



High Wall Type

Service Manual

DW-36-40-45-48

DRW305-365



CONTENTS

1. Precaution	2
1.1 Safety Precaution.....	2
1.2 Warning.....	2
2. Function	6
3. Dimension	7
3.1 Indoor Units.....	7
3.2 Outdoor Units.....	8
4. Refrigerant Cycle Diagram	9
5. Wiring Diagram	10
5.1 Indoor Units.....	10
5.2 Outdoor Units.....	10
6. Installation details	111
6.1 Wrench torque sheet for installation	111
6.2 Connecting the cables	111
6.3 Pipe length and the elevation	122
6.4 Installation for the first time.....	133
6.5 Adding the refrigerant after running the system for many years	166
6.6 Re-installation while the indoor unit need to be repaired	177
6.7 Re-installation while the outdoor unit need to be repaired	199
7. Operation characteristics	222
8. Electronic function	233
8.1 Abbreviation	233
8.2 Display function.....	233
8.3 Main Protection	255
8.4 Operation Modes and Functions.....	266
9. Troubleshooting	333
9.1 Indoor unit error display	333
9.2 Diagnosis and Solution	333

1. Precaution

1.1 Safety Precaution

■ To prevent injury to the user or other people and property damage, the following instructions must be followed.

- Incorrect operation due to ignoring instruction will cause harm or damage.
- Before service the unit, be sure to read this service manual at first.

1.2 Warning

➤ Installation

■ Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.

There is risk of fire or electric shock.

■ For electrical work, contact the dealer, seller, a qualified electrician, or an authorized service center.

Do not disassemble or repair the product, there is risk of fire or electric shock.

■ Always ground the product.

There is risk of fire or electric shock.

■ Install the panel and the cover of control box securely.

There is risk of fire of electric shock.

■ Always install a dedicated circuit and breaker.

Improper wiring or installation may cause fore or electric shock.

■ Use the correctly rated breaker of fuse.

There is risk of fire or electric shock.

■ Do not modify or extend the power cable.

There is risk of fire or electric shock.

■ Do not install, remove, or reinstall the unit by yourself (customer).

There is risk of fire, electric shock, explosion, or injury.

■ Be caution when unpacking and installing the product.

Sharp edges could cause injury, be especially careful of the case edges and the fins on the

condenser and evaporator.

- **For installation, always contact the dealer or an authorized service center.**
- **Do not install the product on a defective installation stand.**
- **Be sure the installation area does not deteriorate with age.**

If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.

- **Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.**

- **Take care to ensure that power cable could not be pulled out or damaged during operation.**

There is risk of fire or electric shock.

- **Do not place anything on the power cable.**

There is risk of fire or electric shock.

- **Do not plug or unplug the power supply plug during operation.**

There is risk of fire or electric shock.

- **Do not touch (operation) the product with wet hands.**

- **Do not place a heater or other appliance near the power cable.**

There is risk of fire and electric shock.

- **Do not allow water to run into electrical parts.**

It may cause fire, failure of the product, or electric shock.

- **Do not store or use flammable gas or combustible near the product.**

There is risk of fire or failure of product.

- **Do not use the product in a tightly closed space for a long time.**

Oxygen deficiency could occur.

- **When flammable gas leaks, turn off the gas and open a window for ventilation before turn the product on.**

- **If strange sounds or smoke comes from product, turn the breaker off or disconnect the power supply cable.**

There is risk of electric shock or fire.

- **Stop operation and close the window in storm or hurricane. If possible, remove the product from the window before the hurricane arrives.**

There is risk of property damage, failure of product, or electric shock.

- **Do not open the inlet grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)**

There is risk of physical injury, electric shock, or product failure.

- **When the product is soaked, contact an authorized service center.**

There is risk of fire or electric shock.

- **Be caution that water could not enter the product.**

There is risk of fire, electric shock, or product damage.

- **Ventilate the product from time to time when operating it together with a stove etc.**

There is risk of fire or electric shock.

- **Turn the main power off when cleaning or maintaining the product.**

There is risk of electric shock.

- **When the product is not be used for a long time, disconnect the power supply plug or turn off the breaker.**

There is risk of product damage or failure, or unintended operation.

- **Take care to ensure that nobody could step on or fall onto the outdoor unit.**

This could result in personal injury and product damage.

➤ CAUTION

- **Always check for gas (refrigerant) leakage after installation or repair of product.**

Low refrigerant levels may cause failure of product.

- **Install the drain hose to ensure that water is drained away properly.**

A bad connection may cause water leakage.

- **Keep level even when installing the product.**

It can avoid vibration of water leakage.

- **Do not install the product where the noise or hot air from the outdoor unit could damage the neighborhoods.**

It may cause a problem for your neighbors.

- **Use two or more people to lift and transport the product.**

- **Do not install the product where it will be exposed to sea wind (salt spray) directly.**

It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins,

could cause product malfunction or inefficient operation.

➤ **Operational**

- **Do not expose the skin directly to cool air for long time. (Do not sit in the draft).**
- **Do not use the product for special purposes, such as preserving foods, works of art etc.**

It is a consumer air conditioner, not a precision refrigerant system.

There is risk of damage or loss of property.

- **Do not block the inlet or outlet of the air flow.**
- **Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.**

There is risk of fire, electric shock, or damage to the plastic parts of the product.

■ **Do not touch the metal parts of the product when removing the air filter. They are very sharp.**

- **Do not step on or put anything on the product. (outdoor units)**
- **Always insert the filter securely. Clean the filter every two weeks or more often if**

necessary.

A dirty filter reduces the efficiency of the air conditioner and could cause product malfunction or damage.

■ **Do not insert hands or other objects through air inlet or outlet while the product is operated.**

- **Do not drink the water drained from the product.**
- **Use a firm stool or ladder when cleaning or maintaining the product.**

Be careful and avoid personal injury.

■ **Replace the all batteries in the remote control with new ones of the same type. Do not mix old and new batteries or different types of batteries.**

There is risk of fire or explosion.

- **Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire.**

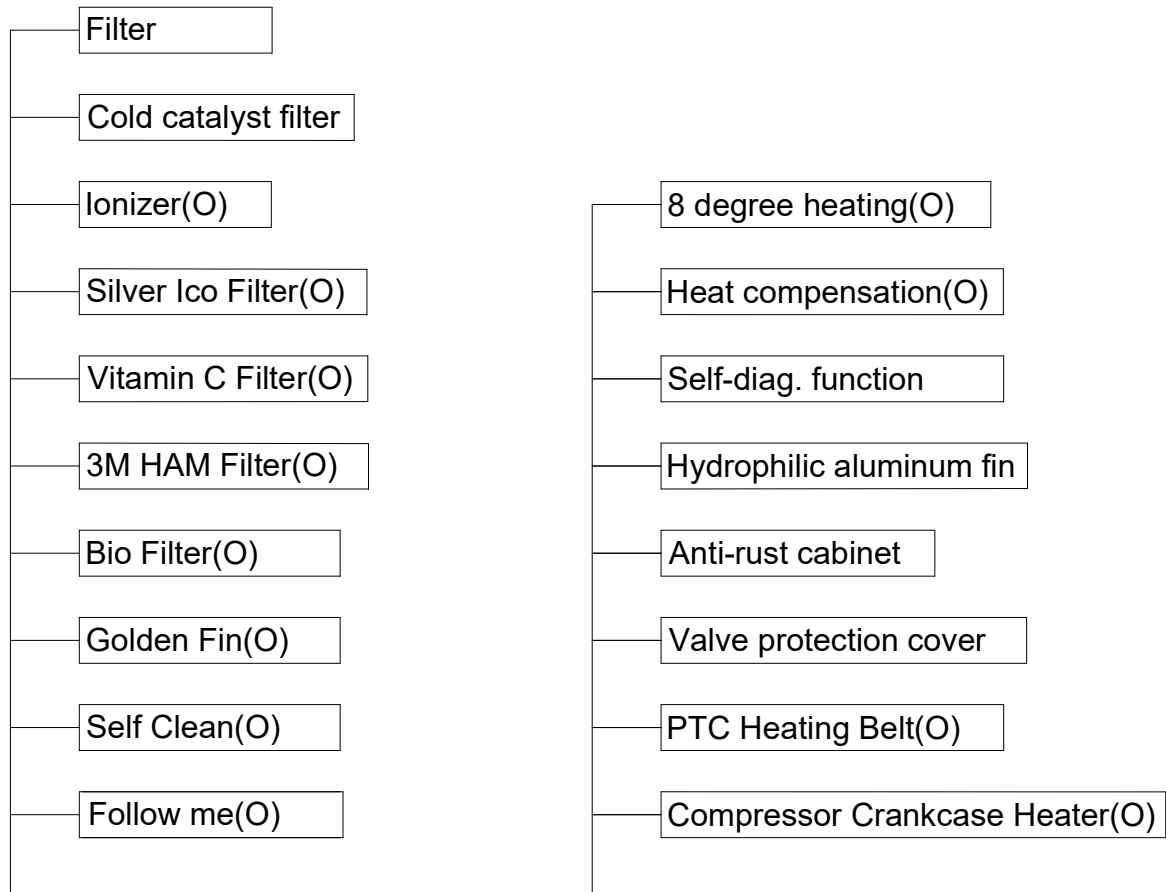
They may burn or explode.

■ **If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote if the batteries have leaked.**

2. Function

Model Names of Indoor/Outdoor Units

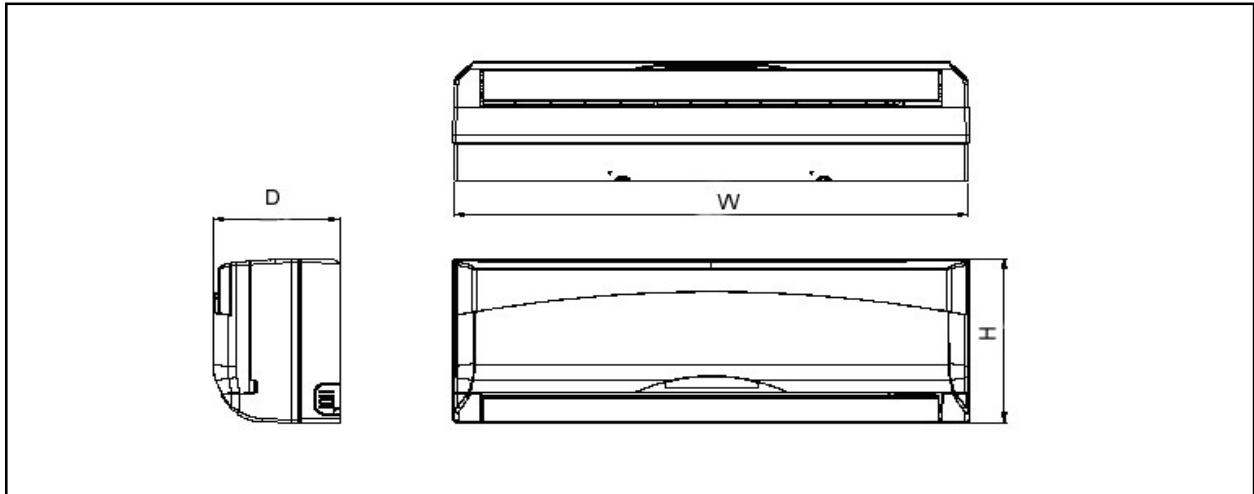
Indoor units	Outdoor units
DW36-48,DRW-305-365	CR-36-48,CR-305-365



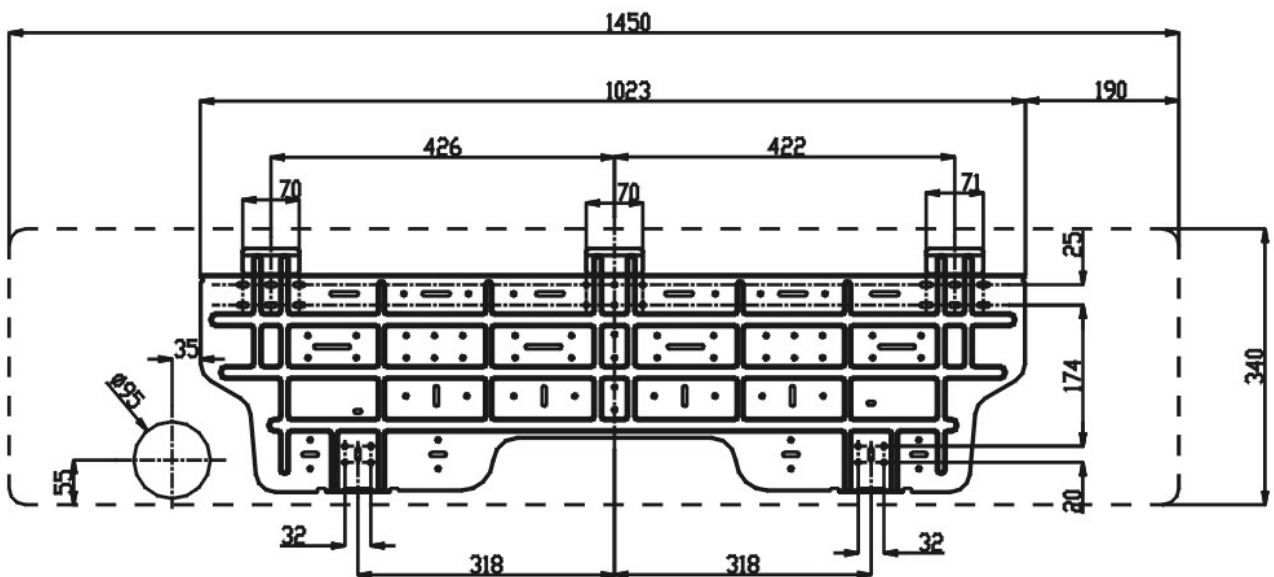
O: optional function

3. Dimension

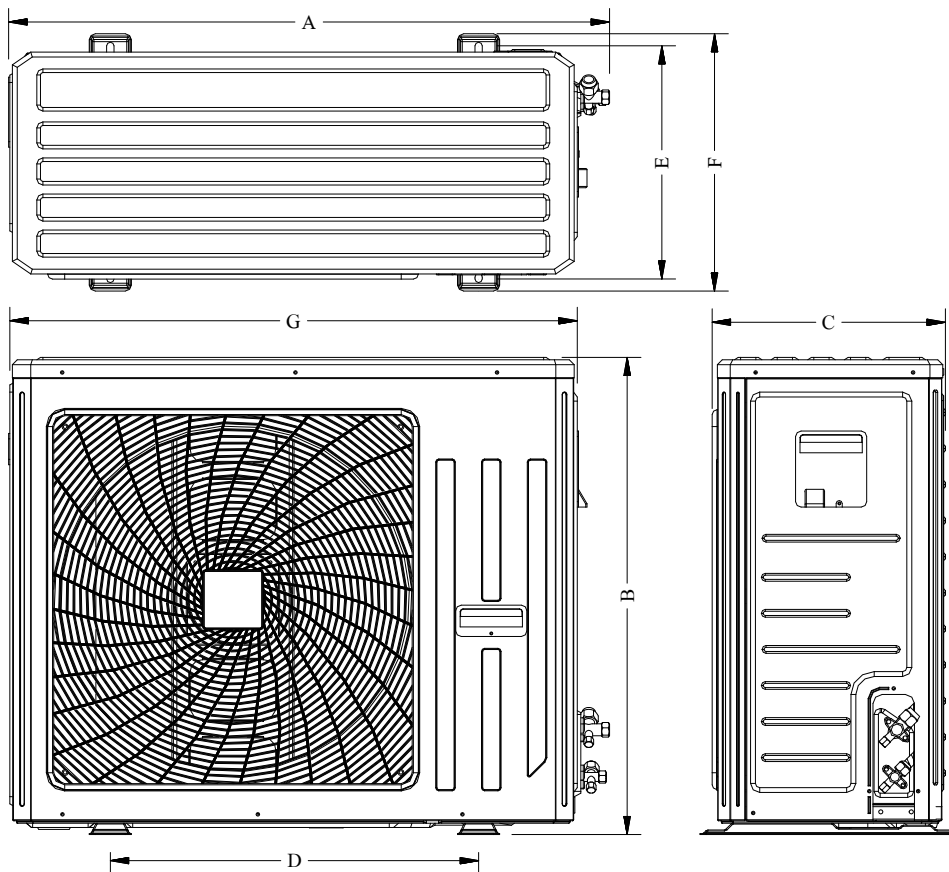
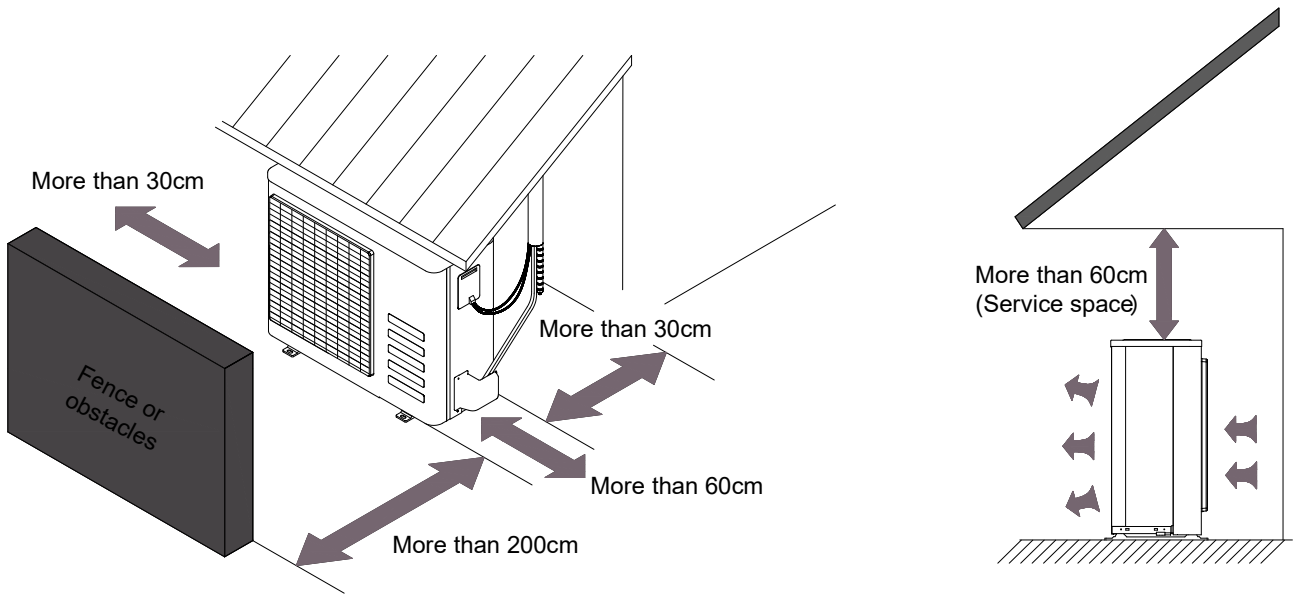
3.1 Indoor Units



Model	W	D	H
DW-36-48,DRW-305-365	1445	277	340



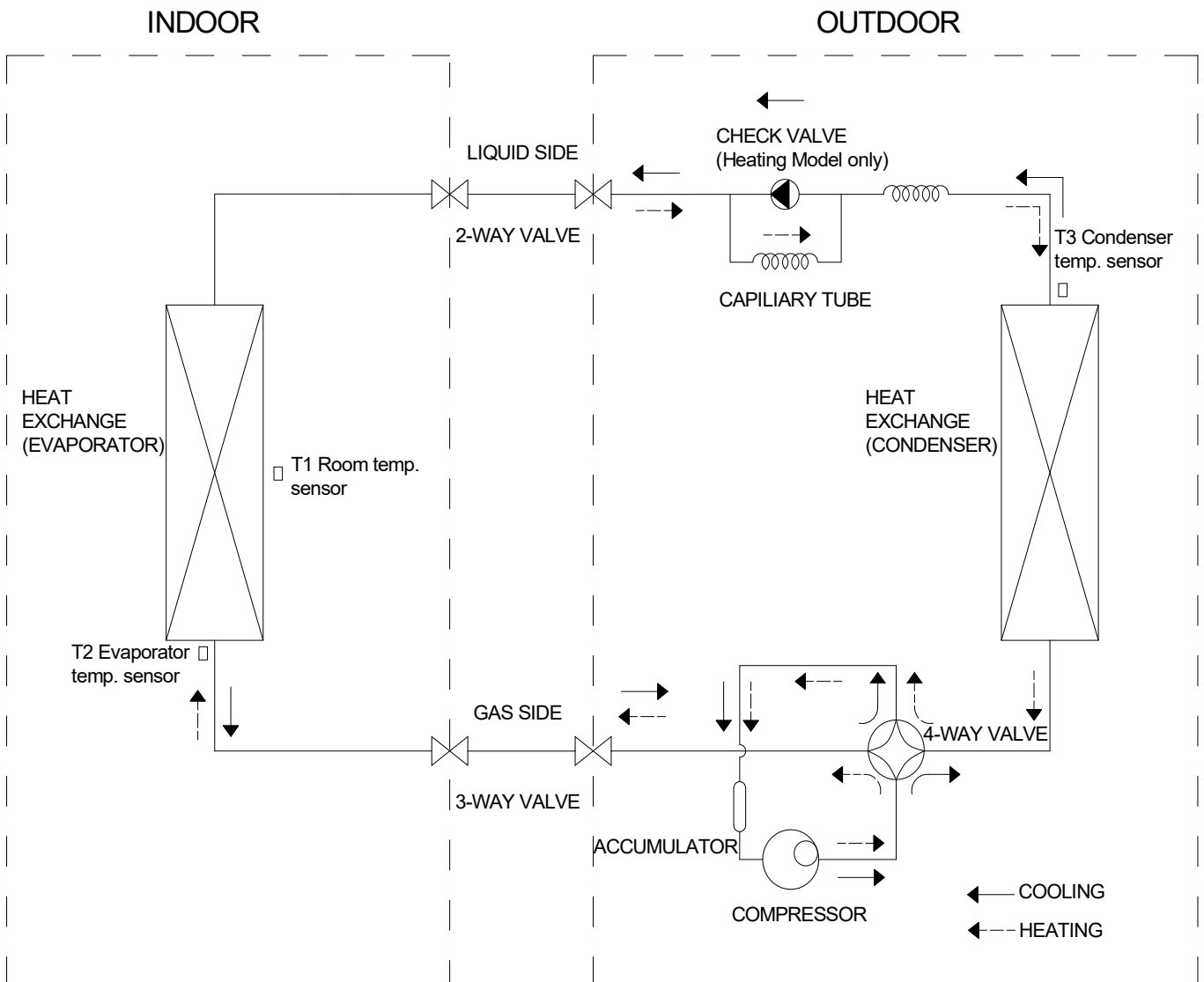
3.2 Outdoor Units



MODEL	A	B	C	D	E	F	G
CR-12	852	543	285	540	286	320	797
CR-18-32	952	695	365	580	366	397	895
CR-36-40,305	982	794	382	603	387	428	929
CR-45-60,365	1094	1104	388	635	397	440	1024

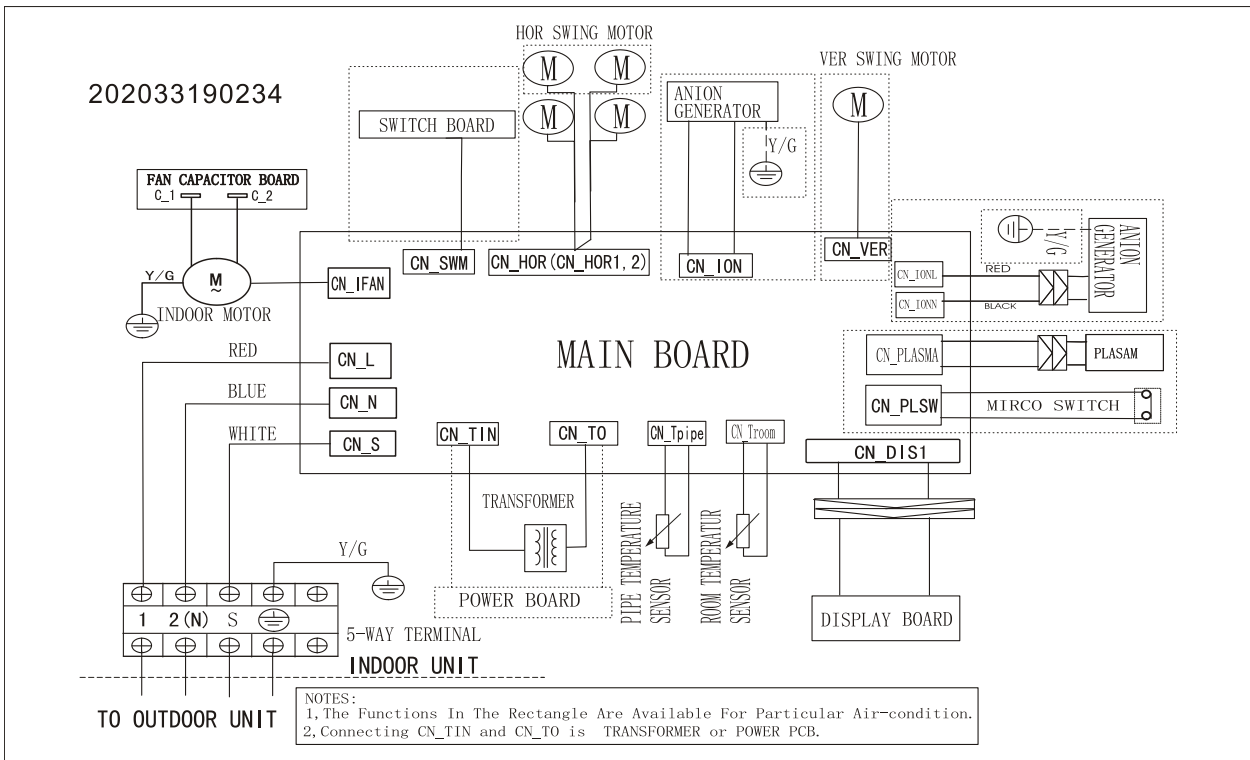
4. Refrigerant Cycle Diagram

For heat pump models:



5. Wiring Diagram

5.1 Indoor Unit



5.2 Outdoor Unit

6. Installation details

6.1 Wrench torque sheet for installation

Outside diameter		Torque	Additional tightening torque
mm	inch	N.cm	N.cm
Φ6.35	1/4	1500(153kgf.cm)	1600(163kgf.cm)
Φ9.52	3/8	2500(255kgf.cm)	2600(265kgf.cm)
Φ12.7	1/2	3500(357kgf.cm)	3600(367kgf.cm)
Φ15.9	5/8	4500(459kgf.cm)	4700(479kgf.cm)
Φ19	3/4	6500(663kgf.cm)	6700(683kgf.cm)

6.2 Connecting the cables

The power cord of connect should be selected according to the following specifications sheet.

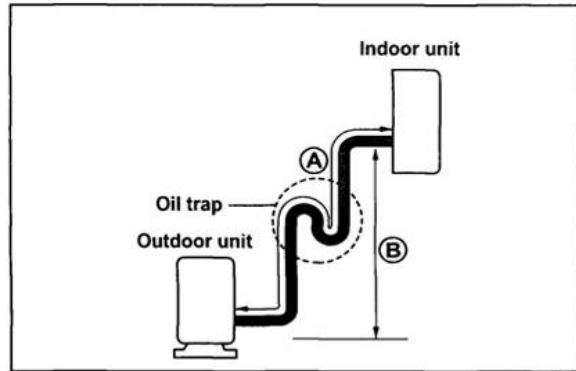
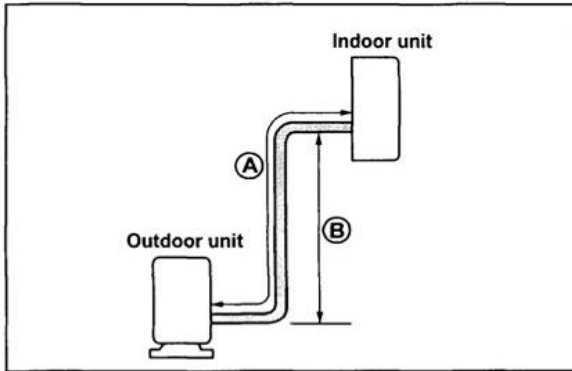
Rated current of appliance	Nominal cross-sectional area (mm ²)
>3 and ≤6	0.75
>6 and ≤10	1
>10 and ≤16	1.5
>16 and ≤25	2.5

The cable size and the current of the fuse or switch are determined by the maximum current indicated on the nameplate which located on the side panel of the unit. Please refer to the nameplate before selecting the cable, fuse and switch.

6.3 Pipe length and the elevation

The pipe length and refrigerant amount:

Model	Pipe size		Standard length (m)	Max. Elevation B (m)	Max. Length A (m)	Additional refrigerant (g/m)
	Gas	Liquid				
AR-36-40-45	3/4" (Φ19.0)	3/8" (Φ9.52)	5	10	25	40



Caution:

The capacity test is based on the standard length and the maximum permissible length is based on the system reliability.

The oil trap should be installed per 5-7 meters.

6.4 Installation for the first time

Air and moisture in the refrigerant system have undesirable effects as below:

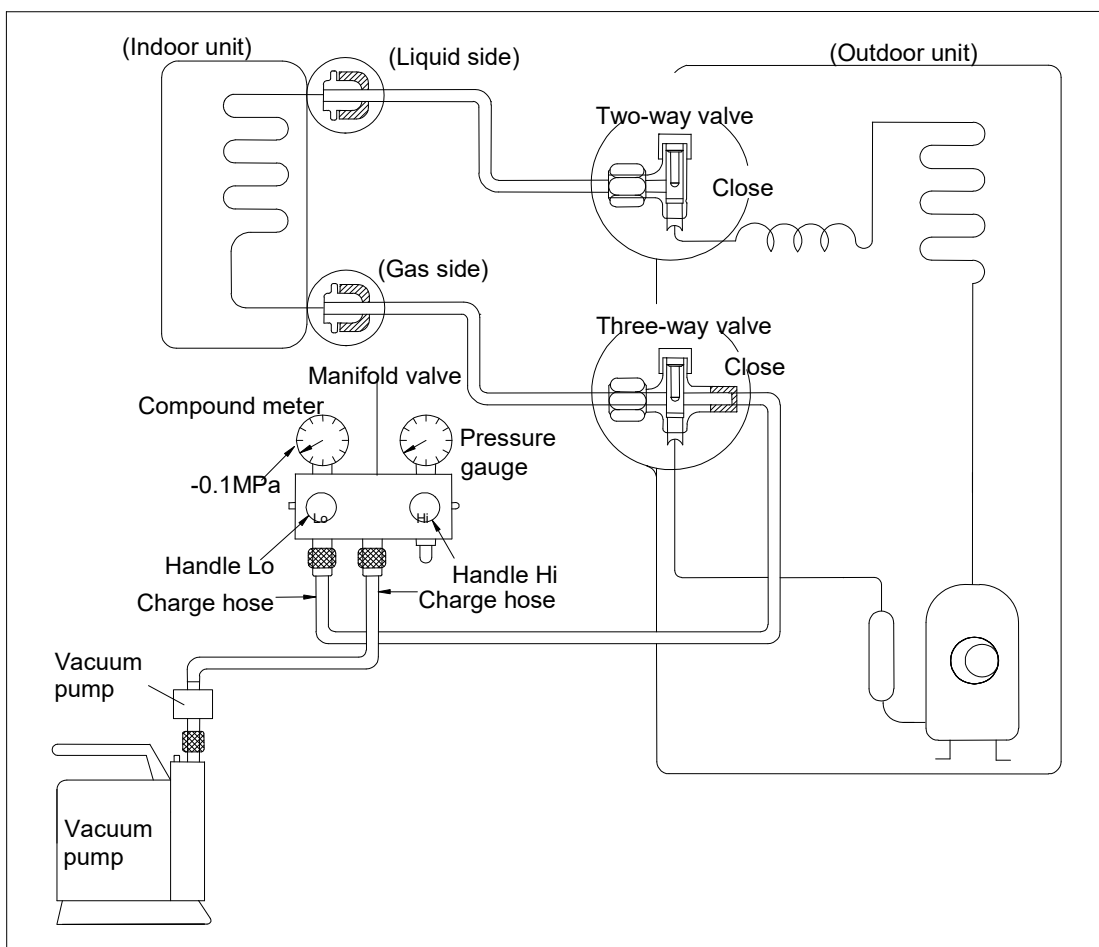
- Pressure in the system rises.
- Operating current rises.
- Cooling or heating efficiency drops.
- Moisture in the refrigerant circuit may freeze and block capillary tubing.
- Water may lead to corrosion of parts in the refrigerant system.

Therefore, the indoor units and the pipes between indoor and outdoor units must be leak tested and evacuated to remove gas and moisture from the system.

Gas leak check (Soap water method):

Apply soap water or a liquid neutral detergent on the indoor unit connections or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping. If bubbles come out, the pipes have leakage.

1. Air purging with vacuum pump



- 1) Completely tighten the flare nuts of the indoor and outdoor units, confirm that both the 2-way and 3-way valves are set to the closed position.
- 2) Connect the charge hose with the push pin of handle lo to the 3-way valves gas service port.
- 3) Connect the charge hose of handle hi connection to the vacuum pump.
- 4) Fully open the handle Lo of the manifold valve.
- 5) Operate the vacuum pump to evacuate.
- 6) Make evacuation for 30 minutes and check whether the compound meter indicates -0.1Mpa. If

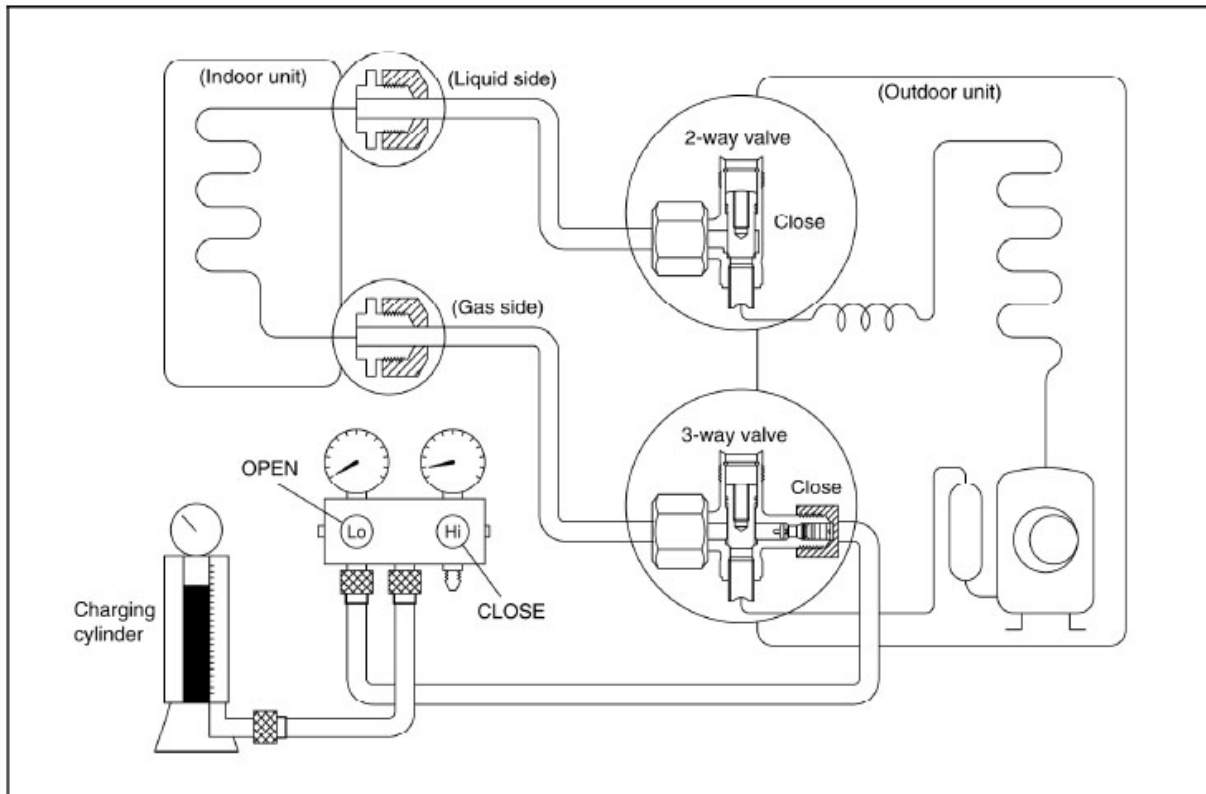
the meter does not indicate -0.1Mpa after pumping 30 minutes, it should be pumped 20 minutes more. If the pressure can't achieve -0.1Mpa after pumping 50 minutes, please check if there are some leakage points.

Fully close the handle Lo valve of the manifold valve and stop the operation of the vacuum pump. Confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).

7) Turn the flare nut of the 3-way valves about 45° counterclockwise for 6 or 7seconds after the gas coming out, then tighten the flare nut again. Make sure the pressure display in the pressure indicator is a little higher than the atmosphere pressure. Then remove the charge hose from the 3 way valve.

8) Fully open the 2 way valve and 3 way valve and securely tighten the cap of the 3 way valve.

2. Air purging by refrigerant



Procedure:

1). Confirm that both the 2-way and 3-way valves are set to the closed position.

2). Connect the charge set and a charging cylinder to the service port of the 3-way valve.

3). Air purging

Open the valves on the charging cylinder and the charge set. Purge the air by loosening the flare nut on the 2-way valve approximately 45° for 3 seconds then closing it for 1 minute; repeat 3 times.

After purging the air, use a torque wrench to tighten the flare nut on the 2-way valve.

4). Check the gas leakage

Check the flare connections for gas leakage.

5). Discharge the refrigerant

Close the valve on the charging cylinder and discharge the refrigerant by loosening the flare nut on the 2-way valve approximately 45' until the gauge indicates 0.3 to 0.5 Mpa.

6). Disconnect the charge set and the charging cylinder, and set the 2-way and 3-way valves to the open position.

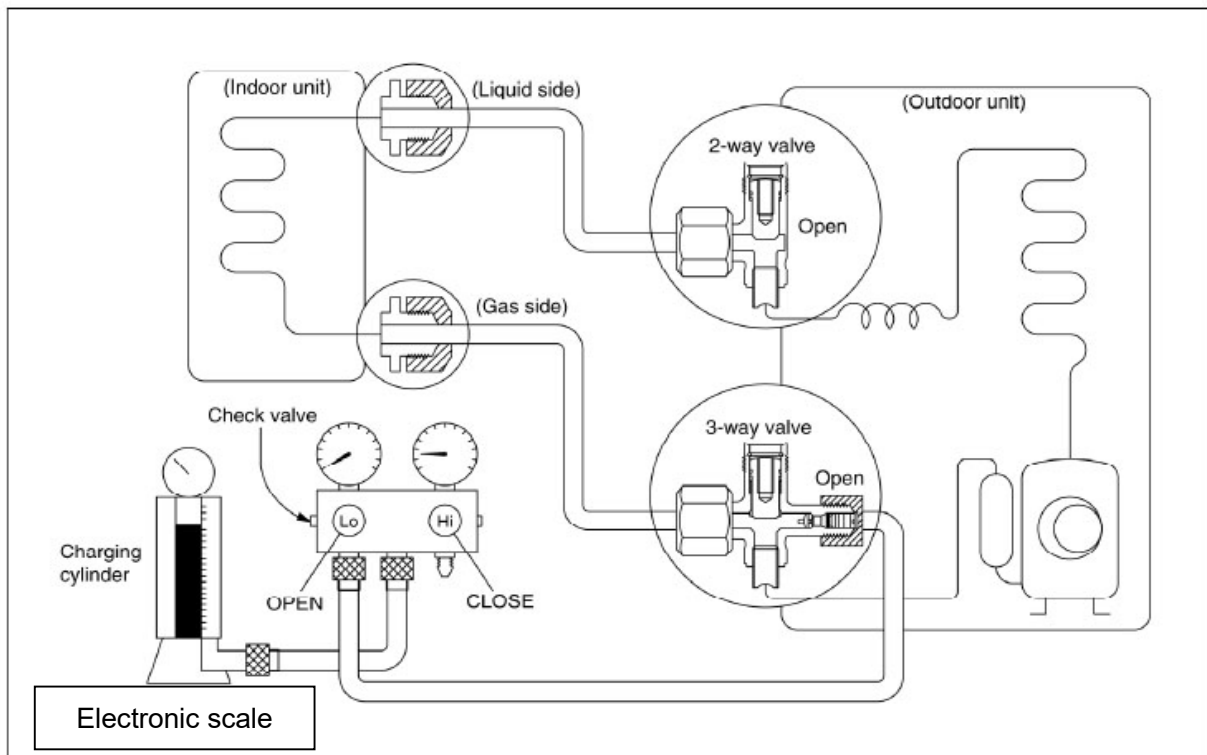
Be sure to use a hexagonal wrench to operate the valve stems.

7). Mount the valve stems nuts and the service port cap

Be sure to use a torque wrench to tighten the service port cap to a torque 18N-m.

Be sure to check the gas leakage.

3. Adding the refrigerant if the pipe length >5m



Procedure:

1). Connect the charge hose to the charging cylinder, open the 2-way valve and the 3-way valve.

Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder. If the refrigerant is R410A, make the cylinder bottom up to ensure the liquid charge.

2). Purge the air from the charge hose

Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).

3) Put the charging cylinder onto the electronic scale and record the weight.

4) Operate the air conditioner at the cooling mode.

5) Open the valves (Low side) on the charge set and charge the system with liquid refrigerant.

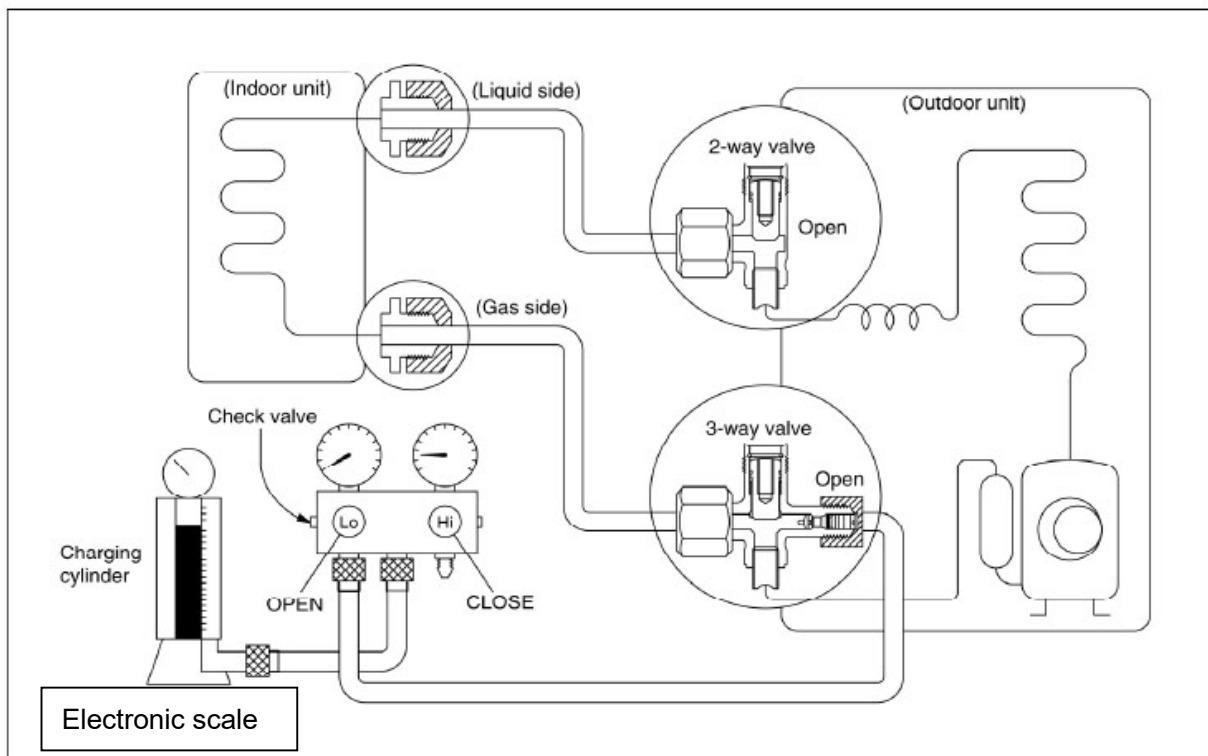
6).When the electronic scale displays the proper weight (refer to the table), disconnect the charge hose from the 3-way valve's service port immediately and turn off the air conditioner before disconnecting the hose.

7). Mount the valve stem caps and the service port

Use torque wrench to tighten the service port cap to a torque of 18N.m.

Be sure to check for gas leakage.

6.5 Adding the refrigerant after running the system for many years



Procedure:

1). Connect the charge hose to the 3-way service port, open the 2-way valve and the 3-way valve.

Connect the charge hose to the valve at the bottom of the cylinder. If the refrigerant is R410A, make the cylinder bottom up to ensure liquid charge.

2). Purge the air from the charge hose

Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).

3) Put the charging cylinder onto the electronic scale and record the weight.

4) Operate the air conditioner at the cooling mode.

5) Open the valves (Low side) on the charge set and charge the system with liquid refrigerant.

6).When the electronic scale displays the proper weight (refer to the gauge and the pressure of the low side), disconnect the charge hose from the 3-way valve's service port immediately and turn off the air conditioner before disconnecting the hose.

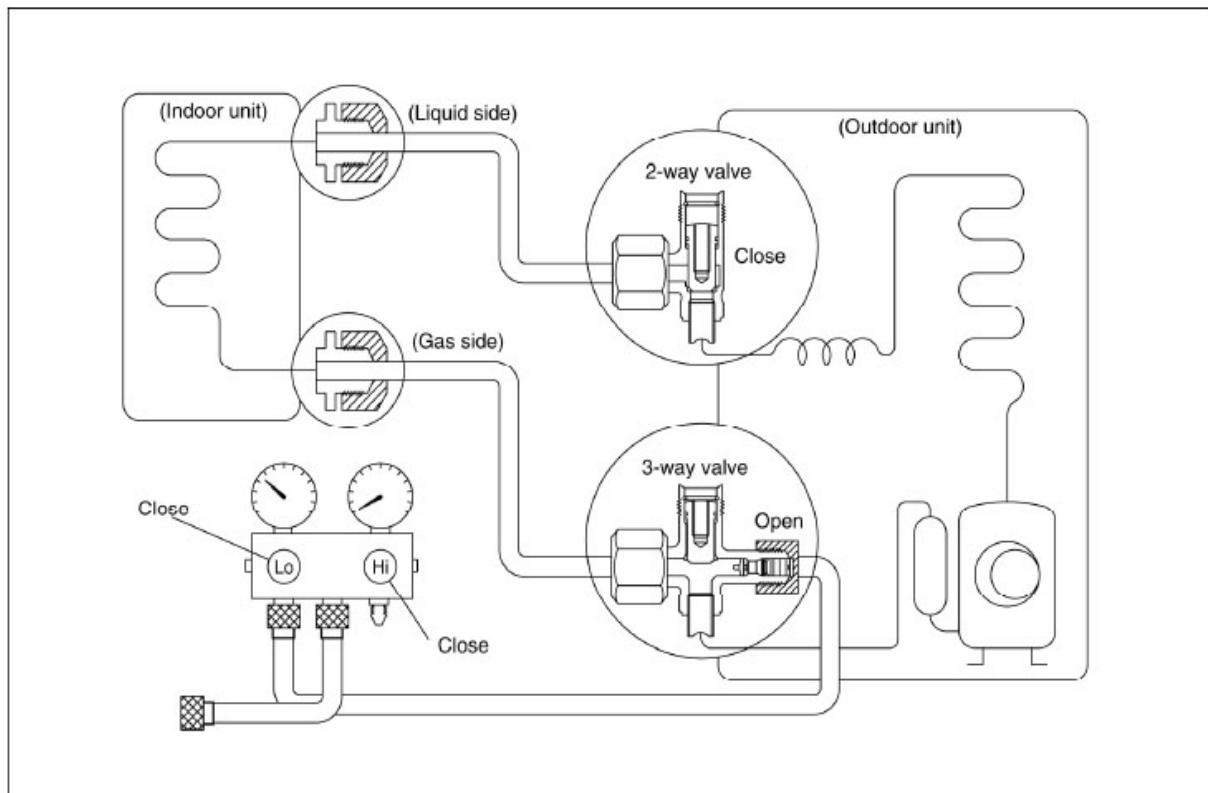
7). Mount the valve stem caps and the service port

Use torque wrench to tighten the service port cap to a torque of 18N.m.

Be sure to check for gas leakage.

6.6 Re-installation while the indoor unit need to be repaired

1. Collecting the refrigerant into the outdoor unit



Procedure

1). Confirm that both the 2-way and 3-way valves are set to the opened position.

Remove the valve stem caps and confirm that the valve stems are in the opened position.

Be sure to use a hexagonal wrench to operate the valve stems.

2). Connect the charge hose with the push pin of handle lo to the 3-way valves gas service port.

3). Air purging of the charge hose

Open the handle Lo valve of the manifold valve slightly to purge air from the charge hose for 5 seconds and then close it quickly.

4). Set the 2-way valve to the close position.

- 5). Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0.1MPa.
- 6). Set the 3-way valve to the closed position immediately.

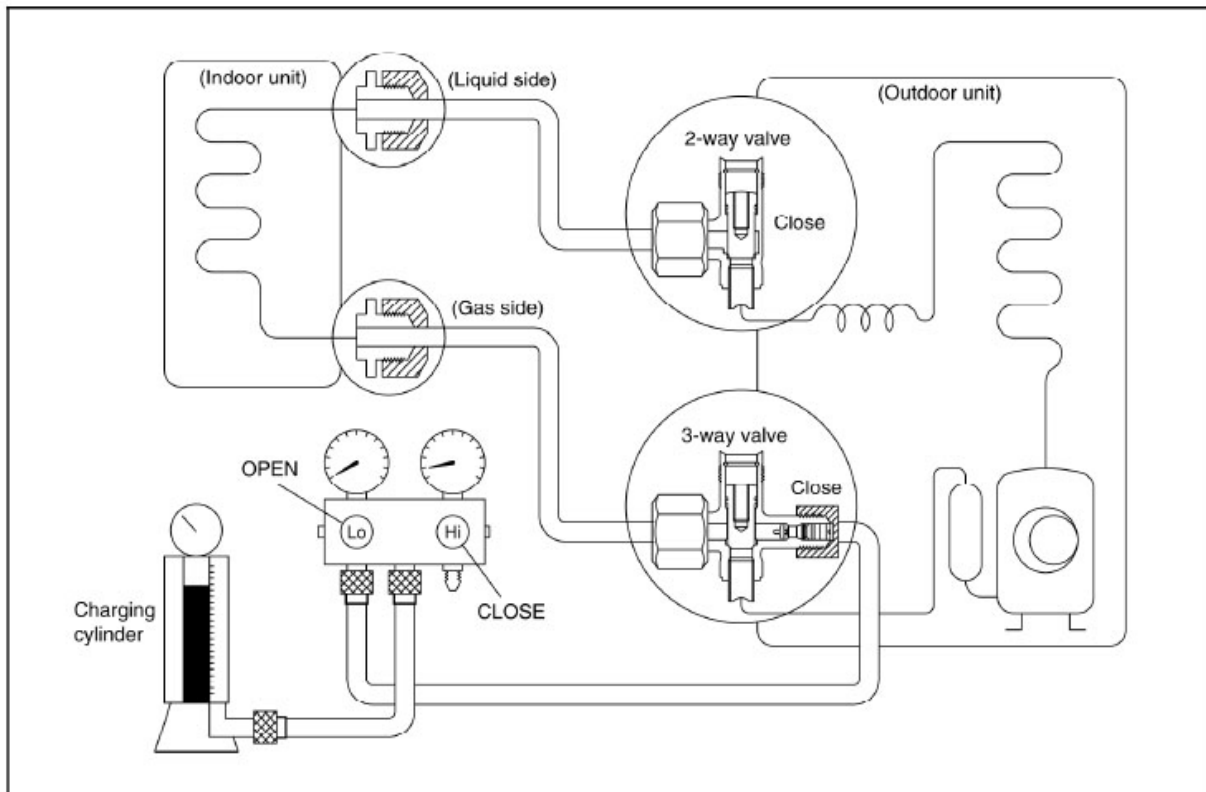
Do this quickly so that the gauge ends up indicating 0.3 to 0.5Mpa.

Disconnect the charge set, and tighten the 2-way and 3-way valve's stem nuts.

Use a torque wrench to tighten the 3-way valves service port cap to a torque of 18N.m.

Be sure to check for gas leakage.

2. Air purging by the refrigerant



Procedure:

- 1). Confirm that both the 2-way and 3-way valves are set to the closed position.

- 2). Connect the charge set and a charging cylinder to the service port of the 3-way valve.

Leave the valve on the charging cylinder closed.

- 3). Air purging

Open the valves on the charging cylinder and the charge set. Purge the air by loosening the flare nut on the 2-way valve approximately 45° for 3 seconds then closing it for 1 minute; repeat 3 times.

After purging the air, use a torque wrench to tighten the flare nut on the 2-way valve.

- 4). Check the gas leakage

Check the flare connections for gas leakage.

- 5). Discharge the refrigerant

Close the valve on the charging cylinder and discharge the refrigerant by loosening the flare nut on the 2-way valve approximately 45' until the gauge indicates 0.3 to 0.5 Mpa.

6). Disconnect the charge set and the charging cylinder, and set the 2-way and 3-way valves to the open position.

Be sure to use a hexagonal wrench to operate the valve stems.

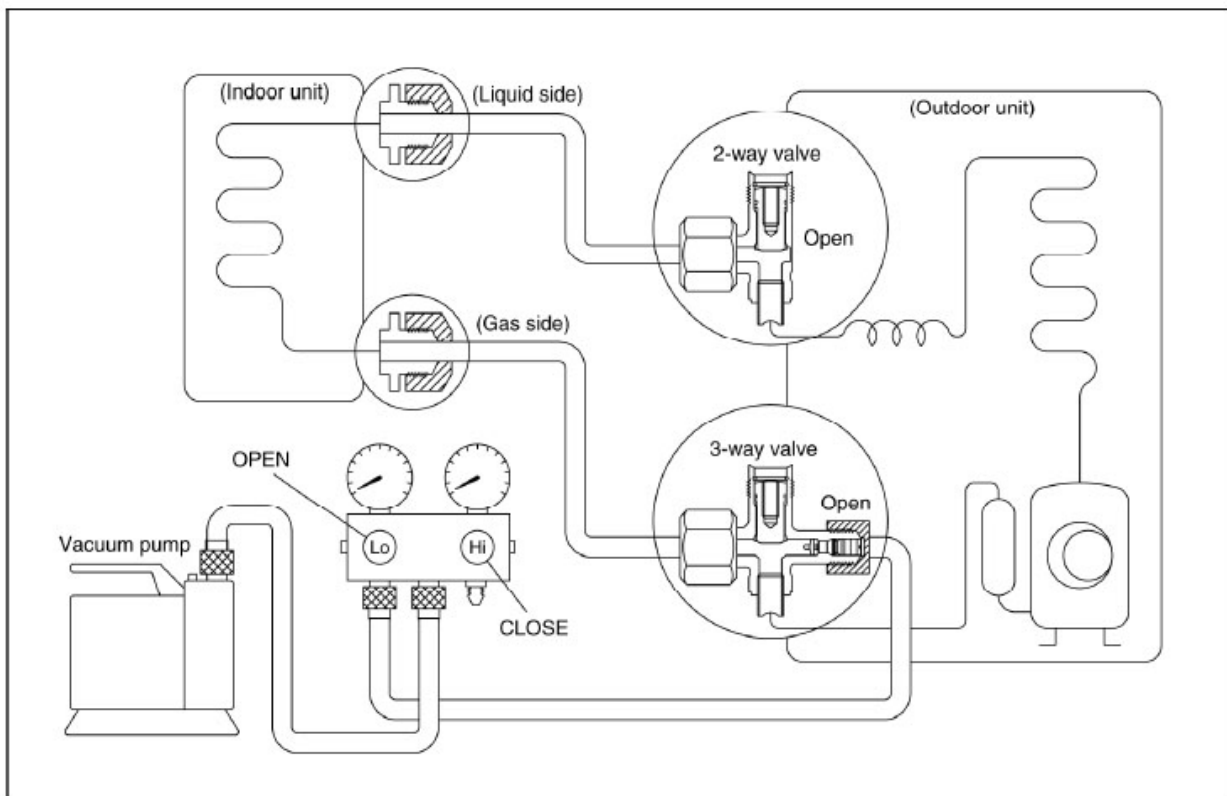
7). Mount the valve stems nuts and the service port cap.

Be sure to use a torque wrench to tighten the service port cap to a torque 18N.m.

Be sure to check the gas leakage.

6.7 Re-installation while the outdoor unit need to be repaired

1. Evacuation for the whole system



Procedure:

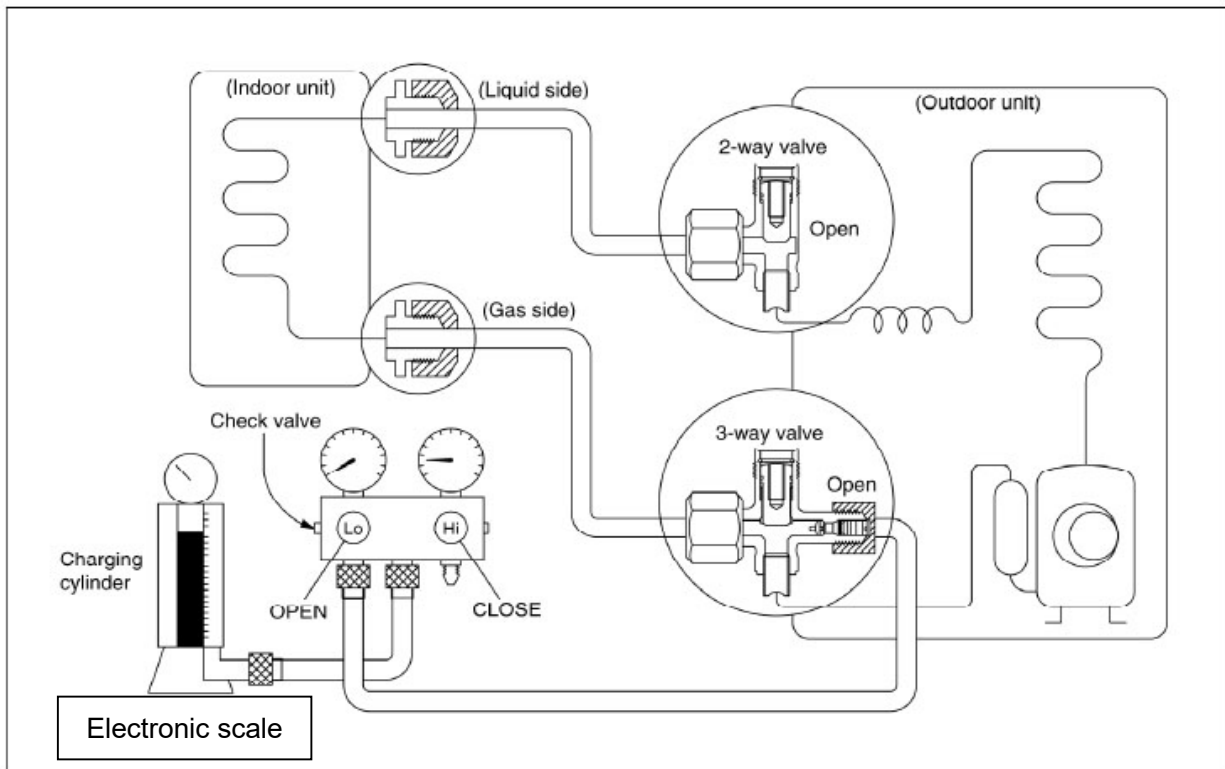
- 1). Confirm that both the 2-way and 3-way valves are set to the opened position.
- 2). Connect the vacuum pump to 3-way valve's service port.
- 3). Evacuation for approximately one hour

Confirm that the compound meter indicates -0.1Mpa.

- 4). Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).

5). Disconnect the charge hose from the vacuum pump.

2. Refrigerant charging



Procedure:

1). Connect the charge hose to the charging cylinder, open the 2-way valve and the 3-way valve.

Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder. If the refrigerant is R410A, make the cylinder bottom up to ensure liquid charge.

2). Purge the air from the charge hose

Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).

3) Put the charging cylinder onto the electronic scale and record the weight.

4). Open the valves (Low side) on the charge set and charge the system with liquid refrigerant.

If the system cannot be charge with the specified amount of refrigerant, or can be charged with a little at a time (approximately 150g each time) , operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure.

5).When the electronic scale displays the proper weight, disconnect the charge hose from the 3-way valve's service port immediately.

If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.

6). Mounted the valve stem caps and the service port

Use torque wrench to tighten the service port cap to a torque of 18N.m.

Be sure to check for gas leakage.

7. Operation characteristics

Model Temperature	Cooling operation	Heating operation	Drying operation
Room temperature	17°C ~ 32°C	0°C ~ 30°C	10°C ~ 32°C 17°C ~ 32°C
Outdoor temperature	18°C ~ 43°C	-7°C ~ 24°C	11°C ~ 43°C 18°C ~ 43°C
	(-7°C ~ 43°C: For the models with low temperature cooling system)		18°C ~ 52°C (For special tropical models)
	(18°C ~ 52°C: For special tropical models)		

CAUTION:

1. If the air conditioner is used beyond the above conditions, certain safety protection features may come into operation and cause the unit to operate abnormally.

2. The room relative humidity should be less than 80%. If the air conditioner operates beyond this figure, the surface of the air conditioner may attract condensation. Please set the vertical air flow louver to its maximum angle (vertically to the floor), and set HIGH fan mode.

3. The optimum performance will be achieved during this operating temperature zone.

8. Electronic function

8.1 Abbreviation

T1: Indoor room temperature

T2: Coil temperature of evaporator

T3: Coil temperature of condenser

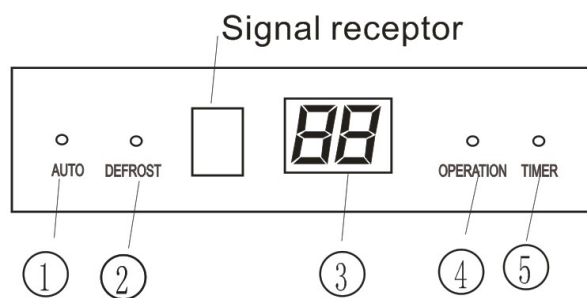
T4: Outdoor ambient temperature

T5: Compressor discharge temperature

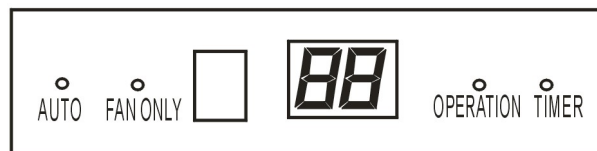
8.2 Display function

8.2.1 Icon explanation on indoor display board:

For heat pump models:



For cooling only models:



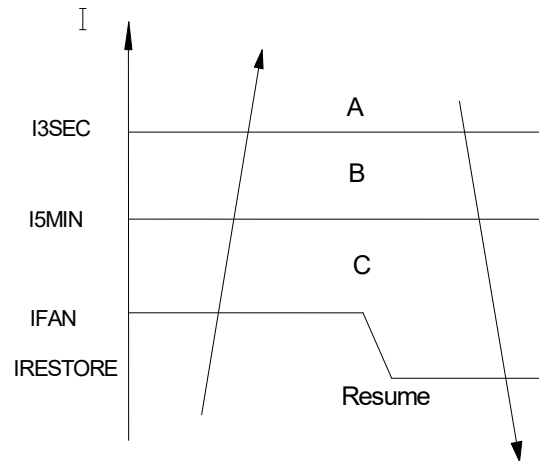
①	AUTO indicator	This indicator illuminates when the air conditioner is in AUTO operation.
②	DEFROST indicator(only for heat pump models)	This indicator illuminates when the air conditioner starts defrosting automatically or when the warm air control feature is activated in heating operation.
③	Fan only indicator	This indicator illuminates when the air conditioner is under FAN ONLY mode.
④	TEMPERATURE indicator	Displays the temperature settings when the air conditioner is operational.

⑤	OPERATION indicator	This indicator flashes after power is on and illuminates when the unit is in operation.
⑥	TIMER indicator	This indicator illuminates when TIMER is set ON/OFF.

8.3 Main Protection

8.3.1 Time Delay at restart for the compressor

8.3.2 Current protection



A zone : The current exceeds I_{3SEC} for 5 seconds, the compressor and outdoor fan will shut off.

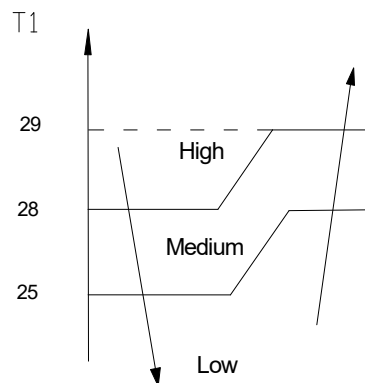
B zone: The current exceeds I_{5min} for 5 minutes, the compressor and outdoor fan will shut off.

C zone: The current exceeds I_{FAN} , the outdoor fan will shut off if AC is in heating mode. If AC is in cooling mode, the indoor fan will run at low speed.

8.4 Operation Modes and Functions

8.4.1 Fan mode

- (1) Outdoor fan and compressor stop.
- (2) Temperature setting function is disabled, and no setting temperature is displayed.
- (3) Indoor fan can be set to high/med/low/auto.
- (4) The louver operates the same as in cooling mode.
- (5) Auto fan:

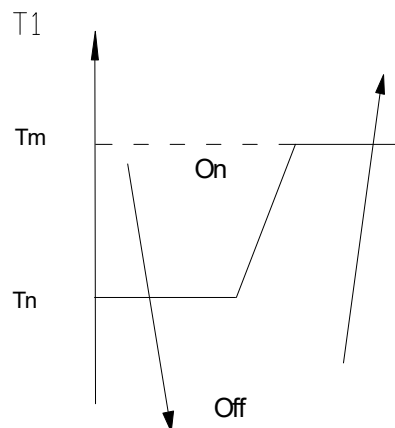


8.4.2 Cooling Mode

8.4.2.1 Compressor running rules

Once the compressor starts up, it will follow the below rules:

When indoor room temp. T_1 is lower than T_n , the compressor and outdoor fan will shut off. When T_1 is higher than T_m , the compressor and outdoor fan will start up.



$$T_m = T_s, T_n = T_s - 2$$

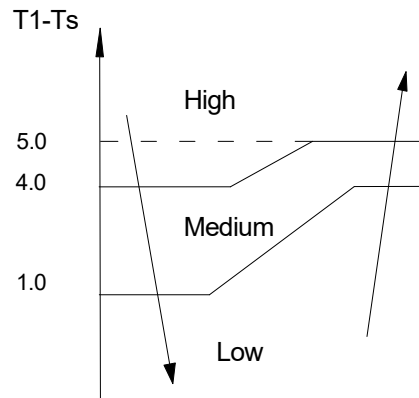
8.4.2.2 Outdoor fan running rules

The outdoor units have single fan speed. The outdoor fan will run following the action of the compressor except when AC is in evaporator high temp. protection in heating mode, defrosting mode

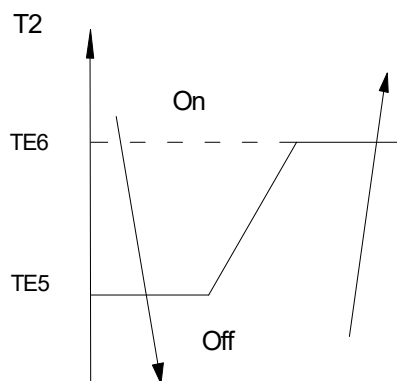
and the current protection.

8.4.2.3 Indoor fan running rules

In cooling mode, indoor fan runs all the time and the speed can be selected as high, medium, low and auto.



8.4.2.4 Low evaporator coil temperature protection



When the evaporator coil temp. $T2$ keeps lower than $TE5$ for 5 minutes, the compressor and outdoor fan will shut off.

When $T2$ is higher than $TE6$, the compressor and outdoor fan will restart up.

8.4.2.5 Condenser high temperature $T3$ protection

When $T3 \geq 65^\circ\text{C}$, the compressor will stop and restart until $T3 < 55^\circ\text{C}$.

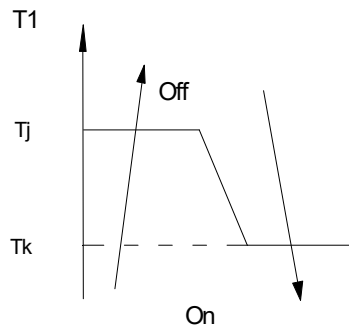
During the protection, the outdoor fan keeps working.

8.4.3 Heating Mode(Only for heat pump models)

8.4.3.1 Compressor running rules

Once the compressor starts up, it will follow the below rules:

When the indoor room temp. $T1$ is higher than Tj , the compressor and outdoor fan will shut off. When $T1$ is lower than Tk , the compressor and outdoor fan will start up.



$$T_j = T_s + T_c,$$

$$T_k = T_s + T_c - 2.$$

8.4.3.2 Outdoor fan running rules

The 36k models have double speed. The other outdoor units have single fan speed. The outdoor fan will run following the action of the compressor except when AC is in evaporator high temp. protection in heating mode, defrosting mode and the current protection.

8.4.3.3 Indoor fan running rules

Indoor fan can be set to high/med/low/auto when the compressor is on.

Anti-cold wind function:

When evaporator coil temp. T_2 is getting higher,

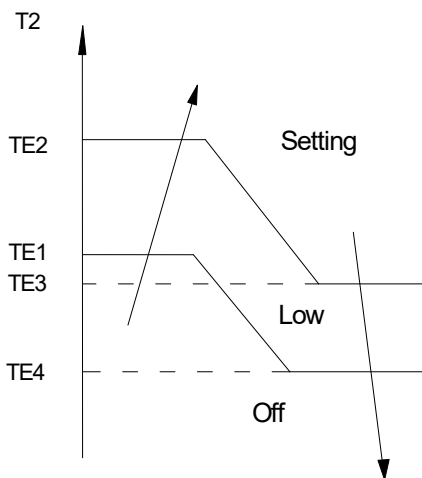
$T_2 > TE_2$, the indoor fan will run at setting speed.

$TE_1 < T_2 < TE_2$, the indoor fan will run at low speed.

When T_2 is getting lower,

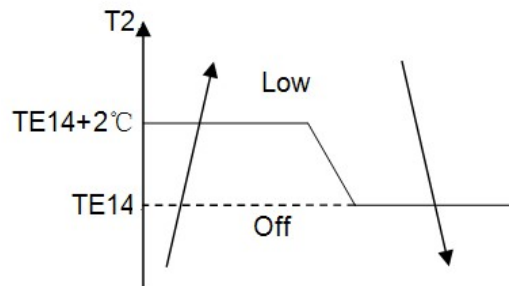
$TE_4 < T_2 < TE_3$, the indoor fan will run at low speed.

$T_2 < TE_4$, the indoor fan will shut off.

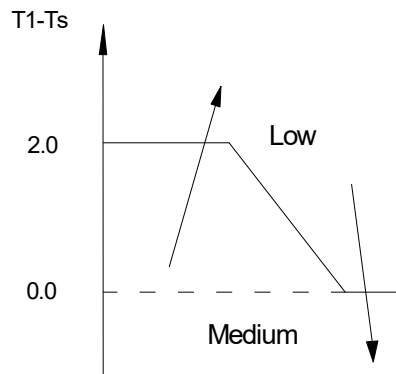


When the compressor is off, the indoor fan will run at low speed and the louver will locate at the anti

cold wind angle. For 36k models, the indoor fans will run as below rules:



Auto fan action:



When $T1-Ts > 2^{\circ}\text{C}$, the indoor fan will run at low speed. When $T1-Ts \leq 0^{\circ}\text{C}$, the indoor fan will run at medium speed.

8.4.3.4 Defrosting mode

- **Condition of defrosting:**

AC will enter defrosting mode if any of the following items is satisfied.

(1) If $T3 < TC1$ and the compressor keeps running over 40 minutes (45 for MSC-24HRN1-QC0W).
Meanwhile $T3 < TC3$ for 3 minutes.

(2) After the last defrosting, the time that the outdoor fan is off but the compressor is on in high T2 protection cumulates up to 90 minutes.

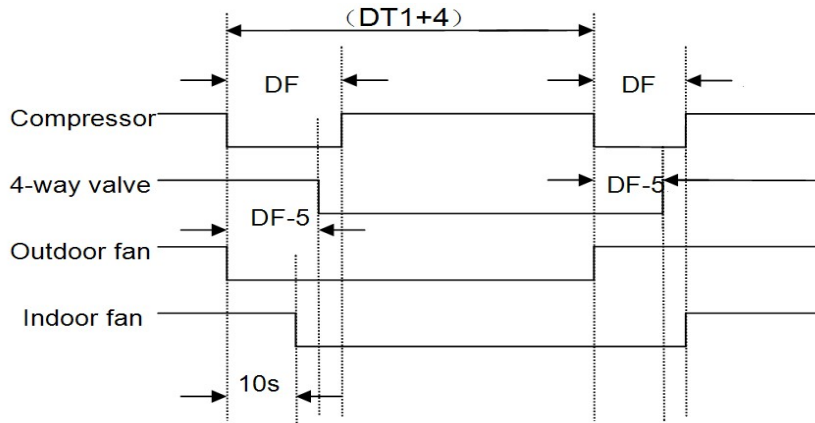
- **Condition of ending defrosting:**

If any one of the following items is satisfied, the defrosting will terminate and the machine will turn to normal heating mode.

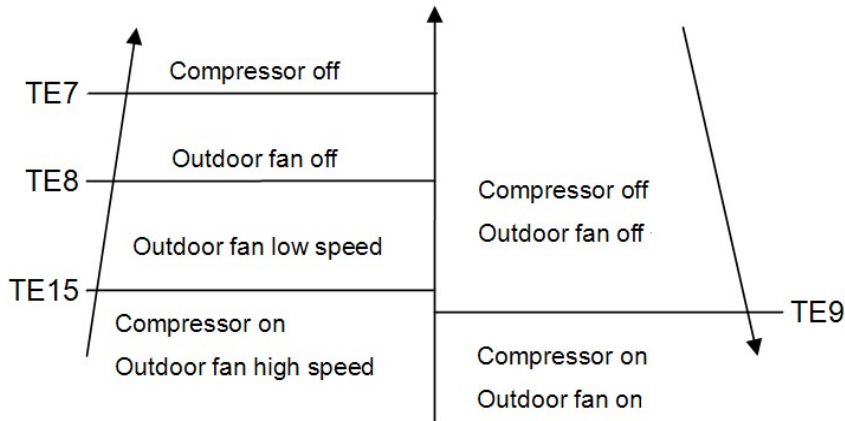
(1) $T3$ rises to be higher than $TC2$.

(2) The machine has run for 10 minutes in defrosting.

● Defrosting action:



8.4.3.5 High evaporator coil temp.T2 protection



8.4.4 Auto-mode

The machine will choose cooling, heating or fan-only mode according to ΔT ($\Delta T = T1 - Ts$).

$\Delta T = T1 - Ts$	Running mode
$\Delta T > 2^\circ C$	Cooling
$-3^\circ C \leq \Delta T \leq 2^\circ C$	Fan-only
$\Delta T < -3^\circ C$	Heating (for cooling only models, they will run at fan-only mode)

AC will run in auto mode in the below cases:

- (1) Pressing the forced auto button.
- (2) If AC is off, it will run in auto mode when the timer on function is active.
- (3) After setting the mode, AC will run in auto mode if the compressor keeps not running for 20 minutes.

8.4.5 Drying mode

The compressor is cycled running by 10 minutes on and then 5 minutes off. The indoor fan will keep running at low speed.

Running rules:

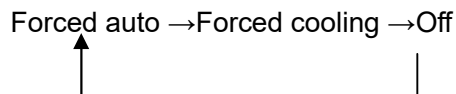
No	Condition	Indoor fan	Compressor
1	$T1 - Ts \geq 2$	Low Breeze	ON 6 minutes OFF 4 minutes
2	$0 \leq T1 - Ts < 2$	Low Breeze	ON 5 minutes OFF 5 minutes
3	$T1 - Ts < 0$	Low Breeze	ON 4 minutes OFF 6 minutes

8.4.5.4 In drying mode, if the room temperature is lower than 10°C, the indoor fan will run at breeze while the compressor and outdoor fan will stop and not resume until room temperature exceeds 13°C.

8.4.5.5 The system protection is active in this mode.

8.4.6 Forced operation function

Press the touch button continually, the AC will run as below sequence:



Forced cooling mode:

The compressor and outdoor fan keep running and the indoor fan runs at low speed. After running for 30 minutes, AC will turn to auto mode with 24°C setting temperature.

Forced auto mode:

The action of forced auto mode is the same as normal auto mode with 24°C setting temperature.

When AC receives signals, such as switch on, switch off, timer on, timer off, mode setting, fan speed setting, sleep mode setting, follow me setting, it will quit the forced operation.

8.4.7 Timer function

8.4.7.1 Timing range is 24 hours.

8.4.7.2 Timer on. The machine will turn on automatically when reaching the setting time.

8.4.7.3 Timer off. The machine will turn off automatically when reaching the setting time.

8.4.7.4 Timer on/off. The machine will turn on automatically when reaching the setting “on” time, and then turn off automatically when reaching the setting “off” time.

8.4.7.5 Timer off/on. The machine will turn off automatically when reaching the setting “off” time, and

then turn on automatically when reaching the setting “on” time.

8.4.7.6 The timer function will not change the AC current operation mode. Suppose AC is off now, it will not start up firstly after setting the “timer off” function. And when reaching the setting time, the timer LED will be off and the AC running mode has not been changed.

8.4.7.7 The setting time is relative time.

8.4.8 Sleep function mode

8.4.8.1 Operation time in sleep mode is 7 hours. After 7 hours running, the AC will quit this mode and turn off.

8.4.8.2. Operation process in sleep mode is as follow:

After pressing ECONOMIC or SLEEP button on the controller, the machine will turn into sleep mode.

When cooling, the setting temperature rises 1□(be lower than 30□) every one hour, 2 hours later the setting temperature stops rising and the indoor fan is fixed as low speed.

For heat pump models, when they are in heating, the setting temperature decreases 1□(be higher than 17□) every one hour, 2 hours later the setting temperature stops rising and the indoor fan is fixed as low speed.(Anti-cold wind function has the priority)

8.4.8.3 Timer setting is available

8.4.8.4 When user uses timer off function in sleep mode (or sleep function in timer off mode), if the timing is less than 7 hours, sleep function will be cancelled when reaching the setting time. If the timing is more than 7 hours, the machine will not stop until reaches the setting time in sleep mode.

8.4.9 Auto-Restart function

The indoor unit is equipped with auto-restart function, which is carried out through an auto-restart module. In case of a sudden power failure, the module memorizes the setting conditions before the power failure. The unit will resume the previous operation setting (not including swing function) automatically after 3 minutes when power returns.

If the memorization condition is forced cooling mode, the unit will run in cooling mode for 30 minutes and turn to drying mode with 24□ setting temp.

If AC is off before power off and AC is required to start up now, the compressor will have 20 seconds delay when power on. If AC is on before power off and AC is required to start up now, the compressor

will have 3 minutes delay when power on.

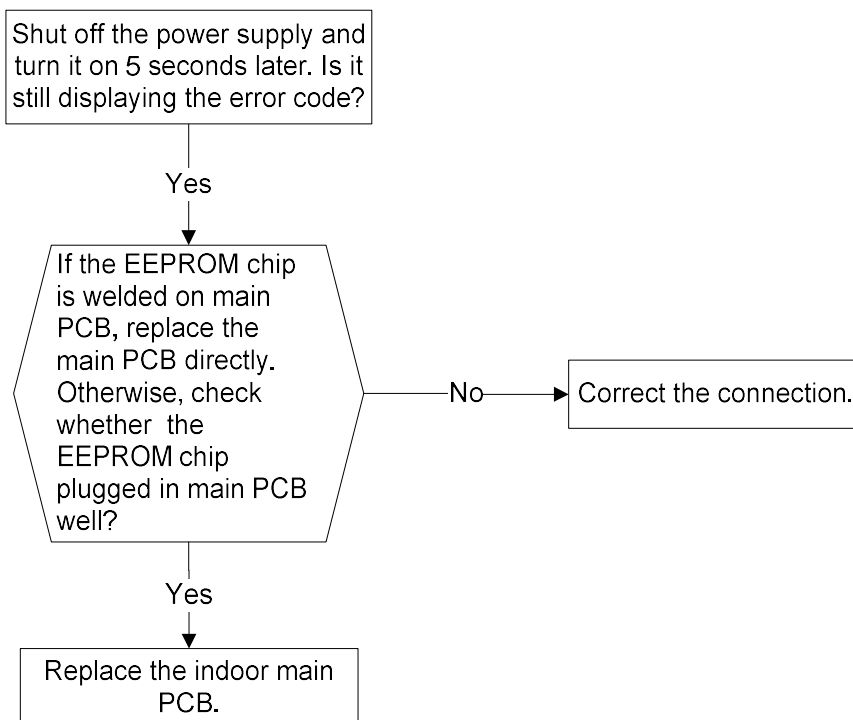
9. Troubleshooting

9.1 Indoor unit error display

Operation lamp	Auto lamp	Def. lamp	Timer lamp	Failure
☆	X	X	☆	EEPROM error
X	X	X	☆	The T1 sensor is open circuit or short circuit
☆	X	X	X	The T2 sensor is open circuit or short circuit
X	X	☆	X	The T3 sensor is open circuit or short circuit
X	☆	X	X	Communication malfunction between indoor unit and outdoor unit
X	☆	☆	X	Outdoor unit has protection(only for 36k)

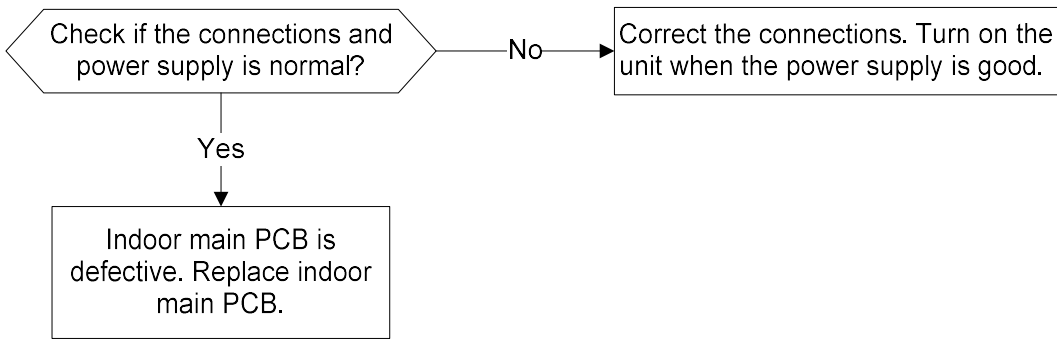
9.2 Diagnosis and Solution

9.2.1 EEPROM parameter error diagnosis and solution

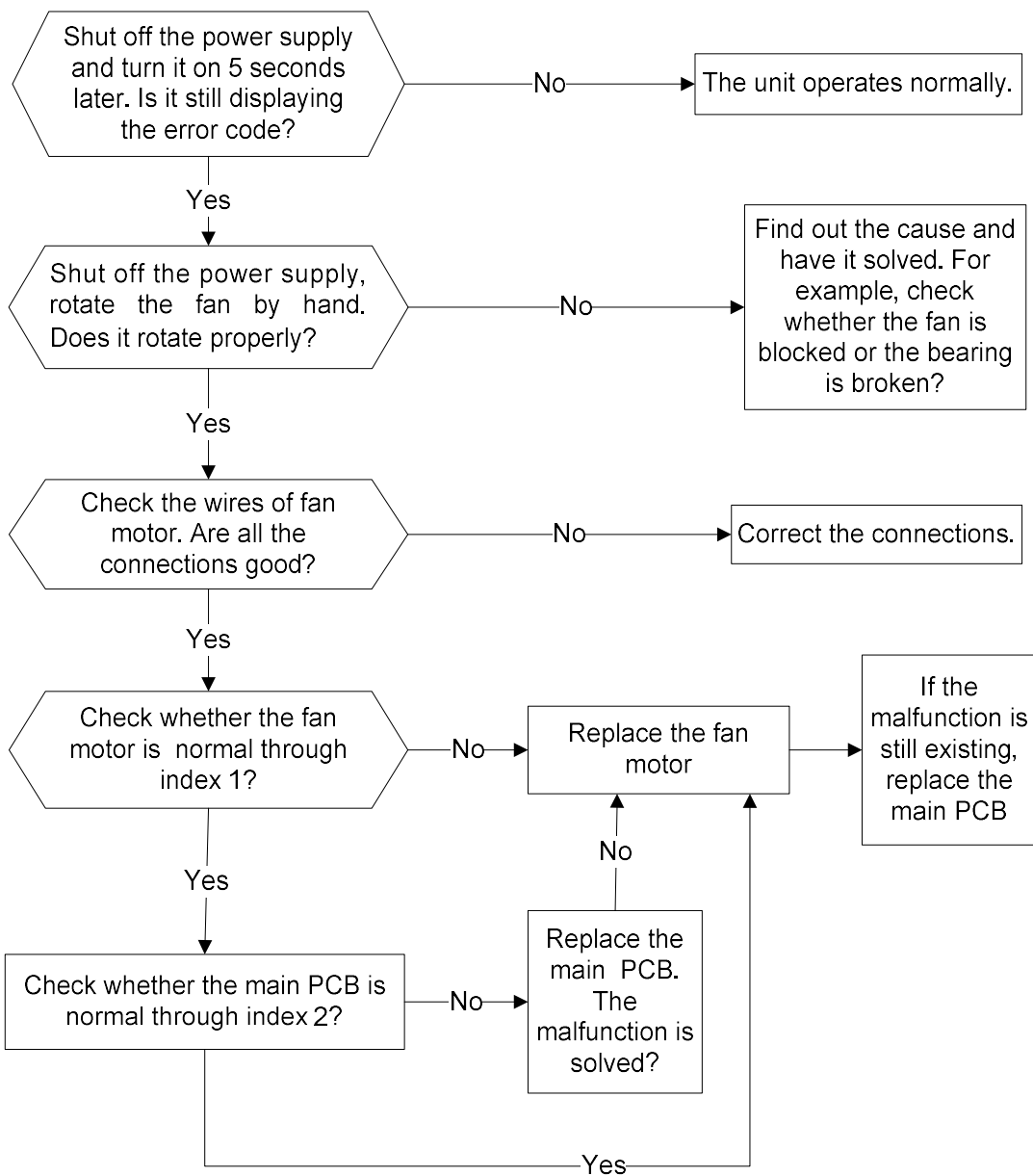


EEPROM: a read-only memory whose contents can be erased and reprogrammed using a pulsed voltage.

9.2.2 Zero crossing detection error diagnosis and solution



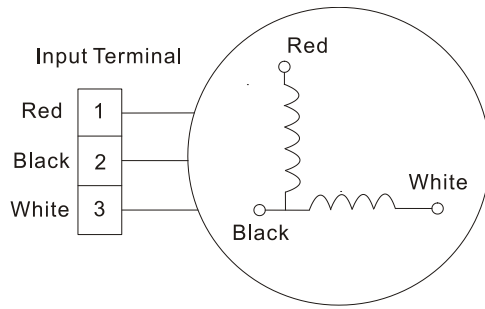
9.2.3 Indoor fan speed has been out of control diagnosis and solution



Index 1:

1. Indoor AC Fan Motor

Measure the resistance value of each winding by using the tester.

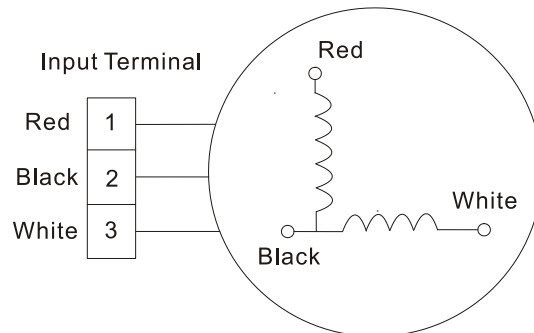


For the definite resistance value of the motor, please contact the technical engineer.

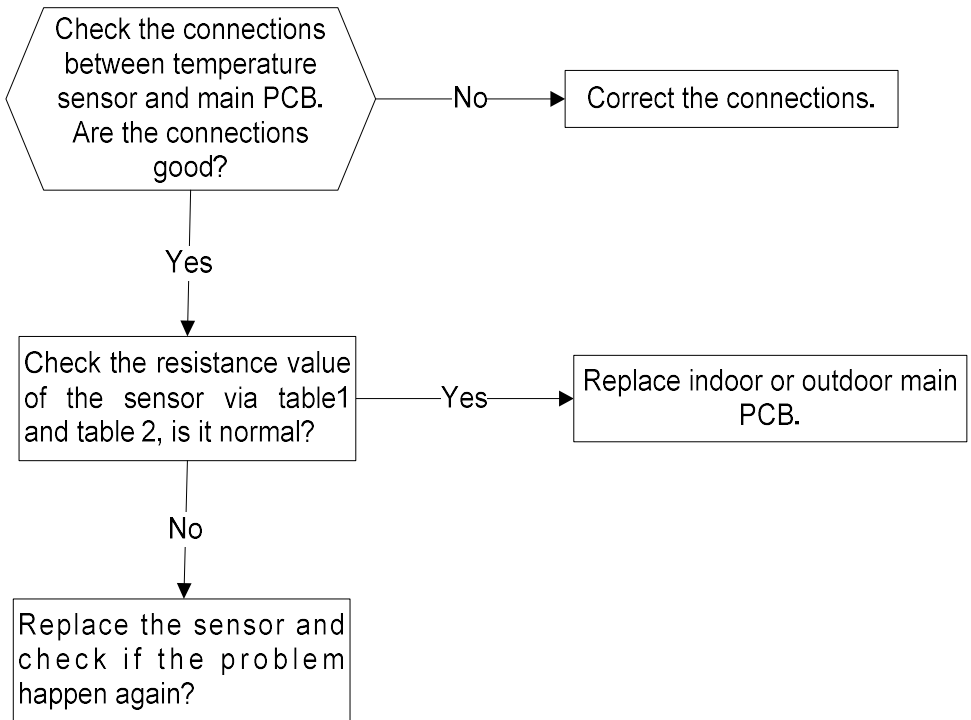
Index2:

1: Indoor AC Fan Motor

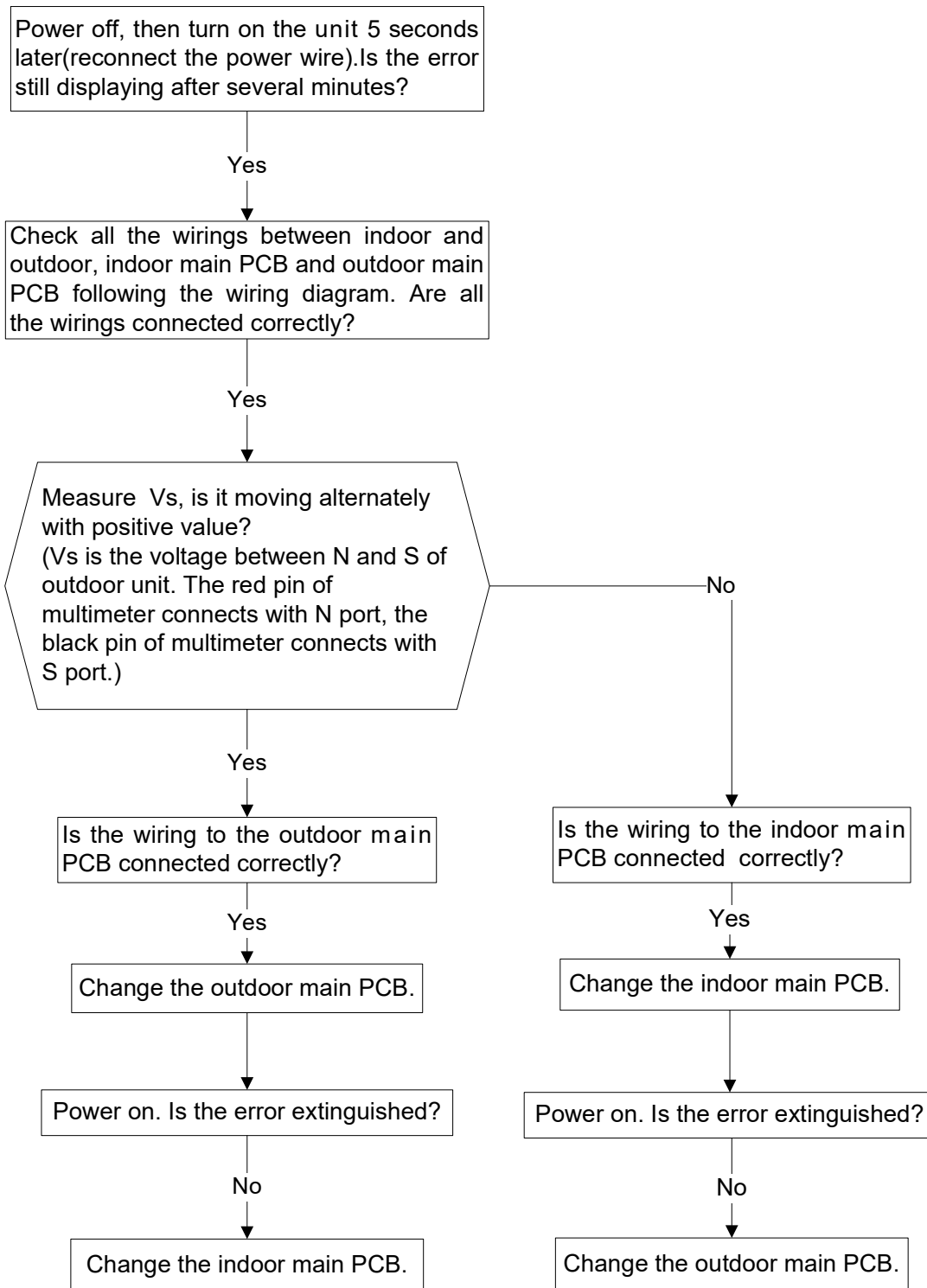
Power on and set the unit running in fan mode at high fan speed. After running for 15 seconds, measure the voltage of pin1 and pin2. If the value of the voltage is less than 100V(208~240V power supply) or 50V(115V power supply), the PCB must has problems and need to be replaced.



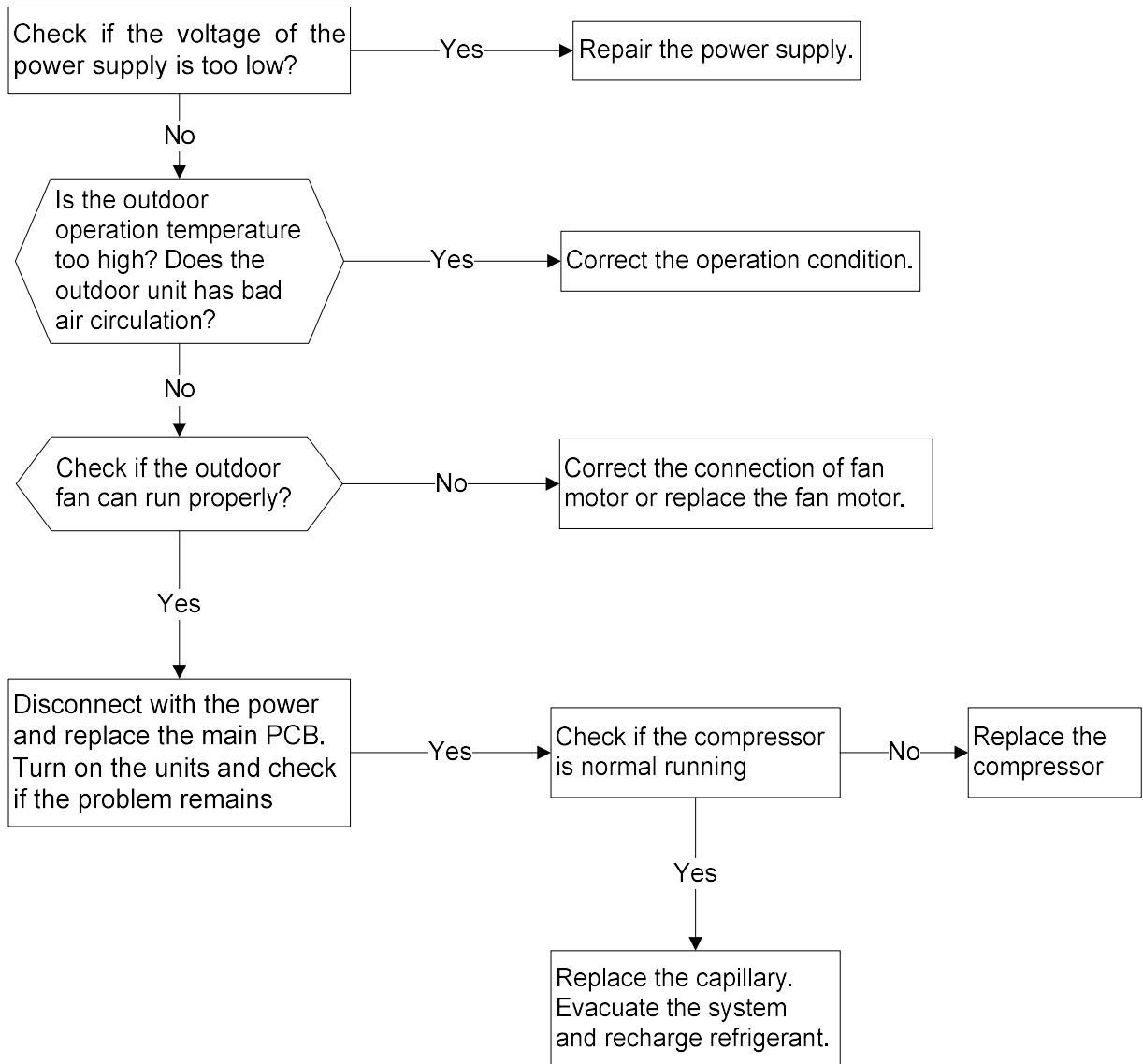
9.2.4 The temp. sensor is open circuit or short circuit diagnosis and solution



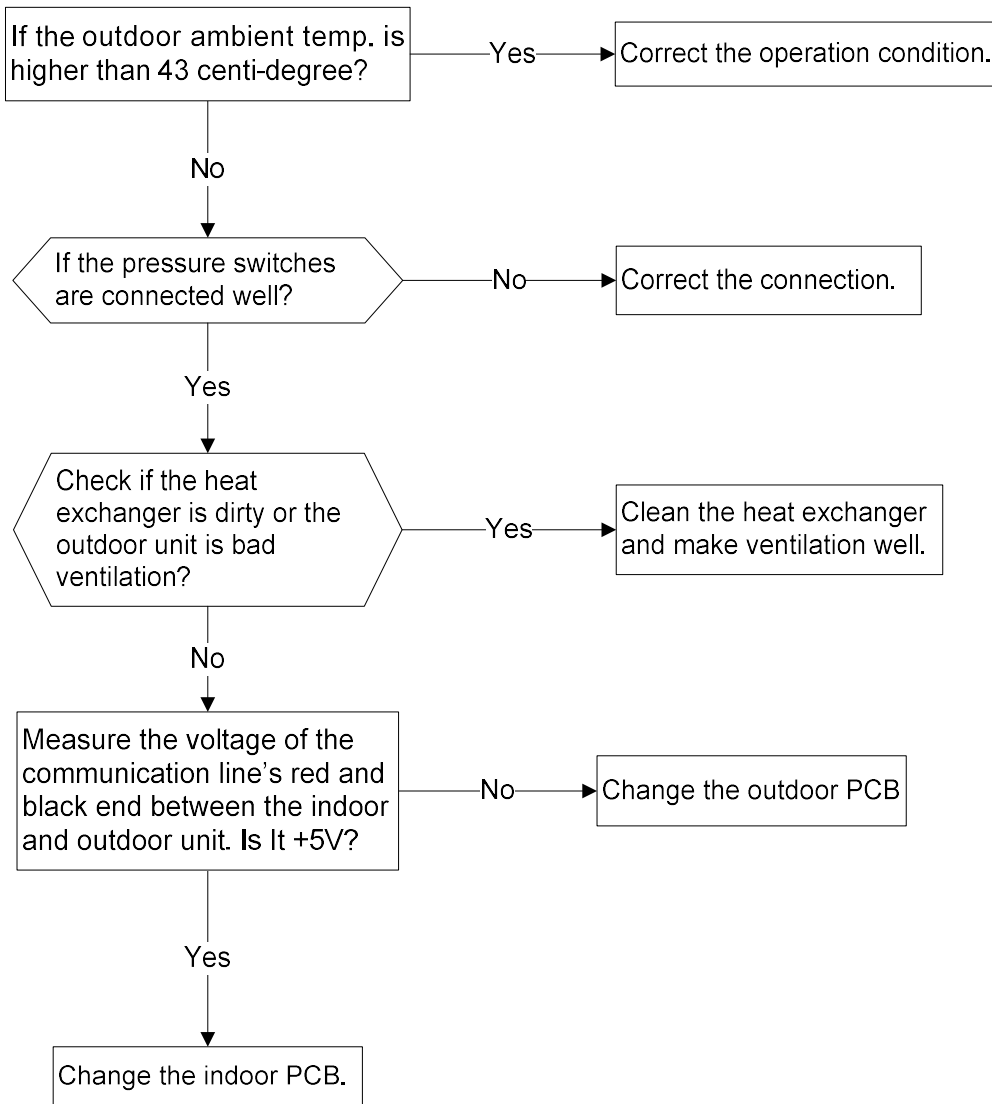
9.2.5 Communication malfunction between indoor unit and outdoor unit diagnosis and solution



9.2.6 Over current protection occurs 4 times diagnosis and solution



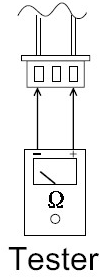
9.2.7 Outdoor unit has protection



Main parts check

1. Temperature sensor checking

Disconnect the temperature sensor from PCB, measure the resistance value with a tester.



Temperature Sensors.

Room temp.(T1) sensor,

Indoor coil temp.(T2) sensor,

Outdoor coil temp.(T3) sensor,

Outdoor ambient temp.(T4) sensor,

Compressor discharge temp.(T5) sensor.

Measure the resistance value of each winding by using the multi-meter.

Table 1:Some frequently-used R-T data for T1,T2,T3 and T4 sensor:

Temperature (°C)	5	10	15	20	25	30	40	50	60
Resistance Value (KΩ)	26.9	20.7	16.1	12.6	10	8	5.2	3.5	2.4

Table 2:Some frequently-used R-T data for T5 sensor:

Temperature (°C)	5	15	25	35	60	70	80	90	100
Resistance Value (KΩ)	141.6	88	56.1	36.6	13.8	9.7	6.9	5	3.7

Resistance value (KΩ)

