



Installation, Operation, and Maintenance

Water Source Heat Pump Axiom™ Horizontal/Vertical (Two-Stage) DXH/DXV 2 to 6 Tons, 60 Hz



Model Numbers

DXHF 024-070 60 Hz
DXVF 024-070 60 Hz

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.



Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE: Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs such as HCFCs and HFCs.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury. All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in NEC and your local/state electrical codes.

WARNING

Personal Protective Equipment (PPE) Required!

Installing/servicing this unit could result in exposure to electrical, mechanical and chemical hazards.

- Before installing/servicing this unit, technicians **MUST** put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). **ALWAYS** refer to appropriate Material Safety Data Sheets (MSDS)/Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate MSDS/SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians **MUST** put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit. **NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

Failure to follow instructions could result in death or serious injury.

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Model Number Description: 2 to 6 Ton

D X H F 0 0 6 1 1 * 0 3 B 0 B R D 0 1 0 0 0 0 1 0 0
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26-36

Digits 1-3 - Unit Configuration

DXH = 2 Stage High Efficiency Horizontal
 DXV = 2 Stage High Efficiency Vertical

Digit 4 - Development Sequence

F

Digits 5-7 - Nominal Capacity

024 = 2 Ton
 036 = 3 Ton
 048 = 4 Ton
 060 = 5 Ton
 070 = 6 Ton

Digit 8 - Voltage (Volts/Hz/Phase)

1 = 208/60/1 4 = 460/60/3
 2 = 230/60/1 7 = 265/60/1
 3 = 208/60/3 8 = 230/60/3

Digit 9 - Heat Exchanger

1 = Copper-Water Coil
 2 = Cupro-Nickel Water Coil
 7 = Insulated Copper Water Coil/Suction Line
 8 = Insulated Cupro-Nickel Water Coil/Suction Line

Digit 10 - Current Design Sequence

Digit 11 - Refrigeration Circuit

0 = Heating and Cooling Circuit
 3 = Heating and Cooling Circuit with Waterside Economizer

Digit 12 - Blower Configuration

3 = ECM Motor

Digit 13 - Freeze Protection

A = 20°F freezestat
 B = 35°F freezestat

Digit 14 - Open Digit = 0

Digit 15 - Supply-Air Arrangement

B = Back Supply-Air Arrangement
 L = Left Supply-Air Arrangement
 R = Right Supply-Air Arrangement
 T = Top Supply-Air Arrangement

Digit 16 - Return-Air Arrangement

L = Left Return-Air Arrangement
 R = Right Return-Air Arrangement

Digit 17 - Control Types

D = Deluxe 24V Controls
 B = Tracer™ ZN524 Controls
 F = UC400
 G = UC400 w/ Wireless Comm

Digit 18 - Tstat/Sensor Location

0 = Wall Mounted Location

Digit 19 - Fault Sensors

1 = Condensate Overflow Sensor
 3 = Condensate Overflow and Filter Maintenance Timer
 6 = Condensate Overflow and Fan Status
 J = Fan Status, Filter Maintenance Timer and Condensate Overflow Sensor

Digit 20 - Temperature Sensor

0 = No Additional Temperature Sensor
 1 = Entering Water Sensor

Digit 21 - Open Digit

Digit 22 - Electric Heat

0 = No Electric Heat
 1 = Internal Boilerless Electric Heat
 4 = External Boilerless Electric Heat

Digit 23 - Open Digit

Digit 24 - Filter Type

1 = 1" Throwaway Filter
 2 = 2" Throwaway Filter
 4 = MERV 8
 5 = MERV13

Digit 25 - Acoustic Arrangement

0 = Enhanced Sound Attenuation
 1 = Deluxe Sound Attenuation

Digits 26-36 - Does not Apply to DXH or DXV

0000000000 Digits 26-36 are not applicable to the DXH or DXV products



Overview of Manual

Note: *One copy of this document ships with each unit and is customer property. It must be retained by the unit's maintenance personnel.*

This booklet describes proper installation, operation, and maintenance procedures for HVAC systems. By carefully reviewing the information within this manual and following the instructions, the risk of improper operation and/or component damage will be minimized.

Service and maintenance work should be performed by a qualified technician and all electrical service and maintenance work should be performed by a qualified licensed electrician.

Unit Nameplate

The unit nameplate is located on the outside of the control box access panel at the front of the unit. It includes the unit model number, serial number, electrical characteristics, refrigerant charge, and other pertinent unit data.

Compressor Nameplate

The nameplate for the compressors are located on the compressor shell.

Model Number Description

All products are identified by a multiple-character model number that precisely identifies a particular type of unit. Its use will enable the owner/operator, installing contractors, and service engineers to define the operation, specific components, and other options for any specific unit.

When ordering replacement parts or requesting service, be sure to refer to the specific model number and serial number printed on the unit nameplate.

General Information

Unit Description

Before shipment, each unit is leak tested, dehydrated, charged with refrigerant and run tested for proper control operation.

Air-to-Refrigerant Coil

The air-to-refrigerant coil is aluminum fin, mechanically bonded to the copper tubing.

Water-to-Refrigerant Coil

The water-to-refrigerant coil is a copper or cupro-nickel (option) and steel tube (tube-within-a-tube) design, leak tested to assure there is no cross leakage between the water tube (copper/cupro-nickel) and refrigerant gas (steel tube).

Table 1. High/low pressure switch

	Trip	Recover	Unit
LP	40 +/-4	56 +/-4	psig
HP	650 +/-10	550 +/-10	psig

Controls

The available control type is a Deluxe 24V control option, a Tracer™ ZN524, LonTalk® certified control option or a Tracer™ UC400 BACnet® control option for all unit sizes.

All power wiring to the equipment is made at the unit contactor for ½–5 ton, 1-phase units. For 3-phase units all power wiring to the equipment is made to the contactor and power block. For DXH/V070 units all power wiring to the equipment is made to the power block. All low-voltage wiring is made at the unit's low voltage terminal board. DXH and DXV 460V units require a neutral wire.

System Input Devices and Functions

A thermostat, zone sensor, or building automation system is required to operate the water-source heat pump. The flexibility of having several mode capabilities depends upon the type of sensor and/or remote panel selected.

Troubleshooting and connection diagrams for the 24V control systems may be located in the back of this manual. All digital control troubleshooting tips and connection diagrams are located in BAS-SVX20*-EN.

Deluxe 24V Controls (option)

Units containing the Deluxe 24V control design will incorporate a microprocessor-based control board. The Trane microprocessor board is factory wired to a terminal strip to provide all necessary terminals for field connection. The deluxe board is equipped with a random start relay, anti-short cycle timer, brown out protection, compressor disable, condensate overflow, unit safety control, diagnostics, and a generic relay (which may be available for field use). See [Table 33, p. 50](#) for diagnostic

information and [Figure 28, p. 31](#) and [Figure 27, p. 31](#) for thermostat connections.

Tracer™ UC400

The Tracer™ UC400 is a BTL Listed BACnet® controller that can operate stand- alone or within a Building Automations system such as Tracer™ SC.

Tracer ZN524 Controls (option)

The digital ZN524 controller is designed to support the 2 to 6 ton water-source heat pumps in either a standalone, peer-to-peer with a Tracer Loop Controller, or as a full building automation (open protocol) system.

For installation, operation and diagnostics of aforementioned options see the WSHP-IOP-2 and/or WSHP-PRB002-EN.

Pump Module (field installed accessory)

The pump module shall consist of either a single or dual 1/ 6 HP bronze pump and a brass 3-way shut-off valve. Cast iron pumps are also acceptable. The pump module kits shall contain the necessary components for the installation, operation and maintenance of the water circuit of a closed-loop distributed pumping application.

Waterside Economizer (Option)

Instructions for mechanical connection of the waterside economizer to the water-source heat pump may be found in the dimensional section of this manual.

The waterside economizer is designed to begin economizing mode when water temperatures fall below the field adjustable temperature of 25, 35, 45, 55 or 65°F (for the Deluxe control option), or below the programmed set-point (for the ZN524 control option).

When the temperature is less than the setpoint, fluid will flow into the economizing coil, while simultaneously halting mechanical operation of the compressor. Mechanical cooling will continue on a call for a second stage from the thermostat or system control. Entering water temperature sensor is factory provided for field installation on the entering water side of the coil.

Boilerless Control/Electric Heat (Option)

Systems that do not contain a boiler may contain a boilerless control with electric heat. Trane offers both a factory mounted electric heat option, and a field mounted duct heater option.

If the 2-6 ton DXH/V unit incorporates the factory mounted option, the unit will ship from the factory with an internally mounted nichrome open wire heating element, designed to start-up electric heat as the systems primary heat in the event entering water temperature falls below 55°F. Once the entering water temperature rises above 60°F, the boilerless controller returns the unit to normal



General Information

compressor heating operation, and locks out the electric heater.

For units comprised of the field installed duct heater option, the unit will ship from the factory with controls available to interface with the field provided electric heat selection.

Note: For geothermal applications, the boilerless controller has an adjustable setting of 25, 35, 45, 55, and 60 degrees.

Table 2. Refrigerant charge

Model	oz	kg
DXHF024	54.5	1.545
DXHF036	71.0	2.013
DXHF048	89.0	2.523
DXHF060	106.0	3.005
DXHF070	118.0	3.345
DXVF024	52.5	1.488
DXVF036	71.0	2.013
DXVF048	89.0	2.523
DXVF060	109.0	3.090
DXVF070	123.0	3.487

Pre-Installation

⚠ WARNING

Fiberglass Wool!

Product contains fiberglass wool. Disturbing the insulation in this product during installation, maintenance or repair will expose you to airborne particles of glass wool fibers and ceramic fibers known to the state of California to cause cancer through inhalation. Glass wool fibers may also cause respiratory, skin or eye irritation.

Unit Inspection Checklist

- Unpack all components of the kit.
 - Check carefully for any shipping damage. If any damage is found it must be reported immediately and a claim made against the transportation company.
- Important:** *Equipment is shipped FOB (Free on Board) at the manufacturer. Therefore, freight claims for damages against the carrier must be initiated by the receiver.*
- Visually inspect the components for shipping damage as soon as possible after delivery, before it is stored. Concealed damage must be reported within 15 days.
 - If concealed damage is discovered, stop unpacking the shipment.
 - Do not remove damaged material from the receiving location. Take photos of the damage, if possible. The owner must provide reasonable evidence that the damage did not occur after delivery.
 - Notify the carrier's terminal of damage immediately by phone and by mail. Request an immediate joint inspection of the damage by the carrier and the consignee.
 - Do not attempt to repair any damaged parts until the parts are inspected by the carrier's representative.

Jobsite Inspection Checklist

Always perform the following checks before accepting a unit:

- Verify that the nameplate data matches the data on the sales order and bill of lading (including electrical data).
- Verify that the power supply complies with the unit nameplate specifications.
- Visually inspect the exterior of the unit, for signs of shipping damage. Do not sign the bill of lading accepting the unit(s) until inspection has been completed. Check for damage promptly after the unit(s) are unloaded. Once the bill of lading is signed at the jobsite, the unit(s) are now the property of the SOLD TO party and future freight claims MAY NOT be accepted by the freight company.

Jobsite Storage

⚠ WARNING

Microbial Growth!

Wet interior unit insulation can become an amplification site for microbial growth (mold), which may cause odors and serious health related indoor air quality problems. If there is evidence of microbial growth (mold) on the interior insulation, remove or replace the insulation prior to operating the system. Failure to remove microbial growth could result in serious health problems.

This unit is intended for indoor use only. To protect the unit from damage due to the elements, and to prevent possible IAQ contaminant sources from growing, the unit should be stored indoors. If indoor storage is not possible, the following provisions for outdoor storage must be met:

- Place the unit(s) on a dry surface or raise above the ground to assure adequate air circulation beneath the unit.
- Cover the unit(s) with a water proof tarp to protect them from the elements.
- Make provisions for continuous venting of the covered units to prevent moisture from standing on the unit(s) surfaces. Wet interior unit insulation can become an amplification site for microbial growth (mold) which has been determined to be a cause of odors and serious health related indoor air quality problems.
- Store units in the normal UP orientation to maintain oil in the compressor.
- Horizontal units may be stacked no more than three units high. Do not stack the vertical unit configurations.

Unit Dimensions and Weights

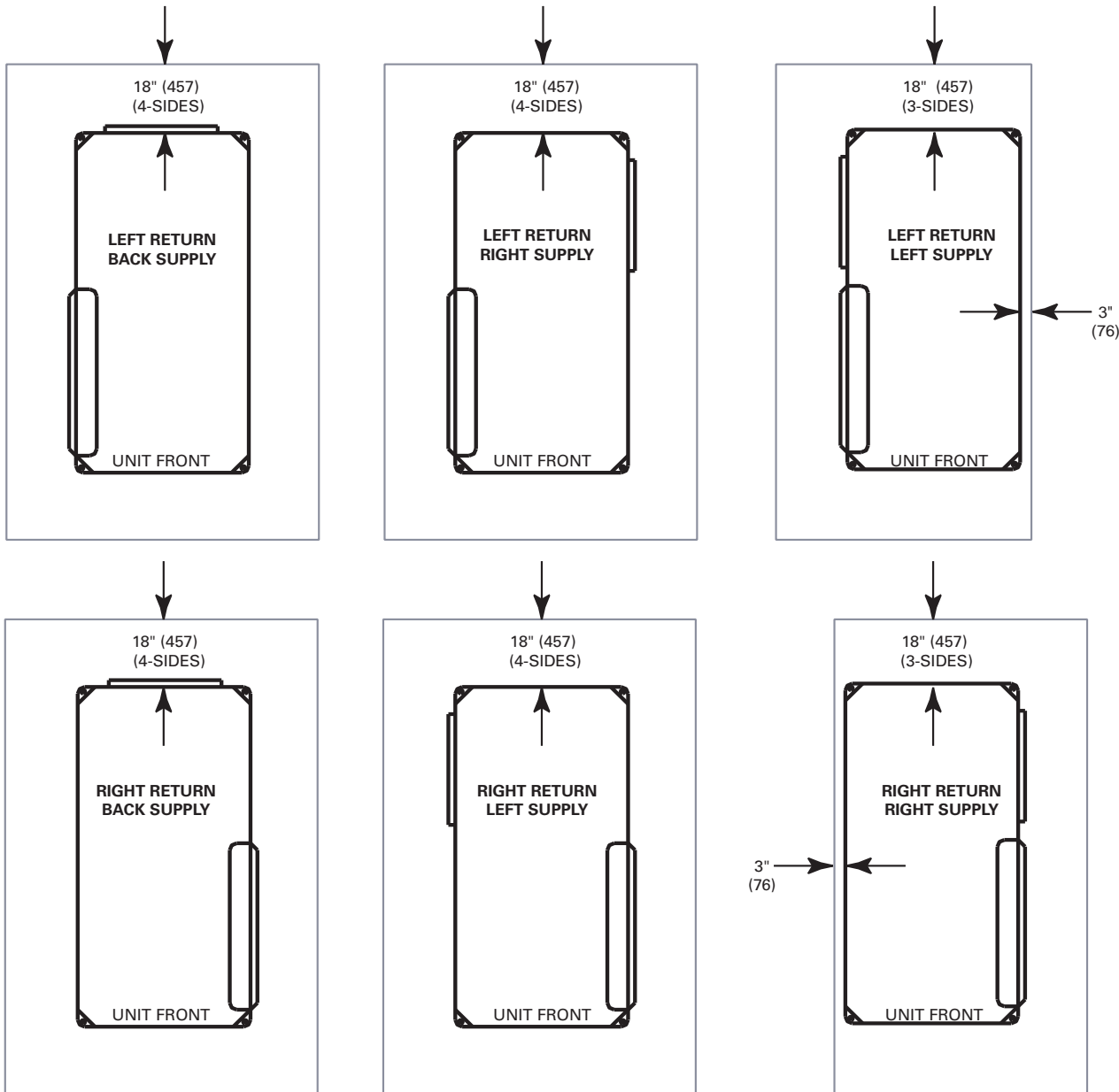
DXH Clearance Dimensions

Access to the unit for service purposes should be provided at installation. All configurations (see [Figure 1, p. 10](#)) require an 18 in. (457 mm) surround clearance from other mechanical and electrical equipment (where shown) to enable panel removal from the unit for service/maintenance ability. NEC requires 36 in. clearance on the control panel side of the unit. Some local codes require a

greater service clearance than listed below. Check all code requirements prior to unit installations.

Equipment containing a same-side supply/return combination requires a 3 in. (229 mm) limitation on one side. Access to the TXV may not be possible with this 3 in. (229 mm) clearance. This configuration is typically applied in a corridor installation, where space limitations force the left or right side of the unit against a wall.

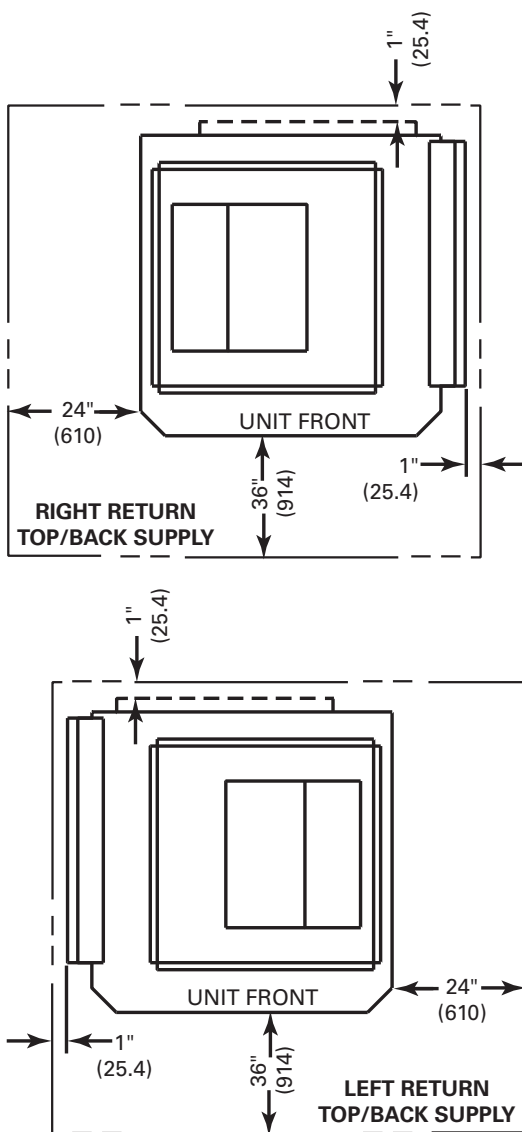
Figure 1. DXH 2 to 6 tons clearance



DXV 2 to 6 tons clearance dimensions

Access to the unit for service purposes should be provided at installation. All configurations require an 24 in. (610 mm) surround clearance (see Figure 2, p. 11) from other mechanical and electrical equipment (where shown) to enable panel removal from the unit for service/maintenance ability. Some local codes require a greater service clearance than listed below. Check all code requirements prior to unit installations. Units in a free return application will require more than a 1 in. (25.4 mm) clearance to provide proper air flow to the units air-to-refrigerant coil.

Figure 2. DXV 2 to 6 tons clearance dimensions



Unit Dimensions and Weights

Figure 3. Left return/left supply DXH

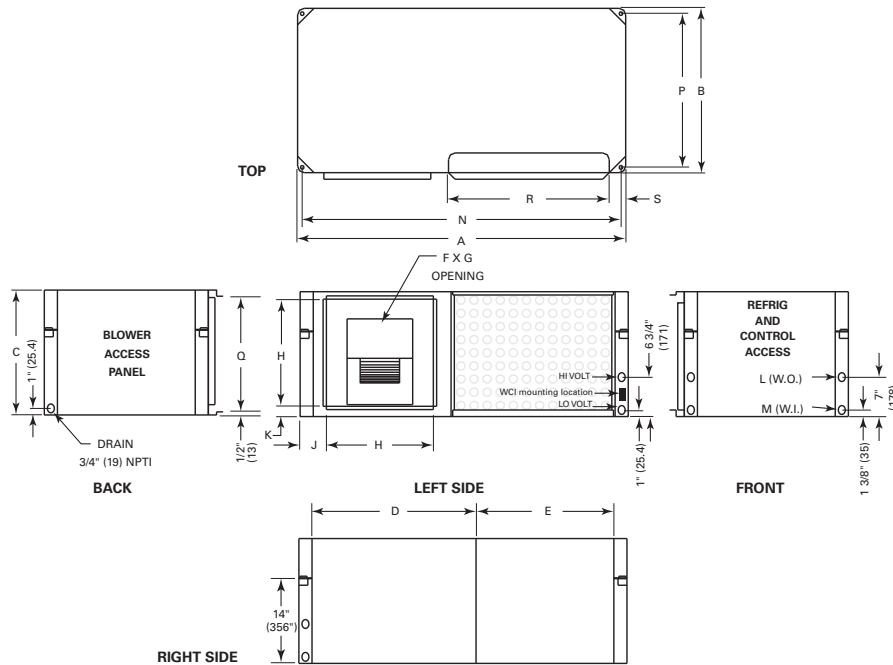


Table 3. Left return/left supply

DXH Unit	A	B	C	D ^(a)	E	F x G	H	J	K	L NPTI	M NPTI	N	P	Q	R ^(b)	S
024	46 (1168)	23 (584)	18 (457)	23 (584)	18 (457)	8-1/4 x 11-3/8 (210) x (289)	13-1/2 (343)	4-3/4 (121)	1-3/8 (35)	3/4 (19)	3/4 (19)	44-3/4 (1137)	21-3/4 (552)	16-5/8 (422)	18-1/2 (470)	4-1/4 (108)
036	50 (1270)	25 (635)	19 (483)	25 (635)	20 (508)	10-1/2 x 13-1/2 (267) x (343)	17 (432)	4 (102)	1 (25)	3/4 (19)	3/4 (19)	48-3/4 (1238)	23-3/4 (603)	17-5/8 (448)	23-1/2 (597)	3-1/4 (83)
048-060	58 (1473)	33 (838)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-1/8 x 11-3/8 (333) x (289)	18 (457)	5-1/4 (133)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	31-3/4 (806)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)
070	58 (1473)	39 (991)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-7/8 x 13-7/8 (352) x (352)	18 (457)	5-1/4 (133)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	37-3/4 (959)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)

Notes:

- All dimensions are in inches followed by millimeters in parenthesis.
- Access to the unit for service purposes should be provided at installation. Horizontal units require an 18 in. (457 mm) surround clearance from other mechanical and electrical equipment to enable panel removal from the unit for service/maintenance ability. NEC requires 36 in. clearance on the control panel side of the unit. Some local codes require a greater service clearance. Check all code requirements prior to unit installations. Installer is responsible for following all local and NEC code requirements.
- Equipment containing a same-side supply/return combination requires a 3 in. (229 mm) clearance on one side. Access to the TXV may not be possible with this 3 in. (229 mm) clearance.
- When a horizontal model is ordered with the same side return and supply in a ducted application, bottom filter removal is required due to limited access on either side of the filter.

(a) Return air opening dimension

(b) Filter rack dimension

Figure 4. Left return/back supply DXH

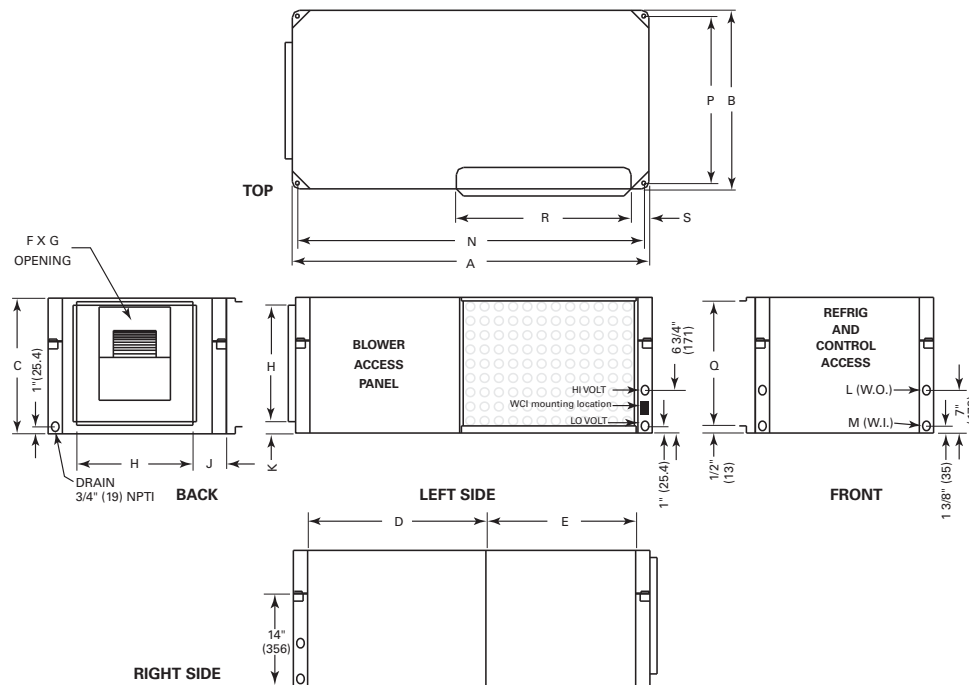


Table 4. Left return/back supply

DXH Unit	A	B	C	D(a)	E	F x G	H	J	K	L NPTI	M NPTI	N	P	Q	R(b)	S
024	46 (1168)	23 (584)	18 (457)	23 (584)	18 (457)	8-1/4 x 11-3/8 (210) x (289)	13-1/2 (343)	4-3/4 (121)	3-1/4 (83)	3/4 (19)	3/4 (19)	44-3/4 (1137)	21-3/4 (552)	16-5/8 (422)	18-1/2 (470)	4-1/4 (108)
036	50 (1270)	25 (635)	19 (483)	25 (635)	20 (508)	10-1/2 x 13-1/2 (267) x (343)	17 (432)	4 (102)	1 (25)	3/4 (19)	3/4 (19)	48-3/4 (1238)	23-3/4 (603)	17-5/8 (448)	23-1/2 (597)	3-1/4 (83)
048-060	58 (1473)	33 (838)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-1/8 x 11-3/8 (333) x (289)	18 (457)	9-3/4 (248)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	31-3/4 (806)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)
070	58 (1473)	39 (991)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-7/8 x 13-7/8 (352) x (352)	18 (457)	9-3/4 (248)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	37-3/4 (959)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)

Notes:

- All dimensions are in inches followed by millimeters in parenthesis.
- Access to the unit for service purposes should be provided at installation. Horizontal units require an 18 in. (457 mm) surround clearance from other mechanical and electrical equipment to enable panel removal from the unit for service/maintenance ability. NEC requires 36 in. clearance on the control panel side of the unit. Some local codes require a greater service clearance. Check all code requirements prior to unit installations. Installer is responsible for following all local and NEC code requirements.
- Equipment containing a same-side supply/return combination requires a 3 in. (229 mm) clearance on one side. Access to the TXV may not be possible with this 3 in. (229 mm) clearance.

(a) Return air opening dimension

(b) Filter rack dimension

Unit Dimensions and Weights

Figure 5. Left return/right supply DXH

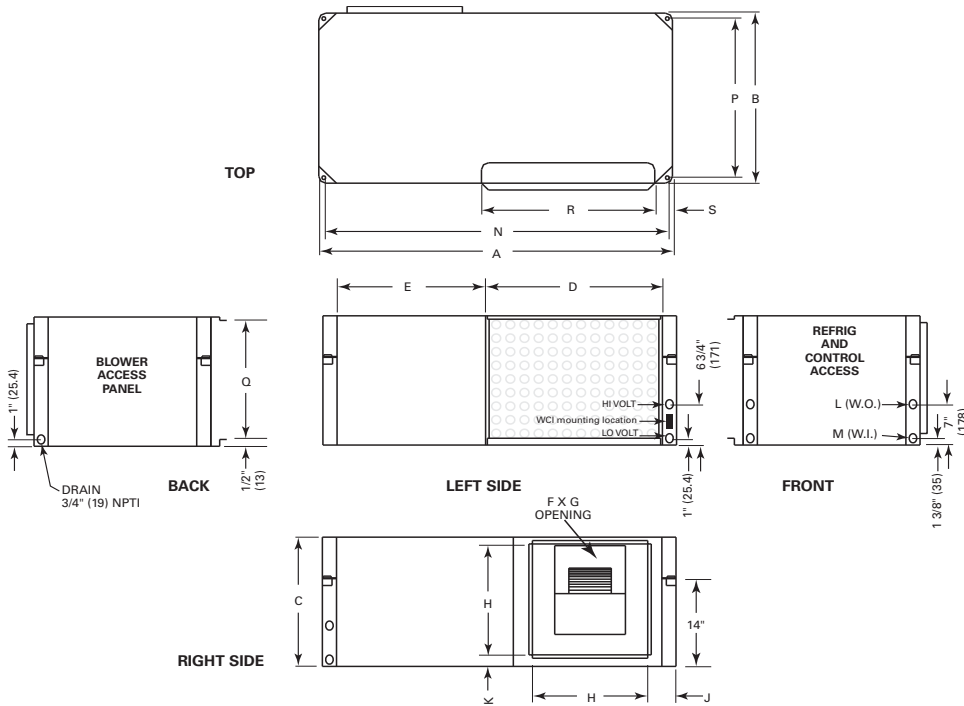


Table 5. Left return/right supply

DXH Unit	A	B	C	D ^(a)	E	F x G	H	J	K	L NPTI	M NPTI	N	P	Q	R ^(b)	S
024	46 (1168)	23 (584)	18 (457)	23 (584)	18 (457)	8-1/4 x 11-3/8 (210) x (289)	13-1/2 (343)	4-3/4 (121)	3-1/4 (83)	3/4 (19)	3/4 (19)	44-3/4 (1137)	21-3/4 (552)	16-5/8 (422)	18-1/2 (470)	4-1/4 (108)
036	50 (1270)	25 (635)	19 (483)	25 (635)	20 (508)	10-1/2 x 13-1/2 (267) x (343)	17 (432)	4 (102)	1 (25)	3/4 (19)	3/4 (19)	48-3/4 (1238)	23-3/4 (603)	17-5/8 (448)	23-1/2 (597)	3-1/4 (83)
048-060	58 (1473)	33 (838)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-1/8 x 11-3/8 (333) x (289)	18 (457)	5-1/4 (133)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	31-3/4 (806)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)
070	58 (1473)	39 (991)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-7/8 x 13-7/8 (352) x (352)	18 (457)	5-1/4 (133)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	37-3/4 (959)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)

Notes:

- All dimensions are in inches followed by millimeters in parenthesis.
- Access to the unit for service purposes should be provided at installation. Horizontal units require an 18 in. (457 mm) surround clearance from other mechanical and electrical equipment to enable panel removal from the unit for service/maintenance ability. NEC requires 36 in. clearance on the control panel side of the unit. Some local codes require a greater service clearance. Check all code requirements prior to unit installations. Installer is responsible for following all local and NEC code requirements.
- Equipment containing a same-side supply/return combination requires a 3 in. (229 mm) clearance on one side. Access to the TXV may not be possible with this 3 in. (229 mm) clearance.

(a) Return air opening dimension

(b) Filter rack dimension

Figure 6. Right return/left supply DXH

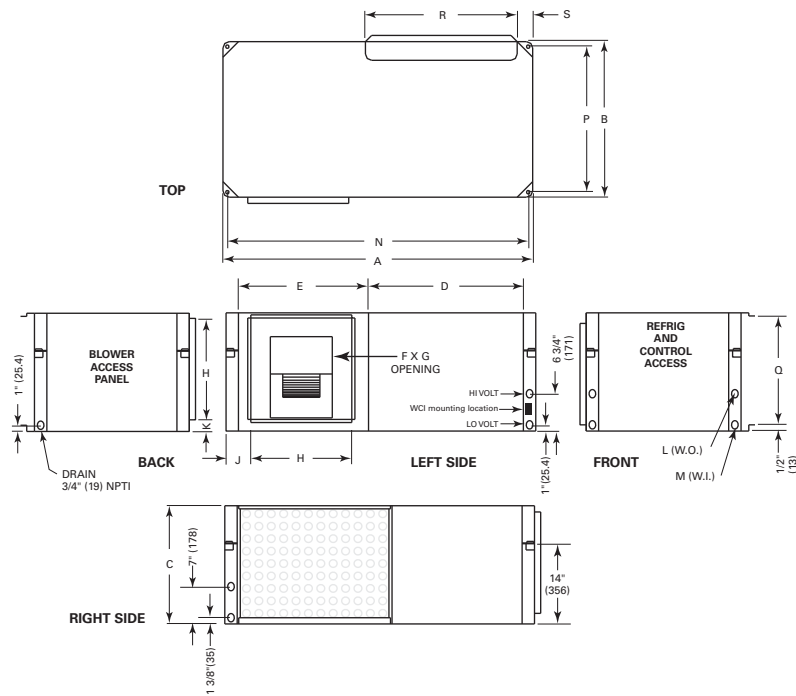


Table 6. Right return/left supply

DXH Unit	A	B	C	D ^(a)	E	F x G	H	J	K	L NPTI	M NPTI	N	P	Q	R ^(b)	S
024	46 (1168)	23 (584)	18 (457)	23 (584)	18 (457)	8-1/4 x 11-3/8 (210) x (289)	13-1/2 (343)	4-3/4 (121)	1-3/8 (35)	3/4 (19)	3/4 (19)	44-3/4 (1137)	21-3/4 (552)	16-5/8 (422)	18-1/2 (470)	4-1/4 (108)
036	50 (1270)	25 (635)	19 (483)	25 (635)	20 (508)	10-1/2 x 13-1/2 (267) x (343)	17 (432)	4 (102)	1 (25)	3/4 (19)	3/4 (19)	48-3/4 (1238)	23-3/4 (603)	17-5/8 (448)	23-1/2 (597)	3-1/4 (83)
048-060	58 (1473)	33 (838)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-1/8 x 11-3/8 (333) x (289)	18 (457)	5-1/4 (133)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	31-3/4 (806)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)
070	58 (1473)	39 (991)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-7/8 x 13-7/8 (352) x (352)	18 (457)	5-1/4 (133)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	37-3/4 (959)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)

Notes:

- All dimensions are in inches followed by millimeters in parenthesis.
- Access to the unit for service purposes should be provided at installation. Horizontal units require an 18 in. (457 mm) surround clearance from other mechanical and electrical equipment to enable panel removal from the unit for service/maintenance ability. NEC requires 36 in. clearance on the control panel side of the unit. Some local codes require a greater service clearance. Check all code requirements prior to unit installations. Installer is responsible for following all local and NEC code requirements.
- Equipment containing a same-side supply/return combination requires a 3 in. (229 mm) clearance on one side. Access to the TXV may not be possible with this 3 in. (229 mm) clearance.

(a) Return air opening dimension
 (b) Filter rack dimension

Unit Dimensions and Weights

Figure 7. Right return/back supply DXH

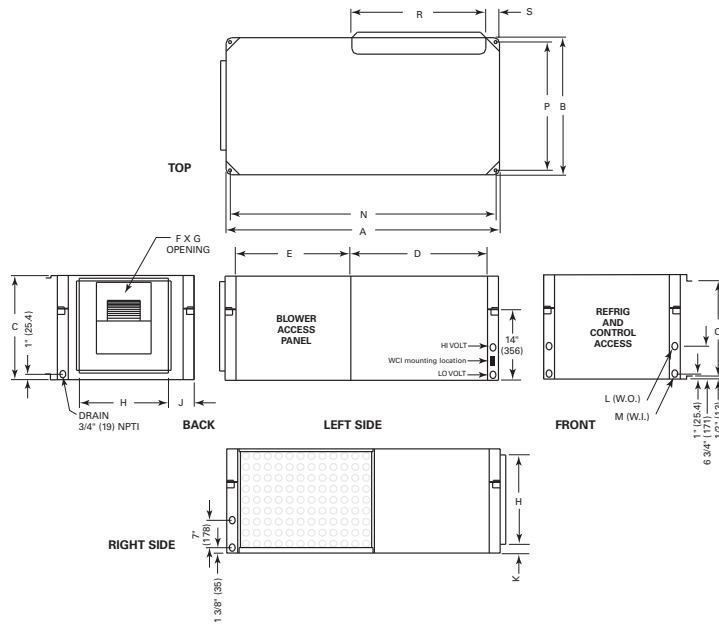


Table 7. Right return/back supply

DXH Unit	A	B	C	D ^(a)	E	F x G	H	J	K	L NPTI	M NPTI	N	P	Q	R ^(b)	S
024	46 (1168)	23 (584)	18 (457)	23 (584)	18 (457)	8-1/4 x 11-3/8 (210) x (289)	13-1/2 (343)	4-3/4 (121)	3-1/4 (83)	3/4 (19)	3/4 (19)	44-3/4 (1137)	21-3/4 (552)	16-5/8 (422)	18-1/2 (470)	4-1/4 (108)
036	50 (1270)	25 (635)	19 (483)	25 (635)	20 (508)	10-1/2 x 13-1/2 (267) x (343)	17 (432)	4 (102)	1 (25)	3/4 (19)	3/4 (19)	48-3/4 (1238)	23-3/4 (603)	17-5/8 (448)	23-1/2 (597)	3-1/4 (83)
048-060	58 (1473)	33 (838)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-1/8 x 11-3/8 (333) x (289)	18 (457)	9-3/4 (248)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	31-3/4 (806)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)
070	58 (1473)	39 (991)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-7/8 x 13-7/8 (352) x (352)	18 (457)	9-3/4 (248)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	37-3/4 (959)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)

Notes:

1. All dimensions are in inches followed by millimeters in parenthesis.
2. Access to the unit for service purposes should be provided at installation. Horizontal units require an 18 in. (457 mm) surround clearance from other mechanical and electrical equipment to enable panel removal from the unit for service/maintenance ability. NEC requires 36 in. clearance on the control panel side of the unit. Some local codes require a greater service clearance. Check all code requirements prior to unit installations. Installer is responsible for following all local and NEC code requirements.
3. Equipment containing a same-side supply/return combination requires a 3 in. (229 mm) clearance on one side. Access to the TXV may not be possible with this 3 in. (229 mm) clearance.

(a) Return air opening dimension
 (b) Return air opening dimension

Figure 8. Right return/right supply DXH

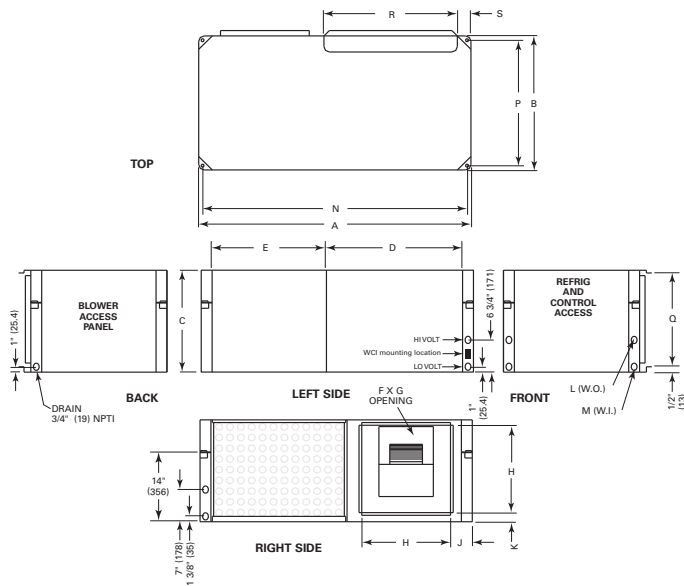


Table 8. Right return/right supply

DXH Unit	A	B	C	D ^(a)	E	F x G	H	J	K	L NPTI	M NPTI	N	P	Q	R ^(b)	S
024	46 (1168)	23 (584)	18 (457)	23 (584)	18 (457)	8-1/4 x 11-3/8 (210) x (289)	13-1/2 (343)	4-3/4 (121)	3-1/4 (83)	3/4 (19)	3/4 (19)	44-3/4 (1137)	21-3/4 (552)	16-5/8 (422)	18-1/2 (470)	4-1/4 (108)
036	50 (1270)	25 (635)	19 (483)	25 (635)	20 (508)	10-1/2 x 13-1/2 (267) x (343)	17 (432)	4 (102)	1 (25)	3/4 (19)	3/4 (19)	48-3/4 (1238)	23-3/4 (603)	17-5/8 (448)	23-1/2 (597)	3-1/4 (83)
048-060	58 (1473)	33 (838)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-1/8 x 11-3/8 (333) x (289)	18 (457)	5-1/4 (133)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	31-3/4 (806)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)
070	58 (1473)	39 (991)	21 (533)	29-1/2 (597)	23-1/2 (749)	13-7/8 x 13-7/8 (352) x (352)	18 (457)	5-1/4 (133)	1-1/2 (38)	1 (25)	1 (25)	56-3/4 (1441)	37-3/4 (959)	19-5/8 (498)	23-1/2 (597)	5-1/2 (140)

Notes:

- All dimensions are in inches followed by millimeters in parenthesis.
- Access to the unit for service purposes should be provided at installation. Horizontal units require an 18 in. (457 mm) surround clearance from other mechanical and electrical equipment to enable panel removal from the unit for service/maintenance ability. NEC requires 36 in. clearance on the control panel side of the unit. Some local codes require a greater service clearance. Check all code requirements prior to unit installations. Installer is responsible for following all local and NEC code requirements.
- Equipment containing a same-side supply/return combination requires a 3 in. (229 mm) clearance on one side. Access to the TXV may not be possible with this 3 in. (229 mm) clearance.
- When a horizontal model is ordered with the same side return and supply in a ducted application, bottom filter removal is required due to limited access on either side of the filter.

(a) Return air opening dimension
 (b) Filter rack dimension

Note: It is recommended to order a bottom access filter rack with right return/right supply combination due to potential problem with return air filter removal.



Unit Dimensions and Weights

Figure 9. Left return/top supply DXV

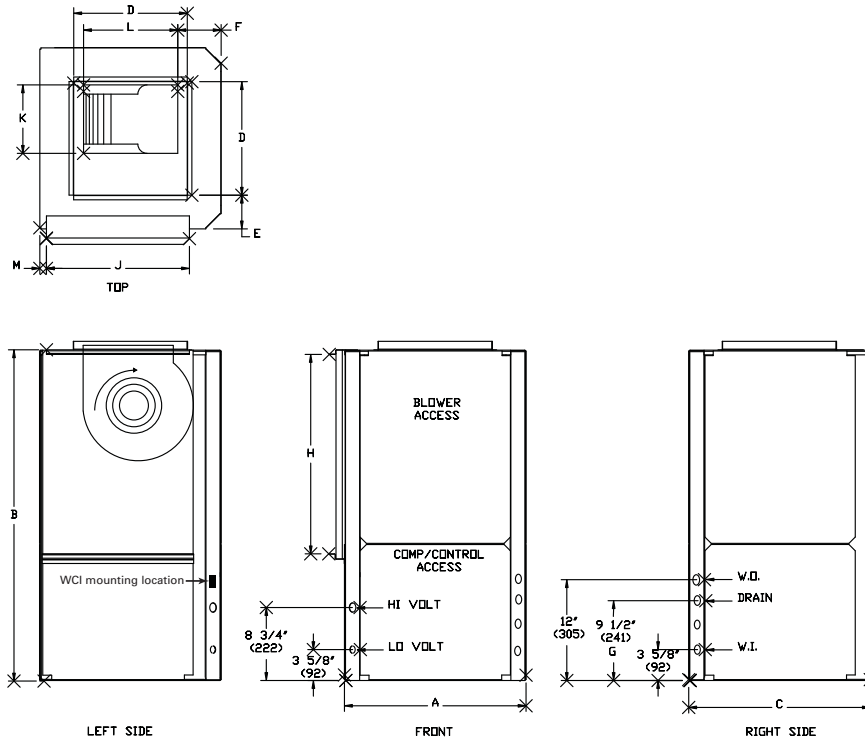


Table 9. Left return/top supply

DXV Unit	A	B	C	D	E	F	G	H	J	K	L	M	W.I. NPTI	W.O. NPTI	Drain FPT
024	21-1/2 (546)	39-1/4 (997)	21-1/2 (546)	13-1/2 (343)	4 (102)	4 (102)	9-1/2 (241)	23-3/4 (603)	17 (432)	8-1/4 (368)	11-3/8 (289)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)
036	24-1/2 (622)	41-7/8 (1064)	26-1/2 (673)	18 (457)	3-1/4 (83)	5-3/4 (146)	9-1/2 (241)	19 (483)	23 (584)	10-1/2 (267)	13-1/2 (343)	1/4 (6)	3/4 (19)	3/4 (19)	3/4 (19)
048-060	26-1/2 (673)	46-7/8 (1191)	30-1/2 (775)	18 (457)	4-1/4 (108)	2 (51)	9-1/2 (241)	29 (737)	27-7/8 (708)	13-7/8 (352)	11-3/8 (289)	1/2 (13)	1 (25.4)	1 (25.4)	3/4 (19)
070	26-1/2 (673)	50-7/8 (1292)	30-1/2 (775)	18 (457)	4-1/4 (108)	2 (51)	9-1/2 (241)	29 (737)	27-7/8 (708)	13-1/8 (333)	11-3/8 (289)	1/2 (13)	1 (25.4)	1 (25.4)	3/4 (19)

Notes:

- All dimensions are in inches followed by millimeters in parenthesis.
- Access to the unit for service purposes should be provided at installation. Vertical units require an 24 in. (610 mm) surround clearance from other mechanical and electrical equipment to enable panel removal from the unit for service/maintenance ability. NEC requires 36 in. clearance on the control panel side of the unit. Some local codes require a greater service clearance. Check all code requirements prior to unit installations. Installer is responsible for following all local and NEC code requirements.
- Units in a free return application will require more than a 1 in. (25.4 mm) clearance to provide proper air flow to the unit's air-to-refrigerant coil.

Figure 10. Left return/back supply DXV

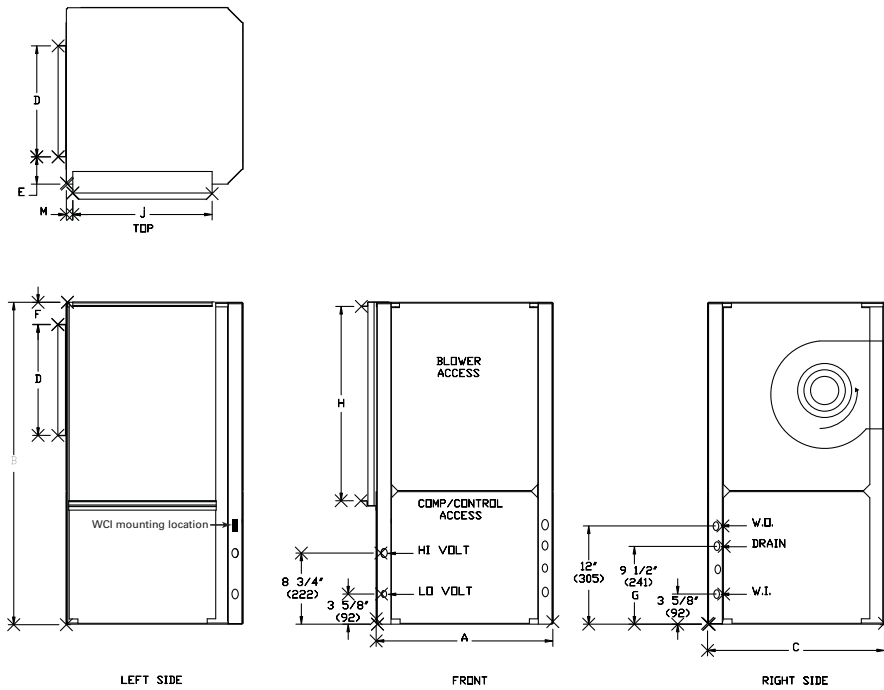


Table 10. Left return/back supply DXV

DXV Unit	A	B	C	D	E	F	G	H	J	K	L	M	W.I. NPTI	W.O. NPTI	Drain FPT
024	21-1/2 (546)	39-1/4 (997)	21-1/2 (546)	13-1/2 (343)	4 (102)	3-7/8 (98)	9-1/2 (241)	23-3/4 (603)	17 (432)	8-1/4 (368)	11-3/8 (289)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)
036	24-1/2 (622)	41-7/8 (1064)	26-1/2 (673)	18 (457)	3-1/4 (83)	1-7/8 (48)	9-1/2 (241)	19 (483)	23 (584)	10-1/2 (267)	13-1/2 (343)	1/4 (6)	3/4 (19)	3/4 (19)	3/4 (19)
048-060	26-1/2 (673)	46-7/8 (1191)	30-1/2 (775)	18 (457)	4-1/4 (108)	2 (51)	9-1/2 (241)	29 (737)	27-7/8 (708)	13-7/8 (352)	11-3/8 (289)	1/2 (13)	1 (25.4)	1 (25.4)	3/4 (19)
070	26-1/2 (673)	50-7/8 (1292)	30-1/2 (775)	18 (457)	4-1/4 (108)	2 (51)	9-1/2 (241)	29 (737)	27-7/8 (708)	13-1/8 (333)	11-3/8 (289)	1/2 (13)	1 (25.4)	1 (25.4)	3/4 (19)

Note:

- All dimensions are in inches followed by millimeters in parenthesis.
- Access to the unit for service purposes should be provided at installation. Vertical units require an 24 in. (610 mm) surround clearance from other mechanical and electrical equipment to enable panel removal from the unit for service/maintenance ability. NEC requires 36 in. clearance on the control panel side of the unit. Some local codes require a greater service clearance. Check all code requirements prior to unit installations. Installer is responsible for following all local and NEC code requirements.
- Units in a free return application will require more than a 1 in. (25.4 mm) clearance to provide proper air flow to the unit's air-to-refrigerant coil.



Unit Dimensions and Weights

Figure 11. Right return/top supply DXV

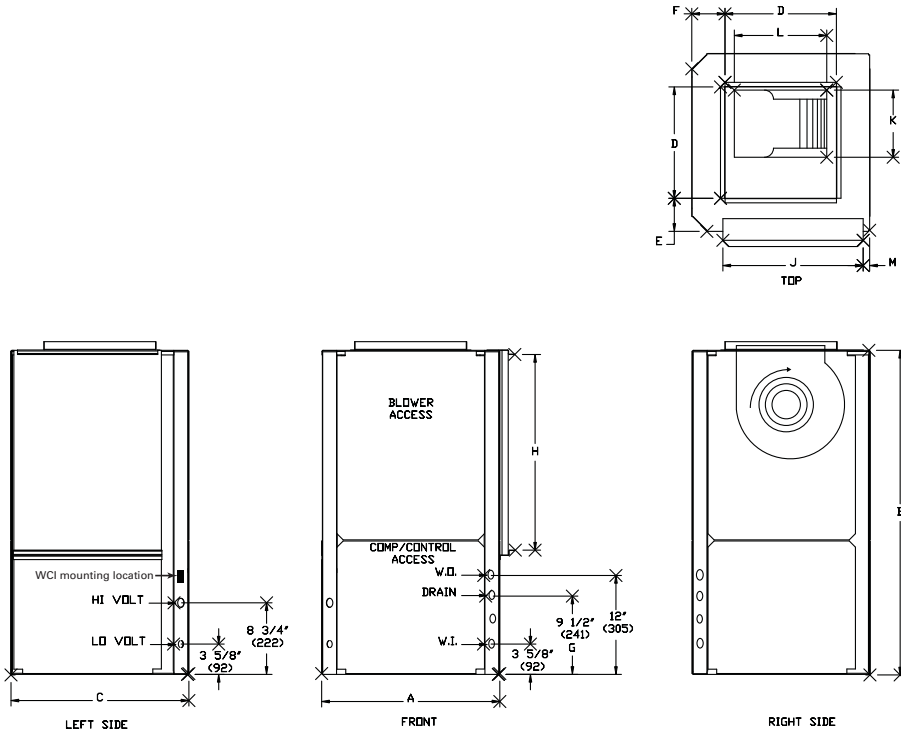


Table 11. Right return/top supply

DXV Unit	A	B	C	D	E	F	G	H	J	K	L	M	W.I. NPTI	W.O. NPTI	Drain FPT
024	21-1/2 (546)	39-1/4 (997)	21-1/2 (546)	13-1/2 (343)	4 (102)	4 (102)	9-1/2 (241)	23-3/4 (603)	17 (432)	8-1/4 (368)	11-3/8 (289)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)
036	24-1/2 (622)	41-7/8 (1064)	26-1/2 (673)	18 (457)	3-1/4 (83)	5-3/4 (146)	9-1/2 (241)	19 (483)	23 (584)	10-1/2 (267)	13-1/2 (343)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)
048-060	26-1/2 (673)	46-7/8 (1191)	30-1/2 (775)	18 (457)	4-1/4 (108)	2 (51)	9-1/2 (241)	29 (737)	27-7/8 (708)	13-7/8 (352)	11-3/8 (289)	1/2 (13)	1 (25.4)	1 (25.4)	3/4 (19)
070	26-1/2 (673)	50-7/8 (1292)	30-1/2 (775)	18 (457)	4-1/4 (108)	2 (51)	9-1/2 (241)	29 (737)	27-7/8 (708)	13-1/8 (333)	11-3/8 (289)	1/2 (13)	1 (25.4)	1 (25.4)	3/4 (19)

Note:

- All dimensions are in inches followed by millimeters in parenthesis.
- Access to the unit for service purposes should be provided at installation. Vertical units require an 24 in. (610 mm) surround clearance from other mechanical and electrical equipment to enable panel removal from the unit for service/maintenance ability. NEC requires 36 in. clearance on the control panel side of the unit. Some local codes require a greater service clearance. Check all code requirements prior to unit installations. Installer is responsible for following all local and NEC code requirements.
- Units in a free return application will require more than a 1 in. (25.4 mm) clearance to provide proper air flow to the unit's air-to-refrigerant coil.

Figure 12. Right return/back supply DXV

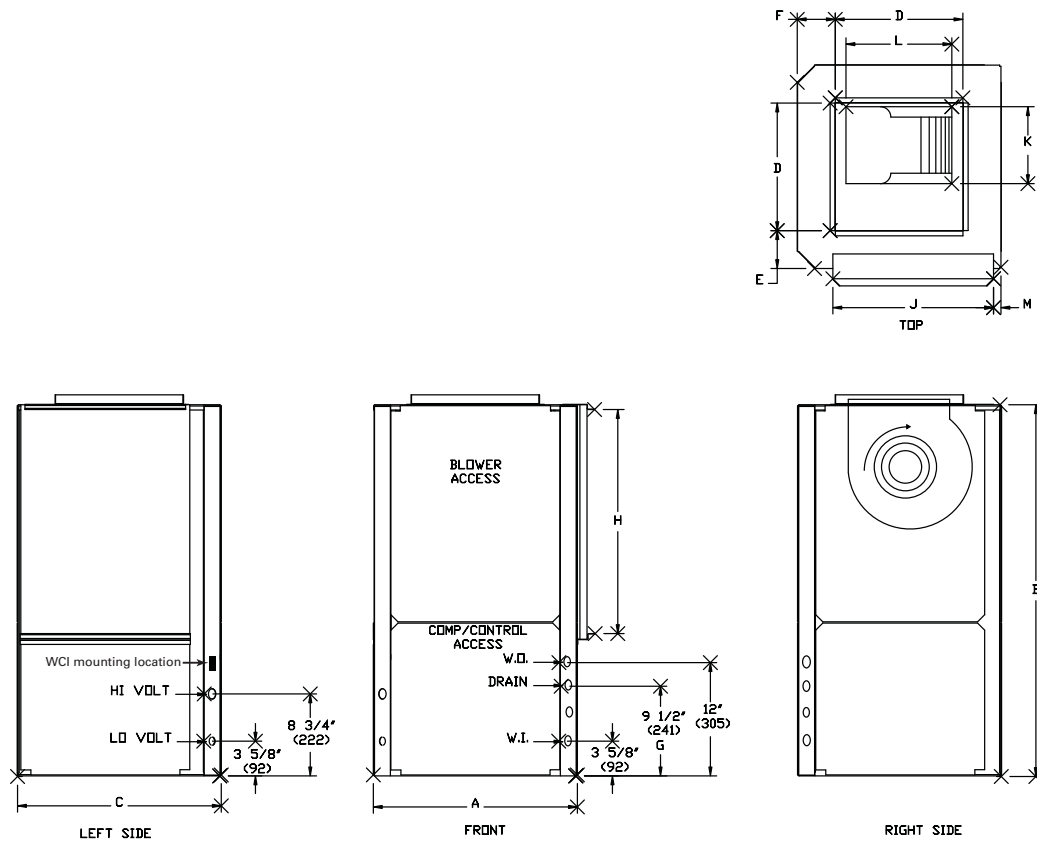


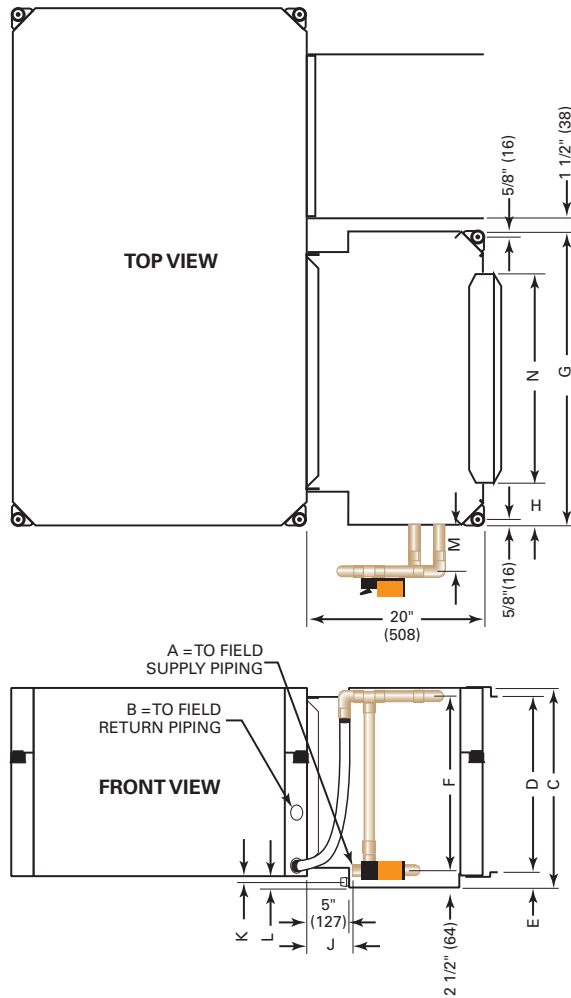
Table 12. Right return/back supply

DXV Unit	A	B	C	D	E	F	G	H	J	K	L	M	W.I. NPTI	W.O. NPTI	Drain FPT
024	21-1/2 (546)	39-1/4 (997)	21-1/2 (546)	13-1/2 (343)	4 (102)	3-7/8 (98)	9-1/2 (241)	23-3/4 (603)	17 (432)	8-1/4 (368)	11-3/8 (289)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)
036	24-1/2 (622)	41-7/8 (1064)	26-1/2 (673)	18 (457)	3-1/4 (83)	1-7/8 (48)	9-1/2 (241)	19 (483)	23 (584)	10-1/2 (267)	13-1/2 (343)	3/4 (19)	3/4 (19)	3/4 (19)	3/4 (19)
048-060	26-1/2 (673)	46-7/8 (1191)	30-1/2 (775)	18 (457)	4-1/4 (108)	2 (51)	9-1/2 (241)	29 (737)	27-7/8 (708)	13-7/8 (352)	11-3/8 (289)	1/2 (13)	1 (25.4)	1 (25.4)	3/4 (19)
070	26-1/2 (673)	50-7/8 (1292)	30-1/2 (775)	18 (457)	4-1/4 (108)	2 (51)	9-1/2 (241)	29 (737)	27-7/8 (708)	13-1/8 (333)	11-3/8 (289)	1/2 (13)	1 (25.4)	1 (25.4)	3/4 (19)

Note: All dimensions are in inches followed by millimeters in parenthesis.

Unit Dimensions and Weights

Figure 13. DXH waterside economizer^(a)



(a) Waterside economizer installation requires field piping.

Table 13. DXH waterside economizer

DXH (60 Hz)	A NPTI	B NPTI	C	D	E	F	G	H	J	K	L	M	N
024	3/4 (19)	3/4 (19)	18-1/2 (470)	15-5/8 (397)	1-1/2 (38)	13-3/4 (349)	26 (660)	3-1/4 (83)	6-7/8 (175)	1/2 (12.7)	1 (25.4)	4 (102)	18-1/2 (470)
036	3/4 (19)	3/4 (19)	21 (533)	17-5/8 (448)	2-1/4 (57)	16-1/2 (419)	30 (762)	3-3/4 (95)	6-1/4 (159)	1-1/4 (32)	2 (50.8)	4-1/2 (114)	23-1/2 (597)
048-070	1 (25.4)	1 (25.4)	23-1/8 (587)	19-5/8 (498)	2-1/2 (64)	19-1/2 (495)	34 (864)	5-1/4 (133)	5-7/8 (149)	1-1/4 (32)	2 (50.8)	4-1/2 (114)	23-1/2 (597)

Figure 14. DXH hanging unit waterside economizer

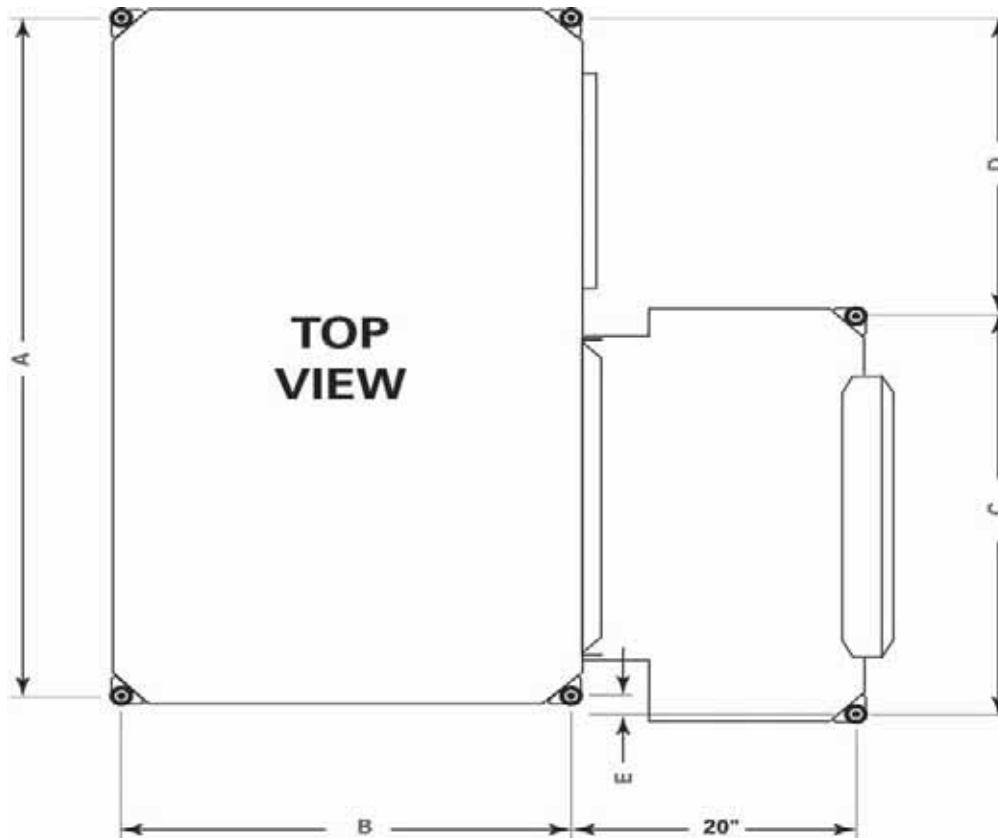


Table 14. DXH hanging unit waterside economizer

DXH Unit (60 Hz)	A	B	C	D	E	Hanging Weight	Shipping Weight
024	44-3/4 (1137)	21-3/4 (552)	24-3/4 (629)	21 (533)	1 (25.4)	269 lb (122 kg)	301 lb (137 kg)
036	48-3/4 (1238)	23-3/4 (603)	28-3/4 (730)	21 (533)	2 (50.8)	313 lb (142 kg)	343 lb (156 kg)
048	56-3/4 (1442)	31-3/4 (806)	32-3/4 (832)	25 (635)	1 (25.4)	424 lb (192 kg)	454 lb (206 kg)
060						444 lb (201 kg)	474 lb (215 kg)
070						484 lb (220 kg)	514 lb (233 kg)

Note: All dimensions are in inches followed by millimeters in parenthesis.



Unit Dimensions and Weights

Table 15. Unit weights DXH 2 to 6 ton

DXH	Shipping Weight with pallet (lbs)	Unit Weight without pallet (lbs)
024	301	269
036	343	313
048	454	424
060	474	444
070	514	484

Table 16. Unit weights DXV 2 to 6 ton

DXV	Shipping Weight with pallet (lbs)	Unit Weight without pallet (lbs)
024	269	301
036	313	333
048	374	422
060	394	442
070	434	482

Weight Distribution for Hanging the DXH Model

⚠ WARNING

Improper Unit Lift!

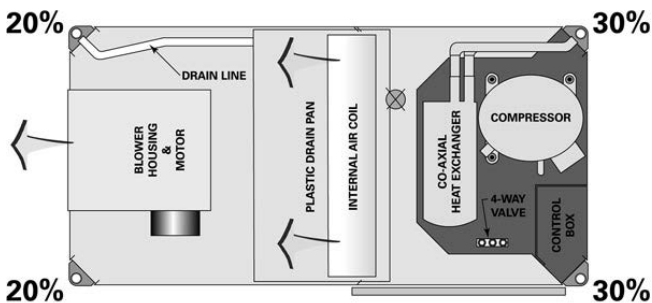
Test lift unit approximately 24 inches to verify proper center of gravity lift point. To avoid dropping of unit, reposition lifting point if unit is not level. Failure to properly lift unit could result in death or serious injury or possible equipment or property-only damage.

Approximate weight distribution for proper hanging of the DXH unit is indicated by weight distribution DXH 2 to 6 ton [Figure 15, p. 24](#).

Tolerance on the weights determined are $\pm 15\%$.

Total weights for each unit size are listed in [Table 15, p. 24](#) and [Table 16, p. 24](#).

Figure 15. Weight distribution DXH 2 to 6 ton



Installation

⚠ WARNING

Proper Field Wiring and Grounding Required!

All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in **NEC** and your local/state electrical codes. Failure to follow codes could result in death or serious injury.

General Installation Checks

The checklist below is a summary of the steps required to successfully install a commercial unit. This checklist is intended to acquaint the installing personnel with what is required in the installation process. It does not replace the detailed instructions that are in the applicable sections of this manual.

1. Remove packaging and inspect the unit. Check the unit for shipping damage and material shortage; file a freight claim and notify appropriate sales representation.

Note: The DXH/V 2 to 6 ton units have been tied to the skid by (2) shipping bolts. The removal of these bolts will require a 3/8 (9.7 mm) ratchet with a 1/2 (12.7 mm) socket.

2. Verify the correct model, options and voltage from the unit nameplate.
3. Pull out all field attached parts (i.e. filter rack, duct collar, filter and mounting screws) from the unit packaging for field mounting.
4. Verify the installation location of the unit will provide the required clearance for proper operation.
5. Remove refrigeration access panel and inspect the unit. Be certain the refrigerant tubing has clearance from adjacent parts.
6. Fabricate and install duct work
7. Install and connect a condensate drain line and trap to the drain connection.

Main Electrical

⚠ WARNING

Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

1. Verify the power supply complies with the unit nameplate specifications.
2. Inspect all control panel components; tighten any loose connections.
3. Connect properly sized and protected power supply wiring to a field-supplied/installed disconnect switch and to the main compressor contactor 1K1 or power block on the DXH/V 2 to 6 ton.
4. Install proper grounding wires to an earth ground. DXH and DXV 460V units require a neutral (a four wire system).

Note: All field-installed wiring must comply with **NEC** and applicable local codes.

Electric Heat Requirements

5. Verify that the power supply complies with the electric heater specifications on the unit and heater nameplate.
6. Inspect the heater junction box and control panel; tighten any loose connections.
7. Check electric heat circuits for continuity.

Low Voltage Wiring (AC) Requirements

8. Install the zone sensor or thermostat.
9. Connect properly sized control wiring to the proper termination points between the zone thermostat or sensor and the unit control panel.

Filter Installation

Each unit ships with 1 (25.4mm) standard, 2 (50.8mm) standard, 2 in. MERV 8 or 2 in. MERV 13 filter. The quantity of filters is determined by unit size. The DXH unit requires a field installation of the filter rack. All sheet metal bracket, filter and hardware are in a box located on the side of the unit within the unit packaging. All vertical units ship with the filter rack and filters factory installed.

Note: Do not operate the unit without filters.

Supply-Air Ductwork

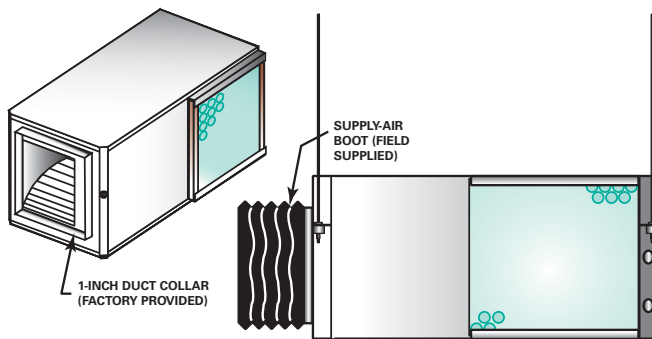
Horizontal DXH units require duct flanges to be field installed. The duct flange ships in a box on the side of the unit. Install the flange with (8) 3/8 in. (213 mm) factory supplied screws.

Install the 1 in. (25.4 mm) supply-air duct flange to the vertical and horizontal equipment with the (8) 5/16 in. (7.94 mm) factory-supplied head screws. The duct collar assembly for each unit is shipped with the unit in the same box where the IOM manual is located.

When attaching the field ductwork to the unit, provide a watertight flexible connector at the unit to prevent operating sounds from transmitting through the ductwork. See [Figure 16, p. 26](#).

Elbows with turning vanes or splitters are recommended to minimize air noise due to turbulence and to reduce static pressure.

Figure 16. Flexible supply-air connector (field provided)



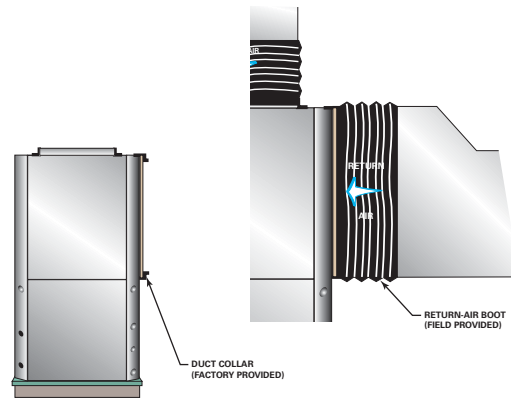
Return-Air Ductwork

Install the 1/2 (25.4 mm/50.8 mm) adjustable filter rack to the horizontal equipment only with the use of (4) 5/16 in. (7.94 mm) factory supplied head screws. The vertical equipment factory ships with the filter rack and filter(s) installed.

When attaching the field ductwork to the unit, provide a water-tight flexible connector at the unit to prevent operating sounds from transmitting through the ductwork.

Elbows with turning vanes or splitters are recommended to minimize air noise due to turbulence and to reduce static pressure.

Figure 17. Flexible return-air connector (field provided)



Ducted Panel

The return-air arrangement may be easily converted from a free return-air system, to a ducted return-air system with the addition of a return-air side panel. By replacing the filter racks with the return-air side panel, a complete seal from the duct to the unit is possible. The 1 1/2 duct flange facilitates ease of field connection to the mechanical system. This accessory is typically used when the return-air filter is placed in a built-in ceiling grille, or placed within a field provided filter rack assembly.

Figure 18. Return-air duct panel

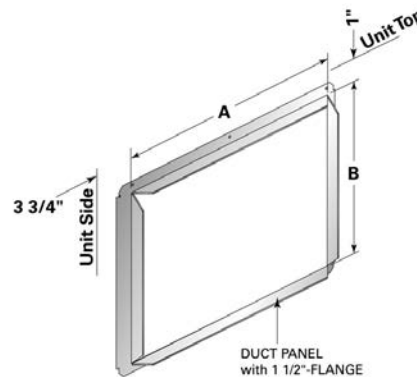
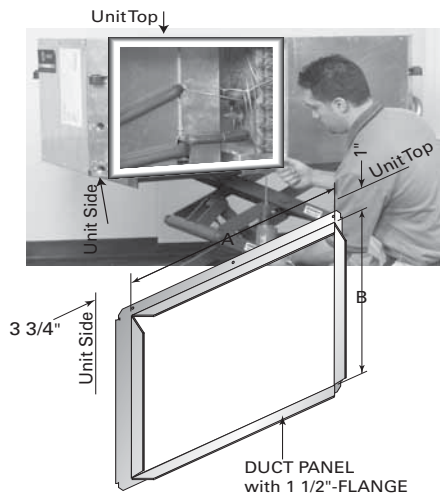


Figure 19. Install return-air duct panel



Install the return-air duct panel to the return-air opening with the six head screws provided for the filter rack assembly.

Dual Filtration (DXH 2 to 6 ton)

Note: The dual-filtration design is typically used in a free-return application.

The horizontal, DXH model, allows the installer flexibility in design applications such as a dual filtration option. With the dual filtration design, the unit will contain a lower static which translates into a decrease in filter maintenance. For installation of a dual filtration accessory for the DXH model, verify that an extra set of return-air filter racks and filter have been ordered from the factory. This accessory will be shipped separate from the unit, and should be located in a separate box than the unit.

1. Remove the return-air side panel from the DXH unit. This panel is held in place by screws.

Figure 20. Side panel



Table 17. Opening size and part number DXH

DXH (60 hz)	A (in.)	B (in.)	Duct Collar Part Number
024	20-1/2	16	447456280100
036	22 1/2	17	447411350100
048-070	26-1/2	19	447411360100

Ducted Filter Rack

When it is necessary to have filter access at the unit in a ducted return, a ducted filter rack is available. This option allows access to the filter at the unit. Vertical unit filter racks are available in right or left access configurations. Horizontal units are available in top, bottom or side access configurations.

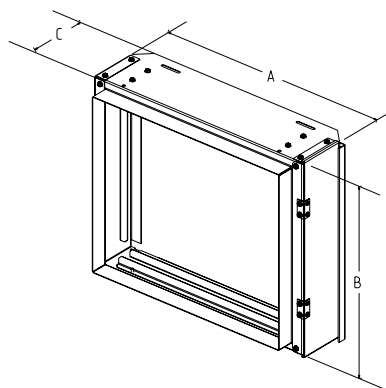


Table 18. Ducted filter opening size

Unit Size	A (in.)	B (in.)	C (in.)
DXH 024	24.5	18.4	5.6
DXH 036	26.4	19.4	5.5
DXH 048-070	30.7	21.4	5.5
DXV 024	20.7	23.1	5.5
DXV 036	25.7	22.4	4.3
DXV 048-070	30.7	26.6	5.5

Note: All dimensions in inches

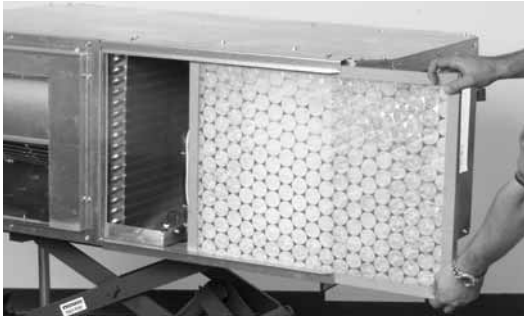
2. Install the top/bottom filter rack at the new opening. The 1/2 (25.4 mm/50.8 mm) adjustable filter rack is held in place with four screws that once held the panel.

Figure 21. Install top/bottom filter rack



3. Install the 1/2 (25.4 mm/50.8 mm) filter.

Figure 22. Install filter



Sound Attenuation Pad

For sound-sensitive installations, a vibration pad (field provided) should be placed beneath the horizontal or vertical equipment. For the horizontal unit, the pad should be approximately twice the size of the unit foot print. For the vertical unit, the pad should be ½ in. (12.7 mm) thick, and equal to the overall unit foot print.

Hanging the Horizontal Unit

⚠ WARNING

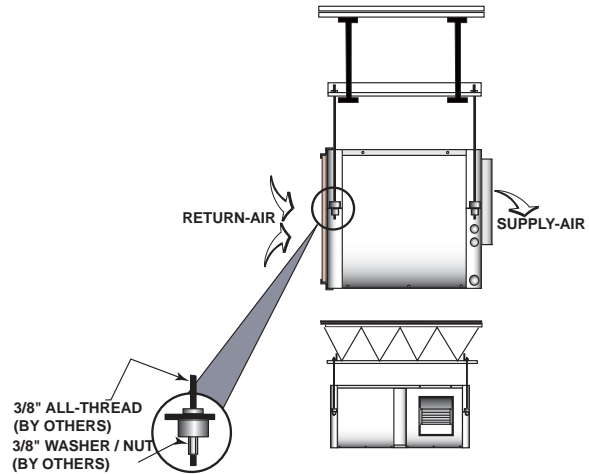
Risk of Unit Dropping!

You **MUST** mount the unit to an area of the ceiling strong enough to support the weight of that unit. If unsure, you **MUST** confirm with a structural engineer. Failure to do so could result in unit dropping from the ceiling which could result in death or serious injury, and equipment damage.

To hang the horizontal configuration (see [Figure 23, p. 28](#)):

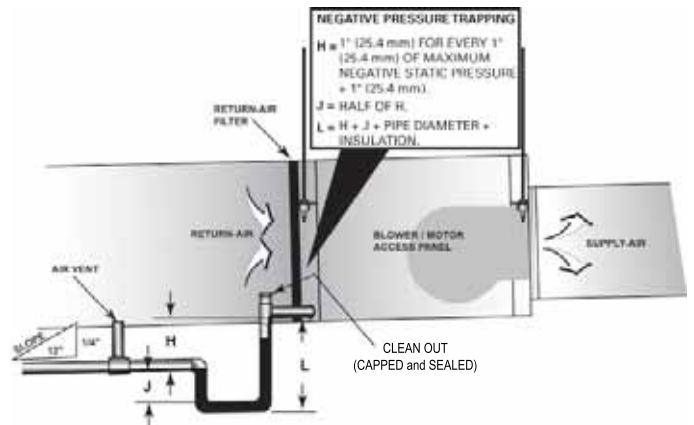
1. Install the hanging isolators (located in the return-air section of the unit) into the four hanging brackets.
2. Secure the equipment to a joist, concrete, etc. with the use of 3/8 in. (9.7 mm) field provided (all-thread) rod. Each corner should contain field provided nuts and washers to complete the hanging installation.
3. Slope horizontal units in two directions. The unit should contain a dual ¼-12 pitch toward the drain connection. This will insure proper drainage of the unit. All plumbing to the unit should conform per national and local codes and is the responsibility of the contractor.

Figure 23. Hanging the unit



Condensate Drain Connection

Figure 24. Negative pressure system



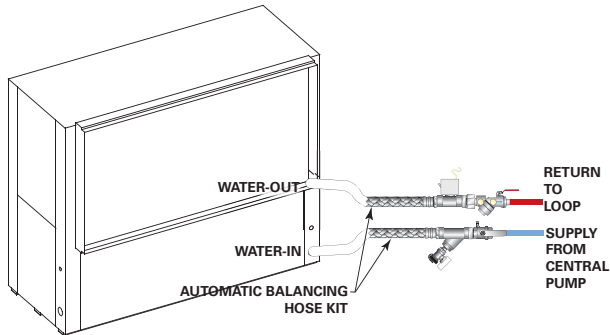
Install proper trapping to the equipment. The unit drain connection is ¾ in. NPT for all DXH and DXV models.

When designing the condensate trap for the water-source system, it is important to consider the unit draw-thru design requiring negative pressure trapping.

In a properly trapped system, when condensate forms during normal operation, the water level in the trap rises until there is a constant flow. It is imperative to maintain water in the trap and not allow the trap to dry out during heating season. Keeping trap primed at all times will enable the water to flow properly. See [Figure 24, p. 28](#) for appropriate dimensions required in a negative pressure system.

Supply/Return Pipe Connections

Figure 25. Supply/return pipe connections



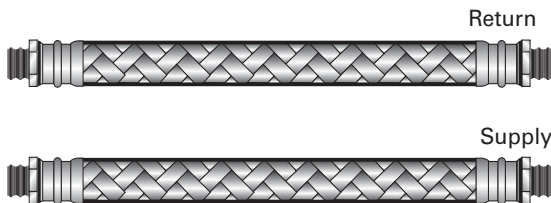
Connect the supply and return hoses to the water-inlet (from supply) and water-outlet (to return) of the unit. For vibration isolation, it is recommended that flexible steel braided hoses be installed instead of hard piping the equipment to the main loop system. Figure 25, p. 29 shows connection of a Hays Measurflo® balancing hose kit to the water-in and water-out of a vertical unit.

Note: Figure 25, p. 29 example incorporates the Hays Measurflo® balancing hose kit and a 2-position isolation valve into the system design. An isolation valve is often used in variable speed pumping applications. The isolation valve is designed to stop water flow to the unit during non operation times. This allows the loop water pumps to run only when a requirement for pumping is needed for greater energy efficiency of the overall system design.

Types of Hose Connections

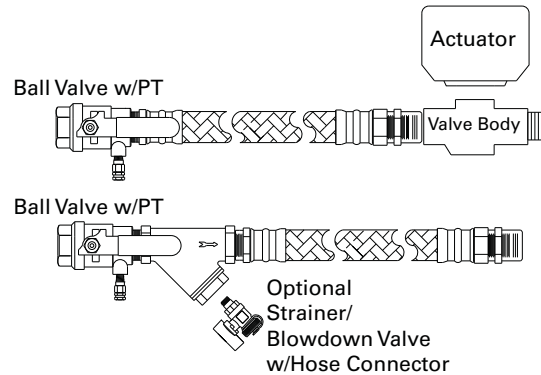
Whether installing the units in a central pump (main/auxiliary pump for the entire zone) design, or as a distributed pump (1-pump per unit) design, a shut-off device and flexible hose is recommended to transition from the hard piping of the closed or open loop water system to the unit. There are multiple hose combinations which may be used to fit the design or specification criteria for the installation.

Flexible hoses



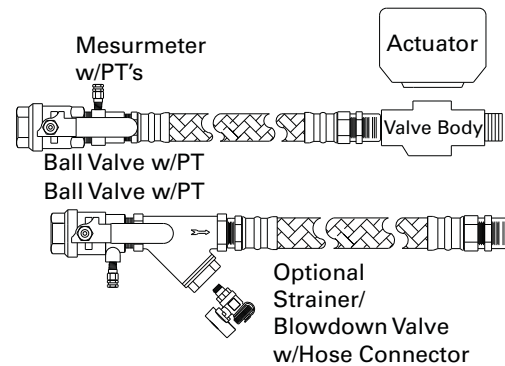
A steel braided hose without a shut-off device is the least expensive means of connecting the heat pump to the supply/return water loop.

Deluxe ball valve hose kit



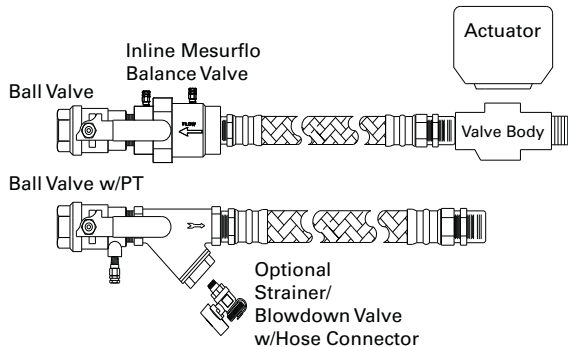
With the addition of a shut-off device on the supply and return of the system, the unit may be isolated during service or maintenance situation. This system may be installed as a wide open (full water flow to the equipment) design, or manually balanced by utilizing the pressure/temperature ports on the top of the ball valve/shut-off device.

Manual balance hose kit



A circuit setter provides a means of manually balancing the water flow to the heat pump. This manual in-line balancing method is accurate up to $\pm 20\%$. In order to determine flow rate, the user must record both handle position, and differential pressure drop. Then, the user must consult a chart containing both pieces of information and make the necessary adjustments to the circuit setter.

Automatic balance hose kit



For self balancing flow control, a Hays Measurflo® balancing hose kit provides a constant flow rate over the pressure differential range of 2 – 80 psid. As system pressures change (through the addition of heat pumps, for example) each individual flow control valve will automatically adjust to the new system conditions.

Additional accessories, such as a strainer are recommended for use to eliminate contaminants from entering the co-axial water-to-refrigerant heat exchanger.

Cleaning and Flushing the Water Loop

After the piping system is complete, the flexible hose connectors should be doubled back to complete the water circuit external to the unit (avoiding trash settle-out in the condenser). An extra pipe may be necessary to connect the hose kits.

1. Water circulation system should be filled with clean water using the water make up connections.

Note: Air vents should be open during filling.

2. With the air vents closed, start the circulating pump and then crack the air vents to bleed off the trapped air, assuring circulation through all components of the system.

Note: Make up water must be available to the system to replace the volume formerly occupied by the air that is bled off.

3. With the air vented and the water circulating, the entire system should be checked for leaks with repairs made as required.
4. Operate the supplementary heat system (boiler) making checks per manufacturer's instructions. During this operation, visual checks should be made for leaks that may have occurred due to increased heat. Repair as required.
5. Open the system at the lowest point for the initial blow down (making sure the make up water is equal to the water being dumped). Continue blow down until the water leaving the drain runs clear, but not less than 2 hours.

6. Shut down pumps and supplementary heat system. Reconnect the hoses placing the water-to-refrigerant heat exchanger in the water circulating system.

Note: Vents should be open when the pumps and supplementary heat system are shut down.

Field Installed Power Wiring

⚠ WARNING

Proper Field Wiring and Grounding Required!

All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in NEC and your local/state electrical codes. Failure to follow codes could result in death or serious injury.

NOTICE:

Use Copper Conductors Only!

Unit terminals are not designed to accept other types of conductors. Failure to use copper conductors could result in equipment damage.

Verify that the power supply available is compatible with the unit's nameplate. Use only copper conductors to connect the power supply to the unit.

Main Unit Power Wiring

⚠ WARNING

Proper Field Wiring and Grounding Required!

All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in NEC and your local/state electrical codes. Failure to follow codes could result in death or serious injury.

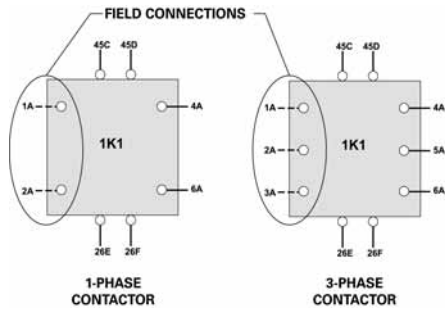
A field supplied disconnect switch must be installed at or near the unit in accordance with the National Electric Code (NEC latest edition).

Location of the applicable electric service entrance for HIGH (line voltage) may be found in the Dimensions section of this manual.

The high-voltage connection is made at the 1K1 contactor or 1TB power block inside the unit control box. See [Figure 26, p. 31](#). Refer to the customer connection diagram that is shipped with the unit for specific termination points.

Provide proper grounding for the unit in accordance with the local and national codes.

Figure 26. Power wiring example



Control Power Transformer

The 24 V control power transformers are to be used only with the accessories called out in this manual. A 50 VA transformer is externally fused. Transformers rated greater than 50 VA are equipped with circuit breakers. If a circuit breaker trips, turn OFF all power to the unit before attempting to reset it.

⚠ WARNING

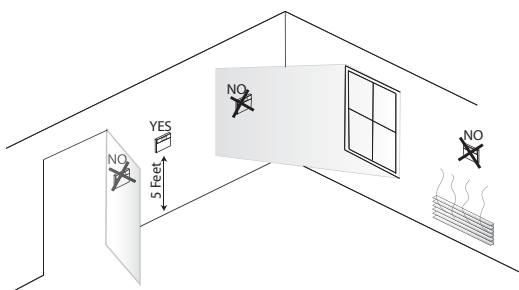
Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

The transformer is located in the control panel. See [Figure 26, p. 31](#) for power wiring example.

Thermostat Location

Figure 27. Thermostat/sensor location



Location of the thermostat or zone sensor is an important element of effective room control.

Areas where the thermostat or zone sensor should not be located include:

- Behind doors or corners
- Near hot or cold air ducts
- Near radiant heat (heat emitted from appliances or the sun)
- Near concealed pipes or chimneys

- On outside walls or other non conditioned surfaces
- In air-flows from adjacent zones or other units.

Controls Using 24 VAC

Before installing any wire, refer to the electrical access locations in the “Unit Dimensions and Weights,” p. 10 of this manual.

Ensure that the AC control wiring between the controls and the unit termination point does not exceed 3 Ohms/ conductor for the length of the run.

NOTICE:

Component Failure!

Resistance in excess of 3 Ohms per conductor could result in component failure due to insufficient AC voltage supply.

Check all loads and conductors for grounds, shorts, and mis-wiring.

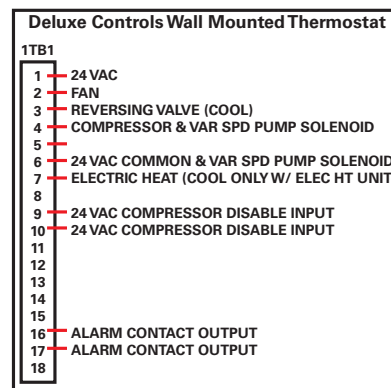
Use copper conductors unless otherwise specified.

Do not run the AC low-voltage wiring in the same conduit with the high voltage power wiring.

Table 19. 24V AC conductors

Distance from unit to control	Recommended wire size
000-460 ft	18 gauge
461-732 ft	16 gauge
733-1000 ft	14 gauge

Figure 28. Low-voltage connection (DXH/V 2 to 6 ton equipment)



Low-voltage connection diagrams for deluxe 24V control packages mounted on 2 to 6 ton equipment sizes are shown in [Figure 28, p. 31](#).

⚠ WARNING

Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

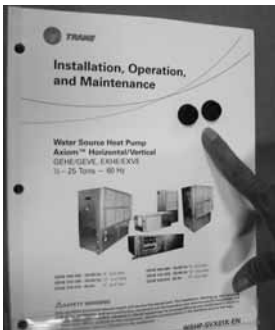
⚠ WARNING

Proper Field Wiring and Grounding Required!

All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in NEC and your local/state electrical codes. Failure to follow codes could result in death or serious injury.

Hole Plug Installation

Figure 29. Hole plug installation



1. Locate two Hayco plastic plugs enclosed with the Installation, Operation and Maintenance manual.
2. Use these plugs to plug the two shipping bolt holes in the bottom of the DXV units after shipping bolt removal.

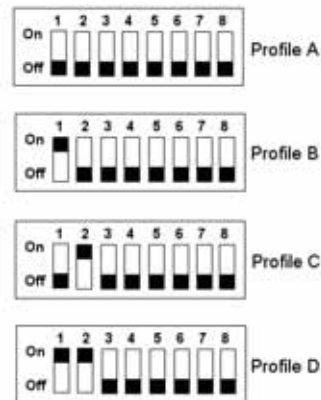
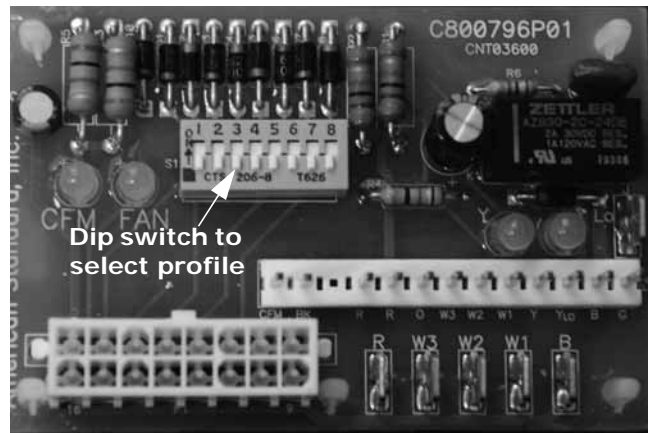
Air Flow Adjustment

⚠ WARNING

Rotating Components!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

Figure 30. ECM control board and dip switch setting



Note: DXH/V 2 to 6 ton high efficiency: Units are shipped from the factory on profile setting B.

To adjust the cfm, disconnect the power to the unit. Set the DIP switch located in the control box to the desired profile setting. Connect the power to the unit. If the power is not disconnected when the DIP switch is set, the motor will not be programmed to the new setting.

- Profile A = 110% of rated air flow
- Profile B = 100% of rated air flow
- Profile C = 90% of rated air flow
- Profile D = 80% of rated air flow

Waterside Economizer Installation

⚠ WARNING

Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

⚠ WARNING

Proper Field Wiring and Grounding Required!

All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in **NEC** and your local/state electrical codes. Failure to follow codes could result in death or serious injury.

The following steps were sequenced to aid in the installation and mating of a water side economizer to a water-source heat pump (DXH 2 to 6 ton).

1. Remove the control side service panel of the water-source heat pump unit.
2. Remove rubber isolation grommets from the return-air section. Place them in a convenient location.
3. Attach ducted panel to the water-source heat pump unit with six factory provided head screws. This panel is shipped loose with the water-source heat pump but must be field installed to the unit.

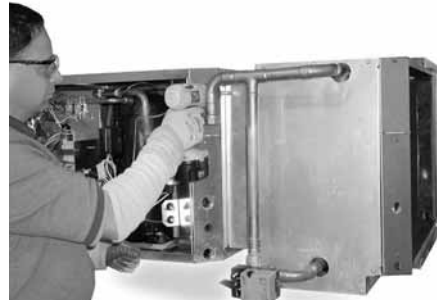
Figure 31. Step 3



4. Attach the water side economizing unit to the ducted panel of the water-source heat pump with 10-factory provided head screws. The economizing package fits to the outside of the of the water-source heat pump. Trane recommends the mating of the systems be made via 3-screws spaced evenly across the top, 3-screws spaced evenly across the bottom (installed immediately after hanging the unit), and 2-screws on each side.

Note: Waterside economizer option is configured for right return. Left return requires additional field piping.

Figure 32. Step 4



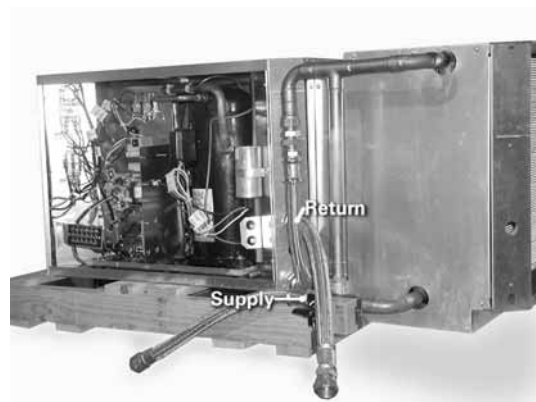
5. Install the 18-inch steel braided hose between the upper most piping connection of the economizer, and the water-in of the heat pump. The hose is shipped loose with the water-side economizer.

Figure 33. Step 5



6. Install the SUPPLY and RETURN hoses to the (1) 2-position valve's threaded connection (2) water-out threaded connection of the water-source heat pump.

Figure 34. Step 6

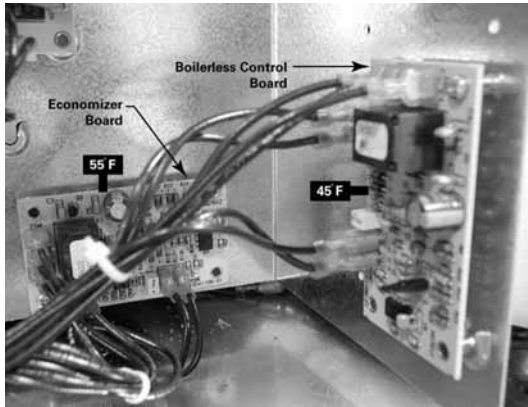


Installation

- Verify the control board for the water side economizer is located at the back of the control box. The temperature rating of this board is factory set to 55°F.

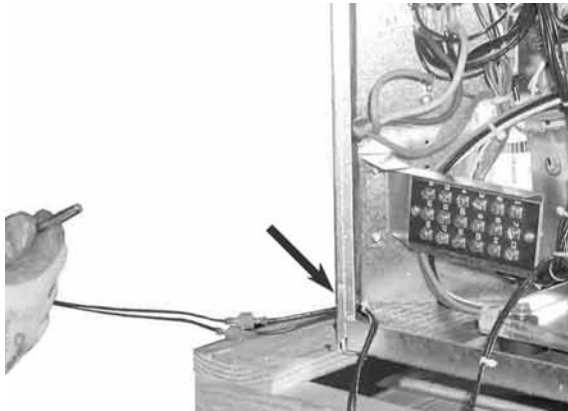
For units with boilerless (electric heat) control and water side economizer, the boilerless control board is factory set to 45°F.

Figure 35. Step 7



- Thread the bulb and wire through the low voltage hole of the water-source heat pump. See [Figure 36, p. 34](#).

Figure 36. Step 8



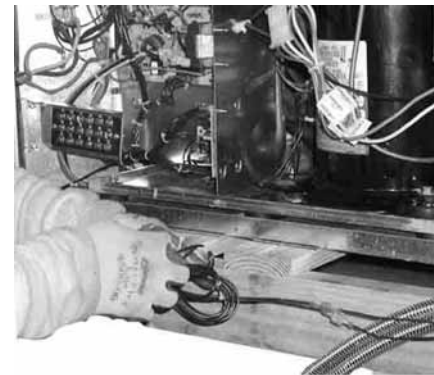
- Wire-tie the sensor to the water SUPPLY side of the piping (ON, or BEFORE) the 2-position valve. See [Figure 37, p. 34](#).

Figure 37. Step 9



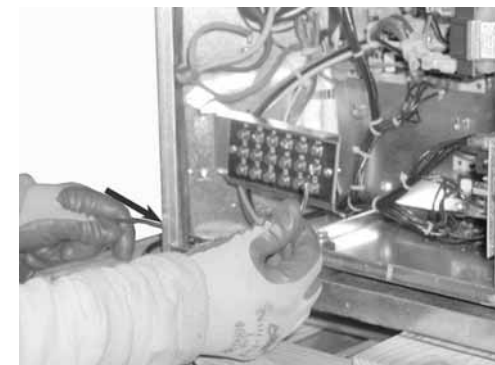
- Bundle excess sensor wire, and wire tie the bundle neatly. See [Figure 38, p. 34](#).

Figure 38. Step 10



- Thread the valve's wire lead through the low voltage hole of the heat pump. See [Figure 39, p. 34](#).

Figure 39. Step 11



12. Wire the valve to the terminal strip according to the unit wire diagram located on the service control panel.

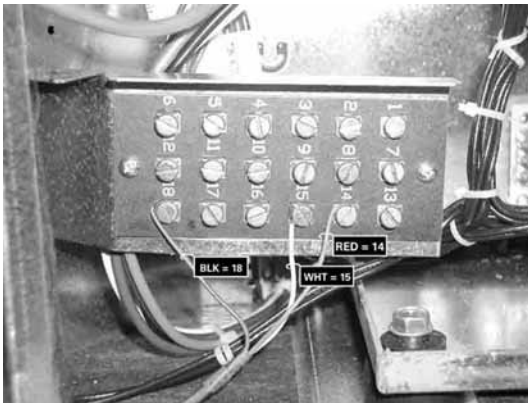
RED = 1TB1-14

BLK = 1TB1-18

WHT = 1TB1-15

See [Figure 40, p. 35](#).

Figure 40. Step 12



13. Bundle excess valve wire, and wire tie the bundle neatly. See [Figure 41, p. 35](#).

Figure 41. Step 13



14. Install control side service panel.

15. Install the hanging isolation grommets (see [Figure 42, p. 35](#)) into the hanging brackets. The unit isolators were located in the return-air section of the unit. Isolators for the economizing package are located with the economizer.

Figure 42. Step 15



16. Insulate the economizing piping package and the supply/return/by-pass hoses (3-hoses) via field provided pipe insulation. Insulating the piping will stop condensation from forming on the pipe and dripping onto the ceiling tiles.

Note: Trane does not provide insulation on the economizing piping package. This insulation must be field provided and field installed.

Note: Trane does not provide condensate overflow protection of the waterside economizer. This must be field provided and installed.

17. Install filter rack (top and bottom) to the economizing package. The filter rack is located in the unit's packaging along with the filter.

18. Hang unit. See [Figure 23, p. 28](#) for hanging of the packaged unit. Bottom screws referenced in [Step 4](#) must be installed at this time.

19. Field pipe the drain lines of the waterside economizer and water-source heat pump together prior to installing a condensate trap (see [Figure 43, p. 35](#)). See [Figure 24, p. 28](#) for proper trapping of condensation.

Figure 43. Step 19



Table 20. Economizer part numbers

DXH Unit	Waterside Economizer Part Number
024	4474 7072 0100
036	4474 1692 0100
048-070	4474 1693 0100



Economizer Start-Up Sequence

1. Set the thermostat to the highest position.
2. Set the thermostat system switch to COOL with the fan control to AUTO. The compressor should NOT run.
3. Reduce the thermostat setting until the compressor, reversing valve, solenoid valve, and loop pump are energized. Adjust water flow utilizing pressure/temperature plugs and comparing to tables contained in specification sheet data. Water leaving the heat exchanger should be warmer than the entering water temperature (approximately 9-12°F); blower operation should be smooth; compressor and blower amps should be within data plate ratings; the suction line should be cool with no frost observed in the refrigerant circuit.
4. Check the cooling refrigerant pressures against values in [Table 26, p. 43](#).
5. Turn the thermostat system switch to the OFF position. Unit should stop running and the reversing valve should de-energize.
6. Leave unit off for approximately FIVE minutes to allow for pressure equalization.
7. Turn the thermostat to the lowest setting.
8. Set the thermostat system switch to the HEAT position.
9. Adjust the temperature setting upward until the unit is energized. Warm air should blow from the register. A water temperature decrease of approximately 5-9°F leaving the heat exchanger should be noted. The blower and compressor operation should be smooth with no frost observed in the refrigeration circuit.
10. Check the heating refrigerant pressures against values in [Table 26, p. 43](#).

Note: *If cooling mode is activated, and the entering water temperature of the heat pump falls below 55°F, the 2-position, water side economizing valve will become energized (open) and compressor operation will halt allowing for free cooling in the space.*

Note: *For units with boilerless electric heat option: In heating mode, if the entering water temperature of the heat pump falls below 45°F, the electric heater will be energized, and compressor operation will halt. Once the entering water temperature rises above 50°F, the boilerless controls returns the unit*

Table 21. Waterside economizing three-way valve specifications

Unit Size	Valve Conn. Size	Valve Pres. Rating	"Valve Close-off pressure	Valve Temp. Range	Actuator
DXH 024-036	3/4 FPT	600 psi	200 psi	0°F to 212°F -18°C to 121°C	Non-spring return type 24 VAC +/- 20% 135 second stroke time 30 Cv at full port
DXH 048-070	1 FPT	600 psi	200 psi	0°F to 212°F -18°C to 121°C	Non-spring return type 24 VAC +/- 20% 135 second stroke time 23 Cv at full port

Note: The valve body is constructed from forged brass with nickel plating, with the ball and stem constructed of stainless steel. For other information pertaining to the economizing water valve, see the valve's data plate.

Electrical Data

Table 22. Electrical data - horizontal models

Model no.	Unit volts	Total unit FLA	Comp RLA	Comp LRA	Blower motor FLA	Blower motor HP	Minimum circuit ampacity	Maximum overcurrent protective device	Electric heat kW	Electric heat amps
DXH024	208/60/1	15.0	13.0	58.3	2.00	1/3	18.25	30	0.0	0.0
	208/60/1	17.7	13.0	58.3	2.00	1/3	22.09	30	3.3	15.7
	230/60/1	15.0	13.0	58.3	2.00	1/3	18.25	30	0.0	0.0
	230/60/1	19.4	13.0	58.3	2.00	1/3	24.24	30	4.0	17.4
	265/60/1	12.1	10.1	54.0	2.00	1/3	14.63	20	0.0	0.0
	265/60/1	22.0	10.1	54.0	2.00	1/3	27.50	30	5.3	20.0
	208/60/3	9.2	7.2	55.4	2.00	1/3	11.00	15	0.0	0.0
	208/60/3	11.0	7.2	55.4	2.00	1/3	13.81	15	3.3	9.0
	230/60/3	9.2	7.2	55.4	2.00	1/3	11.00	15	0.0	0.0
	230/60/3	12.0	7.2	55.4	2.00	1/3	15.05	20	4.0	10.0
	460/60/3	5.9	3.9	28.0	2.00	1/3	6.88	15	0.0	0.0
	460/60/3	8.7	3.9	28.0	2.00	1/3	10.82	15	5.3	6.7
DXH036	208/60/1	19.7	17.0	83.0	2.70	3/4	23.95	40	0.0	0.0
	208/60/1	26.3	17.0	83.0	2.70	3/4	32.82	40	4.9	23.6
	230/60/1	19.7	17.0	83.0	2.70	3/4	23.95	40	0.0	0.0
	230/60/1	28.8	17.0	83.0	2.70	3/4	35.98	40	6.0	26.1
	265/60/1	17.2	14.5	72.0	2.70	3/4	20.83	35	0.0	0.0
	265/60/1	32.7	14.5	72.0	2.70	3/4	40.88	45	8.0	30.0
	208/60/3	15.6	12.9	73.0	2.70	3/4	18.83	30	0.0	0.0
	208/60/3	16.3	12.9	73.0	2.70	3/4	20.38	30	4.9	13.6
	230/60/3	15.6	12.9	73.0	2.70	3/4	18.83	30	0.0	0.0
	230/60/3	17.8	12.9	73.0	2.70	3/4	22.20	30	6.0	15.1
	460/60/3	9.1	6.4	38.0	2.70	3/4	10.70	15	0.0	0.0
	460/60/3	12.7	6.4	38.0	2.70	3/4	15.85	20	8.0	10.0
DXH048	208/60/1	26.5	23.6	104.0	2.90	3/4	32.40	50	0.0	0.0
	208/60/1	34.2	23.6	104.0	2.90	3/4	42.69	50	6.5	31.3
	230/60/1	26.5	23.6	104.0	2.90	3/4	32.40	50	0.0	0.0
	230/60/1	37.7	23.6	104.0	2.90	3/4	47.10	50	8.0	34.8
	208/60/3	18.5	15.6	83.1	2.90	3/4	22.40	35	0.0	0.0
	208/60/3	20.9	15.6	83.1	2.90	3/4	26.18	35	6.5	18.0
	230/60/3	18.5	15.6	83.1	2.90	3/4	22.40	35	0.0	0.0
	230/60/3	23.0	15.6	83.1	2.90	3/4	28.73	35	8.0	20.1
	460/60/3	10.0	7.1	41.0	2.90	3/4	11.78	15	0.0	0.0
	460/60/3	16.2	7.1	41.0	2.90	3/4	20.26	25	10.6	13.3



Electrical Data

Table 22. Electrical data - horizontal models

Model no.	Unit volts	Total unit FLA	Comp RLA	Comp LRA	Blower motor FLA	Blower motor HP	Minimum circuit ampacity	Maximum overcurrent protective device	Electric heat kW	Electric heat amps
DXH060	208/60/1	36.2	30.2	152.9	6.00	1	43.75	70	0.0	0.0
	208/60/1	37.3	30.2	152.9	6.00	1	46.56	70	6.5	31.3
	230/60/1	36.2	30.2	152.9	6.00	1	43.75	70	0.0	0.0
	230/60/1	40.8	30.2	152.9	6.00	1	50.98	70	8.0	34.8
	208/60/3	24.4	18.4	110.0	6.00	1	29.00	45	0.0	0.0
	208/60/3	24.4	18.4	110.0	6.00	1	30.05	45	6.5	18.0
	230/60/3	24.4	18.4	110.0	6.00	1	29.00	45	0.0	0.0
	230/60/3	26.1	18.4	110.0	6.00	1	32.60	45	8.0	20.1
	460/60/3	14.1	8.1	52.0	6.00	1	16.13	20	0.0	0.0
	460/60/3	19.3	8.1	52.0	6.00	1	24.13	25	10.6	13.3
DXH070	208/60/1	39.8	33.1	179.2	6.70	1	48.08	80	0.0	0.0
	208/60/1	39.8	33.1	179.2	6.70	1	48.08	80	6.5	31.3
	230/60/1	39.8	33.1	179.2	6.70	1	48.08	80	0.0	0.0
	230/60/1	41.5	33.1	179.2	6.70	1	51.85	80	8.0	34.8
	208/60/3	26.3	19.6	136.0	6.70	1	31.20	50	0.0	0.0
	208/60/3	26.3	19.6	136.0	6.70	1	31.20	50	6.5	18.0
	230/60/3	26.3	19.6	136.0	6.70	1	31.20	50	0.0	0.0
	230/60/3	26.8	19.6	136.0	6.70	1	33.48	50	8.0	20.1
	460/60/3	16.1	9.4	66.1	6.70	1	18.45	25	0.0	0.0
	460/60/3	20.0	9.4	66.1	6.70	1	25.01	30	10.6	13.3

Table 23. Electrical data - vertical models

Model no.	Unit volts	Total unit FLA	Comp RLA	Comp LRA	Blower motor FLA	Blower motor HP	Minimum circuit ampacity	Maximum overcurrent protective device	Electric heat kW	Electric heat amps
DXV024	208/60/1	14.7	13.0	58.3	1.70	1/3	17.95	30	0.0	0.0
	208/60/1	17.4	13.0	58.3	1.70	1/3	21.72	30	3.3	15.7
	230/60/1	14.7	13.0	58.3	1.70	1/3	17.95	30	0.0	0.0
	230/60/1	19.1	13.0	58.3	1.70	1/3	23.86	30	4.0	17.4
	265/60/1	11.8	10.1	54.0	1.70	1/3	14.33	20	0.0	0.0
	265/60/1	21.7	10.1	54.0	1.70	1/3	27.13	30	5.3	20.0
	208/60/3	8.9	7.2	55.4	1.70	1/3	10.70	15	0.0	0.0
	208/60/3	8.9	7.2	55.4	1.70	1/3	11.00	15	3.3	7.1
	230/60/3	8.9	7.2	55.4	1.70	1/3	10.70	15	0.0	0.0
	230/60/3	10.4	7.2	55.4	1.70	1/3	13.02	15	4.0	8.7
	460/60/3	5.6	3.9	28.0	1.70	1/3	6.58	15	0.0	0.0
	460/60/3	13.2	3.9	28.0	1.70	1/3	16.56	20	5.3	11.5

Table 23. Electrical data - vertical models

Model no.	Unit volts	Total unit FLA	Comp RLA	Comp LRA	Blower motor FLA	Blower motor HP	Minimum circuit ampacity	Maximum overcurrent protective device	Electric heat kW	Electric heat amps
DXV036	208/60/1	19.6	17.0	83.0	2.60	3/4	23.85	40	0.0	0.0
	208/60/1	26.2	17.0	83.0	2.60	3/4	32.70	40	4.9	23.6
	230/60/1	19.6	17.0	83.0	2.60	3/4	23.85	40	0.0	0.0
	230/60/1	28.7	17.0	83.0	2.60	3/4	35.86	40	6.0	26.1
	265/60/1	17.1	14.5	72.0	2.60	3/4	20.73	35	0.0	0.0
	265/60/1	32.6	14.5	72.0	2.60	3/4	40.75	45	8.0	30.0
	208/60/3	15.5	12.9	73.0	2.60	3/4	18.73	30	0.0	0.0
	208/60/3	16.2	12.9	73.0	2.60	3/4	20.25	30	4.9	13.6
	230/60/3	15.5	12.9	73.0	2.60	3/4	18.73	30	0.0	0.0
	230/60/3	17.7	12.9	73.0	2.60	3/4	22.08	30	6.0	15.1
	460/60/3	9.0	6.4	38.0	2.60	3/4	10.60	15	0.0	0.0
	460/60/3	12.6	6.4	38.0	2.60	3/4	15.72	20	8.0	10.0
DXV048	208/60/1	27.2	23.6	104.0	3.60	3/4	33.10	50	0.0	0.0
	208/60/1	34.9	23.6	104.0	3.60	3/4	43.56	50	6.5	31.3
	230/60/1	27.2	23.6	104.0	3.60	3/4	33.10	50	0.0	0.0
	230/60/1	38.4	23.6	104.0	3.60	3/4	47.98	50	8.0	34.8
	208/60/3	19.2	15.6	83.1	3.60	3/4	23.10	35	0.0	0.0
	208/60/3	21.6	15.6	83.1	3.60	3/4	27.05	35	6.5	18.0
	230/60/3	19.2	15.6	83.1	3.60	3/4	23.10	35	0.0	0.0
	230/60/3	23.7	15.6	83.1	3.60	3/4	29.60	35	8.0	20.1
	460/60/3	10.7	7.1	41.0	3.60	3/4	12.48	15	0.0	0.0
460/60/3	16.9	7.1	41.0	3.60	3/4	21.13	25	10.6	13.3	
DXV060	208/60/1	35.9	30.2	152.9	5.70	1	43.45	70	0.0	0.0
	208/60/1	37.0	30.2	152.9	5.70	1	46.19	70	6.5	31.3
	230/60/1	35.9	30.2	152.9	5.70	1	43.45	70	0.0	0.0
	230/60/1	40.5	30.2	152.9	5.70	1	50.60	70	8.0	34.8
	208/60/3	24.1	18.4	110.0	5.70	1	28.70	45	0.0	0.0
	208/60/3	24.1	18.4	110.0	5.70	1	29.68	45	6.5	18.0
	230/60/3	24.1	18.4	110.0	5.70	1	28.70	45	0.0	0.0
	230/60/3	25.8	18.4	110.0	5.70	1	32.23	45	8.0	20.1
	460/60/3	13.8	8.1	52.0	5.70	1	15.83	20	0.0	0.0
	460/60/3	19.0	8.1	52.0	5.70	1	23.76	25	10.6	13.3
DXV070	208/60/1	38.8	33.1	179.2	5.70	1	47.08	80	0.0	0.0
	208/60/1	38.8	33.1	179.2	5.70	1	47.08	80	6.5	31.3
	230/60/1	38.8	33.1	179.2	5.70	1	47.08	80	0.0	0.0
	230/60/1	40.5	33.1	179.2	5.70	1	50.60	80	8.0	34.8
	208/60/3	25.3	19.6	136.0	5.70	1	30.20	45	0.0	0.0
	208/60/3	25.3	19.6	136.0	5.70	1	30.20	45	6.5	18.0
	230/60/3	25.3	19.6	136.0	5.70	1	30.20	45	0.0	0.0
	230/60/3	25.8	19.6	136.0	5.70	1	32.23	45	8.0	20.1
	460/60/3	15.1	9.4	66.1	5.70	1	17.45	25	0.0	0.0
	460/60/3	19.0	9.4	66.1	5.70	1	23.76	25	10.6	13.3



Electrical Data

Table 24. Electrical data - minimum and maximum

Digit 8	Rated Voltage	Hz	Ph	Minimum Utilization Voltage	Maximum Utilization Voltage
1	208	60	1	197	229
2	230	60	1	207	253
3	208	60	3	187	229

Digit 8	Rated Voltage	Hz	Ph	Minimum Utilization Voltage	Maximum Utilization Voltage
4	460	60	3	414	506
7	265	60	1	239	292
8	230	60	3	207	253

Pre-Start Checklist

Before energizing the unit, the following system devices must be checked:

- Is the high voltage power supply correct and in accordance with the nameplate ratings?
- Is phasing of the unit correct per compressor rotation (scroll compressor only)?
- Is the field wiring and circuit protection the correct size?
- Is the low voltage control circuit wiring correct per the unit wiring diagram?
- Is the piping system clean/complete and correct? (A recommendation of all system flushing of debris from the water-to-refrigerant heat exchanger, along with air purging from the water-to-refrigerant heat exchanger be done in accordance with the Closed-Loop/Ground Source Heat Pump Systems Installation Guide).
- Is vibration isolation provided? (i.e. unit isolation pad, hose kits)
- Is unit serviceable? (See clearance specifications in ["Unit Dimensions and Weights," p. 10](#)).
- Are the low/high-side pressure temperature caps secure and in place?
- Are all the unit access panels secure and in place?
- Is the thermostat in the OFF position?
- Is the water flow established and circulating through all the units?
- Is the duct work correctly sized, run, taped, insulated and weather proofed with proper unit arrangement?
- Is the condensate line properly sized, run, trapped, pitched and primed?
- Is the zone sensor correctly wired and in a good location?
- Does the indoor blower turn freely without rubbing?
- Has all work been done in accordance with applicable local and national codes?

Has heat transfer fluid been added in the proper mix to prevent freezing in closed system application?



Start-Up

Initial Unit Start-up

Note: Start-up with the heat pump thermostat is included below:

1. Set the thermostat to the highest position.
2. Set the thermostat system switch to COOL with the fan control to AUTO. The compressor should NOT run.
3. Reduce the thermostat setting until the compressor, reversing valve, solenoid valve, and loop pump are energized. Adjust water flow utilizing pressure/temperature plugs and comparing to tables contained in specification sheet data.

Water leaving the heat exchanger should be warmer than the entering water temperature (approximately 9-12°F); blower operation should be smooth; compressor and blower amps should be within data plate ratings; the suction line should be cool with no frost observed in the refrigerant circuit.
4. Check the cooling refrigerant pressures against values in [Table 26, p. 43](#).
5. Turn the thermostat system switch to the OFF position. Unit should stop running and the reversing valve should de-energize.
6. Leave unit off for approximately FIVE minutes to allow for pressure equalization.
7. Turn the thermostat to the lowest setting.
8. Set the thermostat system switch to the HEAT position.
9. Adjust the temperature setting upward until the unit is energized. Warm air should blow from the register. A water temperature decrease of approximately 5-9°F leaving the heat exchanger should be noted. The blower and compressor operation should be smooth with no frost observed in the refrigeration circuit.
10. Check the heating refrigerant pressures against values in [Table 26, p. 43](#).
11. Set the thermostat to maintain the desired space temperature.
12. Instruct the owner on system operation.

Table 25. Checklist

MODE	Heat	Cool
Entering fluid temperature	_____F	_____F
Leaving fluid temperature	_____F	_____F
Temperature differential	_____F	_____F
Return-air temperature DB/WB	_____F	_____F
Supply-air temperature DB/WB	_____F	_____F
Temperature differential	_____F	_____F
Water coil heat exchanger (Water Pressure IN)	_____PSIG	_____PSIG
Water coil heat exchanger (Water Pressure OUT)	_____PSIG	_____PSIG
Pressure Differential	_____PSI G	_____PSI G
COMPRESSOR		
Amps		
Volts		
Discharge line temperature (after 10 minutes)	_____F	_____F

Start-Up Checklist and Log

Installing Contractor: Use this checklist to thoroughly check-out the system and units before and during start-up. (This form need not be returned to the factory unless requested during technical service support).

Job Name: _____

Model Number: _____

Date: _____

Serial Number: _____

In order to minimize troubleshooting and costly system failures, complete the following checks and data entries before the system is put into full operation.

Operating Pressures

There are many variables (airflow, air temperatures) in an air conditioning system that will affect operating refrigerant pressures and temperatures. The charts below shows approximate conditions and is based on air flow at the rated SCFM, entering air at 80°F(DB), 67°F(WB) in cooling, 70°F(DB) in heating. (+)Heating data with 35°F EWT is based on the use of an anti-freeze solution having a freezing point 20°F lower than the minimum expected entering temperature.

Table 26. Operating pressures in cooling/heating for DX* units

Operating Data										
Model No.	Entering Water Temp (°F)	Water Flow (GPM)	Cooling				Heating			
			Suction Pressure (psig)	Discharge Pressure (psig)	Water Temp Rise (°F)	Air Temp Drop (°F DB)	Suction Pressure (psig)	Discharge Pressure (psig)	Water Temp Drop (°F)	Air Temp Rise (°F DB)
DXH024										
DXH024	35	4.5	---	---	---	---	81-93	270-344	6-7	19-28
DXH024	35	5.6	---	---	---	---	83-96	272-346	5-6	19-29
DXH024	45	4.5	118-136	162-206	14-17	23-28	96-111	292-371	7-9	23-33
DXH024	45	5.6	116-133	155-198	11-14	23-28	99-114	295-375	6-8	24-34
DXH024	55	4.5	124-142	190-242	13-17	22-28	112-129	315-400	8-11	28-38
DXH024	55	5.6	124-142	183-233	11-14	22-28	116-133	319-406	7-9	28-39
DXH024	65	4.5	129-148	220-280	13-17	22-28	128-147	332-422	10-12	32-42
DXH024	65	5.6	129-148	212-270	11-14	22-28	132-152	337-429	8-10	33-43
DXH024	75	4.5	130-150	253-322	13-17	22-27	147-169	354-450	11-14	35-46
DXH024	75	5.6	130-150	245-311	10-13	22-27	153-176	360-458	9-11	37-48
DXH024	85	4.5	133-153	289-368	13-16	21-27	169-195	376-479	12-15	39-51
DXH024	85	5.6	133-152	280-357	10-13	21-27	176-203	383-487	10-13	40-52
DXH024	95	4.5	135-155	328-418	12-16	20-26	---	---	---	---
DXH024	95	5.6	135-155	320-407	10-13	20-26	---	---	---	---
DXH036										
DXH036	35	6.7	---	---	---	---	80-92	287-366	6-8	20-29
DXH036	35	8.4	---	---	---	---	82-94	293-372	5-6	20-30
DXH036	45	6.7	119-137	166-212	13-17	21-27	94-108	308-392	8-10	25-35
DXH036	45	8.4	119-137	160-203	10-13	21-27	97-111	314-399	6-8	26-36
DXH036	55	6.7	121-139	193-246	13-17	21-27	109-125	330-420	9-11	29-39
DXH036	55	8.4	121-139	186-236	10-13	22-27	112-129	336-427	7-9	29-40
DXH036	65	6.7	123-141	223-284	13-16	21-27	125-144	354-451	10-12	32-42
DXH036	65	8.4	123-141	215-274	10-13	21-27	130-149	359-458	8-10	32-43
DXH036	75	6.7	125-143	257-326	13-16	21-26	144-165	380-483	11-14	35-47
DXH036	75	8.4	124-143	248-316	10-13	21-26	149-171	385-490	9-11	36-48
DXH036	85	6.7	126-145	293-373	12-16	20-26	164-189	407-518	12-15	40-51
DXH036	85	8.4	126-145	285-362	10-13	20-26	171-197	412-525	10-13	40-52
DXH036	95	6.7	128-147	333-423	12-15	19-25	---	---	---	---
DXH036	95	8.4	128-147	324-413	10-12	20-25	---	---	---	---
DXH048										
DXH048	35	9.0	---	---	---	---	78-89	274-348	6-8	19-29
DXH048	35	11.2	---	---	---	---	79-91	276-352	5-6	20-30
DXH048	45	9.0	122-141	165-209	13-17	23-28	93-107	292-372	7-9	24-33
DXH048	45	11.2	122-141	158-201	11-14	22-28	95-110	295-376	6-8	24-34
DXH048	55	9.0	124-143	190-242	13-17	22-28	110-126	311-396	8-11	27-37
DXH048	55	11.2	124-143	183-233	11-13	22-28	113-130	315-400	7-9	28-38
DXH048	65	9.0	126-145	219-279	13-16	22-27	128-147	333-424	9-12	30-41
DXH048	65	11.2	126-145	211-269	10-13	22-27	132-152	337-429	8-10	31-42
DXH048	75	9.0	128-148	252-320	13-16	21-27	146-168	359-457	11-14	35-46
DXH048	75	11.2	128-148	244-310	10-13	21-27	151-174	365-464	9-11	36-47
DXH048	85	9.0	130-150	288-366	12-16	21-26	164-189	392-498	12-16	40-52



Start-Up

Table 26. Operating pressures in cooling/heating for DX* units (continued)

Operating Data										
Model No.	Entering Water Temp (°F)	Water Flow (GPM)	Cooling				Heating			
			Suction Pressure (psig)	Discharge Pressure (psig)	Water Temp Rise (°F)	Air Temp Drop (°F DB)	Suction Pressure (psig)	Discharge Pressure (psig)	Water Temp Drop (°F)	Air Temp Rise (°F DB)
DXH048	85	11.2	130-150	279-356	10-13	21-27	170-196	399-508	10-13	41-52
DXH048	95	9.0	132-152	327-416	12-15	20-26	---	---	---	---
DXH048	95	11.2	132-152	318-405	10-12	20-26	---	---	---	---
DXH060										
DXH060	35	11.2	---	---	---	---	80-92	305-389	6-8	24-33
DXH060	35	14.0	---	---	---	---	83-95	306-390	5-7	24-34
DXH060	45	11.2	112-129	160-203	13-16	22-28	97-111	324-412	7-10	28-38
DXH060	45	14.0	112-129	154-196	10-13	22-28	100-115	327-417	6-8	29-39
DXH060	55	11.2	115-133	187-238	12-16	22-28	112-129	347-442	9-11	32-43
DXH060	55	14.0	115-133	181-230	10-13	22-28	115-132	352-448	7-9	33-44
DXH060	65	11.2	119-136	217-277	12-15	22-27	127-146	374-476	10-12	36-48
DXH060	65	14.0	118-136	210-268	10-12	22-27	130-150	381-486	8-10	38-49
DXH060	75	11.2	121-139	250-319	12-15	21-27	142-164	405-516	11-14	41-52
DXH060	75	14.0	120-139	243-309	10-12	21-27	147-169	415-528	9-12	42-54
DXH060	85	11.2	122-141	286-365	12-15	20-26	160-185	441-561	12-15	45-57
DXH060	85	14.0	122-141	278-354	9-12	20-26	167-192	453-576	10-13	47-60
DXH060	95	11.2	124-143	325-414	11-14	20-25	---	---	---	---
DXH060	95	14.0	124-143	317-404	9-12	20-25	---	---	---	---
DXH070										
DXH070	35	12.3	---	---	---	---	76-88	291-370	6-8	21-30
DXH070	35	15.4	---	---	---	---	78-90	296-377	5-7	22-32
DXH070	45	12.3	109-125	163-208	13-16	19-25	89-102	310-394	7-9	24-34
DXH070	45	15.4	109-125	157-200	10-13	19-25	91-104	315-401	6-8	25-35
DXH070	55	12.3	112-129	190-241	13-16	19-25	102-117	330-420	8-11	28-38
DXH070	55	15.4	112-129	183-233	10-13	20-25	104-120	335-427	7-9	29-39
DXH070	65	12.3	116-133	219-279	12-16	20-25	116-133	352-448	10-12	32-43
DXH070	65	15.4	115-133	212-270	10-13	20-25	119-137	358-455	8-10	33-44
DXH070	75	12.3	118-136	252-321	12-16	19-25	132-151	376-479	11-14	36-47
DXH070	75	15.4	118-135	244-311	10-13	19-25	136-156	383-488	9-11	37-48
DXH070	85	12.3	120-138	288-367	12-15	19-25	149-172	403-513	12-15	40-51
DXH070	85	15.4	120-138	280-356	10-12	19-25	155-178	412-525	10-13	41-53
DXH070	95	12.3	122-141	327-416	12-15	18-24	---	---	---	---
DXH070	95	15.4	122-141	319-406	9-12	18-24	---	---	---	---
DXV024										
DXV024	35	4.5	---	---	---	---	78-90	273-347	6-8	20-29
DXV024	35	5.6	---	---	---	---	80-92	275-349	5-6	20-30
DXV024	45	4.5	114-131	160-204	13-16	20-26	95-109	292-372	7-9	24-34
DXV024	45	5.6	114-131	155-197	10-13	25-22	97-112	295-375	6-8	25-35
DXV024	55	4.5	120-138	188-239	13-17	21-27	113-129	312-397	9-11	28-38
DXV024	55	5.6	120-138	181-230	10-13	21-27	116-133	314-400	7-9	28-39
DXV024	65	4.5	125-144	218-277	13-16	21-27	128-147	332-423	10-12	31-42
DXV024	65	5.6	125-144	210-267	10-13	21-27	133-153	335-426	8-10	32-43

Table 26. Operating pressures in cooling/heating for DX* units (continued)

Operating Data										
Model No.	Entering Water Temp (°F)	Water Flow (GPM)	Cooling				Heating			
			Suction Pressure (psig)	Discharge Pressure (psig)	Water Temp Rise (°F)	Air Temp Drop (°F DB)	Suction Pressure (psig)	Discharge Pressure (psig)	Water Temp Drop (°F)	Air Temp Rise (°F DB)
DXV024	75	4.5	127-146	251-319	13-16	21-26	149-171	355-451	11-14	35-46
DXV024	75	5.6	127-146	243-309	10-13	21-27	155-179	358-456	9-11	36-47
DXV024	85	4.5	130-149	287-366	12-16	20-26	172-198	377-480	12-15	39-51
DXV024	85	5.6	129-149	279-355	10-13	20-26	180-207	381-485	10-13	40-51
DXV024	95	4.5	132-152	327-416	12-15	20-26	---	---	---	---
DXV024	95	5.6	132-151	318-405	10-12	20-26	---	---	---	---
DXV036										
DXV036	35	6.7	---	---	---	---	79-91	289-367	6-8	21-30
DXV036	35	8.4	---	---	---	---	81-94	291-371	5-7	21-31
DXV036	45	6.7	113-131	164-208	13-16	25-22	92-106	308-393	7-10	24-34
DXV036	45	8.4	112-129	157-200	10-13	21-26	95-109	312-398	6-8	25-35
DXV036	55	6.7	118-136	191-243	13-16	21-26	109-125	331-421	9-11	28-38
DXV036	55	8.4	118-136	184-234	10-13	21-26	113-130	335-426	7-9	29-39
DXV036	65	6.7	122-140	222-282	13-16	21-26	121-139	348-443	10-12	31-42
DXV036	65	8.4	122-140	214-272	10-13	21-26	125-144	355-451	8-10	32-43
DXV036	75	6.7	124-142	255-324	12-16	20-26	141-162	373-475	11-14	35-46
DXV036	75	8.4	123-142	247-314	10-13	20-26	146-168	382-486	9-11	36-48
DXV036	85	6.7	127-147	292-372	12-16	20-26	163-187	398-507	12-15	39-51
DXV036	85	8.4	127-146	284-361	10-12	20-26	170-196	406-517	10-13	41-52
DXV036	95	6.7	129-149	332-423	12-15	19-25	---	---	---	---
DXV036	95	8.4	129-149	323-412	10-12	20-25	---	---	---	---
DXV048										
DXV048	35	9.0	---	---	---	---	79-91	269-342	6-8	20-30
DXV048	35	11.2	---	---	---	---	81-93	272-347	5-6	21-30
DXV048	45	9.0	118-136	145-184	13-17	20-26	92-106	289-368	7-9	24-33
DXV048	45	11.2	118-136	137-175	10-13	20-26	94-109	293-373	6-8	24-34
DXV048	55	9.0	120-138	189-241	12-16	20-26	106-122	310-394	8-11	27-37
DXV048	55	11.2	120-138	182-231	10-13	20-26	109-125	314-399	7-9	28-38
DXV048	65	9.0	122-140	213-271	12-15	20-25	121-140	329-419	9-12	30-41
DXV048	65	11.2	122-140	205-261	10-12	20-25	126-144	333-424	8-10	31-42
DXV048	75	9.0	124-142	246-314	12-15	19-25	140-161	347-442	11-13	34-45
DXV048	75	11.2	123-142	239-304	10-12	19-25	145-167	351-447	9-11	35-46
DXV048	85	9.0	126-145	286-364	12-15	19-25	161-185	372-474	12-15	38-49
DXV048	85	11.2	125-144	279-355	10-12	19-25	168-193	376-478	10-12	39-50
DXV048	95	9.0	128-147	328-417	12-15	19-24	---	---	---	---
DXV048	95	11.2	128-147	320-408	9-12	19-25	---	---	---	---
DXV060										
DXV060	35	11.2	---	---	---	---	78-90	294-374	7-8	21-31
DXV060	35	14.0	---	---	---	---	80-92	296-377	5-7	22-31
DXV060	45	11.2	115-133	161-205	12-16	19-25	91-105	312-397	8-10	25-35
DXV060	45	14.0	115-133	156-198	10-13	19-25	94-108	315-401	6-8	25-35
DXV060	55	11.2	117-134	188-239	12-16	19-25	104-120	331-422	9-11	28-38



Start-Up

Table 26. Operating pressures in cooling/heating for DX* units (continued)

Operating Data										
Model No.	Entering Water Temp (°F)	Water Flow (GPM)	Cooling				Heating			
			Suction Pressure (psig)	Discharge Pressure (psig)	Water Temp Rise (°F)	Air Temp Drop (°F DB)	Suction Pressure (psig)	Discharge Pressure (psig)	Water Temp Drop (°F)	Air Temp Rise (°F DB)
DXV060	55	14.0	117-134	182-232	10-13	20-25	108-124	335-427	7-9	29-39
DXV060	65	11.2	118-136	218-277	12-15	19-25	119-137	352-448	10-12	32-42
DXV060	65	14.0	118-136	212-269	10-12	20-25	123-141	357-454	8-10	32-43
DXV060	75	11.2	120-138	251-319	12-15	19-25	135-156	374-476	11-14	35-46
DXV060	75	14.0	120-138	244-311	10-12	19-25	140-161	381-485	9-11	36-48
DXV060	85	11.2	122-140	287-365	12-15	18-24	155-178	399-508	12-15	39-51
DXV060	85	14.0	122-140	280-357	9-12	19-24	161-185	407-518	10-13	41-52
DXV060	95	11.2	124-143	326-415	11-15	18-24	---	---	---	---
DXV060	95	14.0	124-143	320-407	9-12	18-24	---	---	---	---
DXV070										
DXV070	35	12.3	---	---	---	---	78-90	295-376	7-8	22-32
DXV070	35	15.4	---	---	---	---	80-92	301-383	5-7	23-32
DXV070	45	12.3	109-126	169-216	13-17	21-27	92-105	307-390	8-10	26-36
DXV070	45	15.4	109-126	163-208	11-14	21-27	94-108	312-397	6-8	26-37
DXV070	55	12.3	113-130	197-251	13-17	21-27	106-122	315-401	9-11	29-39
DXV070	55	15.4	113-130	190-241	11-13	21-27	109-125	321-408	7-9	29-40
DXV070	65	12.3	117-135	226-288	13-16	21-26	121-139	329-419	9-12	31-41
DXV070	65	15.4	117-134	219-278	10-13	21-26	125-143	335-426	8-10	32-42
DXV070	75	12.3	120-137	259-330	13-16	20-26	138-159	354-450	10-13	33-44
DXV070	75	15.4	119-137	251-320	10-13	20-26	143-164	359-457	8-10	34-44
DXV070	85	12.3	122-140	296-377	12-16	20-25	157-181	377-480	11-15	37-49
DXV070	85	15.4	121-140	288-366	10-13	20-25	163-187	383-487	9-12	38-50
DXV070	95	12.3	124-142	336-427	12-15	19-25	---	---	---	---
DXV070	95	15.4	124-142	327-417	10-12	19-25	---	---	---	---

Water Pressure Drop

Table 27, p. 46 and Table 28, p. 46 should be used to define feet of head/pressure drop. Please note the feet of pressure (ft/head) provided is at ARI/ISO standard.

To calculate feet of head, when using gauges that read in PSIG, multiply PSI by 2.31.

Table 27. Cooling water pressure drop (WPD) in feet of head

Unit Size	EWT F	GPM	Ft. Pressure
DXH024	85	5.6	6.0
DXH036	85	8.4	5.4
DXH048	85	11.2	8.3
DXH060	85	14.0	7.1
DXH070	85	15.4	6.2
DXV024	85	5.6	6.4
DXV036	85	8.4	6.1
DXV048	85	11.2	7.8
DXV060	85	14.0	7.3
DXV070	85	15.4	6.6

Table 28. Heating water pressure drop (WPD) in feet of head

Unit Size	EWT F	GPM	Ft. Pressure
DXH024	65	5.6	6.6
DXH036	65	8.4	5.8
DXH048	65	11.2	9.0
DXH060	65	14.0	7.4
DXH070	65	15.4	6.6
DXV024	65	5.6	7.0
DXV036	65	8.4	6.5
DXV048	65	11.2	8.5
DXV060	65	14.0	7.6
DXV070	65	15.4	7.1

Water Volume

Table 54, p. 108 is provided for use in calculating glycol requirements for the unit.

Table 29. Water volume

Unit Size	Water Side Volume (in ³)	Water Side Volume (ft ³)	Water Side Volume (gallons)
DXHF024	89.8	0.052	0.389
DXHF036	171.2	0.099	0.741
DXHF048	200.8	0.116	0.869
DXHF060	331.2	0.192	1.434
DXHF070	331.2	0.192	1.434
DXVF024	89.8	0.052	0.389
DXVF036	171.2	0.099	0.741
DXVF048	200.8	0.116	0.869
DXVF060	331.2	0.192	1.434
DXVF070	331.2	0.192	1.434



Maintenance

⚠ WARNING

Hazardous Service Procedures!

The maintenance and trouble shooting procedures recommended in this section of the manual could result in exposure to electrical, mechanical or other potential safety hazards. Always refer to the safety warnings provided throughout this manual concerning these procedures. When possible, disconnect all electrical power including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components per these tasks. Failure to follow all of the recommended safety warnings provided, could result in death or serious injury.

Preventive Maintenance

Maintenance on the unit is simplified with the following preventive suggestions:

Filter maintenance must be performed to assure proper operation of the equipment. Filters should be inspected at least every three months, and replaced when it is evident they are dirty. Filter sizing is shown in [Table 30, p. 48](#):

Table 30. Filter sizing

Size	Filter Size (Actual) inches (mm)
DXH	
024	17 7/8 X 23 7/8 (454 X 607)
036	18 5/8 x 25 3/8 (473 x 645)
048-070	20 5/8 x 29 3/4 (524 x 755)
DXV	
024	19 7/8 x 19 7/8 (505 x 505)
036	19 7/8 x 24 7/8 (504 x 632)
048-060	23 7/8 x 29 7/8 (606 x 759)
070	27 7/8 x 29 7/8 (708 x 759)

Check the contactors and relays within the control panel at least once a year. It is good practice to check the tightness of the various wiring connections within the control panel.

A strainer (60 mesh or greater) must be used on an open loop system to keep debris from entering the unit heat exchanger and to ensure a clean system.

For units on well water, it is important to check the cleanliness of the water-to-refrigerant heat exchanger. Should it become contaminated with dirt and scaling as a result of bad water, the heat exchanger will have to be back flushed and cleaned with a chemical that will remove the scale. This service should be performed by an experienced service person.

⚠ WARNING

Hazardous Chemicals!

Cleaning agents can be either acidic or highly alkaline. Handle chemical carefully. Proper handling should include goggles or face shield, chemical resistant gloves, boots, apron or suit as required. For personal safety, refer to the cleaning agent manufacturers Materials Safety Data Sheet and follow all recommended safe handling practices. Failure to follow all safety instructions could result in death or serious injury.

It should be noted that the water quality should be checked periodically. See [Table 31, p. 48](#).

Table 31. Water quality

Scaling	Amount
Calcium and magnesium (total hardness)	Less than 350 ppm
Corrosion	
pH	7-9.5
Hydrogen Sulfide	Less than 1 ppm
Sulfates	Less than 25 ppm
Chlorides	Less than 125 ppm
Carbon Dioxide	Less than 75 ppm
Total dissolved solids (TDS)	Less than 1000 ppm
Biological Growth	
Iron Bacteria	Low
Erosion	
Suspended Solids	Low

Condensate Trap

For units incorporating a negative trap design, ensure that the condensate system is primed with water at all times. Allowing a negative, pressure condensate system to run dry could cause a break in the condensate seal allowing the fan to draw water from the condensate line to spray moisture into the mechanical system. By maintaining a primed condensate trap, a seal will be created and will help prevent these complications.

Troubleshooting

⚠ WARNING

Hazardous Service Procedures!

The maintenance and trouble shooting procedures recommended in this section of the manual could result in exposure to electrical, mechanical or other potential safety hazards. Always refer to the safety warnings provided throughout this manual concerning these procedures. When possible, disconnect all electrical power including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components per these tasks. Failure to follow all of the recommended safety warnings provided, could result in death or serious injury.

Deluxe Controls

Troubleshooting units which contain the deluxe control option may be made easy by using the three LEDs (light emitting diodes). These LEDs are provided for indicating the operating mode of the controller. The LEDs are intended to aid in troubleshooting maintenance. The LEDs are labeled on the circuit board with numbers as referenced in [Table 32, p. 49](#).

Table 32. Diagnostic LEDs

Color: Green	Color: Red		Controller Mode
	LED1	LED2	
OFF	OFF	OFF	Control OFF
ON	OFF	OFF	Normal/Compressor OFF
ON	OFF	FLASH	Anti-short cycle
ON	OFF	ON	Normal/Compressor ON
FLASH	ON	OFF	Brownout Condition
ON	FLASH	ON	Soft Lockout (low pressure)
ON	FLASH	FLASH	Soft Lockout (high pressure)
ON	ON	ON	Manual Lockout (low pressure)
ON	ON	FLASH	Manual Lockout (high pressure)
ON	FLASH	OFF	Manual Lockout (condensate overflow)
ON	ON	OFF	Compressor Disable

Troubleshooting

Table 33. Troubleshooting table

Problem	Heating	Cooling	Cause	Correction
No response to any thermostat setting	X	X	Main power off	Check fuses
	X	X	Defective control transformer	Replace
	X	X	Broken or loose connection	Repair
	X	X	Defective thermostat	Replace
	X	X	Transformer	Reset Transformer
Unit short cycles	X	X	Thermostat or sensor improperly located	Relocate
Blower runs, but compressor does not	X	X	Defective compressor overload	Replace (if external)
	X	X	Defective compressor contactor	Replace
	X	X	Supply Voltage too low	Correct
	X	X	Defective compressor capacitor	Replace
	X	X	Defective windings	Replace
	X	X	Limit switches open	Check cause/Replace or repair
Insufficient capacity	X	X	Dirty filter	Replace/clean
	X	X	Blower RPM too low	Correct
	X	X	Loss of conditioned air due to leaks in ductwork	Repair leaks
		X	Introduction of excessively hot return-air	Correct
	X		Introduction of excessively cold return-air	Correct
	X	X	Low on refrigerant charge	Locate leak, repair and recharge by weight (not by superheat)
	X	X	Restricted thermal expansion valve	Replace
	X	X	Defective reversing valve	See WSHP-IOM-# for touch test chart
	X	X	Thermostat improperly located	Relocate
	X	X	Unit undersized	Recalculate heat gains/losses
	X	X	Inadequate water flow	Increase GPM
	X	X	Scaling in heat exchanger	Clean or replace
		X	Water too hot	Decrease temperature
	X		Water too cold	Increase temperature
	X	X	Filter drier blocked	Replace
High pressure switch open		X	Inadequate GPM	Increase water flow to unit
		X	Water too hot	Decrease temperature
	X		Inadequate air flow	Check, clean blower and coil
	X		Dirty filter	Clean/replace
	X	X	Overcharged with refrigerant	Decrease charge
	X	X	Defective pressure switch	Check or replace
High head pressure		X	Trash in heat exchanger	Backflush
		X	Low water flow	Increase GPM
	X	X	Overcharge of refrigerant	Decrease charge
	X	X	Non-condensable in system	Evacuate and recharge by weight
	X	X	Water too hot	Decrease temperature
	X		Dirty filter	Clean / replace
	X		Inadequate air flow	Check, clean blower and coil
Low suction pressure	X	X	Undercharged	Locate leak, repair and recharge
	X	X	Restricted thermal expansion valve	Repair / replace
		X	Inadequate air flow	Check, clean blower and coil
		X	Dirty filter	Clean/replace
Low pressure switch open	X		Inadequate GPM	Increase GPM
	X		Inadequate GPM	Increase GPM
	X		Water too cold	Increase temperature
		X	Inadequate air flow	Increase CFM
		X	Dirty filter	Clean/replace
	X	X	Undercharged with refrigerant	Increase charge
	X	X	Defective pressure switch	Replace
X	X	Heat transfer fluid too cold	Raise water temperature	

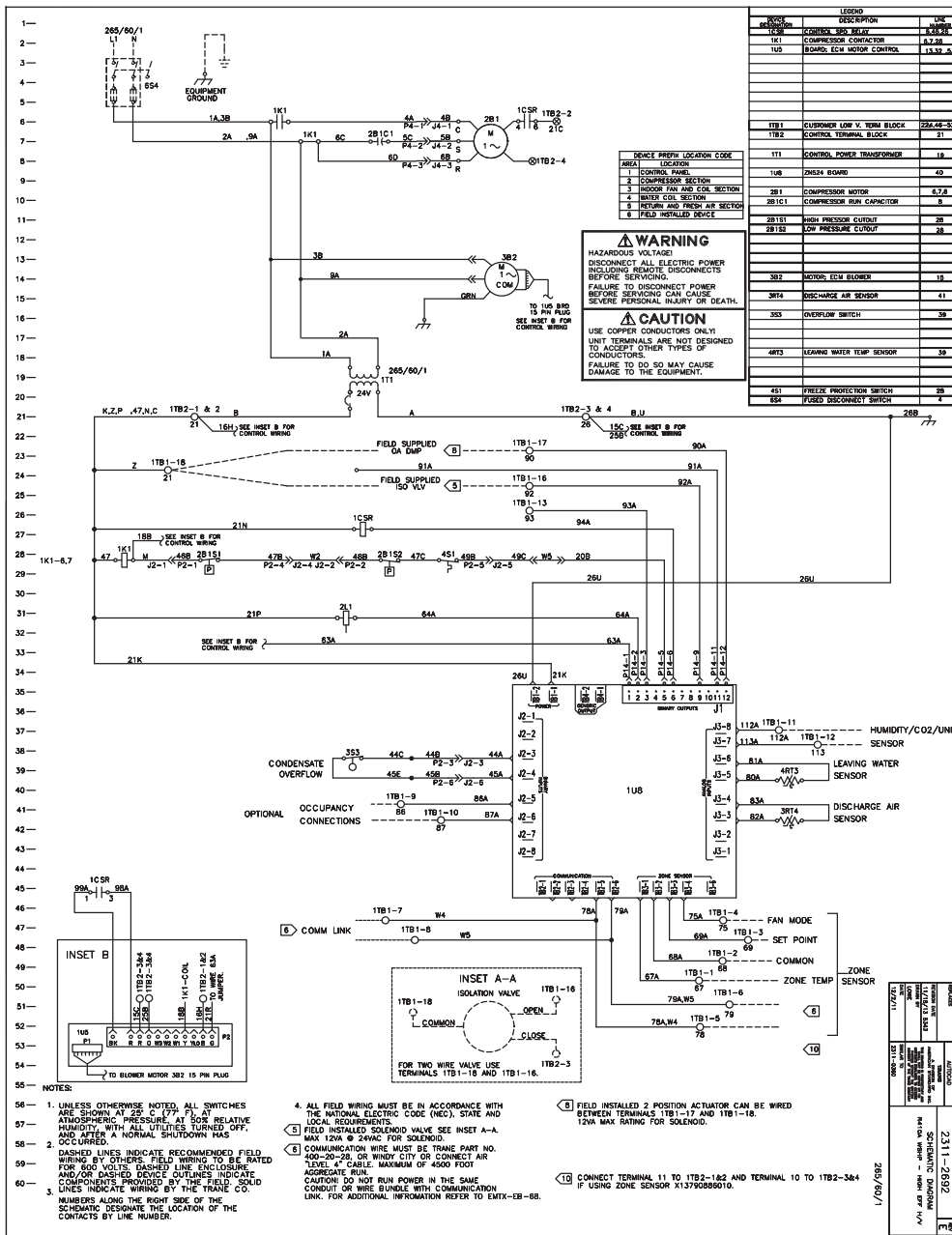
Wiring Diagrams

This section contains wiring diagrams (Figure 44, p. 51–Figure 48, p. 55) and isolation valve wiring connections (Table 34, p. 51).

Table 34. Isolation valve wiring

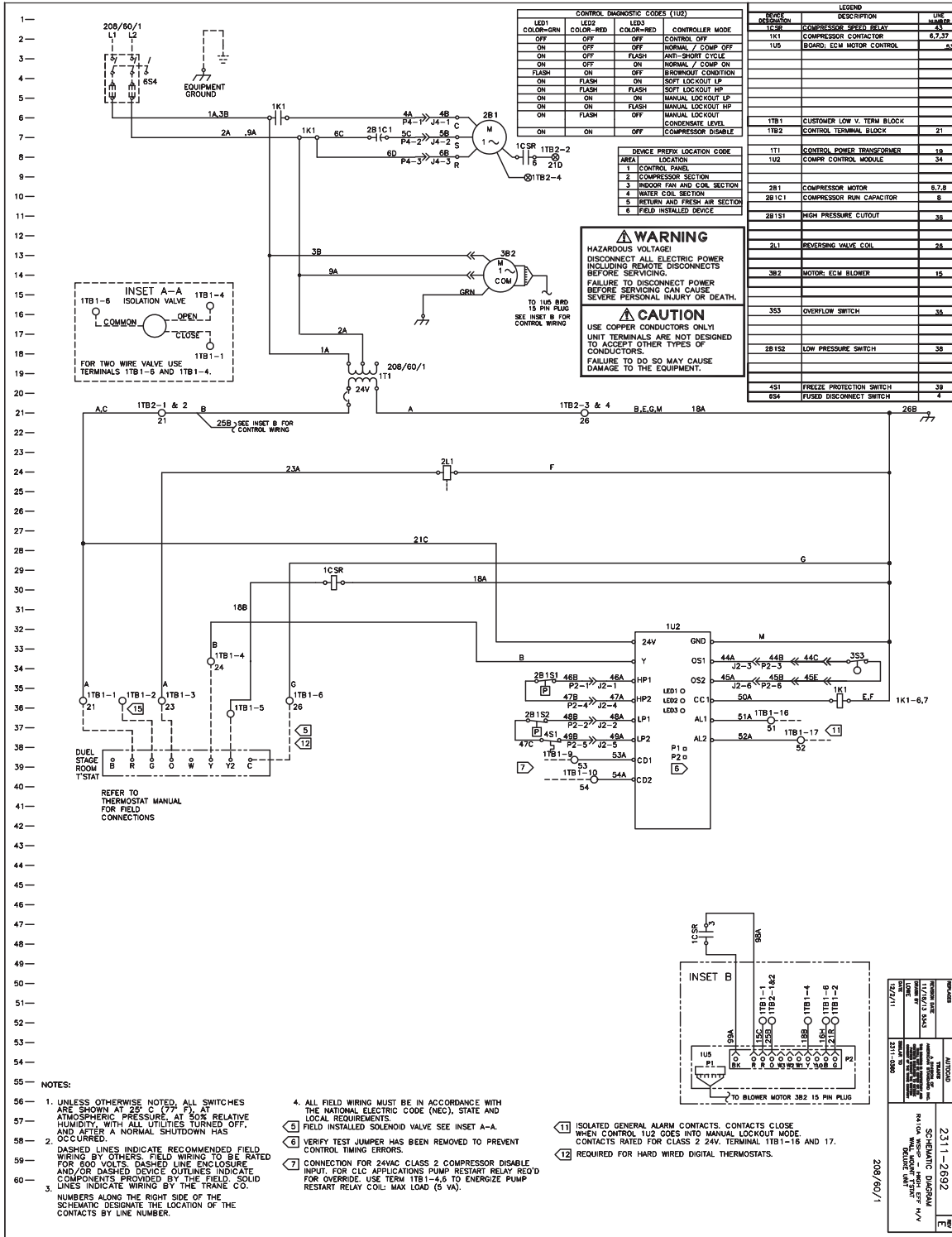
Control type	3-wire Honeywell isolation valve connections		
	Blue	Brown	Black
Basic 24V	1TB1-6	1TB1-1	1TB1-4
Deluxe 24V	1TB1-6	1TB1-1	1TB1-4
ZN510	1TB1-11	1TB2-3	1TB1-12
ZN524	1TB1-18	1TB2-3	1TB1-16

Figure 44. ZN524 Control - 1 ph^(a)



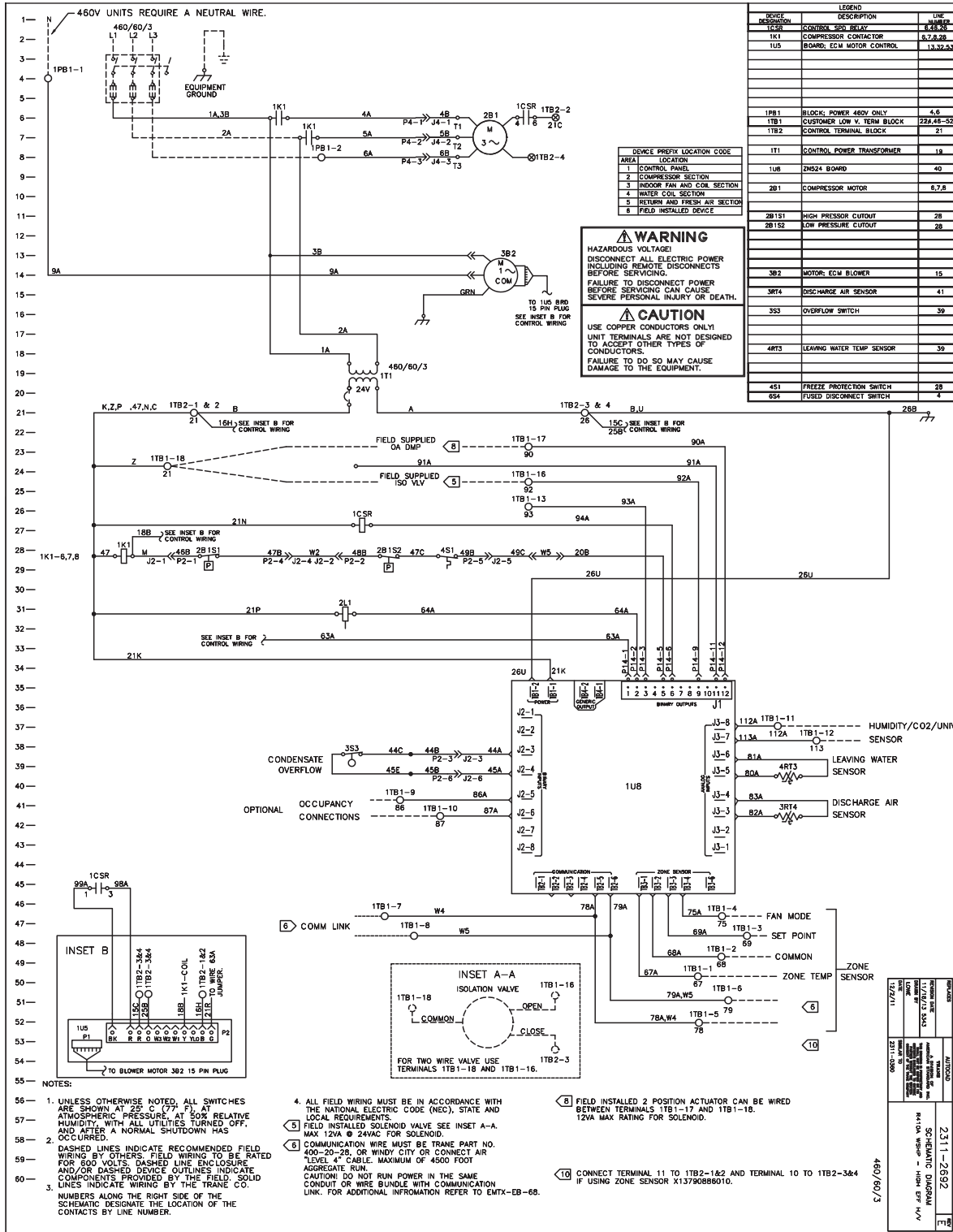
(a) Wiring diagrams provided in the catalog are generic. A unit specific *As Built* wiring diagram is located on the unit control panel.

Figure 45. Deluxe 24V Control - 1 ph(a)



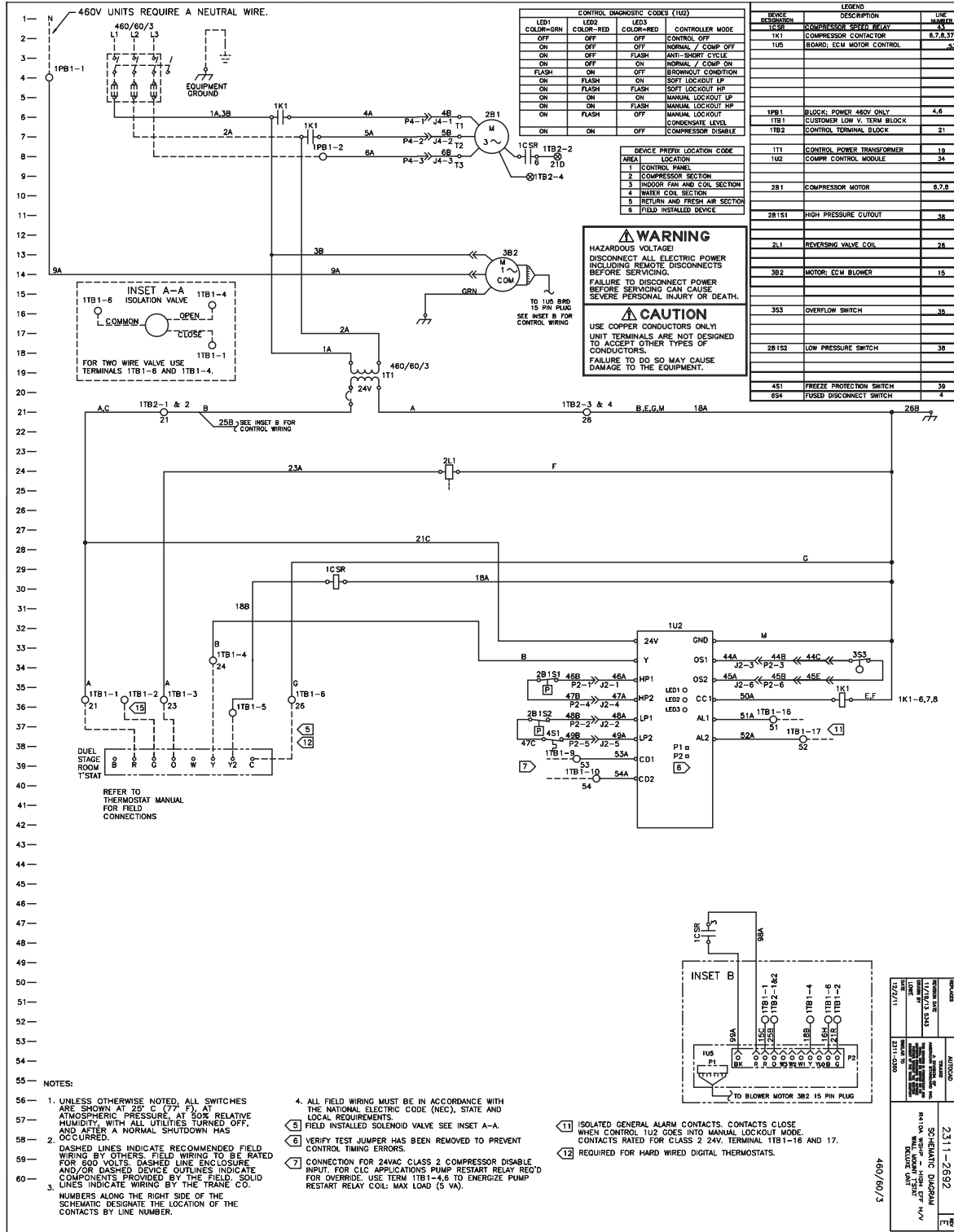
(a) Wiring diagrams provided in the catalog are generic. A unit specific As Built wiring diagram is located on the unit control panel.

Figure 46. ZN524 Control - 3 ph(a)



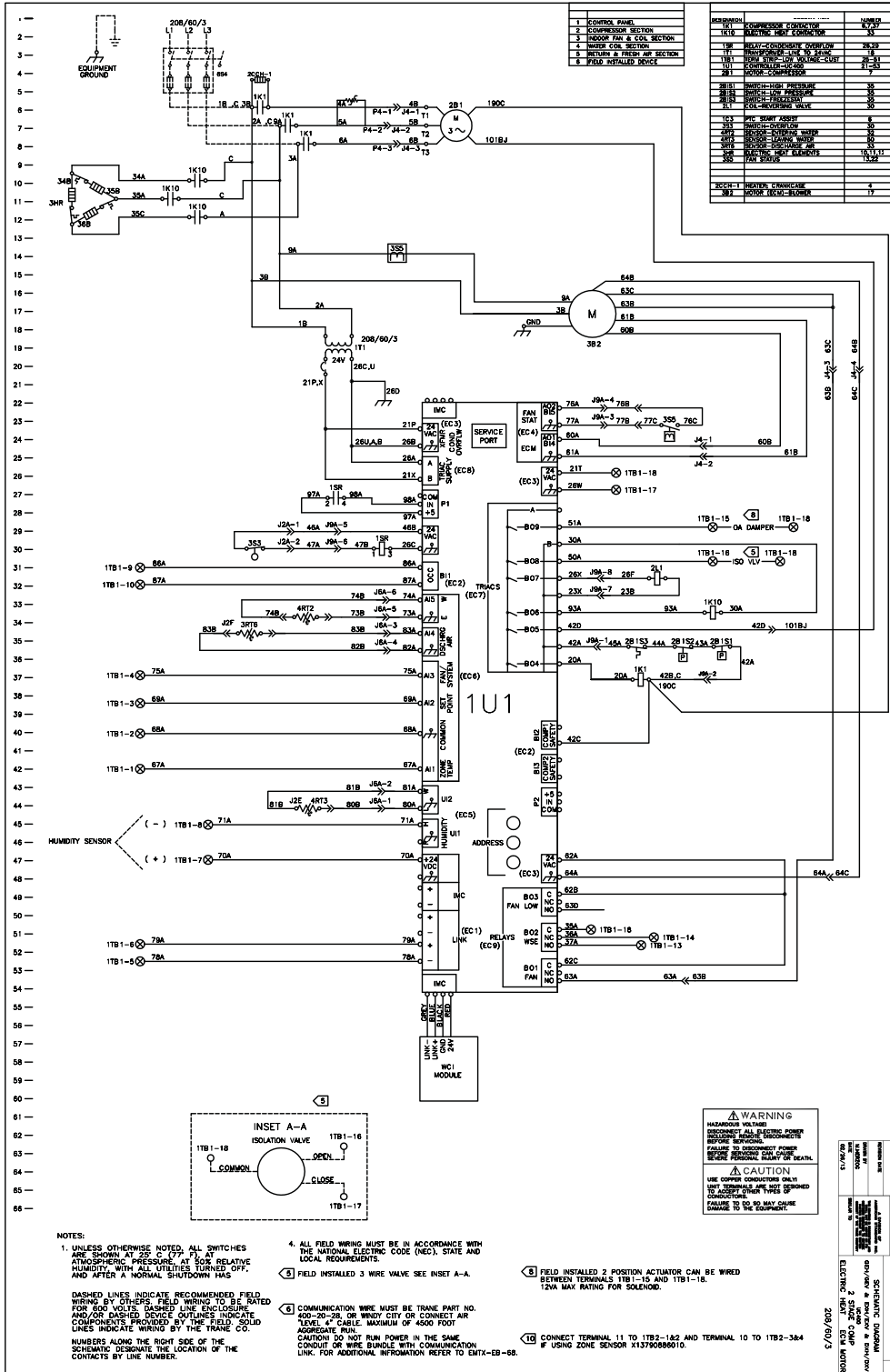
(a) Wiring diagrams provided in the catalog are generic. A unit specific *As Built* wiring diagram is located on the unit control panel.

Figure 47. Deluxe 24V Control - 3 ph(a)



(a) Wiring diagrams provided in the catalog are generic. A unit specific *As Built* wiring diagram is located on the unit control panel.

Figure 48. UC400(a)



(a) Wiring diagrams provided in the catalog are generic. A unit specific *As Built* wiring diagram is located on the unit control panel.

Warranty Information

Standard Warranty

The standard water-source heat pump warranty is Trane's parts-only warranty, running 12 months from startup, not to exceed 18-months from shipment.

Extended Warranty

The optional extended warranty is a second through fifth year warranty. The time starts at the end of the standard 1 year coverage through the fifth year.

These extended warranties apply only to new equipment installed in domestic Trane Commercial Systems Group sales territories and must be ordered prior to start-up.



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