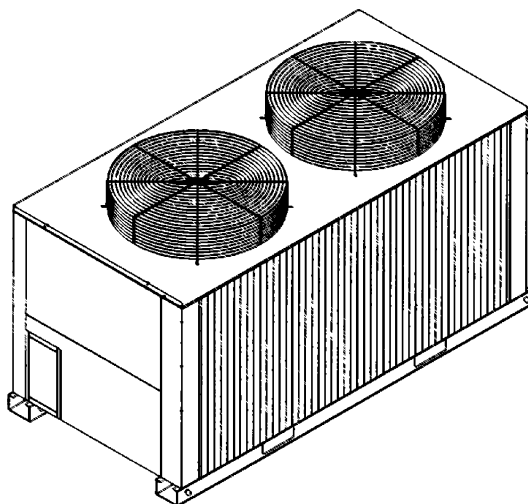


Installation, Start-Up, and Service Instructions



Models

CHS180H000A CHS180L000A

**Split System Heat Pump
Three Phase - 208/230, 460 Volt**

Save This Manual for Future Reference

Installation/ Startup Information

These instructions must be read and understood completely before attempting installation.

WARNING

Installation or repairs made by unqualified persons can result in hazards to you and others. Installation **MUST** conform with local building codes or, in the absence of local codes, with the the National Electrical Code NFPA 70/ANSI C1-1999 or current edition and Canadian Electrical Code Part 1 CSA C.22.1.

The information contained in this manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.

Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

After uncrating unit, inspect thoroughly for hidden damage. If damage is found, notify the transportation company immediately and file a concealed damage claim.

Top skid assembly should be left in place until after the unit is rigged into its final location.

CAUTION

Improper installation, adjustment, alteration, service or maintenance can void the warranty.

The weight of the condensing unit requires caution and proper handling procedures when lifting or moving to avoid personal injury. Use care to avoid contact with sharp or pointed edges.

Safety Precautions

1. Always wear safety eye wear and work gloves when installing equipment.
2. Never assume electrical power is disconnected. Check with meter and disconnect.
3. Keep hands out of fan areas when power is connected to equipment.
4. R-22 causes frost-bite burns.
5. R-22 is toxic when burned.

Locating The Outdoor Unit:

Check local codes covering zoning, noise, platforms.

If practical, avoid locating next to fresh air intakes, vent or windows. Noise may carry into the openings and disturb people inside.

Placement of the unit should be in a well drained area or unit must be supported high enough so runoff will not enter the unit.

Do not locate where heat, lint or exhaust fumes will be discharged on unit (as from dryer vents).

Roof top installations are acceptable providing the roof will support the unit and provisions are made for water drainage and the noise or vibration through the structure.

Do not install the unit in a recessed or confined area where recirculation of discharge air may occur.

Allow sufficient space for airflow clearance, wiring, refrigerant piping, and servicing unit.

Figure 1

CHS180 UNIT DIMENSIONS and CLEARANCES

Unit	Total Weight		Corner 1		Corner 2		Corner 3		Corner 4	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
CHS180	803	365	158	72	243	110	244	111	158	72

NOTE: Recommended service clearances are as follows

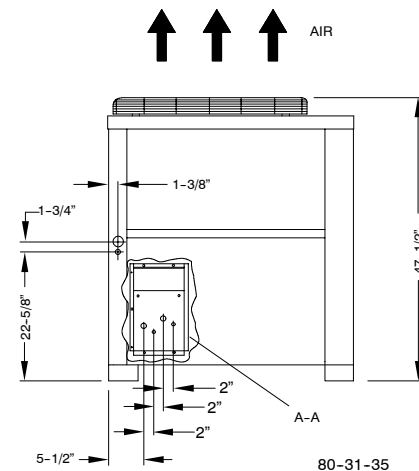
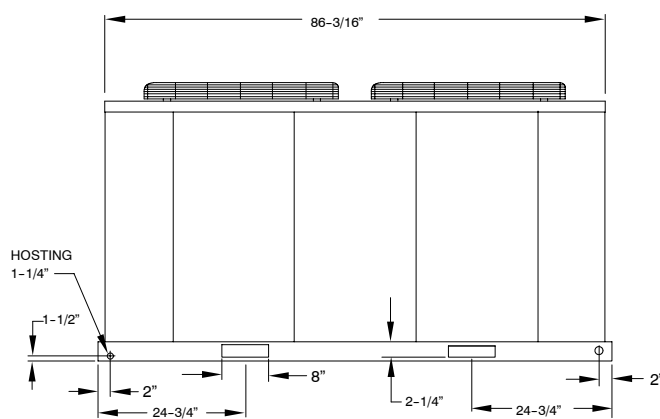
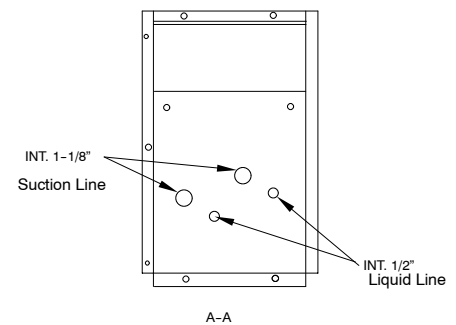
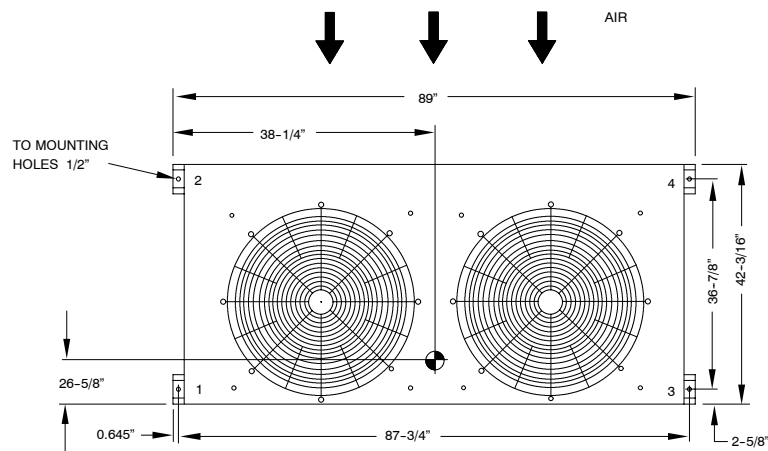
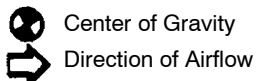
(local codes or jurisdictions may prevail):

Side (compressor) - 3-1/2 ft. (1067 mm)

Side (opposite compressor) - 3 ft. (914 mm)

Ends - 2 ft. (616 mm)

Top - 5 ft. (1524 mm)



Rig and Mount the Unit:

CAUTION

Be sure unit panels are securely in place prior to rigging.

RIGGING – See Figure 2. These units are designed for overhead rigging. Refer to rigging label for preferred rigging method. Spreader bars are not required if top crating is left on unit. All panels must be in place when rigging. As further protection for coil faces, plywood sheets may be placed against sides of unit, behind cables. Run cables to a central suspension point so that angle from the horizontal is not less than 45 degrees. Raise and set unit down carefully.

If it is necessary to roll the unit into position, mount the unit on field-supplied rails placed lengthwise under the unit using a minimum of 3 rollers. Apply force to the rails, not the unit. If the unit is to be skidded into position, place it on a large pad and drag it by the pad. Do not apply any force to the unit.

Raise from above to lift unit from the rails or pad when unit is in final position.

After unit in position, remove all shipping materials and top crating.

NOTE: Before mounting unit, remove holddown brackets and release skid. If conditions or local codes require unit to be fastened to pad, use the mounting holes in the base rails.

Clearances:

Locate unit so that outdoor coil (condenser) airflow is unrestricted on all sides and above. See Figure 1 for unit clearances, weight, and clearance data.

Unit Support:

The unit must be level, and supported above grade by beams, platform or a pad. Platform or pad can be of open or solid construction but should be of permanent materials such as concrete, bricks, blocks, steel or pressure treated timbers approved for ground contact. Refer to Unit Clearances and weights to help determine size of supports etc. Soil conditions should be considered so the platform or pad does not shift or settle excessively and leave the unit only partially supported.

CAUTION

Inadequate support could cause excessive vibration and noise or binding and stress on refrigerant lines resulting in equipment failure.

To minimize vibration or noise transmission, it is recommended that supports not be in contact with the building structure. However, slabs on grade constructions with an extended pad are normally acceptable.

A. Ground Level Installation:

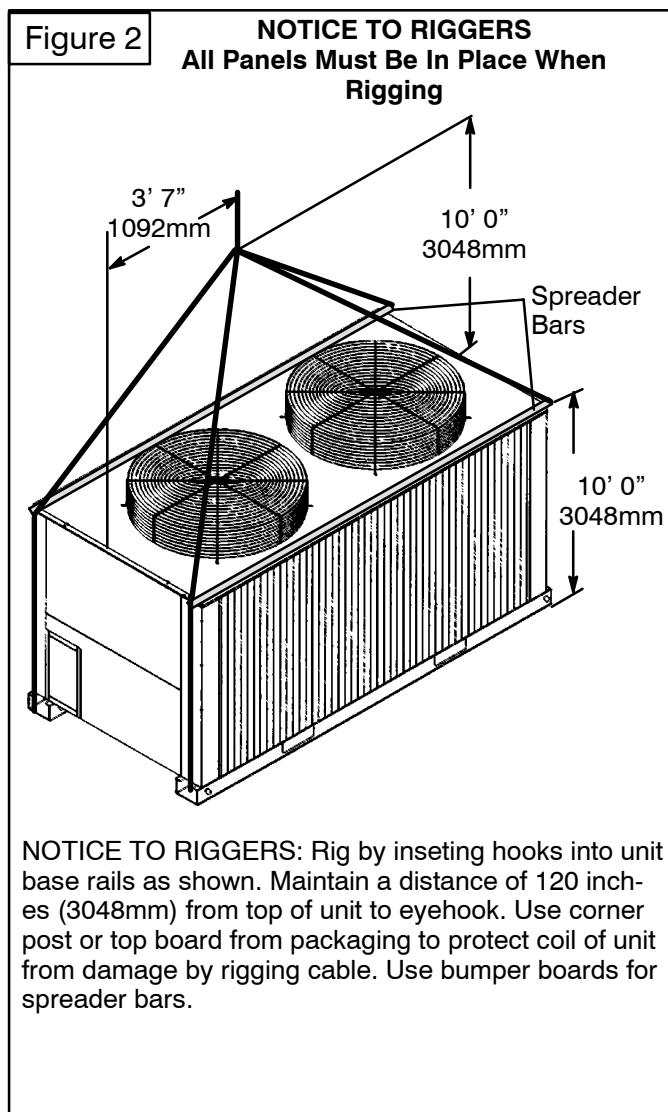
If beams or an open platform are used for support it is recommended that the soil be treated or area be graveled to retard the growth of grasses and weeds.

B. Roof Top Installation:

This type of installation is not recommended on wood frame structures where low noise levels are required.

Supporting structure or platform for the unit must be level. If installation is on a flat roof the unit should be 4 inches (10cm.) above roof level. Four by four posts placed over a load bearing wall make a suitable mounting platform.

If possible, place the unit over one or more load bearing walls. If there are several units, mount them on platforms that are self-supporting and span load bearing walls. These suggestions are to minimize noise and vibration transmission through the structure.



Installing Refrigerant Lines

Complete Refrigerant Piping Connections

Refrigerant lines must be carefully designed and constructed to ensure equipment reliability and efficiency.

Line length, pressure drop, compressor oil return, and vertical separation are several of the design criteria that must be evaluated. See Table 1.

IMPORTANT: Piping must be properly sized and installed for the system to operate efficiently.

CHECK VERTICAL SEPARATION – If there is any vertical separation between the indoor and outdoor units, check to ensure that the separation is within allowable limits. Relocate equipment if necessary. See Table 2.

SIZE REFRIGERANT LINES – Consider the length of the piping required between the outdoor and indoor units. The maximum allowable line length is 100 ft (30.5 m). See Table 1. Refrigerant suction piping should be insulated.

Carefully evaluate any vapor risers at minimum load conditions to ensure proper compressor oil return. If the indoor unit is above the outdoor unit, the riser will function as a hot gas riser. If the outdoor unit is above the indoor unit, the riser is a suction riser. Use a reduced diameter riser design and construct a double riser if necessary.

Table 1 - Refrigerant Piping Sizes								
Unit	Linear Length of Interconnecting Piping - Ft. (mm)							
	0 - 25 (0 - 7.5)		25 - 50 (7.5 - 15)		50 - 75 (15 - 23)		75 - 100 (23 - 30)	
	Line Size (in. OD)							
	L	S	L	S	L	S	L	S
	CHS180	1/2	1-1/8	1/2	1-1/8	1/2	1-1/8	1/2

LEGEND

L – Liquid Line, S – Suction Line

*Maximum length of interconnecting pipe is 100 ft (30.5 m).

NOTES:

- Pipe sizes are based on a 2° F (1° C) loss for liquid and suction lines.
- Pipe sizes are based on the maximum linear length, shown for each column, plus a 50% allowance for fittings.
- Charge units with R-22 in accordance with unit installation instructions.
- Maximum line length must not exceed 100 ft (30.5 m).

Table 2 - Max. Vertical Separation Between Indoor & Outdoor Units		
Unit	Unit Evap.	Distance ft (m)
	Above Unit Evap.	
CHS180	BHC180	60 (18.3)

INSTALL FILTER DRIER(S) AND MOISTURE INDICATOR(S) – Every unit should have a filter drier and liquid-moisture indicator (sight glass). In some applications, depending on space and convenience requirements, it may be desirable to install 2 filter driers and sight glasses. One filter drier and sight glass may be installed at A locations in Fig. 3. Or, 2 filter driers and sight glasses may be installed at B locations.

Select the filter drier for maximum unit capacity and minimum pressure drop. Complete the refrigerant piping from indoor unit to outdoor unit before opening the liquid and suction lines at the outdoor unit.

WARNING

Recover R-22 holding charge before removing runaround liquid piping loop. Failure to recover holding charge before removing piping loop could result in equipment damage and severe injury.

MAKE PIPING CONNECTIONS

- Open service valves in sequence:
 - Discharge service valve on compressor.
 - Suction service valve on compressor.
 - Liquid line valve.
- Remove 1/4 -in. flare cap from liquid valve Schrader port.
- Attach refrigerant recovery device and recover holding charge.
- Remove runaround loop.
- Connect system liquid line from liquid connection of outdoor unit(CHS) to indoor unit liquid line connections. Select proper field-supplied bi-flow filter driers and install in the liquid line. See Fig. 2. Install a field-supplied liquid moisture indicator between the filter drier(s) and the liquid connections on the indoor unit. Braze or silver alloy solder all connections.

Pass nitrogen or other inert gas through piping while making connections to prevent formation of copper oxide. (Copper oxides are extremely active under high temperature and pressure. Failure to prevent collection of copper oxides may result in system component failures.)

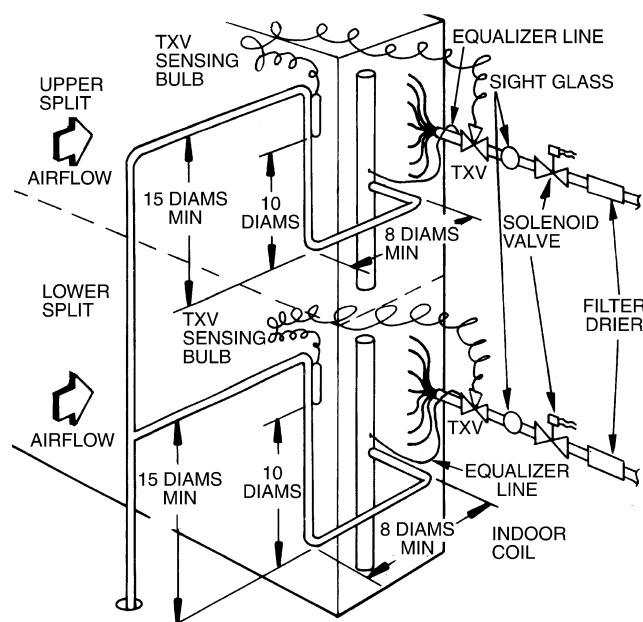
VAPOR LINE PIPING PROCEDURE – Connect system vapor line to the vapor line stub on the outdoor unit and the vapor stubs on the indoor unit. At the indoor unit, construct vapor piping branches as shown in Fig. 3 for good mixing of the refrigerant leaving the indoor coil during cooling. This will ensure proper TXV (thermostatic expansion valve) bulb sensing. Where vapor line is exposed to outdoor air, line must be insulated. See Table 3 for insulation requirements.

Table 3 - Insulation for Vapor Line Exposed to Outdoor Conditions

Length of Exposed Vapor Line*		Insulation Thickness	
feet	meter	inches	mm
10	3	3/8	10
25	8	1/2	13
35	11	3/4	19
50	15	3/4	19

*Recommended vapor line insulation for piping exposed to outdoor conditions to prevent loss of heating during heating cycle. When vapor line goes through interior spaces, insulation should be selected to prevent condensation on cooling cycle. Heating capacity should be reduced 1000 Btuh (295 W) if over 35 ft (11 m) of vapor line with 3/4 in. (19 mm) insulation is exposed to outdoor conditions.

+Closed cell foam insulation with a thermal conductivity of: 0.28 Btu • in./ft 2 • h • °F (0.04W/m • °C).

Fig. 3 — Face-Split Coil Suction and Liquid Line Piping (Typical)**LEGEND**

TXV — Thermostatic Expansion Valve

NOTE: Component location arrangement shown for field installation of sight glasses, solenoid valves, filter driers, and TXV sensing bulbs. The TXVs and equalizer lines are factory installed.

Electrical Wiring

WARNING

Electrical Shock Hazard.

Shut off electric power at fuse box or service panel before making any electrical connections.

Failure to shut off electric power can result in, property damage, personal injury and/or death.

POWER WIRING - Electrical characteristics of available power supply and power supply tolerances must agree with nameplate rating. Phase imbalance must not exceed 2%. Operation of unit on improper supply voltage or with excessive phase imbalance constitutes abuse and is not covered by warranty. See Fig. 4 to determine phase imbalance.

Unit is factory wired for voltage shown on nameplate. Provide adequate fused disconnect switch within sight from unit and readily accessible from unit, but out of the reach of children. Lock switch open (off) to prevent power from being turned on while unit is being serviced. Disconnect switch, fuses, and field wiring must comply with national and local code requirements.

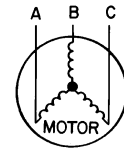
Route power wires through opening in unit end panel to connection in unit control box as shown on unit label diagram. Unit must be grounded.

Fig. 4 Determining Phase Imbalance

Unbalanced 3-Phase Supply Voltage

Never operate a motor where a phase imbalance in supply voltage greater than 2%. Use the following formula to determine the percent voltage imbalance.

EXAMPLE: Supply voltage is 460-3-60.



$$AB = 452 \text{ v}$$

$$BC = 464 \text{ v}$$

$$AC = 455 \text{ v}$$

$$\begin{aligned} \text{Average Voltage} &= \frac{452 + 464 + 455}{3} \\ &= \frac{1371}{3} \\ &= 457 \end{aligned}$$

Determine maximum deviation from average voltage.

$$(AB) 457 - 452 = 5 \text{ V}$$

$$(BC) 464 - 457 = 7 \text{ V}$$

$$(AC) 457 - 455 = 2 \text{ V}$$

Maximum deviation is 7 v.

Determine percent voltage imbalance.

$$\begin{aligned} \% \text{ Voltage Imbalance} &= 100 \times \frac{7}{457} \\ &= 1.53\% \end{aligned}$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

If unit will be operating at 208-3-60 power, remove the wire from the transformer primary connection labelled "230" and move it to the connection labelled "208". See Fig. 5. For 460v wiring and details, see Fig. 6.

CONTROL CIRCUIT WIRING - Control voltage is 24 v. See unit label diagram for field-supplied wiring details. Route control wires through opening in unit end panel to connection in unit control box.

A crankcase heater is wired in the control circuit so it is always operable as long as power supply disconnect is on, even if any safety device is open or unit stop/start switch is off.

Fig. 5	208/230 Volt Wiring Details
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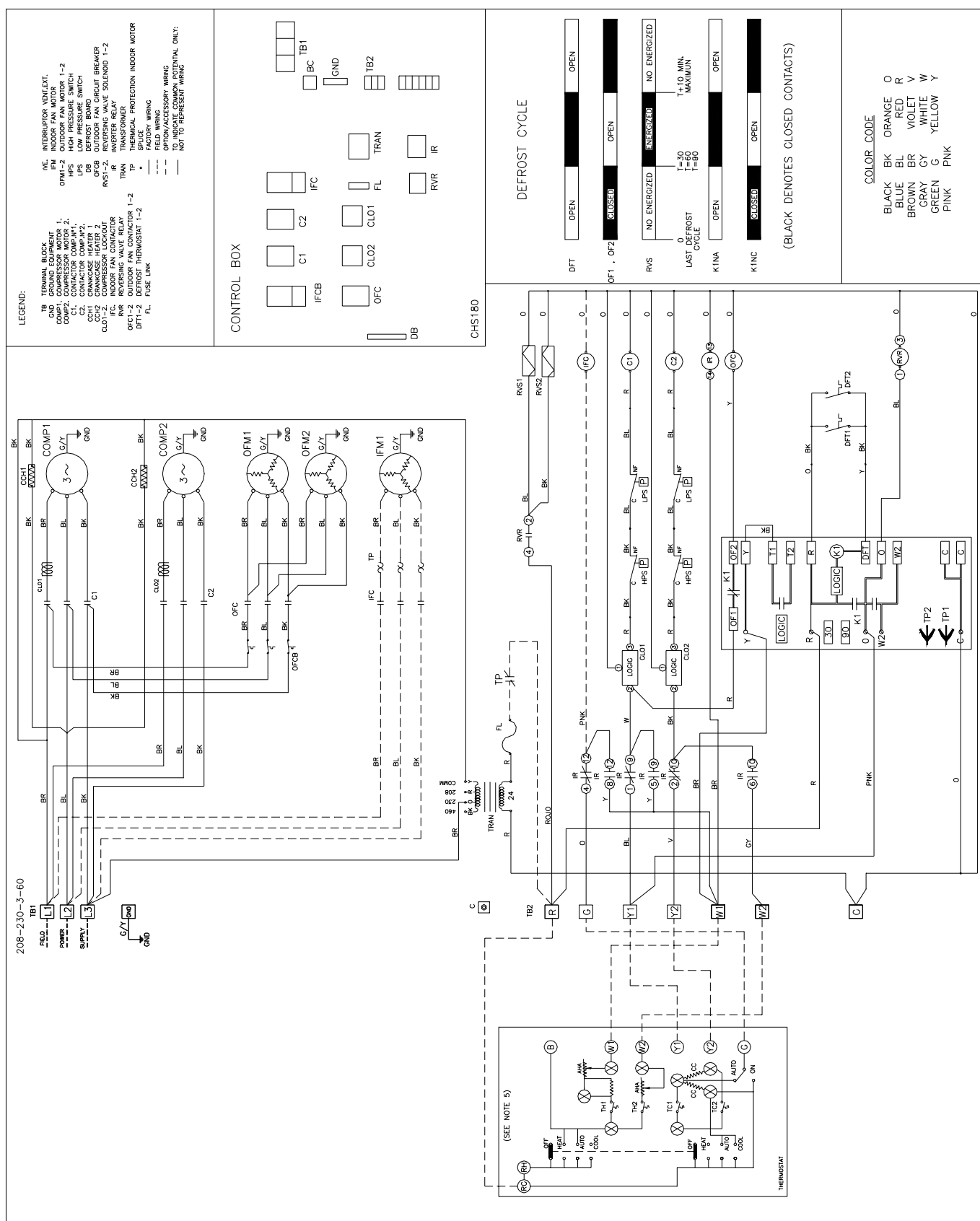
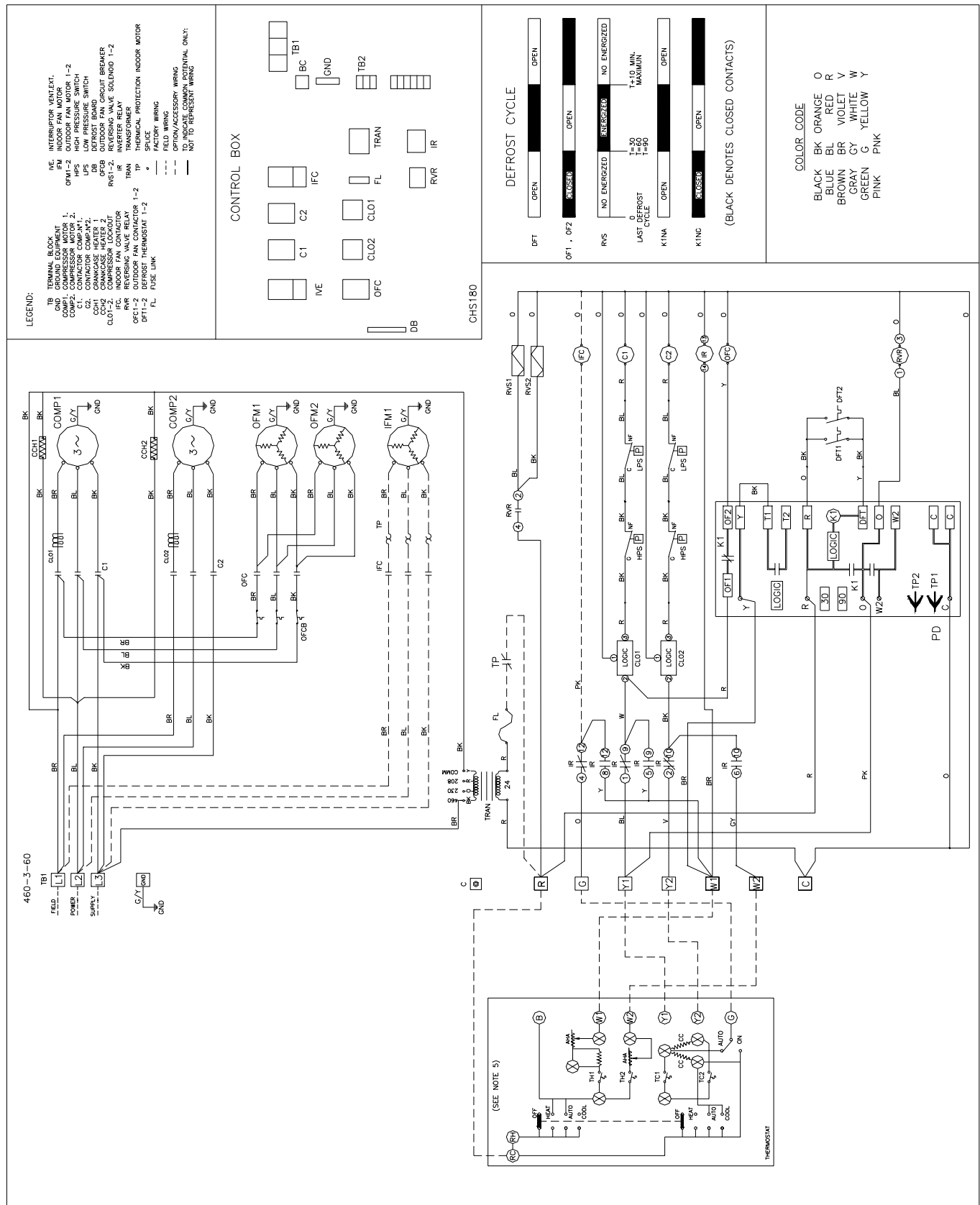


Fig. 6 460 Volt Wiring Details



Pre-Start-Up

CAUTION

Do not attempt to start the condensing unit, even momentarily, until the following steps have been completed. Compressor damage may result.

System Check

1. Check all air handler(s) and other equipment auxiliary components. Consult the manufacturer's instructions regarding any other equipment connected to the condensing unit. If unit has field-installed accessories, be sure all are properly installed and correctly wired. If used, airflow switch must be properly installed.
2. Backseat (open) compressor suction and discharge valves. Now close valves one turn to allow refrigerant pressure to reach test gages.
3. Open liquid line service valve.
4. Check tightness of all electrical connections.
5. Be sure unit is properly leak checked, dehydrated, and charged.
6. Electrical power source must agree with nameplate rating.
7. Crankcase heater must be firmly locked into compressor crankcase. Be sure crankcase is warm (heater must be on for 24 hours before starting compressor).

Start-Up

Compressor crankcase heater must be on for 24 hours before start-up. After the heater has been on for 24 hours, the unit can be started.

COMPRESSOR ROTATION - On 3-phase units with scroll compressors, it is important to be certain compressor is rotating in the proper direction. To determine whether or not compressor is rotating in the proper direction:

1. Connect service gages to suction and discharge pressure fittings.
2. Energize the compressor.
3. The suction pressure should drop and the discharge pressure should rise, as is normal on any start-up.

If the suction pressure does not drop and the discharge pressure does not rise to normal levels:

1. Note that the condenser fan is probably also rotating in the wrong direction.
2. Turn off power to the unit, tag disconnect.
3. Reverse any two of the unit power leads.

4. Reapply power to the compressor, verify correct pressures.

The suction and discharge pressure levels should now move to their normal start-up levels.

COMPRESSOR OVERLOAD - This overload interrupts power to the compressor when either the current or internal motor winding temperature becomes excessive, and automatically resets when the internal temperature drops to a safe level.

This overload may require up to 60 minutes (or longer) to reset. If the internal overload is suspected of being open, disconnect the electrical power to the unit and check the circuit through the overload with an ohmmeter or continuity tester.

START UNIT - The field disconnect is closed, the fan circuit breaker is closed, and the space thermostat is set above ambient so that there is no demand for cooling. Only the crankcase heater will be energized.

Next, close the compressor circuit breaker and then reset space thermostat below ambient so that a call for cooling is ensured.

NOTE: Do not use circuit breaker to start and stop the compressor except in an emergency.

After starting, there is a delay of at least 3 seconds before compressor starts.

Refrigerant Charge

The Condensing unit is pressurized with a holding charge of refrigerant. Recover R-22 holding charge into the system.

Add charge amount as required for the total system, See Table 4.

Unit must be charged in the Cooling Mode only.

Table 4 - Refrigerant Charge		
Circuit	Circuit 1	Circuit 2
Refrigerant Type	R-22	
Operating Charge (lb. oz.)*	22 - 4	21 - 8

*The charge amount is related to a length of 25ft. used in liquid and suction lines. Note: Add or remove the refrigerant charge (.083lb/ft) when liquid and suction lines have different lengths than 25ft.

FINAL CHECKS - Ensure all safety controls are operating, control panel covers are on, and the service panels are in place.

Compressor crankcase heater must be on for 24 hours before start-up. To energize the crankcase heater, set the space thermostat above the ambient temperature so there is no demand for cooling. Close the field disconnect.

The crankcase heater is now energized.

After the heater has been on for 24 hours, the unit can be started. If no time has elapsed since the preliminary charge step was completed, it is unnecessary to wait the 24-hour period.

START UNIT - Close the field disconnect and set the Space thermostats above ambient temperature so that there is no demand for cooling. Only the crankcase heaters will be energized.

Place thermostat selector switch at COOL and set space set point below ambient temperature so that a call for cooling is ensured. If compressor does not start, set thermostat lower.

CHECK HEATING CYCLE OPERATION - Place thermostat selector switch at HEAT and reset the space set point above ambient temperature so that a call for heating is ensured. Compressor will start. Observe system operation.

Operating Sequence

Check that the power is on and the thermostat is set at SYSTEM AUTO, FAN AUTO, and desired temperature.

Cooling

When thermostat calls for cooling, terminals G and Y1 are energized. The indoor (evaporator) fan contactor (IFC), compressor contactor no. 1 (C1) and reversing valve solenoid 1-2(RVS1 and RVS2) are energized, and evaporator-fan motor (IFM), compressor no. 1, and condenser fan(s) start. The condenser-fan motor(s) runs continuously while unit is cooling. When the thermostat calls for a second stage of cooling by energizing Y2, compressor contactor no. 2 (C2) is energized and compressor no. 2 starts.

Heating

When thermostat calls for heating through terminal W1. The indoor (evaporator) fan contactor (IFC) and compressor contactor no. 1 (C1) are energized, and evaporator-fan motor (IFM), compressor no. 1, and condenser fan(s) start. The condenser-fan motor(s) runs continuously while unit is heating. When the thermostat calls for a second stage of heating by energizing W2, compressor contactor no. 2 (C2) is energized and compressor no. 2 starts.

Defrost Cycle

When the temperature of the outdoor coil drops below 28 F as sensed by the defrost thermostat (DFT1 or DFT2), the defrost timer starts. At the end of a timed period (field set at 30, 50, or 90 minutes), the defrost cycle will begin. The defrost board energizes terminals O and W2, energizes the defrost relay (RVR), deenergizes the reversing valve solenoids (RVS1 and RVS2), and energizes the electric heat (Accessory). The outdoor-fan motor will stop. The unit continues to defrost either until the coil temperature as measured by DFT1 or DFT2 reaches 65 F, or until unit completes a 10-minute defrost cycle.

During the defrost mode, when a circuit defrosts, RVS will oscillate between heating and cooling modes until defrost mode is complete. This will prevent the head pressure from getting too high.

At the end of the defrost cycle, the electric heaters (if applicable) will be deenergized, the reversing valve solenoids will be energized, and the outdoor fans will start.

Defrost is initiated by a timer which may be set to 30, 50, or 90 minutes. The cycle begins when the defrost timer motor contacts close for 20 seconds. If the defrost thermostat is closed, the reversing valve and outdoor-air fans are deenergized.

The unit operates on this modified Cooling mode to defrost the coil. The defrost cycle continues until the defrost thermostat or defrost high pressure switch opens or 10 minutes have elapsed.

When the unit is in the defrost cycle, electric resistance heat is energized to prevent cold air recirculation during this modified Cooling mode.

Air Circulation

When the fan switch is at FAN ON, the indoor-air fans operate continuously to provide ventilation. The thermostat operates the other components as described above.

Emergency Heat Cycle

If the compressor is inoperative due to a tripped safety device, the second stage of the thermostat automatically energizes the indoor-air fan and the electric resistance heaters.

If desired, the compressor can be manually locked out by setting the thermostat for emergency heat. In this instance, the emergency heat indicator light on the thermostat assembly is illuminated.

Service

Compressor Removal

1. Shut off power to unit. Remove unit access panel.
2. Recover refrigerant from system using refrigerant recovery methods in accordance with local and national standards.
3. Disconnect compressor wiring at compressor terminal box.
4. Disconnect refrigerant lines from compressor.
5. Remove screws from compressor mounting plate.
6. Remove or disconnect crankcase heater from compressor base.
7. Remove compressor from unit.

8. Clean system. Add new liquid line filter drier.
9. Install new compressor on compressor mounting plate and position in unit. Connect suction and discharge lines to compressor. Secure mounting plate with compressor to unit. Connect wiring. Install crankcase heater.
10. Evacuate and recharge unit.
11. Restore unit power.

Follow safety codes and wear safety glasses and work gloves.

Crankcase Heater – The heater prevents refrigerant migration and compressor oil dilution during shutdown whenever compressor is not operating.

Both compressor service valves must be closed whenever the crankcase heater is deenergized for more than 6 hours. The crankcase heater is operable as long as the control circuit is energized.

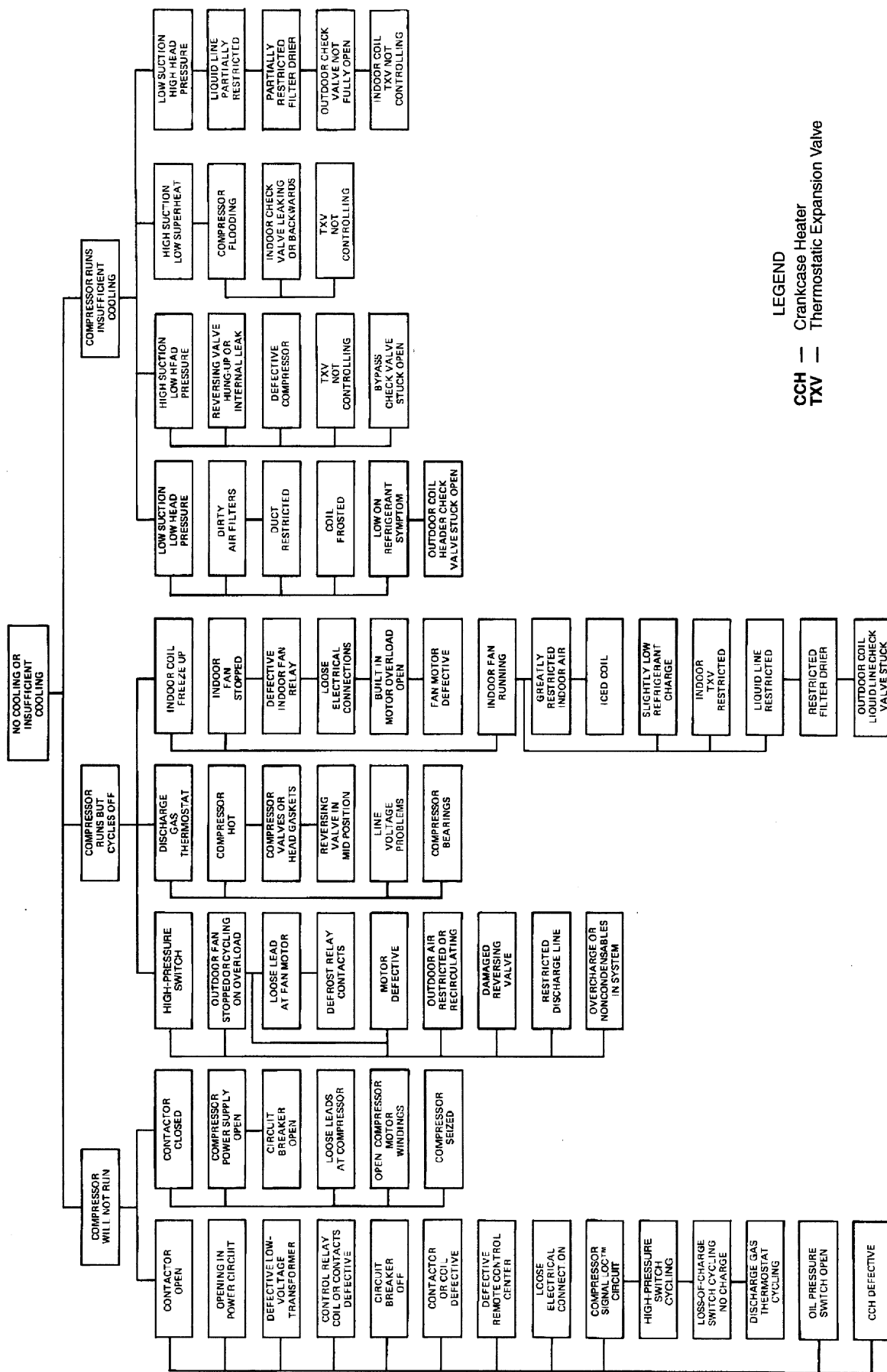
Outdoor Unit Fans – Each fan is supported by a formed-wire mount bolted to the fan deck and covered with a wire guard. Fan motors have permanently lubricated bearings. The exposed end of the motor shaft is covered with a rubber boot. In case a fan motor must be repaired or replaced, be sure the rubber boot is put back on when the fan is reinstalled and be sure the fan guard is in place before starting the unit.

Coil Cleaning and Maintenance – This section discusses the cleaning and the maintenance of standard coils. Routine cleaning of coil surfaces is essential to minimize contamination build-up and remove harmful residue. Inspect coils monthly and clean as required.

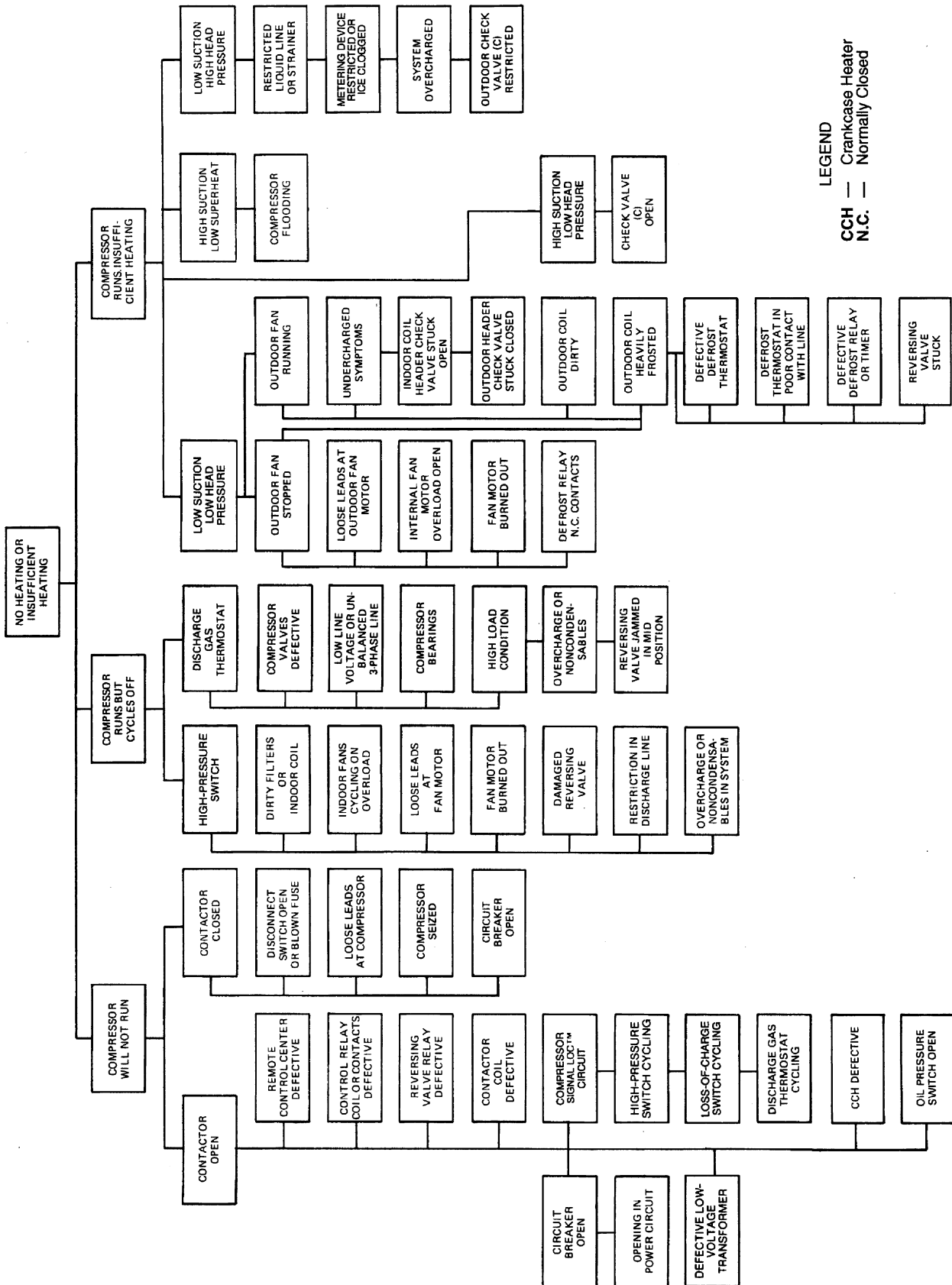
CLEANING STANDARD COILS – Standard coils can be cleaned with a vacuum cleaner, washed out with low velocity water, blown out with compressed air, or brushed (do not use wire brush). Fan motors are dripproof but not waterproof. Do not use acid cleaners.

Clean coil annually or as required by location or outdoor air conditions. Inspect coil monthly and clean as required. Fins are not continuous through coil sections. Dirt and debris may pass through first section and become trapped, restricting condenser airflow. Use a flashlight to determine if dirt or debris has collected between coil sections.

TROUBLESHOOTING CHART — COOLING CYCLE



TROUBLESHOOTING CHART — HEATING CYCLE



**INTERNATIONAL COMFORT PRODUCTS
LIMITED WARRANTY CERTIFICATE
For Cooling & Heating Products**

SAVE THIS CERTIFICATE. It gives you specific legal rights, and you may also have other rights which may vary from state to state and province to province.

If your unit needs servicing, contact a qualified dealer or qualified service agency of your choice. When requesting service, please have the model and serial number from each unit in your heating and/or cooling system readily available. If your dealer needs assistance, the distributor is available to provide support and we, in turn, support its efforts.

Fill in the installation date and model and serial numbers of the unit in the space provided below and retain this Limited Warranty for your files.

GENERAL TERMS

Subject to the conditions and limitations stated herein, during the term of this Limited Warranty, we will provide a replacement for any functional component part (as defined below) of your unit that fails due to defect in materials or workmanship. The term of this Limited Warranty is five years from installation on Residential Products and one year from installation on Commercial Products or applications. Except as otherwise stated in the "Additional Terms" section, this Limited Warranty covers only the original purchaser and subsequent transferees, and only while the unit remains at the site of the original installation (except for mobile home installations), and only if the unit is installed inside the continental United States, Puerto Rico, Alaska, Hawaii or Canada. In addition, the Limited Warranty applies only if the unit is installed and operated in accordance with the printed instructions accompanying the unit, and in compliance with all applicable installation and building codes and good trade practices. As used in this Limited Warranty, "installation" means the original installation of the unit.

THERE ARE EXCEPTIONS to this Limited Warranty as described on the reverse side of this page. All replacement parts will be warranted for the unused portion of the warranty coverage period on the unit. The part to be replaced must be returned by the dealer to a distributor that sells products for International Comfort Products, in exchange for the replacement part. In lieu of providing a replacement part, we may, at our sole option, refund to you an amount equal to the distributor's component purchase price from us, or provide to you a credit equal to that amount to be applied toward the purchase of any new unit that we distribute. If a credit for a new unit is given in lieu of a replacement part, the rating plate from the unit being replaced must be submitted on a warranty claim, and your dealer must make the unit being replaced available to our distributor for disposition. As a condition to warranty coverage, the unit must receive yearly maintenance, as described in the owner's manual, by a dealer. Satisfactory proof of yearly service by a dealer may be required.

"Functional component parts" include only the following: blower motor, unit-mounted sensors & timers, condenser motor, evaporator coil, condenser coil, condenser fan, capacitor, transformer, single-phase strip heat elements, expansion device, reversing valve, solenoid valve, service valve, electronic and electro-mechanical control board, ignitor, ignition module, draft inducer assembly, burner pilot, gas valve, limit control, pressure switch, relays and contactors, blower wheel, interlock switch, crosslighter, pilot shield, gas & oil burners, oil pump assembly, accumulators and factory installed driers and strainers.

This Limited Warranty **DOES NOT COVER** any labor, material, refractory chambers, oil nozzles, refrigerant, refrigerant inspection and refrigerant reclaiming, freight and/or handling charges associated with any repair or replacement and such charges will be your responsibility.

To establish the installation date for any purpose under this Limited Warranty, you must retain the original records that can establish the installation date of your unit. If you do not provide such documents the start date of the term of this Limited Warranty will be based upon the date of unit manufacture, plus thirty (30) days. In establishing that the required yearly service has occurred, you must furnish proof of yearly service by a qualified service agency.

This Limited Warranty does not cover: (a) failure or damages caused by accident, abuse, negligence, misuse, riot, fire, flood, or Acts of God (b) damages caused by operating the unit where there is a corrosive atmosphere containing chlorine, fluorine, or any other damaging chemicals (other than those found in a normal residential environment) (c) damages caused by an unauthorized alteration or repair of the unit affecting its stability or performance (d) damages caused by improper matching or application of the unit or the unit's components (e) damages caused by failing to provide proper maintenance and service to the unit in accordance with this Limited Warranty Certificate and the printed instructions originally provided with the unit (f) any expenses incurred for erecting, disconnecting, or dismantling the unit (g) parts or supplies used in connection with service or maintenance, such as refrigerant, refractory chambers, oil nozzles, filters, or belts (h) damage, repairs, inoperation or inefficiency resulting from faulty installation or application (i) electricity or fuel costs or any increase in electricity or fuel cost whatsoever including additional or unusual use of supplemental electric heat (j) units which have not had the required yearly maintenance described elsewhere in this limited warranty.

In no event shall we be liable for any incidental, consequential, or special damages or expenses in connection with any use or failure of this unit.

WE HAVE NOT MADE, DO NOT MAKE, AND HEREBY DISCLAIM ANY IMPLIED CONDITION OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR USE OR PURPOSE, AND ANY IMPLIED CONDITION OR IMPLIED WARRANTY OF MERCHANTABILITY, TO THE FULLEST EXTENT ALLOWED BY LAW. WE MAKE NO EXPRESS OR IMPLIED WARRANTIES EXCEPT AS STATED IN THIS LIMITED WARRANTY CERTIFICATE.

No one is authorized to change this Limited Warranty or to create for us any other obligation or liability in connection with this unit. Any implied warranties that are not disclaimable shall last only for the term of the express warranty contained herein. Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages or do not allow limitations on how long an implied warranty or condition lasts, so the above limitations or exclusions may not apply to you. The provisions of this Limited Warranty are in addition to and not a modification of or subtraction from any statutory warranties and other rights and remedies provided by law.

Please refer to reverse side of this page for additional terms.

Model No. _____

Serial No. _____ Date Installed _____

USA: International Comfort Products, LLC • 650 Heil-Quaker Avenue • P.O. Box 128 • Lewisburg, Tennessee 37091 • (931-270-4100)

CANADA: International Comfort Products division of UTC Canada Corporation • 6060 Burnside Court, Unit 1, Mississauga, Ontario L5T 2T5 (905-795-8113).

Manufacturers of Airquest, Arcoaire, Clare, Comfortmaker, Dettson, Heil, Keeprite, Lincoln, Tempstar and other quality brand name private label products.

Part No. 401 06 1010 24 (Orig. 11/xx/2003)

ADDITIONAL TERMS FOR RESIDENTIAL APPLICATIONS ONLY

The Additional Terms for the components listed below are in addition to, and subject to, the General Terms on the reverse side of this page.
Warranty coverage is limited to parts that fail due to defect in materials or workmanship during the specified term.

CENTRAL GAS & OIL FURNACE HEAT EXCHANGERS*

Gas Model Series: C9MPV, H9MPV, T9MPV, C9MPT, H9MPT, T9MPT, C9MPD, H9MPD, T9MP: Limited Lifetime Warranty on heat exchangers. If a heat exchanger on one of these furnaces fails due to defect in the part, we will provide a replacement part or, at our option, credit toward the purchase of a new furnace manufactured by us. This additional Limited Warranty runs only to the original purchaser, and lasts only for as long as the original purchaser lives in the home where the furnace is initially installed.** It is not transferable to any subsequent owner. If the furnace was not installed in the home owned by the original purchaser, if the original purchaser sells the home to a subsequent owner, or if proof of original purchase cannot be provided, then the limited warranty is only for 20 years from the date of original installation.

Gas Model Series: T8MPV, H8MPV, C8MPV, T8MPT, H8MPT, C8MPT: A replacement heat exchanger will be provided for any heat exchanger that fails in one of these furnaces due to defect for 25 years from the original date of installation.

Gas Model Series: T8MPN, H8MPN, C8MPN, T8MPL, H8MPL, C8MPL, T8DNL, H8DNL, C8DNL, N8MPN, N8MPL, N9MP1, N9MP2: A replacement heat exchanger will be provided for any heat exchanger that fails in one of these furnaces due to defect for 20 years from original date of installation.

Oil Model Series: OLR(105, 160, 182), OCF, OLF, OUF, NOLF, NOUF, OLB, OHB, ODH, FLO, MBO, LBO, NOMF: Limited Lifetime Warranty on heat exchangers. If a heat exchanger on one of these furnaces fails due to defect in the part, we will provide a replacement part or, at our option, credit toward the purchase of a new furnace manufactured by us. This additional Limited Warranty runs only to the original purchaser, and lasts only for as long as the original purchaser lives in the home where the furnace is initially installed.** It is not transferable to any subsequent owner. If the furnace was not installed in the home of the original purchaser, if the original purchaser sells the home to a subsequent owner, or if proof of original purchase cannot be provided, then the limited warranty is only for 20 years from the date of original installation.

Oil Fired Floor Furnace: NFO: A replacement heat exchanger will be provided for any heat exchanger that fails due to defect for 10 years from installation with the following limitation: during the sixth through tenth year, any credit toward your purchase of a component or toward the purchase of any new unit will be in an amount equal to the distributor's purchase price reduced by 20 percent for each year after the fifth year.

ADDITIONAL TERMS FOR OIL FURNACE APPLICATIONS ONLY

1) OIL BURNERS - A replacement for 5 years from date of original installation for Oil Burner Parts.

2) OPTIONAL ACCESSORIES AND FUNCTIONAL PARTS: A replacement for 5 years from date of original installation. (Refractory and oil nozzles not included)

GAS/ELECTRIC PACKAGED UNITS HEAT EXCHANGERS

Model series: PGAD, PGAA, PGMD, PGME, PGF, GPFM, PGC, GPCM: A replacement for 10 years from original date of installation.

COMPRESSORS:*

1) **Premium Model Units: HAC0, HAC2, HAC4, CAC0, CAC2, CAC4, KAC0, TCA0, TCA2, TCA4, HHP0, HHP2, HHP4, CHP0, CHP2, CHP4, TCH0, TCH2, TCH4, HXA2, TXA2, CXA2, HXA4, TXA4, CXA4, PGME, PYMC, PHAD, PGAD, PA95, PAPC, PAK, APK:** To the original purchaser a replacement for 10 years from original date of installation, only if the unit is installed with factory matched coils, except air conditioner condensing units with a nominal SEER of 10 may be matched with evaporator coils of the same nominal tonnage regardless of manufacturer and in accordance to factory recommendations. This limited 10-year warranty is not transferable to any subsequent owner. HOWEVER, if the unit was not installed in the home owned by the original purchaser, if the purchaser sells the home to a subsequent owner, or if proof of original purchase cannot be provided, then the limited warranty is only for 5 years from the original date of installation.**

2) **All Other Models: Air Conditioners, Heat Pumps, & Combination Gas/Electric Units: NAC0, NAC2, NHP0, NHP2, AO, A2, HO, H2, PGF, PGC, GPFM, GPCM, PAF, APFM, PHF, HPFM, PGAA, PGMD, PA55, PH55, PAPA, PYPA, PGS, GPSP:** A replacement for 5 years from date of original installation, only if: (a) air conditioner condensing units with SEER rating in the range of 10 to 11 SEER are matched with evaporator coils of the same nominal tonnage regardless of manufacturer and in accordance to factory recommendations, or (b) heat pump condensing units are used with factory matched coils, unless written approval to do otherwise is obtained from manufacturer.

ADDITIONAL TERMS FOR COMMERCIAL PRODUCT OR APPLICATIONS ONLY

For purposes of this warranty a commercial product or application is one in which: the product has over 5 tons nominal cooling capacity, or is designed for operation with 3 phase electrical power, or is installed in a commercial establishment such as a beauty or hair salon, hospital, school, restaurant, church, hotel etc..

3-Phase Models: PGF, GPFM, PGF, PGAD, PGME, PGB, PGMG, PGMF, PGS, GPSP, PGE, APE, PAE, PAB, PAMD, PAS, PAF, APFM, APF, PHB, PHE, PYMD, HPB, PHS, CAC, ACC, CAE, ACE, CHC, CHS, HCC, CHE, HCE, CHB, YA:

The additional Terms of the components listed below are in addition to and subject to the General Terms on the reverse side of this page.

1) **GAS FIRED HEAT EXCHANGERS (ALL MODELS, except PGS, GPSP 3 to 5 Ton):*** A replacement for 10 years from date of original installation.

a) **NOTE: PGS, GPSP 3 to 5 Ton Models:*** A replacement for 15 years from date of original installation.

2) **COMPRESSORS (ALL MODELS):*** A replacement for 5 years from date of original installation.

3) **OPTIONAL ACCESSORIES AND FUNCTIONAL COMPONENT PARTS (ALL MODELS):***

A replacement for 1 year from date of original installation.

4) **COMMERCIAL OIL MODELS: OLR210, OLR350, OTF210, AMT3, AMT4, AMP3:** Ten(10) Year Limited Warranty on heat exchangers.

*To receive advantage of your limited warranty, you must provide proof of yearly service by a qualified service agency.

**To receive advantage of your warranty, you must retain the original records that can establish the installation date and proof of purchase of the unit.

MINI SPLITS:

Summary - Mini Splits Warranted for one (1) year on all replacement parts.

Additional terms for Mini Splits:

The additional Terms of the components listed below are in addition to, and subject to, the General Terms on the reverse side of this page.

1) **Compressors (All Models):** A replacement compressor will be provided for all compressors that fail due to defect for 5 years from date of original installation.

2) **Optional Accessories and Functional Components Parts (All Models):**

A replacement part will be provided for all parts that fail due to defect for one (1) year from date of original installation.

Failure to maintain the equipment through annual maintenance by a qualified service agency shall void the warranty. Proof of service will be required with all warranty claims. Proof of purchase and installation date must be submitted with all claims.