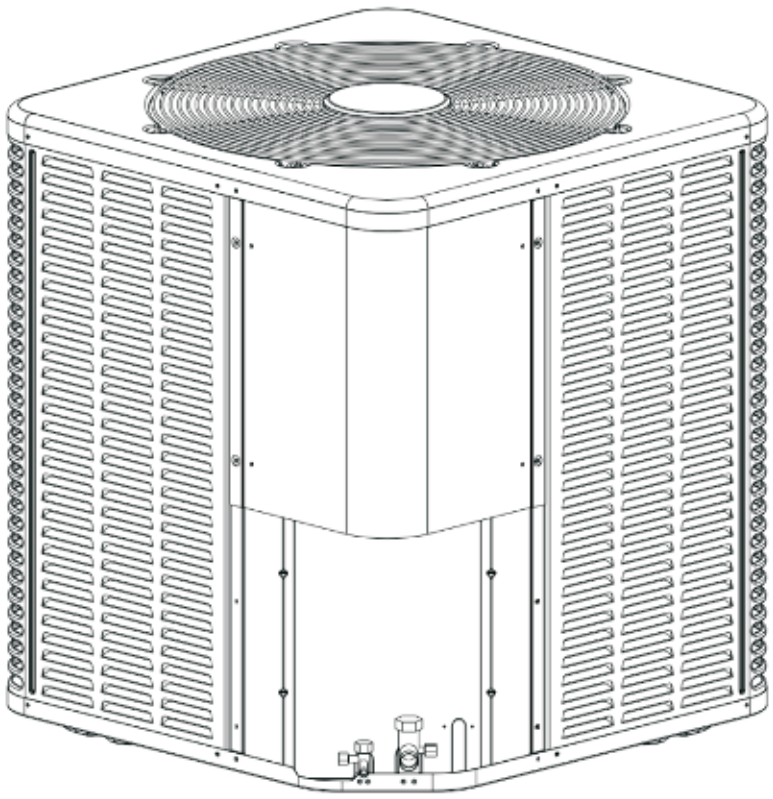
Brothers
AIR CONDITIONING

# INSTALLATION INSTRUCTIONS

## Split System Heat Pump & Air Conditioner

Model Size:
1.5, 2, 2.5, 3, 3.5, 4, 5 Tons
R32



AHRI CERTIFIED®
www.ahridirectory.org
Unitary Small AC
AHRI Standard 210/240
Certification applies only When the complete system is listed with AHRI.

AHRI CERTIFIED®
www.ahridirectory.org
Unitary Small HP
AHRI Standard 210/240
Certification applies only When the complete system is listed with AHRI.

ETL
c US
Intertek

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# 1. Symbol and Key to Safety Instructions

## 1.1 Symbol Keywords

| | | |
|---|---|---|
| ⚠ | WARNING | The warnings in this document are identified by warning triangles printed on a gray background. The key words at the beginning of the warning indicate the type and severity of the next risk if no measures are taken to prevent it. |

**The following keywords are defined and used in this document:**

| | | |
|---|---|---|
| ▶ | Danger | Indicates a dangerous situation, which, if not avoided, will lead to death or serious injury. |
| ▶ | Warning | Indicates a dangerous situation, which, if not avoided, may lead to death or serious injury. |
| ▶ | Caution | Indicates a dangerous situation, which, if not avoided, may cause mild to moderate injury. |
| ▶ | Note | Used to deal with behaviors unrelated to personal injury. |

**Important information**

| | |
|---|---|
| ℹ | This symbol represents important information that is not dangerous to people or property. |

## 1.2 Safety

**Please Read Before Continuing.**

| | | |
|---|---|---|
| ⚠ | WARNING | ▶ Failure to observe this warning may result in property damage, serious personal injury or death. |
| | | ▶ Before touching the electrical components, wait for 3 minutes after disconnecting the power supply. |

| | | |
|---|---|---|
| ⚠ | NOTICE | ▶ This document is the property of the customer and is kept by this unit. When you are finished, please return to the service information package. |
| | | ▶ These instructions do not cover all changes in the system, nor do they provide all unexpected situations that may be encountered during installation. |
| | | ▶ If you need more information, or there are special problems that are not sufficient for the buyer, you should consult your installation dealer or local dealer. |

Some benefits of installing an approved indoor and outdoor split system are maximum efficiency, best performance and best overall system reliability.

This document contains wiring diagram and maintenance information. This is the customer's property and belongs to this unit. When you are finished, please return to the service information package.

## Warning:

- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- The appliance shall be installed in accordance with national wiring regulations
- Before accessing the connection terminals, all power circuits must be disconnected.
- This information is intended for use by individuals with sufficient electrical and mechanical experience background. Attempting to repair central air conditioning products may result in personal injury and/or property damage.

## Warning: Dangerous voltage

- Failure to observe this warning may result in property damage, serious personal injury or death.
- Disconnect all power before maintenance, including remote disconnection. Follow proper locking/tagging procedures to ensure that the power supply will not be energized accidentally.

## Warning: Refrigerant oil

- Attempting to repair central air-conditioning products may result in property damage, serious personal injury or death. These units use R-32 refrigerant, and its working pressure is 2.5% higher than R-410A. Use only the service equipment approved by R-32. The refrigerant cylinder is painted "blue" to indicate the type of refrigerant, and may contain a "dip" tube to allow liquid refrigerant to be filled into the system. All R-32 systems use POE/PVE oil , which can easily absorb moisture from the atmosphere. In order to limit this "moisture absorption" effect, the system should be sealed as much as possible. If the system is exposed to the atmosphere for more than 4 hours, the compressor oil must be changed. Do not destroy the vacuum with air, and always replace the dryer when you open the system for component replacement.

## Warning: Hot surface

- May cause mild to severe burns. Failure to observe this caution may result in property damage or personal injury. Do not touch the top of the compressor.

## Caution: Contains refrigerant

- Failure to follow the correct procedures will lead to personal illness or injury or serious equipment damage. The system contains high-pressure oil and refrigerant. Before opening the system, recover the refrigerant to release the pressure.

## Note: Indoor unit is required

- Indoor unit is equipped with piston or TXV, and the model of piston and TXV is selected by manufacture, please do not change by yourself.

## Note: Grounding is required

- Failure to check or use the correct maintenance tools may result in equipment damage or personal injury. Reconnect all grounding devices. All parts of this product that can conduct current are grounded. If the grounding wire, screw, strap, clip, nut or washer used to complete the grounding path is removed during maintenance, it must be put back in place and properly fixed.

## Warning: service valve

- Failure to observe this warning will result in sudden discharge of system charge, which may result in personal injury and/or property damage. When opening the liquid pipeline service valve, be extra careful. Turn the valve stem counterclockwise until the valve stem touches the bead.

## Warning: Brazing is required

- Failure to check the wiring or use the correct maintenance tools may result in equipment damage or personal injury. If using existing refrigerant lines, make sure that all joints are brazed, not soldered.

## Warning: High current leakage

- Failure to observe this warning may result in property damage, serious personal injury or death. Before connecting the power supply, grounding is essential.

## Warning:

- This product may expose you to chemicals including lead and lead components, which are known to cause cancer, birth defects or other reproductive harm in California. For more information, please visit www.P65Warnings.ca.gov.



Warning:Flammable hazard!



Please read the instructions carefully!



Please read the installation instructions carefully!



Please read the service manual carefully!

# 2. Considerations of Unit Location

## 2.1 Unit Size

**Table 2.1**

| Unit size | |
|---|---|
| Model | H x W x L (inches) |
| 18K/24K/30K | 25 x 23-3/5 x 23-3/5 |
| 36K | 25 x 29-1/7 x 29-1/7 |
| 42K/48K/60K | 32-7/8 x 29-1/7 x 29-1/7 |

The weight of the unit is attached to the carton.

When installing the outdoor unit on the roof, make sure that the roof can support the weight of the outdoor unit. It is recommended to choose appropriate isolation to prevent sound or vibration from being transmitted to the building structure.

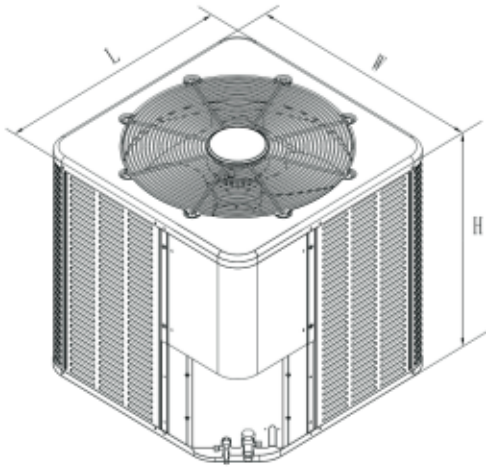



**Figure 2.1**

## 2.2 Refrigerant Pipeline Restriction

**Table 2.2**

| Refrigerant Piping | | Capacity (Kbtu/h) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 18K | 24K | 30K | 36K | 42K | 48K | 60K |
| Liquid-Gas | In. | 3/8-3/4 | 3/8-3/4 | 3/8-3/4 | 3/8-3/4 | 3/8-3/4 | 3/8-7/4 | 3/8-7/4 |
| Max.Refrigerant Line Length* | Ft. | 100 | | | 150 | | | |
| Max.Elevation Vertical Lift** | Ft. | 32 | | | 65 | | | |

* It is recommended to adopt standard pipeline size; Refrigerant charge: see Section 14.

- Maximum equivalent length of pipeline = 150 feet.
- Maximum vertical equivalent length = 65 feet.
- Use only the pipe diameters shown in Table 2.2.
- If the suction line exceeds 65 feet, do not use a larger suction line than recommended.

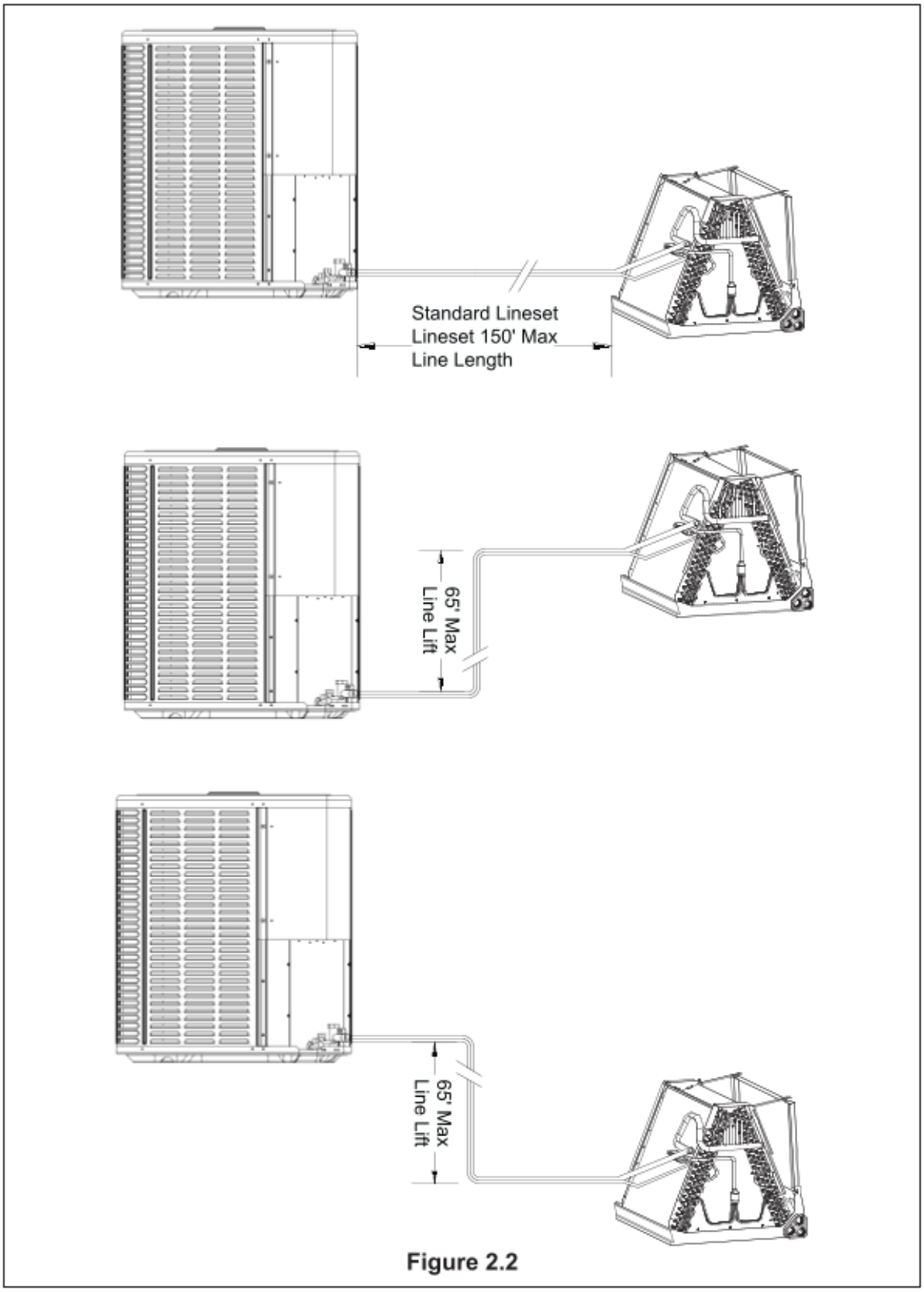



**Figure 2.2**

## 2.3 Position Restriction

- Make sure that the discharge area at least 60 inches above the top of the unit is unrestricted.
- Don't put the outdoor unit near the bedroom, because the normal operating sound may be offensive.
- Position the equipment, leaving enough space for smooth airflow, wiring, refrigerant lines and maintainability.
- 12 inches minimum is allowed. The clearance from one side of the access panel to the wall should be at least 24 inches. Next to the control panel near the panel.
- Keep a distance of 24 inches between adjacent units.
- Place the unit in a place where water, snow or ice cannot fall directly on the device from the roof or overhangs.
- See figures 2.3 and 2.4.

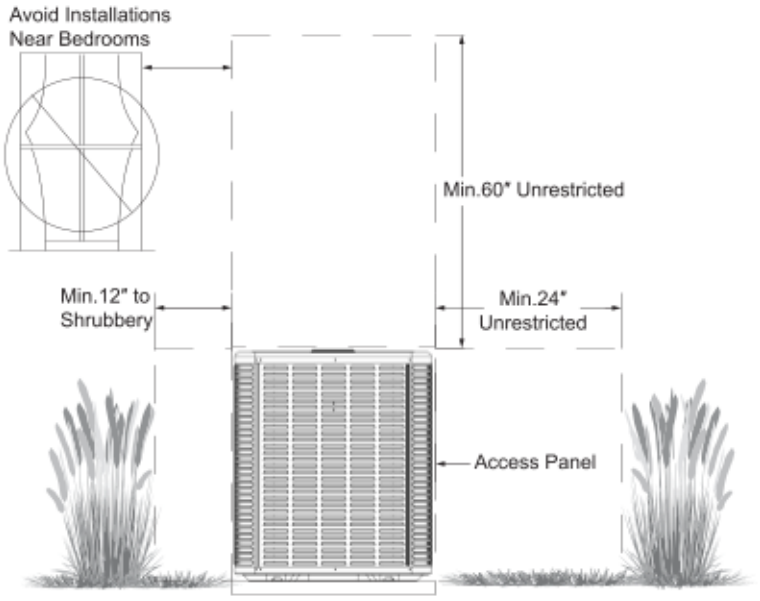



**Figure 2.3**

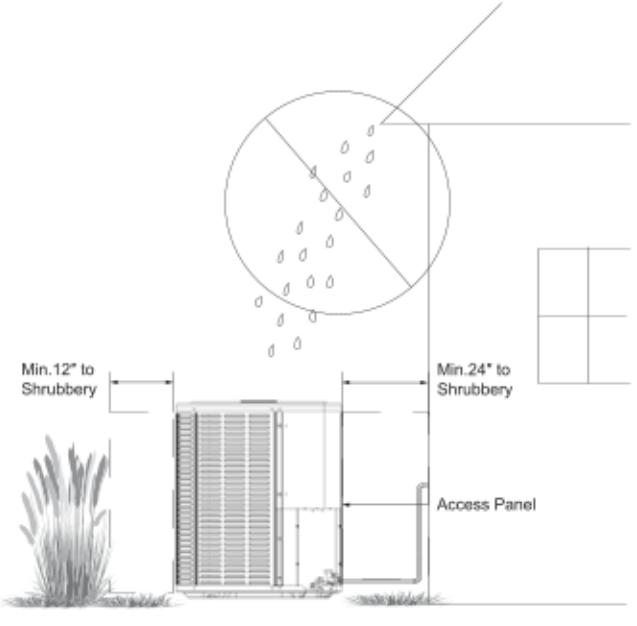



**Figure 2.4**

Precautions in cold climate (heat pump only)

Precautions must be taken for units installed in areas with snow and long-term temperatures below freezing point.

- Depending on the local weather conditions, the unit should be raised by 3-12 inches. This extra height will allow the snow and ice melted during the defrosting cycle to be discharged before re-freezing. Make sure that the drain hole on the unit chassis is not blocked, otherwise it will hinder the defrosting water discharge (Figure 2.5).
- If possible, avoid places that are prone to snow. If this is not feasible, a snow barrier should be installed around the unit to prevent snow accumulation on the side of the unit.

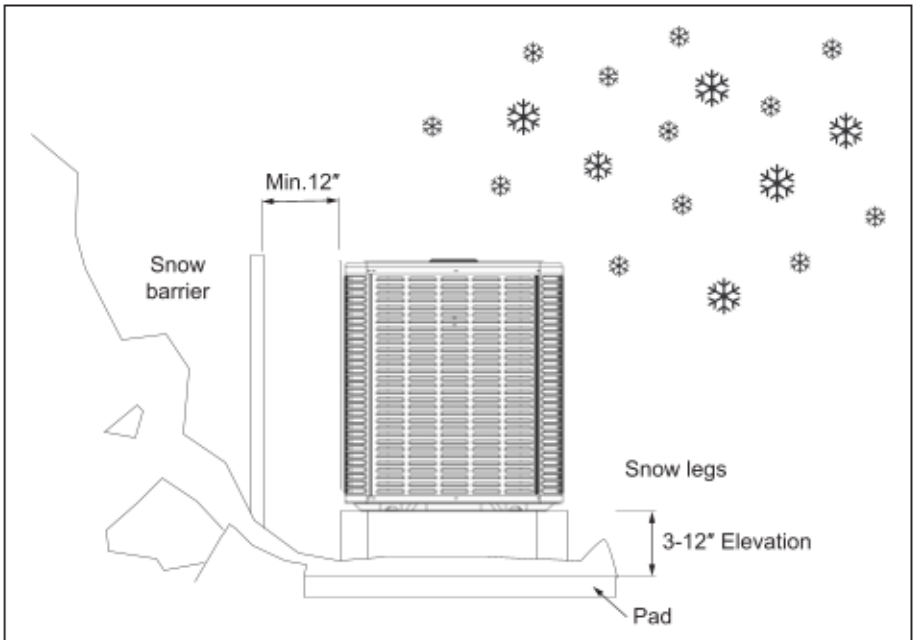



**Figure 2.5**

Corrosive Environment

Exposure to corrosive environment may shorten the service life of unit, corrode metal parts and/or negatively affect the performance of unit. Corrosive elements include but are not limited to: sodium chloride, sodium hydroxide, sodium sulfate and other compounds commonly found in seawater, sulfur, chlorine, fluorine, fertilizers and various chemical pollutants from industrial/manufacturing plants. If it is installed in an area that may be exposed to corrosive environment, special attention should be paid to the placement and maintenance of the unit.

- Lawn sprinklers/hoses/waste water should not be sprayed directly on the outer panel of the unit for a long time.
- In coastal areas: install the unit on the side away from the waterfront.
- Fences or shrubs can provide some shielding protection for the unit, but the minimum device clearance must still be kept.
- Clean the outdoor coil and any exposed external surfaces about every three months.

# 3. Unit Installation Preparation

## 3.1 Prepare the Unit for Installation

● Check whether there is any damage and report any damage to the unit to the manufacturer in time (Figure 3.1)

● The filler can be used to ensure that the refrigerant charge is maintained during shipment.



**Figure 3.1**

# 4. Unit Settings

## 4.1 Gasket Installation

When installing the unit on a support pad (such as a concrete slab), please consider the following:

● All sides of the pad must be at least 1-2 inches larger than the unit.

● The gasket must be separated from any structure.

● The mat must be level.

● The cushion must be high enough above the ground for drainage.

● The location of the pad must comply with national, state and local regulations.

---

These instructions are intended to provide a method of fixing the system to the cement slab as a fixing procedure in windy areas. Check the local regulations of tie-down methods and protocols.

---

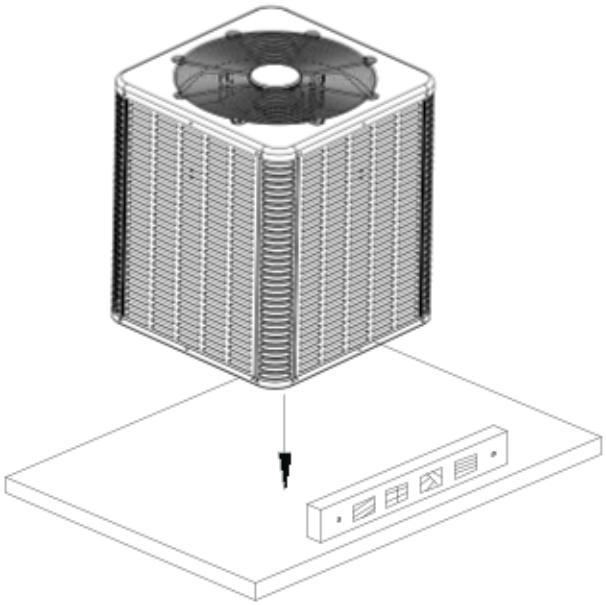


Figure 4.1

# 5. Precautions for Refrigerant Pipeline

## 5.1 Connecting Dimensions of Refrigerant Lines and Service Valves

Table 5.1

| Model | Suction line | Liquid line | Suction line connection | Liquid line connection |
|---|---|---|---|---|
| | The dimensions are in inches. | | | |
| 18K/24K/30K/36K/42K | 3/4 | 3/8 | 3/4 | 3/8 |
| 48K/60K | 7/8 | 3/8 | 7/8 | 3/8 |

## 5.2 Length of Required Refrigerant Pipeline

Determine the required pipeline length (Figure 5.1). Please refer to Section 2.2.

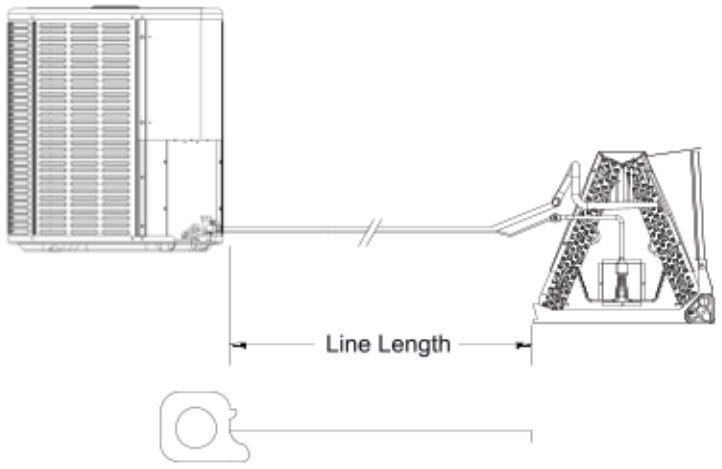



Figure 5.1

## 5.3 Refrigerant Pipe Insulation

The air pipe must always be insulated. Do not let the liquid pipeline and gas pipeline come into direct contact (metal to metal).

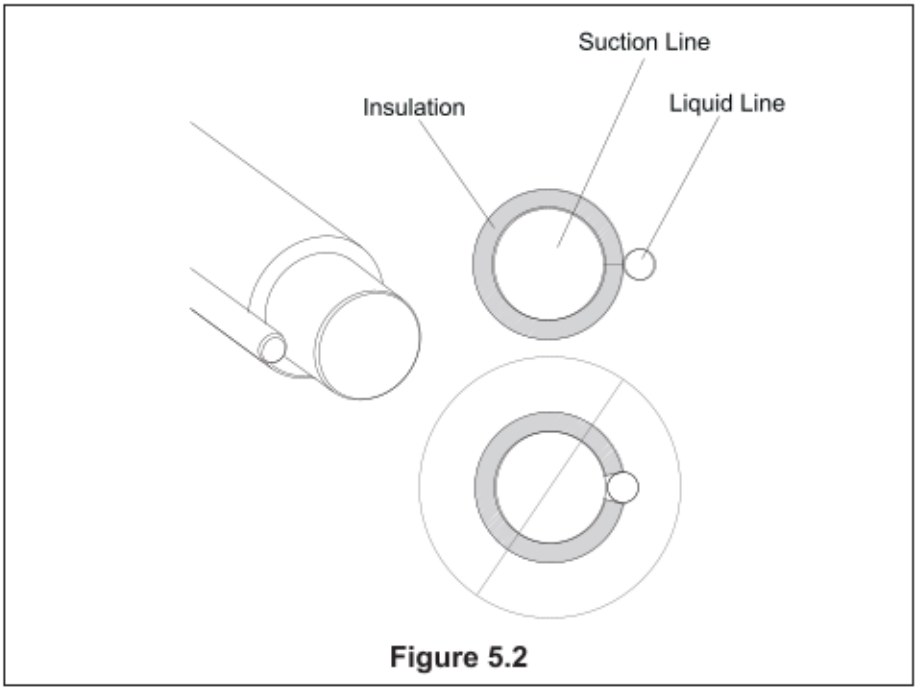



**Figure 5.2**

## 5.4 Reuse the Existing Refrigerant Lines

Note: Mild to moderate burns

- If using existing refrigerant lines, make sure that all joints are brazed, not soldered.

The following precautions should be taken for the retrofit application that will use the existing refrigerant pipeline:

- Make sure the refrigerant line size is correct. Refer to Section 2.2 and Table 2.2.
- Make sure the refrigerant line is free of leakage, acid and oil.

The manufacturer recommends that only approved matching indoor and outdoor systems be installed. All split systems are certificated by AHRI, the indoor unit is equipped with piston or TXV, and the model of piston and TXV is selected by manufacture, please do not change by yourself. The benefits of installing an approved indoor and outdoor split system are maximum efficiency, best performance and best overall system reliability.

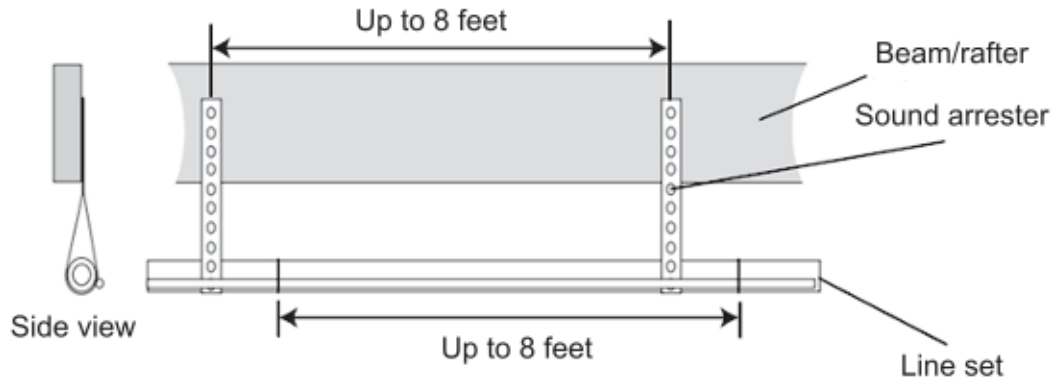
# 6. Refrigerant Pipeline Routing

## 6.1 Preventive Measure

Take preventive measures to prevent noise generated by vibration transmission of refrigerant pipeline in building structure. For example:

- When the refrigerant pipeline must be fixed on floor joists or other frames in the structure, use isolated hangers.
- When the refrigerant pipeline runs in the column space or closed ceiling, the isolation hanger should also be used.
- When refrigerant lines pass through walls or windowsills, they should be insulated and isolated.
- Isolate the pipeline from all piping systems.
- Try to reduce the number of 90 º laps.

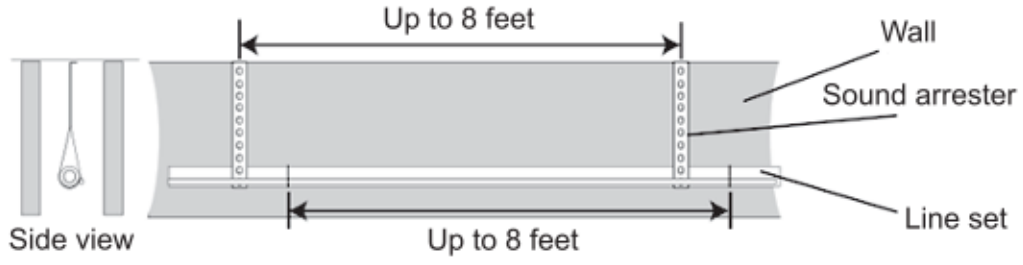
Comply with national, state and local regulations when isolating the wire group from joists, rafters, walls or other structural elements.




Use isolators to fix the air pipes on the beams every 8 feet. Every 8 feet, tape, wire or other suitable methods are used to fix the liquid line directly to the suction line.

**Isolated from beam/rafter**

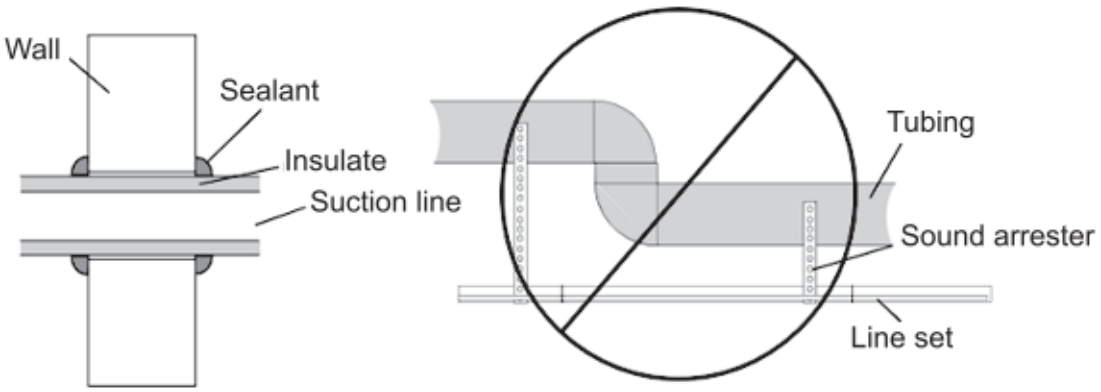
**Figure 6.1**




Use isolators to fix the suction line every 8 feet. Every 8 feet, liquid line directly to the suction line with tape, wire or other suitable methods.

**Isolation on the wall**

**Figure 6.2**




**Wall isolation**

Do not hang the pipeline on the duct work.

**Figure 6.3**

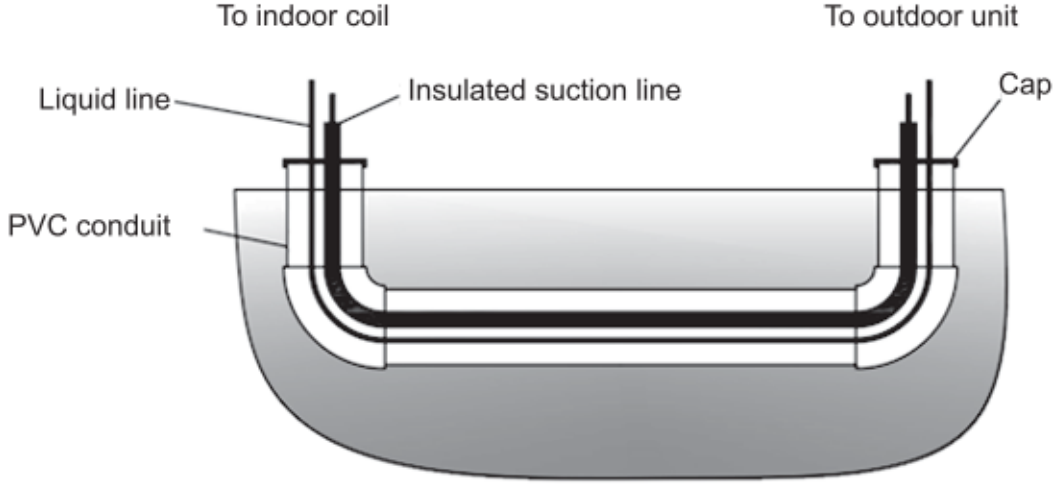



**Figure 6.4**

# 7. Refrigerant Pipeline Brazing

## 7.1 Brazing Refrigerant Pipeline

1. Remove the cover or plug. Use the deburring tool to deburr the pipe end. Clean the inner and outer surfaces of the pipeline with emery cloth.

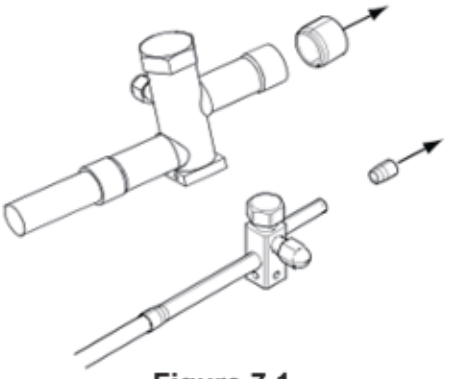


**Figure 7.1**

2. Remove the pressure taps from the two service valves.

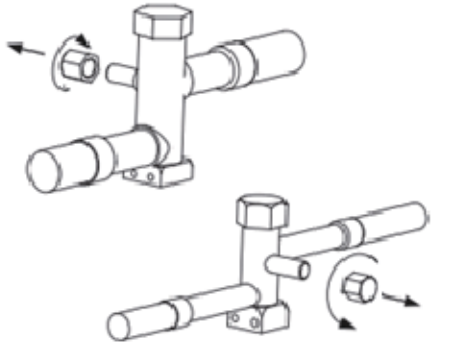


**Figure 7.2**

3. Purge refrigerant lines and indoor coils with dry nitrogen.

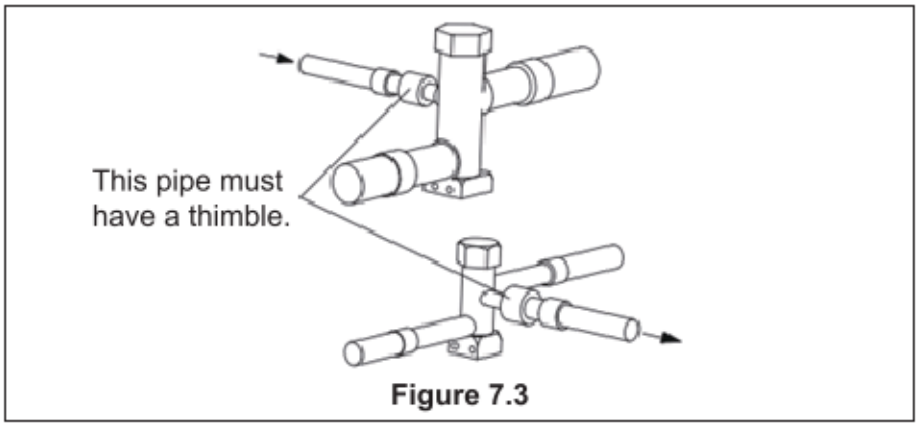



**Figure 7.3**

4. Wrap the valve body with a wet rag to avoid thermal damage, and continue the dry nitrogen purging (Figure 16).
   Braze the refrigerant line to the service valve.

---

Continue the dry nitrogen purge. Don't take off the wet rag before all brazing is completed.

---

Before stopping the dry nitrogen purge, please remove the wet rag.

---

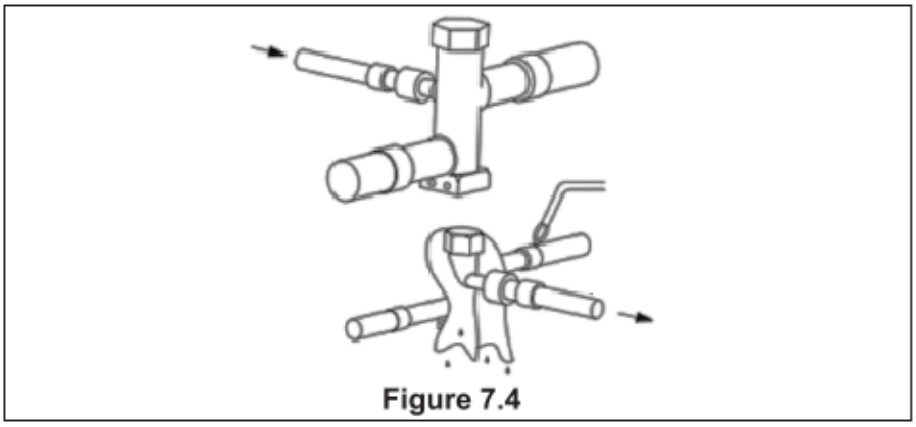


**Figure 7.4**

5. After the service valve cools down, replace the pressure tap.

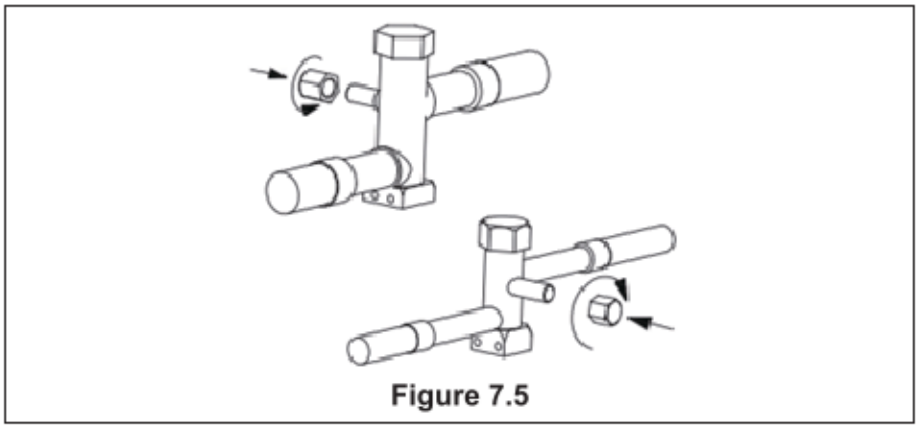


**Figure 7.5**

# 8. Refrigerant Pipeline Leakage Inspection

## 8.1 Check for Leaks

1. Use dry nitrogen to pressurize the refrigerant line and evaporator coil to 150 PSIG.

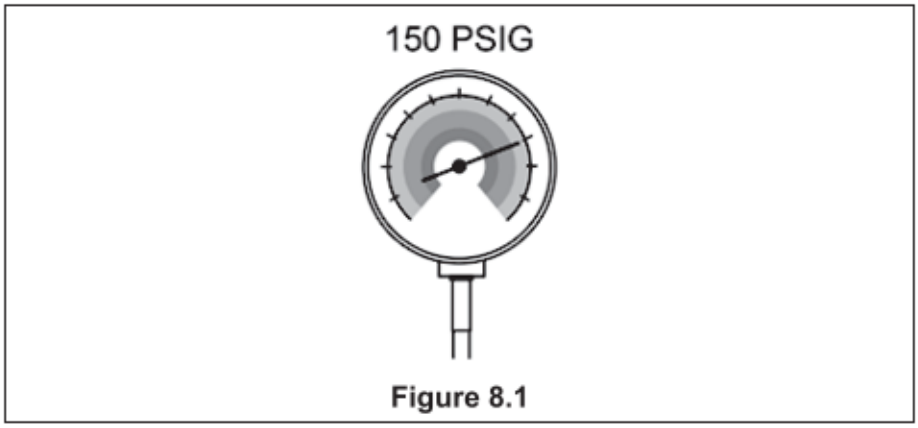



**Figure 8.1**

2. Use soapy water or foam at each soldering position to check for leaks.

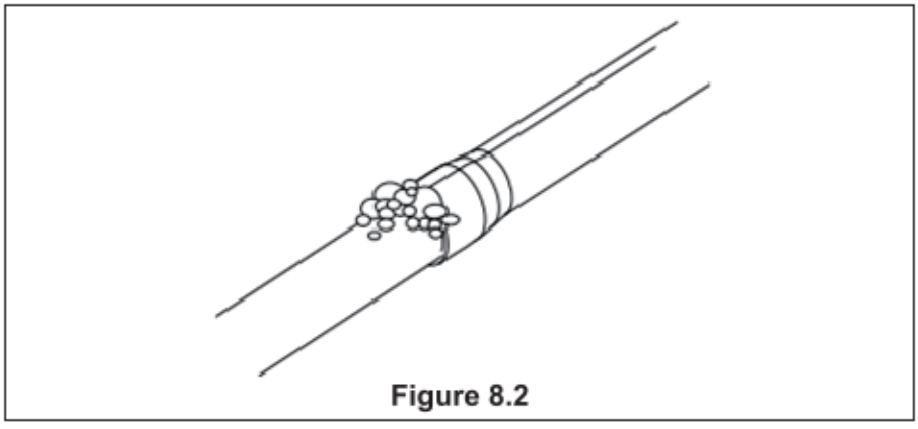


**Figure 8.2**

# 9. Emptying

## 9.1 Emptying Refrigerant Pipeline and Indoor Coil

Do not open the service valve until the leakage inspection and emptying of refrigerant lines and indoor coils are completed.

1. Evacuate until the micrometer reading is not higher than 350 micrometers, and then close the valve of the vacuum pump.

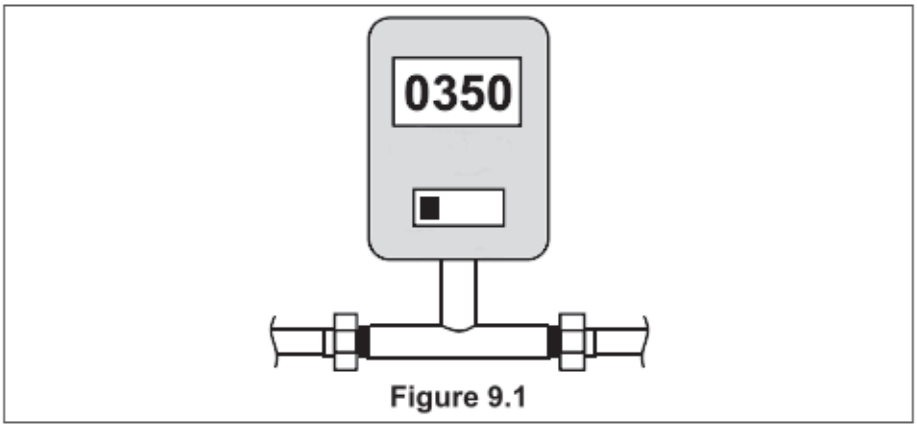



**Figure 9.1**

2. Observe micrometer gauge. If the micrometer meter does not rise above 500 micrometers within one (1) minute, the evacuation is completed.

   After the evacuation, turn off the vacuum pump and micrometer, and close the valve on the manifold instrument cluster.

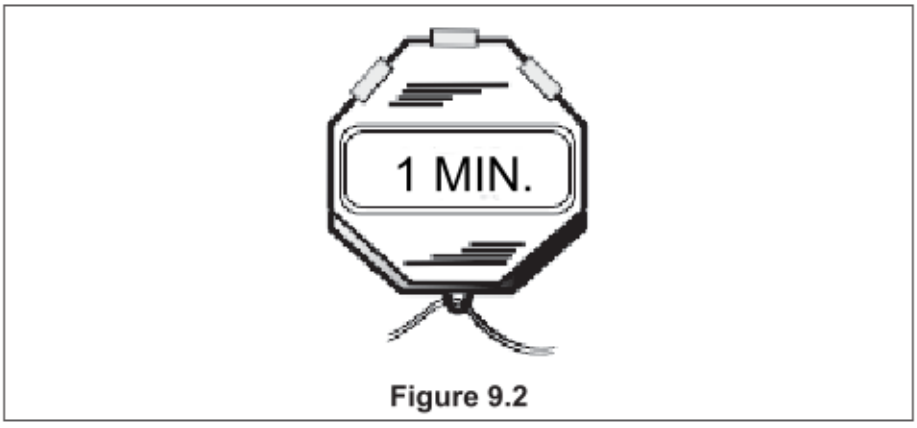



**Figure 9.2**

# 10. Service Valve

## 10.1 Open the Service Valve

Warning: Moderate to severe burns

- When opening the liquid side service valve, be extra careful. Turn counterclockwise until the valve stem just touches the hem. No torque is required. Failure to observe this warning will result in sudden release of system pressure, and may result in personal injury and/or property damage.

Before opening the service valve, the leakage inspection and emptying must be completed. The valve of copper welded pipe installation should be used for leakage inspection and vacuum pumping. The use of a separate suction port in this process will lead to refrigerant loss.

Before opening the Liquid side service valve, the gas side service valve must be opened first.

1. Remove the valve cover (Figure 10.1).
2. Insert the hex wrench into the valve stem completely and back out counterclockwise until the valve stem just touches the bead .
3. Replace the valve stem cap to prevent leakage. Tighten it with your fingers and turn it for another 1/6 turn.
4. Repeat steps 1-3 for the liquid side service valve.

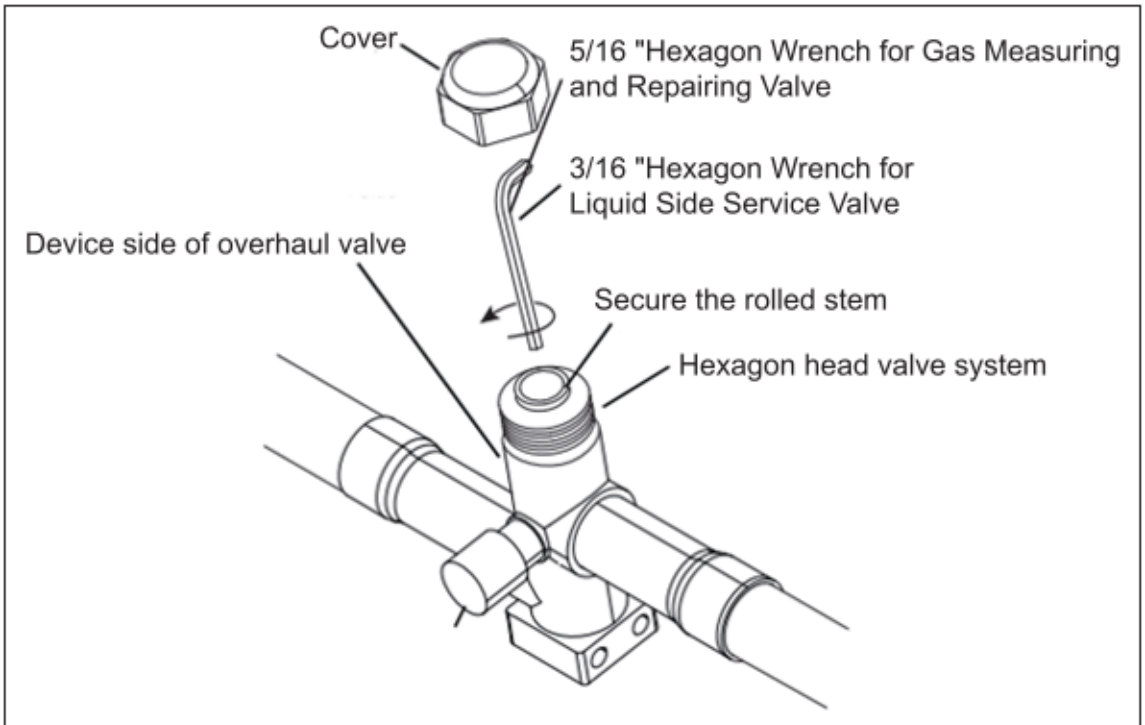



**Figure 10.1**

# 11. Electrical-Low Voltage

## 11.1 Low Voltage Connection Diagram

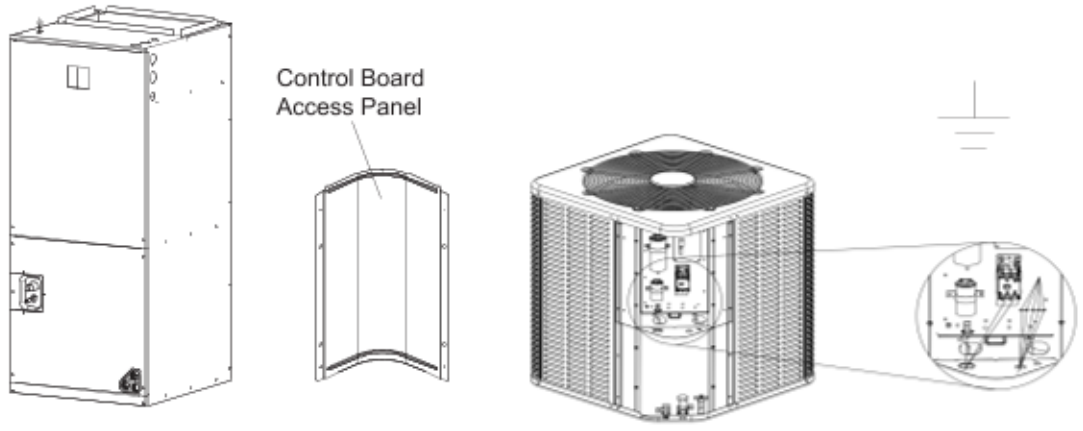



**Figure 11.1 Connection of Low Voltage Device**

## 11.2 Wiring Diagram of Thermostat

- Ensure that the power supply is consistent with the nameplate of the unit.
- The power connection and grounding of the unit must comply with local regulations.
- Low-voltage wiring is the smallest conductor of NO. 22AWG.
- "-----"On-site installation of electrical auxiliary thermal connection
- Single-stage electric auxiliary heating supported by 2H thermostat
- Two-stage electric auxiliary heating supported by 3H thermostat
- W1: The first stage of electric auxiliary heating installed in the indoor unit.
- W2: The second stage of electric auxiliary heating installed in the indoor unit.
- The W signal of the outdoor unit is connected to the electric auxiliary heating or the first-stage electric auxiliary heat.

The dotted line in the following thermostat wiring diagram indicates optional wiring (electric heating). For the wiring of the thermostat, please refer to the user manual of the thermostat.

Terminal B will be connected with the thermostat (O/B) wiring. The reversing valve is energized during heating.

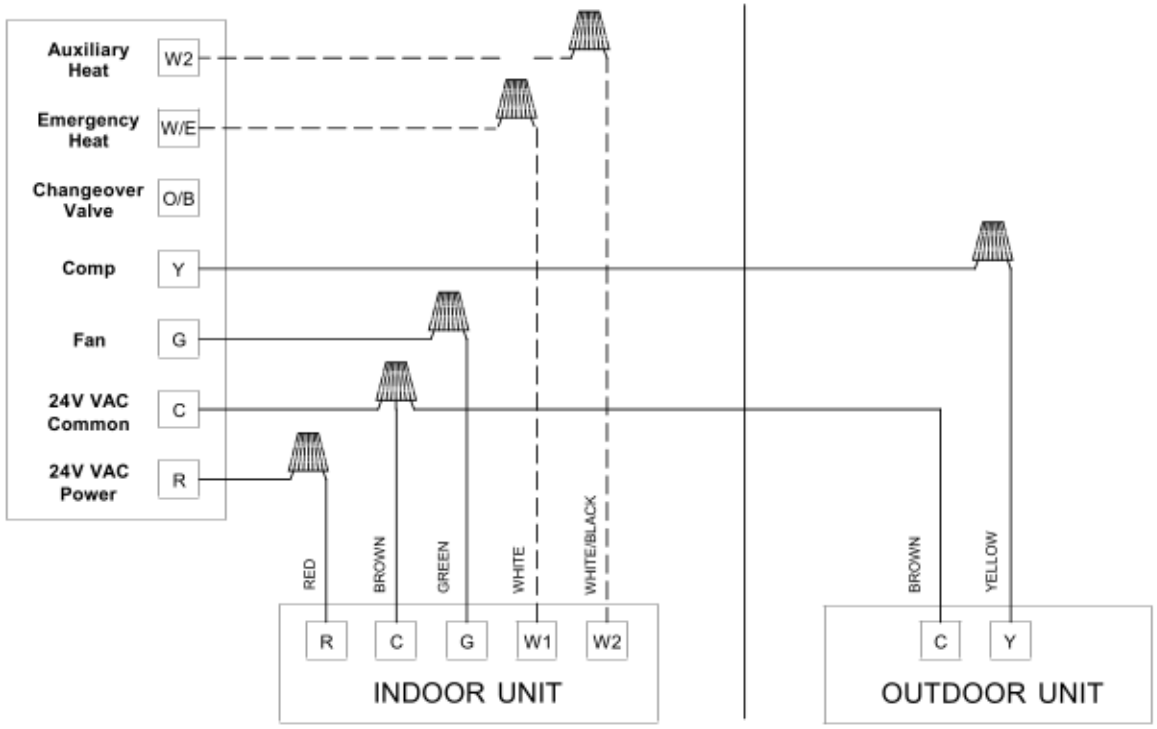



**Figure 11.2 Wiring connection for A/C Systems**

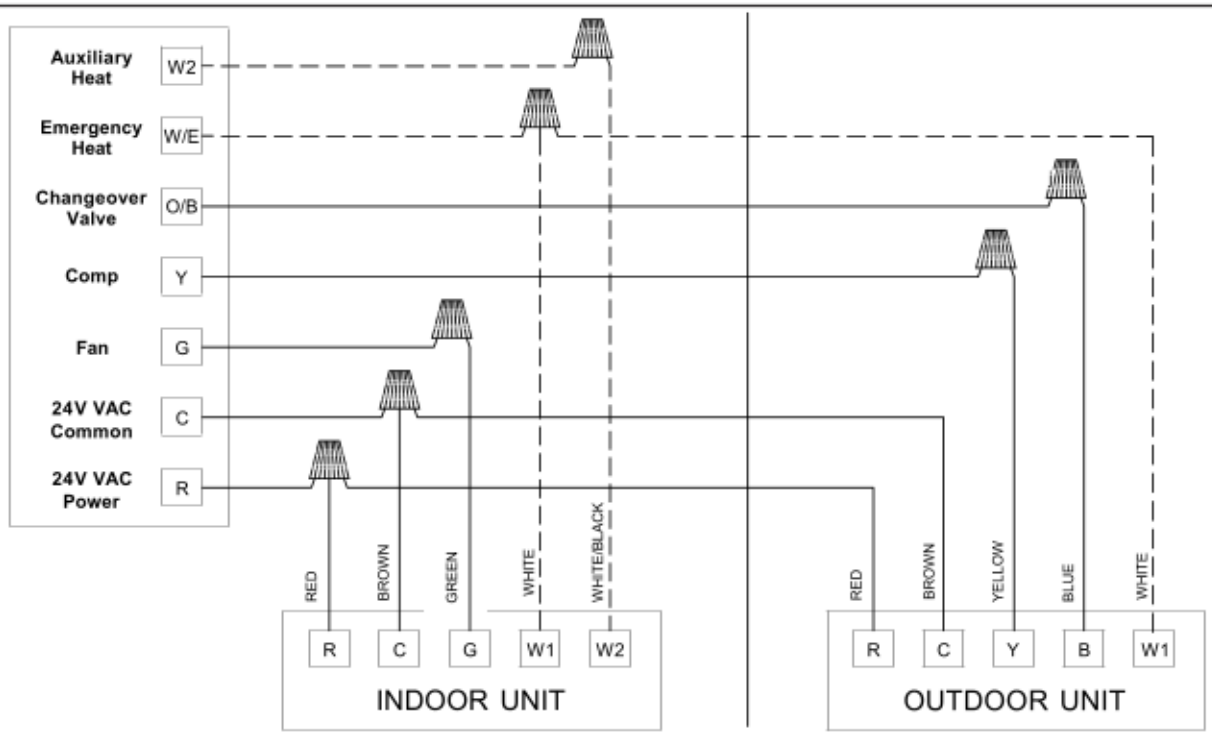



**Figure 11.3 Wiring connection for H/P Systems**

# 12. Electrical-High Voltage

## 12.1 High Voltage Power Supply

Warning: Live electrical parts!

- During the installation, testing, maintenance and troubleshooting of this product, it may be necessary to use live electrical parts. Failure to observe all electrical safety precautions when exposed to live electrical parts may result in death or serious injury.

The high-voltage power supply must match the nameplate of the unit (208/230V, 1PH, 60Hz).

Power supply wiring must comply with national, state and local regulations.

Follow the instructions of the unit wiring diagram located inside the access panel of the control box, and refer to the wiring diagram in this IOM.

## 12.2 High Voltage Isolating Switch

Install a separate disconnect switch on the outdoor unit.
High-voltage wiring must use flexible electrical conduit supplied on site.

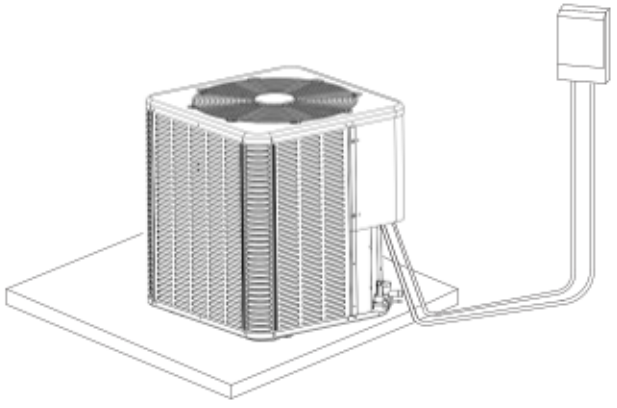


**Figure 12.1**

## 12.3 High Voltage Grounding

Ground the outdoor unit according to the requirements of national, state and local regulations.

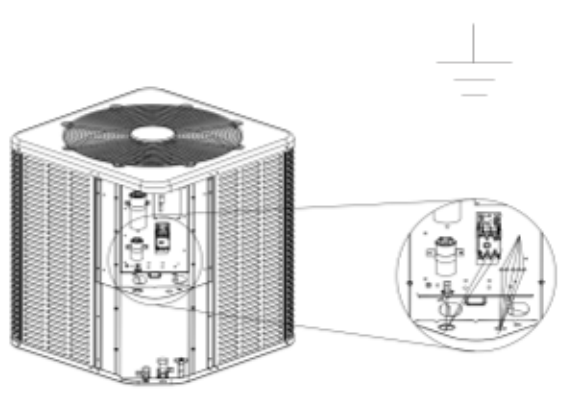


**Figure 12.2**

# 13. Start

## 13.1 System Startup

1. Make sure that parts 7, 8, 9, 10, 11 and 12 have been completed.
2. Set the system thermostat to off.




**Figure 13.1**

3. Turn on the disconnect switch and turn on the power of the indoor unit and outdoor unit.




**Figure 13.2**

4. Set the system thermostat to ON.




**Figure 13.3**

# 14. System Refrigerant Charging Regulation

## 14.1 Charging: Weighing Method

During the initial installation, or when the refrigerant quantity of the updated system is charged, the weighing method is used. When there is no power supply at the site of the unit or the operating conditions (indoor/outdoor temperature) are not within the range verified by Subcooling charging method. All models have a charge factor of 0.28 oz / ft for refrigerant pipe length.



For a 25-ft standard size interconnecting liquid pipe, the factory refrigerant charge of the outdoor unit is sufficient.

**New installation-Calculate the charging amount of connecting pipes larger than 25 ft.**

1. Total length of pipeline (ft) = _____(a)
2. Standard piping setup (ft) =25 (b)
3. (a) minus (b) = _____ (c)
4. Refrigerant multiplier = 0.28 oz/ft (d)
5. Additional refrigerant quantity (c*d) = _____(e)*

* If the line set is less than 25 feet, e=0

**Closed system maintenance-calculate the total filling amount of the system.**

1. Total length of pipeline (ft) = _____(a)
2. Standard piping setup (ft) =25 (b)
3. (a) minus (b) = _____ (c)
4. Refrigerant multiplier = 0.28 oz/ft (d)
5. Additional refrigerant quantity (c*d)= _____(e) *
6. Factory filling quantity (nameplate)= _____(f)
7. Total system charge (e +f) = _____

* If the line set is less than 25 feet, e =0



The only mode approved for verifying system charging is in "forced cooling mode". The outdoor temperature must be between 55°F and 120°F, and the indoor temperature should be between 70°F and 80°F.

## 14.2 Subcooling Charging and Refrigerant Quantity Adjustment in Cooling Mode

1. Check the outdoor ambient temperature.
   Subcooling (cooling mode) is the only recommended charging method when the outdoor ambient temperature is higher than 55°F.
   For outdoor ambient temperature below 55°F, use the weighing charging method.



When the outdoor ambient temperature is higher than 55°F, be sure to return in spring or summer, so as to accurately charge the system in cooling mode.

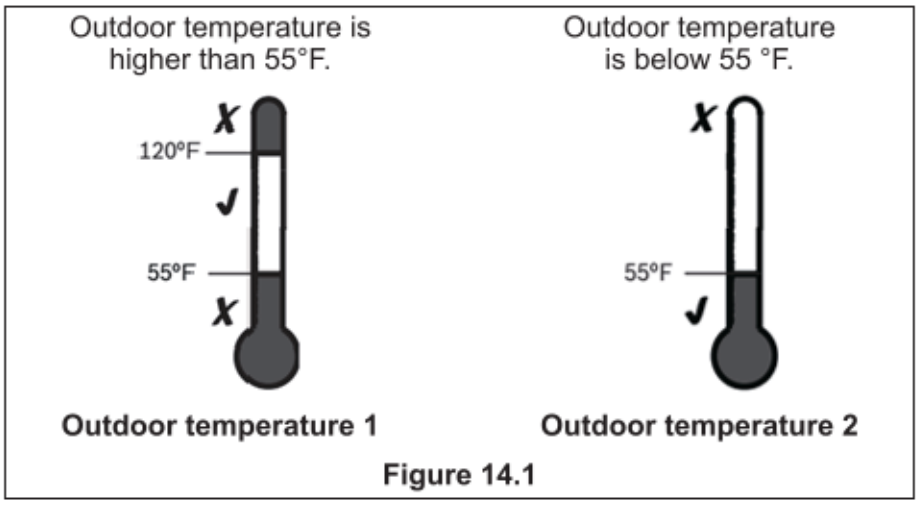



**Figure 14.1**

For best results, the indoor temperature should be kept between 70°F and 80°F during installation.

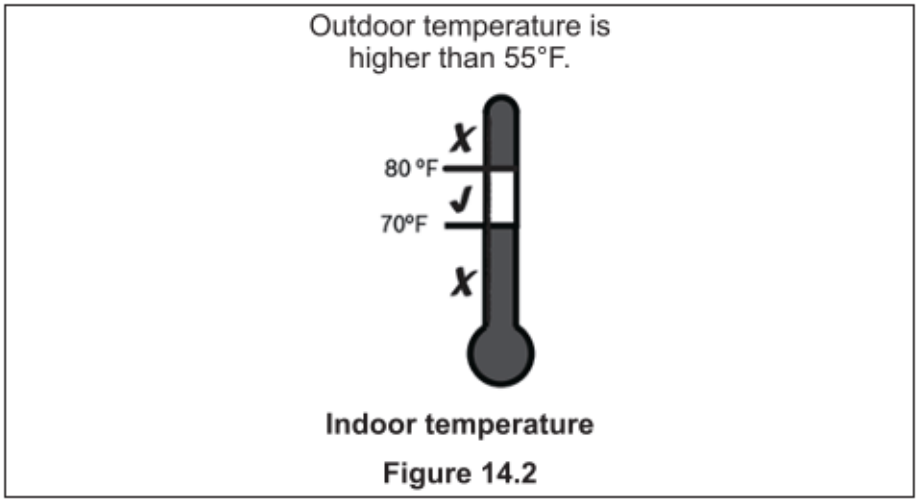



**Figure 14.2**

2. Make sure that parts 7, 8, 9, 10, 11, 12 and 13 have been completed.

# 15. System Operation and Troubleshooting

## 15.1 Control Logic Description

- The system is using universal 24V control.

## 15.2 Sensors

- T3- Outdoor unit coil temperature(Table 15.3)
- T4- Ambient temperature(Table 15.3)
- T5- Compressor exhaust temperature(Table 15.4)
- HP- High pressure switch
- LP- Low pressure switch

## 15.3 Description of Defrosting

- Outdoor unit W terminal will output 24V signal during defrost mode.
- Unit will run defrost mode in below condition:
  1) Unit run in heating mode
  2) Compressor is running.
  3) The defrost mode and cycle time is relate with SW1-2 and SW1-3 dial switch"

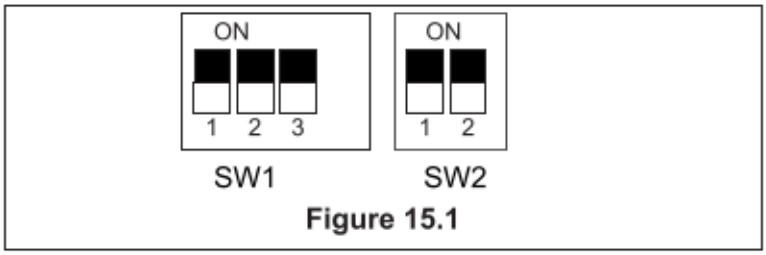



**Figure 15.1**

**Table 15.1**

| Dial switch | SW1-2 | SW1-3 |
|---|---|---|
| OFF | Defrost mode 2 | Cycle time: 60 min |
| ON | Defrost mode 1 | Cycle time: 30 min |

① When SW1-2 is ON, unit will run defrost mode 1 when it meets any below conditions:
Condition 1: When compressor start, unit will record minimum T3 which named T30, and minimum T4 which named T40 during compress start 10-15mins.
When outdoor unit meets below condition, unit will run defrost mode:
a) When T3<0, and compressor run for 40mins;
b) Unit calculate ΔT4=T4-T40(If ΔT4≤2, unit will resultΔT4=0), and T3 + 2 < (T30+ΔT4) keep 30s.
Condition 2: When T3<0, and compressor run for 40mins, and T3<-15℃, unit will defrost.

② When SW1-2 is OFF, unit will run defrost mode 1 when it meets any below conditions:
Condition 1：
a) SW1-3 is ON， and compressor is running, when T3＜-1℃ and keep 30 mins, unit will run defrost.
b) SW1-3 is OFF， and compressor is running, when T3＜-1℃ and keep 60 mins, unit will run defrost.
Condition 2: When unit power on, and compressor first time start, and T3＜-2℃, unit will run defrost.
Condition 3: Condition 2: When unit standby for 2 hours, and T3＜-2℃, unit will run defrost.

4) Quit defrost condition：

① When SW1-2 is ON, unit will quit defrost when it meets any below condition.
Condition 1: Defrost time is last 10 mins.
Condition 2: T3≥ 10℃

② When SW1-2 is OFF, unit will quit defrost when it meets any below condition.
Condition 1: Defrost time is last 10 mins.
Condition 2: T4≥-2℃ and T3≥25℃
Condition 3: Compressor stop
Condition 4: T4＜-2℃ ,T3≥25℃and keep 60s.

## 15.4 Compressor Crankshaft Heater Control Function

The crankshaft heater logic is below:

① Crankshaft heater ON condition:
When unit meet any below condition, crankshaft heater will ON:
Condition 1: Meet 3 conditions at same time below:
a) T5<23℃ or T5 sensor is abnormal.
b) Outdoor unit is in standby mode, and T4 was lower 10℃ before.
c) Outdoor unit stop time ≥4h.
Condition 2:
a) Outdoor unit power on, and T5<23℃；
b) Outdoor unit is in defrost mode， and T5<23℃。

② Crankshaft heater OFF condition
T5≥28℃ and no T5 error

## 15.5 Four-way valve operate condition

Four-way valve will power on in heating mode, and power off in cooling mode.

## 15.6 LED display function of the outdoor unit main PCB and fault table

**Table 15.2**

| Display content | | State description |
|---|---|---|
| No alarm: Green light flashes Red light off | Green light slow flashes | Normal standby |
| | Green light normally on | Normal operation |
| | | |
| System alarm: Red light on Green light flashes | (T3) Temperature sensor fault | Green light flashes 2 times every 8 seconds |
| | (T4) Temperature sensor fault | Green light flashes 9 times every 8 seconds |
| | (T5) Temperature sensor fault | Green light flashes 8 times every 8 seconds |
| | Low pressure alarm | Green light flashes 6 times every 8 seconds |
| | High pressure alarm | Green light flashes 1 times every 8 seconds |
| | (T3)High temperature protection | Green light flashes 10 times every 8 seconds |
| | High exhaust temperature protection | Green light flashes 5 times every 8 seconds |

## 15.7 Troubleshooting of Fault Codes

Warning: Dangerous voltage

- When measuring the resistance, make sure that the power of the unit is turned off and wait for 3 minutes before measuring.

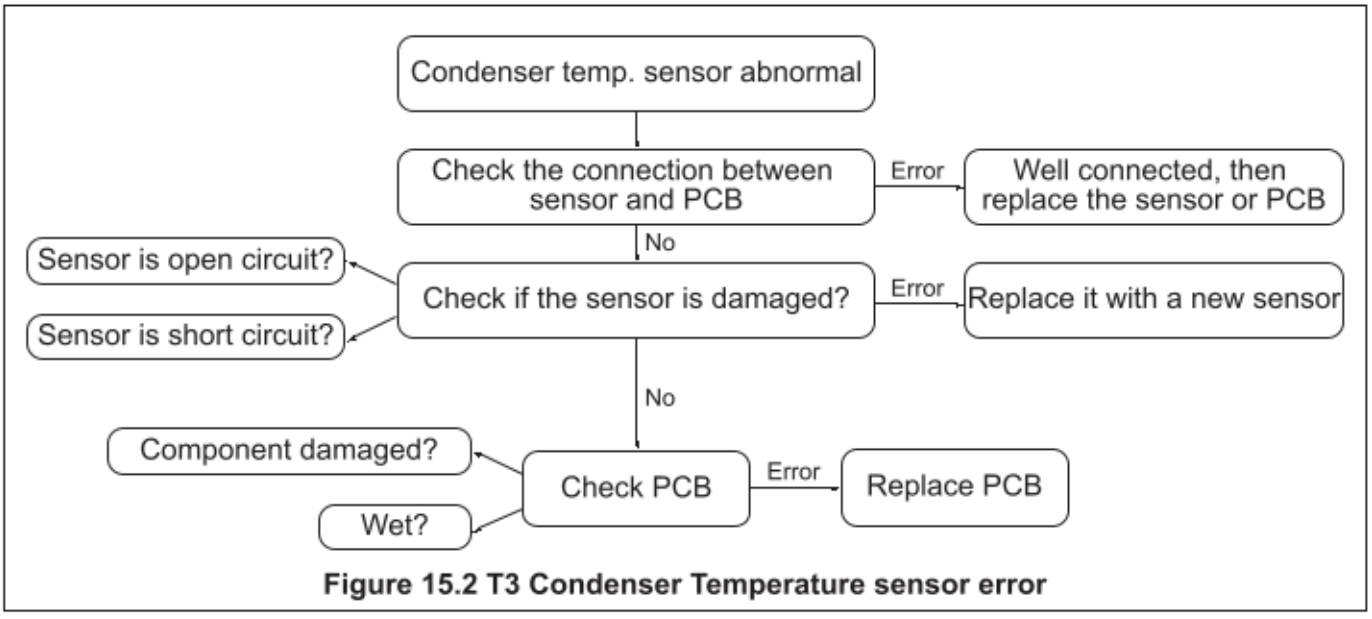



**Figure 15.2 T3 Condenser Temperature sensor error**

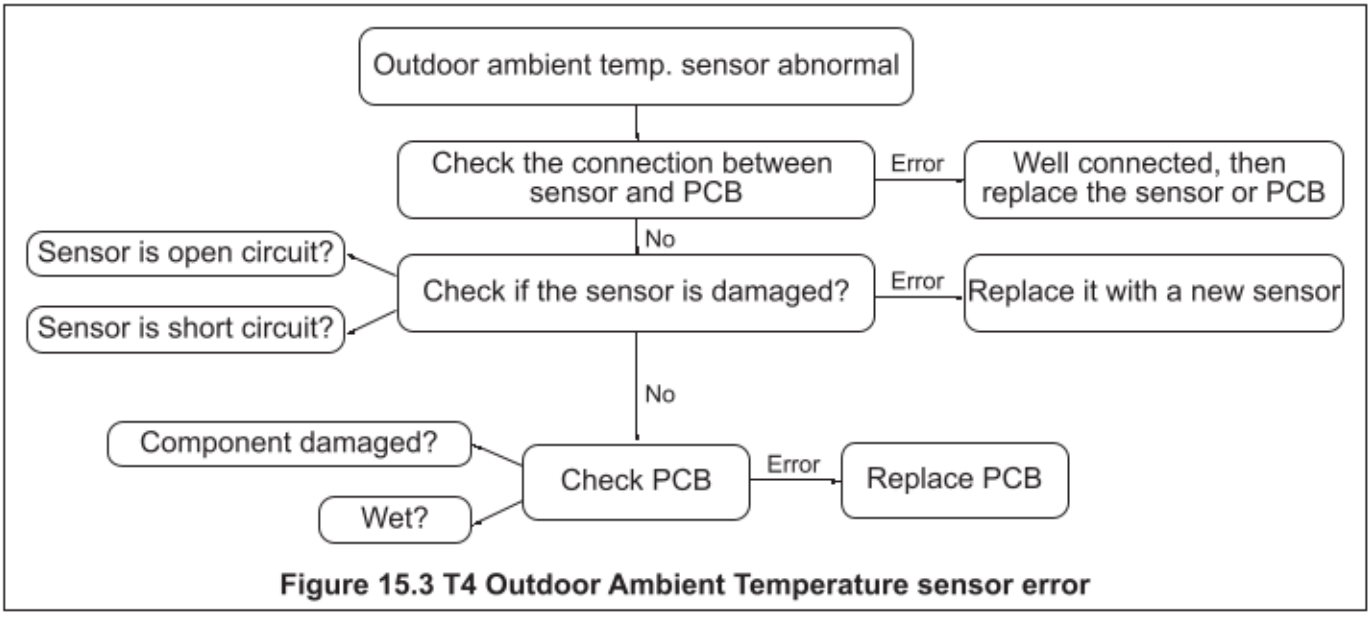



**Figure 15.3 T4 Outdoor Ambient Temperature sensor error**

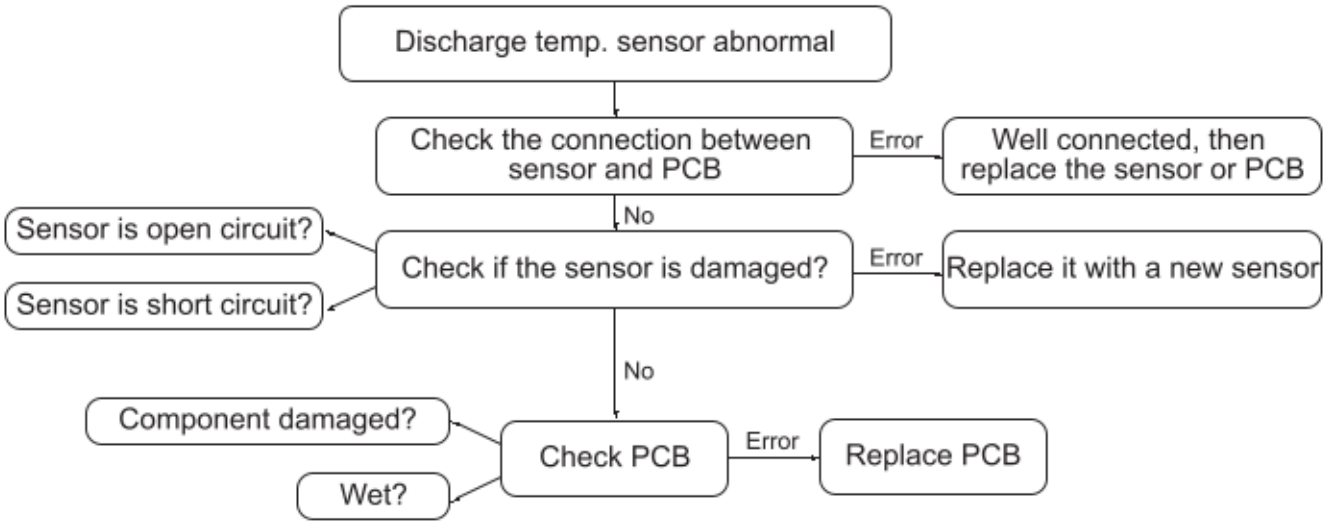



**Figure 15.4 T5 Discharge Temperature sensor error**

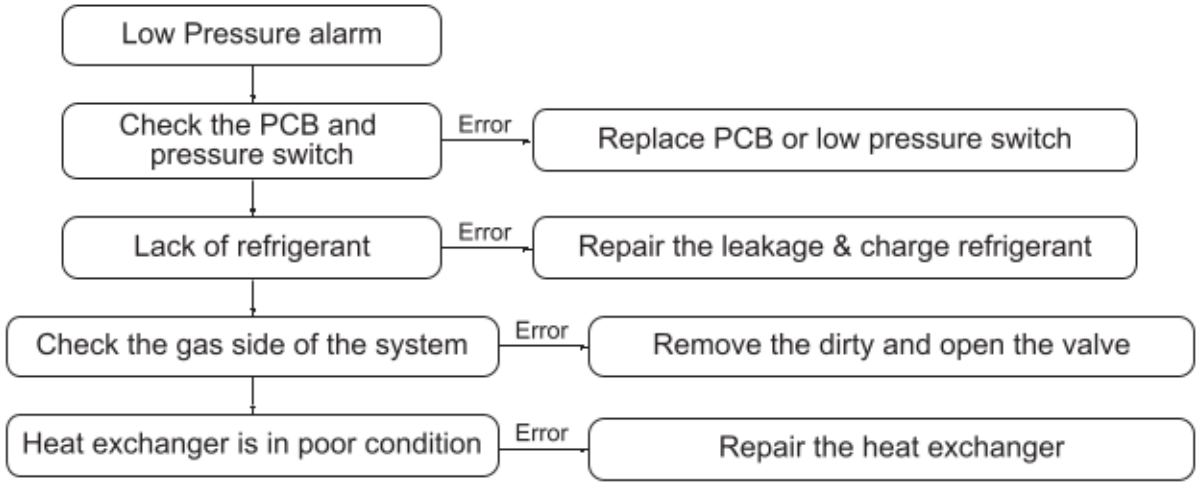



**Figure 15.5 Low Pressure alarm**

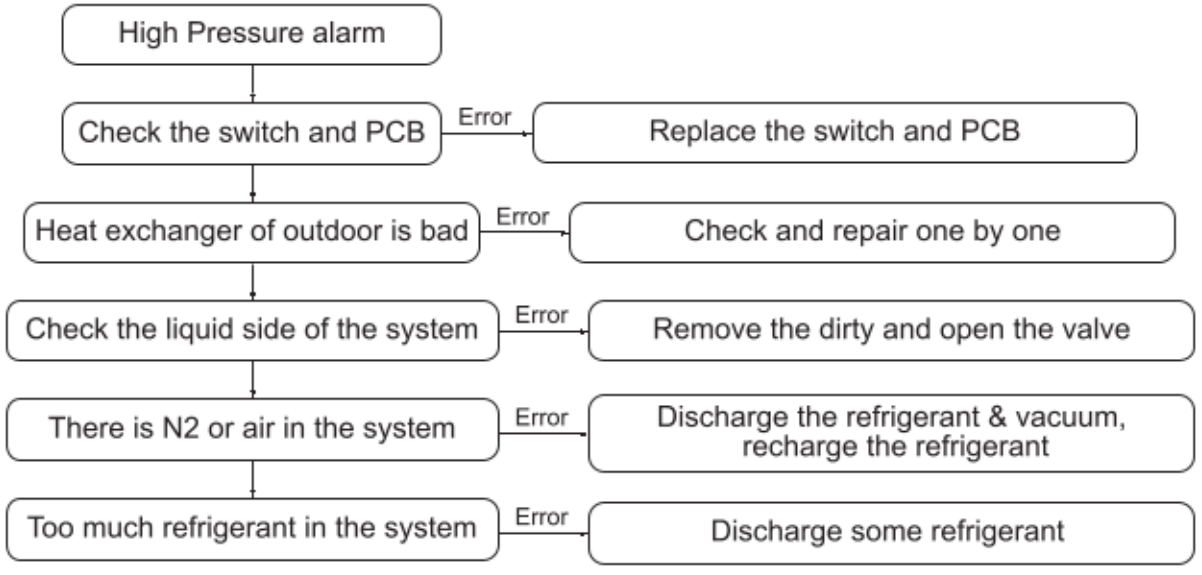



**Figure 15.6 High Pressure alarm**

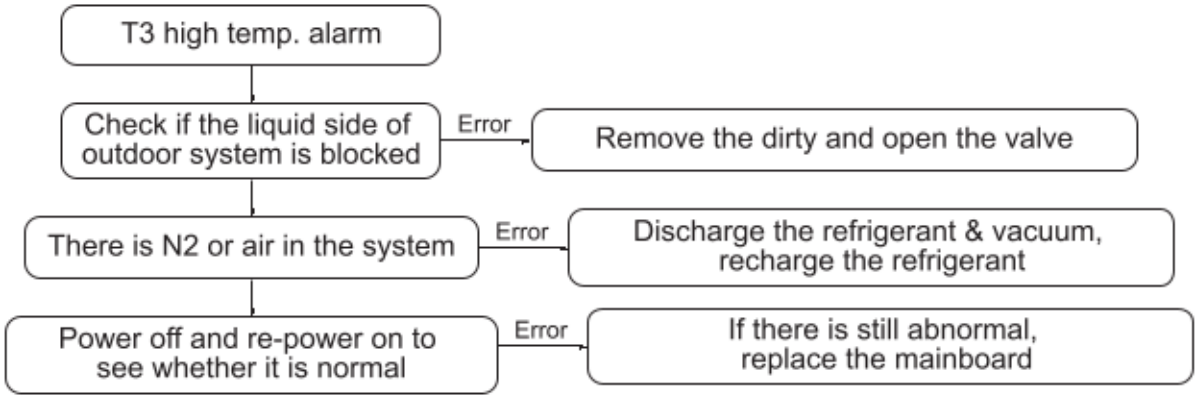



**Figure 15.7 T3 high temperature alarm**

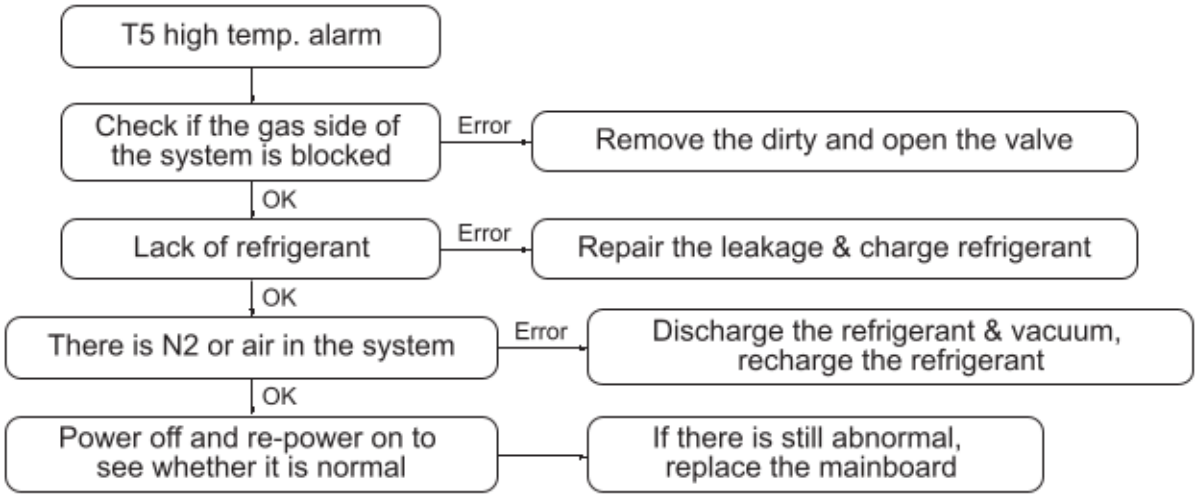
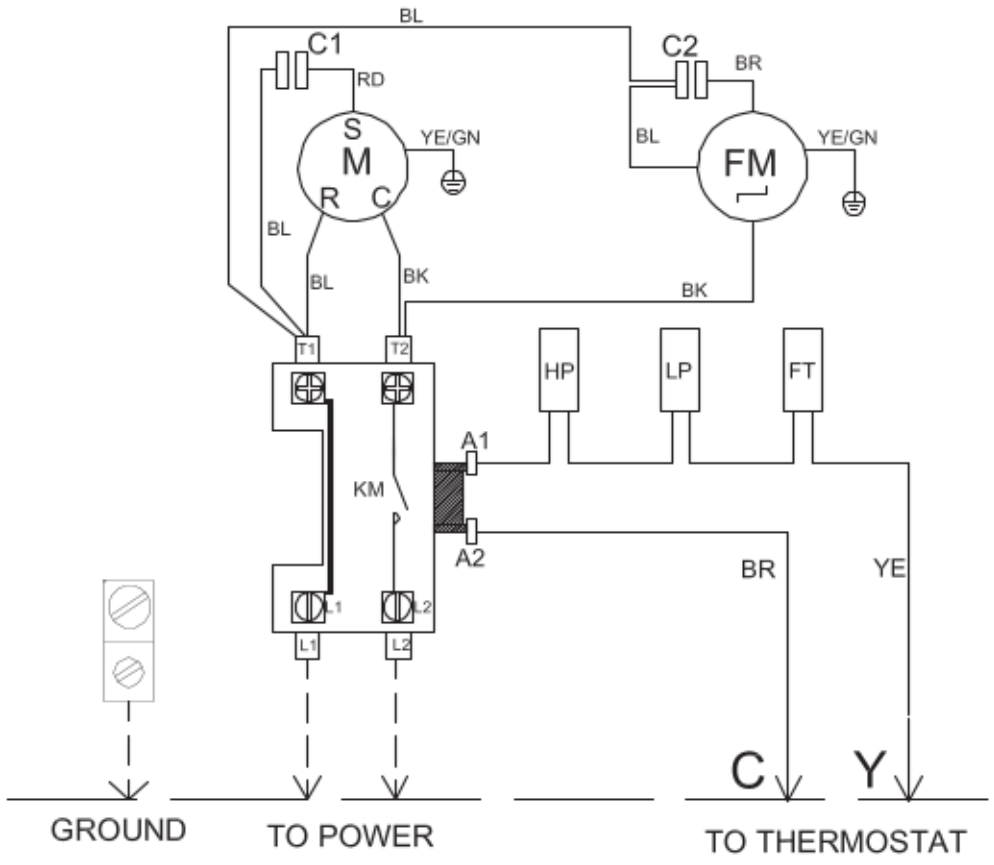



**Figure 15.8 T5 high temperature alarm**

# 16 Wiring Diagram

Applicable for 18K,24K,30K,36K,42K,48k,60K cooling only type



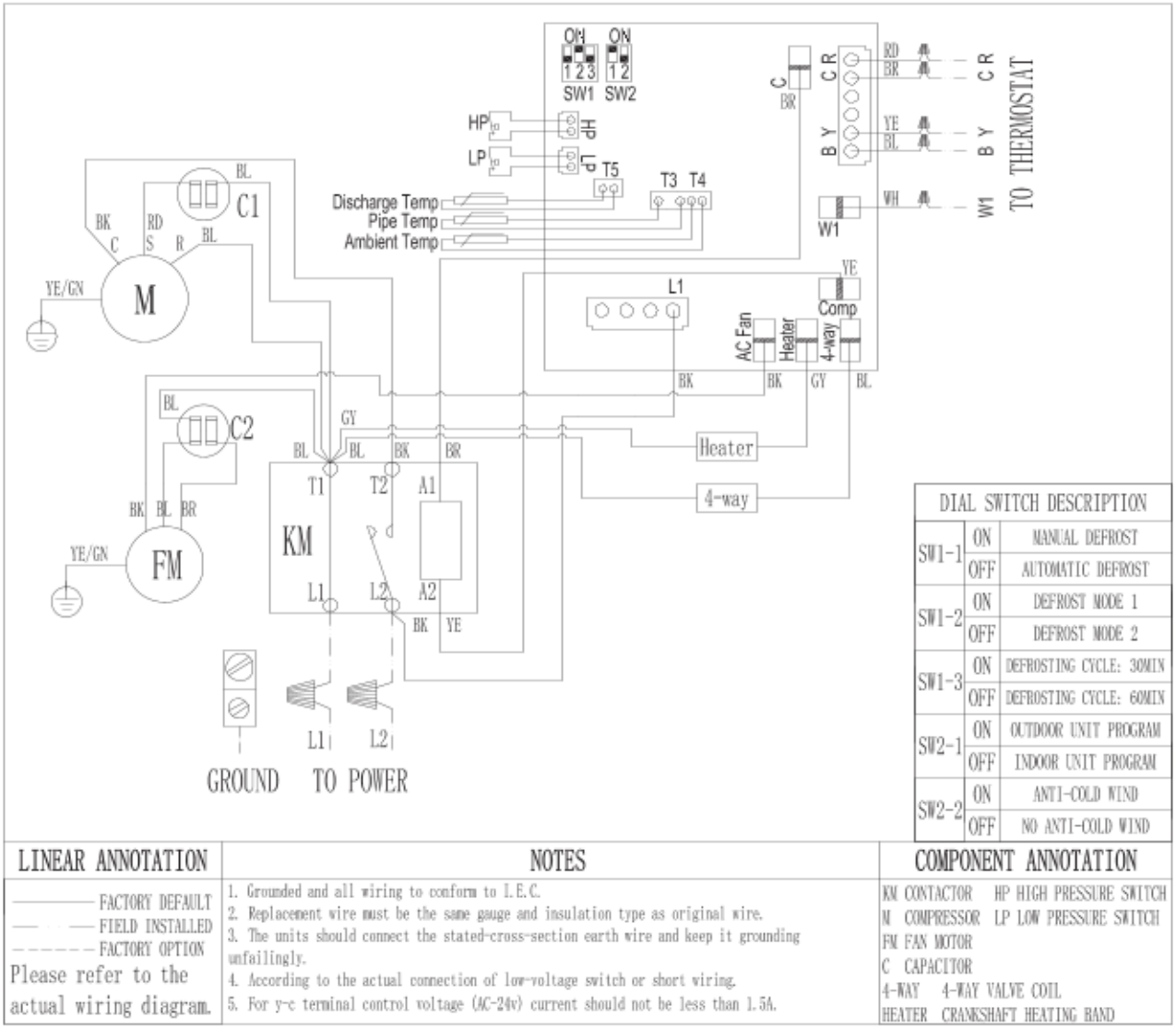

| COMPONENT ANNOTATION | | |
|---|---|---|
| HP | High voltage switch | |
| LP | Low-voltage switch | |
| FT | Exhaust temperature switch | |
| KM | CONTACTOR | |
| M | COMPRESSOR | |
| FM | FAN MOTOR | |

| | |
|---|---|
| NOTES | 1.Grounded and all wiring to conform to I.E.C.<br>2.Replacement wire must be the same gauge and insulation type as original wire.<br>3.The units should connect the stated-cross-section earth wire and keep it grounding unfailingly. |

**NOTE:** *For reference only, the actual wiring diagram shall prevail*

**Figure 16.1 Wiring Diagram for AC Systems**

Applicable for 18K,24K,30K,36K,42K,48K cooling & heating type




| DIAL SWITCH DESCRIPTION | | |
|---|---|---|
| SW1-1 | ON | MANUAL DEFROST |
| | OFF | AUTOMATIC DEFROST |
| SW1-2 | ON | DEFROST MODE 1 |
| | OFF | DEFROST MODE 2 |
| SW1-3 | ON | DEFROSTING CYCLE: 30MIN |
| | OFF | DEFROSTING CYCLE: 60MIN |
| SW2-1 | ON | OUTDOOR UNIT PROGRAM |
| | OFF | INDOOR UNIT PROGRAM |
| SW2-2 | ON | ANTI-COLD WIND |
| | OFF | NO ANTI-COLD WIND |

| LINEAR ANNOTATION | NOTES | COMPONENT ANNOTATION |
|---|---|---|
| ——— FACTORY DEFAULT<br>— — — FIELD INSTALLED<br>- - - - - - FACTORY OPTION<br>Please refer to the actual wiring diagram. | 1. Grounded and all wiring to conform to I.E.C.<br>2. Replacement wire must be the same gauge and insulation type as original wire.<br>3. The units should connect the stated-cross-section earth wire and keep it grounding unfailingly.<br>4. According to the actual connection of low-voltage switch or short wiring.<br>5. For y-c terminal control voltage (AC-24v) current should not be less than 1.5A. | KM CONTACTOR HP HIGH PRESSURE SWITCH<br>M COMPRESSOR LP LOW PRESSURE SWITCH<br>FM FAN MOTOR<br>C CAPACITOR<br>4-WAY 4-WAY VALVE COIL<br>HEATER CRANKSHAFT HEATING BAND |

**NOTE:** *For reference only, the actual wiring diagram shall prevail*

**Figure 16.2 Wiring Diagram for HP Systems**

# 17 Cleaning and Maintenance

## 17.1 Cleaning Precautions

Warning:

- Any maintenance and cleaning of outdoor units can only be carried out by qualified maintenance personnel.
- Any unit maintenance can only be carried out by qualified maintenance personnel.

Caution: Electric shock

- Be sure to turn off the unit and disconnect the power supply before cleaning or maintenance.

Note:

- Do not use chemicals or chemically treated cloth to clean the unit.
- Do not use benzene, paint thinner, polishing powder or other solvents to clean this unit.

Be careful:

- When removing the filter, do not touch the metal parts in the unit. Sharp metal edges can cut you.

## 17.2 Pre-Season Inspection and Maintenance

At the start of each heating or cooling season, do the following:

| | |
|---|---|
|  | Turn off the unit and disconnect the power supply. |
|   | Check for damaged wires, check for leaks. |
|  | Make sure that all air inlets and outlets are not blocked. |

**Table 17.1**

Design, material, performance specifications and components subject to change without notice.