Installation, Operation, & Maintenance

IOM 6003
Rev. A 1/25

HCXQ*V, HCXR*V, HCXW*V

ATTENTION:

Read all instructions thoroughly and retain all manuals for future reference.

COPYRIGHT

The Manufacturer works to continually improve its products and as a result, it reserves the right to change design and specifications without notice.

WARNING

Altering the product or replacing parts with non-authorized factory parts voids all warranty or implied warranty and may result in adverse operational performance and/or a possible hazardous condition to service personnel and occupants. Company employees and/or contractors are not authorized to waive this warning.

WARNING

Only personnel trained and qualified in the installation, adjustment, servicing, maintenance, or repair of the equipment described in this manual should perform service. The manufacturer is not responsible for any injury or property damage arising from improper service or procedures. In jurisdictions where licensing is required to service this equipment, only licensed personnel should perform the service.

Improper installation, adjustment, servicing, maintenance, or repair—or attempting to perform these tasks without proper training—may result in product damage, property damage, personal injury, or death. Service personnel assume responsibility for any injury or property damage resulting from improper procedures.

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SAFETY CONSIDERATIONS

1. READ THE ENTIRE MANUAL BEFORE STARTING THE INSTALLATION.
2. Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause personal injury damage.
3. Consult a qualified licensed installer, service agency, or your distributor for information assistance. The qualified licensed installer or service agency must use factory-authorized kits or accessories when servicing this product.
4. Refer to the individual instructions packaged with kits or accessories when installing.
5. Follow all safety codes.
6. Read these instructions thoroughly and follow all warnings or cautions attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements.

This appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
Children should be supervised to ensure that they do not play with the appliance
Use adequate personal protection equipment when installing and performing maintenance. After switching off and locking-out an electrical disconnect, verify a safe condition with an electrical tester. Discharge a capacitor before handling any PSC motor and wiring. Use eye protection, cut resistant gloves and sleeves to protect against metal edges and screws.

RECOGNIZE THE FOLLOWING SAFETY NOTATIONS THROUGHOUT THIS MANUAL AND POSTED ON THE EQUIPMENT:

WARNING

Indicates a potentially hazardous situation or unsafe practices that could result in severe personal injury or death and/or damage to property.

WARNING

ELECTRIC SHOCK HAZARD

Signifies potential electrical shock hazards that could result in personal injury or death.

CAUTION

Indicates a potentially hazardous situation that may result in minor or moderate personal injury.

IMPORTANT

Suggests important procedure steps to insure proper installation, reliability, or operation.

NOTE

Used to highlight suggestions, which may result in enhanced installation, reliability or operation.

	Service indicator; read technical manual
	Operator's manual; operating instructions
	Read the instructions
	Warning; flammable materials
	UN GHS flame symbol

SAFETY INFORMATION

WARNING

Risk of fire. Flammable refrigerant used. To be repaired only by trained service personnel. Do not puncture refrigerant tubing.

Auxiliary devices which may be ignition sources shall not be installed in the ductwork, other than auxiliary devices listed for use with the specific appliance. See Instructions.

Dispose of refrigerant properly in accordance with federal or local regulations.

Failure to follow proper A2L refrigerant mitigation system installation instructions can result in property damage, personal injury, or death. If any fault indicators are present, please troubleshoot to prevent system malfunction.

WARNING

When a Refrigerant Leak Detection System is installed. The unit must be powered on at all times except for serving.

Installer must verify that the refrigerant sensor is properly installed and functioning or else the warranty will be voided. Failure to do so may result in fire, property damage or death.

WARNING

Work with extreme caution to minimize the risk of refrigerant ignition while installing and servicing a system containing a flammable refrigerant. Control the work environment as much as possible while potentially flammable vapors are present. Inform all persons on site about the risks of the nature of the work underway and the necessary safety precautions. Do not work in confined spaces. Test the work area for refrigerant in the air using an intrinsically safe A2L refrigerant leak detector before beginning work. Have a dry powder or CO2 fire extinguisher available. Use proper tools designed for A2L class refrigerants. While working near A2L refrigerants, use only non-sparking tools. Open flames and other ignition sources must not be present except during brazing. Brazing must only take place on evacuated and nitrogen purged refrigerant lines and components that are open to the atmosphere.

WARNING

These instructions are intended to aid qualified, licensed, service personnel in proper installation, adjustment and operation of this unit. Read these instructions thoroughly before attempting installation or operation. Failure to follow these instructions may result in improper installation, adjustment, service or maintenance possibly resulting in fire, electrical shock, property damage, personal injury or death.

WARNING

Electrical work associated with the installation of this appliance must comply with the National Electrical Code (NEC). Other local or regional electrical and building code requirements may apply. In Canada electrical work associated with the installation of this appliance must comply with CE CSA C22.1

IMPORTANT

This fan-coil must be installed in a location which is not accessible to the general public.

This appliance is for INDOOR USE ONLY.

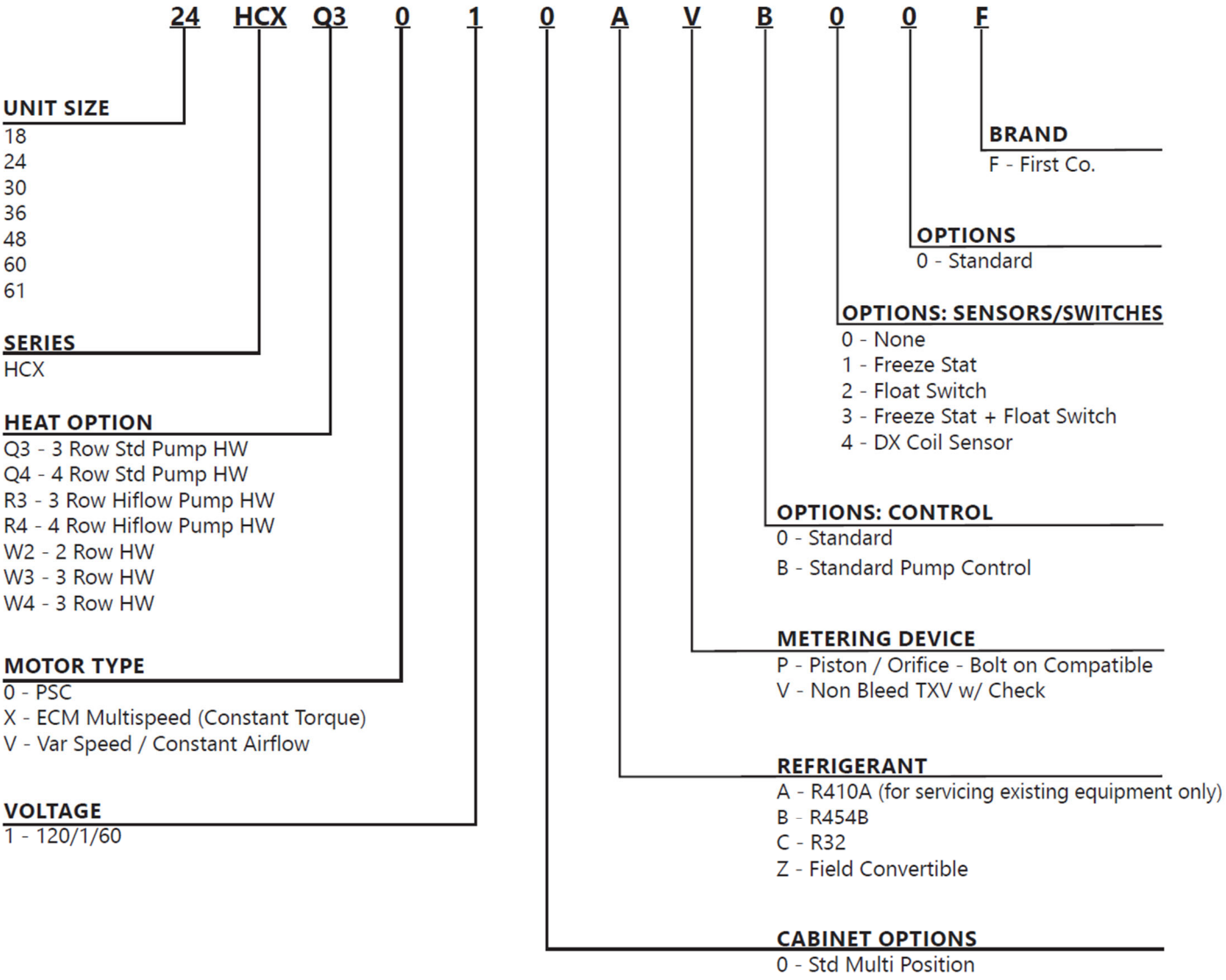
WARNING

When the unit is using flammable refrigerant and is installed in a room with an area less than that outlined in section **Minimum Room Size and Mitigation Airflow**, that room shall be without continously operating open flames or other potential ignition sources.

WARNING

Auxiliary devices that may serve as potential ignition sources must not be installed in the ductwork. Potential ignition sources include hot surfaces exceeding 700°C and electrical switching devices.

MODEL NOMENCLATURE



GENERAL

The manufacturer assumes no responsibility for equipment installed in violation of any code requirement. These instructions give information relative to the installation of these fan coil units only. For other related equipment refer to the proper instructions.

Material in this shipment has been inspected at the factory and released to the transportation agency in good condition. When received, a visual inspection of all cartons should be made immediately. Any evidence of rough handling or apparent damage found, a claim should be filed against the carrier immediately.

WARNING

These instructions are intended as an aid to qualified, licensed, service personnel for proper installation, adjustment and operation of this unit. Read these instructions thoroughly before attempting installation or operation. Failure to follow these instructions may result in improper installation, adjustment, service or maintenance possibly resulting in fire, electrical shock, property damage, personal injury or death.

NOTE

State of MA.-248 CMR code of the state of MA. Requires a pump timer (60 seconds on every 6 hours) See diagram.

IMPORTANT

This unit is a PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements of this Standard, and must only be connected to other units that have been confirmed as complying to the corresponding PARTIAL UNIT requirements of this Standard, UL 60335-2-40/CSA C22.2 No. 60335-2-40, or UL 1995/CSA C22.2 No.236

CAUTION

Any service personnel installing, decommissioning, or performing maintenance on the unit must be properly trained with A2L refrigerants

INTRODUCTION

The HCXQ*V, HCXR*V and HCXW*V Fan Coil units are designed for flexibility and can be used for up flow, horizontal left or right side applications. These units are available for application in systems of 18,000 through 60,000 Btuh nominal cooling capacities and up to 131,700 Btuh heating with the factory installed hot water coil.
This unit may be installed at altitudes up to 10,000 ft. (3,048 m)

INSTALLATION

The licensed installer must adhere strictly to all local and national code requirements pertaining to the installation of this equipment.

NOTE

Locate the unit in an area that easily provides minimum clearance to all service access panels. Consider all additional clearances needed for water connections, electrical connections, duct connections and sufficient return airflow

All HCXQ*V, HCXR*V and HCXW*V Fan Coil units are safety agency listed for installation with zero inches clearance to combustible materials. This includes the unit cabinet, discharge plenum and connecting ducts. Sufficient clearance must be provided at the front of the unit to allow access to electrical controls and removal of the motor/blower assembly for servicing. This clearance distance should be approximately the same depth as the fan coil unit.

INSTALLATION PRECAUTIONS

Always use proper tools and equipment.
No wiring or other work should be attempted without first ensuring that the fan coil is completely disconnected from the power source and locked out.

Always verify that a good ground connection exists prior to energizing any power sources.
Always review the nameplate on each unit for proper voltage and control configurations. This information is determined from the components and wiring of the unit and may vary from unit to unit.

When soldering or brazing to the unit, it is recommended to have a fire extinguisher readily available. When soldering close to valve packages or other components, heat shields or wet rags are required to prevent damage.

Units must be installed level to ensure proper drainage and operation. Be sure that the drain pan is free from foreign material prior to start up. Check filter media installation to ensure that it is installed correctly. Use the directional arrows or other information on the filter to determine the proper flow direction. Ensure that the air distribution system does not exceed the external static rating of the unit.

NOTE

The variable speed unit is compatible with damper duct systems when designed properly. Consult the damper system manufacturer for proper design.

IMPORTANT

Do not operate this unit in any mode during any phase of building construction due to excessive airborne dust and debris. Do not operate this unit without an air filter in place. The manufacturer does not warrant equipment subjected to abuse.

CAUTION

Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

When installing this unit in close proximity to a room containing a shower, laundry room or other area which is prone to extreme humidity; return air must not be taken from these areas. Do not use a free return when the unit is installed in an extremely humid area of the conditioned space. Seal the return air duct to the unit and locate the return air grille(s) in a common area communicating with the supply-air duct system.

CHECK EQUIPMENT

Unpack unit and move to final location. Remove carton taking care not to damage unit. Inspect equipment for damage prior to installation. File a claim with shipping company if shipment is damaged. Locate unit nameplate which contains proper installation information. Check nameplate to be sure unit matches job specifications.

MOUNT FAN COIL

All HCXQ*V, HCXR*V and HCXW*V Fan Coil units are safety agency listed for installation with zero inches clearance to combustible materials. This includes the unit cabinet, discharge plenum and connecting ducts. Unit must be mounted on a field supplied return plenum, lie on its side or hang from the ceiling. Sufficient clearance must be provided at the front of the unit to allow for wiring, piping, and servicing the unit. This clearance distance should be approximately the same depth as the fan coil unit.

IMPORTANT

When unit is installed over a finished ceiling and/or living area, building codes may require a field-supplied secondary condensate pan to be installed under the entire unit. Some localities may allow the alternative of running a separate secondary condensate line or applying a field mounted condensate overflow switch. Consult local codes for additional restrictions or precautions.

NOTE

When installing any fan coil over a finished ceiling and/or living area, installation of a secondary drain pan under entire unit is recommended to avoid damage to ceiling.

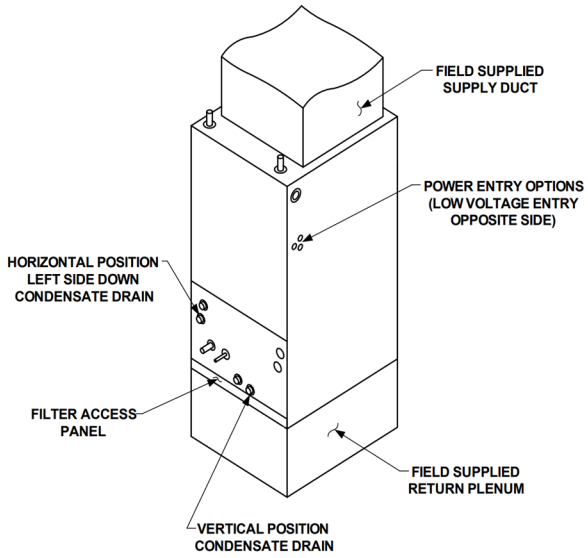


Figure 1 Typical Unit Configuration

HCXQ*V & HCXR*V Fan Coil can be installed for up flow and horizontal-left applications as factory shipped. Units can be installed for horizontal-right applications with field modifications.

CAUTION

Extreme caution must be taken that no internal damage will result if screws or holes are drilled into the cabinet. Failure to follow this **CAUTION** could result in product or property damage and minor personal injury.

UPFLOW INSTALLATION

Unit must be mounted on a field supplied return plenum that is open or ducted with return air. Only use return-air opening provided in the bottom of the unit. All return air must pass through the bottom of the unit and A-coil. (See Figure 1.)

HORIZONTAL INSTALLATIONS

Be sure installation complies with all applicable building codes that may require installation of a secondary condensate pan. The HCXQ*V, HCXR*V and HCXW*V Fan Coil unit is factory assembled for horizontal left side down application without any modification required.

1. Arrange support for unit by setting it in or above secondary condensate pan.
2. When suspending unit from ceiling with metal support straps extreme care should be taken that no internal damage will result if screws are drilled into the cabinet.

CAUTION

The unit should be leveled in such a way that there is slope toward the condensate drain nipple, down 1/2 - 1 level bubble minimum, to assure positive drainage. Failure to follow this CAUTION could result in product or property damage.

HORIZONTAL RIGHT CONVERSION

To convert unit for horizontal right side down installations:

1. Remove blower and coil panels.
2. Remove angle bracket holding top of horizontal drain pan.
3. Remove horizontal drain pan and A-coil assembly.
4. Flip horizontal drain pan over to right side and reinstall horizontal drain pan and A-coil into cabinet.
5. Secure forward edge of horizontal drain pans with angle bracket.
6. Replace blower and coil panels.
7. Unit should be leveled in such a way that there is slope toward the condensate drain nipple to assure positive drainage.

AIR DUCTS

All duct work must be installed in accordance with National Fire Protection Association Codes 90A and 90B. In many cases it is acceptable to use ducting of the same size as the fan coil connections. However, unique arrangements or long duct runs must be confirmed by a local professional. The manufacturer will not be responsible for misapplied equipment.

Consult local building codes and current editions of the National Electrical Code (NEC) NFPA 70. In Canada, refer to current editions of the Canadian electrical code CSA CEC22.1

It is recommended to use flexible connectors between ductwork and the fan coil unit to prevent transmission of vibration. Connect supply-air duct over outside of flanges provided on supply-air opening. Secure duct to flange with proper fasteners for type of duct used, and seal duct-to-unit joint. Ducts should be adequately insulated to prevent condensation during the cooling cycle and to minimize heat loss during the heating cycle. All return air must be filtered to prevent dirt buildup on the coil surface. If there is no ducted return, applicable installation codes may limit the unit to installation only in a single-story residence.

DUCTWORK ACOUSTICAL TREATMENT

Metal duct systems that do not have a 90-degree elbow and 10 ft. of main duct to first branch takeoff may require internal acoustical insulation lining. As an alternative, fibrous ductwork may be used if constructed and installed in accordance with the latest edition of SMACNA construction standard on fibrous glass ducts. Both acoustical lining and fibrous ductwork shall comply with National Fire Protection Association Standards 90A or 90B as tested by UL Standard 181 for Class 1 air ducts.

WARNING

For appliances using A2L refrigerants connected via an air duct system to one or more rooms, only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.

ELECTRICAL CONNECTIONS

IMPORTANT

Electrical work associated with the installation of this appliance must comply with the National Electrical Code (NEC). Other local or regional electrical and building code requirements may apply.
In Canada electrical work associated with the installation of this appliance must comply with CE CSA C22

NOTE

Before proceeding with electrical connections, make certain that supply voltage, frequency, and phase are as specified on unit rating plate. Be sure that electrical service provided by the utility is sufficient to handle the additional load imposed by this equipment. See unit wiring label for proper field high and low voltage wiring. Make all electrical connections in accordance with NEC and any local codes or ordinances that may apply. Use copper wire only. The unit must have a separate branch electric circuit with a field supplied disconnect switch located within sight of and readily accessible from the unit.

CAUTION

If a disconnect switch is to be mounted on the unit, select a location where drill or fastener will not contact electrical or refrigerant components. Electrical shock can cause personal injury or death.

WARNING

Service and maintenance to internal components and wiring cannot be performed until the main disconnect switch (remote to the unit) is turned off. Failure to do so will result in electrical shock causing personal injury or death.

NOTE

Sealed electrical components shall be replaced, not repaired.

CAUTION

Do not use power stealing thermostats. The thermostat will cause the motor to function improperly. A high-grade digital thermostat is recommended. Failure to do so could result in damage to components and will void all warranties.

ELECTRICAL CONNECTIONS CONTINUED

LINE-VOLTAGE CONNECTIONS

1. Connect 120V power leads from field disconnect to white and black stripped leads.
2. Connect ground wire to unit ground lug.
3. Check all factory wiring per unit wiring diagram and inspect factory wiring connections to be sure none were loosened in transit or installation.

GROUND CONNECTIONS

WARNING

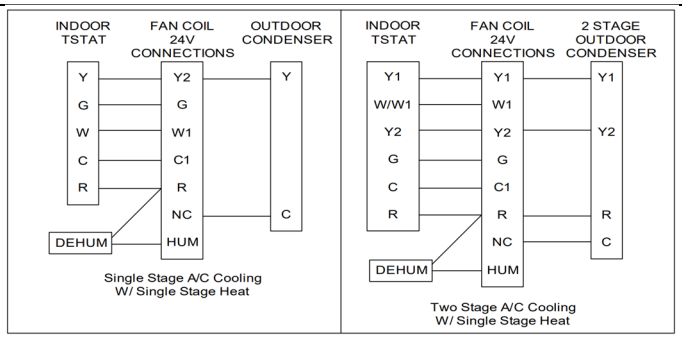
The cabinet must have an uninterrupted or unbroken ground according to NEC, ANSI/NFPA 70 and local codes to minimize personal injury if an electrical fault should occur. The ground may consist of electrical wire or metal conduit when installed in accordance with existing electrical codes. (See Ground/ Conduit Note below.) Failure to follow this warning could result in an electrical shock, fire, or death.

NOTE

Use UL listed conduit and conduit connector to connect supply wire(s) to unit and obtain proper grounding. If conduit connection uses reducing washers, a separate ground wire must be used. Grounding may also be accomplished by using grounding lug provided in control box.

24V CONTROL SYSTEM CONNECTIONS TO UNIT CIRCUIT BOARD

Refer to unit wiring diagram for recommended wiring procedures. Use No. 18 AWG color-coded, insulated (35 degrees C minimum) wires to make low-voltage connections between thermostat and unit. If thermostat is located more than 100 ft from unit (as measured along the low-voltage wires), use No. 16 AWG color-coded, insulated (35 degrees C minimum) wires. Connect low-voltage thermostat leads and low-voltage outdoor unit leads to the fan coil circuit board as shown on unit wiring diagram. (See Figure 2).



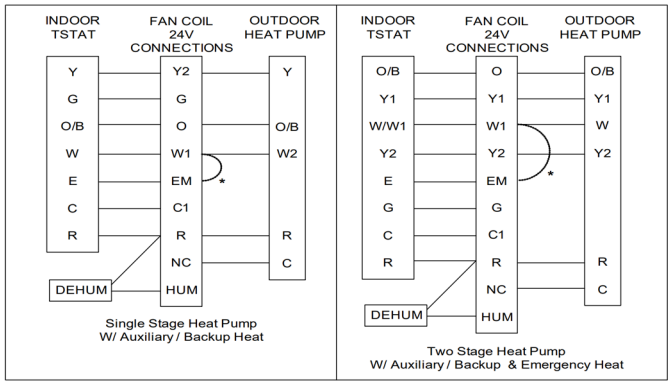


Figure 2 Low Voltage Wiring Connection

NOTE

Some Thermostats may require a jumper between "E" and "W1". Most Heat Pump Thermostats have an "E" terminal for Emergency Heat. When the Tstat is switched from "Normal" to "Emergency" the compressor circuit "Y" is locked out. Usually "E" becomes the 1st stage of heat. If no heat call occurs on a temperature drop below set point, jumper "E" to "W" at the Tstat or at the fan coil. If unit runs continuously on temperature rise above set point, remove jumper and refer to the thermostat installation instructions.

These fan coils are provided with a Class 2 transformer for 24volt control circuits. Should any add-on equipment also have a Class 2 transformer furnished, care must be taken to prevent interconnecting outputs of the two transformers by using a thermostat with isolating contacts.

CAUTION

Any devices such as fan switches or thermostats that have been furnished by the factory for field installation must be wired in strict accordance with the wiring diagram that is supplied with the unit. Failure to do so could result in damage to components and will void all warranties.

REFRIGERANT TUBING CONNECTION AND EVACUATION

The HCXQ*V, HCXR*V and HCXW*V Fan Coil units are supplied with a direct expansion refrigerant coil and a thermostatic expansion valve. Check that the correct thermostatic expansion valve is installed on the coil to match the outdoor unit refrigerant type.

CAUTION

Installer must check the coil metering device to see that it is the correct size and type to be matched with the outdoor unit

Field-supplied refrigerant grade tubing must be sized in accordance with the outdoor unit manufacturer's recommendations. The entire suction tube must be insulated. Do not use damaged, dirty, or contaminated tubing because it may plug refrigerant flow control device. Always evacuate coil and field-supplied tubing to 500 microns before opening outdoor unit service valves.

CAUTION

A brazing shield MUST be used when tubing sets are being brazed to the unit connections to prevent damage to the unit surface. Failure to follow this CAUTION could result in product and property damage.

Units have sweat suction and liquid tube connections. Make suction tube connection first.

1. Cut tubing to correct length.
2. Insert tube into sweat connection on unit until it bottoms.
3. Braze connection using silver bearing or non-silver bearing brazing materials. Do not used solder (materials which melt below 800-degree F)
4. Leak check the line connections and repair any leaks.
5. Evacuate coil and tubing system to 500 microns using deep vacuum method for 30 minutes.

CAUTION

Wrap a wet cloth around rear of fitting to prevent damage to TXV and factory-made joints. Failure to follow this CAUTION could result in product and property damage.

HOT WATER COIL PIPING

PIPING PRECAUTIONS

Flush all field water piping prior to connection to hot water coil to remove debris. Use wet cotton rags to cool valve bodies when soldering. Open all valves (midway for hand valves, manually open on motorized valves) prior to soldering. When soldering to bronze or brass, heat the piping while in the socket/cup and begin introducing the solder when the flux boils rapidly. Avoid direct flame into the solder joint. Heat can only be applied to the cup of the valve body for a minimal time before damage occurs (even with the use of wet rags).

Avoid rapid quenching of solder joints as this will produce joints of inferior quality. Connect all piping per accepted industry standards and observe all regulations governing installation of piping systems. When all connections are complete the system must be pressure tested. Repair any solder joint leaks and gently tighten any leaking valve packing nuts and piping accessories as required. Hydronic systems are not designed to hold pressurized air and should only be tested with water.

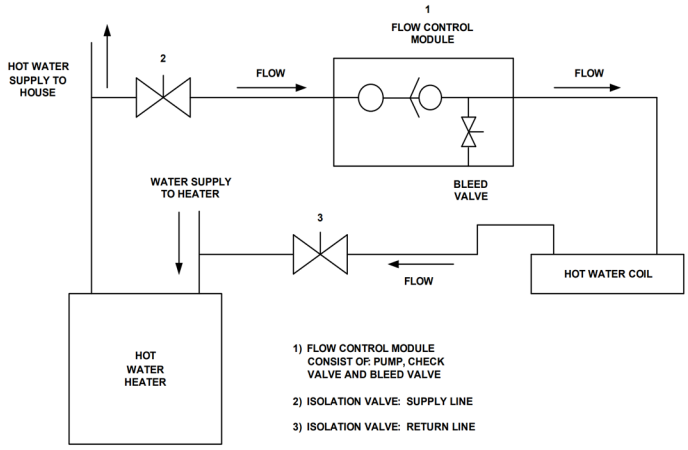


Figure 3 Piping Connections

CAUTION

An expansion tank may be required if a back-flow preventer is installed in the system. Failure to follow this CAUTION could result in product and property damage.

HOT WATER COIL PIPING

HOT WATER COIL PIPING

Hot water coil connections are 3/4 inch nominal (7/8" OD) copper except the 60V HCXQ*V & HCXR*V is 1 inch nominal (1-1/8" OD). The hot water supply to the fan coil will be on the right when facing the fan coil upright and from the front. All piping between the water heater and fan coil unit should be copper and should not exceed 200 feet of total piping. It is recommended that 3/4" nominal (7/8" OD) piping should be used on 18 to 48V HCXQ*V, HCXR*V and HCXW*V units and 1" nominal (1-1/8" OD) on 60V HCXQ*V, HCXR*V and HCXW*V unit to prevent excessive head pressure losses. (Consult the factory for other piping applications.)

CAUTION

When connecting piping to fan coil units, do not bend or reposition the coil header tubing for alignment purposes. This could cause a tubing fracture resulting in a water leak when water pressure is applied to the system. Failure to follow this CAUTION could result in personal injury or product and property damage.

Hot water coil sweat connections:

1. Review hot water coil piping precautions.
2. Insert water lines into hot water coil headers.
3. Solder copper joints with low temperature - non lead solder.
4. When all connections are complete, pressure test the system with water. Repair any solder joint leaks and gently tighten any leaking valve packing nuts and piping accessories as required.

It is also recommended that all piping be adequately insulated to prevent freezing when piping is run in an unconditioned space. Failure to follow this could result in product and property damage due to frozen water line breakage.

CAUTION

Hydronic systems are not designed to hold pressurized air and should only be tested with water. Failure to follow this CAUTION could result in personal injury or product and property damage.

NOTE

Refer to Flow Control Module installation instructions for proper pump installation, if used.

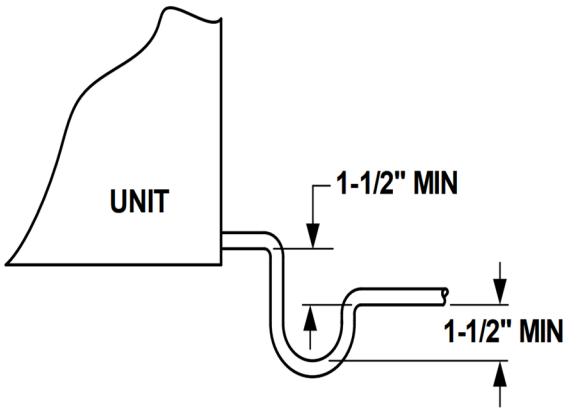
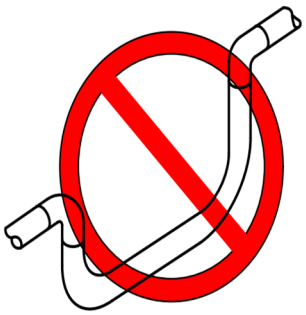


Figure 4 Recommended Condensate Trap



DO NOT USE SHALLOW RUNNING TRAPS !

Figure 5 Insufficient Condensate Trap

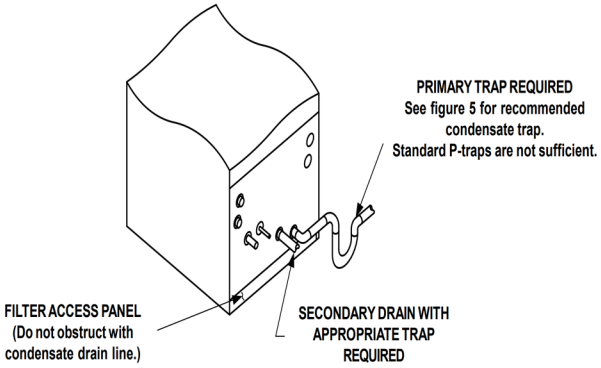


Figure 6 Condensate Trap Unit

NOTE

Hot water coil freeze protection is available for applications where the fan coil is located in ambient air locations (attics, crawl spaces, etc.) or within structures that may be unoccupied during freezing conditions. Consult the factory for additional information.

HOT WATER COIL PIPING CONT.

PIPING CONNECTIONS TO WATER HEATER

Solder Connections - All copper joints in the water lines must be made with low temperature - non lead solder. "T" Connections (at the water heater) - Water lines to and from the fan coil unit must be taken from the horizontal connection of the "T" fittings in the vertical hot and cold water supply lines at the water heater. This ensures that any air in the system will be purged each time water is used in the dwelling. Failure to do so will cause a system malfunction. Isolation Valves - Two valves are required to be installed within the circulating loop to permit servicing of the system if required and to assist in purging the system. (See figure 3)

LEAK CHECK

After pipe installation perform a leak check to ensure that no leakage of refrigerants will occur. Use nitrogen to pressure test at a minimum of 200 psig. Pressure must not decrease within 1 hour. Care must be taken to not use any leak detectors which may cause corrosion on the copper tubing.

Evacuate the suction and liquid lines at the outdoor unit service valves to 500 microns. Isolate the vacuum pump from the piping. The vacuum must not exceed 1500 microns in 10 minutes.

REFRIGERANT CHARGING

WARNING

FIRE OR EXPLOSION HAZARD

Failure to following this warning could result in personal injury, death and/or property damage.

Do not use flames or any potential ignition sources to leak check refrigerant tubing or components.

IMPORTANT

Any metering device installed in the refrigerant circuit must be compatible with the refrigerant used.

Use adequate personal protection equipment when handling refrigerant including, but not limited to eye and hand protection. Consult the outdoor unit manufacturer's instructions for refrigerant charging and consider all pertinent factors when determining the method of charging and the amount of refrigerant required; indoor and outdoor temperatures and humidity, the factory charge amount of the outdoor unit, the length and diameter of tubing between the indoor and outdoor units, the type of metering device installed.

WARNING

- Explosion risk, recover refrigerant only in a cylinder designed and intended for this purpose
- Do not use a damaged cylinder
- Do not apply flame or excessive heat to a refrigerant cylinder
- Do not fill a refrigerant cylinder to more than 80% of its capacity
- Do not use a refrigerant cylinder for anything other than its designed and intended purpose
- Do not use an expired refrigerant cylinder
- Use recovery equipment designed to handle the refrigerant being recovered
- Earth-ground refrigerant cylinders before using

WARNING

It is illegal to discharge refrigerant into the atmosphere. Use proper reclaiming methods and equipment when installing or servicing this unit. A QUALIFIED service agency should perform this service.

REFRIGERANT CHARGING

WARNING

IMPROPER HANDLING OF REFRIGERANTS CAN CAUSE INJURY, EXPLOSION AND DEATH

- It is illegal to release refrigerant into the atmosphere. Refrigerant released into an enclosed space will displace oxygen causing unconsciousness and death.
- If an indoor refrigerant leak is suspected, thoroughly ventilate the area before beginning any work
- DO NOT purge or allow refrigerant to be released into an interior space
- Contact with liquid refrigerant can cause frostbite and blindness. Avoid skin contact with liquid refrigerant, wear goggles and gloves when working with refrigerants. Seek medical help immediately if any refrigerant contact with skin or eyes occurs
- Never burn refrigerant as highly toxic gas will be produced
- Only EPA certified technicians should handle refrigerants.
- In Canada technicians must be ODP / ODS certified to handle refrigerants
- Follow all EPA regulations

Follow the outdoor unit manufacturer's instructions for adding refrigerant to a partially charged system.

FLAMMABLE REFRIGERANT LEAK DETECTION

Under no circumstances should potential sources of ignition be used for detecting refrigerant leaks. Devices such as halide torches (or other detectors using a naked flame) are strictly prohibited. Acceptable methods for refrigerant leak detection include:

- Electronic Leak Detectors: These may be used to detect refrigerant leaks; however, for flammable refrigerants, ensure the sensitivity is adequate and the equipment is recalibrated as necessary. Calibration must occur in a refrigerant-free area. The detector must not pose an ignition risk and should be specifically suited for the refrigerant used. Set the detection equipment to a percentage of the refrigerant's Lower Flammability Limit (LFL), with a maximum setting of 25%. Ensure calibration corresponds to the refrigerant employed.
- Leak Detection Fluids: Fluids such as the bubble method or fluorescent agents are suitable. Avoid detergents containing chlorine, as these may react with the refrigerant and corrode copper pipework.

Important Note: If a refrigerant leak is suspected, all open flames must be extinguished. For leaks requiring brazing, recover all refrigerant from the system or isolate it using shut-off valves in a remote part of the system. Removal of refrigerant must follow the removal and evacuation procedures.

REFRIGERANT CHARGING INSTRUCTIONS

When charging the system in cooling mode, ensure the outdoor temperature is 60°F or higher. Operate the system for a minimum of 15 minutes between adjustments to allow the pressures to stabilize. Systems equipped with micro-channel outdoor coils require small adjustments of 1 ounce or less, as they are highly sensitive to refrigerant charge.

TXV Charging

1. Refer to the instructions provided with the outdoor unit.
2. Alternatively, for AC units, charge to achieve 12°F sub-cooling. For heat pump units, charge to 10°F sub-cooling.
3. If the system is equipped with an adjustable valve, adjust to achieve 10°F superheat.

Fixed Orifice Charging

1. Use the superheat value recommended in the outdoor unit instructions for A1 (R-410) and A2L (R-454B & R-32) refrigerants.
2. Heat pump units initially charged in cooling mode may require final charge adjustments in heating mode, if necessary. For units requiring charging in heating mode, refer to the outdoor unit instructions.

If the system is undercharged after the initial charge, add refrigerant until the sight glass is clear and the recommended pressures, temperatures, sub-cooling, and superheat are achieved. If the system is overcharged, recover refrigerant until these values are within recommended limits.

ELECTRICAL DATA

HCXQ ELECTRICAL DATA							
Model	Voltage Rating	Motor Amps	Motor HP	Pump Amps	Motor HP	MCA	MOP
18HCXQ*V1*	120V-1PH-60HZ	4.8	1/3	0.57	1/40	7	15
24HCXQ*V1*	120V-1PH-60HZ	4.8	1/3	0.57	1/40	7	15
30HCXQ*V1*	120V-1PH-60HZ	7.3	1/2	0.57	1/40	10	15
36HCXQ*V1*	120V-1PH-60HZ	7.3	1/2	0.57	1/40	10	15
48HCXQ*V1*	120V-1PH-60HZ	11.5	1	0.57	1/40	15	20
60HCXQ*V1*	120V-1PH-60HZ	11.5	1	0.75	1/25	15	20

TABLE 1

HCXR ELECTRICAL DATA							
Model	Voltage Rating	Motor Amps	Motor HP	Pump Amps	Motor HP	MCA	MOP
18HCXR*V1*	120V-1PH-60HZ	4.8	1/3	0.84	1/25	7	15
24HCXR*V1*	120V-1PH-60HZ	4.8	1/3	0.84	1/25	7	15
30HCXR*V1*	120V-1PH-60HZ	7.3	1/2	0.84	1/25	11	15
36HCXR*V1*	120V-1PH-60HZ	7.3	1/2	0.84	1/25	11	15
48HCXR*V1*	120V-1PH-60HZ	11.5	1	0.84	1/25	15	25

TABLE 2

HCXW ELECTRICAL DATA					
Model	Voltage Rating	Motor Amps	Motor HP	MCA	MOP
18HCXW*V1*	120V-1PH-60HZ	4.8	1/3	6	15
24HCXW*V1*	120V-1PH-60HZ	4.8	1/3	6	15
30HCXW*V1*	120V-1PH-60HZ	7.3	1/2	10	15
36HCXW*V1*	120V-1PH-60HZ	7.3	1/2	10	15
48HCXW*V1*	120V-1PH-60HZ	10.5	1	14	20
60HCXW*V1*	120V-1PH-60HZ	11.5	1	15	25

TABLE 3

MINIMUM ROOM SIZE AND MITIGATION AIRFLOW

These fan-coils are compatible with A1 as well as A2L refrigerants. However, additional critical components are required if they are used with A2L refrigerants. If not already pre-configured for A2L refrigerants from the factory a kit that is designed for a particular refrigerant must be field installed to ensure that any leakage of refrigerant is sensed and automatically mitigated.

Additionally, units charged with A2L refrigerants require a minimum room size for the application of the fan-coil as well as a minimum mitigation airflow. Both of these are determined as a function of the total refrigerant charge. The total charge is determined by the charge in the outdoor unit (see outdoor nameplate) plus the charge that was added to the system upon installation.

Minimum Circulation Airflow and Room Area for a Given Charge of R32

System Charge of R32		Min Circulation Airflow		Minimum Room Area							
				1.8 m (6 ft) Ceiling/Release Height		2.4 m (8 ft) Ceiling/Release Height		3 m (10 ft) Ceiling/Release Height		3.6 m (12 ft) Ceiling/Release Height	
kg	lbs	m^3/hr	CFM	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2
1.8	4	178	105	6.6	71	4.9	53	4	43	3.3	35
2.3	5	222	131	8.2	89	6.2	66	4.9	53	4.1	44
2.7	6	267	157	9.9	106	7.4	80	5.9	64	4.9	53
3.2	7	311	183	11.5	124	8.6	93	6.9	74	5.8	62
3.6	8	356	209	13.2	142	9.9	106	7.9	85	6.6	71
4.1	9	400	236	14.8	159	11.1	120	8.9	96	7.4	80
4.5	10	445	262	16.5	177	12.4	133	9.9	106	8.2	89
5	11	489	288	18.1	195	13.6	146	10.9	117	9.1	97
5.4	12	534	314	19.8	213	14.8	159	11.9	128	9.9	106
5.9	13	578	340	21.4	230	16.1	173	12.8	138	10.7	115
6.3	14	622	366	23.1	248	17.3	186	13.8	149	11.5	124
6.8	15	667	393	24.7	266	18.5	199	14.8	159	12.4	133
7.3	16	711	419	26.3	284	19.8	213	15.8	170	13.2	142
7.7	17	756	445	28	301	21	226	16.8	181	14	151
8.2	18	800	471	29.6	319	22.2	239	17.8	191	14.8	159
8.6	19	845	497	31.3	337	23.5	252	18.8	202	15.6	168
9.1	20	889	523	32.9	354	24.7	266	19.8	213	16.5	177
9.5	21	934	550	34.6	372	25.9	279	20.7	223	17.3	186
10	22	978	576	36.2	390	27.2	292	21.7	234	18.1	195
10.4	23	1023	602	37.9	408	28.4	306	22.7	245	18.9	204
10.9	24	1067	628	39.5	425	29.6	319	23.7	255	19.8	213
11.3	25	1112	654	41.2	443	30.9	332	24.7	266	20.6	221
11.8	26	1156	680	42.8	461	32.1	346	25.7	276	21.4	230
12.2	27	1200	707	44.5	478	33.3	359	26.7	287	22.2	239
12.7	28	1245	733	46.1	496	34.6	372	27.7	298	23.1	248
13.2	29	1289	759	47.8	514	35.8	385	28.7	308	23.9	257
13.6	30	1334	785	49.4	532	37.1	399	29.6	319	24.7	266

Table 3

MINIMUM ROOM SIZE AND MITIGATION AIRFLOW CONTINUED

Minimum Circulation Airflow and Room Area for a Given Charge of R454B											
System charge of R454B		Min Circulation Airflow		Minimum Room Area							
				1.8 m (6 ft) Ceiling/Release Height		2.4 m (8 ft) Ceiling/Release Height		3 m (10 ft) Ceiling/Release Height		3.6 m (12 ft) Ceiling/Release Height	
kg	lbs	m^3/hr	CFM	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2
1.8	4	184	108	6.8	73	5.1	55	4.1	44	3.4	37
2.3	5	230	135	8.5	92	6.4	69	5.1	55	4.3	46
2.7	6	276	162	10.2	110	7.7	82	6.1	66	5.1	55
3.2	7	322	189	11.9	128	8.9	96	7.2	77	6	64
3.6	8	368	216	13.6	147	10.2	110	8.2	88	6.8	73
4.1	9	414	243	15.3	165	11.5	124	9.2	99	7.7	82
4.5	10	460	271	17	183	12.8	137	10.2	110	8.5	92
5	11	506	298	18.7	201	14	151	11.2	121	9.4	101
5.4	12	552	325	20.4	220	15.3	165	12.3	132	10.2	110
5.9	13	598	352	22.1	238	16.6	179	13.3	143	11.1	119
6.3	14	644	379	23.8	256	17.9	192	14.3	154	11.9	128
6.8	15	689	406	25.5	275	19.2	206	15.3	165	12.8	137
7.3	16	735	433	27.2	293	20.4	220	16.3	176	13.6	147
7.7	17	781	460	28.9	311	21.7	234	17.4	187	14.5	156
8.2	18	827	487	30.6	330	23	247	18.4	198	15.3	165
8.6	19	873	514	32.3	348	24.3	261	19.4	209	16.2	174
9.1	20	919	541	34	366	25.5	275	20.4	220	17	183
9.5	21	965	568	35.8	385	26.8	289	21.5	231	17.9	192
10	22	1011	595	37.5	403	28.1	302	22.5	242	18.7	201
10.4	23	1057	622	39.2	421	29.4	316	23.5	253	19.6	211
10.9	24	1103	649	40.9	440	30.6	330	24.5	264	20.4	220
11.3	25	1149	676	42.6	458	31.9	343	25.5	275	21.3	229
11.8	26	1195	703	44.3	476	33.2	357	26.6	286	22.1	238
12.2	27	1241	730	46	495	34.5	371	27.6	297	23	247
12.7	28	1287	758	47.7	513	35.8	385	28.6	308	23.8	256
13.2	29	1333	785	49.4	531	37	398	29.6	319	24.7	266
13.6	30	1379	812	51.1	550	38.3	412	30.6	330	25.5	275

Table 4

For installations in locations above 800 meters the room size and mitigation airflow must be adjusted with a factor from this chart

ALTITUDE CORRECTION FACTOR													
Altitude(m)	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200
Altitude (ft)	2625	3281	39.7	4693	5349	5349	5906	6562	7874	8530	9186	9843	10499
Adj. Factor (AF)	1.02	1.05	1.07	1.1	1.12	1.12	1.15	1.18	1.25	1.28	1.32	1.36	1.4

TABLE 5

CONDENSATE DRAIN

Units are equipped with primary and secondary 3/4 in. MPT drain connections. For proper condensate line installation **see figure 1.** To prevent property damage and achieve optimum drainage performance, both primary and secondary drain lines should be installed and include properly-sized condensate traps. (**See figure 4.**) Since the drain pan is located on the suction side of the blower, a negative pressure exists at the drain pan and a minimum trap of 1-1/2 inches must be provided in the drain line to assure proper drainage.

CAUTION

Shallow running traps are inadequate and DO NOT allow proper condensate drainage. Failure to follow this CAUTION could result in product and property damage.

NOTE

If a Condensate Overflow Shut-off Switch, that is designed to be installed in the drain line, is used in place of a secondary drain line, then the cut-off switch should be located in the primary drain line between the fan coil unit and the P-trap.

NOTE

When connecting condensate drain lines avoid blocking filter access panel. Prime both primary and secondary condensate traps after connecting to drain pan.

NOTE

If unit is located in or above a living space where damage may result from condensate overflow, a field-supplied external condensate pan should be installed underneath the entire unit, and a secondary condensate line (with appropriate trap) should be run from the unit into the pan. Any condensate in this external condensate pan should be drained to a noticeable place. As an alternative to using an external condensate pan, some localities may allow the use of a separate 3/4 in. condensate line (with appropriate trap) to a place where the condensate will be noticeable. The owner of the structure must be informed that when condensate flows from the secondary drain or external condensate pan, the unit requires servicing, or water damage will occur.

Install traps in the condensate lines as close to the coil as possible. Make sure that the outlet of each trap is below its connection to the condensate pan to prevent condensate from overflowing the drain pan. Prime all traps, test for leaks, and insulate traps if located above a living area. Condensate drain lines should be pitched downward at a minimum of 1 in. for every 10 ft. of length. Consult local codes for additional restrictions or precautions.

AIR FILTER

The air filter should be cleaned or replaced every 30 days or more frequently if severe conditions exist. Always replace the filter with the same type as originally furnished.

CAUTION

Never operate unit without a filter or with filter access door removed. Damage to blower motor or coil can result. Failure to follow this CAUTION could result in product and property damage.

IMPORTANT

Factory authorized filters must be used when locating the filter inside the unit. For those applications where access to an internal filter is impractical, a field-supplied filter must be installed in the return duct system.

UNIT START UP

WARNING

IMPROPER HANDLING OF REFRIGERANTS CAN CAUSE INJURY, EXPLOSION AND DEATH

- It is illegal to release refrigerant into the atmosphere. Refrigerant released into an enclosed space will displace oxygen causing unconsciousness and death.
- If an indoor refrigerant leak is suspected, thoroughly ventilate the area before beginning any work
- DO NOT purge or allow refrigerant to be released into an interior space
- Contact with liquid refrigerant can cause frostbite and blindness. Avoid skin contact with liquid refrigerant, wear goggles and gloves when working with refrigerants. Seek medical help immediately if any refrigerant contact with skin or eyes occurs
- Never burn refrigerant as highly toxic gas will be produced
- Only EPA certified technicians should handle refrigerants.
- In Canada technicians must be ODP / ODS certified to handle refrigerants
- Follow all EPA regulations

WARNING

- Explosion risk, recover refrigerant only in a cylinder designed and intended for this purpose
- Do not use a damaged cylinder
- Do not apply flame or excessive heat to a refrigerant cylinder
- Do not fill a refrigerant cylinder to more than 80% of its capacity
- Do not use a refrigerant cylinder for anything other than its designed and intended purpose
- Do not use an expired refrigerant cylinder
- Use recovery equipment designed to handle the refrigerant being recovered
- • Earth-ground refrigerant cylinders before using

WARNING

Do not exceed the maximum operating pressure listed on the unit rating plate.

WARNING

Components rotate at high speeds when the unit is in operation.
Do not touch any rotating component with any object.
Damage to the equipment and personal injury can occur

IMPORTANT

It is illegal to discharge refrigerant into the atmosphere. Use proper reclaiming methods and equipment when installing or servicing this unit. Service should be performed by a QUALIFIED service agency. A sealed refrigerant system normally requires no maintenance since it is a closed, self-contained system.

Refer to outdoor unit Installation Instructions for system start-up instructions and refrigerant charging method details.

PARTIAL REFRIGERANT CHARGE

Follow refrigerant charging instructions provided by the outdoor unit manufacturer for adding refrigerant to a partially charged system.

PRE-START CHECK

Check that supply voltage matches nameplate data. Ensure that the unit is properly grounded. With power off, check blower wheel set screw for tightness and ensure that the blower wheel rotates freely and quietly.

NOTE

Remove the motor blower shipping brace on the 60VHBQB blower assembly. Failure to do so will cause damage to the unit.

Check that the water coil, valves and piping are leak free and insulated as required. Ensure that all air has been vented from the hot water coil.

NOTE

It may require purging several gallons of water so have a means of discarding the water. Install all panels.

UNIT START UP CONTINUED

NOTE

The blower door must be in place for the unit to operate due to the door safety switch. Install any filters which may have been removed during the installation process. Before start-up, all of the components should be given a thorough check. Optimal operation of this equipment requires cleanliness. Often after installation of this equipment additional construction activities occur. Care must be taken to protect the equipment from debris during these construction phases.

HEAT CYCLE START-UP

WARNING

Do not exceed 180^{0} water temperature in the hydronic coil.

WARNING

Hot water can cause scalding. A hot water mixing valve can be applied to the system to temper domestic water draw. Failure to follow this WARNING could result in personal injury or product and property damage.

CLOSED LOOP SYSTEM

Check that the water coil, valves and piping have been leak checked. Purge the air handler's hot water coil and water lines of all air. Energize circulator pump to check if hot water is circulating through the coil.

DOMESTIC HOT WATER SYSTEM

Fill the water heater. Open a hot water faucet while filling the water heater to vent the air. When the tank is full and all the air is purged, close the faucet. Ignite the water heater and set the thermostat to 140 degrees. Purge the air handler's hot water coil and lines. Close valve number 2 and open valve number 3. (See figure 3.) Next, open the air bleed valve. When all of the air is purged from the lines close valve number 3 and open valve number 2. After all the air is purged from the coil and lines, open both valve number 2 and 3 and close the air bleed valve.

NOTE

Purging the system may require several gallons of water, so have a means of discarding the water.

Switch the room thermostat to the "Heat" position and raise the temperature setting to a position approximately ten degrees above room temperature

NOTE

The door switch must be activated to operate the unit.

The pump should energize and begin circulating the hot water through the coil. If the pump is operating properly and the water temperature in the water heater has reached the set point, then the hot water inlet at the fan coil unit will be hot. If the pump is running but hot water is not circulating, open the air bleed valve long enough to purge any remaining air from the hot water lines and coil. This will allow the pump to begin circulating hot water. The water heater thermostat should be adjusted so that the water temperature entering the hot water coil is as close to 140 degrees as possible with the system energized and operating long enough for all temperatures to stabilize.

CAUTION

The fan coil unit should not be energized for heating until the hot water coil and all water lines have been purged of air. Failure to follow this CAUTION could result in product and property damage.

APPLICATION AND BLOWER SPEED SELECTION

Select taps are used by the installer to properly configure the system. The ECM motor uses the selected taps to modify its operation to a pre-programmed table of airflows. (See Table 1.) Airflows are based on the system size or mode of operation and those airflows are modified in response to other inputs such as the need for dehumidification. The unit will deliver a constant airflow, based on the table of airflows and select taps, with a system static pressure up to 0.5 in H2O.

NOTE

The variable speed unit is compatible with damper duct systems when designed properly. Consult the damper system manufacturer for proper design.

APPLICATION AND BLOWER SPEED SELECTION CONTINUED

Table 1 Airflow Delivery (CFM)

Model	Operating Mode	Thermostat Terminals " X" Energized Terminal						CONTROL BOARD SELECT TAPS							
								COOL TAP				HEAT TAP			
		Y1	Y2	HUM	G	O	W1	A	B	C	D	A	B	C	D
24HCX**V	Cooling														
	Single Stage		X		X	X		800	720	600	525				
	Two Stage	X	X		X	X		560/800	500/720	420/600	370/525				
	Cool & Dehumidify														
	Single Stage		X	X	X	X		640	575	480	420				
	Two Stage	X	X	X	X	X		450/640	400/575	335/480	295/420				
	Continuous Blower				X			400	360	300	260				
	Heat Pump Heating														
	Single Stage		X		X			800	720	600	525				
	Two Stage	X	X		X			560/800	500/720	420/600	370/525				
	Heating (Non- Ht. Pump)														
	Heating						X					750	680	580	500

Model	Operating Mode	Thermostat Terminals " X" Energized Terminal						CONTROL BOARD SELECT TAPS							
								COOL TAP				HEAT TAP			
		Y1	Y2	HUM	G	O	W1	A	B	C	D	A	B	C	D
36HCX**V	Cooling														
	Single Stage		X		X	X		1200	1050	950	850				
	Two Stage	X	X		X	X		840/1200	735/1050	665/950	595/850				
	Cool & Dehumidify														
	Single Stage		X	X	X	X		960	840	760	680				
	Two Stage	X	X	X	X	X		670/960	590/840	530/760	475/680				
	Continuous Blower				X			600	525	475	425				
	Heat Pump Heating														
	Single Stage		X		X			1200	1050	950	850				
	Two Stage	X	X		X			840/1200	735/1050	665/950	595/850				
	Heating (Non- Ht. Pump)														
	Heating						X					1150	1000	900	800

Model	Operating Mode	Thermostat Terminals " X" Energized Terminal						CONTROL BOARD SELECT TAPS							
								COOL TAP				HEAT TAP			
		Y1	Y2	HUM	G	O	W1	A	B	C	D	A	B	C	D
48HCX**V	Cooling														
	Single Stage		X		X	X		1600	1400	1250	1100				
	Two Stage	X	X		X	X		1120/1600	980/1400	875/1250	770/1100				
	Cool & Dehumidify														
	Single Stage		X	X	X	X		1280	1120	1000	880				
	Two Stage	X	X	X	X	X		895/1280	785/1120	700/1000	615/880				
	Continuous Blower				X			800	700	625	550				
	Heat Pump Heating														
	Single Stage		X		X			1600	1400	1250	1100				
	Two Stage	X	X		X			1120/1600	980/1400	875/1250	770/1100				
	Heating (Non- Ht. Pump)														
	Heating						X					1500	1300	1150	1000

Model	Operating Mode	Thermostat Terminals " X" Energized Terminal						CONTROL BOARD SELECT TAPS							
								COOL TAP				HEAT TAP			
		Y1	Y2	HUM	G	O	W1	A	B	C	D	A	B	C	D
60HCX**V	Cooling														
	Single Stage		X		X	X		2000	1800	1600	1400				
	Two Stage	X	X		X	X		1400/2000	1260/1800	1120/1600	980/1140				
	Cool & Dehumidify														
	Single Stage		X	X	X	X		1600	1440	1280	1220				
	Two Stage	X	X	X	X	X		1120/1600	1010/1140	895/1280	785/1120				
	Continuous Blower				X			1000	900	800	700				
	Heat Pump Heating														
	Single Stage		X		X			2000	1800	1600	1400				
	Two Stage	X	X		X			1400/2000	1260/1800	1120/1600	980/1440				
	Heating (Non- Ht. Pump)														
	Heating						X					1850	1650	1500	1300

Airflow shown are at standard air conditions, dry coil at 120volts.

NOTE

The cooling and heating speed taps are factory set on “A”. The delay profile is factory set on “Arid” setting. The adjust profile is factory set on Normal. Adjust profile (+) will increase airflow by 10%, while tap (-) will decrease airflow by 10%.

The fan coil must be configured to operate properly with system components with which it is installed. To successfully configure a basic system, select the proper setting of the four Select Taps.

APPLICATION AND BLOWER SPEED SELECTION CONTINUED

COOLING SELECT TAP

Select system airflow for size of outdoor unit installed. See figure 8 for jumper location. Refer to Table 1 to select the proper airflow and Select Tap for the system installed. Proper selection should be derived from the outdoor unit capacity (tons) multiplied by nominal CFM per ton. (ex. 3 tons x 400 = 1200 CFM)

HEATING SELECT TAP

Select system airflow for heat output. See figure 8. Refer to Table 1 to select the proper airflow and Select Tap for the hot water coil installed. Proper selection should be derived from BTUH output of the coil from the unit specification sheet. The typical selection would be 350 to 400 CFM per ton.

ADJUST SELECT TAP

Select system CFM airflow requirement. See figure 8. Adjust select options are provided to adjust airflow supplied to meet individual installation conditions such as noise, comfort and humidity removal. To provide airflow at rates described in Table 1, the Adjust Tap is factory set at nominal (NORM). The adjust selections will regulate airflow supplied for all operational modes. The (+) tap provides 10 percent airflow over nominal airflow selected and the (-) tap provides 10 percent airflow below nominal airflow selected.

DELAY SELECT TAP

Select desired delay profiles. See figure 8. Four operation delay profiles are provided to customize and enhance system operation.

NOTE

The delay profiles are active only in the cooling modes.

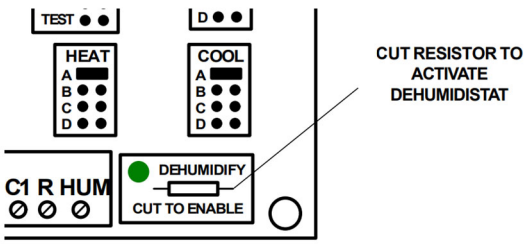


Figure 7 Dehumidify Resistor on Select Control Board

Selection options:

A. Arid Climates – the motor is programmed with a minimum ramp time to achieve full cooling capacity within a short time period. The off-cycle delay is programmed with a reduced airflow over an extended time period.

B. Mild Humid Climates – the motor is programmed with ramp time and speed to achieve dehumidification on cooling start-up, thus allowing more moisture to collect and drain from the coil. The off-cycle delay is programmed with a reduced airflow and short time period to enhance system efficiency and minimize re-evaporation of condensate.

C. Humid Climates – the motor is programmed with extended ramp time and reduced speed to achieve maximum dehumidification on cooling start-up, thus allowing more moisture to collect and drain from the coil. There is no off-cycle delay programmed to eliminate re-evaporation of condensate.

D. No Delays – the motor is programmed with no delays to represent normal operation of a standard air handler.

HEAT DELAY

The motor is factory programmed with a pre-purge time to permit the circulator to circulate hot water to the fan coil before the blower operates at a reduced CFM. The off-cycle delay is programmed with a reduced airflow over a short time period to post purge the heat out of the water coil and duct system.

NOTE

The unit does NOT read changes in COOL, HEAT, and DELAY taps while it is running. Disconnect power for 1 minute before changing taps, then restart for the new settings to take effect.

NOTE

The unit may appear to ‘pulse’ with system static pressures greater than 0.5 in H2O.

APPLICATION AND BLOWER SPEED SELECTION CONTINUED

DEHUMIDIFY CAPABILITY

NOTE

- The dehumidify function requires dehumidistat contacts that open on a rise of humidity wire the dehumidistat between R & HUM terminals of the control board
- Cut the DEHUMIDIFY jumper on the control board (see figure 8)

Latent capacities for systems using the HCXQ*V, HCXR*V and HCXW*V Fan Coil are better than average systems. If increased latent capacity is an application requirement, the field wiring terminal block provides connection terminals for use with a standard dehumidistat. The fan coil will detect the dehumidistat contacts opening on increased humidity and reduce its airflow to approximately 80 percent of nominal cooling airflow. This reduction will increase the system latent capacity until the humidity falls to a level, which causes the humidistat to close its contacts. When the contacts close, the airflow will return to 100 percent of the selected cooling airflow. To activate this mode, cut the resistor located on the lower right-hand corner of the selection control board and wire in a standard dehumidistat. (Refer to figure 8.)

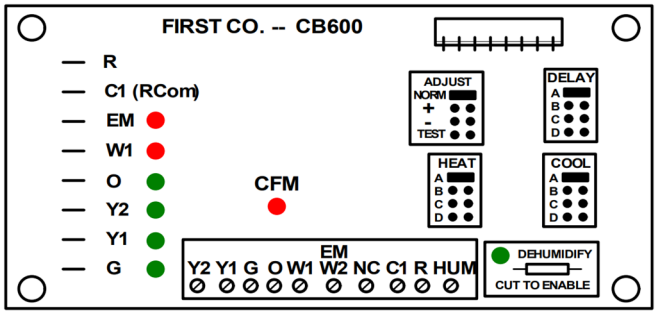


Figure 8 Select Control Board

SEQUENCE OF OPERATION

The sequence of operation will depend what type of thermostat selected. The unit has the ability to be used as:

1. Single stage A/C cooling with single stage heat.
2. Two stage A/C cooling with single stage heat.
3. Single stage heat pump with auxiliary / backup heat.
4. Two stage heat pumps with auxiliary / backup heat & emergency heat.

Refer to the thermostat installation instructions for more information.

A. **Continuous Fan** -The blower runs continuously at a reduced airflow.

B. **A/C Cooling only with Hot Water Heat**

I. **Cooling Mode** - If the indoor temperature is above the thermostat set point and the humidity is below the humidity set point if a dehumidistat is installed, the thermostat sends a signal to the fan coil and compressor which delivers cooling airflow. If the humidity is above the humidity set point, then the fan coil delivers the cooling airflow at 80% of the nominal.

II. **Heating Mode** - If the indoor temperature is below the thermostat set point, the thermostat sends a signal to the fan coil to deliver hot water heating airflow

C. **Heat Pump Cooling/Heating with Backup Hot Water Heat**

I. **Cooling Mode** – If the indoor temperature is above the thermostat set point and the humidity is below the humidity set point if a dehumidistat is installed, the thermostat sends a signal to the fan coil and heat pump which delivers cooling airflow. If the humidity is above the humidity set point, then the fan coil delivers the cooling airflow at 80% of the nominal.

II. **Heating Mode** – If the indoor temperature is below the thermostat set point, the thermostat sends a signal to the fan coil to deliver heat pump and hot water heating airflow.

III. **Emergency Heat** – If the thermostat is set to emergency heat, the thermostat sends a signal to deliver hot water heat only. No mechanical heat is produced from the heat pump.

NOTE

Some thermostats may require a jumper between Emergency heat and W1 for proper operation. Refer to the thermostat installation instructions for more information.

SEQUENCE OF OPERATION CONTINUED

Table 2 Wiring Harness Terminations

Pin # on 16-Pin Connector	Description		Signal on pin with Screw Terminal Jumpered to R *
1	Common		
2	W /W1	Heating Signal	24VAC **
3	Common		
4	Delay Adjust		
5	Cool Fan Adjust		
6	Y1	AC / Heat Pump	(-) 12VDC **
7	CFM Adjust		
8	Not Used		
9	"O" (HP/Cool)	Reversing Valve	
10	Dehumidify		0V (24VAC on no call)
11	Heat Fan Adjust		
12	24V AC		24VAC continuous
13	W2 / EM	Heating Signal	24VAC **
14	Y /Y2	AC / Heat Pump	(-) 12VDC **
15	G	Fan Signal	24VAC **
16	Not Used		

Check voltages wit 16- Pin Plug disconnected from the motor.
These signals will start the motor.
Dehumidify- 24 VAC is present unless a dehumidistat is present and requesting dehumidification

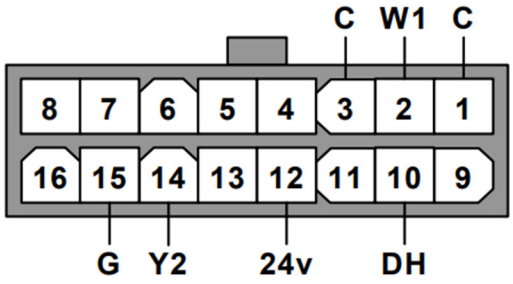


Figure 9 16 Pin Signal Connector

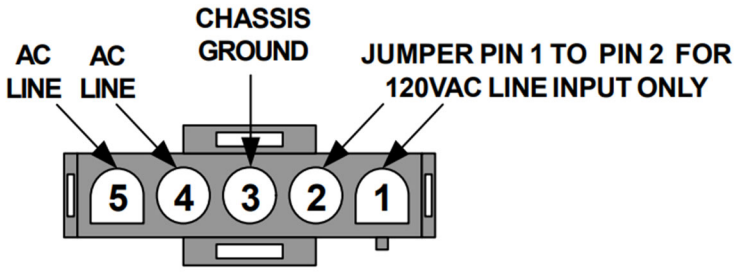


Figure 10 5 Pin Power Connector

WARNING

Applying 240VAC line input with Pin 1 and Pin 2 jumper in place will permanently damage unit.

TROULBESHOOTING ECM MOTOR AND CONTROLS

CAUTION

High voltage is always present at the motor. Disconnect power to the unit before removing or replacing connectors or servicing motor. Wait at least 5 minutes after disconnecting power before opening motor to allow voltage stored in the internal capacitors time to dissipate. Failure to follow this CAUTION could result in personal injury or product and property damage.

The ECM motor contains two parts: the control module and motor winding section. Do not assume the motor or module is defective if it will not start. Go through the steps described below before replacing control module, Select Control Board or entire motor.

IF MOTOR TURNS SLOWLY:

A. Replace panel. Motor may appear to run slowly if access panel is removed.
B. It is normal operation to run noticeably slower if G terminal is energized without a call for heat or cooling

IF MOTOR DOES NOT RUN:

A. Check for 24VAC at terminal R and C1. If no voltage is present, check the transformer.
B. Check all plugs and receptacles for any deformation, which could cause loose connections. Be sure plugs are fully seated.
C. Verify that approximately 120VAC is present at the motor.

CHECK CONTROL SIGNALS

Verify low voltage control signals to motor. The motor receives its control signals through the 16-pin wiring harness. The combination of pins energized will determine the motor speed. See table 2 for pin number on 16-pin plug which should have voltage when Select Control Board screw terminals have 24VAC

THERMOSTAT

A. Remove all thermostat wires from Select Control board
B. Jumper screw terminals on the select control board one at a time: R-G, R-Y1, and R-W1. (Note: R-W1 must be jumpered for at least a minute to see if motor will run.) If motor runs in all cases, thermostat is mis wired, configured incorrectly or defective. If motor runs in some cases, but not others, continue to check wiring harness and circuit board.

WIRING HARNESS

1. Shut off power to unit. Wait 5 minutes.
2. Remove 5-pin connector from motor.
3. Remove 16-pin connector from motor.
4. Replace 5- pin plug and turn power on.
5. Check for correct voltages on 16-pin connector with screw terminals jumpered. (See table 2 for values.)

If signals check correctly and motor does not run, inspect wiring harness for loose pins or damaged plastic connectors that could cause poor connections. If connections are good, either motor control module or motor is defective. If proper signals are not present, check Select Control Board using procedure below: 16-pin Plug on Select Control Board.

- Unplug wiring harness from board.
- Check for appropriate voltage on the connector pins with Select Control Board terminals jumpered. See table 2 for values and example below.

If proper signals are not present, replace the Select Control Board. If signals are present at the board and not the other end of the wiring harness, the wiring harness is defective.

TROUBLESHOOTING EXAMPLE

Motor is not running on a call for cooling.

1. After performing checks in Thermostat section, follow steps 1 thru 5 in the Wiring Harness section. Then proceed with the example.
2. With all thermostat wires removed from the Select Control board, place a jumper wire between R and Y2 low voltage terminals on the Select Control board. If using a heat pump, then jumper R to O as well.
3. Check table 2 for pin number on the 16-pin connector associated with the Y signal. The correct pin is #14. The far-right column shows that (-) 12VDC should be present between pin #14 and pin #1 (common) on the 16-pin connector.
4. Set meter to read DC voltage. Place meter between pins #1 and #14 and check for (-) 12VDC (common side of meter on pin #1.) If signal is present, the problem is the module or motor. If signal is not present, then problem is either wiring harness or Select Board.

These steps can be repeated for the other modes of operation.

TROULBESHOOTING ECM MOTOR AND CONTROLS CONTINUED

TO CHECK SELECT CONTROL BOARD

1. Leave jumper wire in place between R and Y2. If using a heat pump, jumper R to O as well.
2. Remove 16-pin wiring harness from the Select Control Board.
3. Check table 2 for pin number on the 16-pin connector associated with the Y2 signal. The correct pin is #14. The far-right column shows that (-) 12VDC should be present between pin #14 and pin #1 (common) on the 16-pin socket connector.
4. Place meter between pins # 14 and #1 on the socket connector and check for (-) 12VDC.
5. If voltage is present, the wiring harness is bad. If not, the Select control Board is bad.

VERIFY MOTOR WINDING SECTION

Before proceeding with module replacement, check the following to ensure motor winding section is functional. With control module removed and unplugged from the winding section:

1. The resistance between any 2 motor leads should be similar.
2. The resistance between any motor lead and unpainted motor end plate should be greater than 100K ohms.
3. If motor winding section fails one of these tests, it is defective and must be replaced.

OPERATION AND MAINTENANCE

For continuing high performance, and to minimize possible equipment failure, it is essential that periodic maintenance be performed on this equipment

FAN

The fan should be inspected and cleaned annually. It is important to keep fan wheels clean in order to prevent imbalance and vibration.

MOTOR

Check motor connections to ensure that they are secure and made in accordance with the wiring diagram. The blower motor should be cleaned annually. Motor bearings are permanently sealed and do not require field lubrication.

COIL

Dust or other contaminants which accumulate on the heat transfer surfaces impede air flow and heat transfer. The coil must be kept clean by any of the following methods.

- Cleaning with low-pressure compressed air.
- Flushing or rinsing with water (a detergent is recommended for greasy surfaces). Inspect annually or more frequently if required.

DRAIN PIPING

The drain should always be:

- Connected and piped to an acceptable disposable point sloped away from the unit at least 1/8-
- inch per foot
- Checked before summer operation.
- Periodically checked during summer operation.

WARNING

Disconnect all power to unit before servicing field wires or removing control package. The disconnect (when used) does not disconnect power to the line side of the disconnect, but does allow safe service to all other parts of the unit. If the unit does not have a disconnect, disregard the foregoing. Instead, make sure that a disconnecting means is within sight from, and is readily accessible from, the unit. Disconnect all power to the unit before performing any maintenance or service on it. Failure to follow this can cause electrical shock, fire, personal injury, or death.

OPERATION & MAINTENANCE CONTINUED

The minimum maintenance requirements for this equipment are as follows:

1. Inspect and clean or replace the air filter every 30 days or more frequently if severe conditions exist. Always replace the filter with the same type as originally furnished.
2. Inspect cooling coil before each cooling season. The coils must be kept clean, any dust or other contaminants which accumulate on the heat transfer surfaces interferes with the air flow and impairs heat transfer. The coil can be cleaned by one of the following methods: Cleaning with low pressure compressed air or flushing and rinsing with water and a detergent is advisable for greasy surfaces.
3. Inspect drain pan cleanliness annually and clean as required. Inspect the condensate drain prior and periodically during the cooling season for proper draining.

Check blower motor and wheel for cleanliness each heating and cooling season. Clean as required.

4. Inspect electrical connections for tightness and controls for proper operating each heating and cooling season. Service as required.

WARNING

As with any mechanical equipment, personal injury can result from sharp metal edges, etc., therefore, care should be taken when removing and working on metal parts.

LABORATORY TESTING

When the unit has less than 100 operational hours and the coils have not had sufficient time to be “seasoned”, it is necessary to clean the coils with mild surfactant such as calgon to remove the oils left by manufacturing processes.

Compressor bearing products designed for A2L refrigerants may come equipped with a factory installed refrigerant leak detection system. If the sensor is faulty, or disconnected, the appliance will not properly function.

False ceilings or drop ceilings may be used as a return air plenum if a refrigerant detection system is provided in the appliance and any external connections are also provided with a sensor immediately below the return air plenum duct joint.

QUALIFICATION OF WORKERS

Service shall only be performed by qualified technicians, certified by national training organizations or manufacturers that are accredited to teach the relevant national competency standards that may be set in legislation. Competence to properly service the appliance should be documented by a certificate.

CHECKS TO THE WORK AREA

Prior to beginning work on the appliance, safety checks are necessary to ensure that the risk of ignition of released gasses is minimized. Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

CHECKING FOR PRESENCE OF REFRIGERANT

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any such a pipe work shall use any sources of ignition in manner that it may lead to the risk of fire or explosion.

All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “NO SMOKING” signs shall be displayed.

OPERATION & MAINTENANCE CONTINUED

VENTILATED AREA

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

CHECKS TO THE REFREIGERATING EQUIPMENT

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using FLAMMANLE REFRIGERANTS:

- The actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;
- The ventilation machinery and outlets are operating adequately and are not obstructed;
- Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

CHECKS TO ELECTRICAL DEVICES AND SEALED ELECTRICAL COMPONENTS

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial Safety Checks shall include:

- That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- That no live electrical components and wiring are exposed while charging, recovering or purging the system;
- That there is continuity of earth bonding.

Sealed electrical components shall be replaced in the event of damage or malfunction.

CABLING

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

DETECTION OF FLAMMABLE REFRIGERANTS

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.

Leak detection fluids (such as the bubble method or fluorescent method agents) are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

OPERATION & MAINTENANCE CONTINUED

REMOVAL AND EVACUATION OF FLAMMABLE REFRIGERANTS

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for FLAMMABLE REFRIGERANTS it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

- Remove refrigerant charge following local and national regulations
- Purge the circuit with inert gas (optional for A2L);
- Evacuate (optional for A2L)
- If using flame to open circuit, continuously flush system with an inert gas
- Open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.
For appliances containing flammable refrigerants, refrigerant purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing until the working pressure is achieved, then venting to the atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the REFRIGERATING SYSTEM is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

DECOMISSIONING

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

A. Become familiar with the equipment and its operation.
B. Isolate system electrically.
C. Before attempting the procedure, ensure that:
    a. mechanical handling equipment is available, if required, for handling refrigerant cylinders;
    b. all personal protective equipment is available and being used correctly;
    c. the recovery process is supervised at all times by a competent person;
    d. recovery equipment and cylinders conform to the appropriate standards.
D. Pump down refrigerant system, if possible.
E. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
F. Make sure that cylinder is situated on the scales before recovery takes place.
G. Start the recovery machine and operate in accordance with instructions.
H. Do not overfill cylinders (no more than 80 % volume liquid charge).
I. Do not exceed the maximum working pressure of the cylinder, even temporarily.

OPERATION & MAINTENANCE CONTINUED

J. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
K. Recovered refrigerant shall not be charged into another REFRIGERATING SYSTEM unless it has been cleaned and checked.

LABELING

Equipment Shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating that the equipment contains FLAMMABLE REFRIGERANT.

RECOVERY

When removing refrigerant from a system, either for servicing order commissioning, it is recommended good practice that all refrigerants are removed safely.
When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak- free disconnect couplings and in good condition.
The recovered refrigerant shall be processed according to local Legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely

REFRIGERANT DETECTION SENSOR (RDS) INFORMATION

Refer to the appliance IOM for information regarding the minimum conditioned room requirements, and instructions for the RDS operation, installation, and wiring. Any field installed wiring connected to the RDS must be at least 18AWG and have minimum insulation thickness of 1.58mm or be protected from damage.
The RDS is not intended for service or repair. In the event of a sensor failure, the mitigation mode will engage and the sensor shall be replaced by removing the sensor and replacing it with a new sensor.

OPERATION & MAINTENANCE CONTINUED

Status Light Table for Refrigerant Detection System (RDS)		
Status Light	State / Condition	System Response
Green Blinking	Normal Operation	- The system is actively monitoring refrigerant levels. - No refrigerant detected above the activation threshold. - Outdoor unit compressor and indoor blower operate normally.
Red Continuous	Refrigerant Leak Detected	- Refrigerant concentration exceeds the activation threshold. - The outdoor unit compressor (Y) is turned off to prevent further circulation of refrigerant. - The indoor blower is turned on to recirculate air and mitigate the refrigerant concentration.
Red Blinking	Fault Detected	- A fault in the refrigerant detection system (e.g., calibration issue, end-of-life) has been detected. - The outdoor unit compressor (Y) and indoor blower mitigation mode are deactivated for safety. - System requires inspection or replacement.
No Light	System Off or Malfunction	- The system is not operational. - Check the power supply and all system connections.
Amber Blinking	System Initializing	- The system is warming up after power-up. - The outdoor unit compressor (Y) and indoor blower mitigation mode remain inactive during this phase. - Transitions to green blinking when monitoring begins.

A2L SENSING AND MITIGATION

Air handler units that can be charged with over 4lbs (1.81kg) of R454B or R32 refrigerant are shipped with a factory installed refrigerant leak detector attached near the bottom of the evaporator coil. In the event that a refrigerant leak is detected, the controls will disable the compressor operation, and energize the evaporator fan to disperse the leaked refrigerant. The unit will operate in this mitigation state until the sensor no longer detects a refrigerant leak, for a minimum time of 5 minutes. Once the mitigation period has ended, the unit will return to its normal operation based on the current thermostat inputs. An LED status light is provided with the sensor for diagnostic purposes, the description of the LED status light signals can be found in the following table.

A2L SENSOR REPLACEMENT

1) Remove front bottom panel to access coil.
2) Disconnect A2L harness from existing installed sensor.
3) Remove installed A2L sensor from bracket by removing two screws as shown in Figure 11. (use existing screws to install new sensor)
4) Attach new sensor to bracket using two existing screws. See Figure 11
   TAKE CAUTION – DO NOT SCREW INTO COIL/TUBING
5) Connect A2L harness to new installed sensor.

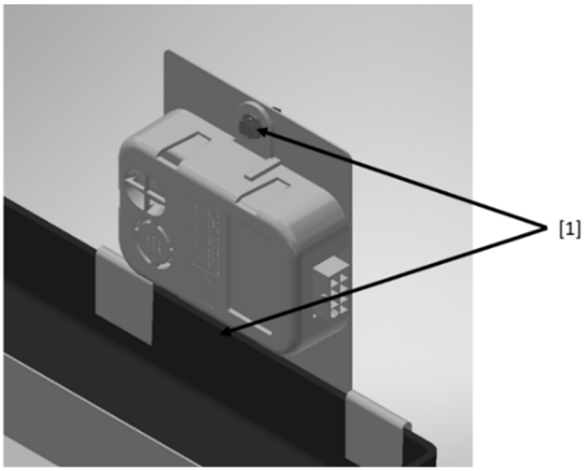


Figure 11 - Sensor Mounting

Note: Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

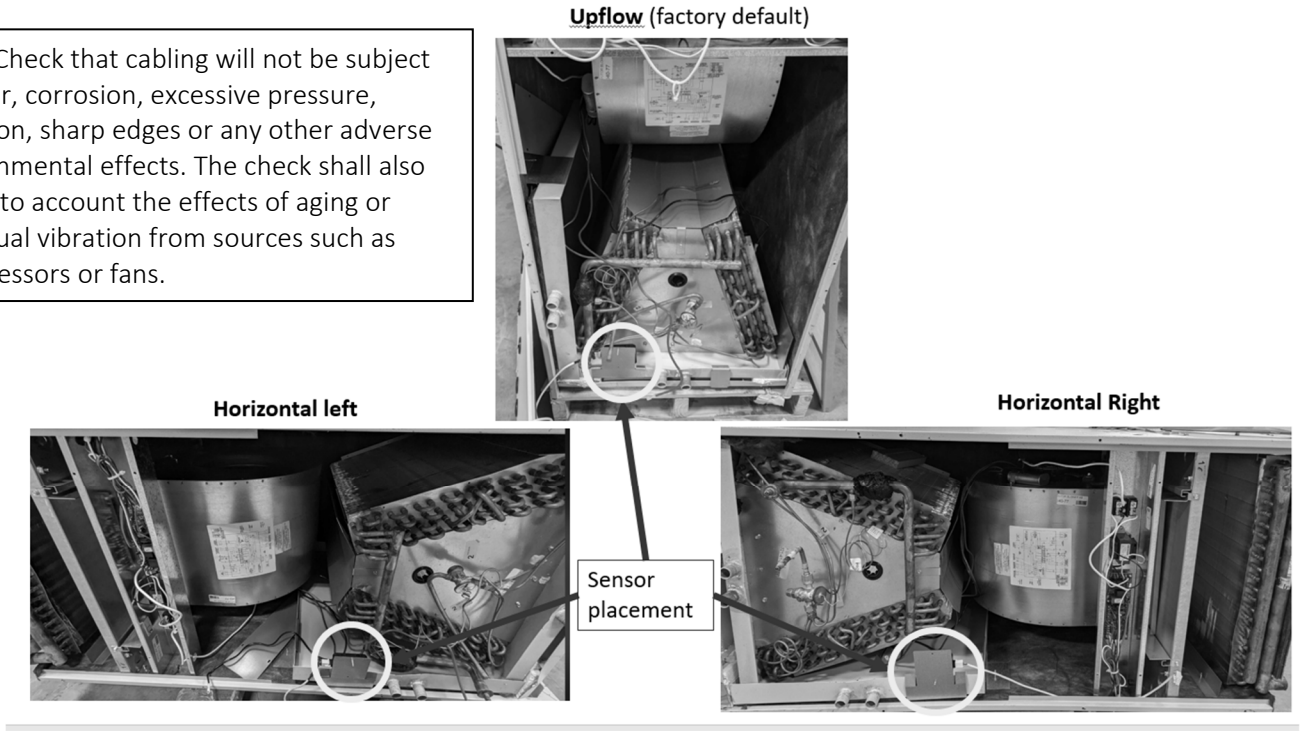
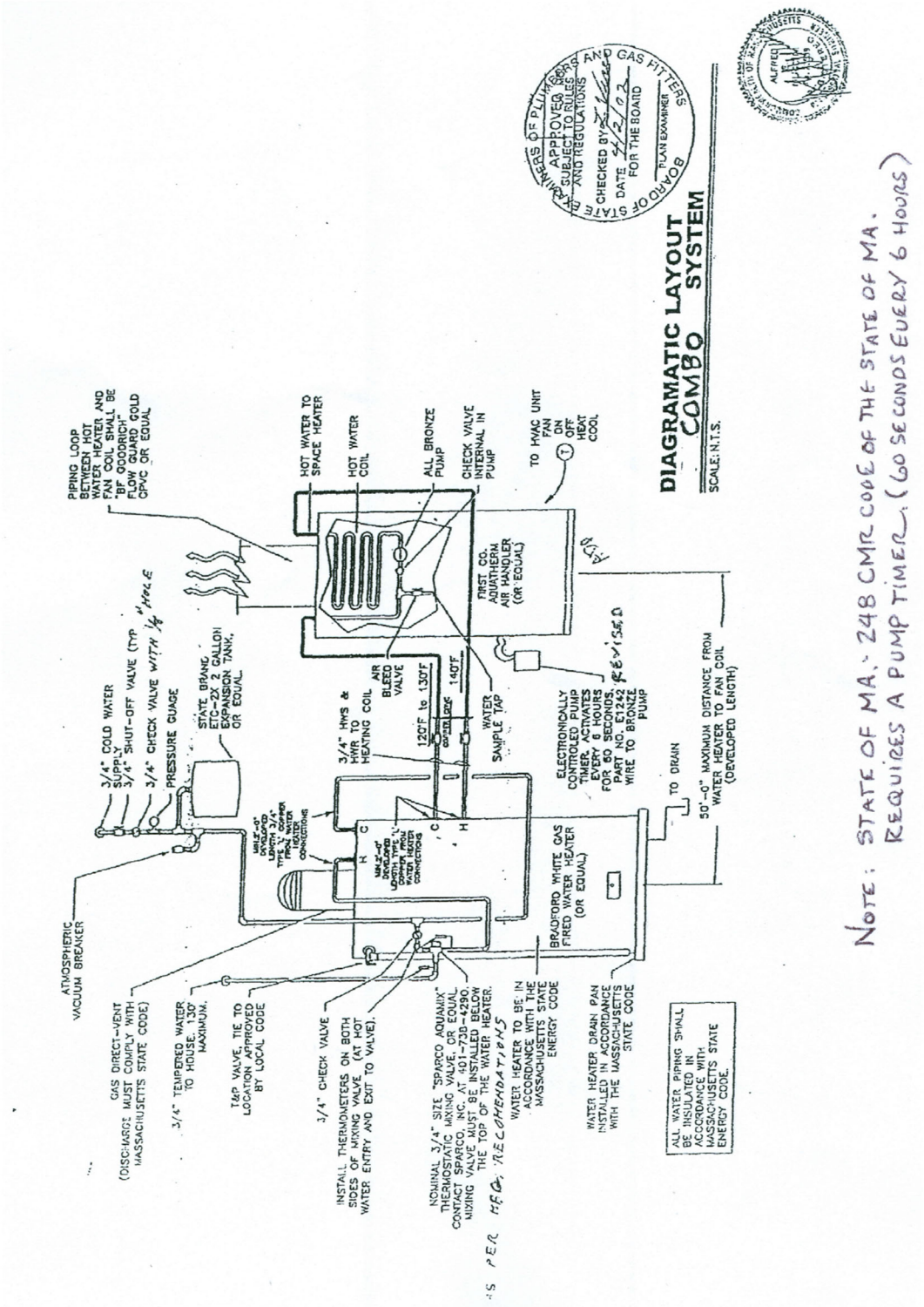


Figure 12 - Sensor Alternate Positioning

PIPING DIAGRAM



STATE OF MASSACHUSETTS PIPING DIAGRAM

UNITS WITH HOT WATER HEATING

NOTES

P.O. Box 270969 Dallas, TX 75227
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The manufacturer works to continually improve its products. It reserves the right to change design and specifications without notice.

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