

Installation Instructions



SPLIT SYSTEM 3 PHASE, 3 to 5 TON HEAT PUMPS

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.

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.

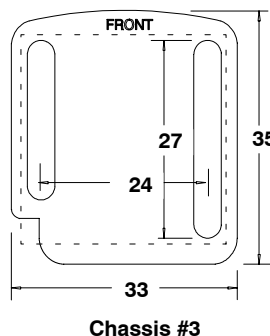
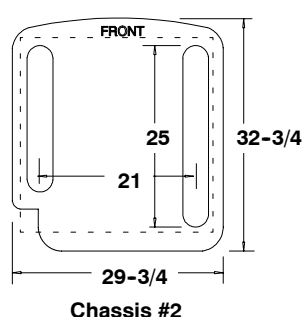
Safety Precautions

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.

NOTE TO INSTALLING DEALER: The Owners Instructions and Warranty are to be given to the owner or prominently displayed near the indoor Furnace/Air Handler Unit.

Figure 1 **Dimensions**

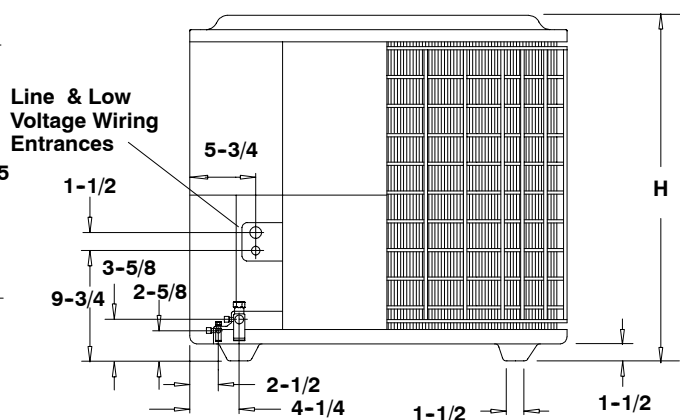
Height Dimensions		
Model	Chassis	Height
036	2	32-5/8
042	2	36-5/8
048	3	40-5/8
060	3	32-5/8
075	3	42-1/2



ALL DIMENSIONS IN INCHES

Minimum Mounting Pad Sizes with pad starting at 9" from structure for minimum clearance of 6".

Chassis #2 24" W X 26" D
Chassis #3 27" W X 28" D



Locating The Outdoor Unit:

Check local codes covering zoning, noise, platforms.

If practical, avoid locating next to fresh air intakes, vent or bedroom 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.

Heat Pumps Only: The top surface of platform must be above average winter snow levels to prevent coil blockage.

Clearances:

Nominal operating clearances, where practical, are 48 inches (120 cm) above unit for discharge air and 18 inches (40cm) around coil for intake air on three sides. Clearance on one side (normally between unit and structure) may be reduced to 6 inches (15cm). Nominal clearances are based from a solid parallel object, wall, roof overhang, etc.

Do Not install under roof overhangs without guttering. A minimum vertical clearance of 48" is required to overhang.

The clearance may be reduced from a single object with a small surface area, such as the end of a wall, outside corner of a wall, fence section or a post, etc. As a general rule the width of the object should equal the minimum clearance from the unit. For example, a 4 inch (10cm) fence post could be 4 inches (10cm) from the unit.

Inside corner locations on single story structures require evaluation. Large overhanging soffits may cause air recirculation in a corner area even though recommended clearances are maintained. As a guide locate the unit far enough out so that half of the discharge grille is out from under the soffit.

Two or more units may be spaced with 18 inches (45cm) between units.

A service clearance of 24 inches (60cm) is desirable from control box end or side. Control box and corner panel below it can be loosened and moved out to the side to facilitate servicing. Internal components can be accessed through control box corner or top only.

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 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.

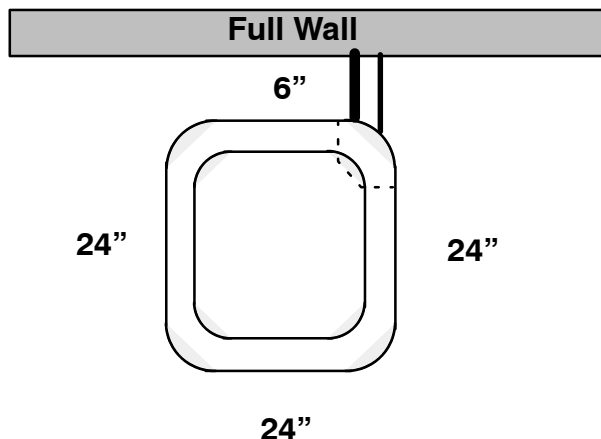
If possible, place the unit over one or more load bearing walls. If there are several units, mount them on platforms that are self-supporting and span load bearing walls. These suggestions are to minimize noise and vibration transmission through the structure. If the structure is a home or apartment, avoid (if practical) locating the unit over bedrooms or study.

NOTE: When condensing unit is to be installed on a bonded guaranteed roof, a release must be obtained from the building owner to free the installer from all liabilities.

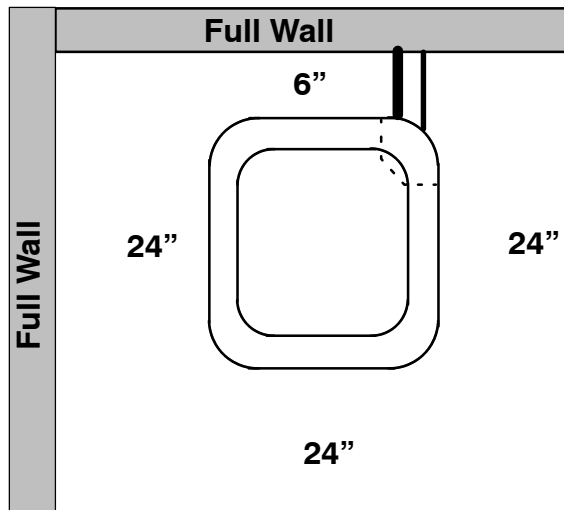
Figure 2

Clearances

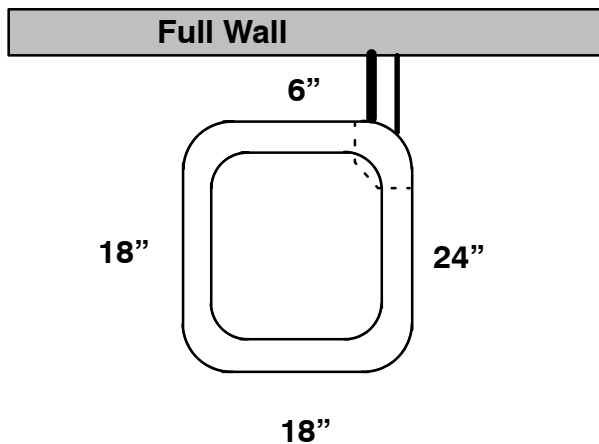
Recommended Clearances



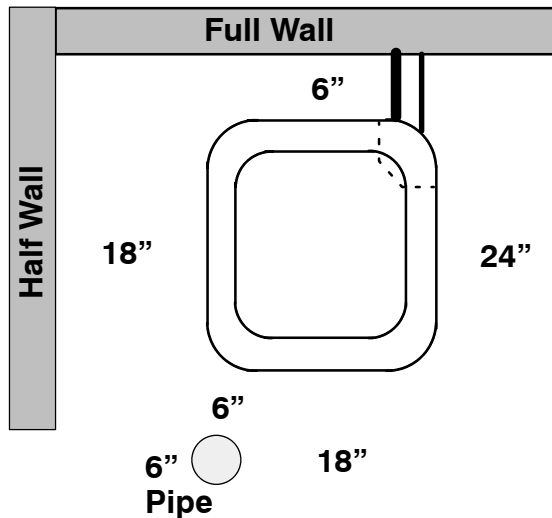
Minimum Clearances



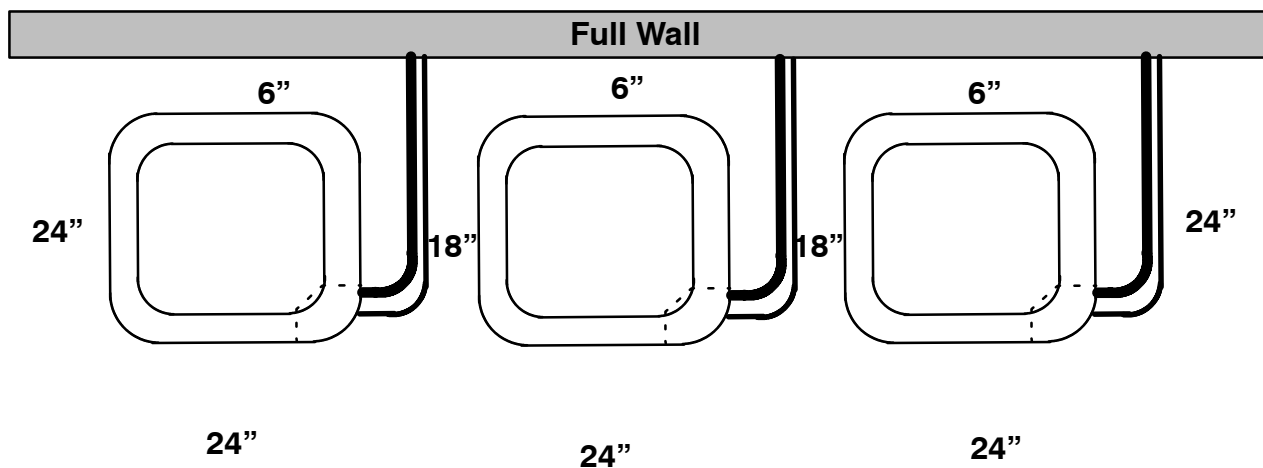
Minimum Clearances



Minimum Clearances



Minimum Clearances



Installing Refrigerant Lines

Component Matches

Check to see that you have the proper system components. **APPROVED MATCHED SYSTEM COMPONENTS MUST BE USED. Refer to the Sales Specification Sheet or Split System Summary for match data and orifice sizes.**

The outdoor units are shipped with a refrigerant charge to match the indoor unit and 25 ft. (7.5m) of refrigerant line. If shorter or longer lines are used, the charge will have to be adjusted.

TOTAL LENGTH OF REFRIGERANT LINES MUST NOT EXCEED 75 ft. WITH A MAXIMUM VERTICAL SEPARATION OF 50 ft. BETWEEN THE OUTDOOR AND INDOOR UNITS WITH 3 TRAPS, 2 TRAPS FOR 40 ft.

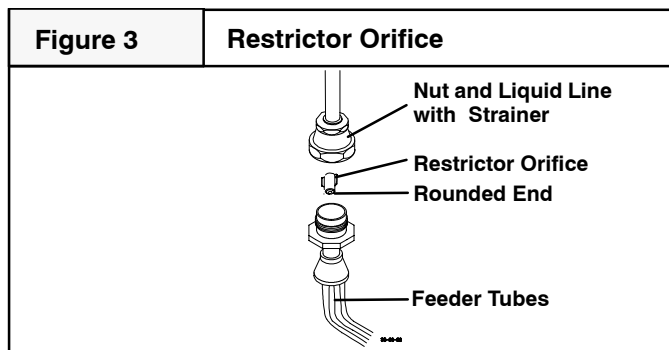
Restrictor Orifice

Some indoor matches use a restrictor orifice in the fitting at the indoor coil. Some matches may require a different orifice for proper system performance and it must be changed before the refrigerant lines are connected.

Changing the Restrictor Orifice

The restrictor orifice is located in a fitting in the liquid line. The fitting is actually the distributor end of the cap tube assembly.

1. Remove the liquid line fitting and replace restrictor orifice. **(STANDARD RIGHT HAND THREAD)**
2. Make sure the restrictor is installed with the rounded end toward the feeder tubes. **See Figure 3.**



Refrigeration Line Sets

If it is necessary to add tubing in the field, use dehydrated or dry sealed deoxidized copper refrigeration tube. **DO NOT** use copper water pipe.

It is important that no tubing is cut or seals broken until you are ready to actually make connections to the evaporator and to the condenser section.

Do not remove rubber plugs or copper caps from the tube ends until ready to make connections at evaporator and condenser.

PLEASE! UNDER NO CIRCUMSTANCES LEAVE THE LINES OPEN TO THE ATMOSPHERE FOR ANY PERIOD OF TIME.

Be extra careful with sharp bends. This tubing can "kink" very easily, and if this occurs, the entire tube length will have to be replaced. Extra care at this time will eliminate future service problems.

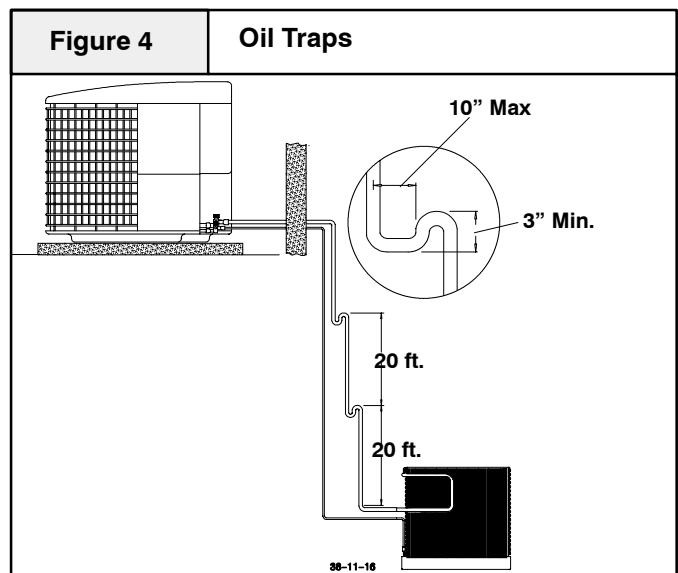
Suspension And Installation Of Refrigeration Lines

DO NOT fasten liquid or suction lines in direct contact with the floor or ceiling joist. Use an insulated or suspension type of hanger. Keep both lines separate, and insulate the suction line. Both lines should be insulated in extremely long runs in an attic or underground in a raceway, 50' or more.

Do not let refrigerant lines come in direct contact with foundation. When running refrigerant lines through the foundation or wall, the openings should be made large enough to allow for a sound absorbing material to be placed or installed between the tubing and the foundation. This will prevent noise transmission between the tubing and the wall section (foundation) or the building.

Installation Instructions For Condensing Units That Are Higher Than Evaporator

It is recommended that vertical suction risers not be upsized. Proper oil return to the compressor should be maintained with suction gas velocity. If velocities drop below 1500 fpm (feet per minute), oil return will be decreased. An oil trap should be installed every 20' of vertical suction line riser (condenser above evaporator.) Refer to line sizing charts.



Line Valves

The outdoor condensing unit is supplied with straight sweat brass service valves with copper stubs.

All line valves are positioned to seal the refrigerant in the condensing unit with gauge ports open to connecting lines when the Schraeder valve is depressed. Gauge ports have Schraeder installed and require use of charging hoses with depressors.

Brazing Connections

WARNING

Fire Hazard

Refrigerant and oil mixture under pressure could ignite as it escapes and contacts brazing torch resulting in Fire. Make sure the refrigerant charge is properly removed from both the high and low sides of the system before brazing any component or lines.

FAILURE TO DO SO COULD RESULT IN BODILY INJURY OR DEATH.

Before making braze connections, be sure all joints are clean. Before heat is applied for brazing, nitrogen should be flowing through the tubing to prevent oxidation and scale formation on the inside of the tubing.

Liquid & Suction Lines

Fully annealed refrigeration lines should be used when installing the system.

The following is the recommended method for making braze connections at the refrigerant line connections:

1. Clean refrigerant tube end with emery cloth or steel brush.
2. Use a suitable brazing alloy for copper to copper joints.
3. Insert tubing into swage fitting connection.
4. Apply heat absorbing paste or heat sink product to prevent damage to the service valve.

CAUTION

Do not heat valve body above 250 degrees F.

5. Braze joint.
6. Quench the joint and tubing with water using a wet rag. Leave rag on fitting body and re-wet with water to help cool area.

Evacuating, And Charging Instructions

NOTE

Intentional release of CFC or HCFC Refrigerant to the Atmosphere violates Federal Law. It may also violate State and Local Codes. Check all Federal, State and Local Codes before proceeding.

These instructions are intended for use with condensing units that are precharged at the factory with adequate refrigerant to handle 25 feet.

NOTE: Do not use any portion of the charge for purging or leak testing. It is mandatory that a thorough evacuation of the refrigerant in the piping and evaporator be performed.

The liquid line and suction line service valves have been closed after final testing at the factory. **Do not disturb these valves until the lines have been leak checked and evacuated or the charge in the unit may be lost.**

Recommended Method Of Evacuating A System

1. Connect the vacuum pump to the suction and liquid line gauge ports.
2. If the evacuation is being performed on a new system installation, the valves should be kept in the "front seated" (closed) position. This will allow the mechanic to evacuate the refrigeration lines and the indoor coil, without disturbing the factory charge in the outdoor unit.
3. Follow the vacuum pump manufacturer's instructions. Allow the pump to operate until the system has been evacuated down to 300 microns. Allow the pump to continue running for an additional 15 minutes. Turn off the pump and leave the connections secured to the two service valves. After 5 minutes, if the system fails to hold 500 microns or less, check all connections for tight fit and repeat the evacuation procedure.
4. Isolate the vacuum pump from the system by closing the shutoff valves on the gauge bar. Disconnect the vacuum pump.

Valve Actuation: Service Valves

A) After evacuation of the connecting lines, remove the service valve cap and fully insert the hex wrench into the stem. A back-up wrench is required on the valve body to open the valve stem (not required on ball valves.) Backout counterclockwise until the valve stem just touches the retaining ring. **NOTE: THIS IS NOT A BACKSEATING VALVE.** Care must be taken to prevent dislodging retainer ring when opening valve. Some models have ball type suction valves that can be opened with a 6" crescent wrench by rotating the valve stem 90° counter clockwise.

B) Replace service valve cap and torque to; 8-11 ft. lbs. on 1/4" and 3/8" valves, 12-16 ft. lbs. on 5/8" and 3/4", 15-21 ft. lbs. on 7/8" valves, 6-8 ft. lbs. on ball valves.

NOTE: The cap is the primary seal and must be tightened to prevent leaks.

C) Torque gauge port cap 6-8 ft. lbs.

REFRIGERATION PIPING & CHARGING

The recommended method of addition or removal of refrigerant is by weight.

Some matching coils may need more refrigerant than the factory charge. If you can't determine charge by weight, then check charge by superheat method and performance curves. The oil charge is sufficient for 50 feet.

For oil requirements refer to **Figure 5**. For piping lengths up to 75 feet refer to **Figure 6** for pipe size, and **Figure 7** for refrigerant adjustment.

On applications where liquid floodback to the compressor is likely to occur, use of a crankcase heater is recommended.

Figure 5 - Addition of Refrigeration Oil

Distance (Feet)	Suction Line Size	
	5/8, 3/4, 7/8	1-1/8
0-50	-	-
51	1 oz.	2 oz.
60	2 oz.	4 oz.
75	3 oz.	6 oz.

Figure 6 - LINE SIZING

Model Series	Size-ton	Liquid	Suction
All Series	3	3/8"	3/4"
All Series	3-1/2 to 4	3/8"	7/8"
All Series	5	1/2"	1-1/8"
All Series	6-1/3	5/8"	1-1/8"

Figure 7 Addition of Refrigeration Charge

Liquid Line Diameter	oz. Per Linear Ft. *
3/8	.60
1/2	1.20
5/8	1.80

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.

Depending on what model you have, the supply voltage should be 208-230 volts (187 volt min. to 253 volts max.), 460 volt (414 min. to 506 max.), or 575 volts (517 min. to 633 max.) 60Hz three phase.

APPROVED FOR USE WITH COPPER CONDUCTORS ONLY. DO NOT USE ALUMINUM WIRE.

REFER TO UNIT RATING PLATE FOR CIRCUIT PROTECTION.

Grounding

Permanently ground unit in accordance with the National Electrical Code and local codes or ordinances. Use a copper conductor of the correct size from the grounding terminal in control box to a grounded connection in the service panel or a properly driven and electrically grounded ground rod.

Wiring Connections

Make all outdoor electrical supply (Line Voltage) connections with raintight conduit and fittings. Most codes require a disconnect switch outdoors within sight of the unit.

Connect wiring for Low Voltage controls, Reference **Figures 8-11 and Wiring Diagram on unit.**

Use of Rigid Metal Conduit

It is recommended that wires be tied together or twisted together inside the conduit. This will minimize any buzzing type sounds that could be produced with high current loads, such as during starting. Under some conditions it may be necessary to use a hard start kit to eliminate problem noises.

Control Box Access

Remove the four screws. Cover is notched so it will slide out from under top edge of unit.

Figure 9

Heat Pump Control Box

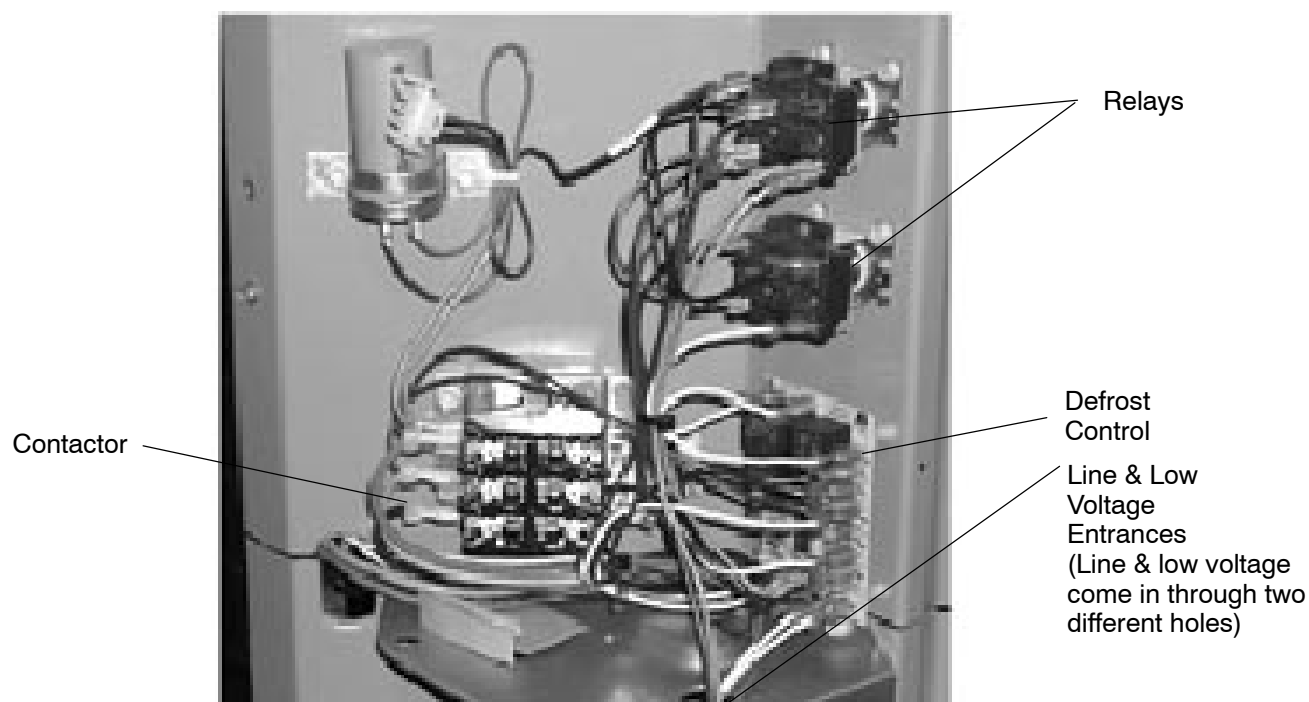
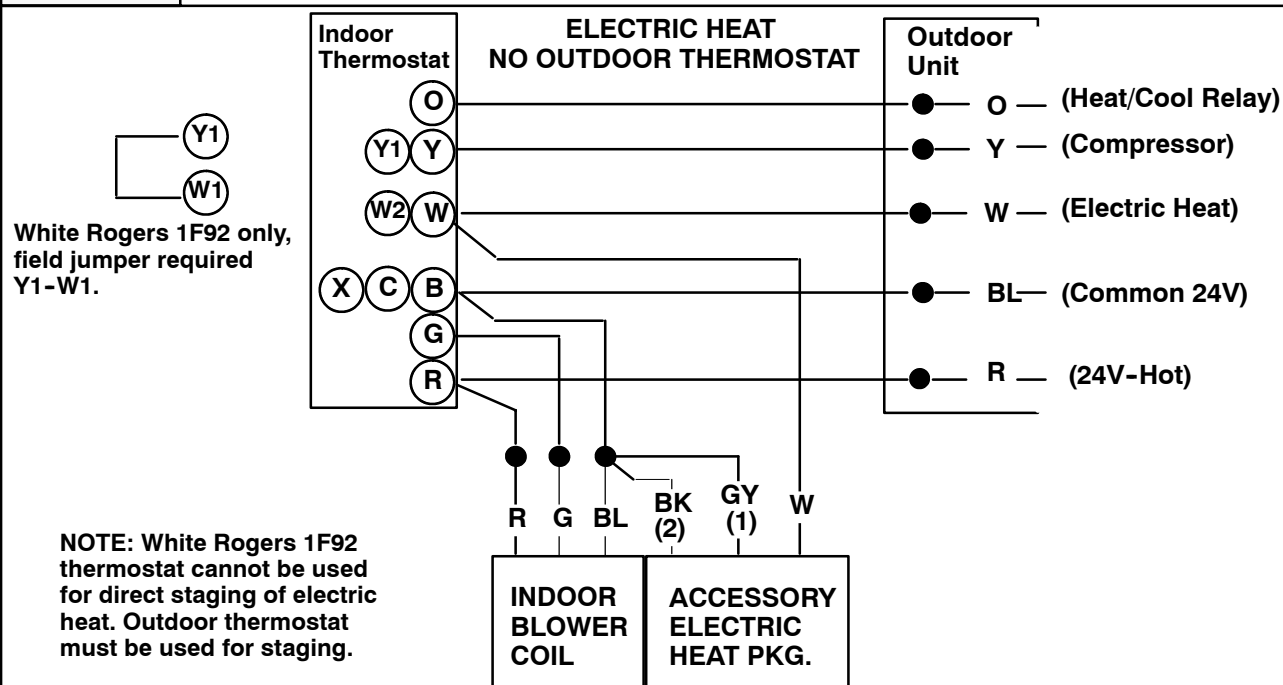


Figure 11

Heat Pump Typical Low Voltage Control Connections



● SPLICE (WIRE NUT OR SOLDER AND TAPE)

(1) FIRST STAGE ELECTRIC HEAT ALL HEATERS

(2) ADDITIONAL STAGES, ELECTRIC HEAT STAGE 2 = BK, STAGE 3 = V, STAGE 4 = BR

If electric heat is not used, discard connection shown from electric heat package.

Start-Up Procedure

Start-up Procedure

1. Close electrical disconnects to energize system.
2. Energize crankcase heater on units so equipped.
3. Set Thermostat selector switch to OFF.
4. Set room thermostat at desired temperature. Be sure setpoint is below indoor ambient temperature for cooling and above indoor ambient for heating.
5. Set the system switch of the thermostat on COOL and fan switch for continuous operation or AUTO, as desired. Operate unit for 15–20 minutes, then check the system refrigerant charge if it was necessary to adjust.
6. After the refrigerant charge has been adjusted, the system is now ready for continuous operation.

Final Refrigeration Charge Adjustment

Before any adjustment is made to the refrigerant charge, it is imperative that the air flow characteristics of the indoor blower be established.

When checking indoor air flow, it is important to remember that the blower will deliver a higher quantity of air across a dry coil versus a wet coil. Blower charts are calculated with a dry coil.

Recommended air flow for installations of cooling units and heat pumps is 350–450 CFM per ton (12,000 BTUH) through a wet coil. Refer to indoor unit installation instructions for proper methods of determining air flow and blower performance.

To Check System Refrigerant Charge (Superheat Method), Cooling Only

1. Attach an accurate temperature sensing device to the suction line approximately 4" – 6" away from the suction line service valve. The temperature sensing device should be clamped securely to the suction line, on a horizontal plane (between 9 & 3 O'clock) and insulated. Record the suction line temperature.
2. Measure and record the suction line refrigeration pressure. (Measure at the suction line service valve gauge port.) Using Temperature / Pressure Chart convert this pressure to the saturation refrigerant temperature. The difference between actual and saturated temperatures is the amount of superheat.

Figure 12 - Temperature / Pressure Chart

Temperature °F.	PSIG R-22	Temperature °F.	PSIG R-22	Temperature °F.	PSIG R-22
-6	19.3	19	41.9	41	70.0
-4	20.8	20	43.0	42	71.4
-2	22.4	21	44.1	43	73.0
0	24.0	22	45.3	44	74.5
1	24.8	23	46.4	45	76.0
2	25.6	24	47.6	46	77.6
3	26.4	25	48.8	47	79.2
4	27.3	26	49.9	48	80.8
5	28.2	27	51.2	49	82.4
6	29.1	28	52.4	50	84.0
7	30.0	29	53.6	55	92.6
8	30.9	30	54.9	60	101.6
9	31.8	31	56.2	65	111.2
10	32.8	32	57.5	70	121.4
11	33.7	33	58.8	75	132.2
12	34.7	34	60.1	80	143.6
13	35.7	35	61.5	85	155.7
14	36.7	36	62.8	90	168.4
15	37.7	37	64.2	95	181.8
16	38.7	38	65.6	100	195.9
17	39.8	39	67.1	105	210.8
18	40.8	40	68.5	110	226.4
				115	242.7

3. Measure and record the outside ambient air temperature.

4. Optimum performance will be achieved when the operating charge produces 15°–20° F suction superheat at compressor with 82° F outdoor ambient and 80° F dry bulb (67° F wet bulb) indoor temperature (ARI "B" test conditions) at rated airflow. If these conditions cannot be obtained, compare the calculated superheat value with the recommended values given in **Figure 13**.

Figure 13 - Recommended Superheat Values

Outside Air Temp ° F	Superheat °F Variator or Piston
65	38 – 45
75	27 – 33
85	20 – 25
95	10 – 15
105	2 – 6

If the actual superheat readings are higher than shown, the system is most likely under-charged, and charge should be added. Add charge in 4 ounce increments, and recalculate superheat values. Continue adjusting charge until the actual superheat approximately matches the recommended values.

If the actual superheat readings are lower than shown, the system is most likely over-charged, and charge should be removed. Remove charge in 4 to 6 ounce increments, and recalculate superheat values. Continue adjusting charge until the actual superheat approximately matches the recommended values.

NOTE: Each time that charge is added or removed from the system, allow the system to run approximately 15 minutes before pressure and temperature readings are taken and superheat calculations made.

NOTE: Indoor Wet Bulb Temperature (and Relative Humidity) will alter superheat values. All readings should be at 50% humidity inside and 350 to 450 CFM per ton across the indoor coil.

Heating Checkout (Heat Pump Only)

1. Turn thermostat heat-cool switch to OFF. Turn thermostat fan switch to AUTO.
2. Turn on all power except high voltage line to outdoor section.
3. Turn fan switch on thermostat to ON. Blower should run. Reset to AUTO; blower should turn off.
4. Set thermostat below room temperature. Turn selector switch to heat. Move thermostat above room temperature. Blower should run on heating speed and a click should be heard in the condensing unit outside (contactor closing). The sequencer coils for auxiliary heat should be energized. After approximately 30 seconds the contacts in the sequencers should close and the electric heat elements start heating. Allow 3 minutes for all heaters to come on.
5. Set system switch to OFF> Turn the thermostat above room temperature. Turn on the high voltage power to the outdoor unit. Nothing apparent will be happening, but the crankcase heater is now energized. If the outdoor temperature is below 75 °F allow the unit to stay in this mode at least 6 hours. This is needed to vaporize any refrigerant that may be in the compressor oil.
6. Set the thermostat above room temperature. Move system switch to heat. Count to 5 (about 5 seconds). Turn the electric power off at the condensing unit disconnect switch. Check that there is no clattering or unusual noises. The outdoor fan blade should have started turning and a humming noise should have been heard from the compressor. The indoor fan should continue to run at its normal speed and electric elements continue to heat.
7. Wait 2 minutes, then repeat the procedure and re-check the same things in case you missed something during the first power application.
8. With the unit operating, close all doors, windows, storm windows, and openings to the house. Set the thermostat to the desired setting. Set outdoor thermostat (if installed) to balance point of house. If temperature of house is at least two degrees below thermostat setting, heat pump and auxiliary heat not controlled by outdoor thermostats will continue to run until room temperature is approximately 2° below thermostat set point. Auxiliary heat light should go out and auxiliary heat cycle off. Heat pump should continue to run until thermostat reaches set point.

To Check System Refrigerant Charge (Heating Mode)

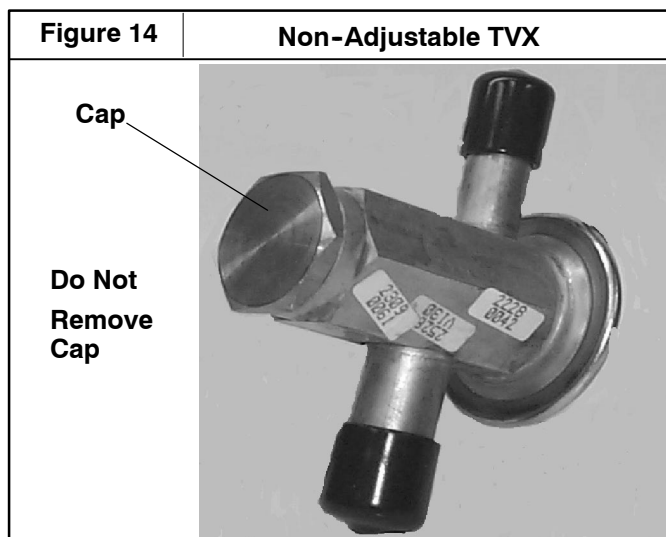
For models with an outdoor restrictor orifice, optimum heating performance will be achieved when the operating charge produces 10° – 20° F suction superheat at compressor with 47° F outdoor ambient and 70° F dry bulb indoor temperature (ARI "High Heat" test conditions) at rated airflow.

The recommended method of addition or removal of charge in the heating mode is by weight. The system operation may be checked against the performance charts. Remember, indoor airflow must be approximately 400 CFM per ton to compare operation to performance charts.

Subcooling Adjustment - Models with Adjustable TXV (Heating Mode)

If heating performance requires adjustment, adjust subcooling at or as close to a 47 degree F outdoor ambient and a 70 degree F dry bulb indoor ambient temperature (ARI "High Heat" test conditions) at rated indoor airflow. For heat pump models provided with an **adjustable** outdoor thermal expansion valve (TXV), the following procedure should be used to adjust the subcooling in the heating mode. (**Figures 14, 15 and 16** show details of non- adjustable TXV versus adjustable TXV).

Operate for 30 minutes and check subcooling levels. To accurately measure subcooling, record the liquid line temperature at the liquid valve at the outdoor unit. Using a R22 refrigerant table, determine the saturated liquid temperature, then subtract the measured liquid line temperature to calculate the subcooling. **Subcooling = (Saturated Liquid Temp. @ Liquid PSIG) - Measure Liquid Temp.** If adjustment is necessary, proceed as follows: TXV maximum adjustment should be no greater than 1/2 turn clockwise or 1/2 turn counter-clockwise. An adjustment clockwise will increase subcooling while an adjustment counter-clockwise will decrease subcooling. It is recommended to adjust the TXV in 1/8 turn (45 Degree turn) increments or less. Allow 30 minutes after each TXV adjustment for the system to stabilize before confirming the amount of subcooling.

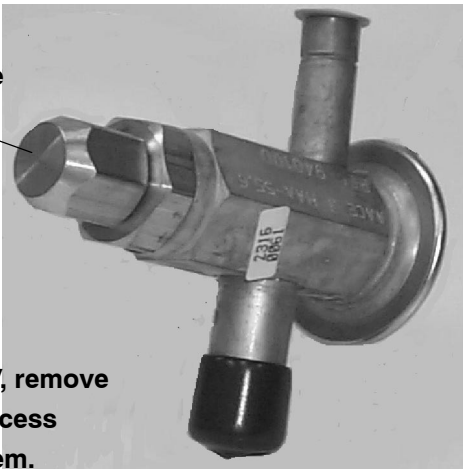


CAUTION: Do not remove the cap on a Non-Adjustable TXV.

Figure 15

Adjustable TVX

Cap Nut on
an Adjustable
TXV



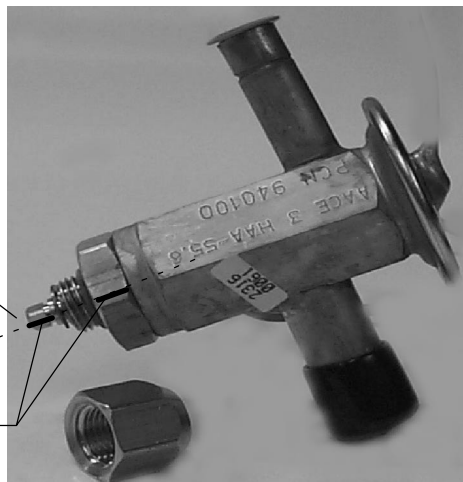
To adjust TXV, remove
Cap Nut to access
adjustable stem.

Figure 16

Adjustable TVX

Adjustable
Stem

Reference
Mark



Note: It is recommended that a reference mark be made on the TXV body and the adjustment stem before adjustments are made. This allows one to accurately measure the position of the adjustable stem to guard against over-adjustment of the stem.

Defrost System (Heat Pump Only)

Defrost Control

Time Interval Adjustment

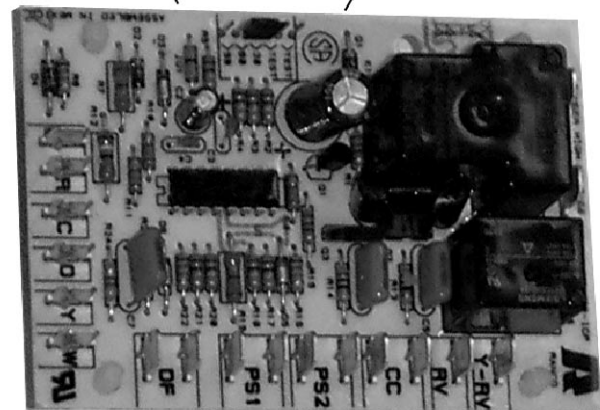
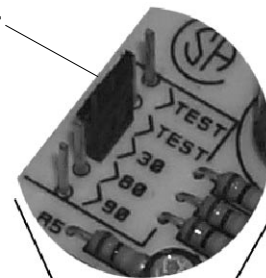
To adjust defrost frequency, turn off all power to the Heat Pump. Remove control box cover and locate the electronic defrost control board.

The defrost control board has a jumper clip that fits over two pins. To change the time interval, remove the jumper clip and place it on pins for the desired time interval, 30, 60 or 90 minutes.

Figure 17

Adjusting Defrost Time -
Time Temperature Type

Jumper



Maintenance

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.

Condensate Drain

During the cooling season check at least monthly for free flow of drainage and clean if necessary.

Cleanliness

These tips will help you keep your air conditioner looking better and working more efficiently:

1. Free air flow is essential. Keep the outdoor coil clean and free of restrictions. Keep fences, shrubs, snow drifts and any other obstructions at least two feet from all coil air inlets.
2. Keep the coil free of grass clippings, weeds and other debris. **BE SURE TO TURN OFF ELECTRICITY BEFORE CLEANING!**

Coils may require cleaning. The coil should always be cold when cleaning. Use an alkaline based cleaner only. Cleaning a hot coil or using an acid based cleaner will remove the paint from the fins and may clog the coil.

4. Never use a weather cover over the outdoor unit unless it is a ventilated type or made of breathable fabric that will allow moisture to evaporate rapidly. A cover that holds moisture in the unit will cause more rust build-up and damage than normal exposure to weather.

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.