Firstco HX-HXX Series Horizontal Fan Coil Units Instruction Manual

Contents

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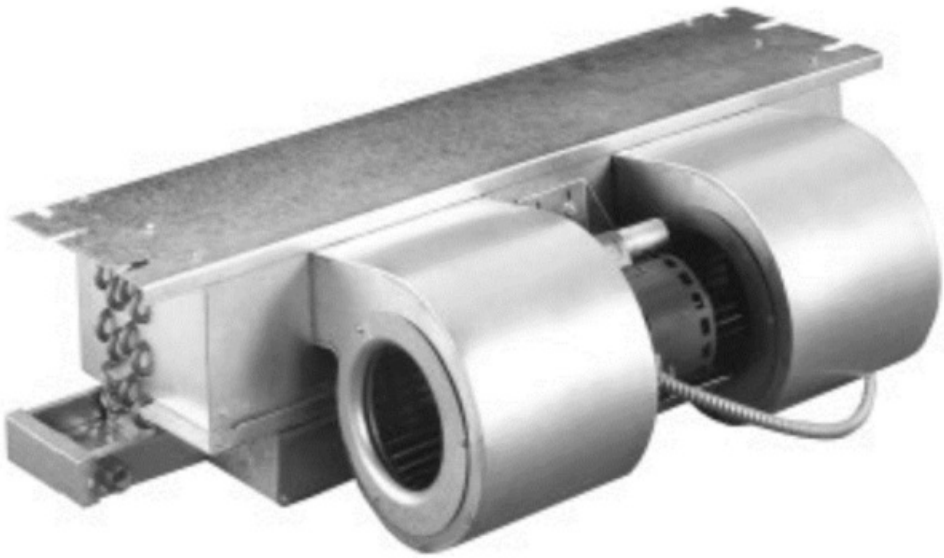


Specifications

- Product Name: HX-HXX Series Horizontal Fan Coil Units
- Model: HX-HXX
- Revision: A 04/24

Product Information

The HX-HXX Series Horizontal Fan Coil Units are designed for efficient cooling and heating in commercial and residential settings. The units are intended for horizontal installation above dropped ceilings, adhering to all local and national code requirements.

Installation

1. Read the entire manual thoroughly before starting the installation.
2. Ensure proper positioning of the unit in a horizontal orientation above a dropped ceiling.
3. Consult a qualified licensed installer or service agency for assistance.
4. Use only factory-authorized kits or accessories during installation.
5. Follow all safety codes and consult local building regulations.

Operation

1. Perform pre-start checks as outlined in the manual.
2. Start-up the unit following the provided instructions.
3. Maintain the fan motor, filter, coil, and drain piping regularly to ensure optimal performance.

Maintenance
Regular maintenance is essential for the longevity and efficiency of the unit. Refer to the manual for specific maintenance procedures.

FAQ

- **Q: Can I install the fan coil unit vertically?**

A: No, the units are designed for horizontal installation above dropped ceilings.

- **Q: What should I do if I encounter an electrical shock hazard?**

  A: Immediately disconnect power and consult a qualified professional to address the issue.

Installation, Operation, &
Maintenance
IOM 4101
Rev. A 04/24

HX-HXX Series Horizontal
Fan Coil Units

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

WARNING TO INSTALLER, SERVICE PERSONNEL AND OWNER
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.

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.

GENERAL INFORMATION

HX and HXX are ceiling mounted fan-coil units comprised of a blower assembly and a direct expansion coil for connection to a properly matched air conditioning or heat pump unit using R410a refrigerant only. HX and HXX may also be equipped with factory installed electric heat. When a HX or HXX fan-coil unit with electric heat is part of a heat pump system, also install a 942-1 heat pump kit.
The manufactures 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 should be noted on the delivery receipt and the material inspected in the presence of the carrier's representative. If damage is found, a claim should be filed against the carrier immediately.

FAN COIL UNIT

The installer must adhere strictly to all local and national code requirements pertaining to the installation of this equipment. These units are designed for installation in a horizontal position above a dropped ceiling.

WARNING

Extreme caution must be taken that no internal damage will result if screws or holes are drilled into the cabinet.

Free return installation (non-ducted return air): the furred down area must be completely sealed (except return air grille) to ensure that all return air is pulled from the conditioned space and not from other areas of the building structure.
Access must be provided for servicing the unit. If this access is provided by a removable ceiling panel, ample space must be allowed for removal of the blower panels and to provide access to electrical and plumbing controls.
While most fan coils are U.L listed for installations with zero clearance to combustible materials, reference should be made to the marking on the particular unit being installed where specific information regarding clearances is provided.

NOTE

When a HX or HXX fan coil unit is equipped with electric heat and is connected to a heat pump, a 942-1 heat pump kit must be installed.

WARNING
Unit must not be operated during building construction due to excessive airborne dust and debris. The unit must not be operated under any circumstances without an air filter in place.

WARNING
Refer to equipment rating plates for listed maximum operating pressure, do not exceed this pressure.

WARNING
Connect this unit only to an air conditioning condenser or heat pump unit designed for use with R410a refrigerant.

IMPORTANT
Electrical work associated with the installation of this appliance must comply with the National Electrical Code (NEC).

IMPORTANT
HX and HXX units are PARTIAL UNIT AIR CONDITIONERS, complying with PARTIAL UNIT requirements of this Standard, and must only be connected to other units that have been confirmed as complying to 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

AIR DISTRIBUTION DUCTS
All duct work must be installed in accordance with National Fire Protection Association Codes 90A and 90B. 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. 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.

ELECTRICAL
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.
Units are provided with wiring diagrams and nameplate data to provide information required for necessary field wiring. On some unit models remote control boxes are furnished for field installation. In these instances, care should be taken to assure that the control box used is the same as that indicated by the marking on the unit. The control box should be located as near as the unit as possible in a location readily accessible for servicing. Wiring between the control box and the unit must be in accordance with the diagrams provided. The field wiring between the control box and the motor junction box must be installed using either flexible metal conduit or armored cable with sufficient length to allow removal of the blower section for service access to the heater elements and thermal cutoffs.

WARNING
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.

These units are provided with a Class 2 transformer for 24-volt 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.

OVER CURRENT PROTECTION

HACR type breakers are recommended. Other over-current protection devices that comply with all applicable codes are acceptable.
Field installed electrical wiring supplying power to this unit and / or electric heaters must include a disconnect

device at the unit.

OPERATING VOLTAGE
HX and HXX fan-coil units are factory wired for a 240-volt supply. Follow the steps below to change the transformer primary wire connections at the time of installation when a 208-volt power supply is used.

FOR 208 VOLT OPERATION

WARNING
ELECTRIC SHOCK HAZARD

1. Disconnect and lockout all power supplies to the HX /HXX unit.
2. Disconnect the orange primary transformer wire from its connection point.
3. Connect the blue primary transformer wire to original connection point of the orange wire.
4. Cap-off the orange primary transformer wire.

INSTALLATION PRECAUTIONS

Installation of this fan coil should only be performed by a licensed contractor to ensure proper installation and the safety of the installer. The following are some precautions to be followed for typical installations.

- 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 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 metering devices or other components, heat shields or wet rags are required to prevent damage.

WARNING
Do not touch any rotating component with any object. Damage to the equipment and personal injury can occur.

- When the fan coil unit is in operation components are rotating at high speeds.
- Units must be installed level to ensure proper drainage and operation.
- Check unit prior to operation to ensure that the condensate water will drain toward the drain connection. An overflow drain or an auxiliary drain pan under the fan coil may be required as a back up to a clogged primary drain.
- Be sure that the drain pan is free from foreign material prior to start up.
- Check filter media installation to ensure that 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.

STATIC PRESSURE
These fan coil units are designed for quiet operation, however, all air conditioning equipment will transfer some amount of noise to the conditioned space. This should be taken into consideration when planning the location of

the equipment.
The total external static pressure must be considered when planning installation and duct design. Refer to the rating label on your unit for more information. HX (PSC) units are recommended for use up to .3” total external static pressure. HXX (ECM) units are recommended for use up to .5” total external static pressure. A unit operating at lower total external static pressure will be more efficient and quiet vs. operation at higher static pressure.

MOUNTING
It is important to ensure that the fan coils are securely mounted and the structure is sufficient to support the weight of the equipment. All anchors for mounting the equipment must be placed and sized to ensure a safe and durable installation.
These units are provided with four (4) mounting slots. Metal washers and nuts of the proper size are to be provided by the installer. When necessary, use shims to obtain the proper level. This will ensure that the condensate will drain from the unit.

WARNING
When connecting piping to fan coils, do not bend or reposition the coil header tubing for alignment purposes. This could cause a tubing fracture resulting in a refrigerant leak when pressure is applied to the system.

Select a location that will provide adequate space to mount the unit and accommodate ducting. The recommended clearance for service is 24” on all sides of the unit. Units with or without electric heat may be installed with 0” clearance to combustibles. Always check the unit rating plate for clearance and other information before mounting unit. Refer to dimensional data in FIGURES 1-3 for HX & HXX units and enclosures to determine space required for mounting.

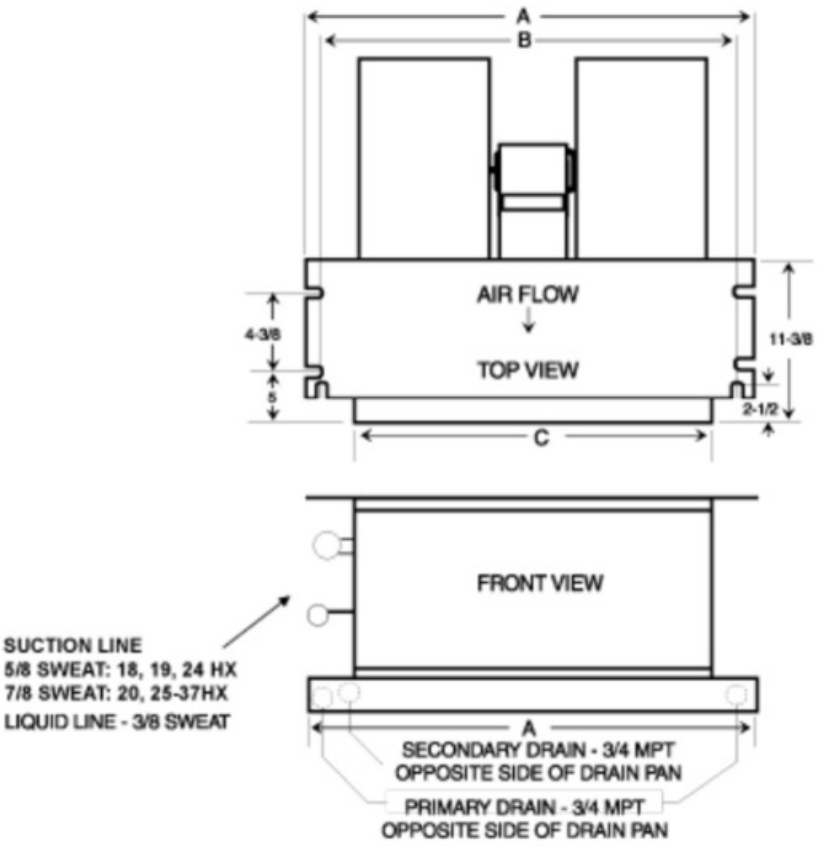


Figure 1

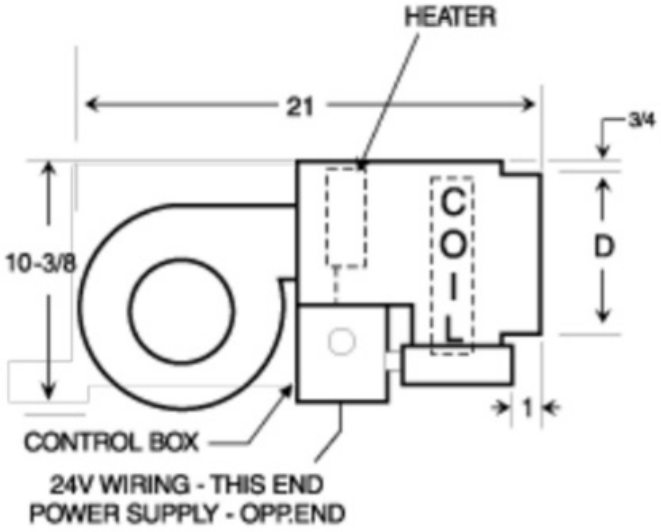


Figure 2

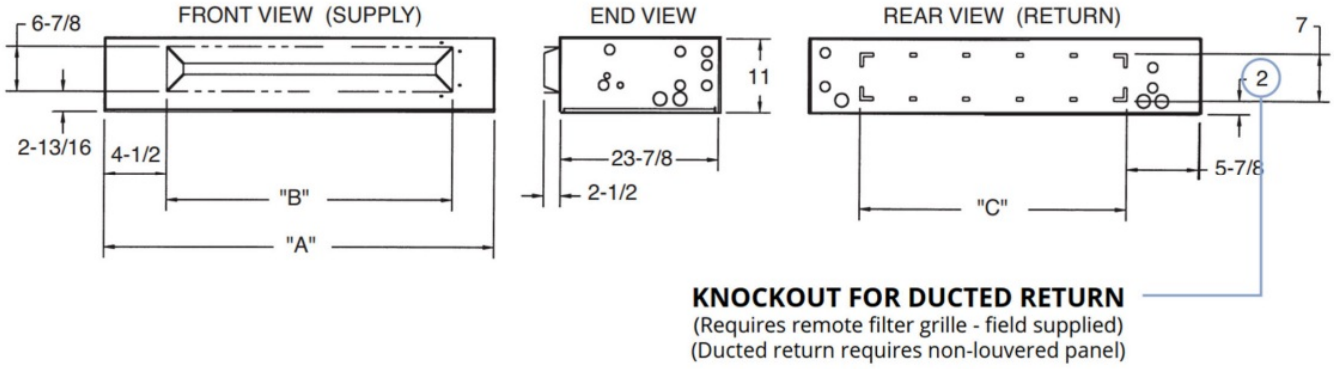


Figure 3

DIMENSIONS

*ENCLOSURE DIMENSIONS (CM)					
HX MODEL	HXX MODEL	ENCLOSURE NO.	A	B	C
18, 19, 24HX	12, 19, 24HXX	9EHX01	39-3/4″ (101)	30-5/8″ (78.8)	28″ (71.1)
20, 25HX	20, 25HXX	9EHX02	45-3/4″ (116.2)	36-5/8″ (90)	34″ (86.4)
26, 31HX	26, 31HXX	9EHX03	51-3/4″ (131.4)	42-5/8″ (108.3)	40″ (101.6)
28, 32, 37HX	28, 32, 37HXX	9EHX04	58-3/4″ (149.2)	50″ (127)	46-3/4″ (118.7)

*Dimensions shown are for enclosure only. Room for refrigerant tubing, electrical, and drain piping must be considered along with adequate service clearance when planning the installation.

*UNIT DIMENSIONS (CM)					
HX MODEL	HXX MODEL	A	B	C	D
18, 19, 24HX	12, 19, 24HXX	37-1/4″ (94.6)	34-11/16 (88.1)	30 (76.2)	6-1/2 (16.5)
20, 25HX	20, 25HXX	43-1/4″ (109.9)	40-11/16 (103.3)	36 (91.4)	6-1/2 (16.5)
26, 31HX	26, 31HXX	49-1/4″ (125)	46-11/16 (118.6)	42 (106.7)	6-1/2 (16.5)
28, 32, 37HX	28, 32, 37HXX	56-1/4″ (142.9)	53-11/16 (166.8)	49 (124.5)	6-1/2 (16.5)

*Dimensions shown are for unit only. Room for refrigerant tubing, electrical, and drain piping must be considered along with adequate service clearance when planning the installation.

COOLING COIL PIPING
The HX fan coil units are supplied with a direct expansion refrigerant coil. The suction and liquid refrigerant lines must be sized in accordance with the outdoor unit manufacturer's recommendations.
Condensate drain lines must be installed with adequate slope away from the unit to assure positive drainage. 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 inch must be provided in the drain line to assure proper drainage.

WARNING

- Always wear eye protection.
- When fan coil is operating, some components are operating at high speeds. Personal injury can result from touching these items with any object.
- All electrical and service access panels must be returned and secured in their proper place.
- Clear surrounding area of all tools, equipment and debris.
- Check the entire unit to ensure its cleanliness.

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.

ELECTRIC HEATERS
HX / HXX units are available with factory installed electric heat. Electric heaters must not be added to the HX / HXX cabinet as a field installed item.

REFRIGERANT CHARGING
Use adequate personal protection equipment when handling refrigerant including, but not limited to eye and hand protection. Use only R410a refrigerant. 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.

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

ACCESSORIES

When installing a heat pump with a HX / HXX unit equipped with electric heat, a 942-1 heat pump kit must be

installed. Follow instructions included with the 942-1 or refer to Figures 4 and 5 and the instructions below for installing a 942-1 heat pump kit.
942-1 HEAT PUMP KIT (Installation Instructions)

APPLICATION
For use on model HX & HXX fan coil units that are furnished with factory installed electric heat and are used as the indoor section of a heat pump system.
The thermostat sensor is used to prevent excessive discharge pressures should the electric heat be energized during mild weather conditions. On sensing an elevated liquid line temperature, the thermostat turns off the electric heat and keeps it off until the liquid line temperature returns to normal.

INSTALLATION
Install the thermostat sensor on the liquid line as shown in Figure 5. The exact location is not critical except that the sensor must not be subjected to brazing temperatures or damage to the sensor element will occur. Wrap the foam tape insulation over the sensor element and secure with the wire tie. Clip off the push-on terminals located on the ends of the sensor wires.

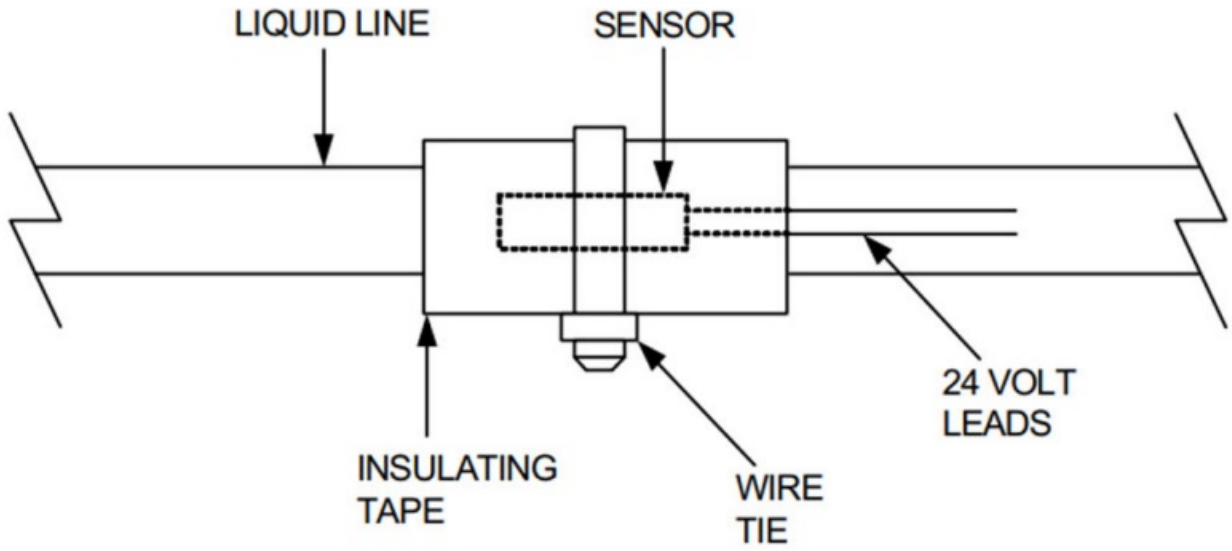


Figure 5

WIRING – 24 VOLT AC
The pigtail leads are connected between the “W” lead at the fan coil unit and the thermostat lead that energizes the supplemental electric resistance heat. The designation of this lead can vary depending on the heat pump thermostat used. Typical connections are as shown in Figure 4.

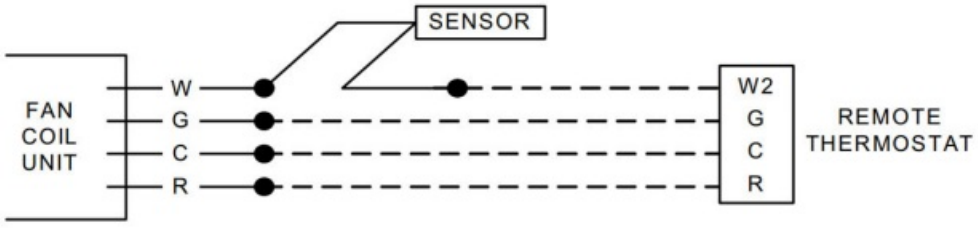


Figure 4

OPERATION AND MAINTENANCE

To achieve maximum performance and service of life of each piece of equipment a formal schedule of regular maintenance should be established and maintained.
Use adequate personal protection equipment when performing maintenance. Use eye protection, cut resistant gloves and sleeves to protect against metal edges and screws.

PRE-START CHECK

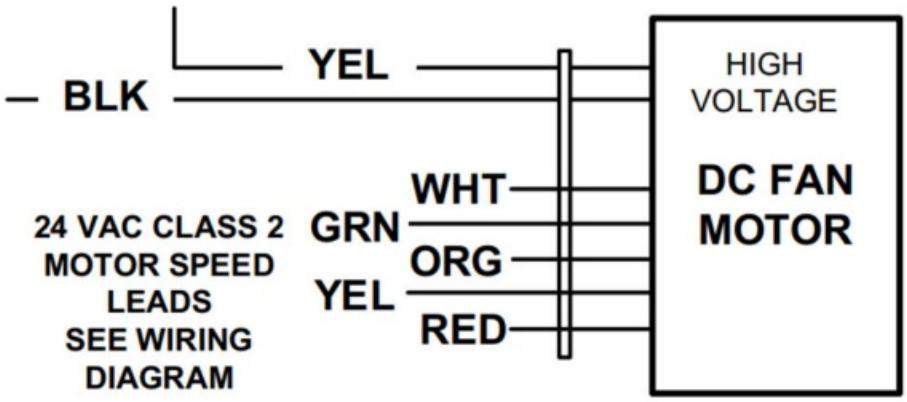
- Check that supply voltage matches nameplate data.
- Ensure that the unit is properly grounded.
- With power off, check blower wheel set screws for tightness and ensure that the blower wheels rotate freely and quietly.
- Check that the refrigerant coil connections and piping have been leak checked and insulated as required.

WARNING
The manufacturer does NOT WARRANT equipment subjected to abuse. Metal chips, dust, drywall tape, paint over spray, etc. can void warranties and liability for equipment failure, personal injury and property damage.

START-UP AND MAINTENANCE
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. All access panels and filters must be in place before operation of the units.
FAN
The fan should be inspected and cleaned, in conjunction with maintenance of the motor and bearings. It is important to keep the wheels clean in order to avoid imbalance and vibration.

WARNING
R-410a systems operate at much higher pressures than systems using former refrigerants. Use only equipment certified for use with R-410a.

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.
With DC motors, high voltage power is applied at all times.



BRUSHLESS DC MOTOR CONNECTIONS
IF SO EQUIPPED

Figure 6

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.

COIL

Any dust or other contaminants which accumulate on the heat transfer surfaces interferes with the airflow and impairs 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 advisable for greasy surfaces).

DRAIN PIPING

The drain should always be:

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

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.

WARNING
R-410a can become combustible if mixed with air at elevated temperatures and/or pressures. Property damage, personal injury or death could result if this warning is ignored.

P.O. Box 270969 Dallas, TX 75227 www.firstco.com or www.ae-air.com

Documents / Resources

	Firstco HX-HXX Series Horizontal Fan Coil Units [pdf] Instruction Manual HX-HXX IOM 4101, 942-1, HX-HXX Series Horizontal Fan Coil Units, HX-HXX Series, Horizontal Fan Coil Units, Fan Coil Units, Coil Units

References

- Ae-Air – Applied Environmental Air
- User Manual