

INSTALLATION INSTRUCTIONS

SPLIT HEAT PUMP OUTDOOR SECTION

MODELS

**24UHPQA
30UHPQA
36UHPQA**

**FOR USE WITH:
MATCHING INDOOR BLOWER
COIL UNITS AND MATCHING
ADD ON COIL UNITS ONLY**

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BRYAN, OHIO**

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FIGURE 1

NOMENCLATURE EXPLANATION--Example:

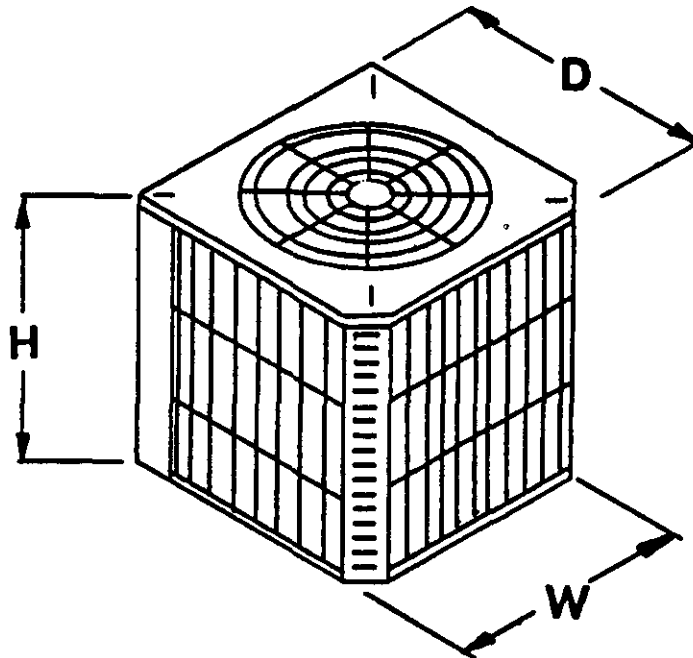
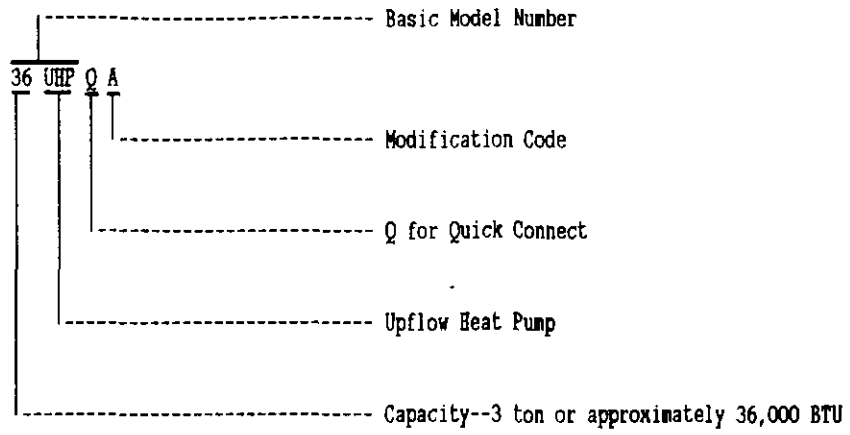


TABLE 1

| DIMENSIONS | | | |
|-----------------|-----------|-----------|------------|
| Basic Model No. | "W" Width | "D" Depth | "H" Height |
| 24UHPQA | | | |
| 30UHPQA | 32-1/2" | 32-1/2" | 26" |
| 36UHPQA | | | |

TABLE 2

| RATED CFM AND AIRFLOW DATA (Wet Coil--Cooling) | | | | | | |
|--|------------------------------|---------------|----------------------------------|----------------|-----------------|----------------------------|
| Condensing Unit Model Number | Evaporator Coil Model Number | Rated AirFlow | | Rated E.S.P. ② | Motor Speed Tap | Recommended Air Flow Range |
| | | CFM | Pressure Drop H ₂ O ① | | | |
| 24UHPQA | BC24B | 800 | .16 | .35 | High | 700 - 910 |
| | A30AQ-A | 800 | | | | 700 - 910 |
| 30UHPQA | BC36B | 1050 | .20 | .30 3 | Low | 900 - 1150 |
| | BC35B | 975 | | .50 3 | Low | 825 - 1075 |
| | A36AQ, S-A | 1050 | | | | 900 - 1150 |
| | A42AS, S-A | 1050 | | .15 | | 900 - 1150 |
| 36UHPQA | BC36B | 1200 | .30 | .30 3 | High | 1020 - 1320 |
| | BC35B | 1125 | | .40 3 | High | 950 - 1240 |
| | A36AQ, S-A | 1200 | | | | 1020 - 1320 |
| | A42AS, S-A | 1200 | | .20 | | 1020 - 1320 |

① Measured across the evaporator coil assembly, including drain pan.

② External static pressure available for the duct system--supply and return. All blower coils have multi-speed motors, and value shows is at the recommended rated speed. Consult specification airflow charts with the blower coil units for complete information at other speeds.

③ Add .05 ESP for side inlet return with FR6 filter rack.

APPLICATION AND INSTALLATION INSTRUCTIONS

GENERAL

These instructions explain the recommended method to install the air cooled remote type condensing unit, the interconnecting refrigerant tubing and the electrical wiring connections to the unit.

The condensing units are to be used in conjunction with the matching evaporator coils or evaporator blower units for comfort cooling/heating applications as shown in the specification sheet.

These instructions and any instructions packaged with any separate equipment required to make up the entire air conditioning system should be carefully read before beginning the installation. Note particularly "Connecting Quick-Connect Couplings, Starting Procedure" and any tags and/or labels attached to the equipment.

While these instructions are intended as a general recommended guide, they do not supersede any national and/or local codes in any way. Authorities having jurisdiction should be consulted before the installation is made.

SHIPPING DAMAGE

Upon receipt of equipment, the carton should be checked for external signs of shipping damage. If damage is found, the receiving party must contact the last carrier immediately, preferably in writing, requesting inspection by the carrier's agent.

INSTALLATION

Size of unit for a proposed installation should be based on heat loss calculation made according to methods of National Warm Air Heating and Air Conditioning Association. The air duct should be installed in accordance with the Standards of the National Fire Protection Association for the Installation of Air Conditioning and Ventilating Systems of Other Than Residence Type, NFPA No. 90A and Residence Type Warm Air Heating and Air Conditioning Systems, NFPA No. 90B. Where local regulations are at a variance with instructions, installer should adhere to local codes.

LOCATION

The condensing unit is designed to be located outside with free and unobstructed condenser air inlet and discharge. It must also permit access for service and installation. Condenser air enters the coil on three sides and discharges upward from the top. Refrigerant and electrical connections are made from the rear of the unit as shown in Figure 7 with electrical service access on the right side. The unit can be installed with the rear of the unit "close to the wall", however, additional service clearance at the back of the unit would be desirable if practical for unit service. The compressor can be serviced through the top.

WIRING

All wiring must be installed in accordance with the national Electrical Code and local codes. Power supply voltage must conform to the voltage shown on the unit serial plate. A wiring diagram of the unit is attached to the inside of the electrical cover. The power supply shall be sized and fused according to the specifications supplied. A ground lug is supplied in the control compartment for equipment ground.

The control circuit is a 24 volt circuit. "Typical" wiring diagrams illustrating some of the various circuits which could be encountered can be found later in the manual.

The unit rating plate lists a "Maximum Time Delay Fuse" or "HACR Type" circuit breaker that is to be used with the equipment. The correct size must be used for proper circuit protection and also to assure that there will

be no nuisance tripping due to the momentary high starting current of the compressor motor.

When matching with a B-model blower coil unit, refer to the installation instructions with that indoor unit for 24V wiring information.

PRESSURE SERVICE PORTS

High and low pressure service ports are installed on all units so that the system operating pressures can be observed. Pressure tables can be found later in the manual covering all models. It is imperative to match the correct pressure table to the unit by model number.

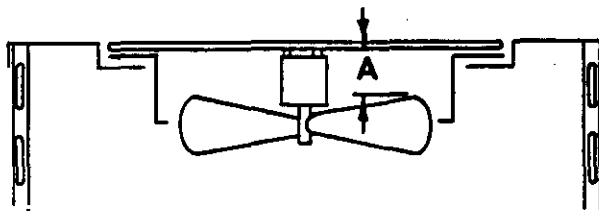
The pressure service ports on the split system heat pump are located on the interconnecting tubing quick connect fittings. An additional low side service port is located on the quick connect mounting plate for low side pressure during heating operation.

FAN BLADE SETTING DIMENSIONS

Shown in the drawing below are the correct fan blade setting dimensions for proper air delivery across the outdoor coil.

Any service work requiring removal or adjustment in the fan and/or motor area will require that the dimensions below be checked and blade adjusted in or out on the motor shaft accordingly.

FIGURE 2



| Model | Dimension A |
|----------------|-------------|
| 24, 30, 36 UHP | 3-1/2 |

INDOOR COIL

These units are designed to match with all indoor blower coils, horizontal coils and "A" coils shown earlier in these instructions. Some blower and all horizontal coils are produced with capillary tube type refrigerant control. All "A" coils and some blower coils shown are produced with an interchangeable brass orifice to provide optimum matching of the refrigerant control when matching alternate sized indoor units to the outdoor unit. A properly sized orifice for each outdoor section is packaged with this unit. See installation instructions packaged with the indoor section for complete details.

**TABLE 3
ELECTRICAL DATA**

| MODEL | 24UEPQA | 30UEPQA | 36UEPQA |
|--|------------|-----------|-----------|
| Electrical Rating (60HZ/V/PH) | 230/208-1 | | |
| Operating Voltage Range | 197 - 253 | | |
| Minimum Circuit Ampacity | 17 | 21.5 | 24 |
| +Field Wire Size | #12 | #10 | #10 |
| ++Delay Fuse Max. or Ckt. Bkr. | 25 | 30 | 40 |
| Total Unit Amps 230/208 | 11.4/13.1 | 14.5/17.4 | 16.4/18.6 |
| COMPRESSOR | | | |
| Rated Load Amps 230/208 | 10.3/12.0 | 13.4/16.3 | 15.3/17.5 |
| Branch Ckt. Selection Current | 12.1 | 14.8 | 18 |
| Lock Rotor Amps 230/208 | 57/57 | 76/76 | 83.5/83.5 |
| FAN MOTOR AND COMPRESSOR | | | |
| Fan Motor--HP/RPM | 1/6 - 825 | | |
| Fan Motor--Amps | 1.1 | | |
| Fan--Dia/CFM | 24" - 3000 | | |
| + 60 degree C copper wire size. | | | |
| ++ Maximum time delay fuse or HACR type circuit breaker. | | | |

SETTING THE UNIT

GENERAL--The unit must be located outside, or in a well ventilated area. It must not be in the space being heated or cooled. A sound absorbing material should be considered if the unit is to be installed in such a position or location that might cause transmission of sound or vibration to the living area or adjacent buildings.

SLAB MOUNTING

In areas where winter temperatures DO NOT go below 32 degrees F for periods over twelve hours, the unit may be slab mounted at grade level. When installing the unit at grade level, install on a concrete slab at least four inches above finished grade level. Slab should have a slope tolerance away from the building structure of at least 1/4 inch per foot, while being level from side to side. This will prevent ice buildup under the unit during defrost cycles. Place slab in a location where run-off water from higher ground will not collect around unit. See Figure 6.

A minimum clearance should be provided between the coil inlet and any building surfaces. Provide at least four feet between coil outlet and any structures. Provide a minimum of 8 inches clearance on the service access side of the unit. Refer to Figure 7.

ROOF MOUNTING

When a unit is installed in areas where low ambient temperatures or strong winter winds exist, it should be placed so prevailing winter winds are not in direct line with the heat pump coil. If this is not possible, a wind barrier should be constructed. Place barrier 24 inches from the coil side of the unit and in the direction of the prevailing winds. Size barrier at least the same height and 6 to 12 inches wider than unit. See Figure 8.

WINTER INSTALLATION BELOW 32 DEGREES F

In areas where winter conditions go below 32 degrees F for extended periods, the unit must be elevated above the mounting surface to prevent snowfall or defrost ice accumulation from interfering with the operation of the

unit. A minimum of twelve inch elevation is recommended, while greater elevation may be required for areas of high snow accumulation. Poured concrete, steel framework, brick, cement block, etc. can be utilized to construct a suitable raised mounting platform. See Figure 9. The mounting platform must provide support on all 5 dimples located on the unit base and must not rest against the unit base.

REFRIGERANT CHARGE

The correct system R-22 is shown on the unit rating plate. Optimum unit performance will occur with a refrigerant charge resulting in a suction line temperature (6" from compressor) as shown in the following table:

TABLE 4

| Models | Rated Airflow | 95 Degrees F O.D. Temp. | 82 Degrees F O.D. Temp. |
|--------------------|---------------|----------------------------|----------------------------|
| 24UHPQA/BC24B | 800 | 58 - 60 | 72 - 74 |
| 24UHPQA/A30AQ, S-A | 800 | 52 - 54 | 66 - 68 |
| 30UHPQA/BC35B | 975 | 54 - 56 | 70 - 72 |
| 30UHPQA/BC36B | 1050 | 56 - 58 | 68 - 70 |
| 30UHPQA/A36AQ, S-A | 1050 | 62 - 64 | 70 - 72 |
| 30UHPQA/A42A, S-A | 1050 | 59 - 61 | 68 - 70 |
| 36UHPQA/BC35B | 1125 | 58 - 60 | 69 - 71 |
| 36UHPQA/BC36B | 1200 | 60 - 62 | 67 - 69 |
| 36UHPQA/A36AQ, S-A | 1200 | 59 - 61 | 68 - 70 |
| 36UHPQA/A42A, S-A | 1200 | 60 - 62 | 69 - 71 |

NOTE: The suction line temperatures are based upon 80 degrees F dry bulb/67 degrees F wet bulb (50% R.H.) temperature and rated air flow across the evaporator during cooling cycle.

SEQUENCE OF OPERATION

COOLING--Circuit R-Y makes at thermostat pulling in compressor contactor starting the compressor and outdoor motor. The G (indoor motor) circuit is automatically completed on any call for cooling operation, or can be energized by manual fan switch on subbase for constant air circulation.

HEATING--A 24V solenoid coil on reversing valve controls heating cycle operation. Two thermostat options, one allowing "Auto" changeover from cycle to cycle and the other constantly energizing solenoid coil during heating season and thus eliminating pressure equalization noise except during defrost, are to be used. On "Auto" option, a circuit is completed from R-W1 and R-Y on each heating "on" cycle, energizing reversing valve solenoid and pulling in compressor contactor starting compressor and outdoor motor. R-G also make starting indoor blower motor. Heat pump heating cycle is now in operation. The second option has no "Auto" changeover position, but instead energizes the reversing valve solenoid constantly whenever the system switch on subbase is placed in "heat" position, the "B" terminal being constantly energized from R. A thermostat demand for heat completes R-Y circuit, pulling in compressor contactor starting compressor and outdoor motor. R-G also make starting indoor blower motor.

TABLE 5

| Part No. | Model No. | Description |
|----------|-----------|--|
| 8403-017 | T874R1129 | THERMOSTAT--1 stg. cool, 2 stg. heat, 1st stage fixed, 2nd stg. adj. heat anticipators |
| 8404-009 | Q674L1181 | SUBBASE --System switch: Em. Heat-Heat-Off-Cool Fan switch: On-Auto SPECIAL FEATURE: Manual Changeover (Non-Cycling Rev. Valve) Em. heat light and System check light |
| 8403-018 | T874N1024 | THERMOSTAT--1 stg. cool, 2 stg. heat, 1st stage fixed, 2nd stg. adj., heat anticipators |
| 8404-010 | Q674F1261 | SUBBASE --System switch: Off-Cool-Auto-Heat-Em.Ht. Fan switch: On-Auto SPECIAL FEATURE: Auto system changeover, Em. heat light and System check light |
| 8403-024 | IF58-45 | THERMOSTAT--1 stg. cool, 2 stg. heat, 1st stage fixed, 2nd stg. adj. heater System switch: Em. Heat-Heat-Off-Cool Fan Switch: On-Auto |

IMPORTANT NOTE: All thermostat and subbase combinations shown above incorporate the following features: Man-Auto fan switch, Off-Heat-Cool-Em. Heat Switch, and two (2) indicator lamps--one for emergency heat and one for compressor malfunction.

WARNING: Only the thermostats and subbases listed in Table 5 have been approved for use with units covered in this manual. Use of any other thermostat subbase combination can cause a condition of no blower operation during defrost cycle when auxiliary heat is energized causing an unsafe condition and possible fire.

THERMOSTAT INDICATOR LAMPS

The red lamp marked "EM.HT." comes on and stays on whenever the system switch is placed in the emergency heat position. The green lamp marked "check" will come on if the high pressure switch opens and that prevents the compressor from running. To reset high pressure switch, place thermostat in off position then back to on position.

EMERGENCY HEAT POSITION

The operator of the equipment must manually place the system switch in this position. This is done when there is a known problem with the outdoor section, or when the green "check" lamp comes on indicating a problem.

DEFROST CYCLE

The defrost cycle is controlled by time and temperature. The 24 volt solid state heat pump control runs only during heat pump operation.

When the outdoor temperature is in the lower 40 degrees F temperature range or colder, the outdoor coil temperature is 32 degrees F or below. This temperature is sensed by the coil sensor mounted near the bottom of the outdoor coil. The coil sensor sends a signal to the control logic of the heat pump control at approximately 32 degrees F. Every 60 (90, or 30) minutes that the heat pump is running, contacts on the heat pump control close for 10 minutes. If the coil sensor indicates that the coil is at 32 degrees F or lower, the defrost relay energizes and places the system in defrost mode.

During the defrost mode, the refrigerant cycle switches back to the cooling cycle, the outdoor motor stops, electric heaters are energized, and hot gas passing through the outdoor coil melts any accumulated frost. When the temperature rises to approximately 57 degrees F, the defrost thermostat opens, de-energizing the defrost relay and returning the system to heating operations automatically.

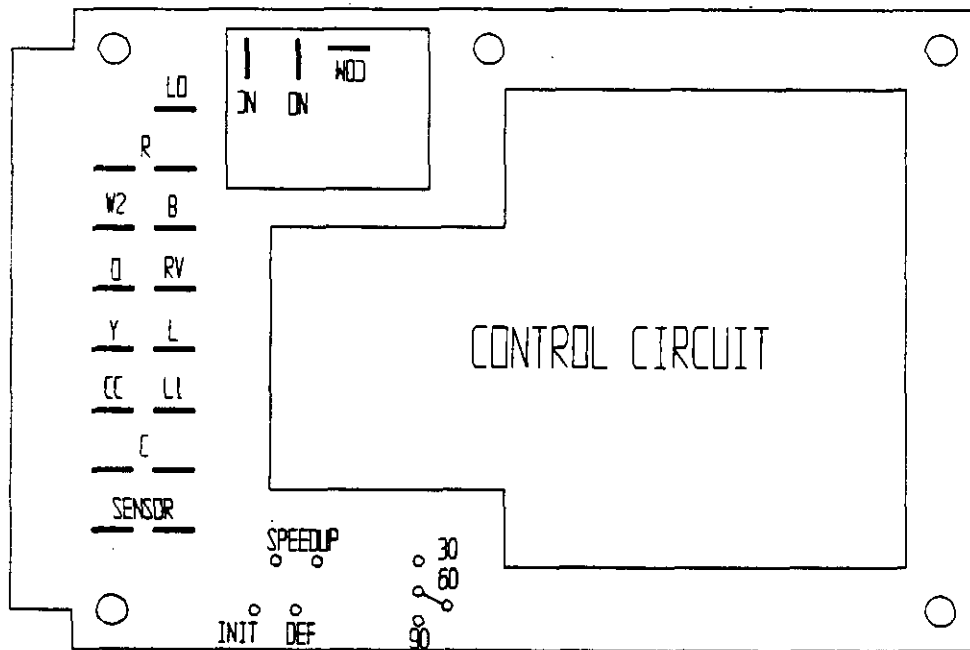
If some abnormal or temporary condition such as a high wind causes the heat pump to have a prolonged defrost cycle, the heat pump control will restore the system to heating operation automatically after 10 minutes.

There are three settings on the heat pump control--30 minute, 60 minute, and 90 minute. Most models are shipped wired on the 60 minute setting for greatest operating economy. If special circumstances require a change to another time, remove wire connected to terminal 60 and reconnect to desired terminal.

There is a cycle speed up jumper on the control. This can be used to reduce the time between defrost cycle operation without waiting for time to elapse.

There is an initial defrost jumper on the control that can be used at any outdoor ambient during the heating cycle to simulate a 0 degree coil temperature. This can be used to check defrost operation of the unit without waiting for the outdoor ambient to fall into the defrost region.

FIGURE 3



CRANKCASE HEATERS

All models have an insertion well-type heater located in the lower section of the compressor housing. This is a self-regulating type heater that draws only enough power to maintain the compressor at a safe temperature.

Some form of crankcase heat is essential to prevent liquid refrigerant migrating to the compressor causing oil pump out on compressor start-up and possible valve failure due to compressing a liquid.

Refer to unit wiring diagram to find exact type of crankcase heater used.

The following decal is affixed to all outdoor units detailing start-up procedure. This is very important. Please read carefully.

FIGURE 4

IMPORTANT

THESE PROCEDURES MUST BE FOLLOWED AT INITIAL START-UP AND AT ANY TIME POWER HAS BEEN REMOVED FOR 12 HOURS OR LONGER.

TO PREVENT COMPRESSOR DAMAGE WHICH MAY RESULT FROM THE PRESENCE OF LIQUID REFRIGERANT IN THE COMPRESSOR CRANKCASE

- 1. MAKE CERTAIN THE ROOM THERMOSTAT IS IN THE "OFF" POSITION. (THE COMPRESSOR IS NOT TO OPERATE).**
- 2. APPLY POWER BY CLOSING THE SYSTEM DISCONNECT SWITCH. THIS ENERGIZES THE COMPRESSOR HEATER WHICH EVAPORATES THE LIQUID REFRIGERANT IN THE CRANKCASE.**
- 3. ALLOW 4 HOURS OR 60 MINUTES PER POUND OF REFRIGERANT IN THE SYSTEM AS NOTED ON THE UNIT RATING PLATE, WHICHEVER IS GREATER.**
- 4. AFTER PROPERLY ELAPSED TIME THE THERMOSTAT MAY BE SET TO OPERATE THE COMPRESSOR.**
- 5. EXCEPT AS REQUIRED FOR SAFETY WHILE SERVICING — DO NOT OPEN SYSTEM DISCONNECT SWITCH.**

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IMPORTANT INSTALLER NOTE

For improved start-up performance, wash the indoor coil with a dishwasher detergent.

SERVICE HINTS

1. Caution homeowner to maintain clean air filters at all times. Also, not to needlessly close off supply and return air registers. This reduces air flow through the system, which shortens equipment service life as well as increasing operating costs.
2. Switching to heating cycle at 75 degrees F or higher outside temperature may cause a nuisance trip of the reset high pressure switch.
3. The heat pump wall thermostats perform multiple functions. Be sure that all function switches are

correctly set for the desired operating mode before trying to diagnose any reported service problems.

4. Check all power fuses or circuit breakers to be sure that they are the correct rating.
5. Periodic cleaning of the outdoor coil to permit full and unrestricted air flow circulation is essential.

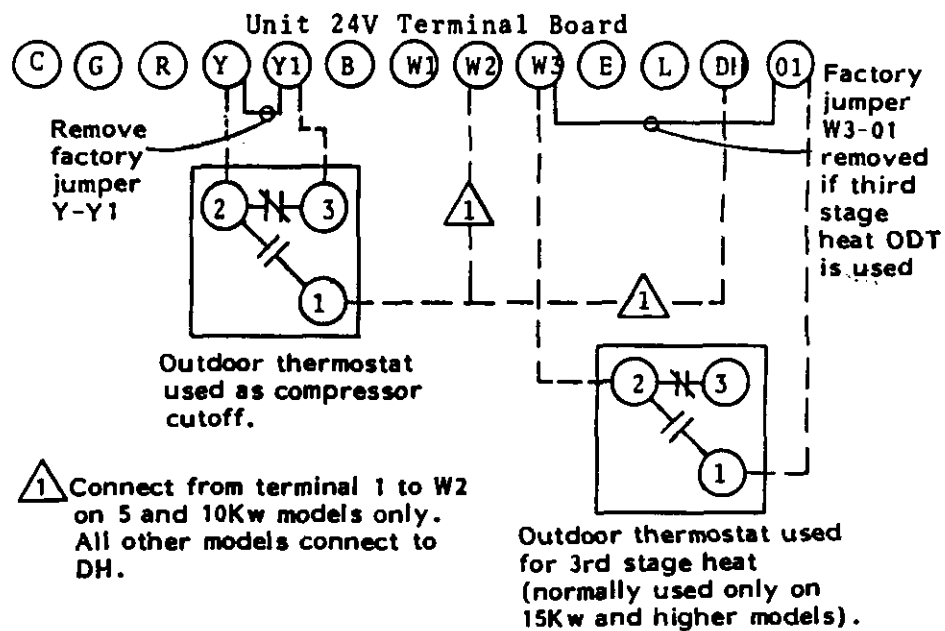
COMPRESSOR CUT-OFF THERMOSTAT AND OUTDOOR THERMOSTAT

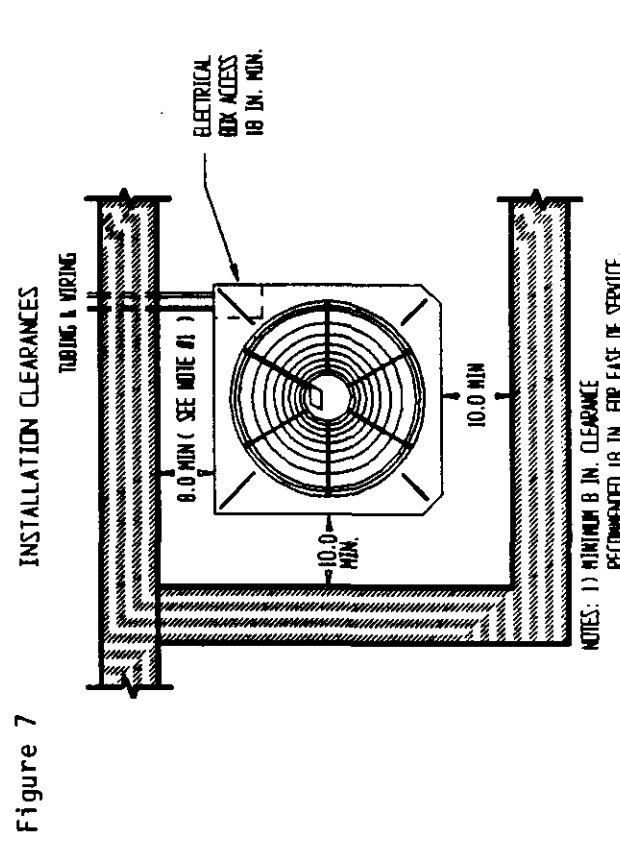
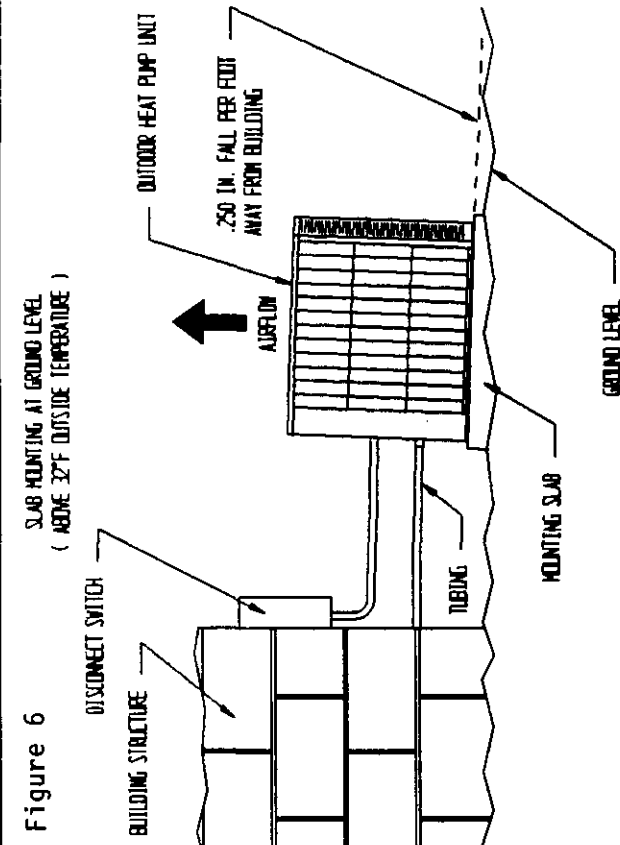
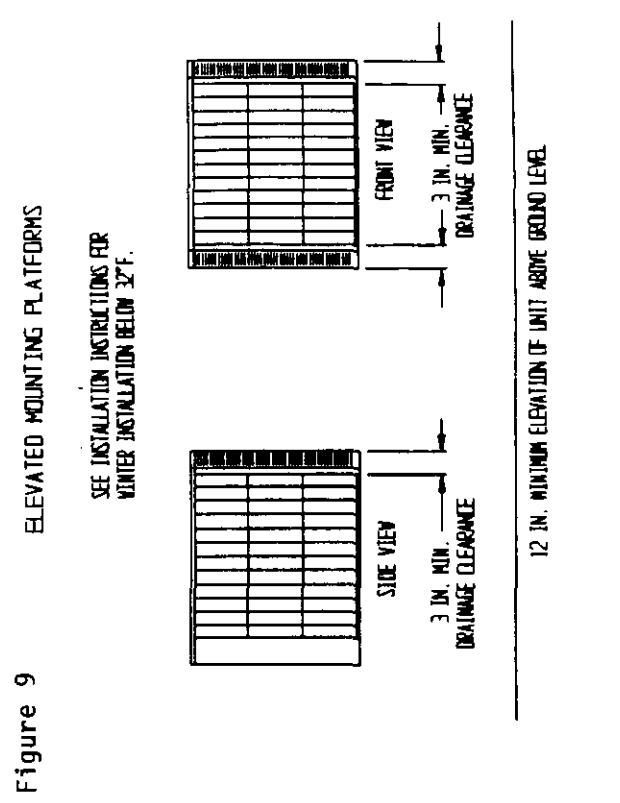
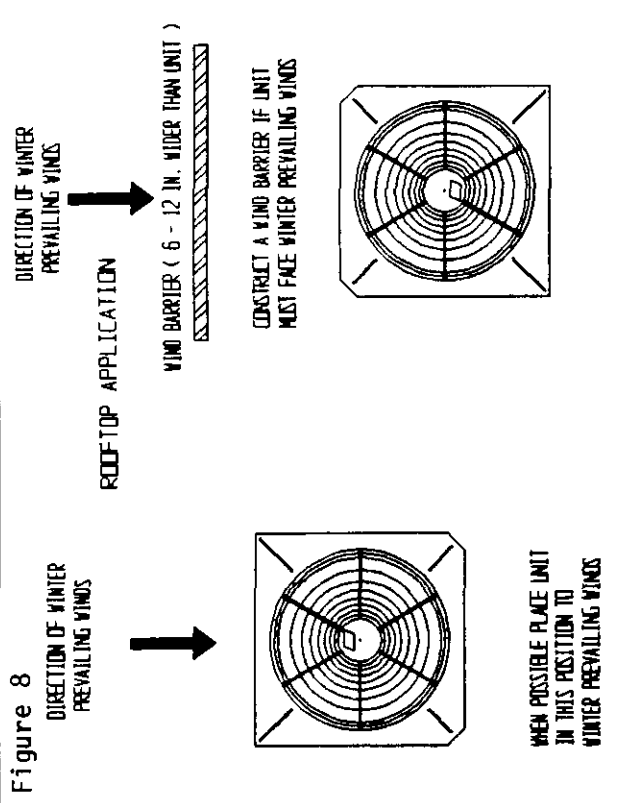
Heat pump compressor operation at outdoor temperatures below 0 degree F are neither desirable nor advantageous in terms of efficiency. Since most equipment at time of manufacture is not designated for any specific destination of the country, and most of the equipment is installed in areas not approaching the lower outdoor temperature range, the compressor cut-offs are not factory installed.

Outdoor thermostats are available to hold off various banks of electric heat until needed as determined by outdoor temperature. The set point of either type of thermostat is variable with geographic region and sizing of the heating equipment to the structure. Utilization of the Heating Application Data and the heat loss calculation of the building are useful in determining the correct set points.

COMPRESSOR CUT-OFF AND OUTDOOR THERMOSTAT WIRING

FIGURE 5





INSTALLING REFRIGERANT TUBING

PRECHARGED TUBING--Examine carefully the two lengths of precharged tubing furnished with the unit. The larger is the suction line. The smaller is the liquid line. The end of the tubing with the hex nut and gauge port is to be attached to the condensing unit.

Unroll the tubing, being careful not to kink, and install it between the condensing unit and the evaporator coil.

CAUTION: Be careful not to tear the insulation when pushing it through holes in masonry or frame walls.

When sealing tube opening in house wall, use a soft material to prevent tube damage and vibration transmission.

Before fastening either end, use a tubing bender to make any necessary bends in the tubing. **AVOID EXCESSIVE BENDING IN ANY ONE PLACE TO AVOID KINKING.**

Start connecting the tubing at the evaporator coil end, first remove the protective caps and plugs from the quick-connect fittings on the evaporator coil and the precharged tubing. Inspect fittings and clean if necessary making sure they are clear of foreign materials. If you clean the fittings, lubricate them with refrigeration oil. Connect both tubes to the fittings on the coil and draw up by hand.

When necessary to bend the insulated tube suction line, cut the insulation around its circumference at a distance far enough beyond the point of the bend so as to clear the tubing bender.

Slip the insulation back together and vapor seal the joint with tape.

NOTE: The maximum distance for precharge tubing between the condenser and the evaporator is 45 feet.

CAUTION: Prior to connecting the precharged tubing to the evaporator coil or condensing unit, be sure all bends have been made. Then coil any excess tubing in a horizontal place with the slope of the tubing toward the condensing unit.

CAUTION: Be sure to hold the coupling firmly to prevent movement of the coupling and tubing. Failure to do so could tear out the diaphragm causing a blockage of the system.

CAUTION: After starting to tighten up the fitting, never try to back it off or take it apart.

For connecting the tubing at the condensing unit end, first remove the protective caps and plugs from the quick-connect fittings on the condensing unit and the precharged tubing. Inspect fittings and clean if necessary, making sure they are clear of foreign materials. If you clean the fittings, lubricate them with refrigeration oil. Connect both tubes to the fittings on the coil and draw up by hand.

Locate the gauge port in a 45 degree angle from a vertical up position so as to be accessible for gauge connections.

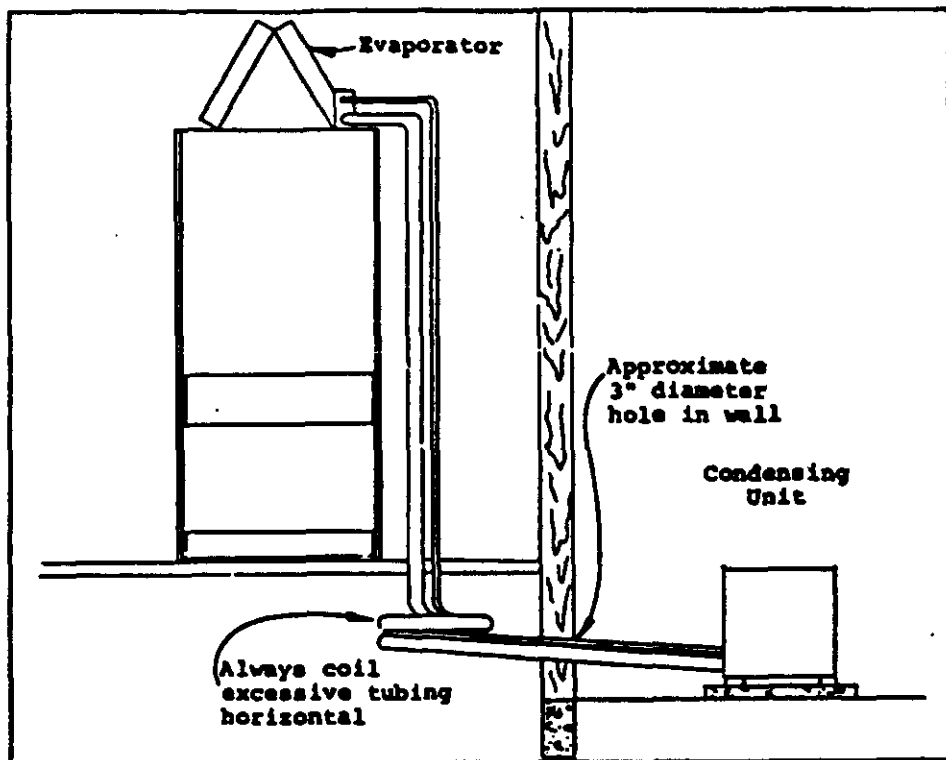
Use a wrench on the hex nut of the female fitting backing up the fitting with another wrench to keep tube from turning. Tighten the fittings together until they bottom out then tighten for an additional 1/4 turn so that coupling will seat properly.

Check the gauge port cap to make sure it is tight. If loose, tighten, being careful not to tighten too much as it will damage the valve in the gauge port.

Leak test all connections using an Electronic Leak Detector or a Halide Torch.

When tubing is installed in attics or drop ceiling, insulate the quick connect fitting on the larger tube thoroughly with 3/8" wall thickness, closed cell sponge tube insulation or equivalent. Failure to insulate will result in water damage to ceiling since the fitting will "sweat" and drop water on the ceiling.

Figure 10



**R22 TOTAL SYSTEM CHARGE FOR
SPLIT AIR CONDITIONING AND HEAT PUMP SYSTEMS**

The following tables are used to determine the operating charge for split air conditioning and heat pump systems. The values shown are the total amount of refrigerant received in the precharged system components, which include the outdoor unit, indoor unit, and inter-connecting tubing. This is also the amount of refrigerant required for a system recharge following any refrigeration system repairs.

Find the outdoor section and matching indoor section (Table 7) and connecting tubing set (Table 6) for system being used. Add the ounces of charge for each of the system components together. This value is the **TOTAL SYSTEM CHARGE**.

$$\begin{array}{r} \text{OZs} \\ \hline \text{OUTDOOR UNIT} \\ \text{(Table 7)} \end{array} + \begin{array}{r} \text{OZs} \\ \hline \text{INDOOR UNIT} \\ \text{(Table 7)} \end{array} + \begin{array}{r} \text{OZs} \\ \hline \text{TUBING SET} \\ \text{(Table 6)} \end{array} = \begin{array}{r} \text{OZs} \\ \hline \text{TOTAL SYSTEM CHARGE} \end{array}$$

To change total charge to lbs. and ozs., divide by 16.

EXAMPLE: 30UEPQA with BC36B and CT25A tubing set.

$$\begin{array}{r} \text{84} \\ \hline \end{array} \text{ OZs} + \begin{array}{r} \text{13} \\ \hline \end{array} \text{ OZs} + \begin{array}{r} \text{8} \\ \hline \end{array} \text{ OZs} = \begin{array}{r} \text{105} \\ \hline \end{array} \text{ OZs}$$

or $\frac{105}{16} = 6 \text{ lbs. } 9 \text{ ozs.}$

TABLE 6

| CHARGED TUBING SETS | | | | |
|---|--------|---------------|-------------|--------------|
| Model | Charge | Length in Ft. | Liquid Line | Suction Line |
| FOR USE WITH: 24UEPQA, 30UEPQA, 36UEPQA | | | | |
| CT0 | None* | 0 | 3/8" | 3/4" |
| CT15A | 2 oz. | 15 | 3/8" | 5/8" |
| CT25A | 8 oz. | 25 | 3/8" | 3/4" |
| CT35A | 14 oz. | 35 | 3/8" | 3/4" |
| CT45A | 20 oz. | 45 | 3/8" | 3/4" |

*CT0 and CT0-12 for field installed tubing. (See Table 7 for charging).

TABLE 7

| Model | Outdoor Unit Factory Charge | For Use With Indoor Unit | Indoor Unit Factory Charge |
|---------|--------------------------------|-----------------------------|-------------------------------|
| 24UHPQA | 103 oz. | BC24B | 5 oz. |
| | | A30AQ-A | 8 oz. |
| 30UHPQA | 84 oz. | BC36B | 13 oz. |
| | | BC35B | 8 oz. |
| | | A36AQ-A | 8 oz. |
| | | A42AS-A 1 | 0 oz. |
| 36UHPQA | 111 oz. | BC36B | 13 oz. |
| | | BC35B | 8 oz. |
| | | A36AQ-A | 8 oz. |
| | | A42AS-A 1 | 0 oz. |

1 Requires the use of CTO-12 kit for proper tubing connections on indoor coil.

In the event that the installer is running his own tubing by using a CTO kit, installing a sweat type A-coil or is modifying a precharged tubing set by adding or subtracting a few feet of tubing length, the tubing set should be evacuated and charged before being connected to the outdoor and indoor section. To determine TUBING SET ONLY charges, use the following table:

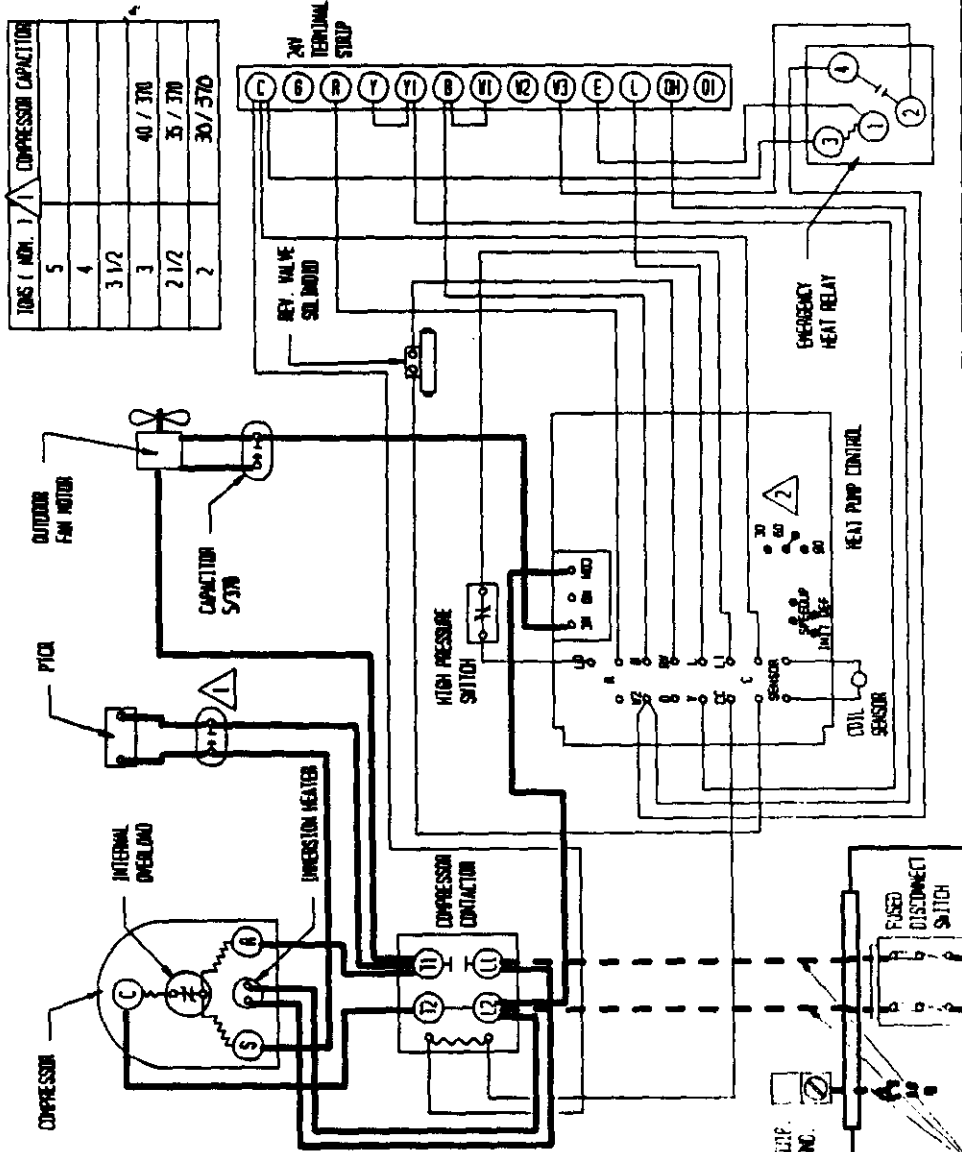
| TABLE 8 (Shows Charge in Ozs.) | | | | | | | | | | | | |
|-----------------------------------|--------------------------|----|----|----|----|----|----|----|----|----|----|----|
| | Tubing Set Length in Ft. | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| CT Series | 3/8" O.D. Liquid Line | 2 | 2 | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 |

To determine a TOTAL SYSTEM CHARGE for a system that is connected with a non-standard tubing length, the outdoor basic charge (from Table 7) plus the indoor unit basic charge (from Table 7), is added to the tube set based on liquid line O.D. size (Table 8). This value is the TOTAL SYSTEM CHARGE.

NOTE: If your tubing length is between the sizes shown in the table, use a charge value appropriately between the values shown for the tubing length shorter and longer than actual length.

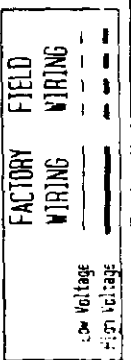
CONNECTION DIAGRAM

DANGER: ELECTRICAL SHOCK HAZARD.
DISCONNECT POWER BEFORE SERVICING

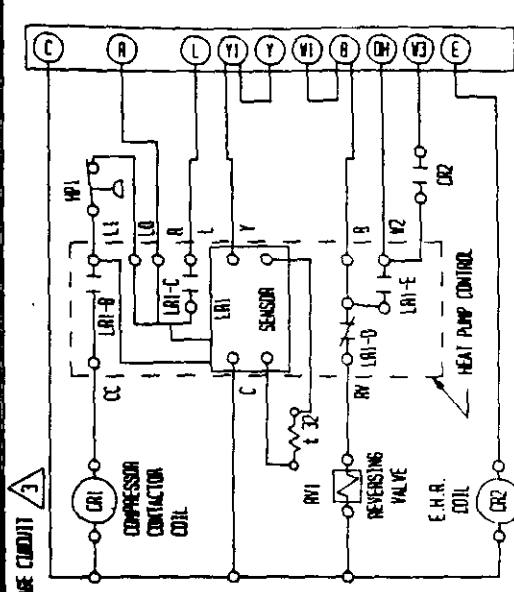
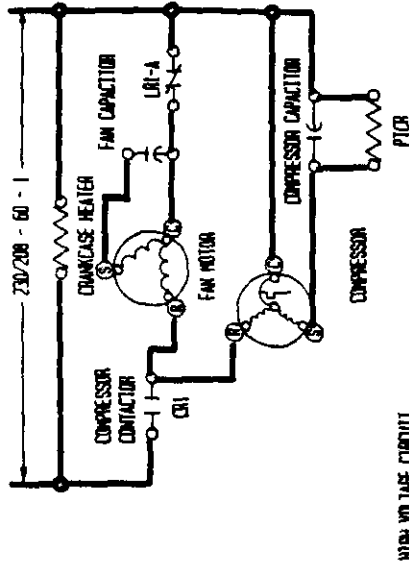


| TONS (MIN.) | COMPRESSOR CAPACITOR |
|-------------|----------------------|
| 5 | |
| 4 | |
| 3 1/2 | 40 / 370 |
| 3 | 5 / 370 |
| 2 1/2 | |
| 2 | 30 / 570 |

2 FACTORY SET ON 60 MIN. CYCLE
RECONNECT TO 30 FOR 30 MIN. CYCLE
RECONNECT TO 90 FOR 90 MIN. CYCLE



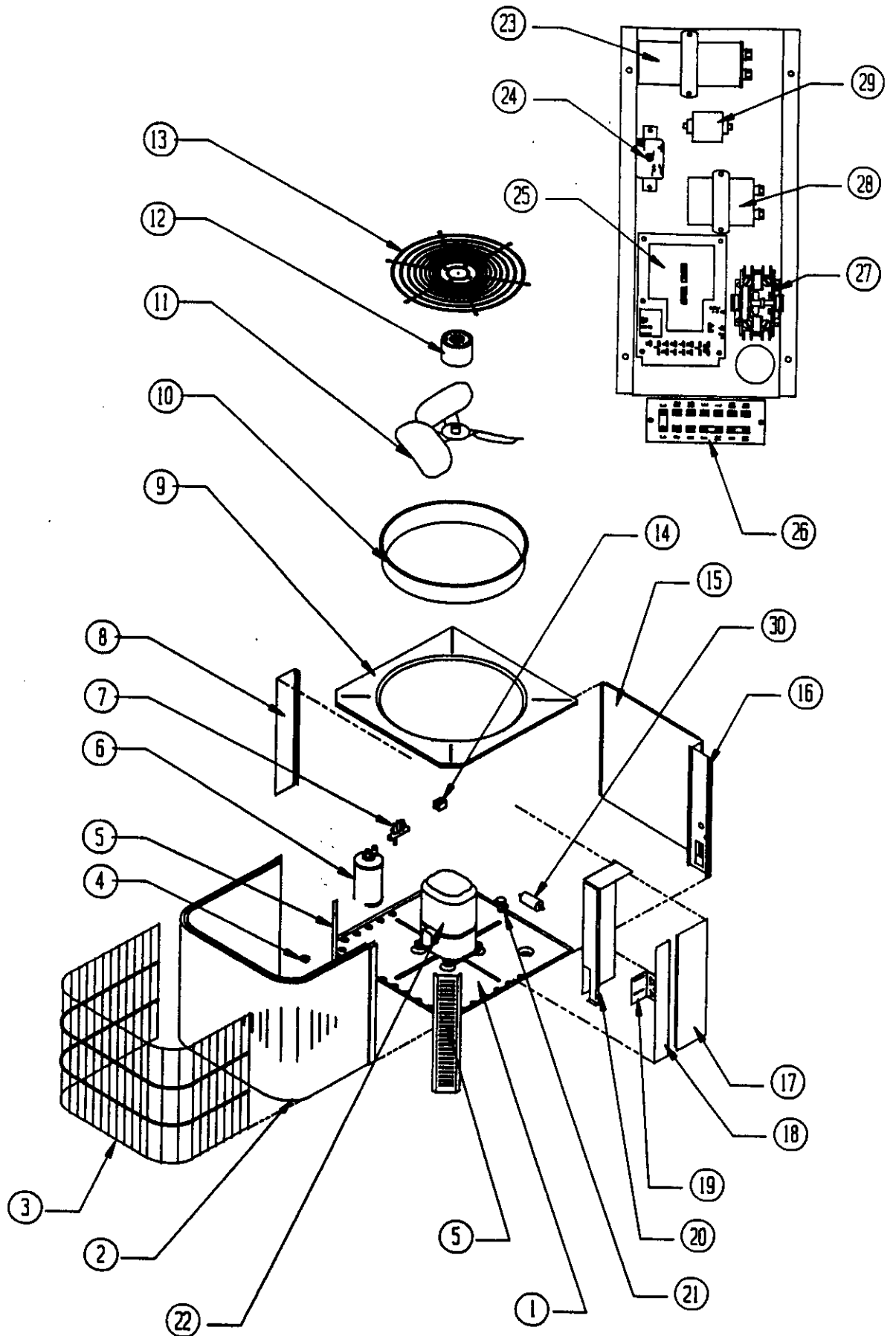
LADDER DIAGRAM



3 24 VOLTS FOR LOW VOLTAGE CONTROL CIRCUIT SUPPLIED BY INDOOR UNIT TRANSFORMER



| | COOLING | HEATING | HEATING (DEFROST CYCLE) | COMPRESSOR LOCK OUT COOLING | COMPRESSOR LOCK OUT HEATING |
|------------------------------------|--------------|--------------|----------------------------|--------------------------------|--------------------------------|
| COMPRESSOR CONTACTOR CR1 | ENERGIZED | ENERGIZED | ENERGIZED | DE-ENERGIZED | DE-ENERGIZED |
| EMERGENCY HEAT RELAY CR2 | DE-ENERGIZED | DE-ENERGIZED | DE-ENERGIZED | DE-ENERGIZED | DE-ENERGIZED |
| HEAT PUMP CONTROL CONTACT LRI-A | CLOSED | CLOSED | OPEN | CLOSED | CLOSED |
| HEAT PUMP CONTROL CONTACT LRI-B | CLOSED | CLOSED | CLOSED | OPEN | OPEN |
| HEAT PUMP CONTROL CONTACT LRI-C | OPEN | OPEN | OPEN | CLOSED | CLOSED |
| HEAT PUMP CONTROL CONTACT LRI-D | CLOSED | CLOSED | OPEN | CLOSED | CLOSED |
| HEAT PUMP CONTROL CONTACT LRI-E | OPEN | OPEN | CLOSED | OPEN | OPEN |
| HIGH PRESSURE SWITCH HP1 | CLOSED | CLOSED | CLOSED | OPEN | OPEN |
| REVERSING VALVE RV1 | DE-ENERGIZED | ENERGIZED | DE-ENERGIZED | DE-ENERGIZED | DE-ENERGIZED |
| FAN MOTOR | ON | ON | OFF | OFF | OFF |
| COMPRESSOR | ON | ON | ON | OFF | OFF |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |



30 - 36 UHP

PARTS LIST
SPLIT SYSTEM CONDENSING UNITS

Page: D4
Date: 06/28/89

| Item No. | Part No. | Description | 2 | 3 | 3 |
|----------|----------|-----------------------------|---|---|-------------|
| | | | 4 | 0 | 6 |
| | | | U | U | U |
| | | | H | H | H |
| | | | P | P | P |
| | | | Q | Q | Q |
| | | | A | A | A |
| 1 | 127-114 | Base Assembly | X | X | X |
| 2 | 5051-055 | Condenser Coil | X | X | |
| 2 | 5051-056 | Condenser Coil | | | X |
| 3 | 7051-019 | Coil Grille | X | X | X |
| 4 | 8408-019 | Ther. Sensor | X | X | X |
| 5 | 148-055 | Front Cover | X | X | X |
| 6 | 5202-016 | Accumulator | X | X | X |
| 7 | 5650-005 | Reversing Valve | X | | |
| 7 | 5650-013 | Reversing Valve | | X | X |
| 8 | 148-056 | Left Rear Corner | X | X | X |
| 19 | 106-096 | Top | X | X | X |
| 10 | 167-011 | Fan Venturi | X | X | X |
| 11 | 5151-039 | Fan Blade | X | X | X |
| 12 | 8102-010 | Fan Motor 1/6 HP | X | X | X |
| 13 | 7051-018 | Fan Motor Mount Grille | X | X | X |
| 14 | 5650-008 | Reversing Valve Solenoid | X | X | X |
| 15 | 152-144 | Service Door | X | X | X |
| 16 | 148-054 | Control Panel Cover | X | X | X |
| 17 | 132-064 | Control Panel Cover | X | X | X |
| 18 | 100-146 | Right Side | X | X | X |
| 19 | 140-144 | Quick Connect Support | X | X | X |
| 20 | 116-094 | Control Panel Wrapper | X | X | X |
| 21 | 5651-070 | Expansion Valve | | X | |
| 21 | 5651-071 | Expansion Valve | | | X |
| 21 | 5651-072 | Expansion Valve | X | | |
| 22 | 8000-099 | Compressor R23B283ABCA | | X | |
| 22 | 8000-055 | Compressor CRH3-0275-PFV | | | X |
| 22 | 8000-101 | Compressor R23B223ABC | X | | |
| 23 | 8552-032 | Capacitor 35/370V | | X | |
| 23 | 8552-035 | Capacitor 40/370V | | | X |
| 23 | 8552-045 | Capacitor 30/370 | X | | |
| 24 | 8201-008 | Emergency Heat Relay | X | X | X |
| 25 | 8201-055 | Heat Pump Control | X | X | X |
| 26 | 8607-019 | Terminal Strip | X | X | X |
| 27 | 8401-007 | Compressor Contactor 25 Amp | X | X | X |
| 28 | 8552-002 | Capacitor 5/370V | X | X | X |
| 29 | 8551-005 | Motor Starting Device | X | X | X |
| 30 | 5201-009 | Heat Pump Filter Drier | X | X | X |
| 31 | 8002-001 | Sound Cover | X | X | |
| 32 | 8002-002 | Sound Cover | | | X |
| | 4087-110 | Wiring Diagram | X | X | X |
| | 5625-059 | Restrictor w/.059" Orifice | X | | |
| | 5625-067 | Restrictor w/.067" Orifice | | X | |
| | 5625-072 | Restrictor w/.072" Orifice | | | X |
| | 8408-008 | Outdoor Thermostat | | | Field Inst. |

SD3/PARTSLIST/TEXTLIB

Outdoor Model
24UHPQA
COOLING

TABLE 9

Air Temperature Entering Outdoor Coil Degree F

| Indoor Model | Return Air Temperature | Pressure | Air Temperature Entering Outdoor Coil Degree F | | | | | | | | |
|--------------------------------|------------------------|-----------|--|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 |
| BC24B Rated CFM 800 | 75 deg DB | Low Side | 66 | 70 | 73 | 75 | 77 | 78 | 79 | 79 | 79 |
| | 62 deg WB | High Side | 170 | 185 | 200 | 216 | 231 | 246 | 262 | 277 | 293 |
| | 80 deg DB | Low Side | 71 | 75 | 78 | 80 | 82 | 83 | 84 | 85 | 85 |
| | 67 deg WB | High Side | 174 | 190 | 205 | 221 | 237 | 253 | 269 | 285 | 301 |
| A30AQ-A Rated CFM 800 | 85 deg DB | Low Side | 77 | 81 | 84 | 86 | 88 | 89 | 90 | 91 | 91 |
| | 72 deg WB | High Side | 181 | 197 | 213 | 229 | 245 | 261 | 278 | 294 | 311 |
| | 75 deg DB | Low Side | 63 | 66 | 69 | 71 | 73 | 75 | 76 | 77 | 78 |
| | 62 deg WB | High Side | 168 | 183 | 199 | 215 | 230 | 245 | 261 | 276 | 291 |
| A30AQ-A Rated CFM 800 | 80 deg DB | Low Side | 68 | 71 | 74 | 76 | 78 | 80 | 81 | 82 | 83 |
| | 67 deg WB | High Side | 173 | 189 | 204 | 220 | 236 | 252 | 268 | 283 | 299 |
| | 85 deg DB | Low Side | 72 | 76 | 79 | 82 | 84 | 86 | 87 | 88 | 89 |
| | 72 deg WB | High Side | 178 | 194 | 211 | 228 | 244 | 260 | 277 | 293 | 309 |

TABLE 10

HEATING

Air Temperature Entering Outdoor Coil Degree F

| Model | Return Air Temperature | Pressure | Air Temperature Entering Outdoor Coil Degree F | | | | | | | | | | | | | | |
|-----------------------------|------------------------|-----------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 0 | 5 | 10 | 15 | 17 | 20 | 25 | 30 | 35 | 40 | 45 | 47 | 50 | 55 | 60 |
| BC24B Rated CFM 800 | 70 Degree D.B. | Low Side | 25 | 27 | 30 | 33 | 34 | 36 | 40 | 44 | 48 | 53 | 58 | 60 | 63 | 69 | 75 |
| | | High Side | 135 | 149 | 162 | 174 | 178 | 184 | 194 | 203 | 211 | 218 | 234 | 226 | 229 | 233 | 236 |
| A30AQ-A Rated CFM 800 | 70 Degree D.B. | Low Side | 20 | 23 | 26 | 29 | 31 | 33 | 38 | 42 | 47 | 52 | 58 | 60 | 64 | 70 | 76 |
| | | High Side | 209 | 207 | 208 | 211 | 213 | 217 | 225 | 235 | 248 | 263 | 281 | 289 | 301 | 324 | 349 |

Low side pressure \pm 2 PSIG (suction service port @ quick support plate)
High side pressure \pm 5 PSIG (location line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged to serial plate instructions.

Outdoor Model
30UBPQA
COOLING

TABLE 11

Air Temperature Entering Outdoor Coil Degree F

| Indoor Model | Return Air Temperature | Pressure | ° | ° | ° | ° | ° | ° | ° | ° | ° |
|---------------------------------|------------------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 |
| BC36B Rated CFM 1050 | 75 deg. DB | Low Side | 69 | 70 | 72 | 73 | 75 | 77 | 78 | 79 | 81 |
| | 62 deg. WB | High Side | 183 | 193 | 206 | 219 | 236 | 254 | 274 | 296 | 319 |
| | 80 deg. DB | Low Side | 74 | 75 | 77 | 78 | 80 | 82 | 83 | 85 | 86 |
| | 67 deg. WB | High Side | 188 | 198 | 211 | 225 | 242 | 261 | 281 | 304 | 328 |
| BC35B Rated CFM 975 | 85 deg. DB | Low Side | 79 | 81 | 83 | 84 | 86 | 88 | 89 | 91 | 92 |
| | 72 deg. WB | High Side | 195 | 205 | 218 | 233 | 251 | 270 | 291 | 315 | 339 |
| | 75 deg. DB | Low Side | 66 | 67 | 68 | 69 | 70 | 71 | 73 | 74 | 76 |
| | 62 deg. WB | High Side | 174 | 187 | 200 | 213 | 228 | 243 | 260 | 277 | 294 |
| A36AQ-A Rated CFM 1050 | 80 deg. DB | Low Side | 71 | 72 | 73 | 74 | 75 | 76 | 78 | 79 | 81 |
| | 67 deg. WB | High Side | 179 | 192 | 205 | 219 | 234 | 250 | 266 | 284 | 302 |
| | 85 deg. DB | Low Side | 76 | 77 | 78 | 80 | 81 | 82 | 84 | 85 | 87 |
| | 72 deg. WB | High Side | 185 | 199 | 212 | 227 | 242 | 260 | 275 | 294 | 312 |
| A42AS-A Rated CFM 1050 | 75 deg. DB | Low Side | 65 | 67 | 69 | 71 | 73 | 75 | 76 | 77 | 78 |
| | 62 deg. WB | High Side | 170 | 186 | 203 | 219 | 236 | 253 | 270 | 287 | 304 |
| | 80 deg. DB | Low Side | 70 | 72 | 74 | 76 | 78 | 80 | 81 | 82 | 83 |
| | 67 deg. WB | High Side | 175 | 191 | 208 | 225 | 242 | 259 | 277 | 294 | 312 |
| A42AS-A Rated CFM 1050 | 85 deg. DB | Low Side | 75 | 77 | 80 | 82 | 84 | 86 | 87 | 88 | 89 |
| | 72 deg. WB | High Side | 181 | 198 | 215 | 233 | 250 | 268 | 287 | 304 | 322 |
| | 75 deg. DB | Low Side | 68 | 69 | 71 | 72 | 74 | 76 | 77 | 79 | 80 |
| | 62 deg. WB | High Side | 176 | 189 | 203 | 217 | 233 | 250 | 268 | 288 | 308 |
| A42AS-A Rated CFM 1050 | 80 deg. DB | Low Side | 73 | 74 | 76 | 77 | 79 | 81 | 82 | 84 | 85 |
| | 67 deg. WB | High Side | 181 | 194 | 208 | 223 | 239 | 256 | 275 | 295 | 316 |
| | 85 deg. DB | Low Side | 78 | 80 | 82 | 83 | 85 | 87 | 88 | 90 | 91 |
| | 72 deg. WB | High Side | 187 | 200 | 215 | 231 | 247 | 265 | 285 | 305 | 327 |

TABLE 12

HEATING

Air Temperature Entering Outdoor Coil Degree F

| Model | Return Air Temperature | Pressure | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | ° | |
|---------------------------------|------------------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 0 | 5 | 10 | 15 | 17 | 20 | 25 | 30 | 35 | 40 | 45 | 47 | 50 | 55 | 60 |
| BC36B Rated CFM 1050 | ° 70 DB | Low Side | 11 | 16 | 21 | 26 | 28 | 31 | 36 | 40 | 45 | 50 | 54 | 56 | 59 | 63 | 68 |
| | | High Side | 131 | 143 | 154 | 164 | 168 | 174 | 182 | 191 | 198 | 205 | 211 | 213 | 216 | 221 | 225 |
| BC35B Rated CFM 975 | ° 70 DB | Low Side | 20 | 22 | 25 | 29 | 30 | 32 | 36 | 40 | 44 | 48 | 53 | 55 | 58 | 63 | 68 |
| | | High Side | 170 | 171 | 173 | 176 | 178 | 181 | 187 | 194 | 202 | 212 | 222 | 227 | 234 | 248 | 262 |
| A36AQ-A Rated CFM 1050 | ° 70 DB | Low Side | 11 | 16 | 21 | 26 | 28 | 31 | 36 | 40 | 45 | 50 | 54 | 56 | 59 | 63 | 68 |
| | | High Side | 131 | 144 | 155 | 166 | 170 | 176 | 185 | 193 | 201 | 208 | 214 | 216 | 219 | 223 | 227 |
| A42AS-A Rated CFM 1050 | ° 70 DB | Low Side | 20 | 22 | 25 | 28 | 29 | 31 | 35 | 39 | 43 | 48 | 53 | 55 | 58 | 64 | 70 |
| | | High Side | 168 | 166 | 165 | 166 | 167 | 168 | 173 | 178 | 185 | 194 | 204 | 208 | 215 | 228 | 243 |

Low side pressure \pm 2 PSIG (suction service port @ quick support plate)
High side pressure \pm 5 PSIG (location line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged to serial plate instructions.

Outdoor Model
36URPQA
COOLING

TABLE 13

Air Temperature Entering Outdoor Coil Degree F

| Indoor Model | Return Air Temperature | Pressure | Air Temperature Entering Outdoor Coil Degree F | | | | | | | | | |
|---------------------------------|------------------------|-----------|--|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | | | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | |
| BC36B Rated CFM 1200 | 75 deg. DB | Low Side | 62 | 64 | 65 | 66 | 68 | 70 | 71 | 73 | 74 | |
| | 62 deg. WB | High Side | 180 | 194 | 209 | 222 | 236 | 250 | 263 | 278 | 291 | |
| | 80 deg. DB | Low Side | 67 | 68 | 70 | 71 | 73 | 75 | 76 | 78 | 79 | |
| | 67 deg. WB | High Side | 185 | 199 | 214 | 228 | 242 | 256 | 270 | 285 | 299 | |
| BC35B Rated CFM 1125 | 85 deg. DB | Low Side | 72 | 73 | 75 | 76 | 78 | 81 | 82 | 84 | 85 | |
| | 72 deg. WB | High Side | 191 | 206 | 221 | 236 | 250 | 265 | 279 | 295 | 309 | |
| | 75 deg. DB | Low Side | 55 | 58 | 60 | 62 | 65 | 66 | 68 | 70 | 71 | |
| | 62 deg. WB | High Side | 172 | 188 | 205 | 221 | 238 | 253 | 270 | 285 | 300 | |
| A36AQ-A Rated CFM 1200 | 80 deg. DB | Low Side | 59 | 62 | 64 | 67 | 69 | 71 | 73 | 75 | 76 | |
| | 67 deg. WB | High Side | 176 | 193 | 210 | 227 | 244 | 260 | 277 | 292 | 308 | |
| | 85 deg. DB | Low Side | 63 | 66 | 68 | 72 | 74 | 76 | 78 | 81 | 82 | |
| | 72 deg. WB | High Side | 182 | 199 | 217 | 235 | 252 | 269 | 286 | 302 | 319 | |
| A42AS-A Rated CFM 1200 | 75 deg. DB | Low Side | 61 | 62 | 64 | 66 | 68 | 70 | 71 | 73 | 74 | |
| | 62 deg. WB | High Side | 176 | 192 | 208 | 222 | 238 | 252 | 268 | 283 | 297 | |
| | 80 deg. DB | Low Side | 65 | 67 | 69 | 71 | 73 | 75 | 76 | 78 | 79 | |
| | 67 deg. WB | High Side | 180 | 197 | 213 | 228 | 244 | 259 | 275 | 290 | 305 | |
| A42AS-A Rated CFM 1200 | 85 deg. DB | Low Side | 69 | 72 | 74 | 76 | 78 | 81 | 82 | 84 | 85 | |
| | 72 deg. WB | High Side | 186 | 204 | 220 | 236 | 253 | 268 | 285 | 300 | 316 | |
| | 75 deg. DB | Low Side | 61 | 62 | 64 | 65 | 68 | 70 | 72 | 74 | 76 | |
| | 62 deg. WB | High Side | 178 | 192 | 207 | 221 | 237 | 252 | 269 | 285 | 302 | |
| A42AS-A Rated CFM 1200 | 80 deg. DB | Low Side | 65 | 67 | 69 | 70 | 73 | 75 | 77 | 79 | 81 | |
| | 67 deg. WB | High Side | 183 | 197 | 212 | 227 | 243 | 259 | 276 | 293 | 310 | |
| | 85 deg. DB | Low Side | 69 | 72 | 74 | 75 | 78 | 81 | 83 | 85 | 87 | |
| | 72 deg. WB | High Side | 189 | 204 | 219 | 235 | 251 | 268 | 286 | 303 | 321 | |

TABLE 14

HEATING

Air Temperature Entering Outdoor Coil Degree F

| Model | Return Air Temperature | Pressure | Air Temperature Entering Outdoor Coil Degree F | | | | | | | | | | | | | | |
|---------------------------------|------------------------|-----------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | 0 | 5 | 10 | 15 | 17 | 20 | 25 | 30 | 35 | 40 | 45 | 47 | 50 | 55 | 60 |
| BC36B Rated CFM 1200 | 0 70 D.B. | Low Side | 27 | 26 | 26 | 27 | 28 | 29 | 32 | 36 | 40 | 45 | 51 | 54 | 58 | 66 | 75 |
| | | High Side | 167 | 170 | 174 | 178 | 180 | 183 | 189 | 196 | 204 | 213 | 222 | 226 | 232 | 243 | 255 |
| BC35B Rated CFM 1125 | 0 70 D.B. | Low Side | 21 | 23 | 25 | 28 | 29 | 31 | 34 | 38 | 42 | 46 | 51 | 53 | 56 | 61 | 67 |
| | | High Side | 174 | 185 | 196 | 207 | 211 | 218 | 229 | 240 | 251 | 262 | 273 | 278 | 285 | 296 | 308 |
| A36AQ-A Rated CFM 1200 | 0 70 D.B. | Low Side | 23 | 24 | 25 | 27 | 28 | 30 | 32 | 36 | 40 | 45 | 50 | 52 | 56 | 62 | 69 |
| | | High Side | 162 | 172 | 181 | 190 | 194 | 199 | 208 | 217 | 225 | 233 | 241 | 244 | 249 | 256 | 263 |
| A42AS-A Rated CFM 1200 | 0 70 D.B. | Low Side | 27 | 26 | 26 | 27 | 28 | 29 | 32 | 35 | 39 | 44 | 50 | 52 | 56 | 66 | 71 |
| | | High Side | 196 | 190 | 186 | 185 | 185 | 186 | 190 | 196 | 204 | 215 | 228 | 234 | 244 | 262 | 282 |

Low side pressure \pm 2 PSIG (suction service port @ quick support plate)
High side pressure \pm 5 PSIG (location line @ outdoor unit quick connect)

Tables are based upon rated CFM (airflow) across the evaporator coil and should be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged to serial plate instructions.