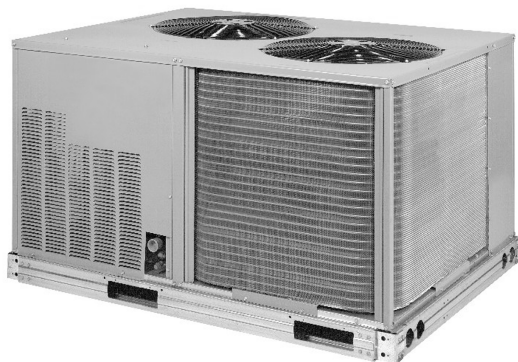


# **Installation, Start-Up, and Service Instructions**



## **SPLIT SYSTEM 3 PHASE, 10 TON HEAT PUMP**

**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.

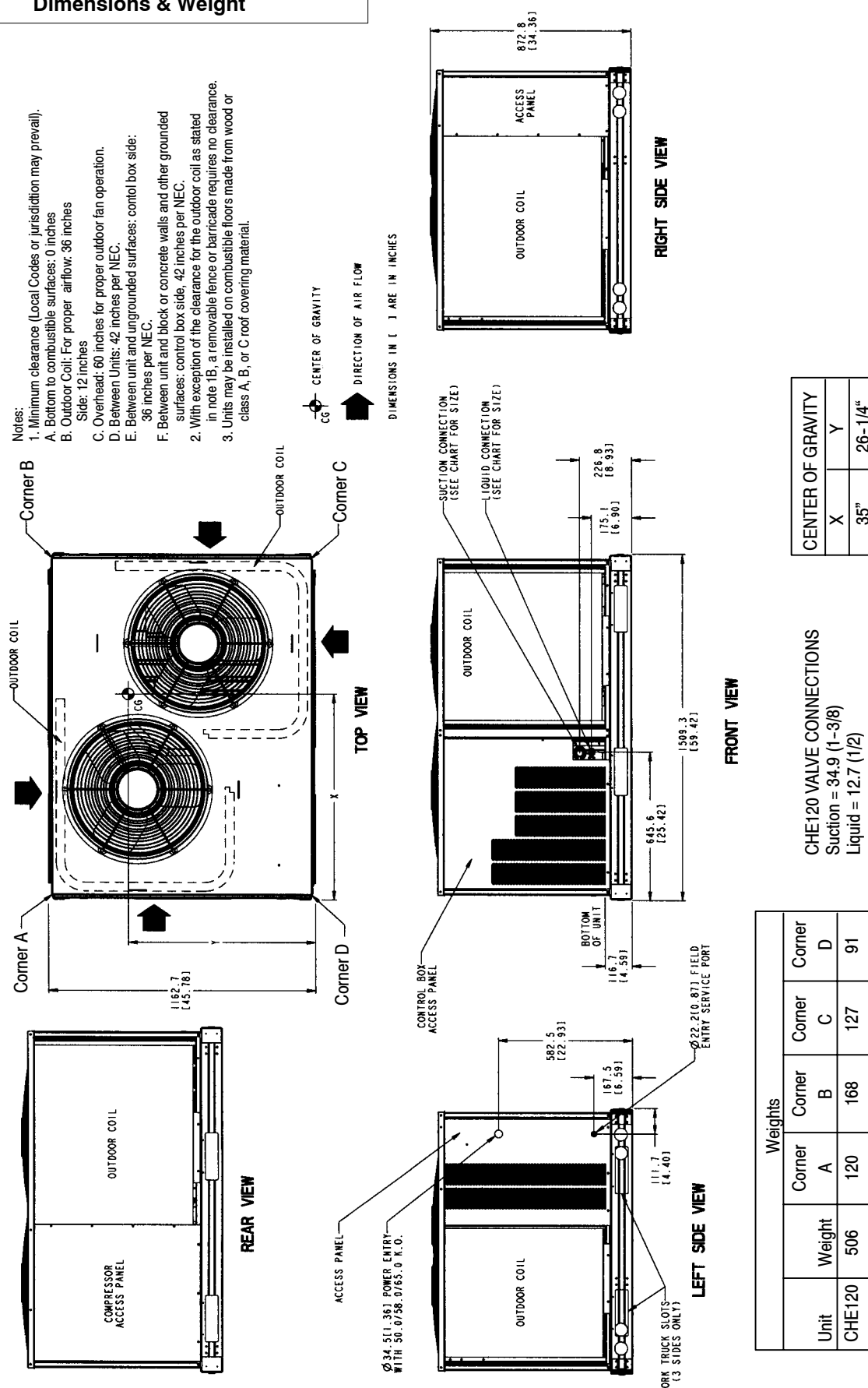
Do not locate where heat, lint or exhaust fumes will be discharged on unit (as from dryer vents).

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      Dimensions & Weight



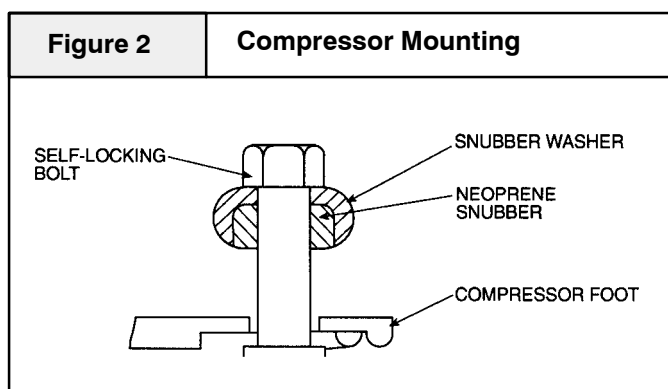
## Rig and Mount the Unit:

### CAUTION

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

**RIGGING** – 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.

**COMPRESSOR MOUNTING** – As shipped, compressor is held down by 4 bolts. After unit is installed, loosen each bolt using locknut until flat washer or snubber ( 3 / 8 in.) can be moved with finger pressure. Be sure compressor floats freely on the mounting springs and that upper flat washers can be moved with finger pressure. See Fig. 2.



## 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

**IMPORTANT:** A refrigerant receiver is not provided with the unit. Do not install a receiver.

**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.

**NOTE:** Use the piping data in Table 1 as a general guide only. For CHE120 applications with liquid lift greater than 20 ft, use 5/8 -in. liquid line. Maximum lift is 60 ft.

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
	CHE120	1/2	1-3/8	1/2	1-3/8	1/2	1-3/8	1/2

\* Field-supplied suction accumulator required for pipe length 75-100 ft.

**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.**

**INSTALL LIQUID LINE SOLENOID VALVE** – Addition of a liquid solenoid valve (LLSV) is required. The LLSV must be a bi-flow type suited for use in heat pump systems. The recommended valve is ALCO model 200RB5T5-BF (5/8-in. ODF). Wire the solenoid valve in parallel with the compressor contactor coil. See Fig. 3.

**MAKE PIPING CONNECTIONS** – Do not remove run around loop from suction and liquid line stubs in the compressor compartment until piping connections are ready to be made. Pass nitrogen or other inert gas through piping while brazing to prevent formation of copper oxide.

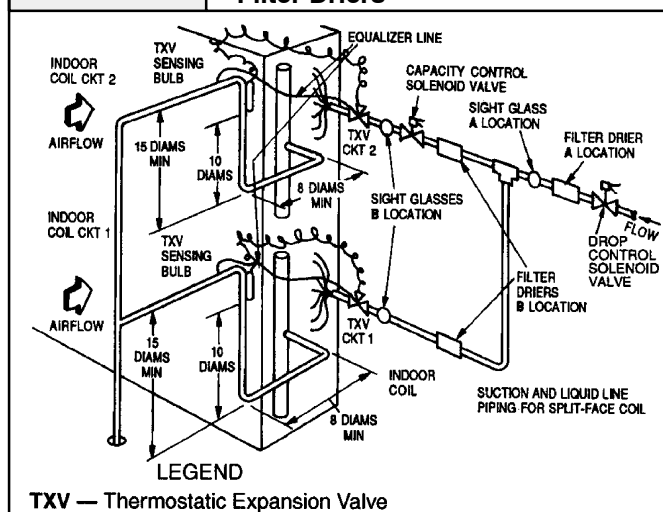
## CAUTION

Recover holding charge prior to removal of runaround piping loop.

- 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 to indoor unit liquid line connections. Select proper field-supplied bi-flow filter driers and install in the liquid line. See Fig. 3. 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.)

Figure 3

Location of Sight Glass(es) & Filter Driers



# 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.**

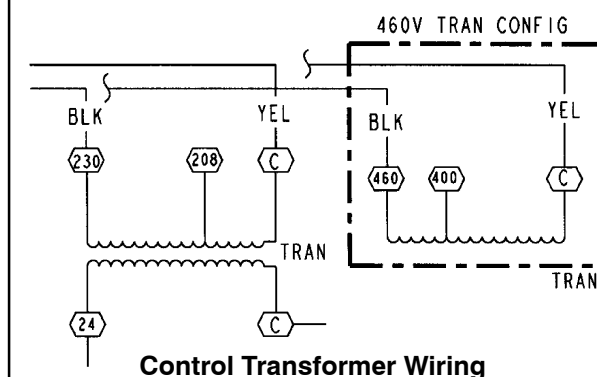
**POWER WIRING** - Unit is factory wired for voltage shown on nameplate. Provide adequate fused disconnect switch within sight from unit and readily accessible from unit, but out of the reach of children. Lock switch open (off) to prevent power from being turned on while unit is being serviced. Disconnect 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.

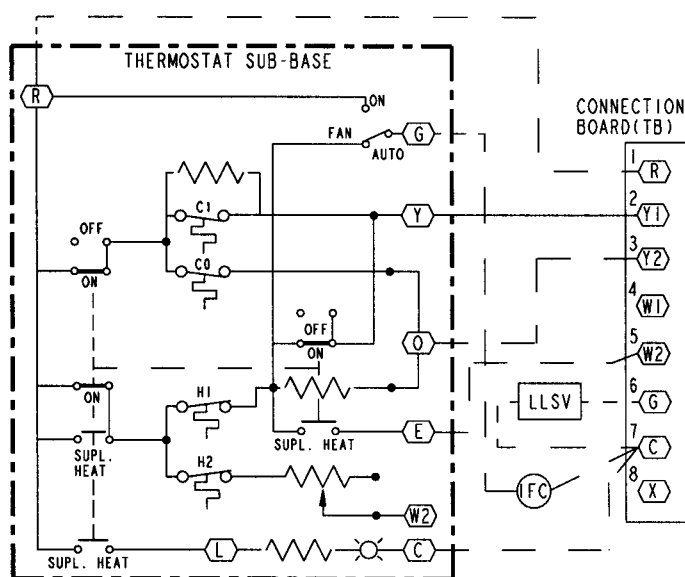
If unit will be operating at 208-3-60 power, remove the wire from the transformer primary connection labelled "230" and move it to the connection labelled "208". See Fig. 4.

**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.

**Figure 4**      **Wiring Connections**



**Figure 5**      **Wiring Diagram**

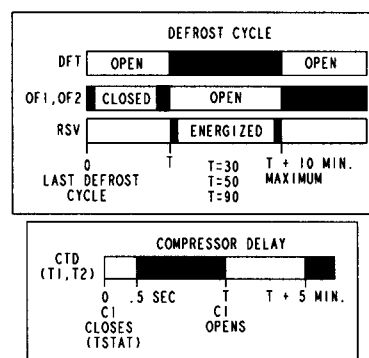


**C** — Contactor, Compressor  
**CB** — Circuit Breaker  
**DFT** — Defrost Thermostat  
**IFC** — Indoor Fan Contactor  
**LLSV** — Liquid Line Solenoid Valve  
**RSV** — Relay Solenoid Valve  
**TB** — Terminal Block

Field Splice  
 Marked Wire

### LEGEND

Terminal (Marked)  
 Terminal (Unmarked)  
 Terminal Block  
 Splice  
 Factory Wiring  
 Field Control Wiring  
 Field Power Wiring  
 Accessory or Optional Wiring



### NOTES:

1. If any of the original wire furnished must be replaced. It must be replaced with type 90° C wire or its equivalent.
2. For thermostat and subbase part no. see price pages.
3. Set heat anticipator at .6.
4. Use copper conductors only.
5. Three phase motors are protected under primary single phasing conditions.
6. 39 va available for field-installed accessories control power requirement for heat pump condensing unit is 36 va (sealed). Supplied control transformer is 75 va.

VOLTAGE RATING	MFG. PART NO.	MUST TRIP AMPS
24V	POTTER & BRUMFIELD	
	W2BX-1024-3.2	3.2

## Pre-Start-Up

**IMPORTANT:** Before beginning Pre-Start-Up or Start-Up, review Start-Up Checklist at the back of this book. The Checklist assures proper start-up of a unit and provides a record of unit condition, application requirements, system information, and operation at initial 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. Be sure compressor floats freely on the mounting springs and that snubber washers can be moved with finger pressure. See Compressor Mounting Section on page 4.

**Leak Test** – Leak test the entire refrigerant system using soap bubbles and/or an electronic leak detector.

**Turn On Crankcase Heater** – Turn on crankcase heater for 24 hours before starting the unit to be sure all the refrigerant is out of the oil. To energize the crankcase heater, proceed as follows:

1. Set the space thermostat set point above the space temperature so there is no demand for cooling.
2. Close the field disconnect.
3. Turn the fan circuit breaker on. Leave the compressor circuit breakers off. The crankcase heater is now energized.

### CAUTION

Prior to starting compressor refrigerant equal to operating charge must be added to avoid possible compressor damage.

**PRELIMINARY CHARGE** – Charge with R-22 by the liquid charging method (through liquid service valve) on the high side. See approximate refrigerant charge in Table 2. Charge according to the values in the Charging Charts. See Fig. 5.

**LIQUID LINE SOLENOID** – To minimize refrigerant migration to the compressor during the heat pump OFF cycle, the unit features a bi-flow liquid line solenoid valve. The valve opens when the compressor is energized, and closes when the compressor is deenergized. This feature reduces compressor flooded starts, significantly increasing compressor life.

## 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.

### CAUTION

Never charge liquid into the low-pressure side of system. Do not overcharge. During charging or removal of refrigerant, be sure indoor-fan system is operating.

**ADJUST REFRIGERANT CHARGE** - Unit must be charged in Cooling mode only. Refer to Cooling Charging Charts, Fig. 6 and to Table 2 for maximum charge level. Do not exceed maximum refrigerant charge. For applications with line lengths greater than 100 ft, contact your distributor. Vary refrigerant until the conditions of the chart are met. Note that charging charts are different from type normally used. Charts are based on charging the units to the correct subcooling for the various operating conditions. Accurate pressure gage and temperature sensing device are required. Connect the pressure gage to service port on

the liquid line service valve. Mount the temperature sensing device on the liquid line, close to the liquid line service valve and insulate it so that outdoor ambient temperature does not affect the reading. Indoor airflow must be within the normal operating range of the unit. Operate unit a minimum of 15 minutes. Ensure pressure and temperature readings have stabilized. Plot liquid pressure and temperature on chart and add or reduce charge to meet curve. Adjust charge to conform with charging chart, using the liquid pressure and temperature to read chart.

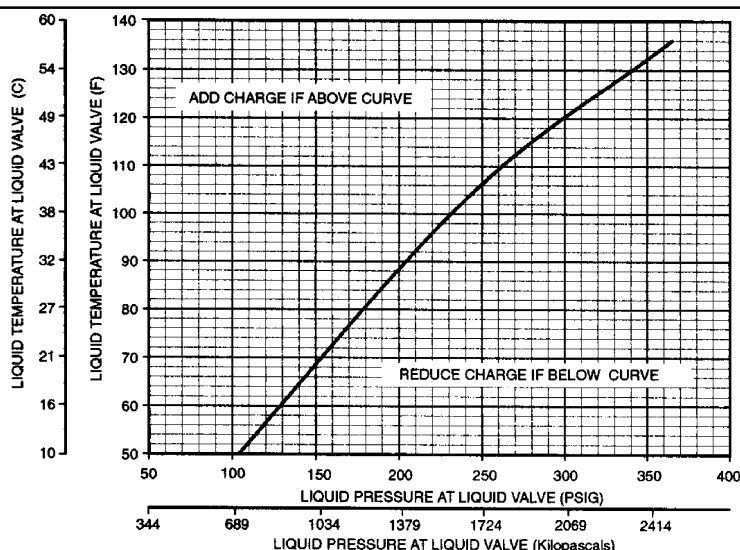
**FINAL CHECKS** - Ensure all safety controls are operating, control panel covers are on, and the service panels are in place.

**Table 2 - Maximum Refrigerant Charge**

CHE120	R-22	
	(lb)	(kg)
	34.2	15.5

**Figure 6**

**CHE120 Charging Chart**





## Operating Sequence

When power is supplied to unit, the transformer (TRAN) is energized. The crankcase heater is also energized.

### Cooling

With the thermostat subbase in the cooling position, and when the space temperature comes within 2° F (1° C) of the cooling set point, the thermostat makes circuit R-O. This energizes the reversing valve solenoid (RVS) and places the unit in standby condition for cooling.

As the space temperature continues to rise, the second stage of the thermostat makes, closing circuit R-Y. When compressor time delay (5 +/- 2 minutes) is completed, a circuit is made to contactor (C), starting the compressor (COMP) and outdoor fan motor (OFM). Circuit R-G is made at the same time, energizing the indoor fan contactor (IFC) and starting the indoor fan motor (IFM) after one second delay.

When the thermostat is satisfied, contacts open, deenergizing C. The COMP, IFM, and OFM stop.

### Heating

On a call for heat, thermostat makes circuits R-Y and R-G. When compressor time delay (5 +/- 2 minutes) is completed, a circuit is made to C, starting COMP and OFM. Circuit R-G also energizes IFC and starts IFM after a 1 second delay.

## Service

**Crankcase Heater** - The heater prevents refrigerant migration and compressor oil dilution during shutdown whenever compressor is not operating. It is wired to cycle with the compressor; the heater is off when compressor is running, and on when compressor is off.

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.

## Compressor Protection

**COMPRESSOR OVERTEMPERATURE PROTECTION (IP)** - A thermostat installed on compressor motor winding reacts to excessively high winding temperatures and shuts off the compressor.

**CRANKCASE HEATER** - Heater minimizes absorption of liquid refrigerant by oil in crankcase during brief or extended shutdown periods. The control circuit is maintained if compressor fan motor circuit breakers are turned off. The main disconnect must be on to energize crankcase heater.

**High-Pressure Switches** - Switches have fixed, nonadjustable settings. Switches are mounted on the compressors.

**Low-Pressure Switches** - Switches have fixed, non-adjustable settings. Switches are mounted on the compressors.

**TO CHECK** - Slowly close liquid shutoff valve and allow compressor to pump down. Do not allow compressor pumpdown below 2 psig (13.8 kPa). Compressor should shut down when suction pressure drops to cutout pressure in specification sheet tables, and should restart when pressure builds up to cut-in pressure shown.

**Outdoor 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.

## Lubrication

FAN MOTORS have sealed bearings. No provisions are made for lubrication.

COMPRESSOR has its own oil supply. Loss of oil due to a leak in the system should be the only reason for adding oil after the system has been in operation.

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

**CLEANING COILS** – Coils can be cleaned with a vacuum cleaner, washed out with low velocity water, blown out with low-pressure compressed air, or brushed (do not use wire brush). Fan motors are drip-proof but not waterproof. Do NOT use acid cleaners.

Clean outdoor 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, become trapped between 2nd and 3rd rows of fins and restrict outdoor airflow. Use a flashlight to determine if dirt or debris has collected between coil sections. Clean coil as follows:

1. Turn off unit power.
2. Remove screws holding rear corner posts and top cover in place. Pivot top cover up 12 to 18 in. (305 to 457 mm) and support with a rigid support. See Fig. 7.
3. Remove clips securing tube sheets together at the return bend end of the coil. Carefully spread the ends of the coil rows apart by moving the outer sections. See Fig. 8.
4. Using a water hose, or other suitable equipment, flush down between the sections of coil to remove dirt and debris.
5. Clean the remaining surfaces in the normal manner.
6. Reposition outer coil sections.
7. Reinstall clips which secure tube sheets.
8. Replace top cover and rear corner posts.

Figure 7

Pivot and Support Top Cover

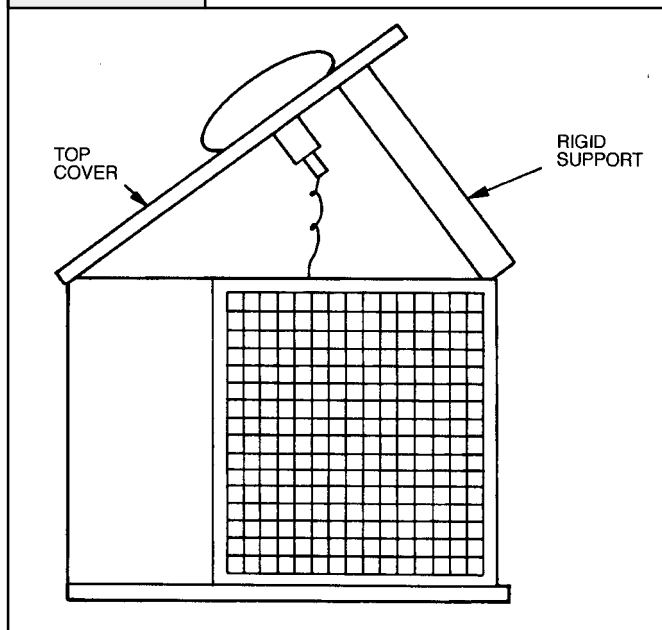
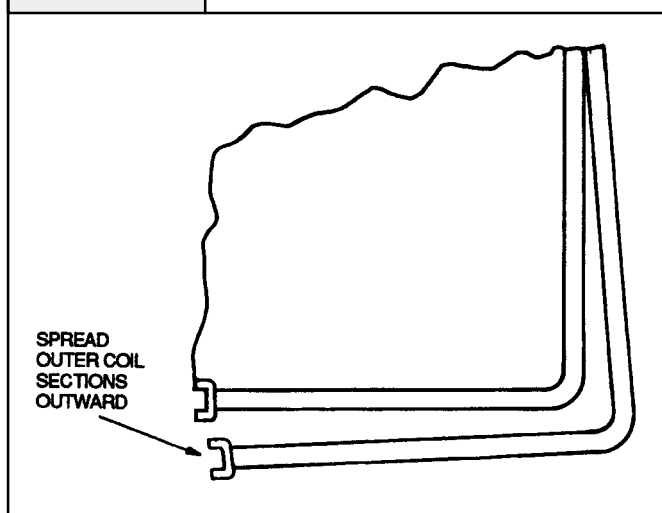
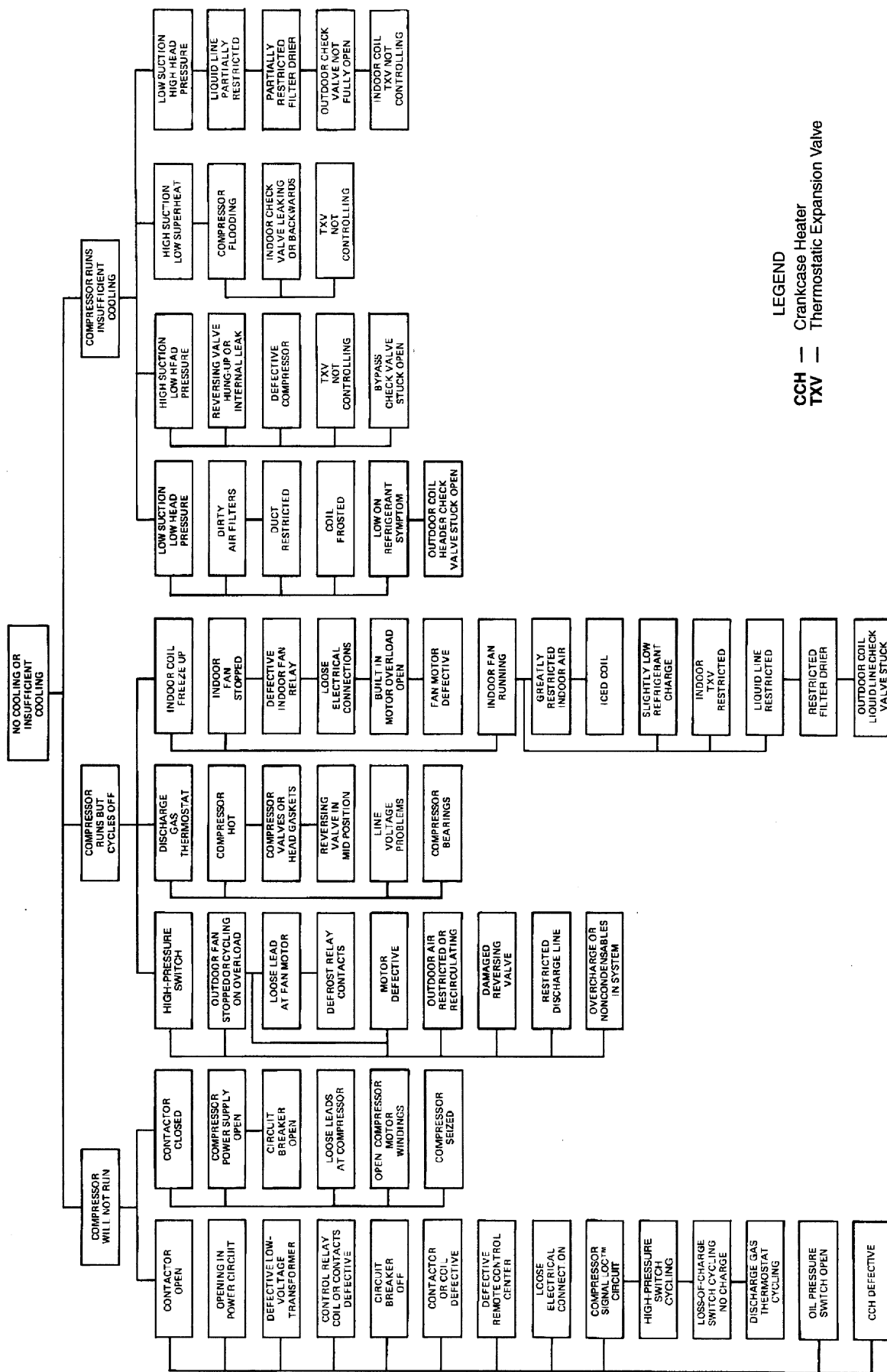


Figure 8

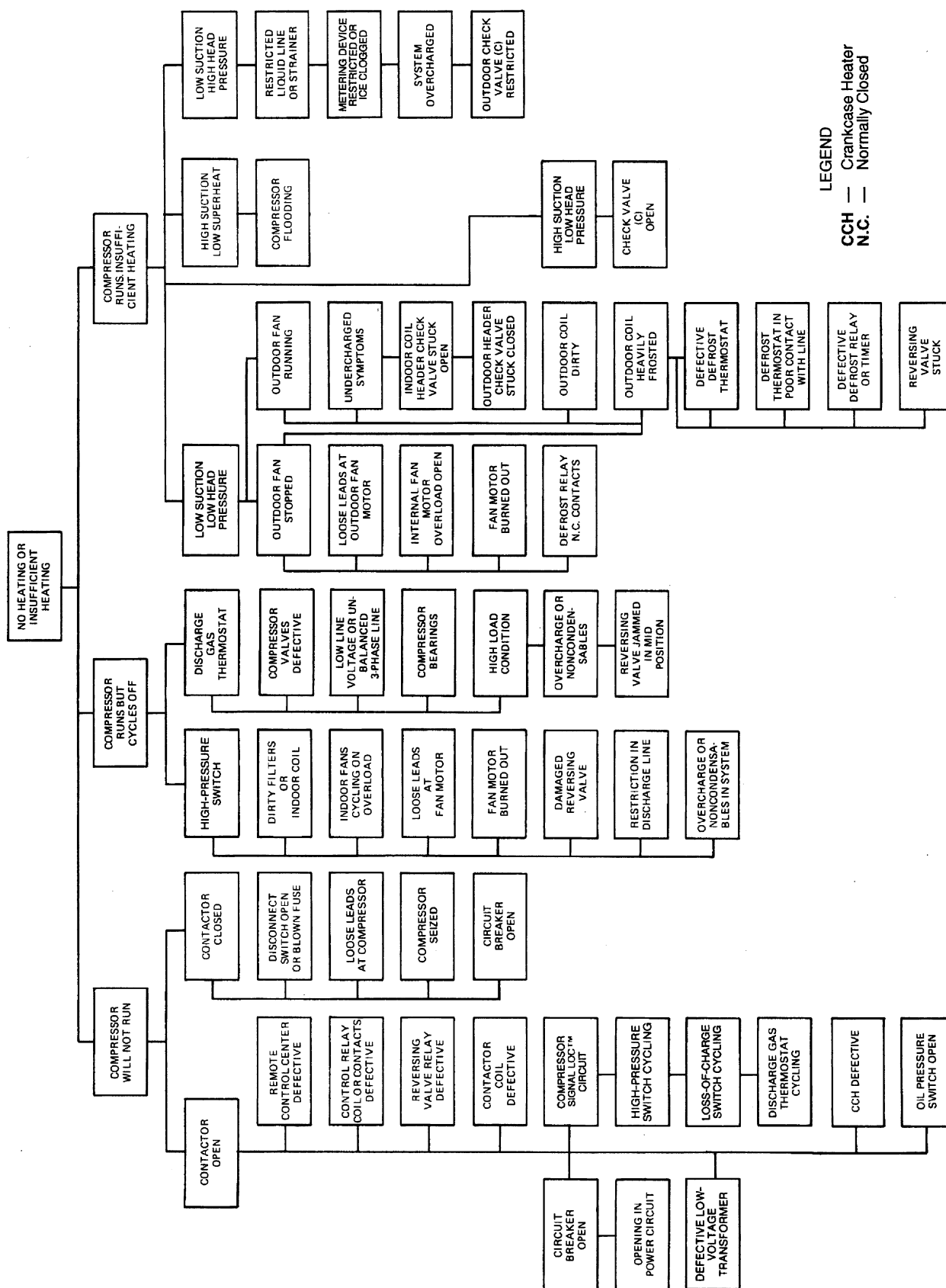
Coil Cleaning (Typical)



## TROUBLESHOOTING CHART — COOLING CYCLE



## TROUBLESHOOTING CHART — HEATING CYCLE



**I. START-UP CHECKLIST**

Outdoor: Model No.	Serial No.
INDOOR: Air Handler Manufacturer -	
Model No.	Serial No.
Additional Accessories:	

**II. PRE-START-UP****OUTDOOR UNIT**

IS THERE ANY SHIPPING DAMAGE? (Y/N) \_\_\_\_\_

IF SO, WHERE: \_\_\_\_\_

WILL THIS DAMAGE PREVENT UNIT START-UP? (Y/N) \_\_\_\_\_

CHECK POWER SUPPLY. DOES IT AGREE WITH UNIT? (Y/N) \_\_\_\_\_

HAS THE GROUND WIRE BEEN CONNECTED? (Y/N) \_\_\_\_\_

HAS THE CIRCUIT PROTECTION BEEN SIZED AND INSTALLED PROPERLY? (Y/N) \_\_\_\_\_

ARE THE POWER WIRES TO THE UNIT SIZED AND INSTALLED PROPERLY? (Y/N) \_\_\_\_\_

HAVE COMPRESSOR HOLDDOWN BOLTS BEEN LOOSENEED (Snubber washers are snug, but not tight)? (Y/N) \_\_\_\_\_

**CONTROLS**

ARE THERMOSTAT AND INDOOR FAN CONTROL WIRING CONNECTIONS MADE AND CHECKED? (Y/N) \_\_\_\_\_

ARE ALL WIRING TERMINALS (including main power supply) TIGHT? (Y/N) \_\_\_\_\_

HAS CRANKCASE HEATER BEEN ENERGIZED FOR 24 HOURS? (Y/N) \_\_\_\_\_

**INDOOR UNIT**

HAS WATER BEEN PLACED IN DRAIN PAN TO CONFIRM PROPER DRAINAGE? (Y/N) \_\_\_\_\_

ARE PROPER AIR FILTERS IN PLACE? (Y/N) \_\_\_\_\_

HAVE FAN AND MOTOR PULLEYS BEEN CHECKED FOR PROPER ALIGNMENT? (Y/N) \_\_\_\_\_

DO THE FAN BELTS HAVE PROPER TENSION? (Y/N) \_\_\_\_\_

HAS CORRECT FAN ROTATION BEEN CONFIRMED? (Y/N) \_\_\_\_\_

**PIPING**

HAVE LEAK CHECKS BEEN MADE AT COMPRESSOR, OUTDOOR AND INDOOR COILS, TXVs (Thermostatic Expansion Valves), SOLENOID VALVES, FILTER DRIERS, AND FUSIBLE PLUGS WITH A LEAK DETECTOR? (Y/N) \_\_\_\_\_

LOCATE, REPAIR, AND REPORT ANY LEAKS.

HAVE ALL COMPRESSOR SERVICE VALVES BEEN FULLY OPENED (BACKSEATED)? (Y/N) \_\_\_\_\_

HAVE LIQUID LINE SERVICE VALVES BEEN OPENED? (Y/N) \_\_\_\_\_

**CHECK VOLTAGE IMBALANCE**

LINE-TO-LINE VOLTS: AB \_\_\_\_\_ V      AC \_\_\_\_\_ V      BC \_\_\_\_\_ V

$(AB + AC + BC)/3 = \text{AVERAGE VOLTAGE} = \text{_____ V}$

MAXIMUM DEVIATION FROM AVERAGE VOLTAGE = \_\_\_\_\_ V

VOLTAGE IMBALANCE =  $100 \times (\text{MAX DEVIATION})/(\text{AVERAGE VOLTAGE}) = \text{_____}$

IF OVER 2% VOLTAGE IMBALANCE, DO NOT ATTEMPT TO START SYSTEM! CALL LOCAL POWER COMPANY FOR ASSISTANCE.

**III. START-UP**

CHECK INDOOR UNIT FAN SPEED AND RECORD.

CHECK OUTDOOR UNIT FAN SPEED AND RECORD.

AFTER AT LEAST 10 MINUTES RUNNING TIME, RECORD THE FOLLOWING MEASUREMENTS:

SUCTION PRESSURE \_\_\_\_\_

SUCTION LINE TEMP \_\_\_\_\_

DISCHARGE PRESSURE \_\_\_\_\_

DISCHARGE LINE TEMP \_\_\_\_\_

ENTERING OUTDOOR UNIT AIR TEMP \_\_\_\_\_

LEAVING OUTDOOR UNIT AIR TEMP \_\_\_\_\_

INDOOR UNIT ENTER-AIR DB (dry bulb) TEMP \_\_\_\_\_

INDOOR UNIT ENTER-AIR WB (wet bulb) TEMP \_\_\_\_\_

INDOOR UNIT LEAVING-AIR DB TEMP \_\_\_\_\_

INDOOR UNIT LEAVING-AIR WB TEMP \_\_\_\_\_

COMPRESSOR AMPS - L1 \_\_\_\_\_ L2 \_\_\_\_\_ L3 \_\_\_\_\_

NOTES

**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 technician 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 found to be defective 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. 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 technician.

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 shall last for the term of the expressed 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 \_\_\_\_\_

**Effective on units installed After July 1, 2002.**

USA: International Comfort Products Corporation (USA) • 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 18 (Orig. 8/9/2002)**

## 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, T9MPD:** 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: GDL, GNL, TNE, TDE, NTC7, NDC7, NTP6, NDP6, TDE, NTV6, VNE:** 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: NTC6, GNE, GDE, NDN6, NTG3, NDN3, FBF, NBF, NDF, NTN3, NTN6, NNE, N9MP1, N9MP2, FUH:** 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, NOME:** 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, 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:** 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 APPLICATIONS ONLY

For purposes of this warranty a commercial 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, GPF, PGAD, PGME, PGB, PGMG, PGMF, PGS, PGE, APE, PAE, PAB, PAMD, PAS, PAF, APFM, APF, PHB, PHE, PYMD, HPB, PHS, CAC, ACC, CAE, ACE, CHC, HCC, CHE, HCE:**

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):\*** A replacement for 10 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 technician.

\*\*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 technician 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.