TOYOTOMI

Service Manual

MODEL:
MUL FWCA-SL Series
CASSETTE COMPACT
MUL 12FWCA-SL
MUL 18FWCA-SL

CONTENTS

Summary and features

MUL 12FWCA - SL / MUL18FWCA - SL

1 Safety Precautions

Installing, starting up, and servicing air conditioner can behazardous due to system pressure, electrical components, and equipment location, etc.

Only trained, qualified installers and service personnel areallowed to install, start-up, and service this equipment.Untrained personnel can perform basic maintenance fun-ctions such as cleaning coils. All other operations should be performed by trained service personnel.

When handling the equipment, observe precautions in themanual and on tags, stickers, and labels attached to theequipment. Follow all safety codes. Wear safety glasses andwork gloves. Keep quenching cloth and fire extinguisher nearby when brazing.

Read the instructions thoroughly and follow all warnings orcautions in literature and attached to the unit. Consult localbuilding codes and current editions of national as well as local electrical codes.

Recognize the following safety information:

⚠Warning Incorrect handling could result inpersonal injury or death.

⚠Caution Incorrect handling may result inminor injury,or damage to productor property.

● Make sure the outdoor unit is installed on a stable, levelsurface with no accumulation of snow, leaves, or trashbeside.

● Make sure the ceiling/wall is strong enough to bear theweight of the unit.

● Make sure the noise of the outdoor unit does not disturbneighbors.

● Follow all the installation instructions to minimize the riskof damage from earthquakes, typhoons or strong winds.

● Avoid contact between refrigerant and fire as it generatespoisonous gas.

● Apply specified refrigerant only. Never have it mixed withany other refrigerant. Never have air remain in therefrigerant line as it may lead to rupture and other hazards.

● Make sure no refrigerant gas is leaking out when install-ation is completed.

● Should there be refrigerant leakage, the density of refri-gerant in the air shall in no way exceed its limited value, or it may lead to explosion.

● Keep your fingers and clothing away from any moving parts.

● Clear the site after installation. Make sure no foreign ob-jects are left in the unit.

● Always ensure effective grounding for the unit.

⚠Warning

All electric work must be performed by a licensed technicianaccording to local regulations and the instructions given in this manual.

● Before installing, modifying, or servicing system, mainelectrical disconnect switch must be in the OFF position.There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.

● Never supply power to the unit unless all wiring and tub-ing are completed, reconnected and checked.

● This system adopts highly dangerous electrical voltage.Incorrect connection or inadequate grounding can causepersonal injury or death. Stick to the wiring diagram and all the instructions when wiring.

● Have the unit adequately grounded in accordance withlocal electrical codes.

● Have all wiring connected tightly. Loose connection maylead to overheating and a possible fire hazard.

All installation or repair work shall be performed by your dea-ler or a specialized subcontractor as there is the risk of fire, electric shock, explosion or injury.

⚠Caution

● Never install the unit in a place where a combustible gasmight leak, or it may lead to fire or explosion.

● Make a proper provision against noise when the unit isinstalled at a telecommunication center or hospital.

● Provide an electric leak breaker when it is installed in awatery place.

● Never wash the unit with water.

● Handle unit transportation with care. The unit should not be carried by only one person if it is more than 20kg.

● Never touch the heat exchanger fins with bare hands.

● Never touch the compressor or refrigerant piping withoutwearing glove.

● Do not have the unit operate without air filter.

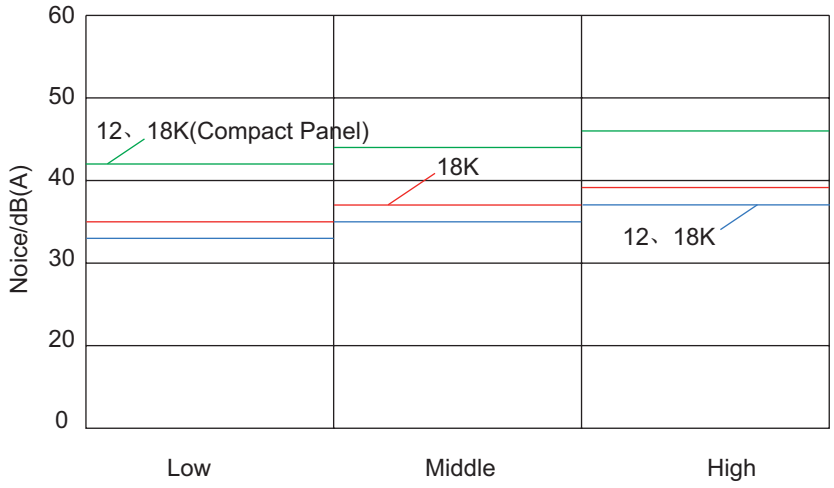
● Should any emergency occur, stop the unit and discon-nect the power immediately.

● Properly insulate any tubing running inside the room toprevent the water from damaging the wall.

Model		MUL 12FWCA - SL	MUL 18FWCA - SL
Product code		CN510N0040	CN510N0050
Cooling capacity	kW	3.50	4.50
	kBtu/h	11.94	15.35
Heating capacity	kW	4.00	5.00
	kBtu/h	13.65	17.06
Air flow volume(H)	m^3/h	600	600
	CFM	353	353
Sound pressure level (H)	dB(A)	46	46
Sound power level (L)	dB(A)	56	56
Rated voltage	V	220-240	220-240
Frequency	Hz	50	50
Phases		1	1
Fan Type		Centrifugal	Centrifugal
Fan Motor Speed	rpm	820/720/620/420	820/720/620/420
Fan motor output	W	11	11
Input of fan motor	W	50	50
Fan motor running current	A	0.23	0.23
Fan Motor Full Load Amp(FLA)	A	0.2	0.2
Fan Motor Capacitor	μF	2.5	2.5
Gas Pipe(to indoor unit)	mm	Φ9.52	Φ12.7
	inch	Φ3/8	Φ1/2
Liquid pipe	mm	Φ6.35	Φ6.35
	inch	Φ1/4	Φ1/4
Connection method		Flare Connection	Flare Connection
Drain pipes(external dia)	mm	Φ31	Φ31
Drain pipes(thickness)	mm	3.0	3.0
Unit dimensions(main body)(W×D×H)	mm	570×570×230	570×570×230
Unit dimensions(panel)(W×D×H)	mm	650×650×50	650×650×50
Package dimensions(main body)(W×D×H)	mm	851×731×325	851×731×325
Package dimensions(panel)(W×D×H)	mm	733×673×117	733×673×117
Net weight(main body)	kg	18.0	18.0
Net weight(panel)	kg	2.5	2.5
Gross weight(main body)	kg	23.0	23.0
Gross weight(panel)	kg	3.65	3.65
Loading Quantity(20’ Container)	unit	102	102
Loading Quantity(40’ Container)	unit	209	209
Loading Quantity (40’ High Cube Container)	unit	246	246

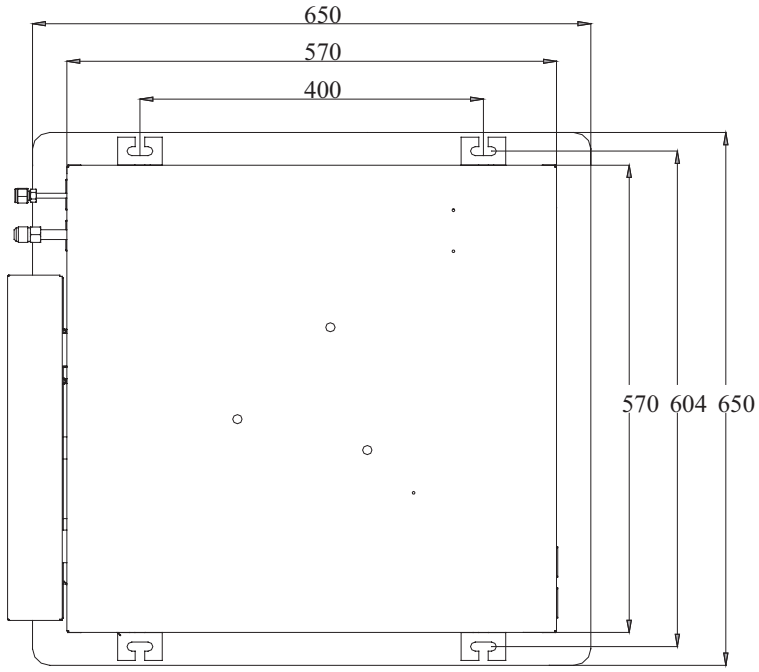
2.2 Noise Criteria Curve Tables for Both Models

Cassette type



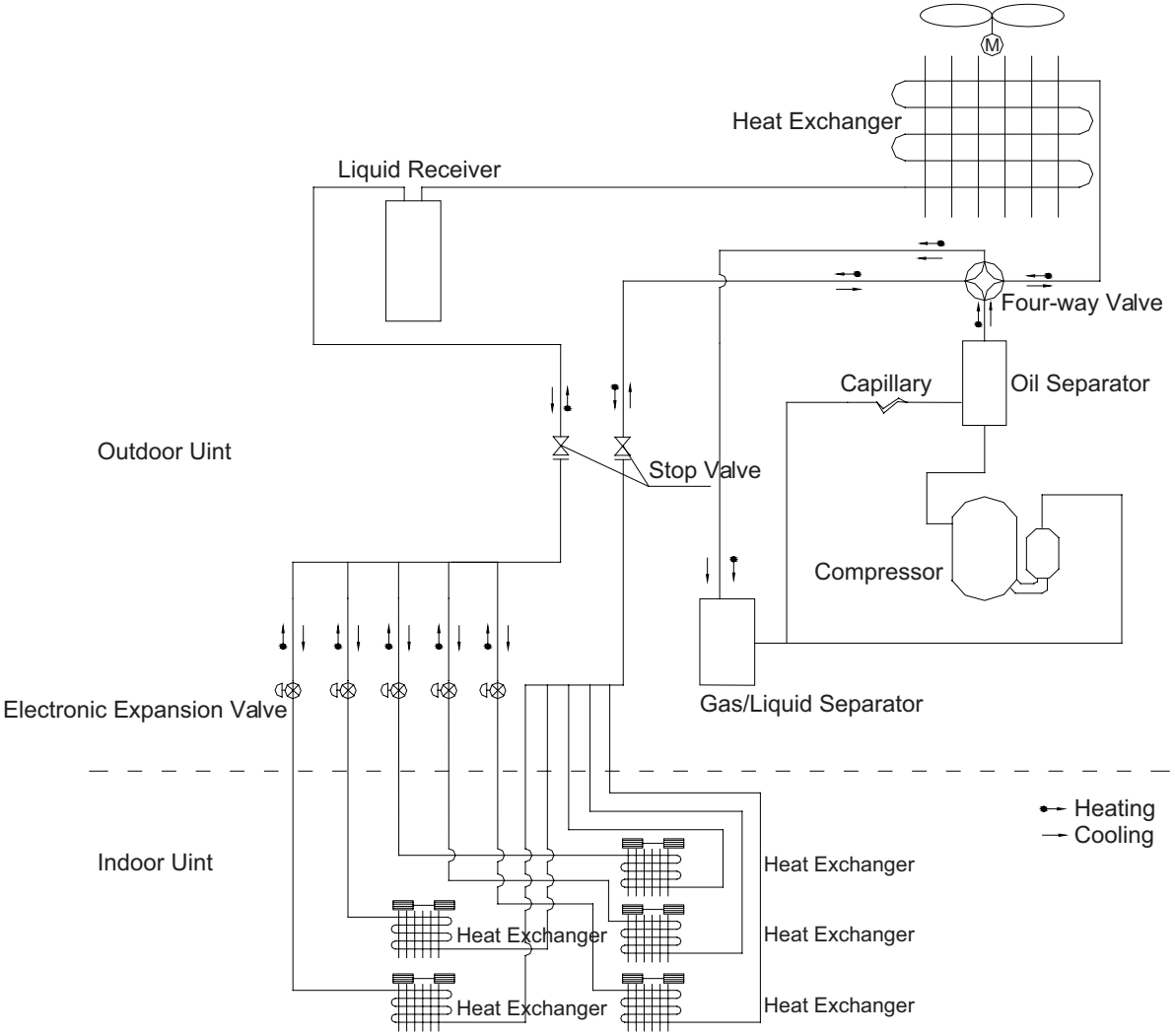
3 Construction Views

Cassette type
MUL 12FWCA - SL, MUL 18FWCA - SL



4 Refrigerant System Diagram

Schematic Diagram of Free Match Series Inverter Heat Pump

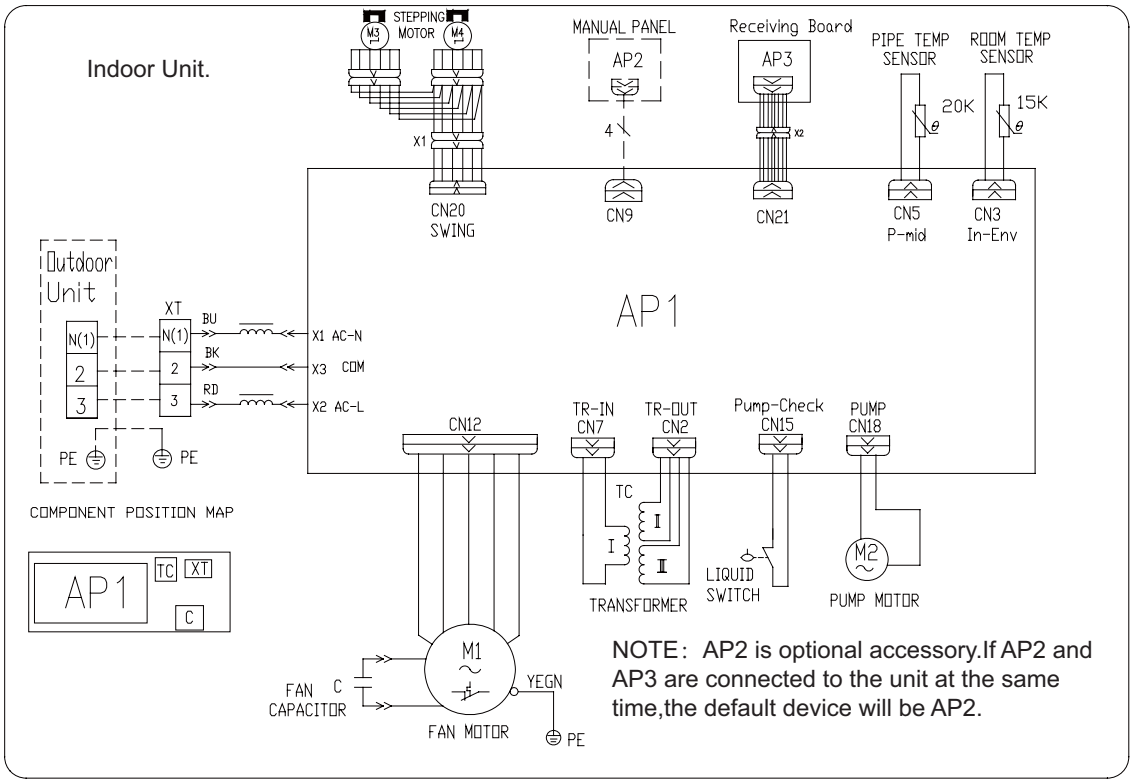


Schematic Diagram of Free Match Series Inverter Heat Pump

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.

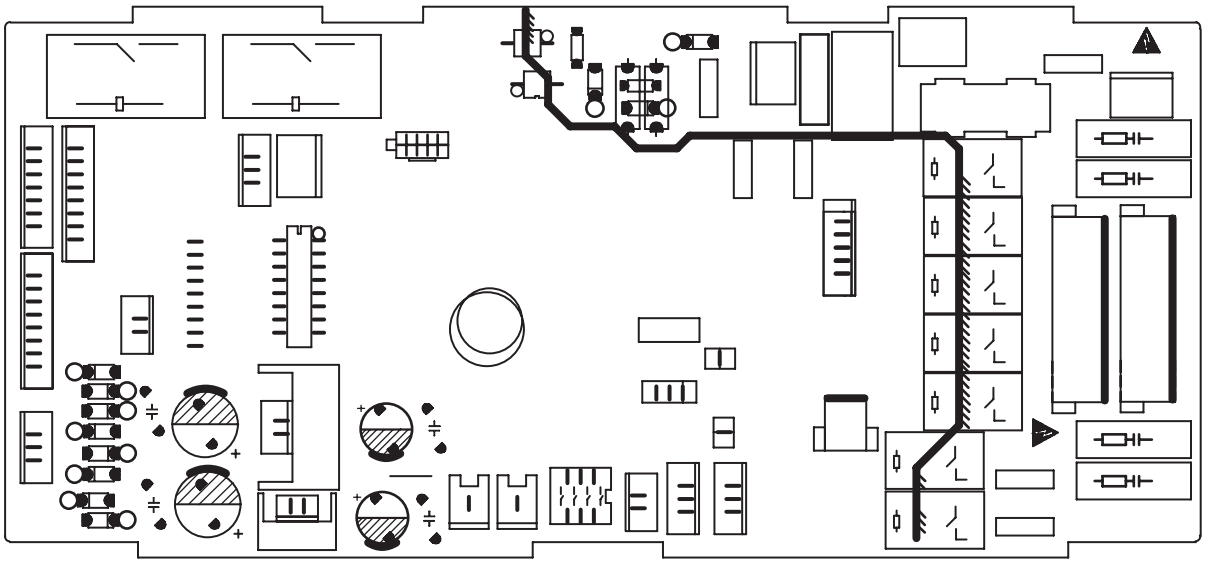
N(1)

For MUL 12FWCA - SL, MUL 18FWCA - SL Unit



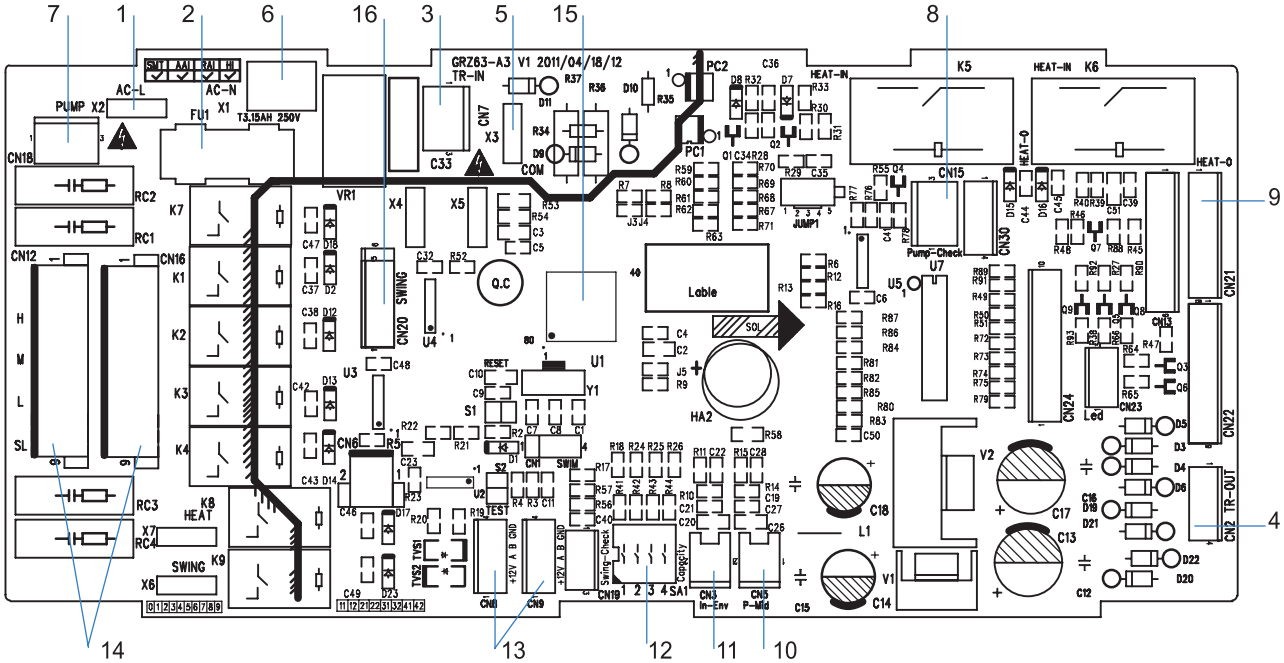
1	Live Line	9	Control Panel
2	Neutral Line	10	Evaporator Mid-Tube Temperature Sensor
3	Fuse	11	Indoor Temperature Sensor
4	Transformer (High Voltage)	12	Wired Controller
5	Transformer (Low Voltage)	13	Fan Motor
6	Communication Line	14	MCU
7	Water Pump	15	Fan
8	Water Level Indicator	16	DIP Switch

- Bottom view



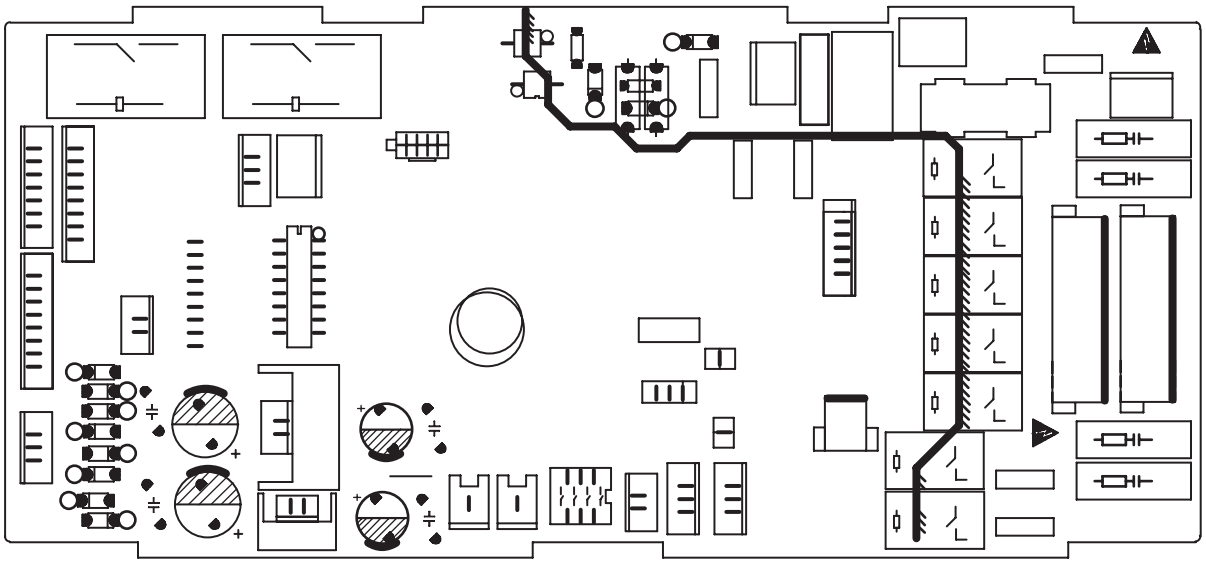
Cassette type for MUL 12FWCA - SL, MUL 18FWCA - SL Unit

- 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



6 Function and Control

6.1 Remote Control Operations

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 FAN

Press it to set fan speed.

5 MODE

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

6 I FEEL

7

Press it to set HEALTH function

8

Press it to set AIR function.

9 CLOCK

Press it set clock.

10 TIMER ON

Press it to set auto-on timer.

11

Press it set swing angle.

12 X-FAN (X-FAN is the alternative expression of BLOW for the purpose of understanding.)

13 TEMP

14 TIMER OFF

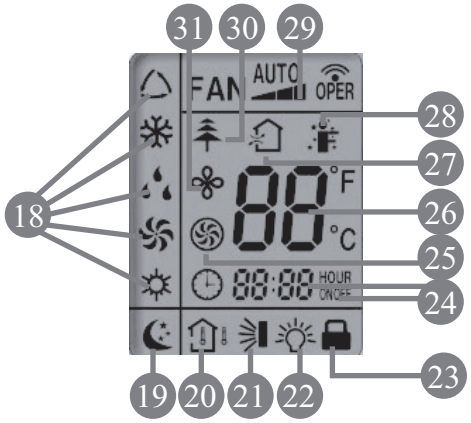
Press it to set auto-off timer

15 TURBO

16 SLEEP

17 LIGHT

Press it to turn on/off the light.



18 MODE icon:

If MODE button is pressed, current operation mode icon (AUTO), (COOL), (DRY), (FAN) or (HEAT only for heat pump models) will show.

19 SLEEP icon :

is displayed by pressing the SLEEP button. Press this button again to clear the display.

20 TEMP icon:

Pressing TEMP button, (set temperature), (ambient temperature), (outdoor ambient temperature) and blank is displayed circularly.

21 Up & down swing icon:

is displayed when pressing the up & down swing button. Press this button again to clear the display.

22 LIGHT icon:

is displayed by pressing the LIGHT button. Press LIGHT button again to clear the display.

23 LOCK icon:

is displayed by pressing "+" and “-” buttons simultaneously. Press them again to clear the display.

24 SET TIME display:

After pressing TIMER button, ON or OFF will blink.This area will show the set time.

25 TURBO icon:

is displayed when pressing the TURBO button.Press this button again to clear the display.

26 DIGITAL display:

This area will show the set temperature. In SAVE mode,"SE" will be displayed. During defrosting operation, “H1” will be displayed.

27 AIR icon:

is displayed when pressing the AIR button.Press this button again to clear the display.

28 I FEEL icon:

is displayed when pressing the I FEEL button. Press this button again to clear the display.

29 FAN SPEED display:

Press FAN button to select the desired fan speed setting (AUTO Low-Med-High).Your selection will be displayed in the LCD windows,except the AUTO fan speed.

30 HEALTH icon:

is displayed when pressing the HEALTH button. Press this button again to clear the display.

31 X-FAN icon:

is displayed when pressing the X-FAN button. Press this button again to clear the display.

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. Hold it down for above 2 seconds to rapidly decrease set temperature. In AUTO mode, set temperature is not adjustable.

3 +:

Press this button to increase set temperature. Hold it down for above 2 seconds to rapidly increase set temperature. In AUTO mode, set temperature is not adjustable.

4 FAN :

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

Low speed Medium speed High speed

5 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:

*Note: Only for models with heating function.

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

6 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.

7 :

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

8 :

Press this button to select AIR function ON or OFF.

9 CLOCK :

Pressing CLOCK button, links. 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.

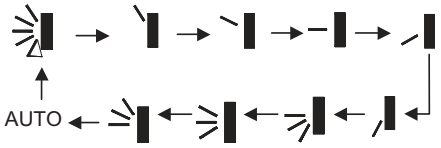
10 TIMER ON :

Press this button to initiate the auto-ON timer. To cancel the auto-timer program, simply press this button again.

After pressing this button, disappear sand " ON " blink s . 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.

11

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



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:

12 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.

13 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 temperature'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.

14 TIMER OFF :

Press this 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.

15 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.

16 SLEEP:

Press this button to go into the SLEEP operation mode. Press it again to cancel this function. This function is available in COOL, HEAT (Only for models with heating function) or DRY mode to maintain the most comfortable temperature for you.

17 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 tunrned off , disappears.

18 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.

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

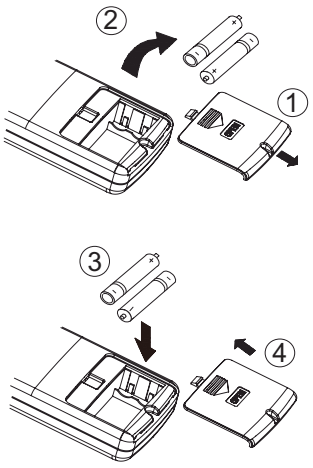
Replacement of Batteries

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 AAA1.5V dry batteries, and pay attention to the polarity.

4) Reinstall the battery cover plate.



Sketch map for replacing batteries

Notes:

d. When replacing the batteries, do not use old or different types of batteries, otherwise, it may cause malfunction.

e. If the remote controller will not be used for a long time, please remove batteries to prevent batteries from leaking.

f. The operation should be performed in its receiving range.

g. It should be kept 1m away from the TV set or stereo sound sets.

h. 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.

6.2 Description of Each Control Operation

Protection Function

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℃ ~30℃ .

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. 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℃ ~30℃ .

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℃ , the unit will run as the COOL mode.

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

c) When the indoor ambient temperature is higher than 22℃ but lower than 26℃ , the system will run at the FAN mode, and the set temperature is 24 ℃ . 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℃ , the indoor unit fan runs at the medium speed.

When the ambient temperature is or lower than the set temperature plus 2 ℃ , 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℃ , the indoor unit runs at high speed.

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

When the ambient temperature is or lower than the set temperature plus 1 ℃ , 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 .

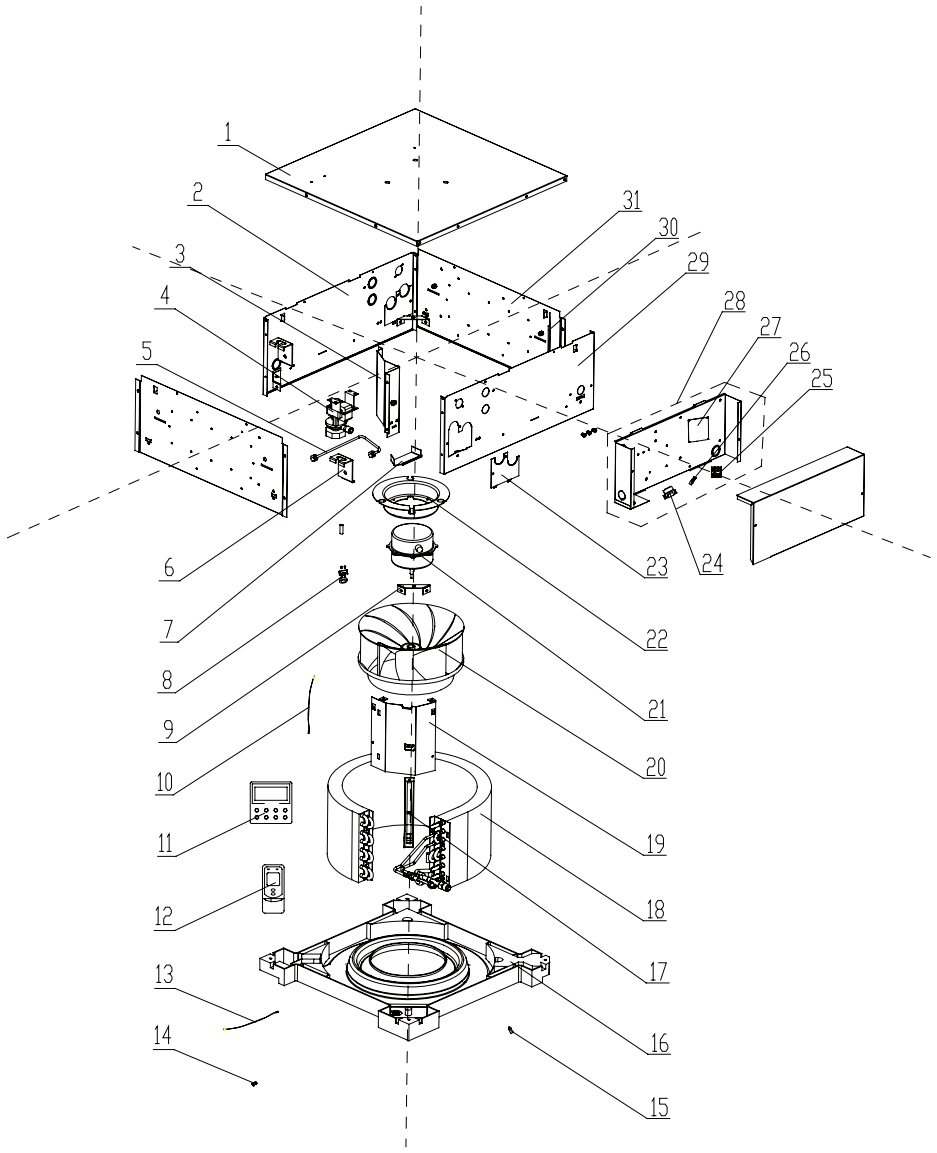
j. Blow

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.

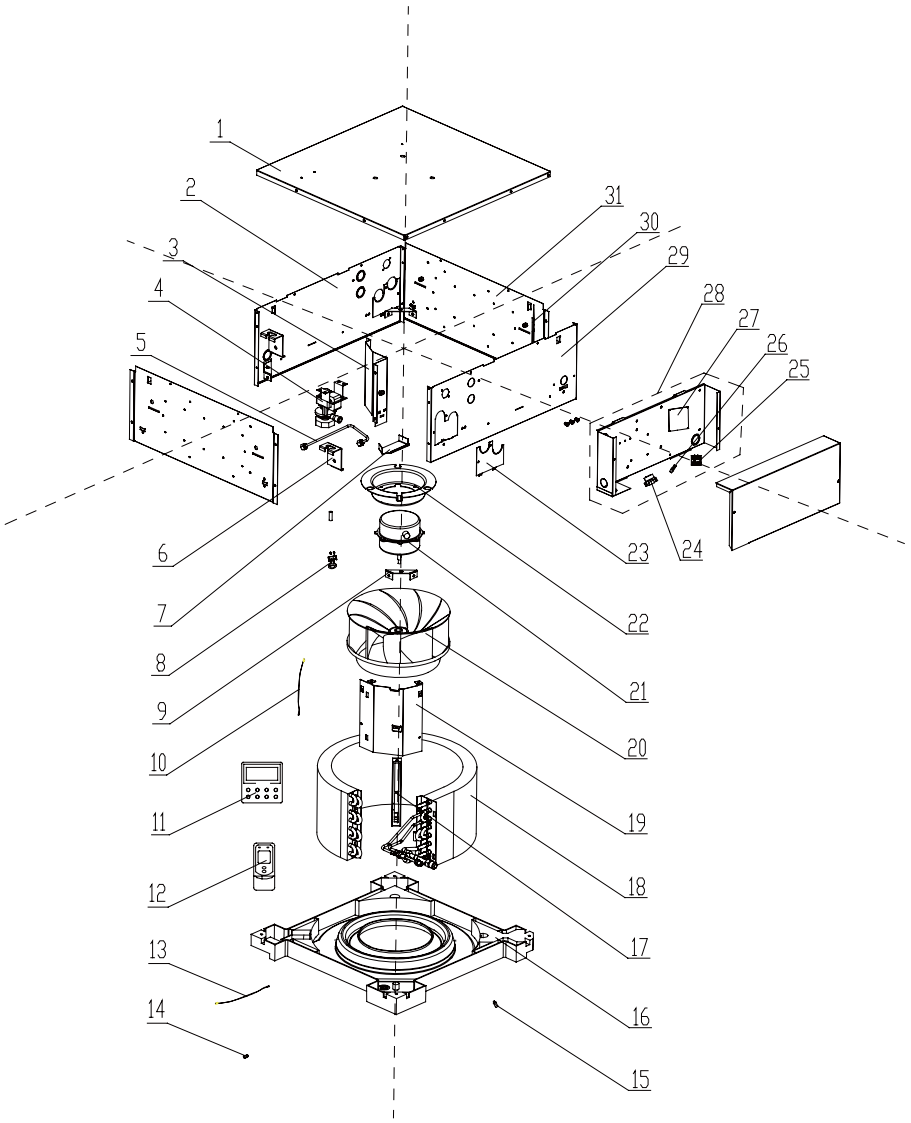
Model: MUL 12FWCA-SL



Part list: MUL 12FWCA - SL

NO.	Description	MUL 12FWCA - SL	
		Code	Qty
1	Seat Board Sub-Assy	01222712	1
2	Front Side Plate	01302741	1
3	Right Baffle Assy	01362704	1
4	Water Pump	43130320	1
5	Pump Drainpipe	05232722	1
6	Body Installing Support	01332705	4
7	Pump Support Assy	01332708	1
8	Water Level Switch	450127011	1
9	Water Tray Support	01332706	4
10	Temperature Sensor	390001982G	1
11	Display Board	30296317	1
12	Remote Controller	305100492	1
13	Ambient Temperature Sensor	3900019813	1
14	Filter Sub-Assy	11120011	1
15	Filter Sub-Assy	11120012	1
16	Water Tray Assy	20182704	1
17	Evaporator Support	01072714	1
18	Evaporator Assy	01024307	1
19	Evaporator Connection Board	01072713	1
20	Centrifugal Fan	10312702	1
21	Fan Motor	15704114	1
22	Motor Support	01702702	1
23	Tube Exit Plate Assy	01382719	1
24	Transformer	43110226	1
25	Terminal Board	420111041	1
26	Capacitor	33010026	1
27	Main Board	30226354	1
28	Electric Box Assy	01399534	1
29	Front Side Plate	01314211	1
30	Pass WirePlate	01362701	1
31	Right Side Plate Sub-Assy	01302743	2

Model: MUL 18FWCA - SL



Part list: MUL 18FWCA - SL

NO.	Description	MUL 18FWCA - SL	
		Code	Qty
1	Seat Board Sub-Assy	01222712	1
2	Front Side Plate	01302741	1
3	Right Baffle Assy	01362704	1
4	Water Pump	43130320	1
5	Pump Drainpipe	05232722	1
6	Body Installing Support	01332705	4
7	Pump Support Assy	'01332708	1
8	Water Level Switch	450127011	1
9	Water Tray Support	01332706	4
10	Temperature Sensor	390001982G	1
11	Display Board	30296317	1
12	Remote Controller	305100492	1
13	Ambient Temperature Sensor	3900019813	1
14	Filter Sub-Assy	11120011	1
15	Filter Sub-Assy	11128633	1
16	Water Tray Assy	20182704	1
17	Evaporator Support	01072714	1
18	Evaporator Assy	0102430701	1
19	Evaporator Connection Board	01072713	1
20	Centrifugal Fan	10312702	1
21	Fan Motor	15704114	1
22	Motor Support	01702702	1
23	Tube Exit Plate Assy	01382719	1
24	Transformer	43110226	1
25	Terminal Board	420111041	1
26	Capacitor	33010026	1
27	Main Board	30226354	1
28	Electric Box Assy	01399534	1
29	Front Side Plate	01314211	1
30	Pass WirePlate	01362701	1
31	Right Side Plate Sub-Assy	01302743	2

9 Troubleshooting

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 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 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

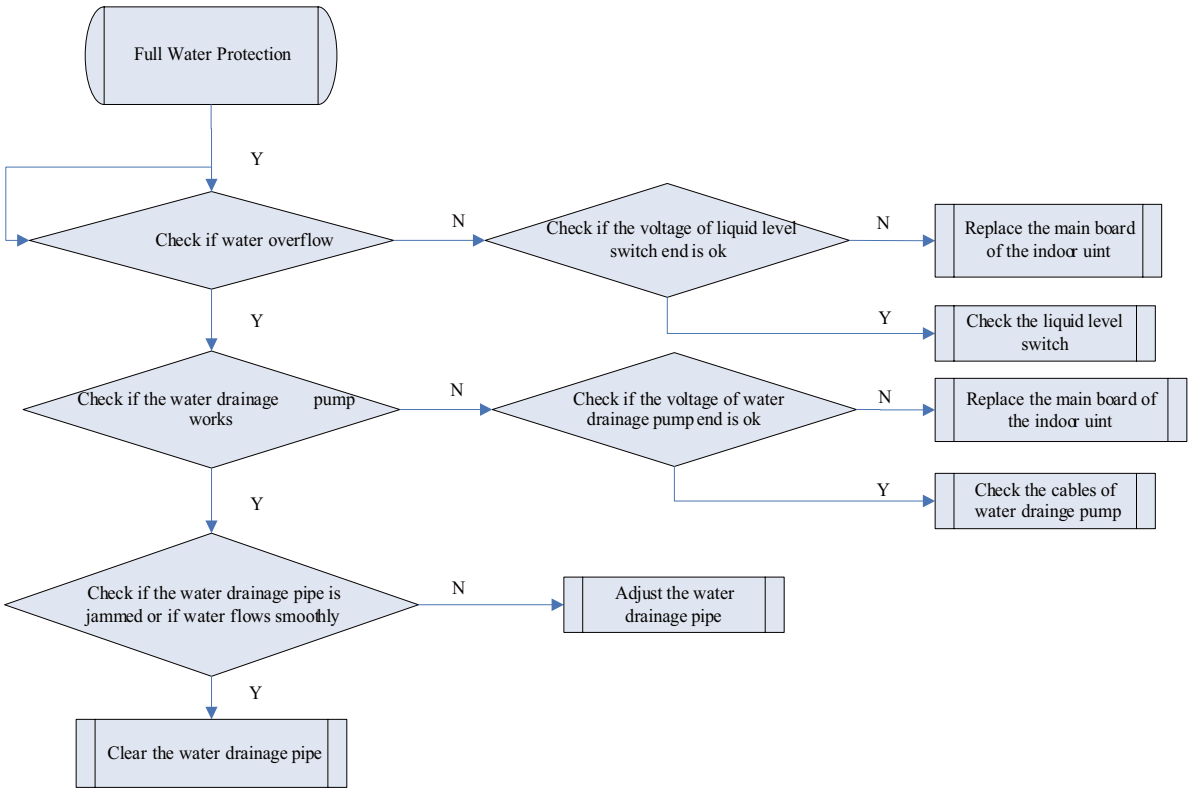
Service personnel shall collect the malfunction information as much as possible and research them thoroughly, list these electrical parts which may cause malfunction, service personnel shall be able to determine the specific reason and solve the faulted parts.

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

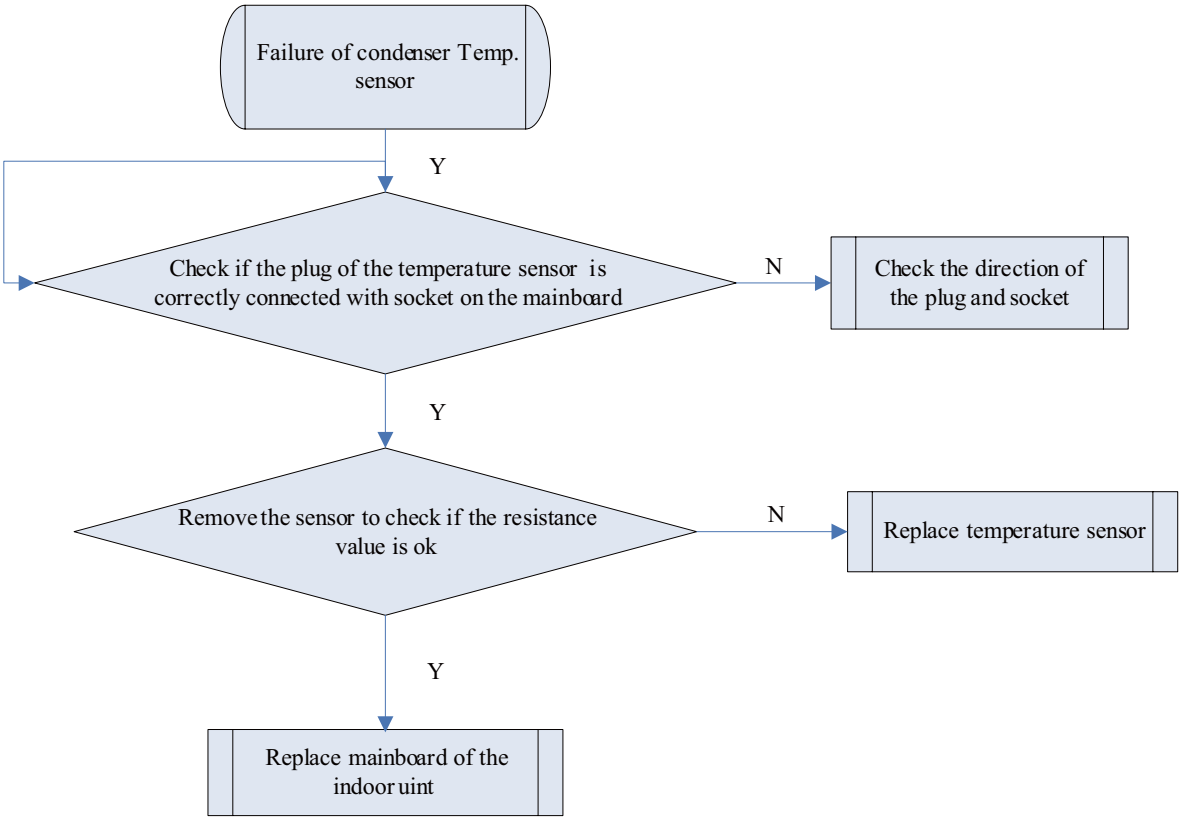
It is advised to start from the simple operation during analyzing ,judging and confirming malfunction reason, then conduct the complicated operations such removal of device, part replacement and refrigerant filling.

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.

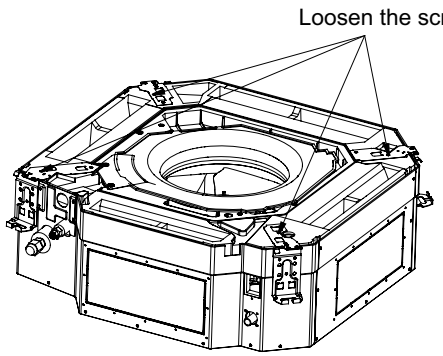
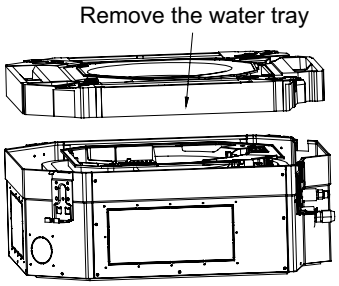
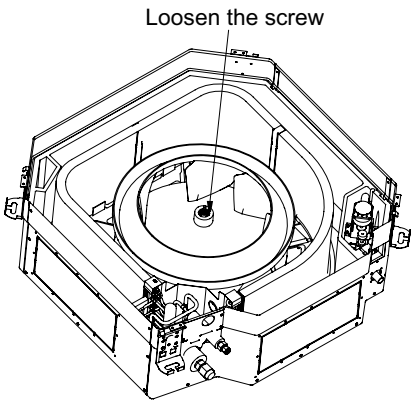
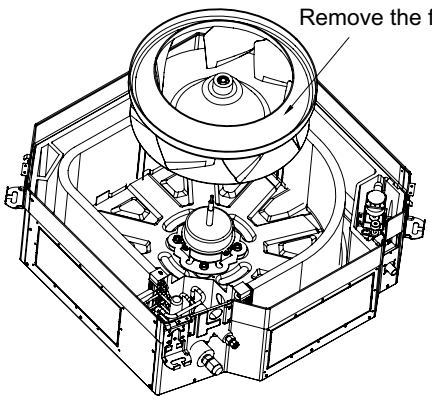
◆ Malfunction display: E9 Full Water Protection

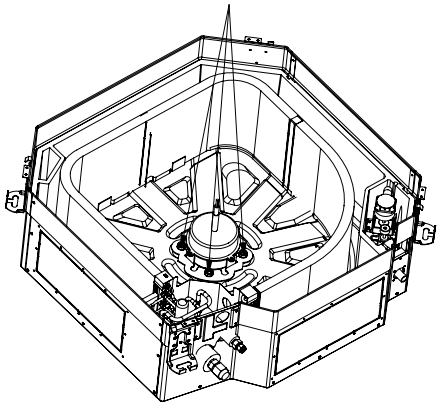
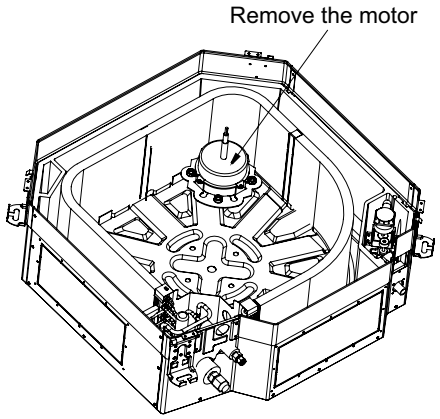
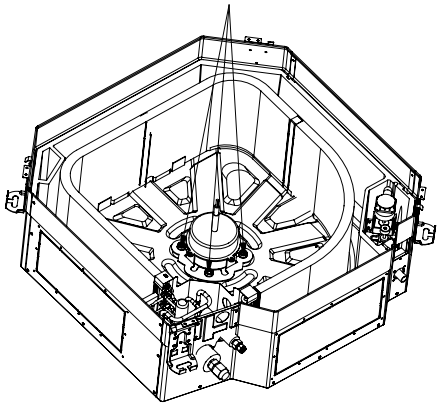
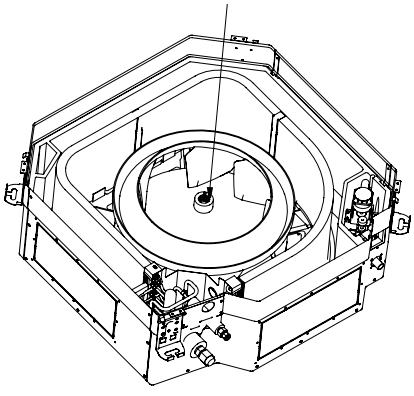


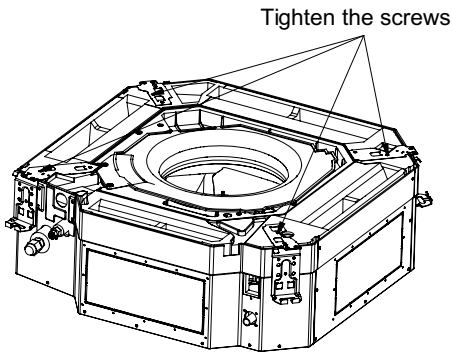
◆ Malfunction display: F2 Failure of Evaporator Temp. Sensor

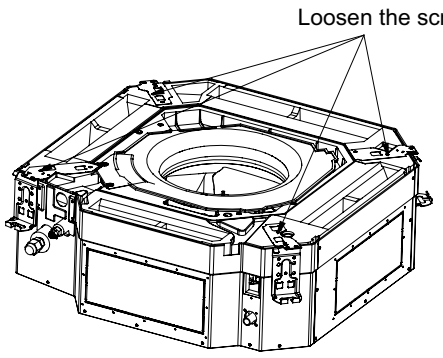
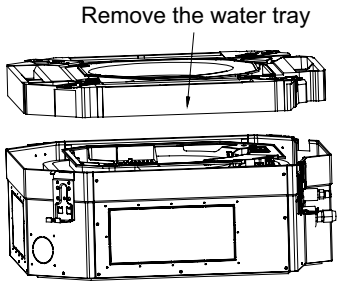
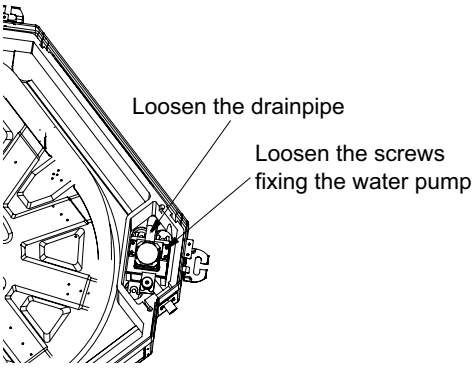


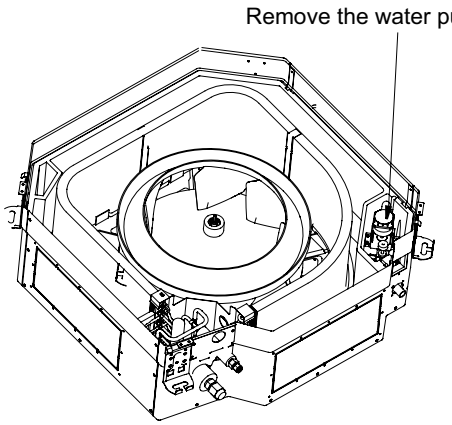
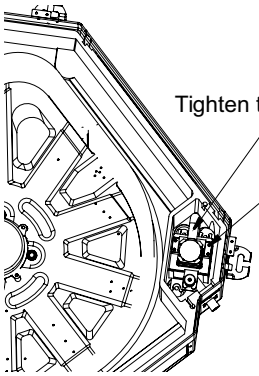
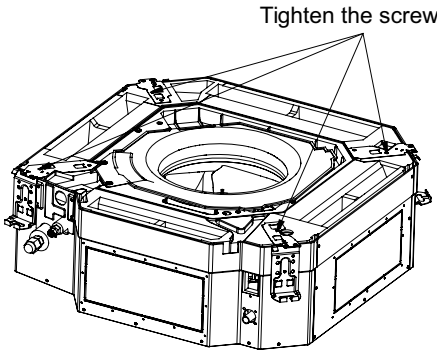
Cassette type

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		●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		●Use screwdriver to loosen the screws fixing the water tray
2. 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.		●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