This product utilizes **R-454B** *refrigerant*

VersaPro®
Gas Packaged Unit
Service Manual

MODELS:

- **MPG*S*MO13C**



Read this manual carefully before installation and keep it where the operator can easily find it for future reference.

Due to updates and constantly improving performance, the information and instructions within this manual are subject to change without notice.

Version Date: **April 14, 2025**
Please visit www.mrcool.com/documentation
to ensure you have the latest version of this manual.

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Safety Signs



This is the general warning sign. It is used to alert the user to potential hazards. All safety messages that follow this sign shall be obeyed to avoid possible harm.

DANGER

Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

WARNING

Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

NOTE

A situation that may cause damage to the equipment or loss of property.

WARNING

Work on the refrigerant circuit with flammable refrigerant in safety group A2L may only be carried out by authorized contractors. These heating contractors must be trained in accordance with UL 60335-2-40, Section HH. The certificate of competence from an industry accredited body is required.
Work on electrical equipment may only be carried out by a qualified electrician.
Before initial commissioning, all safety – related points must be checked by the particular certified heating contractors. The system must be commissioned by the system installer or a qualified person authorized by the installer.
For installation of the unit, refer to the corresponding installation and operation manual. If an unit is installed in an unventilated area, the area shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard.
The appliance shall be stored so as to prevent mechanical damage from occurring.
Do not stack combustible materials on the surface of the unit.





Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
The appliance shall be stored in a room that does not have continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
Do not pierce or burn the unit.
Be aware that refrigerants may not contain an odour.
If refrigerant gas leaks during installation, ventilate the area immediately.
Comply with national gas regulations.

Safety Precautions

WARNING

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or persons who lack experience and knowledge, unless they are supervised or have been given instructions concerning the use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Any person who is involved with working on or opening a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment credential.

Servicing shall only be performed as recommended by the equipment manufacturer.

Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of a person competent in the use of flammable refrigerants.

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to minimize the risk of ignition.

When repairing the refrigerating system, comply with the following precautions prior to conducting work on the system:

– shall be undertaken according to controlled procedures so as to minimize the risk of the presence of flammable gases or vapors while the work is being performed.

– All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

– The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable environment. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

– If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available and easily accessible. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

– When carrying out work in relation to a refrigerating system that involves exposing any pipe work, no sources of ignition shall be used in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repair, or removal and disposal of the unit, during which refrigerant can possibly be released into the surrounding space. Prior to beginning work, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be clearly displayed.

Ensure that the area is in the open or that it is adequately ventilated before opening the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the surroundings.

Where electrical components are being changed, they shall be fit according to their purpose and to the correct specification. At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance. The following checks shall be applied to installations using flammable refrigerants:

– The actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;

– The ventilation machinery and outlets are operating adequately and are not obstructed.

– If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.

– Equipment marking must remain visible and legible. Markings and signs that are illegible shall be corrected.

Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substances which may corrode refrigerant containing components, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.

Repair and maintenance of electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until the fault has been dealt with satisfactorily.

Safety Precautions

⚠ WARNING

If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so that all parties are advised. Initial safety checks shall include:
– That capacitors are discharged: this shall be done in a safe manner to avoid the possibility of sparking;
– That no live electrical components and wiring are exposed while charging, recovering or purging the system;
– That there is continuity of earthing.
Sealed electrical components shall be replaced. Intrinsically safe components must be replaced.
Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.
Under no circumstances shall potential sources of ignition be used while searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.
Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated for the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant which requires brazing is found, all of the refrigerant shall be recovered from the system, or isolated(by means of shut off valves) in a part of the system remote from the leak.
Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
NOTE： Examples of leak detection fluids are
-bubble method,
-fluorescent method agents.
When breaking into the refrigerant circuit to make repairs - or for any other purpose-conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:
- safely remove refrigerant following local and national regulations.
- evacuate.
-purge the circuit with inert gas .
- evacuate.
- continuously flush or purge with inert gas when using flame to open circuit, and.
- open the circuit.
The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.
For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system .When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.
Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant they contain.
Cylinders shall be kept upright. Ensure that the refrigeration system is grounded prior to charging the system with refrigerant.
Label the system when charging is complete (if it is not already labeled).
Take extreme care not to overfill the refrigeration system.

Safety Precautions

WARNING

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.

b) Isolate system electrically.

c) Before attempting the procedure ensure that:

– mechanical handling equipment is available, if required, for handling refrigerant cylinders;

– all personal protective equipment is available and being used correctly;

– the recovery process is supervised at all times by a competent person;

– recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that the cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate it in accordance with the manufacturer's instructions.

h) Do not overfill cylinders. (No more than 80% volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

j) When the cylinders have been filled correctly and the process has been completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

Equipment shall be labeled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e.special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Do not use the air conditioner for other purposes. In order to avoid any quality deterioration, do not use the unit for the cooling of precision instruments, food, plants, animals or works of art. Before cleaning, be sure to stop the operation, turn the breaker off or unplug the supply cord. Otherwise, electric shock and injury may occur. In order to avoid electric shock or fire, make sure that an earth leak detector is installed.

Never touch the air outlet or the horizontal blades while the swing flap is in operation. Your fingers may be come caught or the unit may break down.

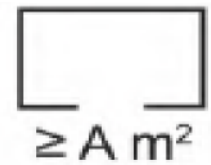
Safety Precautions

WARNING

Never put any objects into the air inlet or outlet.
Objects touching the fan at high speed can be dangerous.
Never inspect or service the unit by yourself.
Ask a qualified service person to perform this task.
Do not dispose of this product as unsorted municipal waste. This waste should be collected separately for special treatment. Do not dispose of electrical appliances as unsorted municipal waste. Use separate collection facilities. Contact your local government for information regarding the connection systems available.
If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, harming your health and well-being.
To prevent refrigerant leak, contact your dealer. When the system is installed and operates in a small room, it is required to maintain the concentration of the refrigerant below the limit, in case a leak occurs. Otherwise, oxygen in the room may be affected, resulting in a serious accident.
The refrigerant in the air conditioner is safe and normally does not leak.
If the refrigerant leaks into the room and comes into contact with the fire of a burner, a heater or a cooker, a harmful gas could be released.
Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.
Do not use the air conditioner until a service person confirms that the refrigerant leak is repaired.
Keep ventilation openings clear of obstruction.
Be sure the air conditioner is earthed.
In order to avoid electric shock, make sure that the unit is earthed and that the earth wire is not connected to a gas or water pipe, lightning conductor or telephone earth wire.
Do not operate the air conditioner with a wet hands. An electric shock may happen.
Do not touch the heat exchanger fins. These fins are sharp and could cut you.
To avoid oxygen deficiency, ventilate the room sufficiently if equipment with a burner is used together with the air conditioner.
Arrange the drain hose to ensure smooth drainage. Incomplete drainage may cause wetting of the building, furniture, etc.
Never touch the internal parts of the controller.
Do not remove the blower access panel. Some parts inside are dangerous to touch, and machine troubles may occur.
Attention is drawn to the fact that additional transportation regulations may exist with respect to equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment permitted to be transported together will be determined by the applicable transport regulations.
Signs for similar appliances used in a work area are generally addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location.
All required signs are to be maintained and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs. The effectiveness of signs should not be diminished by too many signs being placed together. Any pictograms used should be as simple as possible and contain only essential details.
The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.
Storage package protection should be constructed such a way that mechanical damage to the equipment inside the package will not cause a leak of the REFRIGERANT CHARGE.
The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.
Do not operate the air conditioner when using a room fumigation - type insecticide. Failure to observe this precaution could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals. It may also cause the refrigerant sensor to alarm.
Do not place appliances which produce open flame in places exposed to the air flow from the unit or under the unit. It may cause incomplete combustion or deformation of the unit due to the heat.
Do not install the air conditioner in a location where flammable gas may leak out. If the gas leaks out and stays around the air conditioner, a fire may break out.

Safety Precautions

⚠WARNING



The appliance shall be installed, operated and stored in a room with a floor area not less than the minimum room area. Refer to the installation instructions for the minimum room area required to install the appliance.

⚠WARNING

The pipe-work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code. inspection prior to being covered or enclosed; or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

All joints made in the installation between parts of the refrigerating system, with at least one part charged, shall be made in accordance with the following:

— A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts. A vacuum valve shall be provided to evacuate the interconnecting pipe or any uncharged refrigerating system part.

— Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be refabricated.

— Refrigerant tubing shall be protected or enclosed to avoid damage.

Compliance is checked according to the installation instructions and a trial installation, if necessary.

After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements.

The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system, cannot be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.

— mechanical joints in compliance with ISO 14903 or UL 207 (U.S. only).

— welded or brazed joints.

— joints in enclosures that vent to the unit or to the outside. Compliance is checked by inspection and tests.

Components and accessories from the units are not part of ordinary domestic waste.

Complete units , compressors, motors etc. are only to be disposed of via qualified disposal specialists.

This unit uses flammable refrigerant R454B. Please contact the dealer when you want to dispose of this unit.

Law requires that the collection, transportation and disposal of refrigerants must conform with the regulations governing the collection and destruction of hydrofluorocarbons.

Service Manual

PART 1 Product Instructions

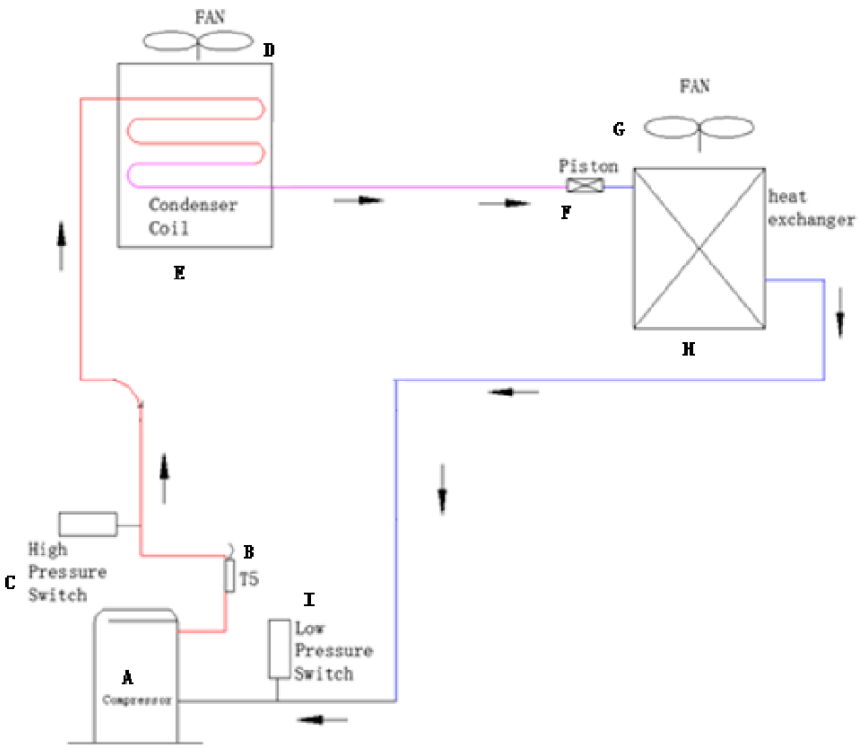
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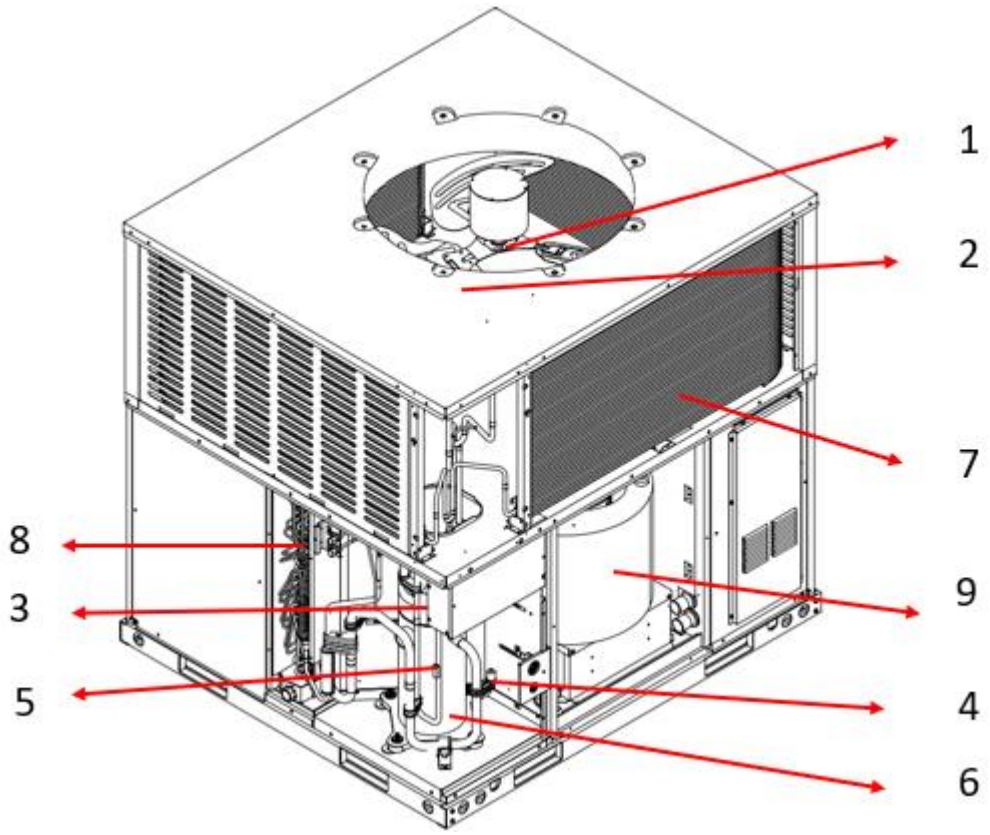
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2.1 Refrigerant Circuit

No. in diagram	Symbol	Part Name	Major function
A	Comp.	Compressor	Compresses and drives the refrigerant.
B	T5	Compressor discharge temperature sensor	Used to discharge temperature protection
C	HPS	High pressure switch	Used to high pressure protection when up to 580 PSIG and recovery when below to 435 PSIG.
D	Fan	Fan of outdoor	Used to help heat exchange by PSC motor.
E	Exchanger	Exchanger of outdoor	Exchange heat to the outdoor
F	throttle valve	Piston	Adjust refrigerant flow rate
G	Fan	Fan of indoor	Used to help heat exchange by ECM motor.
H	Exchanger	Exchanger of indoor	Take heat from the indoor
I	LPS	Low pressure switch	Used to low pressure protection when below to 14.5 PSIG and recovery when up to 31.9 PSIG.

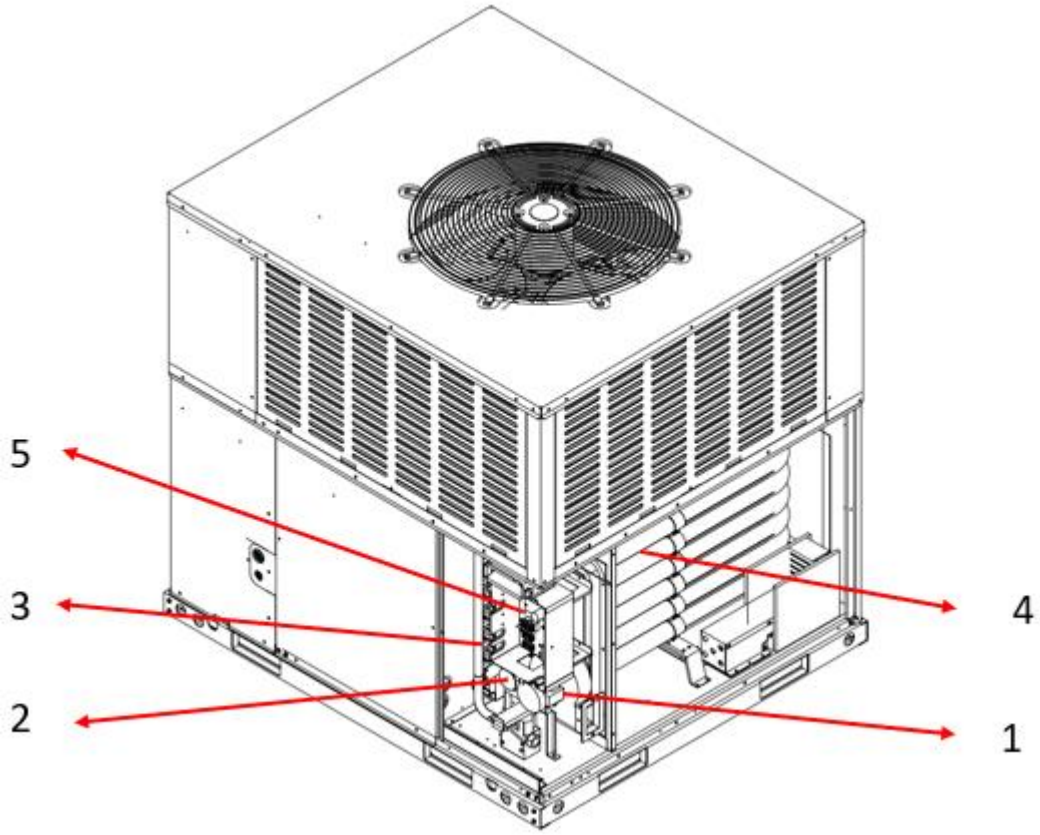


2.2 Functional Part layout



NO	Symbol	Part Name
1	Motor	Fan motor
2	Fan	Fan of outdoor
3	HPS	High pressure switch
4	LPS	Low pressure switch
5	DTS	Discharge Temperature switch
6	Comp.	Compressor
7	Cond.	Condenser Coil
8	Evap.	Evaporator Coil
9	Fan	Fan of Indoor

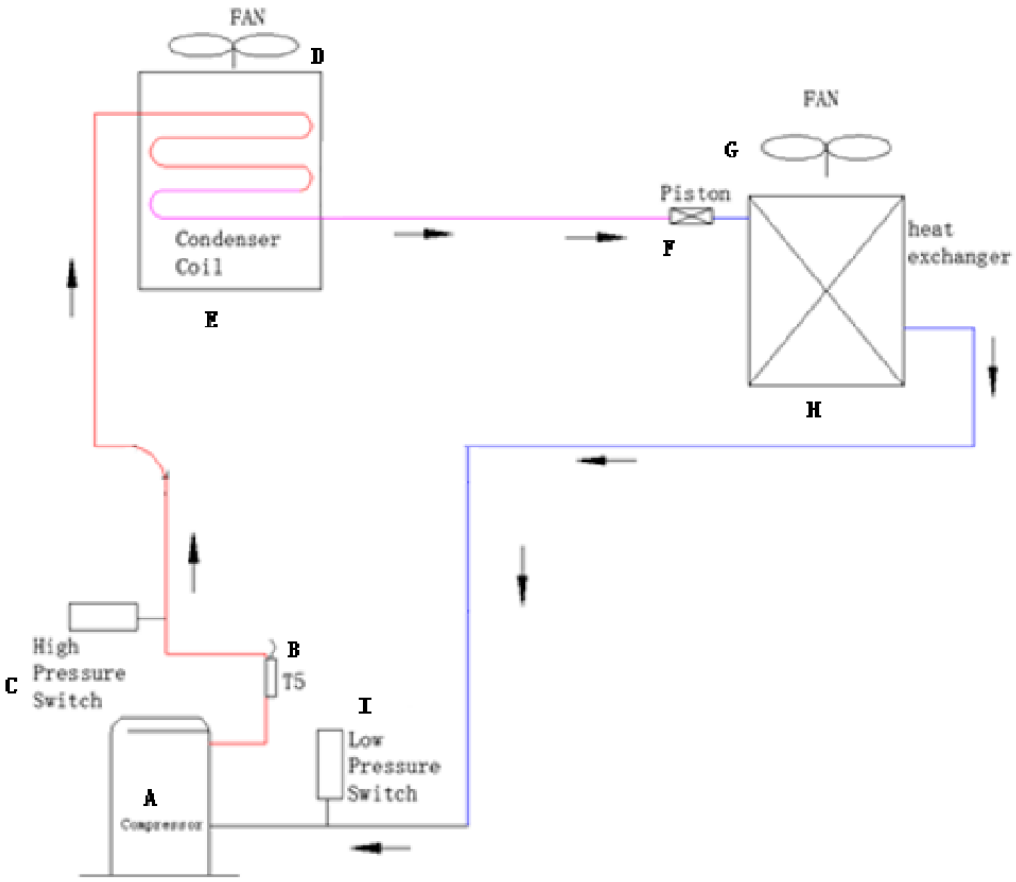
2.2 Functional Part layout



NO	Symbol	Part Name
1	Motor	Exhaust fan motor
2	PS	Pressure switch
3	Burner	Burner assembly
4	HEP	Heat exchange pipe
5	CB	Control board

2.3 Refrigerant Flow Chart

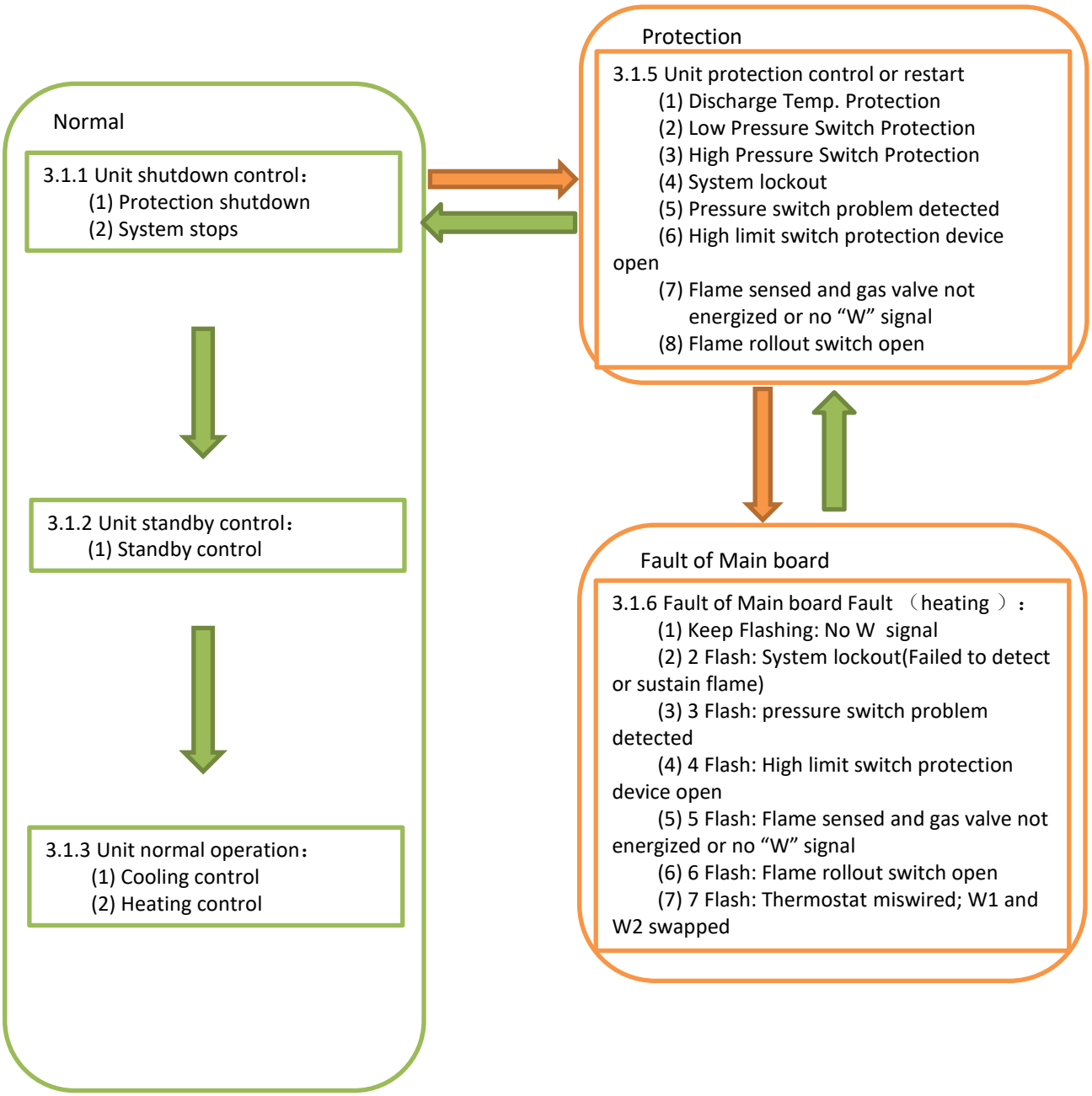
High pressure gas
High pressure liquid
Low pressure



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3.1 Function General



3.1.1 Unit shutdown control

⑴ Unit protection shutdown

To protect the unit during heating, our system will shut down when there is something abnormal. Also the LED would show the fault code when fault present.

⑵ Thermostat satisfied shutdown

Anytime system is in unit standby, LED will steady on .

3.1.2 Unit standby control

⑴ Standby control

When compressor stopped, the outdoor fan would stop immediately.

When “W” signal is lost, gas valve would shutdown immediately, while smoke extraction fan and inside fan would work for the time delay

3.1.3 Unit normal operation

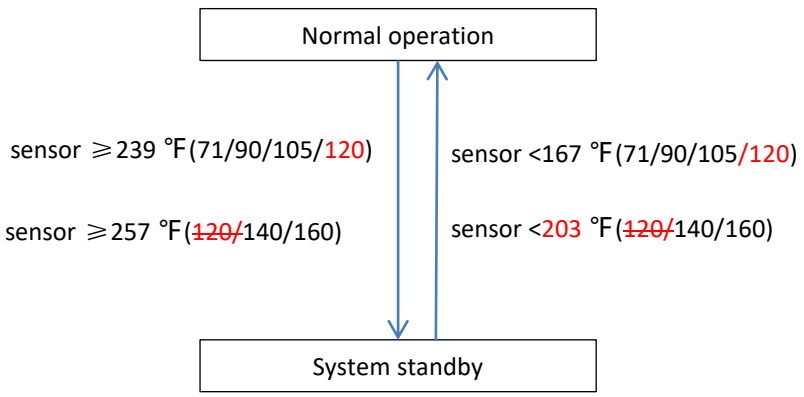
(1) Reversing valve control

The unit need “R”,”C”,”G”,“Y”,”W” signal of 24V wires.

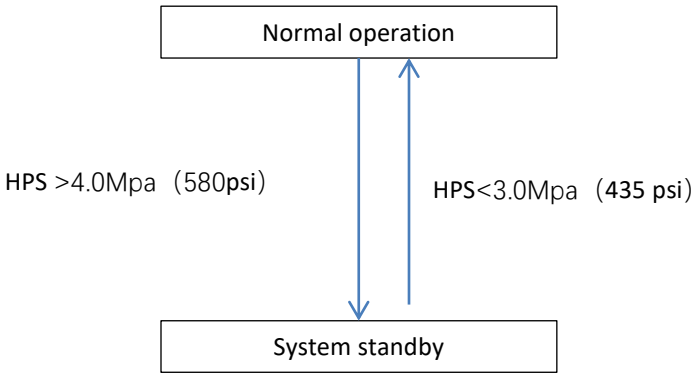
- Cooling:
  “R”,”C”,”G”,“Y” signals are on.
- Heating:
  “R”,”C”,”W” ” signals are on.

3.1.4 Unit protection control or restart：

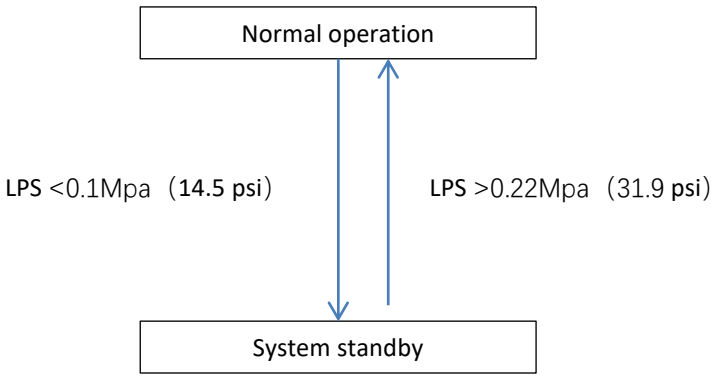
(1) Discharge Temp. Protection in cooling



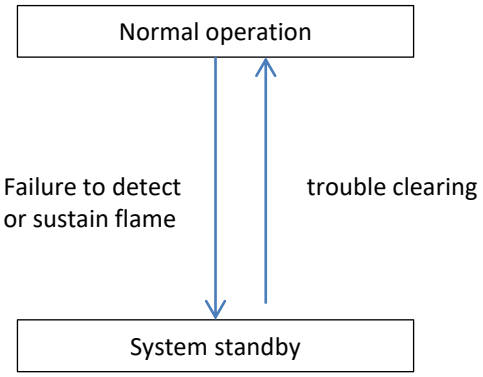
(2) High Pressure Switch Protection in cooling



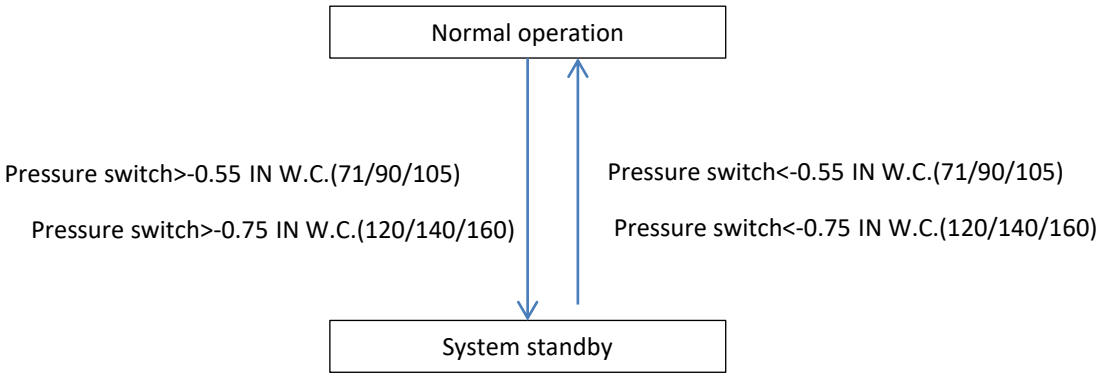
(3) Low Pressure Switch Protection



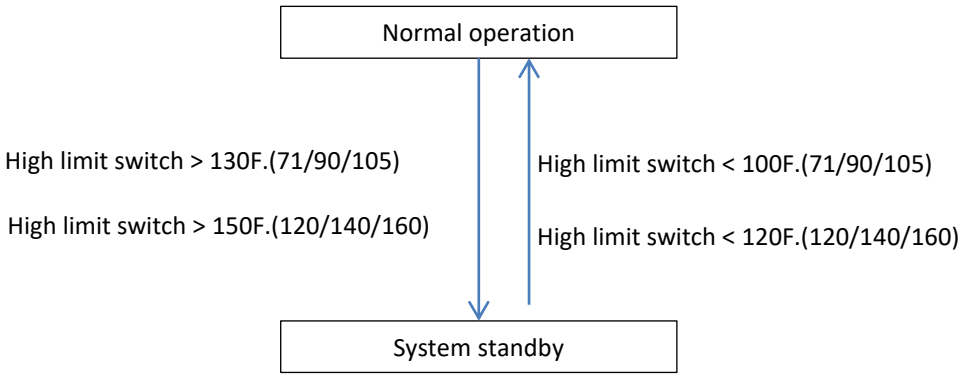
(4) System lockout in heating



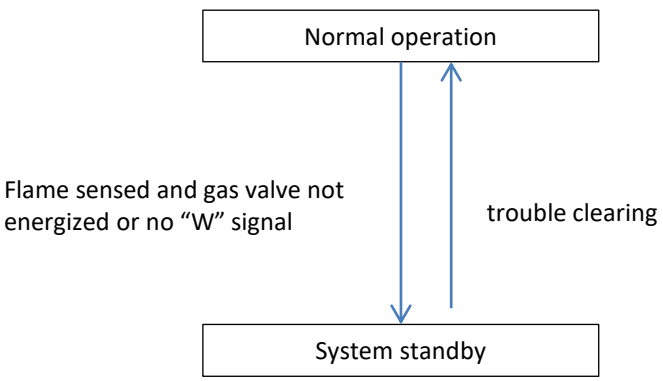
(5)Pressure switch problem detected



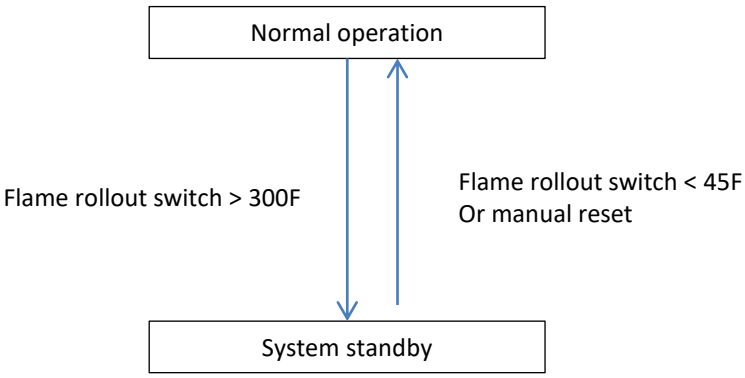
(6) High limit switch protection device open in heating



(7) Flame sensed and gas valve not energized or no “W” signal

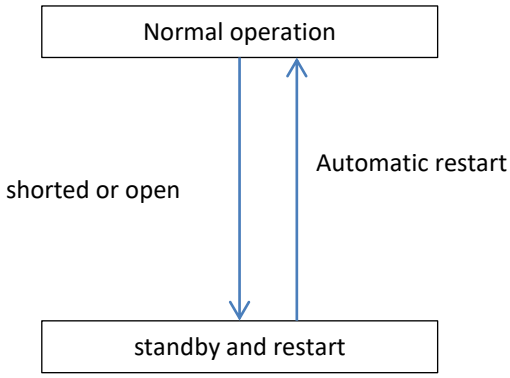


(8) Flame rollout switch open

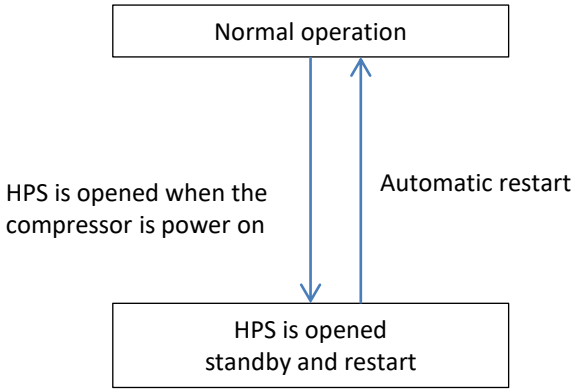


3.1.5 Unit Fault Control or Restart：

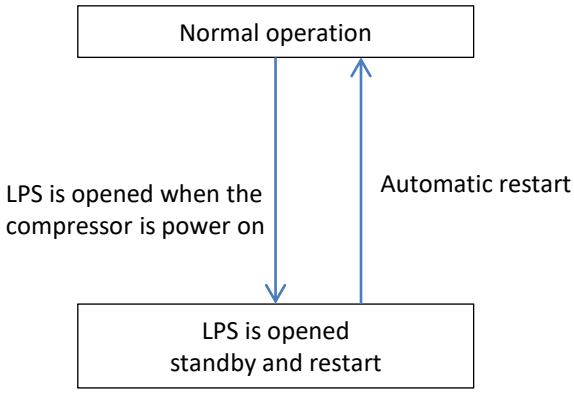
(1) Discharge Temp. sensor not reading correctly in cooling



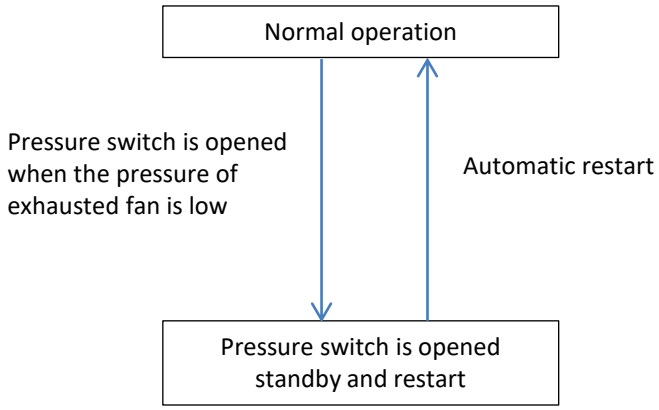
(2) HPS open



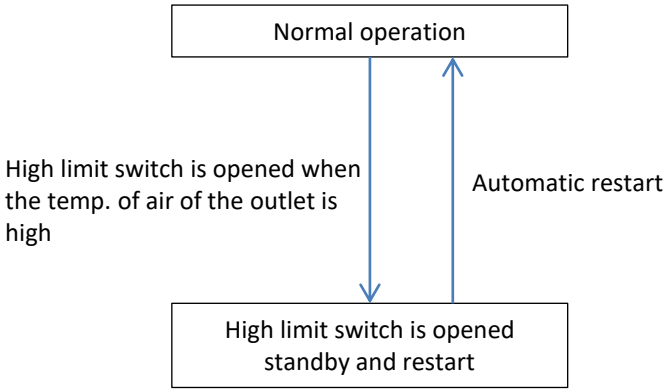
(3) LPS open



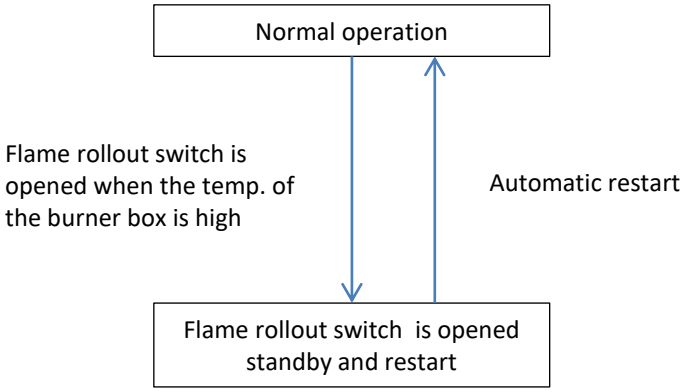
(4) Pressure switch in heating



(2) High limit switch open



(3) Flame rollout switch open



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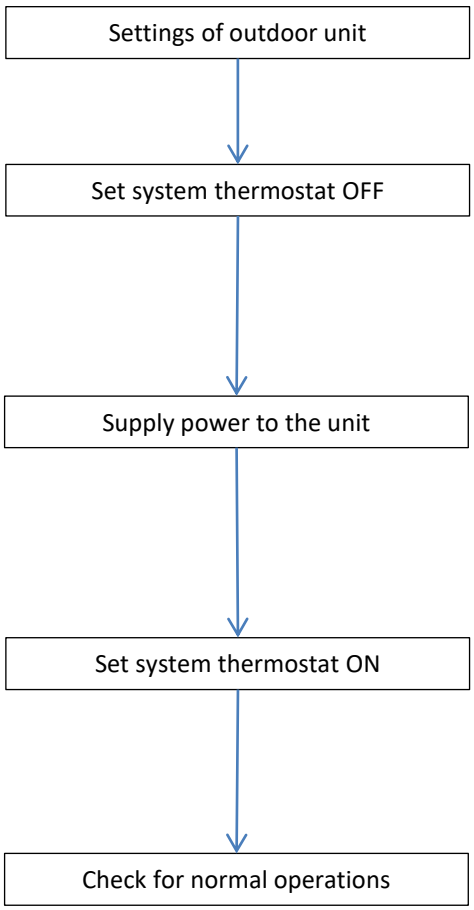
4.1 Test operation

4.1.1 Checks before test operation

No.	Checkpoints	Cautions or warnings
1	Are all units securely installed?	Dangerous for turning over during storm Possible damage to pipe connections
2	Is the earth wire installed according to the applicable local standard?	Dangerous if electric leakage occurs
3	Is the unit installed according to location restrictions requirement?	Poor capacity abnormal operation
4	Are all air inlets and outlets of the indoor and outdoor units unobstructed?	Poor cooling
5	Do the supply power wirings connected Normally? Including the earth wiring.	Dangerous if electric leakage occurs
6	Does the earth leakage circuit breaker connected normally?	Dangerous if electric leakage occurs
7	Do the wirings of 24V signal connected according to wiring diagram? Including the thermostat wiring and setting.	abnormal operation
8	Is the supply voltage conform to the specifications on the name plate?	abnormal operation Damage unit
9	Are the cable sizes as specified and according to local regulations?	Damage of cables

4.1 Test operation

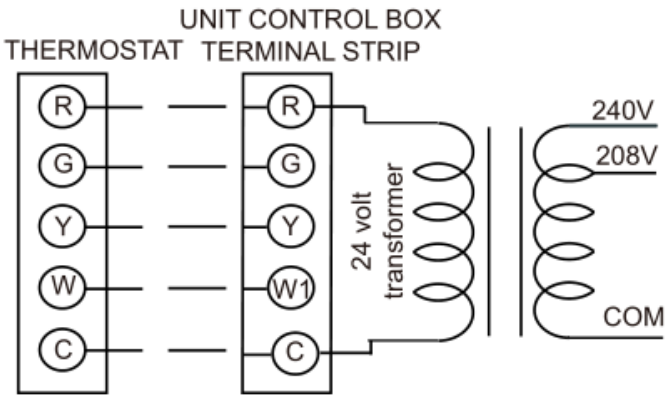
4.1.2 Turn power on



Note:
Check operations
Check for the 24V signal from thermostat
Check for operation mode

4.2 Thermostat

Thermostat should be mounted on an inside wall about 58” from floor and will not be affected by unconditioned air, sun and/or heat exposure. Follow the instruction carefully because there are many wiring requirements.



** Minimum wire size of 18 AWG wire should be used for all field installed 24 volt wire.

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5.1 diagnosis system introduction

GAS BOARD LED CODE		
	STEADY ON	NORMAL OPERATION
	OFF	GAS BOARD FAILURE
	KEEP FLASHING	NO W SIGNAL
	2FLASH	SYSTEM LOCKOUT: FAILED TO DETECT OR SUSTAIN FLAME
	3FLASH	PRESSURE SWITCH PROBLEM DETECTED
	4FLASH	HIGH LIMIT SWITCH PROTECTION DEVICE OPEN
	5FLASH	FLAME SENSED AND GAS VALVE NOT ENERGIZED OR FLAME SENSED AND NO W SIGNAL.
	6FLASH	FLAME ROLLOUT SWITCH OPEN
	7FLASH	THERMOSTAT MISWIRED; W1 AND W2 SWAPPED

Note:

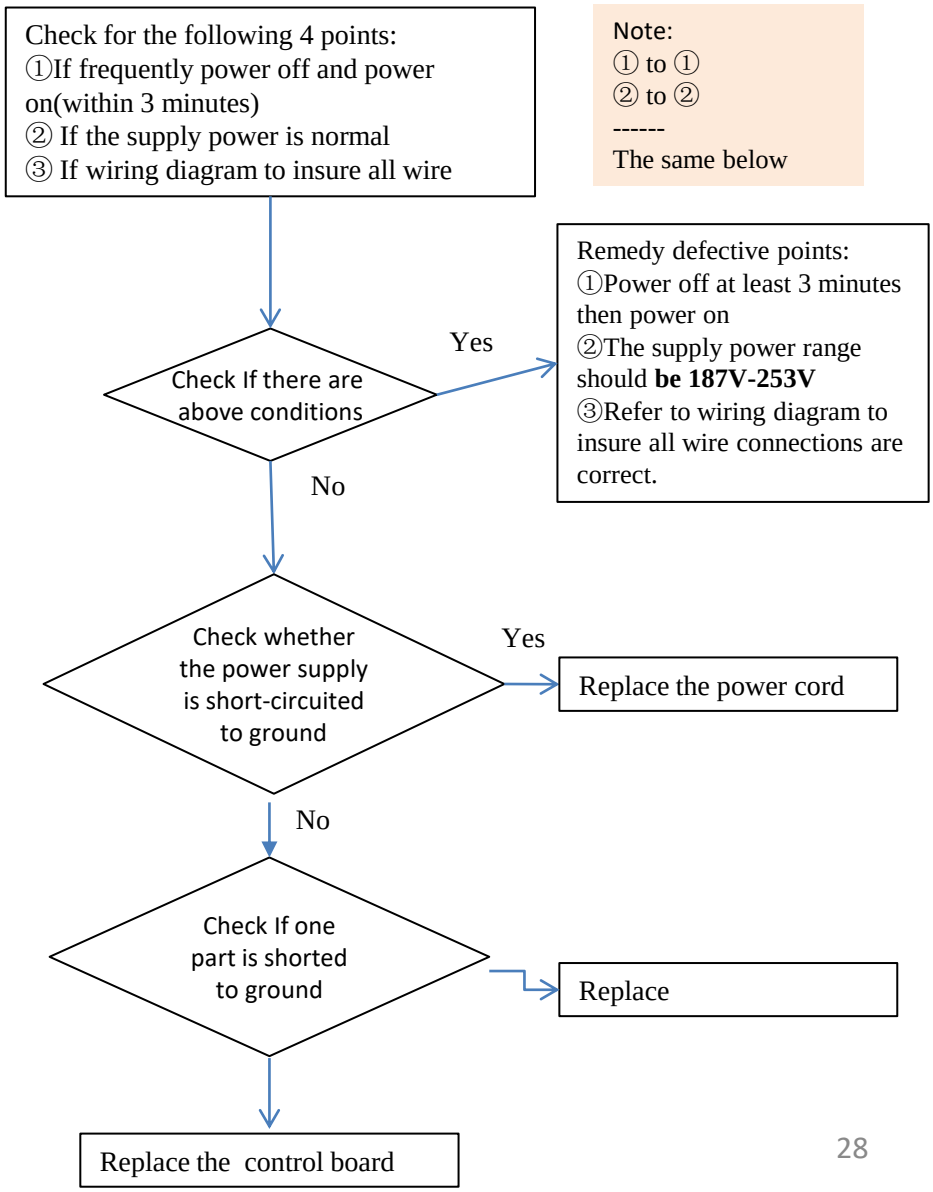
1. These fault codes will be displayed on the digital tube until the issue is resolved.

5.2 Symptom-based Troubleshooting

5.2.1 Indicator light OFF

Issue	Indicator light OFF
Model	All
Fault name	/
Classify	Power/electric issue
Possible cause	• Frequently power off and power on （within 3 minutes） • Abnormal power input • Abnormal wire connections
Notes:	

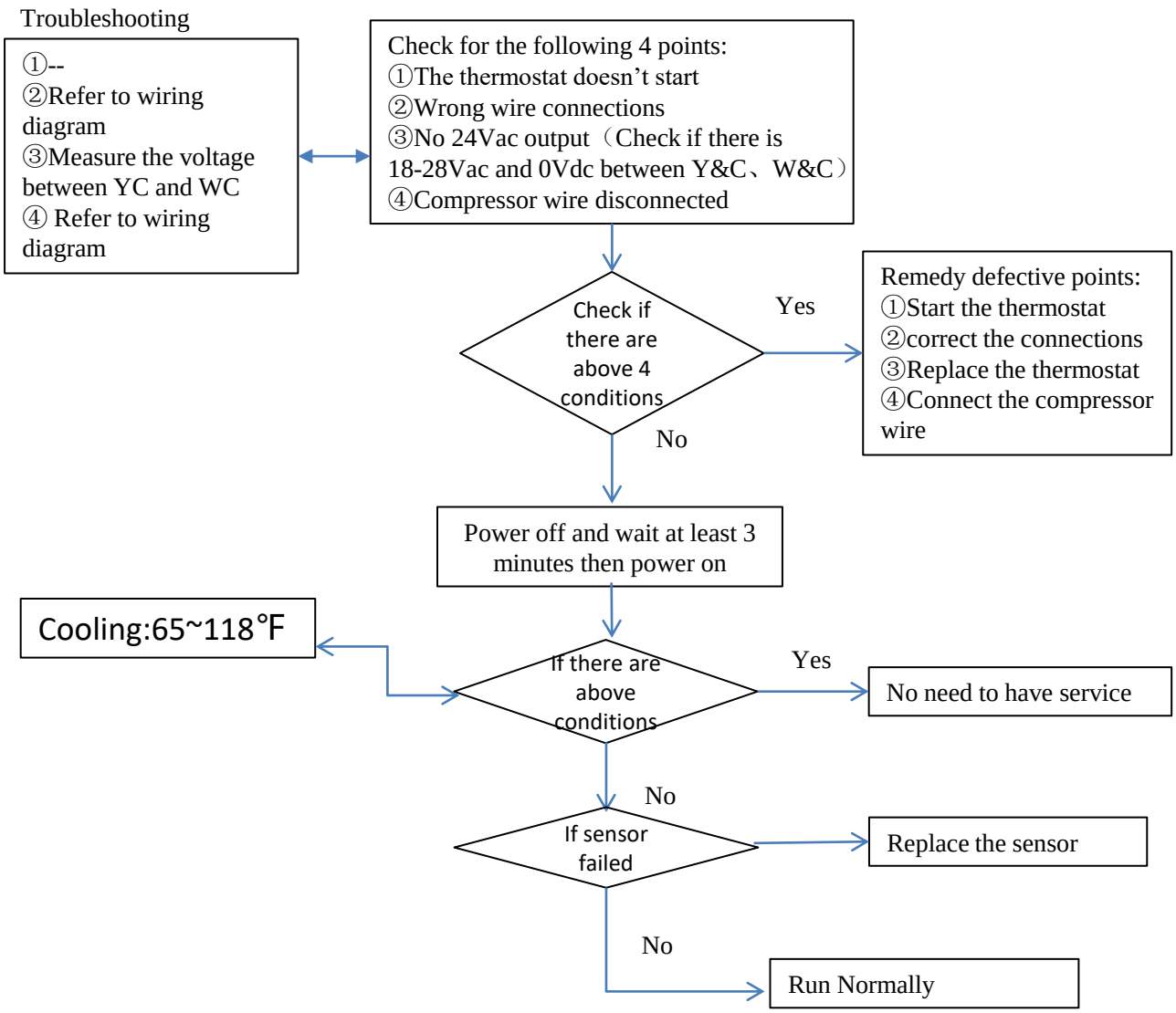
Troubleshooting



5.2 Symptom-based Troubleshooting

5.2.2 System does not start operation

Issue	System does not start operation
Model	All
Fault name	/
Classify	Thermostat fault
Possible cause	• The thermostat doesn't start • Wrong wire connections between thermostat and unit • Damaged thermostat • Disconnect the compressor wire（could be caused after service）
Notes:	

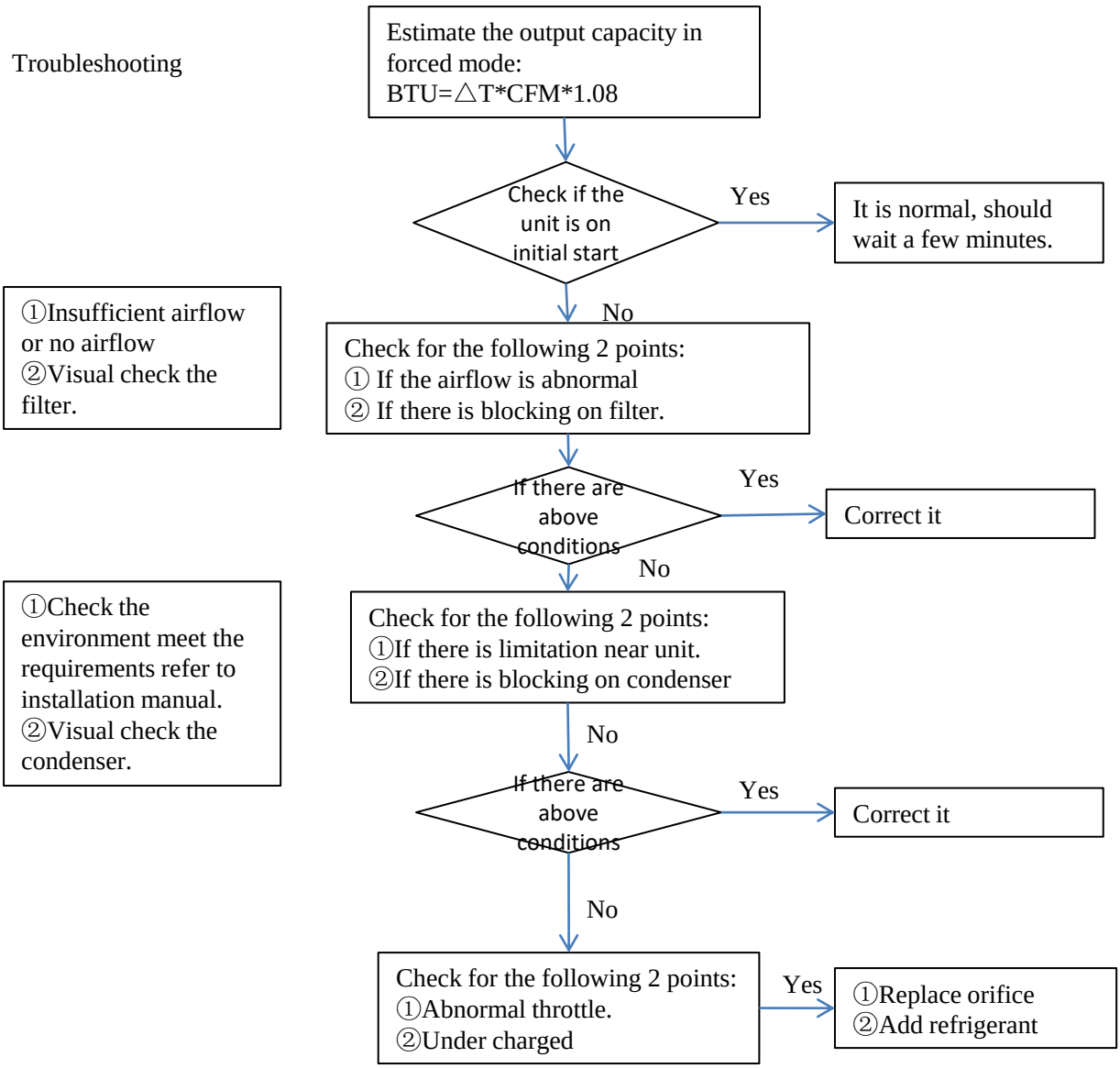


5.2 Symptom-based Troubleshooting

5.2.3 Capacity is low

Issue	Capacity is low
Model	All
Name	/
Classify	System fault
Possible cause	• Poor heat dissipation of the evaporator • Poor heat dissipation of the condenser • Under charged • First start

Troubleshooting

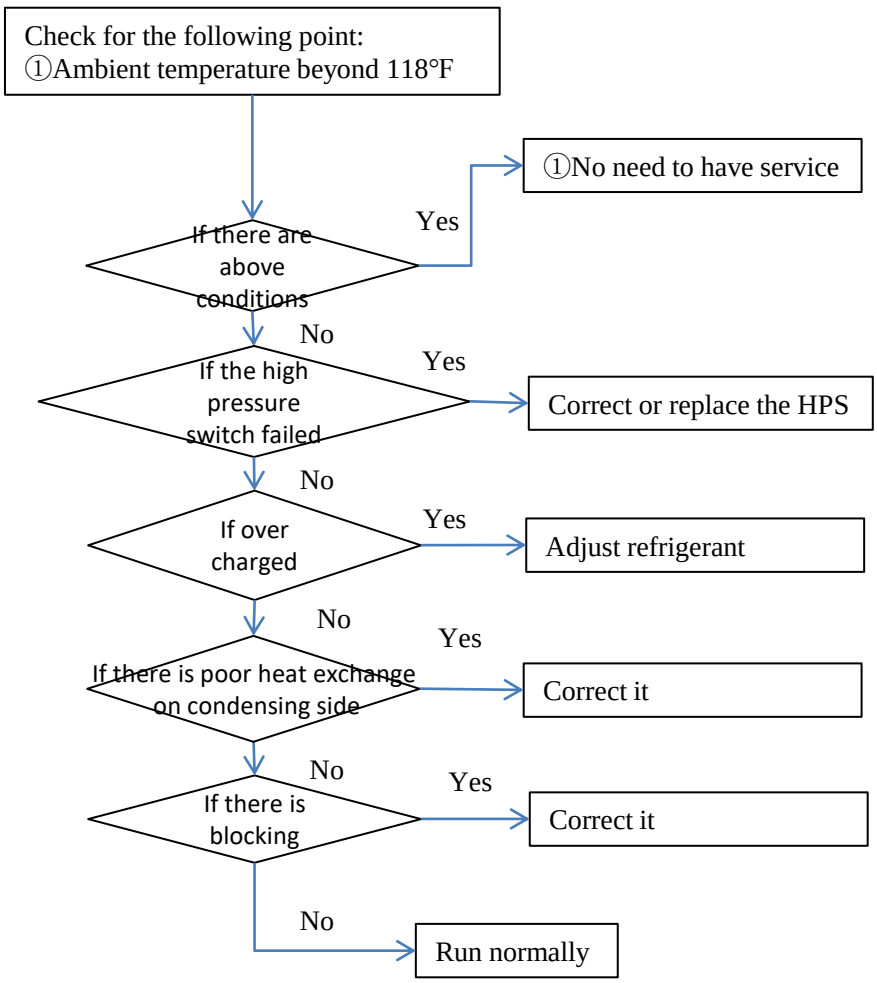


5.2 Symptom-based Troubleshooting

5.2.4 High pressure protection

Issue	High pressure protection
Mode	All
Name	/
Classify	System fault
Possible cause	• High temperature and load • Poor heat exchange on condensing side • orifice/filter blocked

Troubleshooting

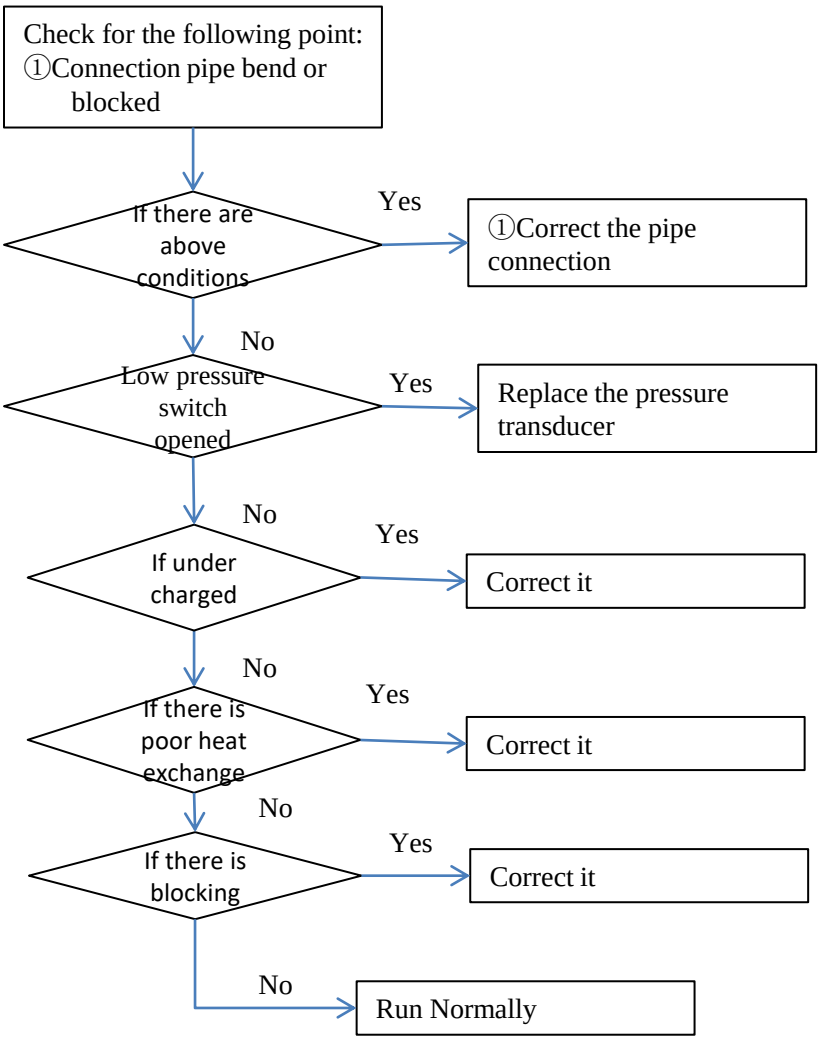


5.2 Symptom-based Troubleshooting

5.2.5 Low pressure protection

Issue	Low pressure protection
Mode	All
Name	/
Classify	System fault
Possible cause	• Indoor fan stopped abnormally / poor heat exchange • **orifice/filter drier/indoor coil blocked** • Under charged

Troubleshooting

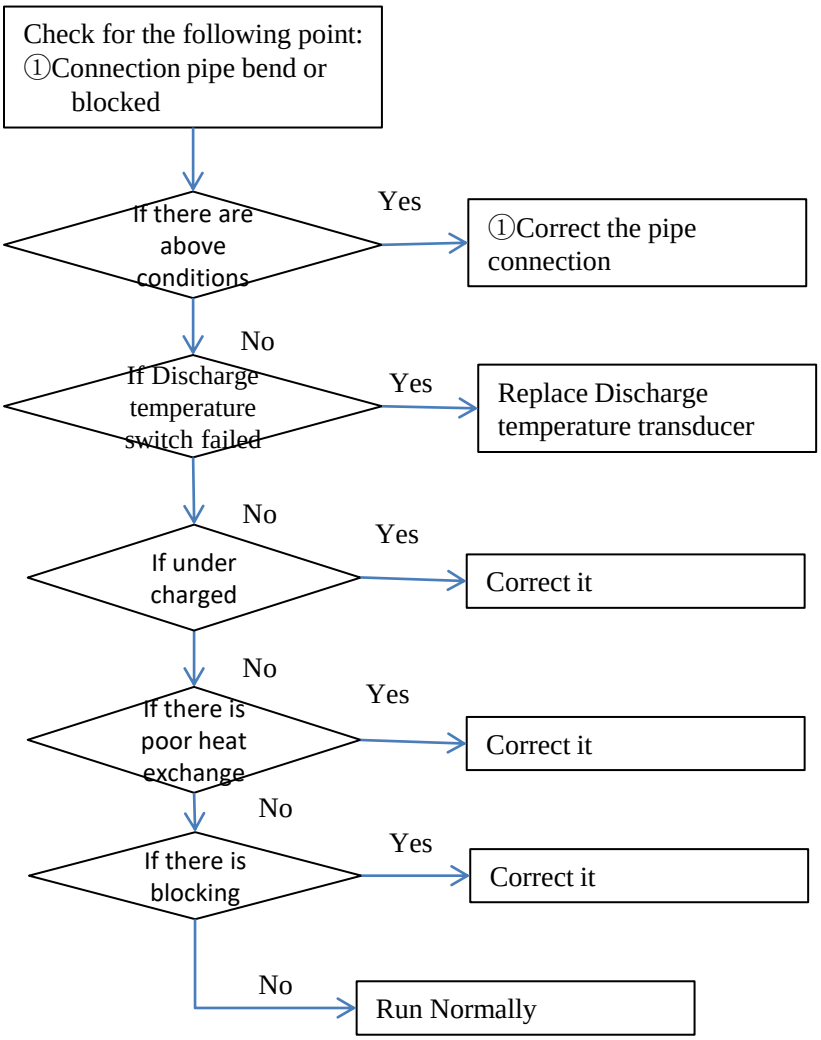


5.2 Symptom-based Troubleshooting

5.2.6 Discharge temperature protection

Issue	Discharge temperature protection
Mode	All
Name	/
Classify	System fault
Possible cause	• orific/filter drier blocked • Under charged • Outdoor unit motor stopped abnormally • Poor heat exchange on outdoor unit • Discharge temperature sensor（T5） fault

Troubleshooting

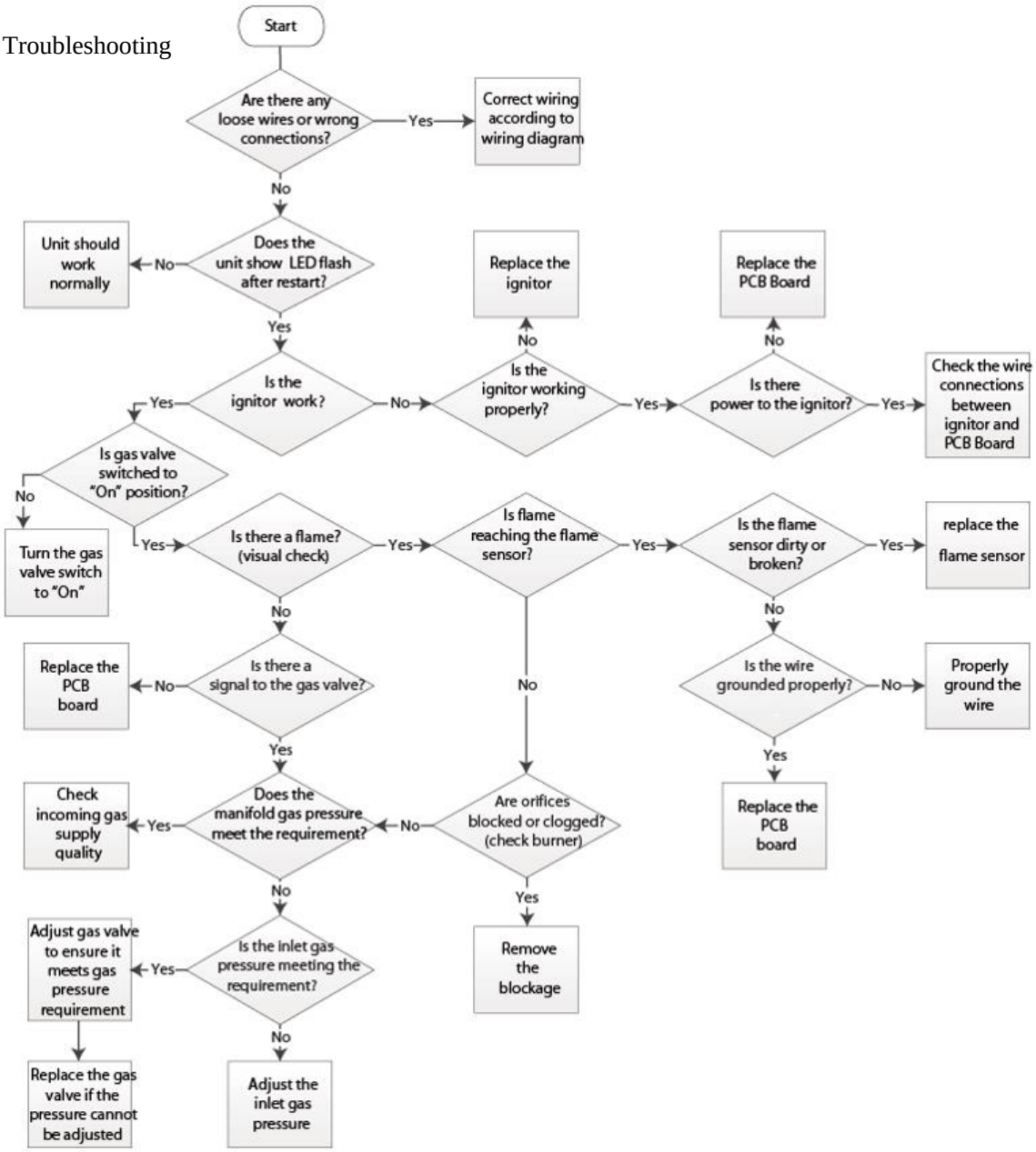


5.3 Troubleshooting by Main board Fault code

5.3.1 System lockout（heating）

Faulty code	2 flash
Mode	All
Name	System lockout（heating）
Classify	System fault
Possible cause	• System Lock-Out due to Failed Ignition • System Lock-Out due to too Many Flame Dropouts • System Lock-Out due to failed to detect or sustain flame

Troubleshooting

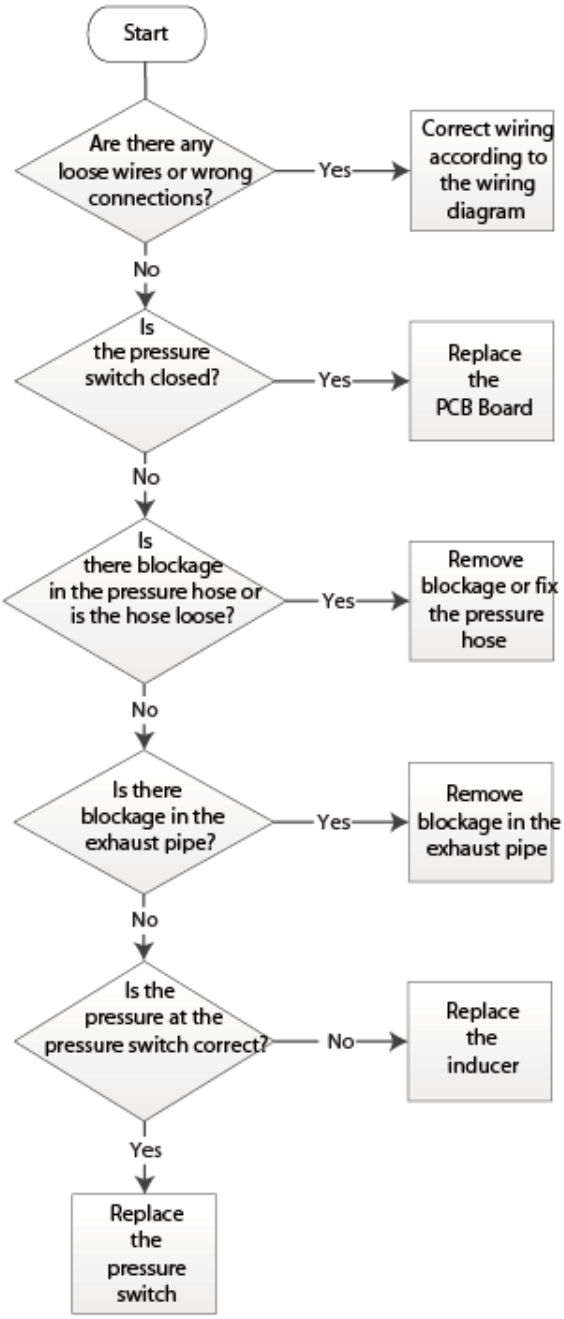


5.3 Troubleshooting by Main board Fault code

5.3.2 Pressure switch problem detected（heating）

Faulty code	3 flash
Mode	All
Name	Pressure switch problem detected（heating）
Classify	System fault
Possible cause	• Pressure switch is not good • blockage in the pressure hose • blockage in the exhaust pipe

Troubleshooting

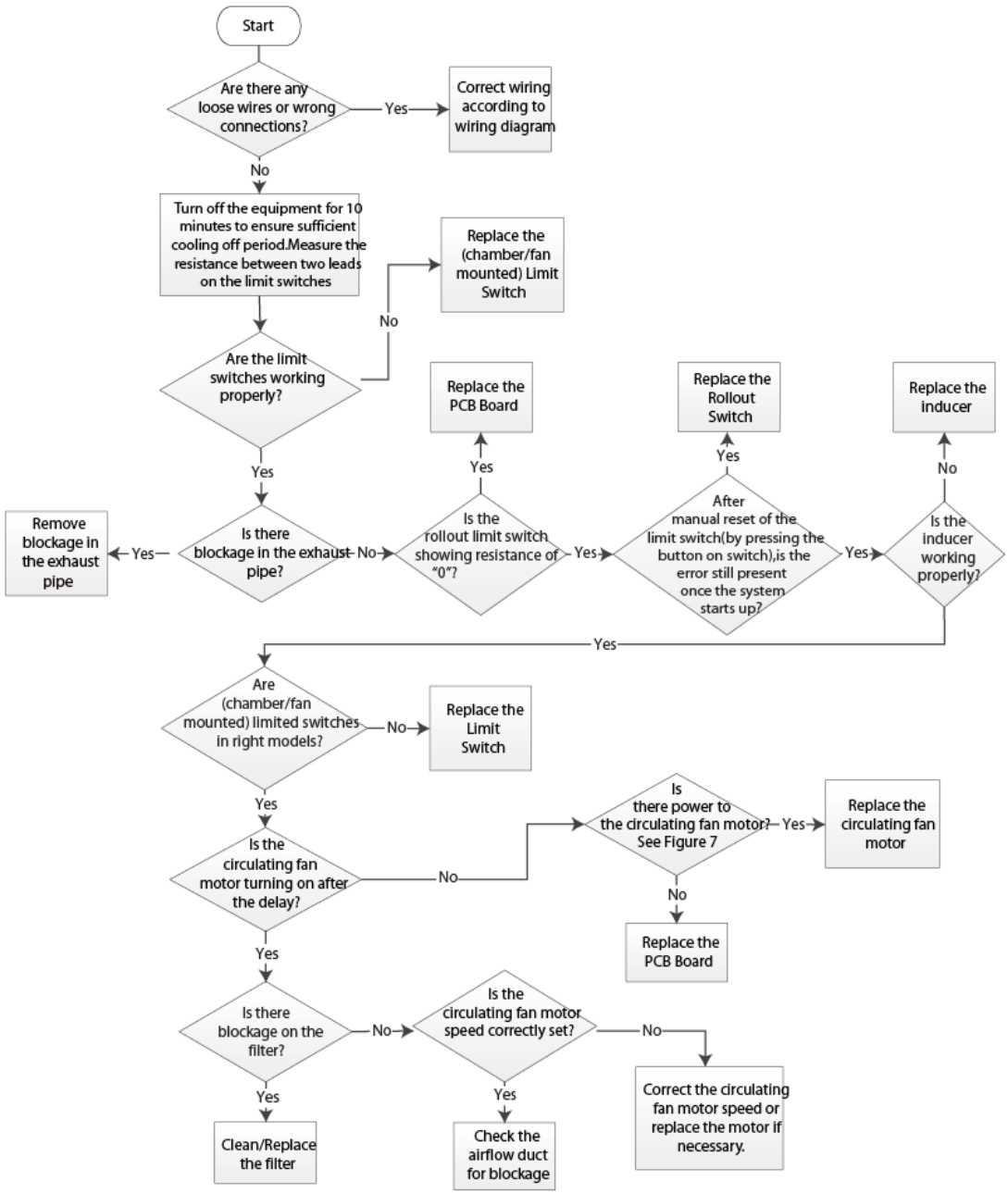


5.3 Troubleshooting by Main board Fault code

5.3.3 High limit switch protection device open or Flame rollout switch open（heating）

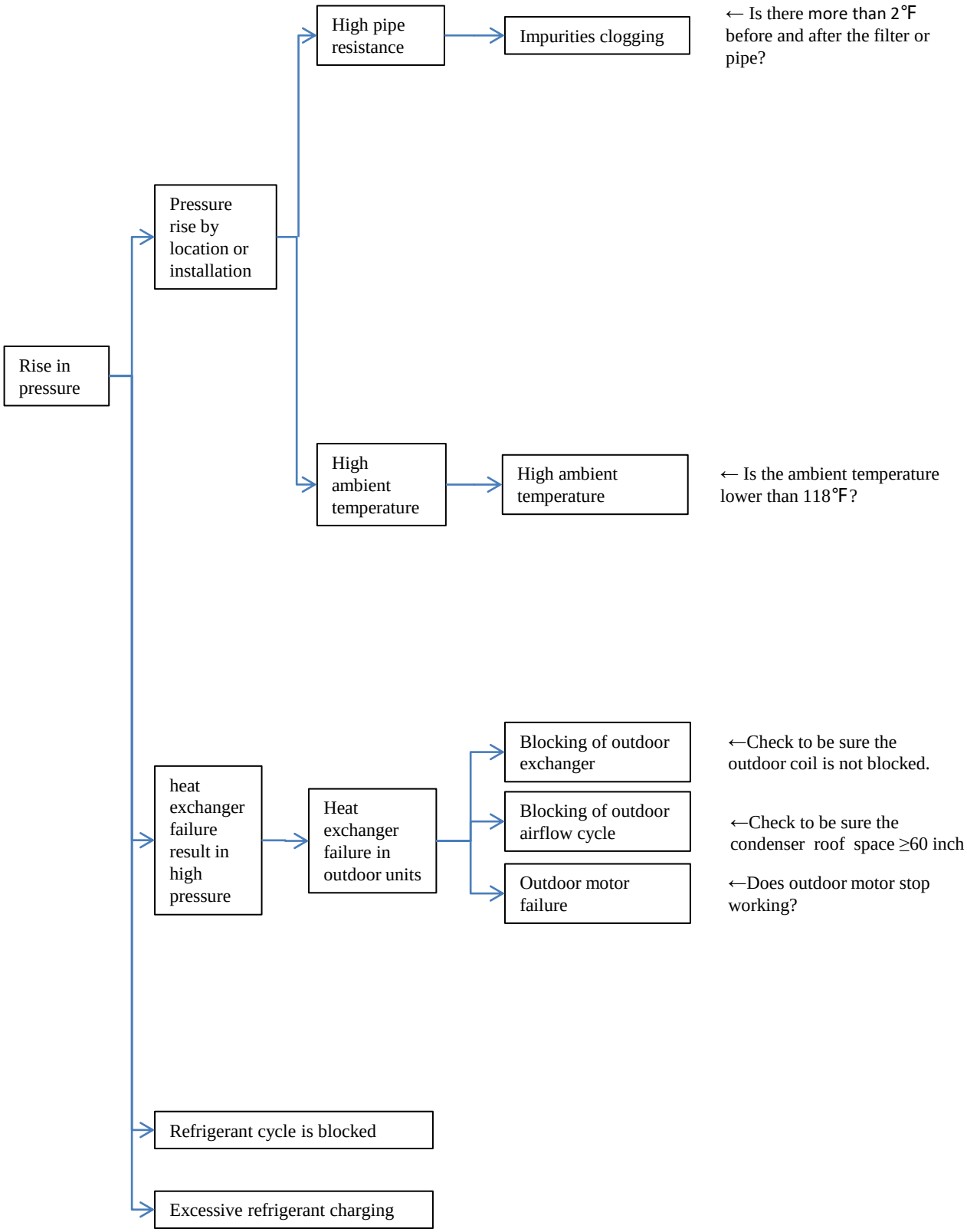
Faulty code	4 flash or 6 flash
Mode	All
Name	High limit switch protection device open（heating） Flame rollout switch open （heating）
Classify	System fault
Possible cause	• low airflow • blockage in the exhaust pipe

Troubles



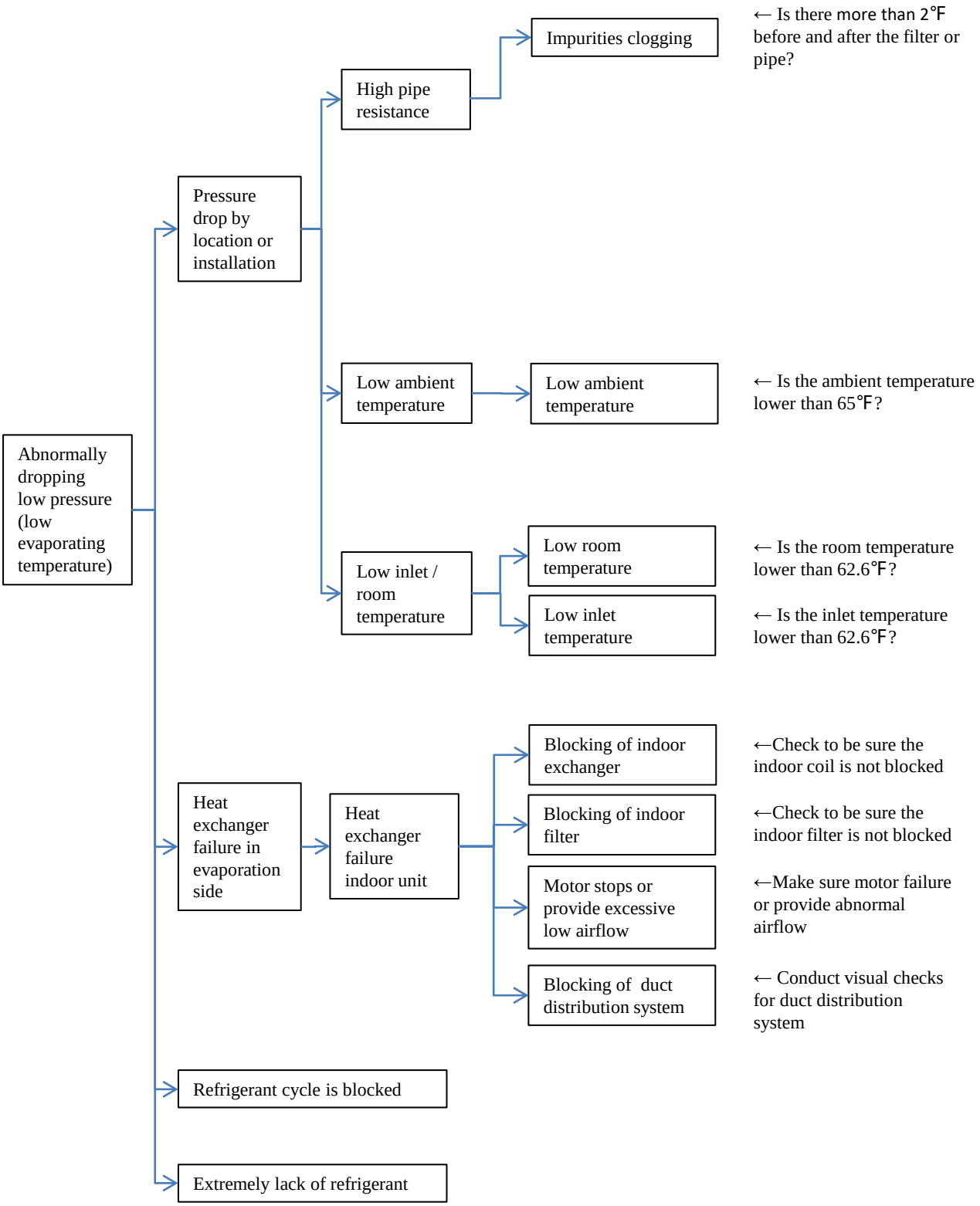
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6.6 Check for Discharge Temperature Switch (T5) 36
6.7 Check for Compressor Check 37

CHECK 1 6.1 Check for Causes of Rise in High Pressure



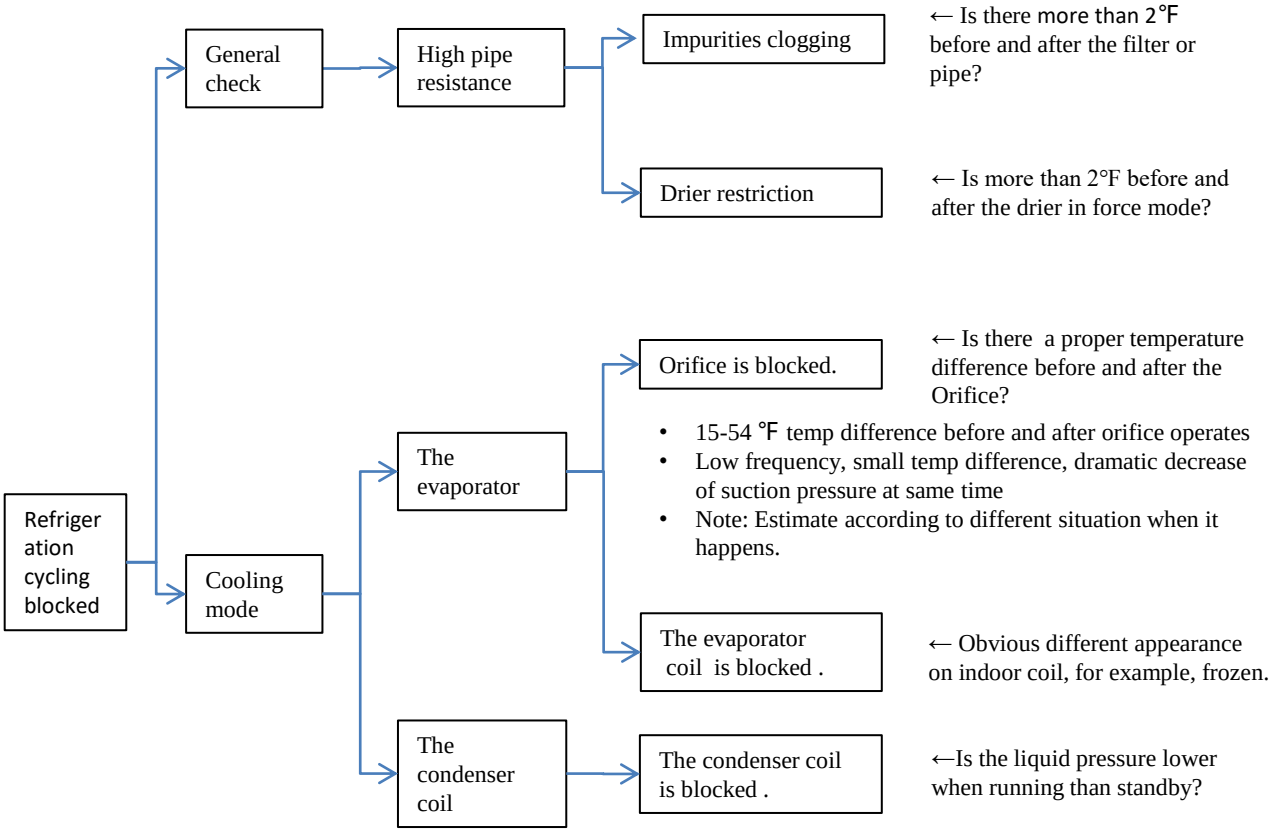
CHECK 2 6.2 Check for Causes of Dropping Low Pressure in cooling

Note: 110-140PSIG head pressure is normal in cooling conditions. The value may be lower/higher at start-up or return oil stages.



CHECK 3 6.3 Check for Causes of Refrigeration cycling blocked

Note: Check at normal operation, some problems will be more obvious.



CHECK 4 6.4 Check for High Pressure Switch（HPS）

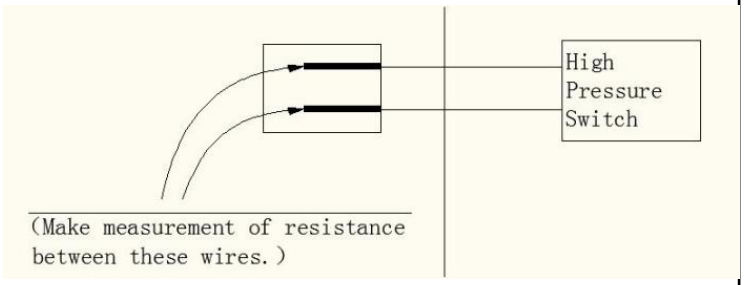
High Pressure Switch：
Whether the switch can start normally when start the machine

Start normally

Yes → Work well

No

When power off and pull up



High pressure switch secure, no wiring damages?

No → Reconnect/fix the wiring damages

Yes

R < 1Ω

No → abnormal pressure switch, replace it

Yes

Still in high pressure protection?

Yes → Should replace board

Note: low probability, caution in handling

No → Work well

Note:
Normal high pressure switch opens above 4Mpa（580PSIG）resets below 435PSIG.

CHECK 5 6.5 Check for Low Pressure Switch（LPS）

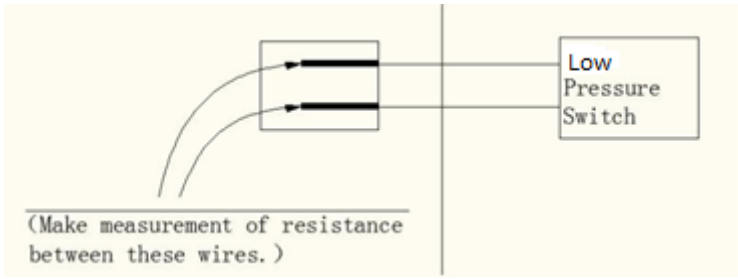
Low Pressure Switch：
Whether the switch can start normally when start the machine

Start normally

Yes → Work well

No

When power off and pull up



Low pressure switch secure, no wiring damages?

No → Reconnect/fix the wiring damages

Yes

R < 1Ω

No → abnormal pressure switch, replace it

Yes

Still in low pressure protection?

Yes → Should replace board

Note: low probability, caution in handling

No → Work well

Note:
Normal high pressure switch opens below 0.1Mpa（14.5PSIG）, resets above0.22Mpa（31.9PSIG）.

CHECK 6 6.6 Check for Discharge Temperature Switch（T5）

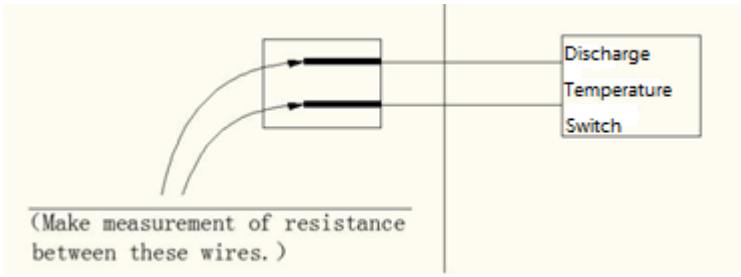
Discharge Temperature Switch：
Whether the switch can start normally when start the machine

Start normally

Yes → Work well

No

When power off and pull up



Discharge Temperature Switch secure, no wiring damages?

No → Reconnect/fix the wiring damages

Yes

R < 1Ω

No → abnormal pressure switch, replace it

Yes

Still in Discharge Temperature Switch protection?

Yes → Should replace board

Note: low probability, caution in handling

No → Work well

Note:
Normal discharge temperature switch opens above 239℉, resets below 167℉(For 71/90/105/120); opens above 257℉, resets below 203℉(For 140/160).

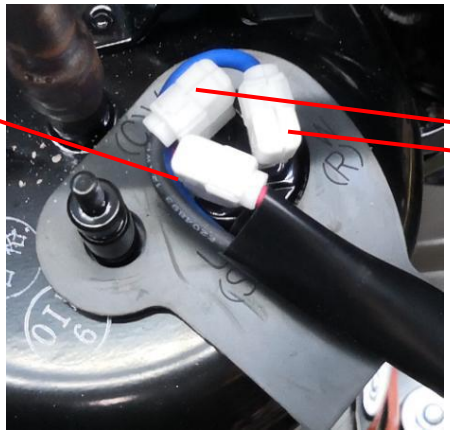
CHECK 7 6.7 Check for Compressor

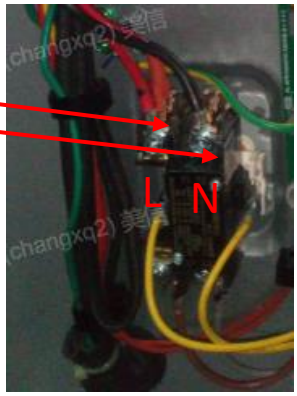
Compressor：
Whether compressor can start normally

Normal? — Yes → Work well

No → When power off，after 3minutes and unplugged







For Scroll compressor, supply wring is unitary, you can check it with colour (Red for L1, Black for L2, White for S)

Resistance （Ω）	Rotary	Scroll
Between R and C （L1 and L2）	<2	<2
Between C and S (L1 and S)	<2	<1
Between R and S (L2 and S)	<4	<1
Between U/V/W and ground	>10M	>10M

Normal compressor winding? — No → Compressor replace

Yes → If the ground resistance is normal? — No → Compressor replace

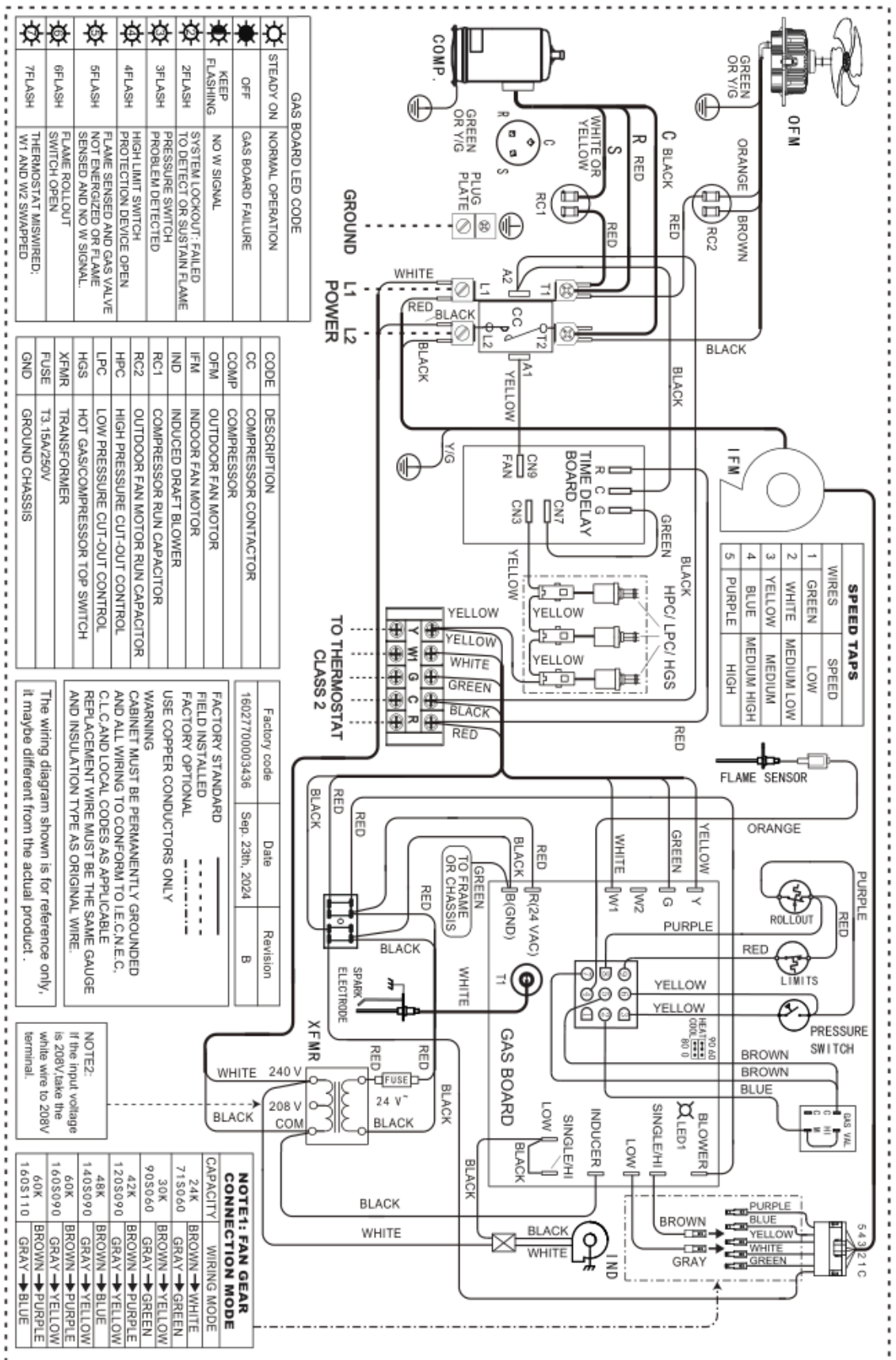
Yes → If the compressor current is normal — No → Compressor replace

Yes → Check according to the condition of whole unit

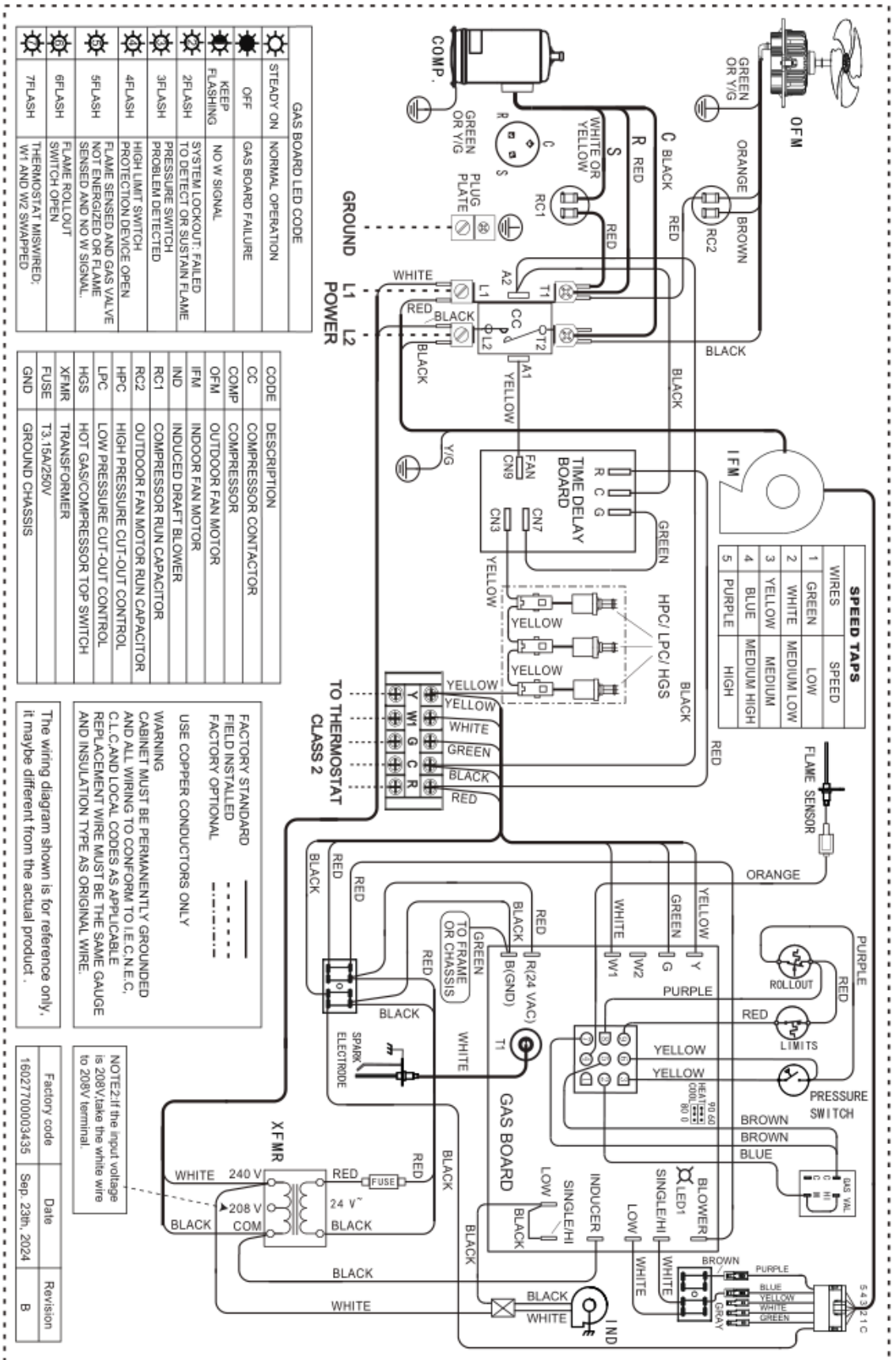
PART 7 Appendix

7.1 Wiring Diagrams ····· 39

Appendix 1 7.1 Wiring diagrams for 24/30/42/48/60K



Appendix 1 7.1 Wiring diagrams for 36K



Appendix 2 7.2 Indoor Fan replacement procedure



Bolts

Step 1: Unplug the power and signal wires from the motor;

Step 2: Use a screwdriver to loosen the 2 bolts;

Step 3: Ensure that there are no obstacles in the direction of motor extraction;

Step 4: Pull out the motor horizontally

Step 5: Ensure that there are no obstacles in the direction of motor insertion

Step 6: New motor horizontally pushed in

Step 7: Use a screwdriver to fix the 2 bolts

Step 8: Plug back the power and signal cables