
23	Swing Lever	10582096	2
24	Shaft of Guide Louver	10542020	2
25	Rear Grill	01472024	1
26	Water Tray Assy	20182141	1
27	Air Louver (lower)	10512144	2
28	Axis (lower step motor)	10542034	1
29	Step Motor	1521210101	1
30	Tube Sensor	390000591	1
31	Remote Controller	30510135_TOSOT	1
32	Pipe Connection Nut Accessories	06320020	1
33	Ambient Temperature Sensor	390000453	1

The data above are subject to change without notice.

TM12HKDI TM18HKDI

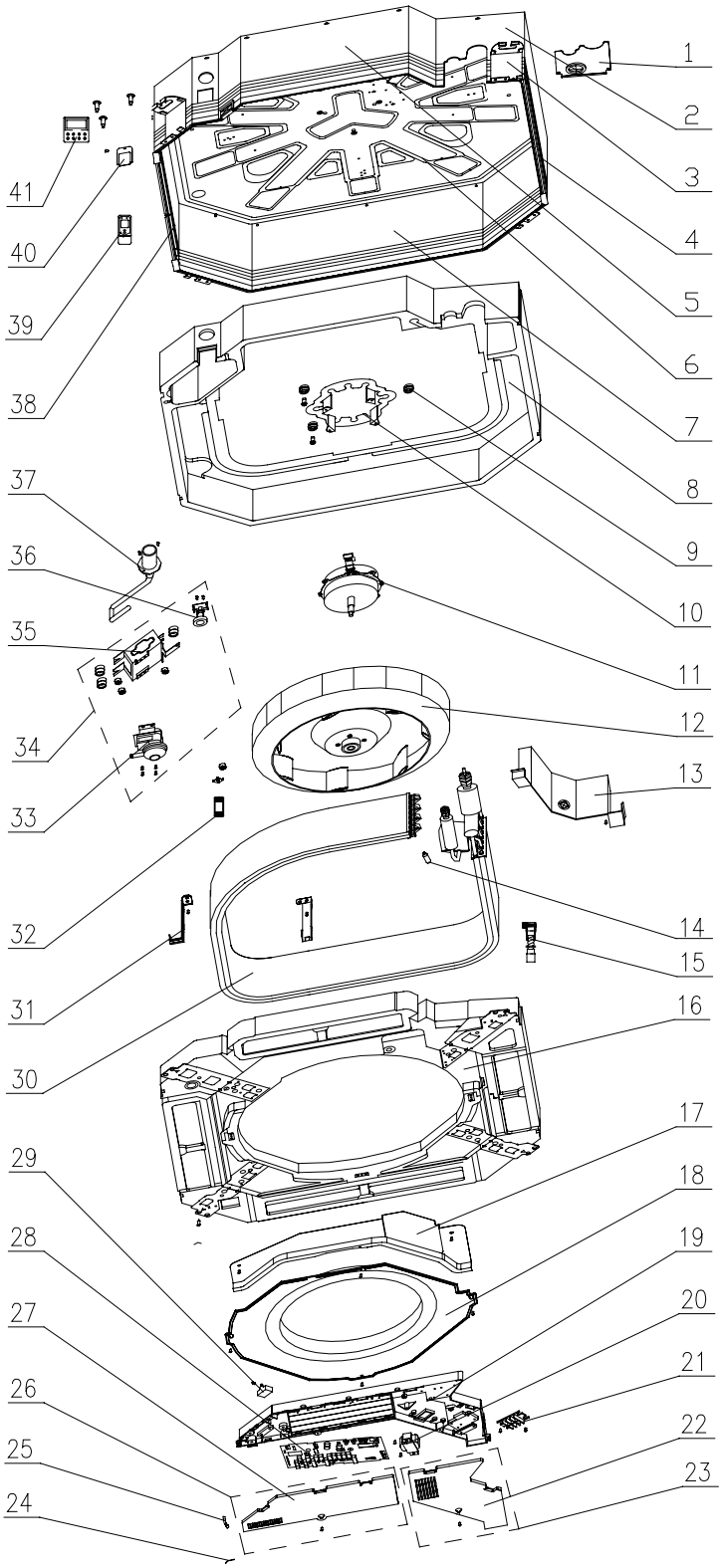


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code		Qty
		TM12HKDI	TM18HKDI	
	Product Code	CN51000060_L81561	CN51000070_L81561	
1	Front Side Plate	01302741	01302741	1
2	Right Baffle Assy	01362704	01362704	1
3	Water Pump	43130320	43130320	1
4	Pump Drainpipe	05232722	05232722	1
5	Body Installing Support	01332705	01332705	4
6	Pump Support Assy	01332708	24212705	1
7	Water Level Switch Support	24212705	1332708	1
8	Water Level Switch	450127011	450127011	1
9	Water Tray Support	01332706	01332706	4
10	Temperature Sensor	390001982G	390001982G	1
11	Display Board	30296317	30296317	1
12	Remote Controller	305100492	305100492	1
13	Ambient Temperature Sensor	3900019813	3900019813	1
14	Filter Sub-Assy	11120011	11120011	1
15	Clamp (power cord)	71010105	71010105	1
16	Filter Sub-Assy	11120012	11128633	1
17	Water Tray Assy	20182704	20182704	1
18	Evaporator Support	01072714	01072714	1
19	Evaporator Assy	01024307	0102430701	1
20	Evaporator Connection Board	01072713	01072713	1
21	Centrifugal Fan	10312702	10312702	1
22	Fan Motor	1570411401	1570411401	1
23	Motor Support	01702702	01702702	1
24	Motor Gasket	76712705	76712705	3
25	Tube Exit Plate Assy	01382719	01382719	1
26	Transformer	43118007	43118007	1
27	Terminal Board	420001000002	420001000002	1
28	Capacitor CBB61	33010089	33010089	1
29	Main Board	30226354	30226354	1
30	Electric Box Assy	01399536	01399536	1
31	Front Side Plate	01314211	01314211	1
32	Pass WirePlate	01362701	01362701	1
33	Right Side Plate Sub-Assy	01302743	01302743	2
34	Seat Board Sub-Assy	01222712	01222712	1

The data above are subject to change without notice.

TM24HKDI

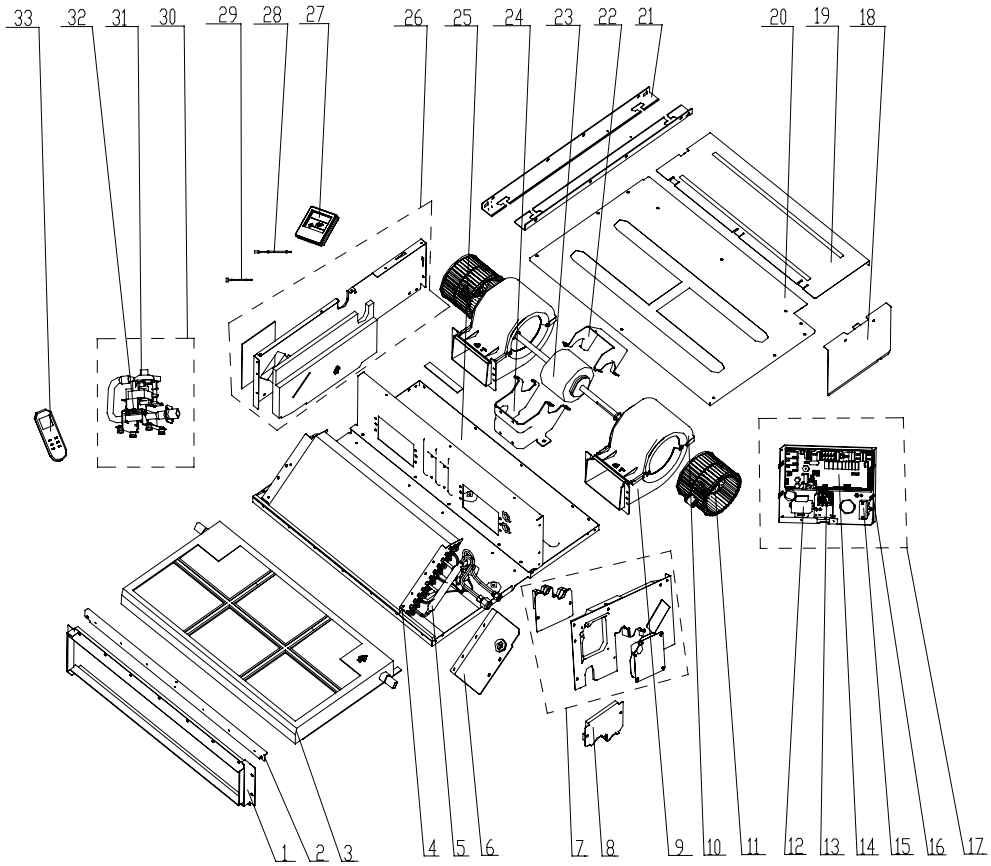


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code	Qty
		TM24HKDI	
	Product Code	CN51000080_L81561	
1	Tube Exit Plate Assy	01382715	1
2	Shell Assy	01432704	1
3	Body Installing Plate	01332701	1
4	Front Side Plate Assy	01302718	1
5	Left Side Plate Assy	01302715	1
6	Base Plate Assy	01222701	1
7	Rear Side Plate Assy	01302714	1
8	Bottom Foam Assy	52012722	1
9	Motor Gasket	76712711	4
10	Motor support	01702701	1
11	Fan Motor	15704102	1
12	Centrifugal Fan	10312705	1
24	Temperature Sensor	390001982G	1
37	Pump Drainpipe	05230026	1
38	Right Side Plate Assy	01302716	1
39	Remote Controller	305125063	1
13	Connected Board Assy Of Evaporator	01074042	1
14	Filter Sub-Assy	07210028	1
15	Drain Hose Sub-Assy	05232702	1
16	Water Tray Assy	20182701	1
17	Electric Base Plate	1412721	1
18	Diversion Circle	10372701	1
19	Electric Box Assy	01399520	1
20	Transformer	43110233	1
21	Terminal Board	420001000002	1
22	Electric Box Cover I	20102702	1
23	Electric Box Cover Sub-Assy1	20122054	1
25	Ambient Temperature Sensor	390000453	1
26	Electric Box Cover Sub-Assy2	20122055	1
27	Electric Box Cover II	20102703	1
28	Main Board	30226340	1
29	Capacitor CBB61	33010027	1
30	Evaporator Assy	01004641	1
31	Evaporator Support Assy	01072703	2
32	Magnetic Ring	49010104	1
33	Water Pump	43130324	1
34	Water Pump Assy	01332752	1
35	Pump Support	01332702	1
36	Water Level Switch	45010201	1
40	Pump Cover Board Assy	01252713	1
41	Display Board	30296317	1

The data above are subject to change without notice.

TM09HFDI TM12HFDI

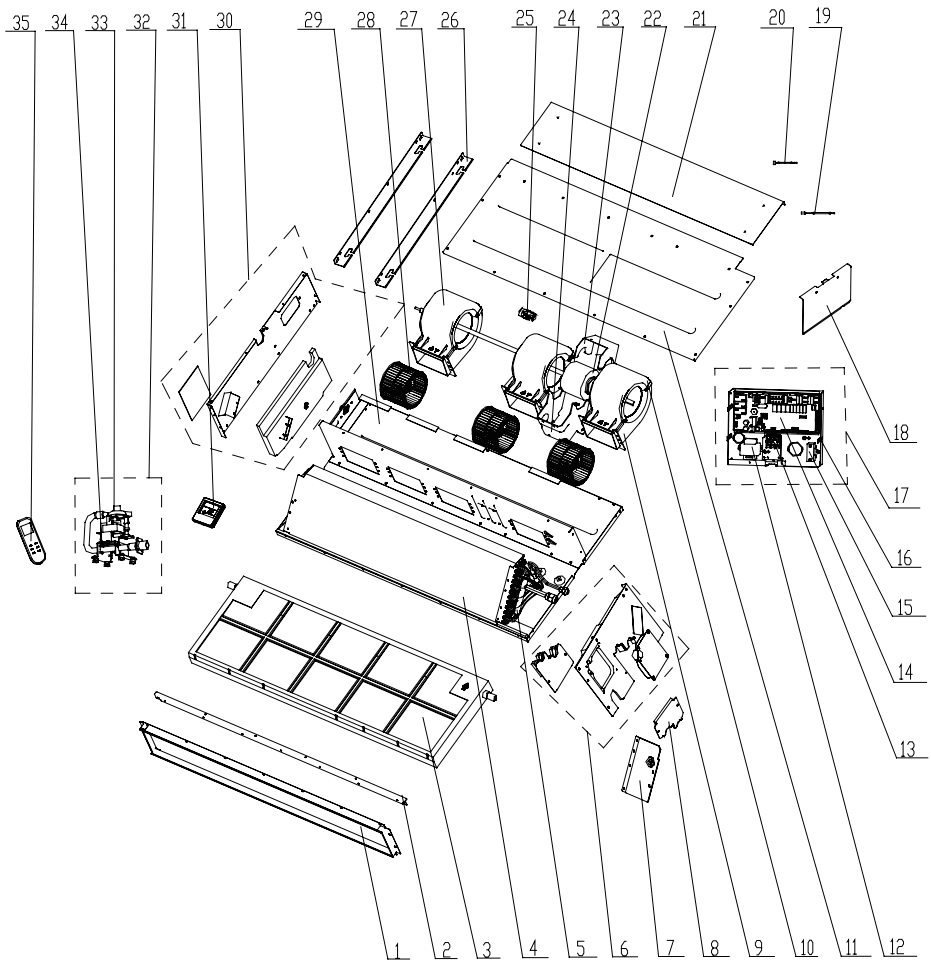


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code		Qty
		TM09HFDI	TM12HFDI	
	Product Code	CN210N0070_L81561	CN210N0060_L81561	
1	Air outlet frame assy	01865216	01865216	1
2	Cover of air outlet	01265298	01265298	1
3	Water Tray Assy	01285332	01285332	1
4	Top Cover Board Assy	01265325	01265325	1
5	Evaporator Assy	01024266	01024905	1
6	Plate of the Evaporator Sub-Assy	01495317	01495317	1
7	Left Side Plate Assy	01315334	01315334	1
8	Plate of the Exit Tube Sub-Assy	01495316	01495316	1
9	Front volute casing	26905205	26905205	2
10	Rear volute casing	26905206	26905206	2
11	Centrifugal fan	10425200	10425200	2
12	Transformer	43110233	43110233	1
13	Terminal Board	420001000002	420001000002	1
14	Main Board	30226339	30226338	1
15	Capacitor	3301074701	3301074704	1
16	Electric Box Sub-Assy	01395100	01395100	1
17	Electric Box assy	01395980	01395983	1
18	Electric Box Cover	01424253	01424253	1
19	Cover Plate of the Fan	01265300	01265300	1
20	Bottom Cover Plate	01265299	01265299	1
21	Supporter	01895225	01895225	1
22	Bar Clasp	70818405	70818405	1
23	Fan Motor	150101000076	1570520106	1
24	Supporter	01805288	01805288	1
25	Fan Mounting Plate Assy	01325312	0132531201	1
26	Right Side Plate Assy	01315335	01315335	1
27	Display Board	30296317	30296317	1
28	Ambient Temperature Sensor	39000206	39000206	1
29	Temperature Sensor	390001982G	390001982G	1
30	Water Pump Assy	15405241	15405241	1
31	Water Level Switch	45010201	45010201	1
32	Water Pump	43130324	43130324	1
33	Remote Controller	305100492	305100492	1

The data above are subject to change without notice.

TM18HFDI

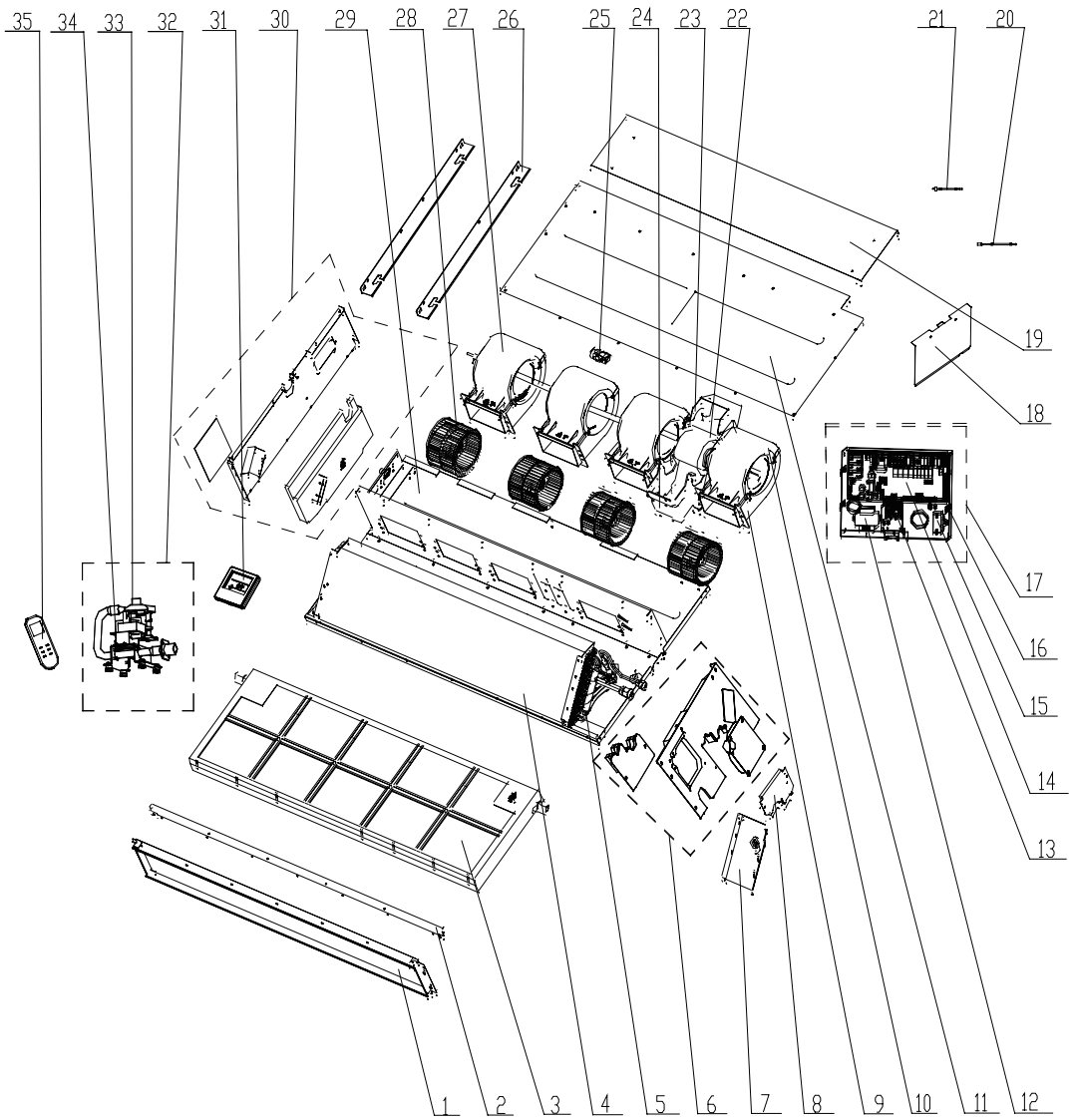


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code	Qty
		TM18HFDI	
	Product Code	CN210N0080_L81561	
1	Air outlet frame assy	1865217	1
2	Cover of air outlet	1265331	1
3	Water Tray Assy	1285333	1
4	Evaporator Assy	1024268	1
5	Lower Cover Plate Sub-Assy	1265328	1
6	Left Side Plate Assy	1315334	1
7	Plate of the Evaporator Sub-Assy	1495317	1
8	Plate of the Exit Tube Sub-Assy	1495316	1
9	Front volute casing	26905205	3
10	Rear volute casing	26905206	3
11	Bottom Cover Plate	80050053	1
12	Transformer	43110233	1
13	Terminal Board	420001000002	1
14	Main Board	30226338	1
15	Capacitor	3301074704	1
16	Electric Box Sub-Assy	1395100	1
17	Electric Box assy	1395984	1
18	Electric Box Cover	1424253	1
19	Temperature Sensor	39000206	1
20	Ambient Temperature Sensor	39000206	1
21	Cover Plate of the Fan	1265333	1
22	Fan Motor	150101000070	1
23	Bar Clasp	70818405	1
24	Supporter	1805288	1
25	Joint Slack	73018731	1
26	Supporter	1895225	1
27	Rotary Axis Sub-Assy	73018731	1
28	Centrifugal fan	10425200	3
29	Fan Mounting Plate Assy	1325314	1
30	Right Side Plate Assy	1305263	1
31	Display Board	30296317	1
32	Water Pump Assy	15405241	1
33	Water Level Switch	45010201	1
34	Water Pump	43130324	1
35	Remote Controller	305100492	1

The data above are subject to change without notice.

TM24HFDI



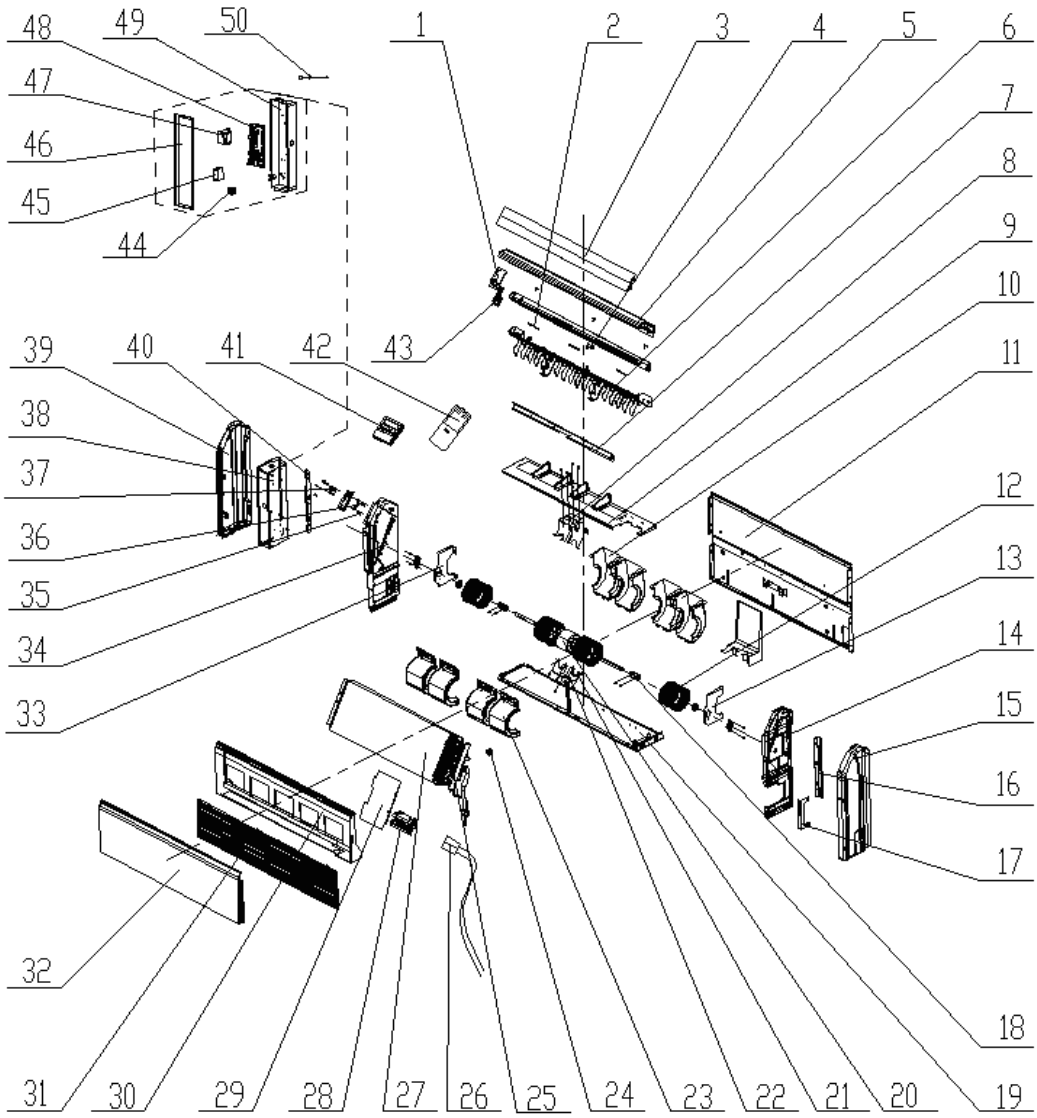
The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code	Qty
		TM24HFDI	
	Product Code	CN210N0100_L81561	
1	Air outlet frame assy	01375224	1
2	Cover of air outlet	01265335	1
3	Water Tray Assy	01285334	1
4	Evaporator Assy	01024269	1
5	Lower Cover Plate Sub-Assy	01265339	1
6	Left Side Plate Assy	01315334	1
7	Plate of the Evaporator Sub-Assy	01495317	1
8	Plate of the Exit Tube Sub-Assy	01495316	1
9	Front volute casing	26905205	3
10	Rear volute casing	26905206	3
11	Bottom Cover Plate	01265337	1
12	Transformer	43110233	1
13	Terminal Board	420001000002	1
14	Main Board	30226338	1
15	Capacitor	3301074704	1
16	Electric Box Sub-Assy	01395100	1
17	Electric Box assy	01395985	1
18	Electric Box Cover	01424253	1
19	Cover Plate of the Fan	01265338	1
20	Temperature Sensor	39000206	1
21	Ambient Temperature Sensor	390001982G	1
22	Fan Motor	15010100007401	1
23	Bar Clasp	70818405	1
24	Supporter	01805288	1
25	Joint Slack	73018731	1
26	Supporter	01895225	1
27	Rotary Axis Sub-Assy	73018022	1
28	Centrifugal fan	10425200	3
29	Fan Mounting Plate Assy	01325316	1
30	Right Side Plate Assy	01305263	1
31	Display Board	30296317	1
32	Water Pump Assy	15405241	1
33	Water Level Switch	45010201	1
34	Water Pump	43130324	1
35	Remote Controller	305100492	1

The data above are subject to change without notice.

TM09HTDI TM12HTDI

TM18HTDI TM24HTDI



The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code			Qty
		TM09HTDI TM12HTDI	TM18HTDI	TM24HTDI	
	Product Code	CN610N0060_L81561 CN610N0070_L81561	CN610N0050_L81561	CN610N0080_L81561	
1	Fixed Mount	26909426R	26909426R	26909426R	1
2	Louver Clamp	26112127	26112127	26112127	2
3	Guide Louver	10619403	10619403	10619403	1
4	Rotating Shaft	26909430	26909430	26909430	4
5	Front Connecting Plate	01349414P	01349414P	01349414P	1
6	Base Frame	26909448	26909448	26909448	1
7	Air Lead Plate sub-assy	02229418	02229418	02229418	1
8	Supporter(Motor)	01805288	01805288	01805288	1
9	Mid-clapboard sub-assy	01249427	01249427	01249427	1
10	Front volute casing	26905205	26905205	26905205	4
11	Rear side plate assy	1319440	1319440	1319440	1
12	Centrifugal fan	10425200	10425200	10425200	4
13	Support 1	01809417	01809417	01809417	1
14	Right Side Plate Sub-Assy	01319429	01319429	01319429	1
15	Right Cover Plate	26909444	26909444	26909444	1
16	Installation Supporting Frame(Right)	01809402	01809402	01809402	1
17	Connection Board(Right)	02229406	02229406	02229406	1
18	Joint Slack	73018731	73018731	73018731	2
19	Rear Connecting Plate	01349422	01349422	01349422	1
20	Fan Motor	1570940901	150101000074	15709409	1
21	Bar Clasp	70818405	70818405	70818405	1
22	Bar Clasp Sub-assy	70815201	70815201	70815201	1
23	Rear volute casing	26905206	26905206	26905206	4
24	Rubber ring	76513101	76513101	76513101	1
25	Filter 2	07216221	07216221	07216221	1
26	Ambient Temperature Sensor	390001978G	390001978G	390001978G	1
27	Evaporator Assy	01029482	01029469	1029474	1
28	Press Plate of Water Lead flume	26909442	26909442	26909442	1
29	Connection Board(Evaporator)	01344115	01344115	02229428	1
30	Water Tray Assy	01289404	01289404	01289404	1
31	Front Grill sub-assy	01579403	01579403	01579403	1
32	Top Cover Board Sub-assy	01269409	01269409	01269409	1
33	Support 2	01809418	01809418	01809418	1
34	Left Side Plate Sub-Assy	0131942801	0131942801	0131942801	1
35	Rotating Shaft	26909412	26909412	26909412	1
36	Rotating Shaft	26909413	26909413	26909413	1
37	Step Motor	1521240206	1521240206	1521240206	1
38	Electric Box Assy	02404651	02404653	02404654	1
39	Left Cover Plate	26909443	26909443	26909443	1
40	Installation Supporting Frame(Left)	01809401	01809401	01809401	1
41	Display Board	30296317	30296317	30296317	1
42	Remote Controller	305100491	305100491	305100491	1
43	Display Board	30294220	30294220	30294220	1
44	Terminal Board	420001000002	420001000002	420001000002	1
45	Capacitor CBB61	3301074716	3301074710	3301074704	1
46	Electric Box Cover	01429420	01429420	01429420	1
47	Transformer	43110257	43110257	43110257	1
48	Main Board	30226350	30226350	30226350	1
49	Electric Box	01429419	01429419	01429419	1
50	Room Sensor	3900019822	3900019822	3900019822	1

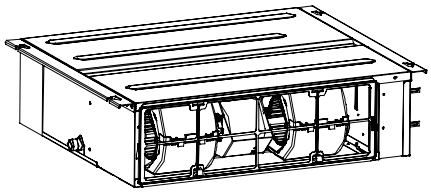
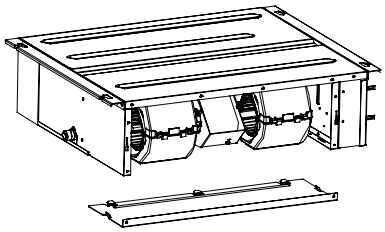
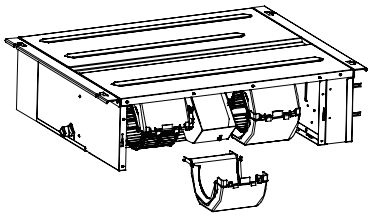
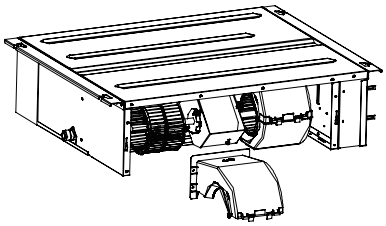
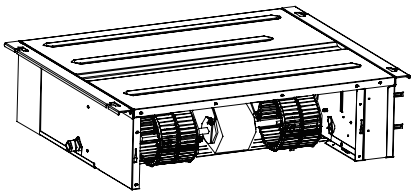
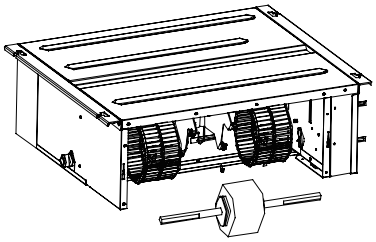
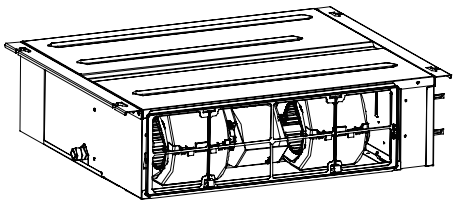
The data above are subject to change without notice.

11. Removal Procedure

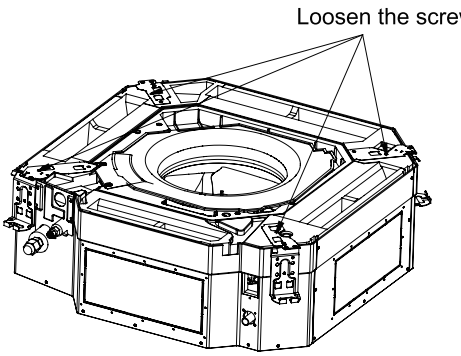
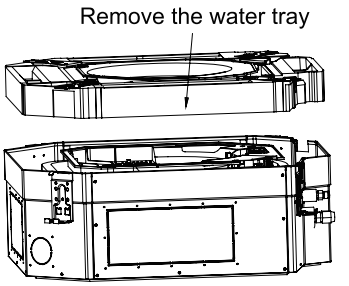
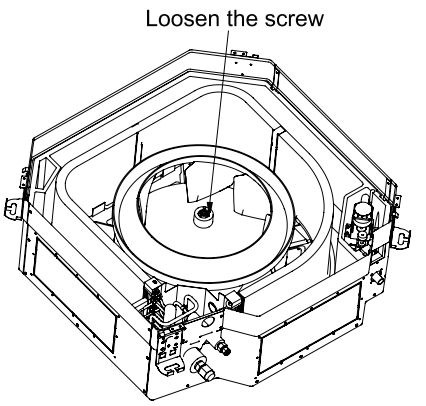
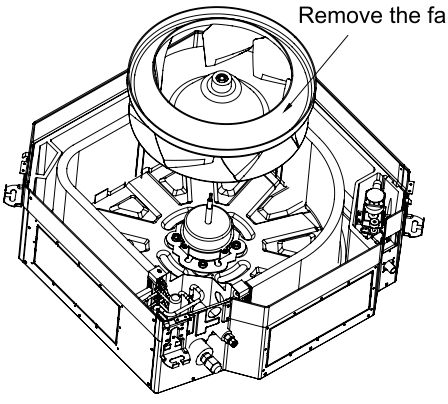
⚠ Caution: discharge the refrigerant completely before removal.

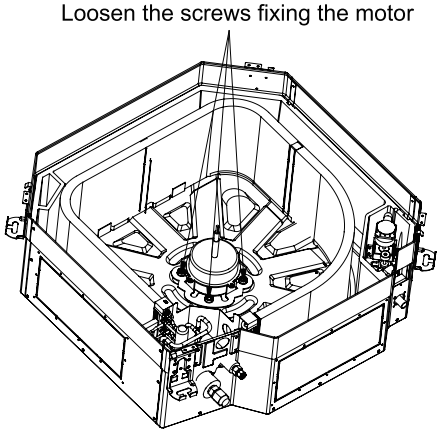
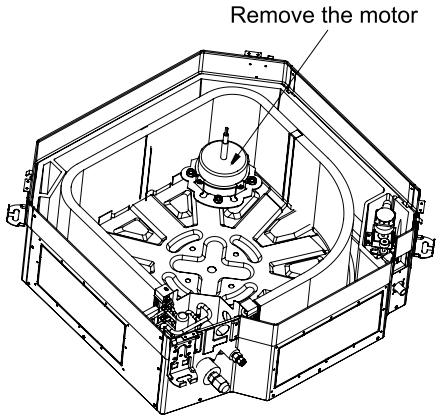
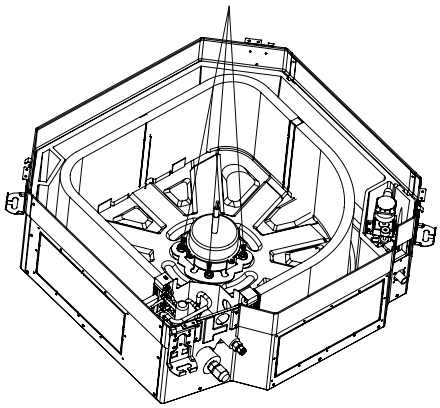
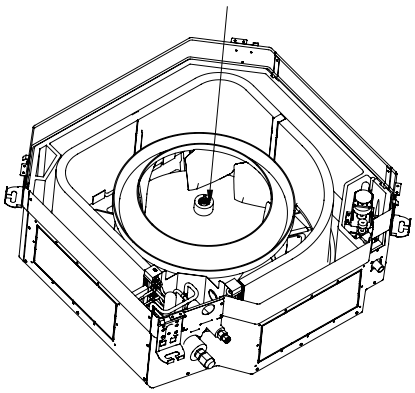
11.1 Removal Procedure of Indoor Unit

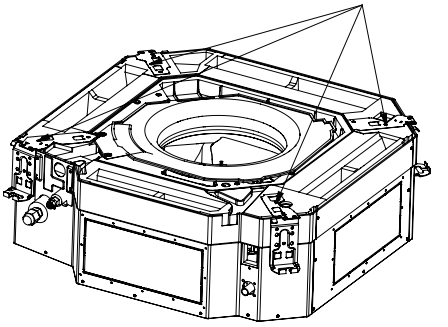
Duct type

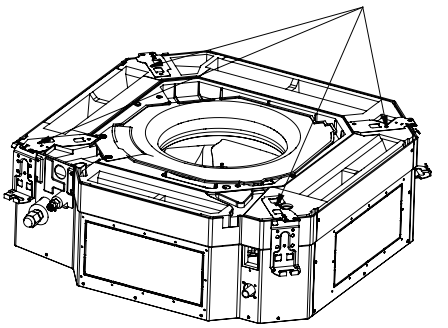
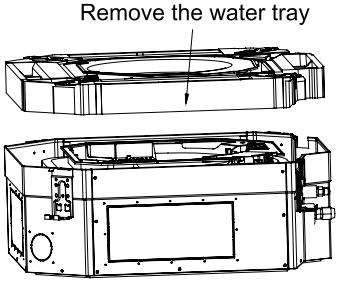
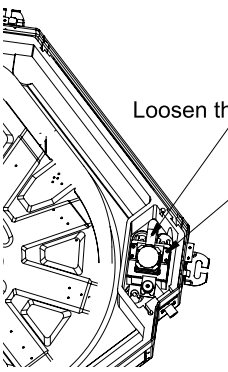
Assembly and Disassembly of the Electric Fan		
Remarks: Prior to the assembly and disassembly, make sure the power supply is cut off.		
Steps	Illustrations	Operation Instructions
1.Pull out the electric wire of the motor.		● Cut off the power supply of the indoor unit, open the cover plate of the electric box and then pull out the electric wire inside the box.
2.Remove the cover plate for return air.		●Loosen the screws used to fixed the cover plate for return air with a screwdriver.
3. Remove the rear volute		● Undo the buckle of the rear and front volutes and then remove the rear volute away.
4. Remove the front volute		● Loosen the screws used to fix the front volute and then remove it away.
5. Loosen the fan blade and fan motor		●Loose the screws used to fix the fan blades and then undo the buckle used to fix the motor.
6.Remove the motor away.		● Separate the motor always from the motor frame, remove the fan blade, and lastly take the motor out from the return air frame. As for the motor
7. Repalce the motor.		● Assemble the fan as the reverse disassembly order and then take a power-on test.

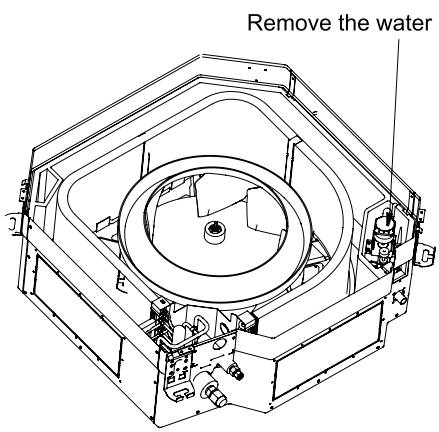
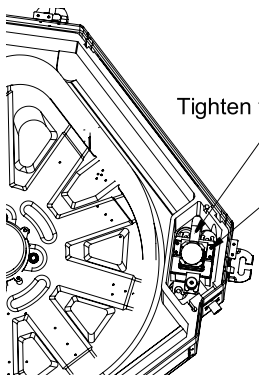
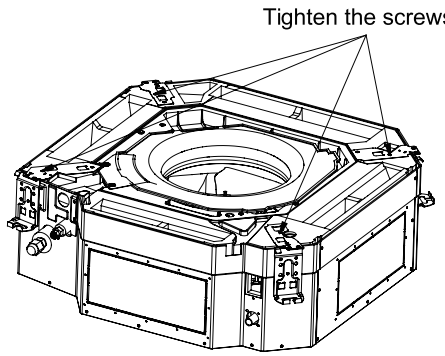
Cassette type

Removal and Assembly of Fan Motor		
Step	Illustration	Handling Instruction
1. Loosen the screws fixing the water tray		●Use screwdriver to loosen the screws fixing the water tray
2. Remove the water tray		●Remove the water tray
3. Loosen the bolts fixing the fan		●Use spanner to loosen the bolts fixing the fan.
4. Remove the fan		●Remove the fan

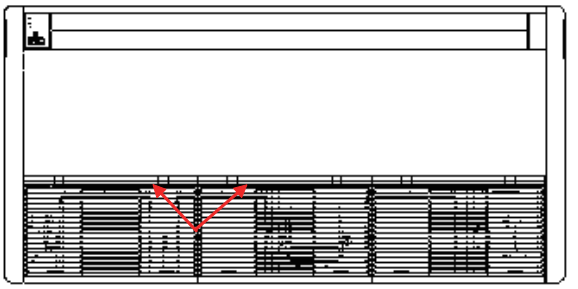
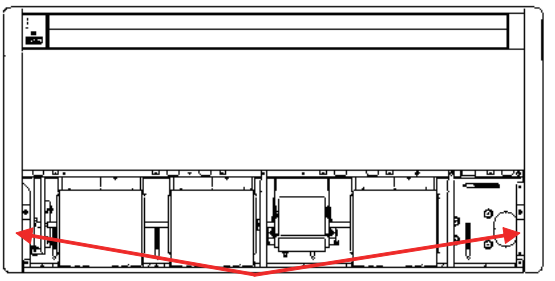
5. Loosen the screws fixing the motor	Loosen the screws fixing the motor 	●Use screwdriver to loosen the screws fixing the motor
6. Remove the motor and replace it	Remove the motor 	●Remove the motor and replace it
7. Tighten the screws fixing the motor	Tighten the screws fixing the motor 	●Use screwdriver to tighten the screws fixing the motor.
8. Mount the fan and tighten the fixing bolts	Fix the screw 	●Mount the fan and use spanner to tighten the bolts fixing the fan.

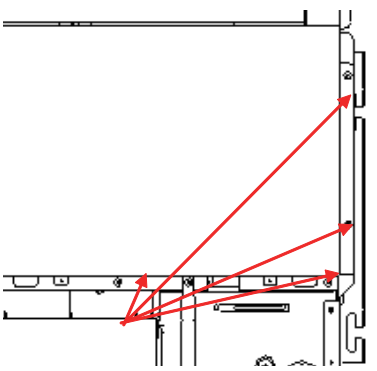
9. Mount the water tray and tighten the screws	Tighten the screws 	●Use screwdriver to loosen the screws fixing the water tray

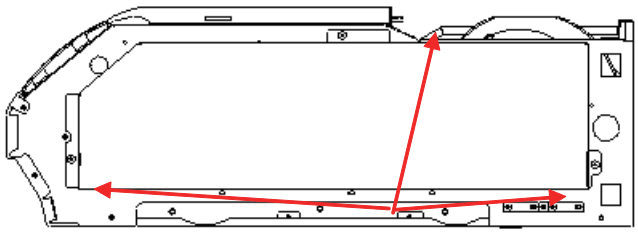
emoval and Installation of Drainage Pump		
Step	Illustration	Handling Instruction
1. Loosen the screws fixing the water tray	Loosen the screw 	●Use screwdriver to loosen the screws fixing the water tray
2. Remove the water tray	Remove the water tray 	●Remove the water pump and replace it.
3. Pull out the water outlet pipe and loosen the screws fixing the water pump.	Loosen the drainpipe Loosen the screws fixing the water pump 	●Pull out the water outlet pipe and use screwdriver to loosen the screws fixing the water pump.

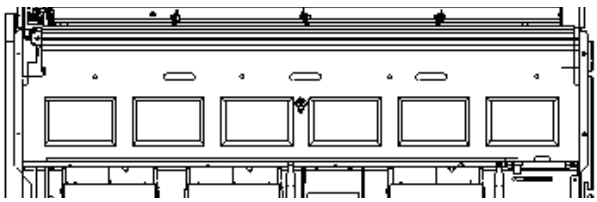
4. Take out the pump and replace it		●Take out the pump and replace it
5. Connect the drainage pipe and tighten the screws fixing the water pump.		●Connect the drainage pipe and use screwdriver to tighten the screws fixing the water pump.
6. Mount the water tray and tighten the screws		●Use screwdriver to loosen the screws fixing the water tray

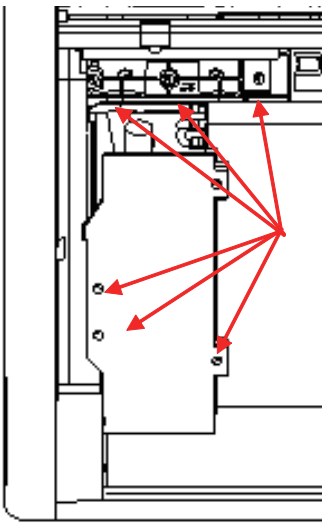
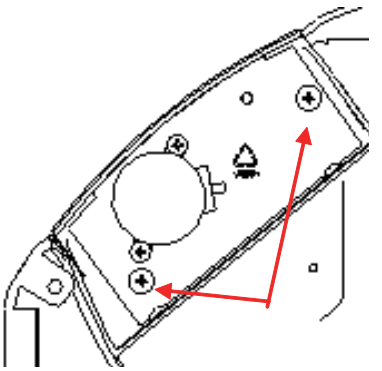
Floor ceiling type

Remove panel grating module		
Remark: Make sure that the power supply is cut off before disassembling and protect all the parts during disassembly. Do not put filter screen near the high temperature heat source.		
Step	Illustration	Handling Instruction
Remove sub-assy of front grill		●Move down the clip of the sub-assy of fromt grill until the front grill is open. (As is shown in the graph, arrow represents the position of bottons. There are two clips for each grating.)
Remove right and left finishing plates		
Remark: Make sure the power supply is cut off before disassembling and protect all the parts during disassembly. Do not scratch the outer parts.		
Step	Illustration	Handling Instruction
Remove right and left finishing plates		●Remove the screws as shown in the graph with screwdriver and then push upward to remove the right and left finishing plates.(As is shown in the graph, arrow represents the position of screws.)

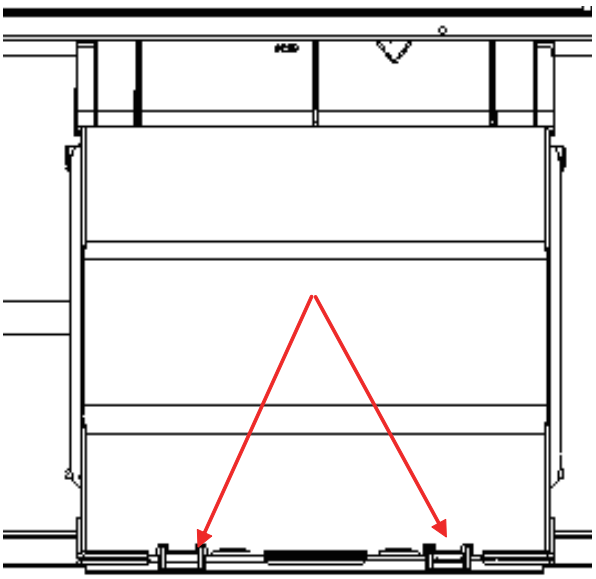
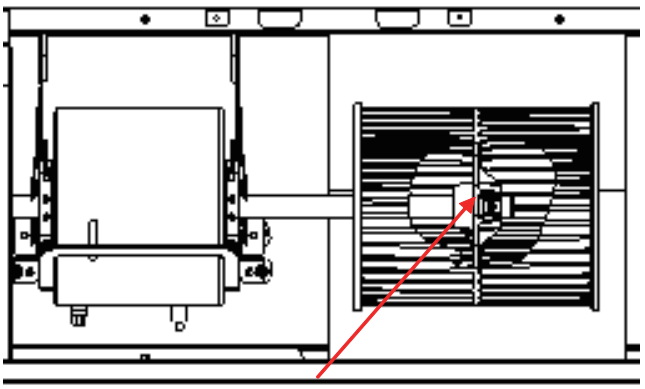
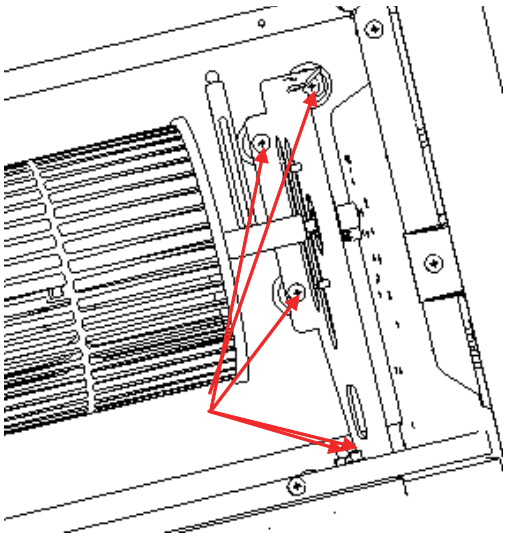
Remove panel parts		
Remark: Make sure the power supply is cut off before disassembling and protect all the parts during disassembly. Do not scratch the outer parts.		
Step	Illustration	Handling Instruction
Remove panel parts		●Remove the screws shown by the arrow in the graph with screwdriver (two on both right and left and 4 in the front) and then remove the panel parts.
Remove sub-assy of electric box		

Remark: Make sure that the power supply is cut off before disassembling and protect all the parts during disassembly, especially the components inside the box in case of water and hit.		
Step	Illustration	Handling Instruction
1. Remove electric box cover		●Remove 3 screws as shown by the arrow in the graph on left and remove the electric box cover.
Remove air deflecting plate modules		
Remark: Make sure the power supply is cut off before disassembling and protect all the parts during disassembly, especially the joints of the air deflecting plate.		
Step	Illustration	Handling Instruction
Remove sub-assy of air deflecting plate		●Remove the air deflecting plates from the air deflecting plate support assembly, and then remove both ends from the air sweeping motor joint. (As is shown in the graph, arrow represents the support assembly and circle the air sweeping motor joint.)

Remove water-containing plate modules		
Remark: Make sure the power supply is cut off before disassembling and protect all the parts during disassembly.		
Step	Illustration	Handling Instruction
Remove water-containing plate modules		●Remove the water-containing plate modules.
Remove evaporator components		
Remark: Make sure that the power supply is cut off and protect the copper tube and aluminum fin. If the time for disassembly shall be long, seal the copper tube.		
Step	Illustration	Handling Instruction

Remove evaporator components		●Remove the screws as shown by the arrow in the graph with screwdriver. (There are 6 screws on left and right of the evaporator and 5 on evaporator outlet press plate modules)
Remove fixing plate sub-assy for air sweeping fans		
Remark: Make sure that the power supply is cut off before disassembling and protect all the parts during disassembly.		
Remark: Make sure that the power supply is cut off before disassembling and protect all the parts during disassembly.		
Step	Illustration	Handling Instruction
Remove fixing plate sub-assy for air sweeping fans		●Remove the screws shown in the graph with screwdriver.

Remove fan and motor components		
Remark: Make sure that the power supply is cut off before disassembling and protect all the parts during disassembly, especially the fastening screws for fans.		
Step	Illustration	Handling Instruction

1. Remove front and back scroll cases		●Press the buckle at the joints of front and back scroll cases with hands and pull upward to remove the front scroll case. Then remove the screws on the back scroll case. Lift the buckle of back scroll case with hands and remove it.(As is shown in the graph, circle represents 2 screws on left and right.)
2. Remove fans		●Remove the fixing screws of fan wheel with inner hexagonal and remove the wheel. The inner hexagonal and its direction of effect are shown by the arrow in the graph.
3. Remove bearing fixing plates		●Remove 4 screws on the bearing fixing plates with screwdriver. (As shown in the box in the graph)

Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

Conversion formula for Fahrenheit degree and Celsius degree: Tf=Tcx1.8+32

Set temperature

Fahrenheit display temperature (℉)	Fahrenheit (℉)	Celsius (℃)	Fahrenheit display temperature (℉)	Fahrenheit (℉)	Celsius (℃)	Fahrenheit display temperature (℉)	Fahrenheit (℉)	Celsius (℃)
61	60.8	16	69/70	69.8	21	78/79	78.8	26
62/63	62.6	17	71/72	71.6	22	80/81	80.6	27
64/65	64.4	18	73/74	73.4	23	82/83	82.4	28
66/67	66.2	19	75/76	75.2	24	84/85	84.2	29
68	68	20	77	77	25	86	86	30

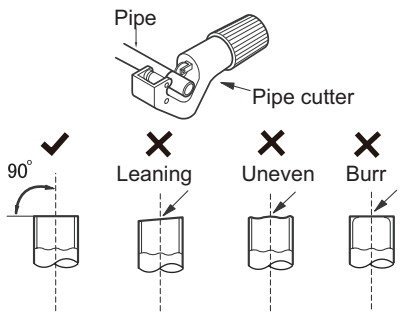
Ambient temperature

Fahrenheit display temperature (℉)	Fahrenheit (℉)	Celsius (℃)	Fahrenheit display temperature (℉)	Fahrenheit (℉)	Celsius (℃)	Fahrenheit display temperature (℉)	Fahrenheit (℉)	Celsius (℃)
32/33	32	0	55/56	55.4	13	79/80	78.8	26
34/35	33.8	1	57/58	57.2	14	81	80.6	27
36	35.6	2	59/60	59	15	82/83	82.4	28
37/38	37.4	3	61/62	60.8	16	84/85	84.2	29
39/40	39.2	4	63	62.6	17	86/87	86	30
41/42	41	5	64/65	64.4	18	88/89	87.8	31
43/44	42.8	6	66/67	66.2	19	90	89.6	32
45	44.6	7	68/69	68	20	91/92	91.4	33
46/47	46.4	8	70/71	69.8	21	93/94	93.2	34
48/49	48.2	9	72	71.6	22	95/96	95	35
50/51	50	10	73/74	73.4	23	97/98	96.8	36
52/53	51.8	11	75/76	75.2	24	99	98.6	37
54	53.6	12	77/78	77	25			

Appendix 2: Pipe Expanding Method

⚠ **Note:**

Improper pipe expanding is the main cause of refrigerant leakage.Please expand the pipe according to the following steps:

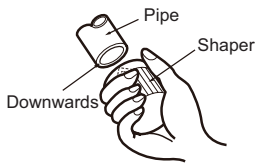


A:Cut the pip

- Confirm the pipe length according to the distance of indoor unit and outdoor unit.
- Cut the required pipe with pipe cutter.

B:Remove the burrs

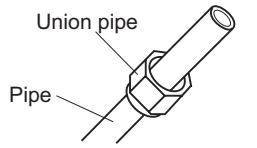
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C:Put on suitable insulating pipe

D:Put on the union nut

- Remove the union nut on the indoor connection pipe and outdoor valve; install the union nut on the pipe.



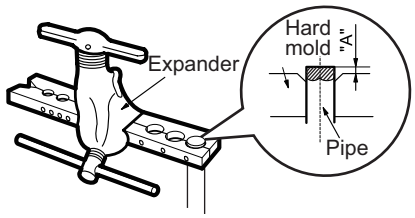
E:Expand the port

- Expand the port with expander.

⚠ **Note:**

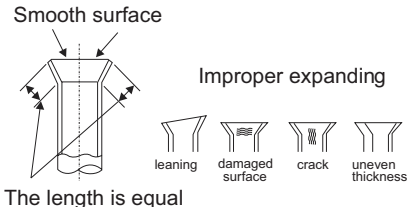
● "A" is different according to the diameter, please refer to the sheet below:

Outer diameter(mm)	A(mm)	
	Max	Min
Φ6 - 6.35 (1/4")	1.3	0.7
Φ9.52 (3/8”)	1.6	1.0
Φ12 - 12.70 (1/2”)	1.8	1.0
Φ16 - 15.88 (5/8”)	2.4	2.2



F:Inspection

● Check the quality of expanding port. If there is any blemish, expand the port again according to the steps above.



Appendix 3: List of Resistance for Temperature Sensor

Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(15K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-19	138.1		20	18.75		59	3.848		98	1.071
-18	128.6		21	17.93		60	3.711		99	1.039
-17	121.6		22	17.14		61	3.579		100	1.009
-16	115		23	16.39		62	3.454		101	0.98
-15	108.7		24	15.68		63	3.333		102	0.952
-14	102.9		25	15		64	3.217		103	0.925
-13	97.4		26	14.36		65	3.105		104	0.898
-12	92.22		27	13.74		66	2.998		105	0.873
-11	87.35		28	13.16		67	2.896		106	0.848
-10	82.75		29	12.6		68	2.797		107	0.825
-9	78.43		30	12.07		69	2.702		108	0.802
-8	74.35		31	11.57		70	2.611		109	0.779
-7	70.5		32	11.09		71	2.523		110	0.758
-6	66.88		33	10.63		72	2.439		111	0.737
-5	63.46		34	10.2		73	2.358		112	0.717
-4	60.23		35	9.779		74	2.28		113	0.697
-3	57.18		36	9.382		75	2.206		114	0.678
-2	54.31		37	9.003		76	2.133		115	0.66
-1	51.59		38	8.642		77	2.064		116	0.642
0	49.02		39	8.297		78	1.997		117	0.625
1	46.6		40	7.967		79	1.933		118	0.608
2	44.31		41	7.653		80	1.871		119	0.592
3	42.14		42	7.352		81	1.811		120	0.577
4	40.09		43	7.065		82	1.754		121	0.561
5	38.15		44	6.791		83	1.699		122	0.547
6	36.32		45	6.529		84	1.645		123	0.532
7	34.58		46	6.278		85	1.594		124	0.519
8	32.94		47	6.038		86	1.544		125	0.505
9	31.38		48	5.809		87	1.497		126	0.492
10	29.9		49	5.589		88	1.451		127	0.48
11	28.51		50	5.379		89	1.408		128	0.467
12	27.18		51	5.197		90	1.363		129	0.456
13	25.92		52	4.986		91	1.322		130	0.444
14	24.73		53	4.802		92	1.282		131	0.433
15	23.6		54	4.625		93	1.244		132	0.422
16	22.53		55	4.456		94	1.207		133	0.412
17	21.51		56	4.294		95	1.171		134	0.401
18	20.54		57	4.139		96	1.136		135	0.391
19	19.63		58	3.99		97	1.103		136	0.382

Resistance Table of Tube Temperature Sensors for Indoor and Outdoor (20K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-19	181.4		20	25.01		59	5.13		98	1.427
-18	171.4		21	23.9		60	4.948		99	1.386
-17	162.1		22	22.85		61	4.773		100	1.346
-16	153.3		23	21.85		62	4.605		101	1.307
-15	145		24	20.9		63	4.443		102	1.269
-14	137.2		25	20		64	4.289		103	1.233
-13	129.9		26	19.14		65	4.14		104	1.198
-12	123		27	18.13		66	3.998		105	1.164
-11	116.5		28	17.55		67	3.861		106	1.131
-10	110.3		29	16.8		68	3.729		107	1.099
-9	104.6		30	16.1		69	3.603		108	1.069
-8	99.13		31	15.43		70	3.481		109	1.039
-7	94		32	14.79		71	3.364		110	1.01
-6	89.17		33	14.18		72	3.252		111	0.983
-5	84.61		34	13.59		73	3.144		112	0.956
-4	80.31		35	13.04		74	3.04		113	0.93
-3	76.24		36	12.51		75	2.94		114	0.904
-2	72.41		37	12		76	2.844		115	0.88
-1	68.79		38	11.52		77	2.752		116	0.856
0	65.37		39	11.06		78	2.663		117	0.833
1	62.13		40	10.62		79	2.577		118	0.811
2	59.08		41	10.2		80	2.495		119	0.77
3	56.19		42	9.803		81	2.415		120	0.769
4	53.46		43	9.42		82	2.339		121	0.746
5	50.87		44	9.054		83	2.265		122	0.729
6	48.42		45	8.705		84	2.194		123	0.71
7	46.11		46	8.37		85	2.125		124	0.692
8	43.92		47	8.051		86	2.059		125	0.674
9	41.84		48	7.745		87	1.996		126	0.658
10	39.87		49	7.453		88	1.934		127	0.64
11	38.01		50	7.173		89	1.875		128	0.623
12	36.24		51	6.905		90	1.818		129	0.607
13	34.57		52	6.648		91	1.736		130	0.592
14	32.98		53	6.403		92	1.71		131	0.577
15	31.47		54	6.167		93	1.658		132	0.563
16	30.04		55	5.942		94	1.609		133	0.549
17	28.68		56	5.726		95	1.561		134	0.535
18	27.39		57	5.519		96	1.515		135	0.521
19	26.17		58	5.32		97	1.47		136	0.509

Resistance Table of Discharge Temperature Sensor for Outdoor(50K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-29	853.5		10	98		49	18.34		88	4.75
-28	799.8		11	93.42		50	17.65		89	4.61
-27	750		12	89.07		51	16.99		90	4.47
-26	703.8		13	84.95		52	16.36		91	4.33
-25	660.8		14	81.05		53	15.75		92	4.20
-24	620.8		15	77.35		54	15.17		93	4.08
-23	580.6		16	73.83		55	14.62		94	3.96
-22	548.9		17	70.5		56	14.09		95	3.84
-21	516.6		18	67.34		57	13.58		96	3.73
-20	486.5		19	64.33		58	13.09		97	3.62
-19	458.3		20	61.48		59	12.62		98	3.51
-18	432		21	58.77		60	12.17		99	3.41
-17	407.4		22	56.19		61	11.74		100	3.32
-16	384.5		23	53.74		62	11.32		101	3.22
-15	362.9		24	51.41		63	10.93		102	3.13
-14	342.8		25	49.19		64	10.54		103	3.04
-13	323.9		26	47.08		65	10.18		104	2.96
-12	306.2		27	45.07		66	9.83		105	2.87
-11	289.6		28	43.16		67	9.49		106	2.79
-10	274		29	41.34		68	9.17		107	2.72
-9	259.3		30	39.61		69	8.85		108	2.64
-8	245.6		31	37.96		70	8.56		109	2.57
-7	232.6		32	36.38		71	8.27		110	2.50
-6	220.5		33	34.88		72	7.99		111	2.43
-5	209		34	33.45		73	7.73		112	2.37
-4	198.3		35	32.09		74	7.47		113	2.30
-3	199.1		36	30.79		75	7.22		114	2.24
-2	178.5		37	29.54		76	7.00		115	2.18
-1	169.5		38	28.36		77	6.76		116	2.12
0	161		39	27.23		78	6.54		117	2.07
1	153		40	26.15		79	6.33		118	2.02
2	145.4		41	25.11		80	6.13		119	1.96
3	138.3		42	24.13		81	5.93		120	1.91
4	131.5		43	23.19		82	5.75		121	1.86
5	125.1		44	22.29		83	5.57		122	1.82
6	119.1		45	21.43		84	5.39		123	1.77
7	113.4		46	20.6		85	5.22		124	1.73
8	108		47	19.81		86	5.06		125	1.68
9	102.8		48	19.06		87	4.90		126	1.64

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