Installation, Operation, and Maintenance

Water Source Heat Pump
Axiom™ High Efficiency Console

0.5 to 1.5 Tons — 50/60 Hz

Model Numbers: GECE 006, 009, 012, 015, 018 (60 Hz)
GECE 006, 009, 012, 015 (50 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.

June 2023 **WSHP-SVX11F-EN**

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.

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 according to local rules. For the USA, 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!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- **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 Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labeling 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.**

⚠ WARNING

Follow EHS Policies!

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

- **All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.**
- **Non-Trane personnel should always follow local regulations.**

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Revision History

- Updated the Model Number Descriptions chapter.
- Control type Symbio™ 400-B content added in the document.
- Tracer® ZN524 drawings removed from Wiring Diagrams chapter.

Table of Contents

Model Number Description

Digits 1-3 — Unit Configuration

GEC = High Efficiency Console

Digit 4 — Unit Configuration

E

Digits 5-7 — Nominal Capacity

006= 0.5 Tons

009 = 0.75 Tons
012 = 1 Tons
015 = 1.25 Tons
018 = 1.5 Tons

Digit 8 — Voltage Volts/Hz/Phase)

0 = 115/60/1
1 = 208/60/1
2 = 230/60/1
6 = 220-240/50/1
7 = 265/60/1

Digit 9 — Heat Exchanger

1 = Copper-Water Coil
2 = Cupro-Nickel Water Coil

Digit 10 — Design Sequence

B

Digit 11 — Refrigeration Circuit

0 = Heating and Cooling Circuit
2 = Heating and Cooling Circuit with Hot Gas Reheat

Digit 12 — Blower Configuration

1= Standard Blower Motor

Digit 13 — Freeze Protection

A = 20° Freezestat (For Glycol Loop) (Extended Range Geothermal)
B = 35° Freezestat (For Water Loop)

Digit 14 — Open Digit

0 = Open Digit
S = Design Special

Digit 15 — Supply-Air Arrangement

0 = Standard Supply-Air Arrangement

Digit 16 — Return-Air Arrangement

0 = Standard Return-Air Arrangement

Digit 17 — Control Types

D = Deluxe 24V Controls
E = Deluxe 24V Control with Programmable Thermostat
H = Symbio™ 400-B/UC400-B
J = Symbio 400-B/UC400-B with Air-Fi® Wireless Communications

Digit 18 — Tstat/Sensor Location

0 = Wall Mounted Location
1 = Unit Mounted Location with Standard Entry
2 = Unit Mounted Location with Keylock Entry

Digit 19 — Fault Sensors

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

Digit 20 — Temperature Sensor

0 = No Additional Temperature Sensor
1 = Entering Water Sensor

Digit 21 — Open Digit

0 = Open Digit

Digit 22 — Electric Heat

0 = No Electric Heat
2 = Boilerless Control Electric Heat (minimum)
3 = Boilerless Control Electric Heat (maximum)

Digit 23 — Unit Mounted Disconnect

0 = No Unit Mounted Disconnect
A = Power Cord/Receptacle Box
B = Power Cord/Receptacle Box with Circuit Breaker
C = On/Off Toggle Switch

Digit 24 — Filter Type

0 = No Filter; Chassis Only
1 = 1-inch Throwaway Filter
A = 1-inch MERV 8 Filter

Digit 25 — Acoustic Arrangement

0 = Enhanced Sound Attenuation

Digit 26 — Factory Configuration

0 = Standard Factory Configuration (Chassis, Cabinet and Subbase)
1 = Chassis ONLY
2 = Low Height Factory Configuration (Chassis, Cabinet and Subbase)
3 = Extended Length Factory Configuration (Chassis, Cabinet and Subbase)

Digit 27 — Paint Color

0 = No Paint Selection Available
1 = Deluxe Beige
2 = Cameo White
3 = Soft Dove

Digit 28 — Outside Air

0 = No Outside Air Option
1 = Outside Air Opening
2 = Motorized Outside Air *(2-position)*

Digit 29 — Piping Arrangement

L = Left Hand Piping Arrangement
R = Right Hand Piping Arrangement

Digit 30-36 — Does Not Apply to GEC

0000000 = Digits 30-36 are not applicable to the GEC product

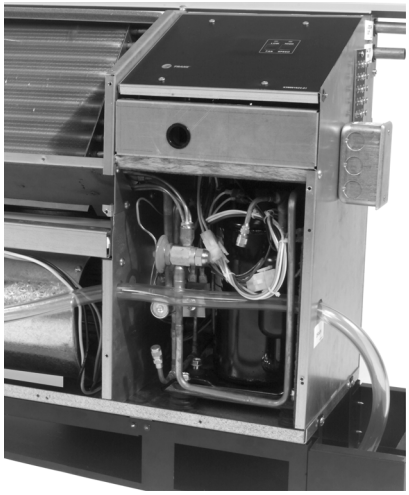
General Information

Jobsite Inspection

Each unit has been inspected, tested and operated at the factory by production and quality associates prior to being crated for safe transit. However, rough handling or accidents can occur resulting in damaged equipment being delivered. Always perform the following checks before accepting a unit:

- 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.
- Check the unit model numbers on the bill of lading against those ordered and received to assure equipment is AS ORDERED.
- Check that the refrigerant charge has been retained during shipment by use of gauges. Schrader taps are located and labeled internal to the cabinet.

Figure 1. Schrader location



Important: *Verify the charge has been retained. Then, re-install schrader caps to ensure that refrigerant leakage does not occur.*

Re-install the unit panel using all factory provided screws.

Jobsite Storage

NOTICE:

Microbial Growth!

Wet interior unit insulation can become an amplification site for microbial growth (mold), which could result in odors and damage to the equipment and building materials. If there is evidence of microbial growth on the interior insulation, it should be removed and replaced prior to operating the system.

NOTICE:

Microbial Growth!

Failure to follow instructions below could result in odors and damage to the equipment and building materials.The floor or foundation must be level and the condensate drain at the proper height for proper coil drainage and condensate flow. Standing water and wet surfaces inside the equipment can become an amplification site for microbial growth (mold).

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. This is to assure that no portion of the unit contacts standing water at any time.
- 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 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. Storing units in this manner maintains oil in the compressor.
- Units may be stacked two high.

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.*

Unit Dimensions

Service Clearances

Access to the unit for servicing purposes should be provided at installation. All configurations require clearance from other mechanical and electrical equipment on three service sides (shown below). This enables panel removal from the unit for service/maintenance ability.

Figure 2. Clearances - GEC 0.5 to 1.5 tons

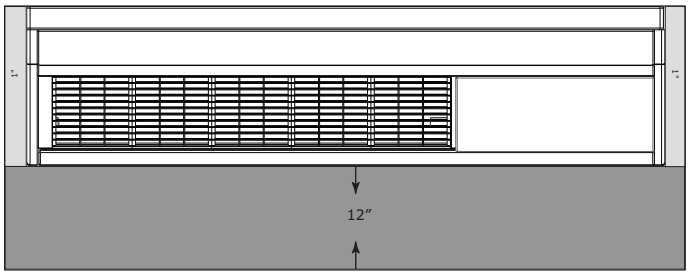


Figure 3. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - cabinet (RH) piping connection

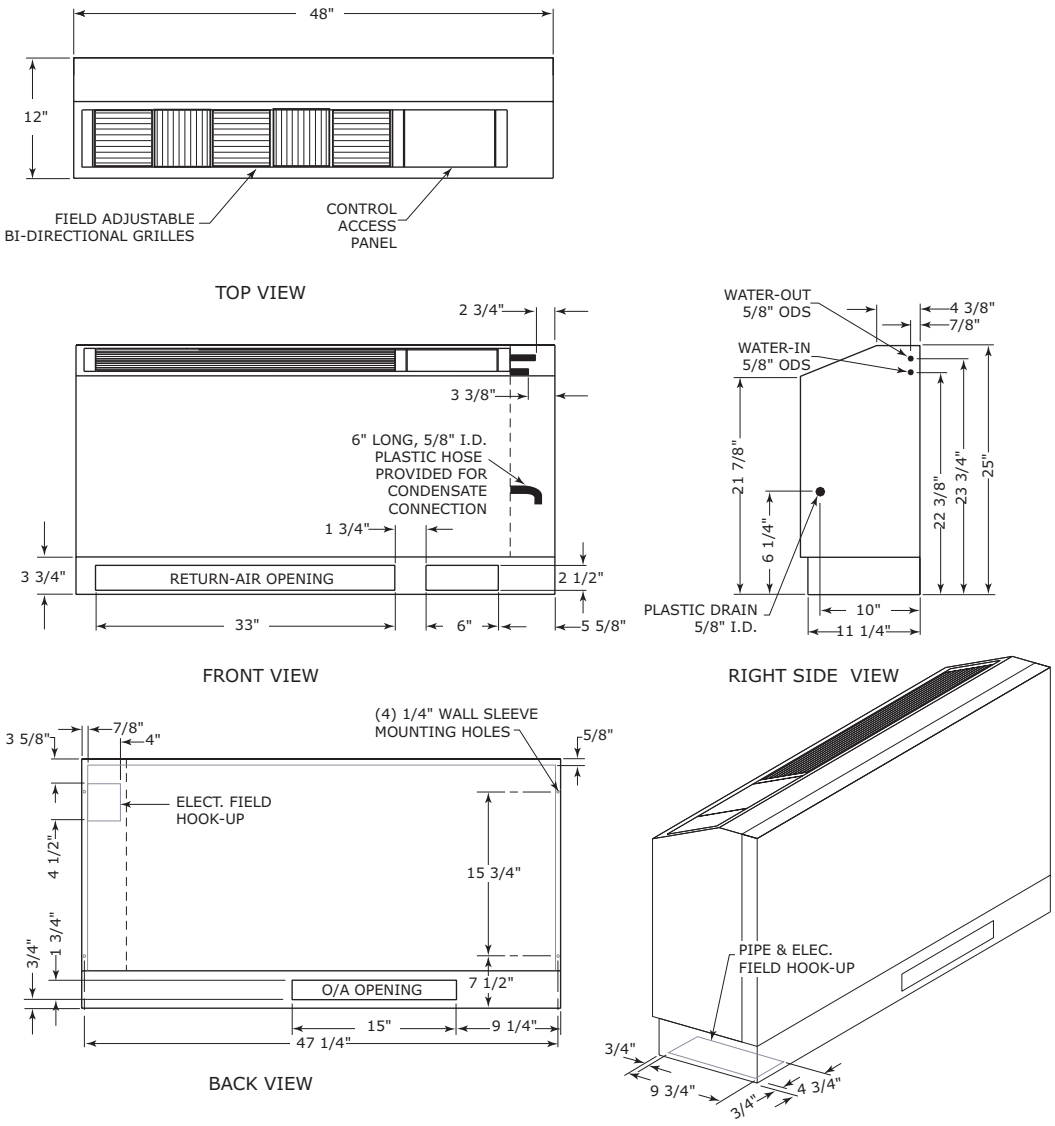


Figure 4. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - cabinet (LH) piping connection

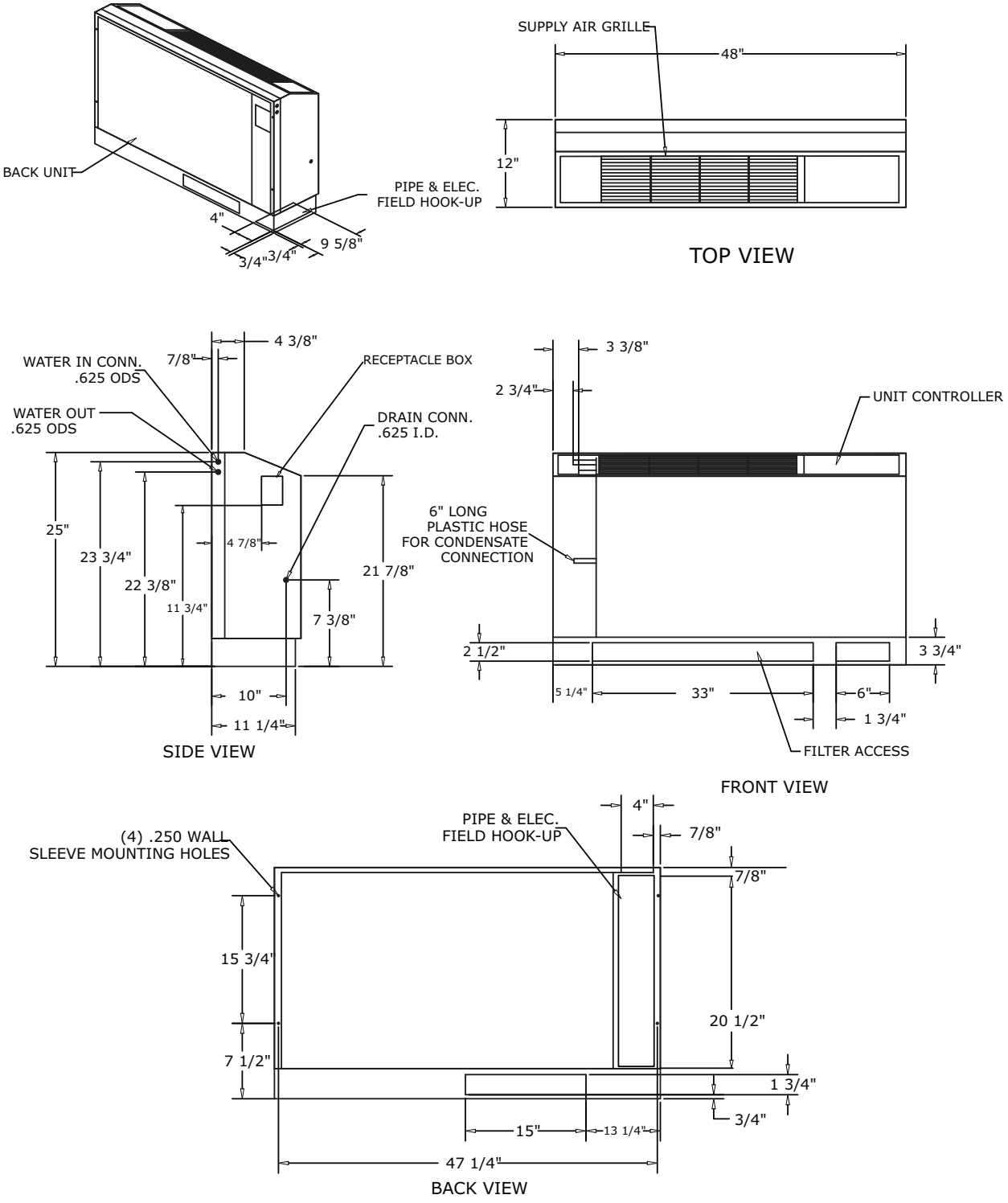
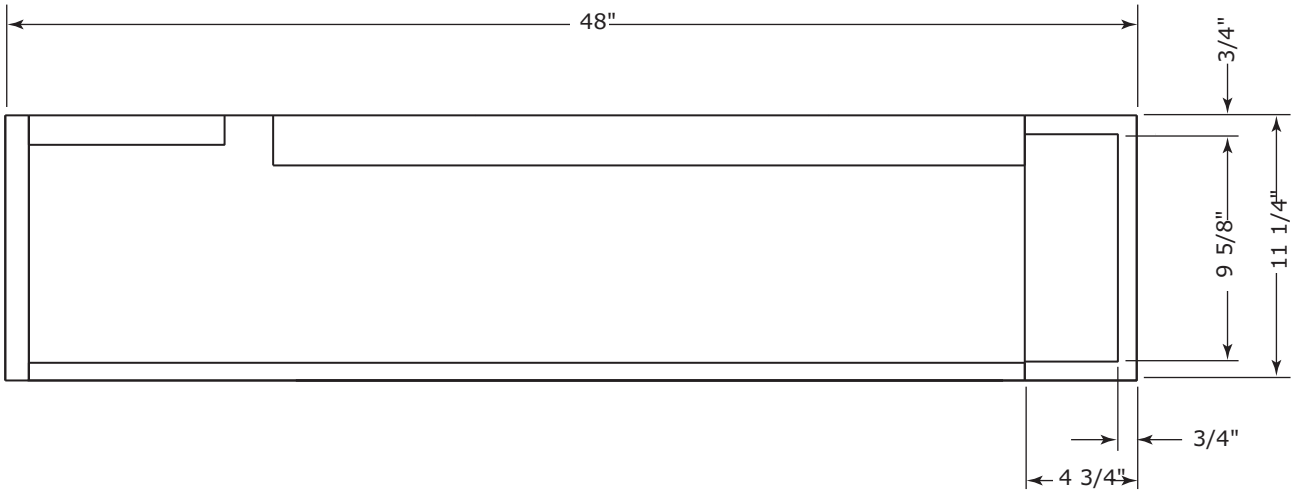
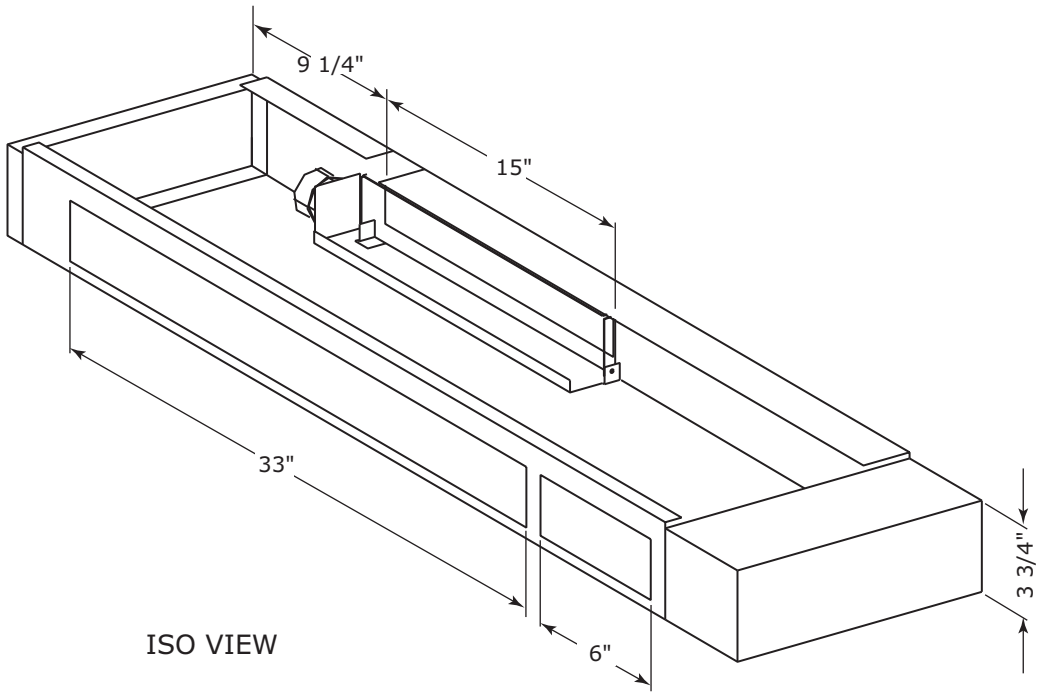


Figure 5. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - subbase (RH)

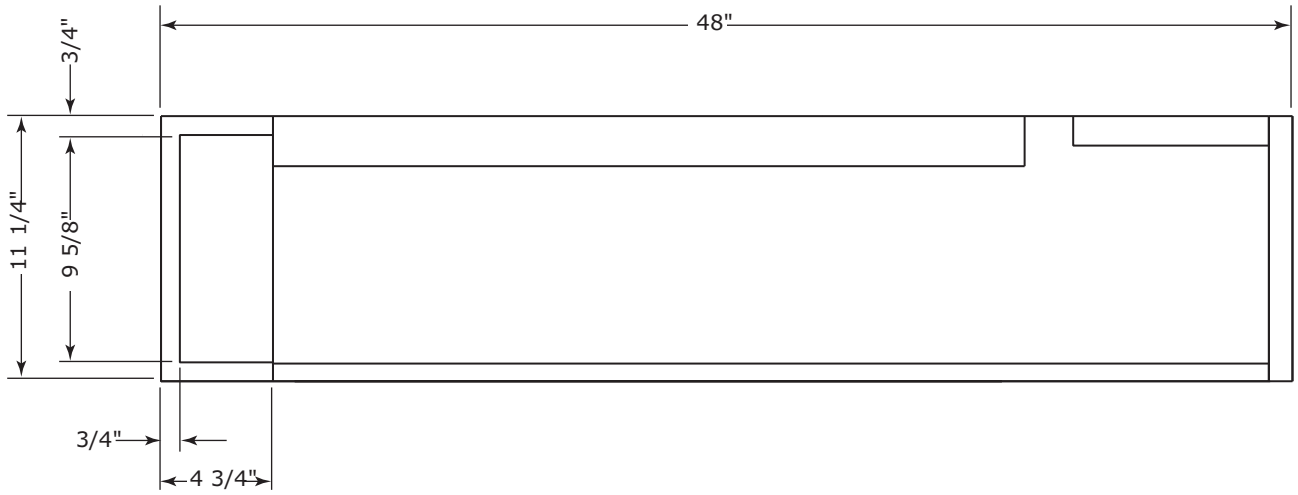


TOP VIEW

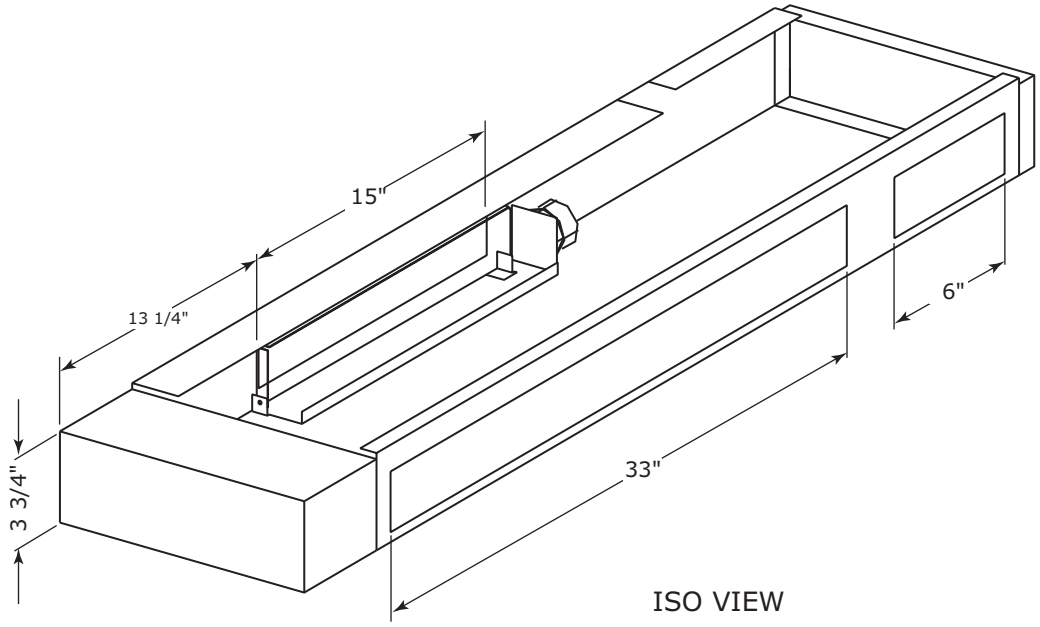


ISO VIEW

Figure 6. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - subbase (LH)



TOP VIEW



ISO VIEW

Figure 7. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - cabinet (RH) piping extended length

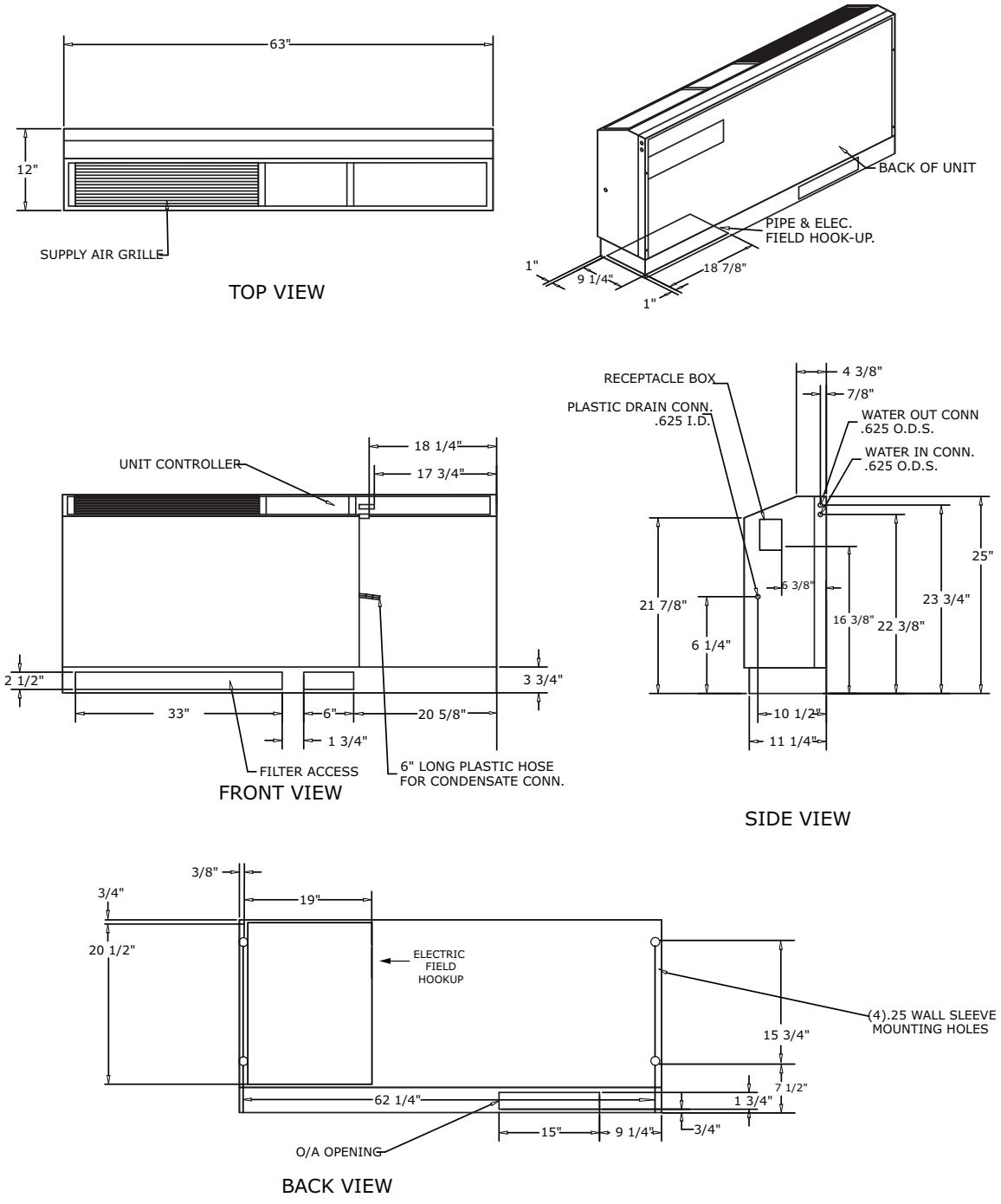


Figure 8. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - cabinet (LH) piping extended length

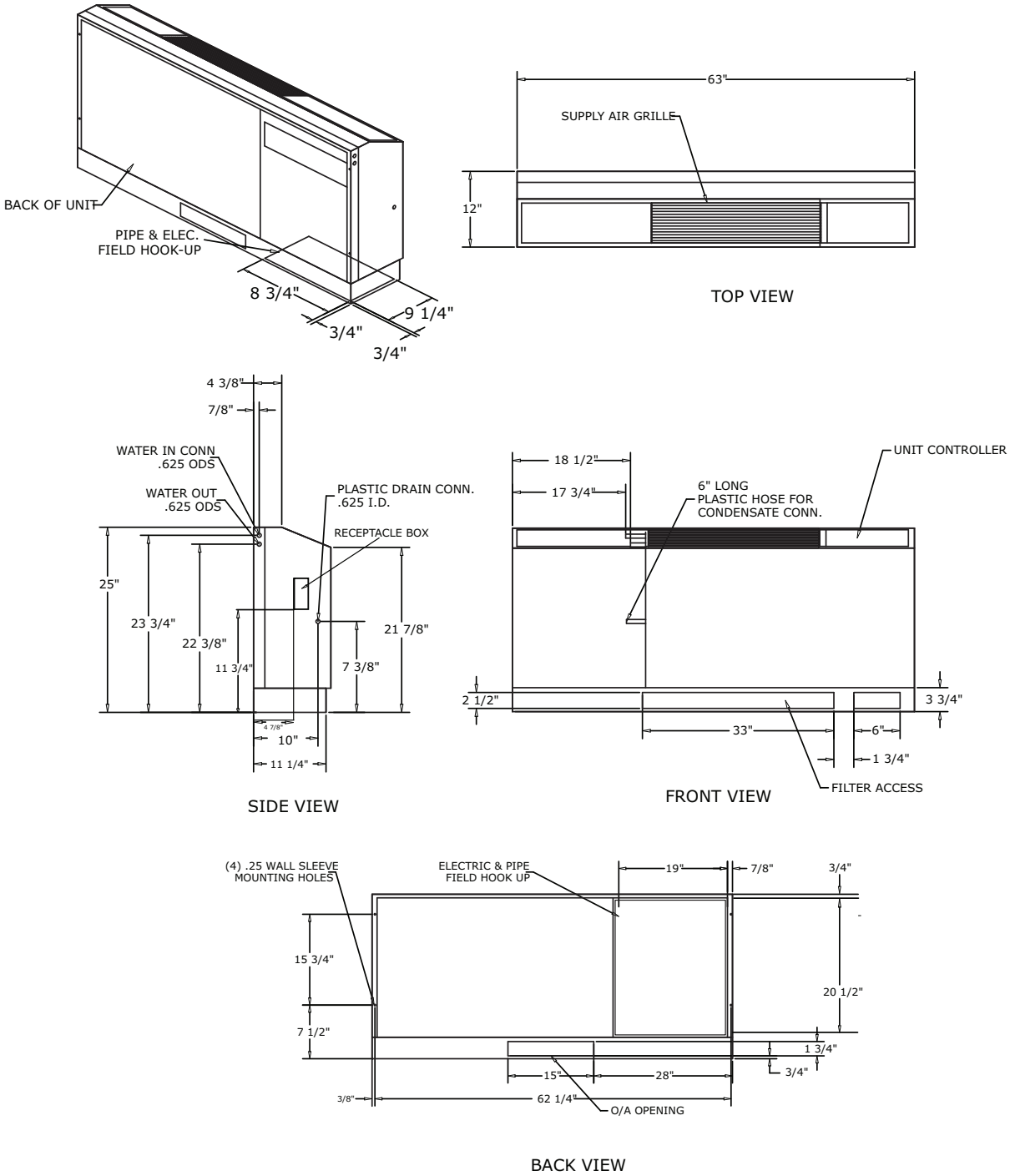


Figure 9. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - subbase (RH) extended length

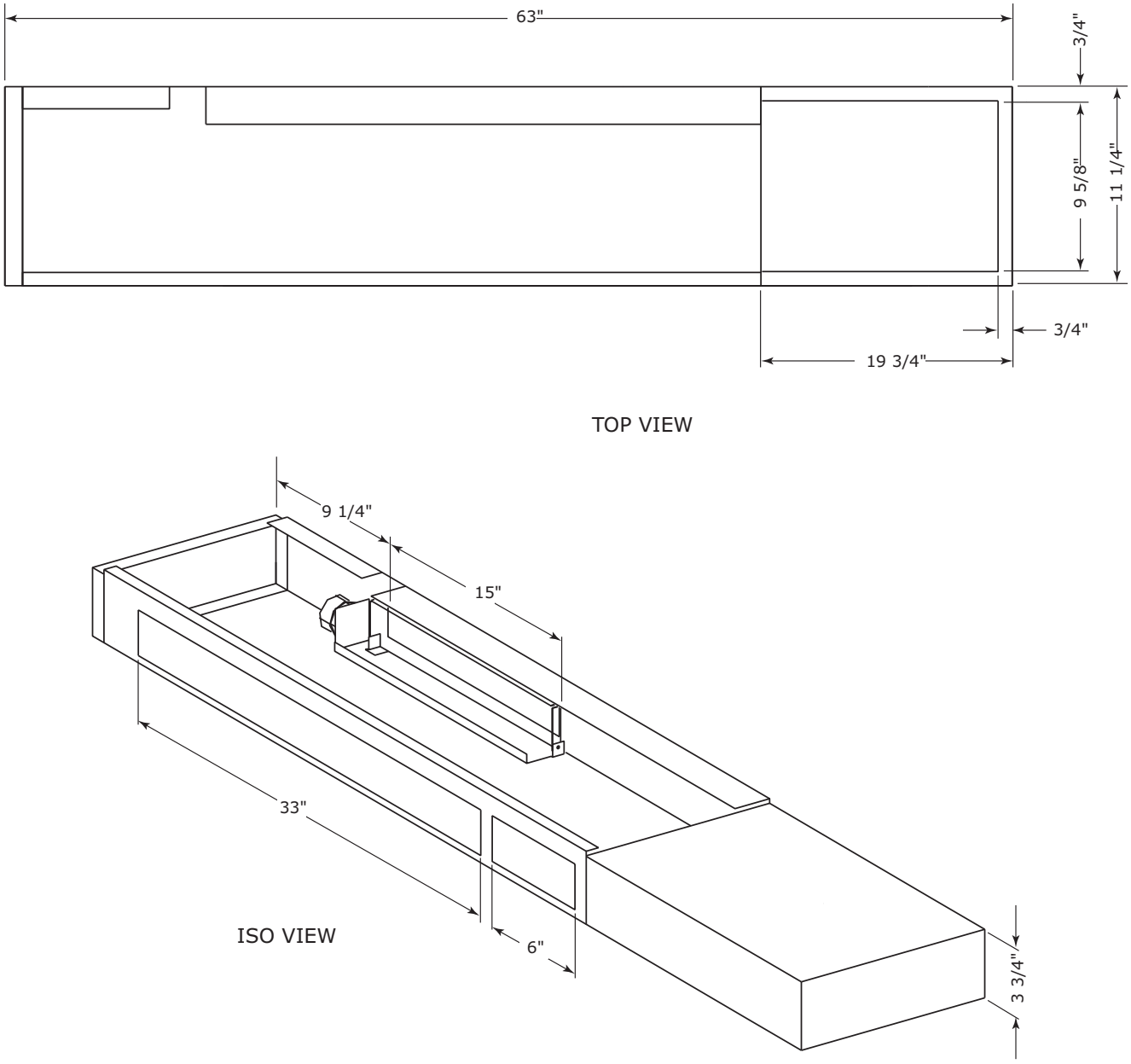
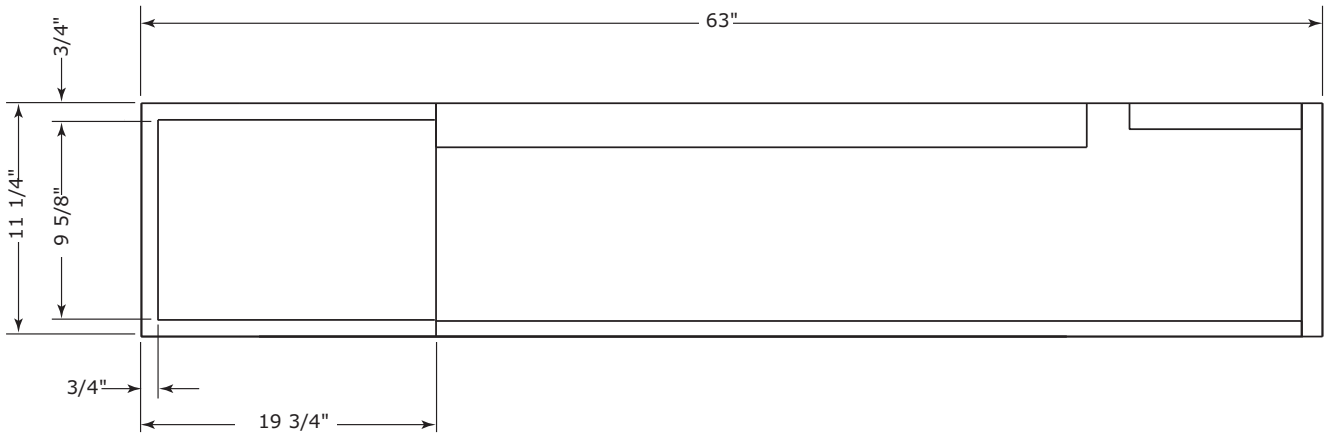
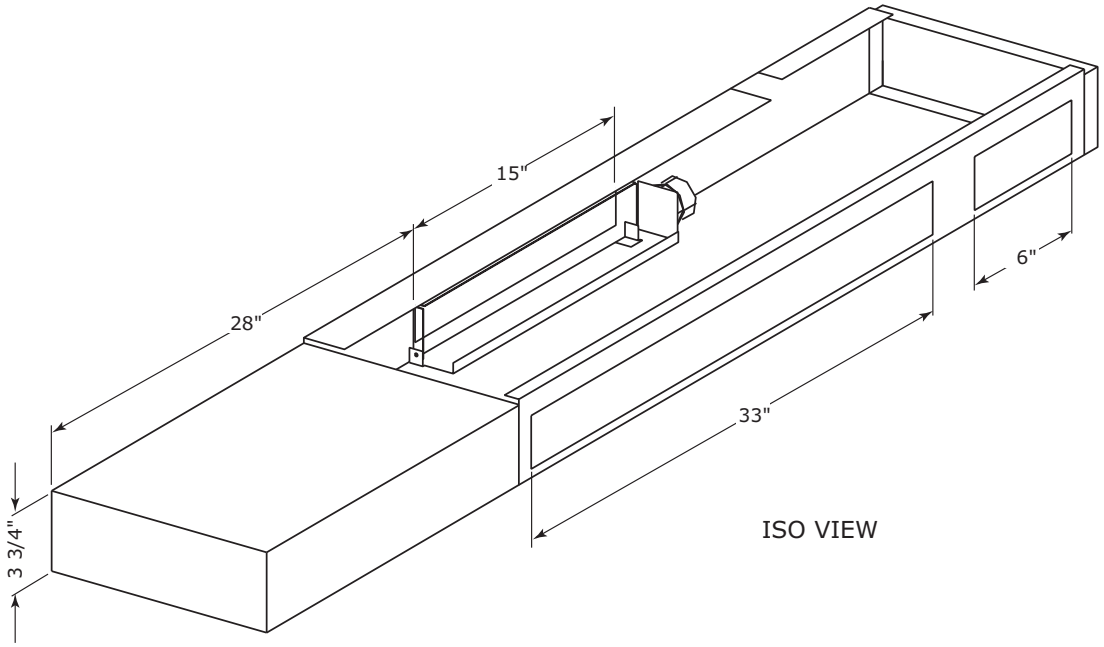


Figure 10. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - subbase (LH) extended length



TOP VIEW



ISO VIEW

Figure 11. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - cabinet (RH) low height unit

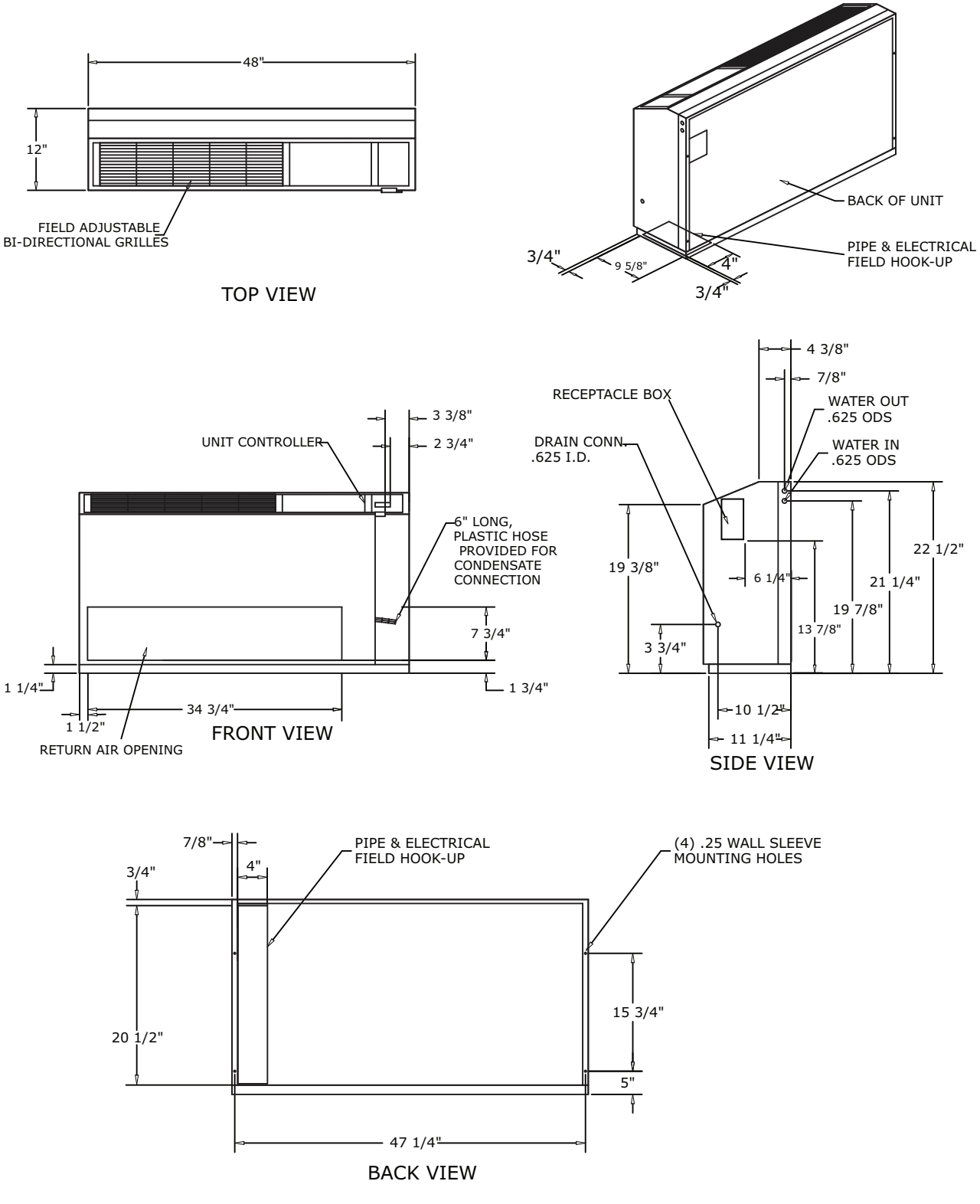


Figure 12. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - cabinet (LH) low height unit

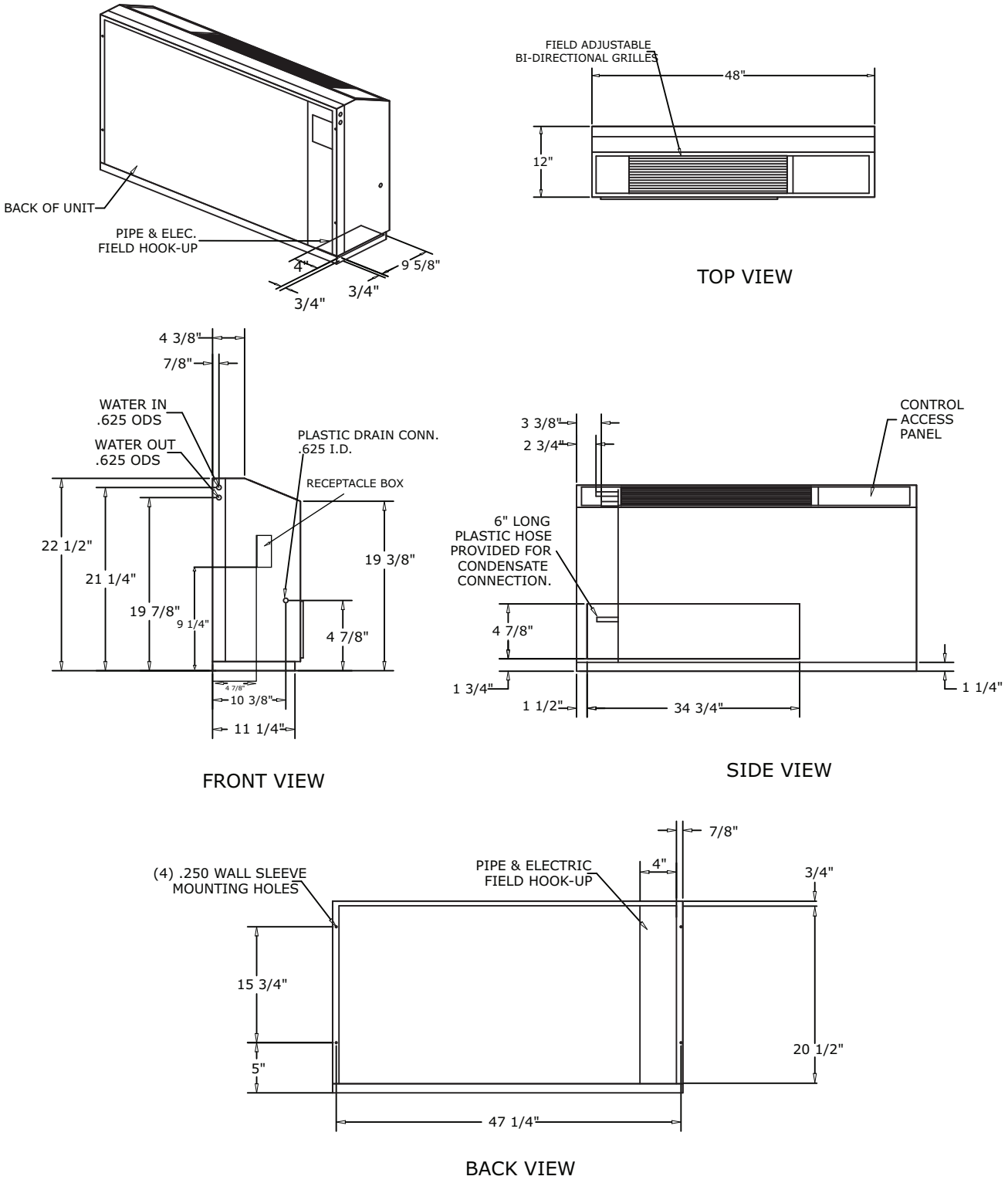


Figure 13. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - chassis (RH)

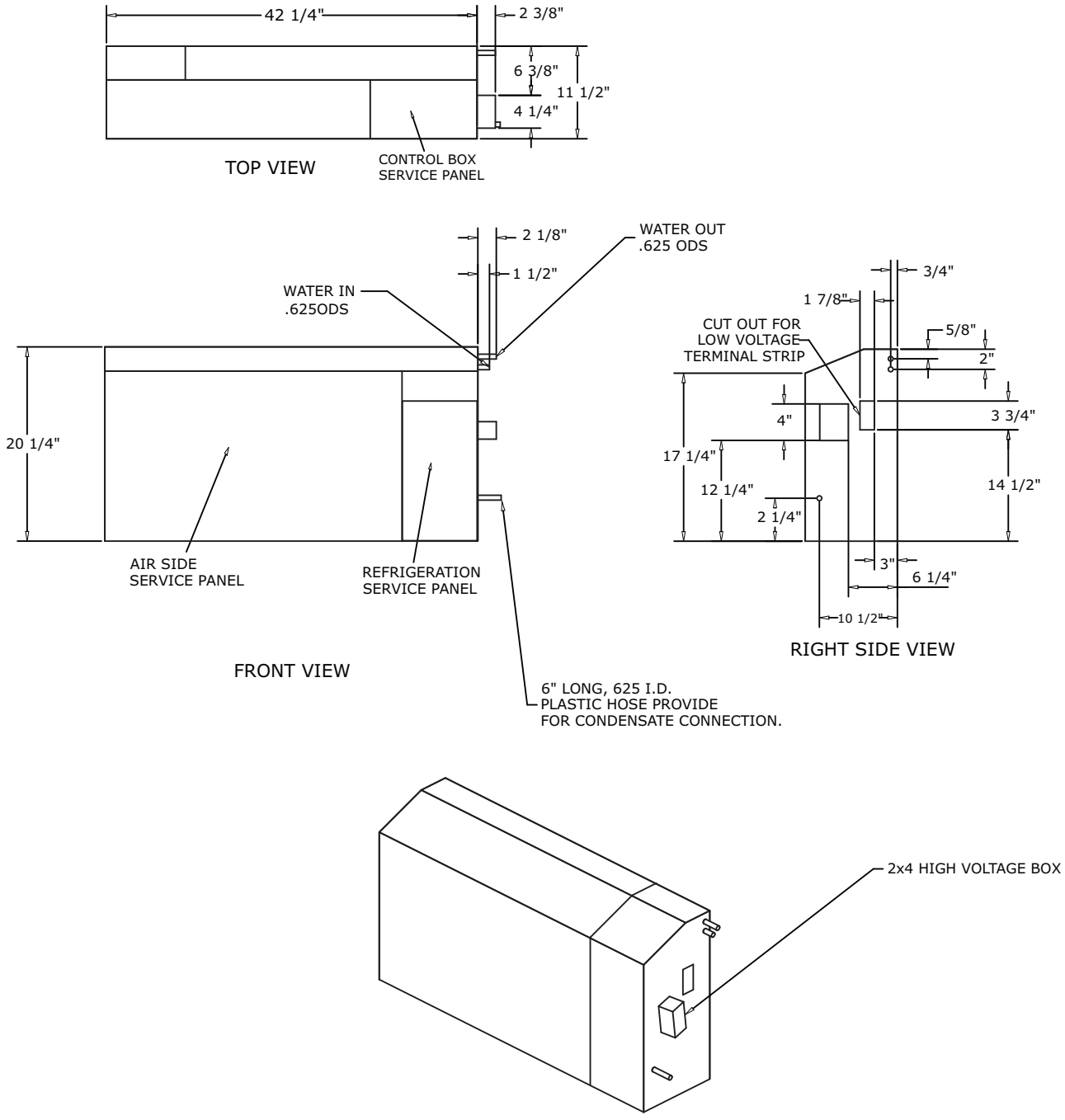
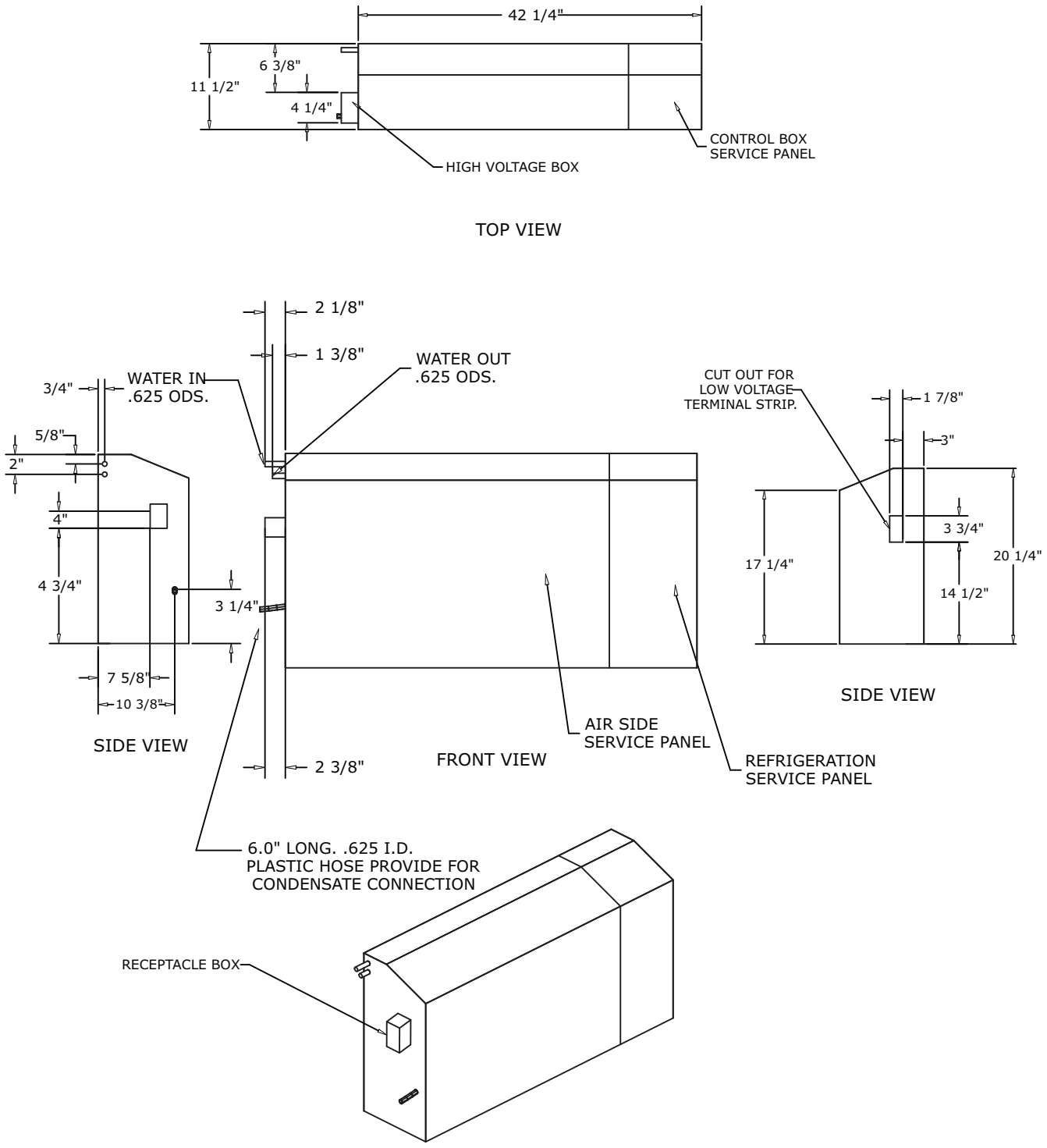


Figure 14. GEC 0.5 to 1.5 tons (60 Hz), 0.5 to 1.25 tons (50 Hz) - chassis (LH)



Weights

Table 1. Unit weights GEC (0.5 to 1.5 tons)

Unit Size	Shipping Weight with Pallet		Shipping Weight without Pallet	
GEC	Unit Weight (lbs)	Chassis Weight (lbs)	Unit Weight (lbs)	Chassis Weight (lbs)
006	218	170	188	140
009	219	171	189	141
012	234	186	204	156
015	240	192	210	162
018	242	194	212	164

Installation

⚠WARNING

Hazardous Voltage!

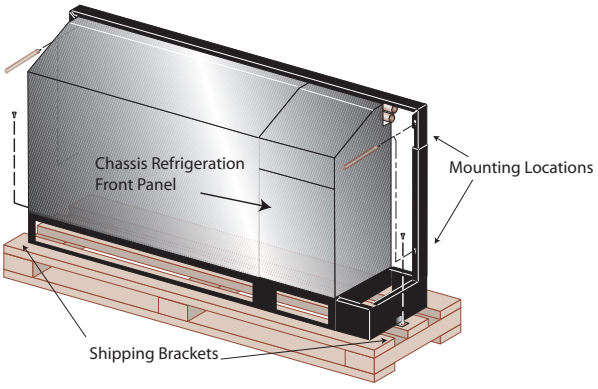
Failure to disconnect power before servicing could result in death or serious injury. Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized.

⚠WARNING

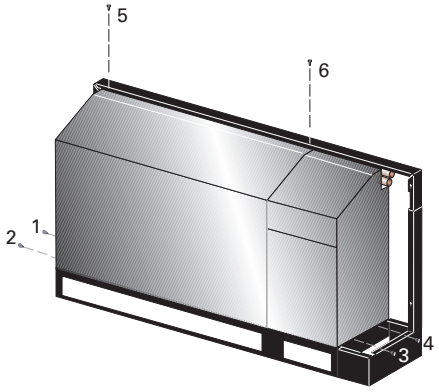
Proper Field Wiring and Grounding Required!

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.

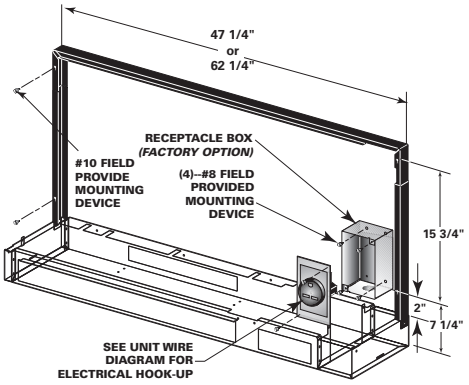
1. Remove the unit and packaging from the crate. Inspect the unit. Carefully remove the stretch wrap and cardboard pieces. The installation literature and may be found on the back of the unit in a clear, plastic bag. Unit has been tied to skid by (2) shipping brackets.
2. Remove refrigeration panel and inspect the unit. Be certain the refrigerant tubing has clearance from adjacent parts. Verify that the electrical connections are tight and in-place.



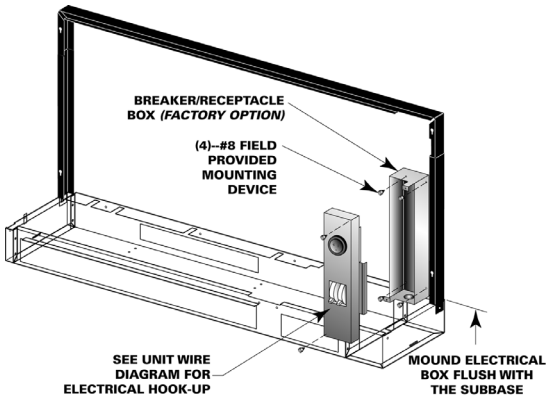
3. With the chassis still on the subbase, align the unit to the wall. If unit contains an outside air option, align the wall cut-out to the subbase outside-air cut-out. Level the unit per plan requirements. Mark the four mounting locations for wall sleeve mounting to the wall. The dimensions should fall in line with Step 5.
4. Remove the chassis from the subbase via 6 screws. The chassis is attached to both the subbase and the wall sleeve (see diagram above). To assure proper alignment, re-install screws 2 and 3 in the final installation of the unit (Step 11).



5. After removing chassis from the subbase, install the wall flange assembly to the desired wall with the use of four #10-field provided screws. The wall flange assembly includes four,¼ in. diameter clearance holes.
6. Mounting of the receptacle box (option) should be made prior to piping and electrical hook-up. This factory disconnect option is designed to fit inside the end pocket. Mount the receptacle box 2 in. above the top of the subbase with four, #8-field supplied screws.

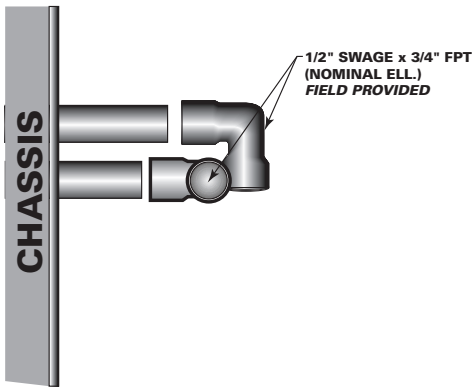


7. Mounting of the circuit breaker/receptacle box (option) should be made prior to piping and electrical hook-up. This factory disconnect option is designed to fit inside the end pocket. Mount the electrical box flush with the subbase with four, #8-field supplied screws.
8. Wiring of receptacle box (option). Power wiring to the equipment should be installed per national and local electric codes by a professional electrician. Power wiring to the receptacle box may be done at this time. See the unit's wiring schematic for field wiring.



Note: *Factory recommendation: Unit's receiving the circuit breaker option should have water and condensate piping supplied/returned through the bottom of the unit OR include the extended cabinet option.*

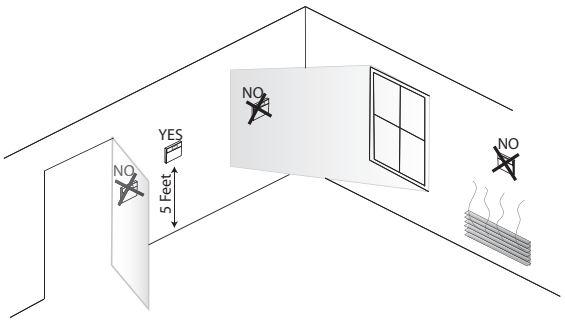
9. Slide the chassis onto the subbase to verify that field installed receptacle box, condensate pipe, and supply/return pipe are in the appropriate locations and will not require adjustments. Verify water connection angle prior to brazing of the unit water-in/out.
10. With the chassis on or off of the subbase, install the field provided water connections to the unit water-in/out pipe. Trane recommends a ½ in. x ¾ in. nominal ell to be field brazed to the factory ½ in. nominal water-in/out lines. Water in/out copper size: 5/8 in. ODS or ½ in. nominal.



11. Slide chassis back into place on the subbase. To assure proper alignment, reinstall the two front screws (2 and 3) that attach the chassis to the subbase.
12. Inspect the system water pipe thoroughly before connecting the unit to the system. Water-to-refrigerant heat exchanger fouling, freezing and failure is imminent if the system pipe contains contaminants. Water to refrigerant heat exchanger ships with nitrogen holding charge. Remove rubber plugs from heat exchanger. All field piping must be cleaned of contaminants.
13. Connect the supply and return line to the unit inlet and outlet. Flexible hoses reduce vibration from the water lines to the unit. An isolation valve, p/t plugs and auto-flow valves are recommended to separate the closed/open loop from the mechanical device.
14. Because the console configuration is a blow-through design, no condensate trapping is necessary. However, it is necessary for the condensate to run in a downward motion to allow gravity to properly drain the system. The unit drain connection is 5/8 in. I.D. or 7/8 in. O.D. for all GEC* 006-018 systems.
15. Power wiring to the equipment should be installed per national and local electric codes by a professional electrician. Refer to Step 6, Step 7, and Step 8 for units that include the factory supplied receptacle box.

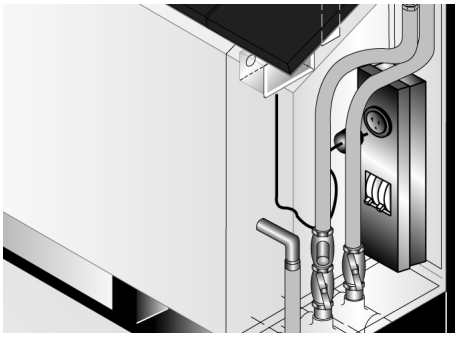
    For units containing a field provided disconnect, or, are hard wired to the unit, Trane provides pig tail leads inside a 2 x 4 handy-box in either the right or left side end pocket. See unit wiring schematic for details.

    For units containing a wall mounted thermostat, a low voltage (18-pole) terminal strip is provided for field installation of the thermostat. See Step 18 for unit mounted controls.
16. The thermostat hook-up to the unit is made at the unit mounted 24V (18-pole) low voltage terminal strip. This strip is mounted on the exterior of the control box on the right side of the unit. For units that contain left hand piping, a low voltage crossover to the 18-pole terminal strip may be necessary. For this configuration, run the low voltage wires behind the chassis to the right side of the console unit for termination to the terminal strip.
17. Location of the thermostat or zone sensor is an important element of effective room control. Areas where the thermostat/zone sensor should not be mounted include: behind doors or corners; near hot or cold air ducts; near radiant heat (heat emitted from appliances or sun); near concealed pipes or chimneys; on outside walls or other non conditioned surfaces; in air-flows from adjacent zones or other units.



18. For units with unit mounted controls (option), all low voltage connections are factory made. The fan will run continuous with unit mounted controls.

19. For units with the factory provided receptacle box options, the receptacle plug may now be connected to the electrical outlet.



Electrical Data

Table 2. Electrical data (0.5 to 1.5 tons)

Model	Volts	Total Unit FLA	Comp RLA (ea)	CompL RA (ea)	No. of Comp	Cmp MCC	Blower Motor FLA	Blower Motor hp	Fan Motors	Minimum Circuit Ampacity	Maximum Overcurrent Protective Device	Electric Heat kW	Electric Heat Amps
GEC006	115/60/1	6.5	5.6	30.0	1	7.5	0.90	1/30	1	7.9	15	0.0	0.0
GEC006	208/60/1	4.1	3.3	14.0	1	4.2	0.80	1/30	1	4.9	15	0.0	0.0
GEC006	208/60/1	11.6	3.3	14.0	1	4.2	0.80	1/30	1	14.5	15	2.25	10.82
GEC006	208/60/1	15.2	3.3	14.0	1	4.2	0.80	1/30	1	19.0	20	3.0	14.42
GEC006	230/60/1	3.9	3.2	15.0	1	4.2	0.70	1/30	1	4.7	15	0.0	0.0
GEC006	230/60/1	12.7	3.2	15.0	1	4.2	0.70	1/30	1	15.8	20	2.75	11.96
GEC006	220-240/50/1	3.6	2.9	17.0	1	4.0	0.70	1/30	1	4.3	15	0.0	0.0
GEC006	220-240/50/1	13.2	2.9	17.0	1	4.0	0.70	1/30	1	16.5	20	3.0	12.5
GEC006	265/60/1	3.2	2.5	11.0	1	3.5	0.70	1/20	1	3.8	15	0.0	0.0
GEC006	265/60/1	11.1	2.5	11.0	1	3.5	0.70	1/20	1	13.9	15	2.75	10.38
GEC009	115/60/1	7.3	6.4	36.0	1	8.6	0.90	1/30	1	8.9	15	0.0	0.0
GEC009	208/60/1	4.5	3.7	16.0	1	4.8	0.80	1/30	1	5.4	15	0.0	0.0
GEC009	208/60/1	11.6	3.7	16.0	1	4.8	0.80	1/30	1	14.5	15	2.25	10.82
GEC009	208/60/1	15.2	3.7	16.0	1	4.8	0.80	1/30	1	19.0	20	3.0	14.42
GEC009	230/60/1	4.2	3.5	17.0	1	4.8	0.70	1/30	1	5.1	15	0.0	0.0
GEC009	230/60/1	12.7	3.5	17.0	1	4.8	0.70	1/30	1	15.8	20	2.75	11.96
GEC009	230/60/1	16.8	3.5	17.0	1	4.8	0.70	1/30	1	21.0	25	3.7	16.09
GEC009	220-240/50/1	6	5.3	23.0	1	7.4	0.70	1/12	1	7.3	15	0.0	0.0
GEC009	220-240/50/1	13.2	5.3	23.0	1	7.4	0.70	1/12	1	16.5	20	3.0	12.5
GEC009	220-240/50/1	17.4	5.3	23.0	1	7.4	0.70	1/12	1	21.7	25	4.0	16.67
GEC009	265/60/1	3.5	2.8	13.0	1	3.7	0.70	1/30	1	4.2	15	0.0	0.0
GEC009	265/60/1	11	2.8	13.0	1	3.7	0.70	1/30	1	13.8	15	2.74	10.34
GEC009	265/60/1	14.7	2.8	13.0	1	3.7	0.70	1/30	1	18.3	20	3.7	13.96
GEC012	115/60/1	13.3	12.1	58.0	1	16.9	1.20	1/12	1	16.3	25	0.0	0.0
GEC012	208/60/1	7.2	6.3	30.0	1	8.8	0.90	1/12	1	8.8	15	0.0	0.0
GEC012	208/60/1	11.7	6.3	30.0	1	8.8	0.90	1/12	1	14.7	15	2.25	10.82
GEC012	208/60/1	15.3	6.3	30.0	1	8.8	0.90	1/12	1	19.2	20	3.0	14.42
GEC012	230/60/1	7	6.3	30.0	1	8.8	0.70	1/12	1	8.6	15	0.0	0.0
GEC012	230/60/1	12.7	6.3	30.0	1	8.8	0.70	1/12	1	15.8	20	2.75	11.96
GEC012	230/60/1	16.8	6.3	30.0	1	8.8	0.70	1/12	1	21.0	25	3.7	16.09
GEC012	220-240/50/1	7.4	6.7	30.0	1	9.4	0.70	1/12	1	9.1	15	0.0	0.0
GEC012	220-240/50/1	13.2	6.7	30.0	1	9.4	0.70	1/12	1	16.5	20	3.0	12.5
GEC012	220-240/50/1	17.4	6.7	30.0	1	9.4	0.70	1/12	1	21.7	25	4.0	16.67
GEC012	265/60/1	5.7	5.0	23.0	1	7.0	0.70	1/12	1	7.0	15	0.0	0.0
GEC012	265/60/1	11.0	5.0	23.0	1	7.0	0.70	1/12	1	13.8	15	2.74	10.34
GEC012	265/60/1	14.7	5.0	23.0	1	7.0	0.70	1/12	1	18.3	20	3.7	13.96
GEC015	115/60/1	16.1	14.9	60.0	1	20.9	1.20	1/12	1	19.8	30	0.0	0.0
GEC015	208/60/1	8.9	7.9	36.0	1	11.1	1.00	1/12	1	10.9	15	0.0	0.0
GEC015	208/60/1	11.8	7.9	36.0	1	11.1	1.00	1/12	1	14.8	15	2.25	10.82
GEC015	208/60/1	15.4	7.9	36.0	1	11.1	1.00	1/12	1	19.3	20	3.0	14.42
GEC015	230/60/1	8.8	7.9	36.0	1	11.1	0.90	1/12	1	10.8	15	0.0	0.0
GEC015	230/60/1	12.9	7.9	36.0	1	11.1	0.90	1/12	1	16.1	20	2.76	12.0
GEC015	230/60/1	17	7.9	36.0	1	11.1	0.90	1/12	1	21.2	25	3.7	16.09

Table 2. Electrical data (0.5 to 1.5 tons) (continued)

Model	Volts	Total Unit FLA	Comp RLA (ea)	CompL RA (ea)	No. of Comp	Cmp MCC	Blower Motor FLA	Blower Motor hp	Fan Motors	Minimum Circuit Ampacity	Maximum Overcurrent Protective Device	Electric Heat kW	Electric Heat Amps
GEC015	220-240/50/1	8.6	7.9	28.0	1	11.1	0.70	1/12	1	10.6	15	0.0	0.0
GEC015	220-240/50/1	13.2	7.9	28.0	1	11.1	0.70	1/6	1	16.5	20	3.0	12.5
GEC015	220-240/50/1	17.4	7.9	28.0	1	11.1	0.70	1/6	1	21.7	25	4.0	16.67
GEC015	265/60/1	7.1	6.4	30.0	1	9.0	0.70	1/6	1	8.7	15	0.0	0.0
GEC015	265/60/1	11	6.4	30.0	1	9.0	0.70	1/12	1	13.8	15	2.74	10.34
GEC015	265/60/1	14.7	6.4	30.0	1	9.0	0.70	1/12	1	18.3	20	3.7	13.96
GEC018	208/60/1	10.0	9.0	30.0	1	12.6	1.00	1/6	1	12.3	20	0.0	0.0
GEC018	208/60/1	11.8	9.0	30.0	1	12.6	1.00	1/6	1	14.8	20	2.25	10.82
GEC018	208/60/1	15.4	9.0	30.0	1	12.6	1.00	1/6	1	19.3	20	3.0	14.42
GEC018	230/60/1	9.9	9.0	30.0	1	12.6	0.90	1/6	1	12.2	20	0.0	0.0
GEC018	230/60/1	12.9	9.0	30.0	1	12.6	0.90	1/6	1	16.1	20	2.76	12.0
GEC018	230/60/1	17	9.0	30.0	1	12.6	0.90	1/6	1	21.2	25	3.7	16.09
GEC018	265/60/1	8.5	7.8	30.0	1	10.9	0.70	1/6	1	10.5	15	0.0	0.0
GEC018	265/60/1	11	7.8	30.0	1	10.9	0.70	1/6	1	13.8	15	2.74	10.34
GEC018	265/60/1	14.7	7.8	30.0	1	10.9	0.70	1/6	1	18.3	20	3.7	13.96

Table 3. Console VA

Designator	Controls	Deluxe with Reheat (75 VA)	Deluxe with Electric Heat (75 VA)	Symbio™ 400-B/UC400-B (75 VA)	x = ON[a]
	Controller	6.0	6.0	12.5	
1K1	Compressor Contactor	5.5	5.5	5.5	X
1K2	Fan Relay	9.5	9.5	9.5	
2L1	Reversing Valve	5.0	5.0	5.0	X
2L2	Reheat Valve	5.0	—	—	
5B3	Damper Actuator	—	—	—	
1K10	Electric Heat Contactor	—	5.5	Optional[b]	X
IU3	Boilerless Control Board	—	3.0	N/A	X
	Field Supplied Solenoid	7.0	7.0	7.0	X
1K6, 1K7	Reheat Relays(2)	12.5	—	Optional[c]	X
1K8	Reheat Low Speed Relay	—	—	N/A	X
1U1	Thermostat-Unit Mounted	6.0	6.0	N/A	X
	Timer Delay Relay	N/A	N/A	N/A	X
	Total VA	56.5	47.5	39.5	61.40
	Extra VA	18.5	27.5	32.5	13.60

Note: Listed VA values are for reference only. Actual values may vary with operating conditions.

(a) Consider unit options and concurrent loads.
(b) Electric heat is optional with Symbio 400-B/UC400-B controller. If electric heat is selected, add 5.5 VA.
(c) HGR is optional with the Symbio 400-B/UC400-B controller. If HGR is selected, add 12.5 VA.

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 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? (Allow a 12-inch clearance at the unit front for serviceability).
- 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, and pitched?
- Is the zone sensor (when used) 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 for wall-mounted thermostats found in thermostat manufacturer literature.*

Start-up with the conventional 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 and isolation valve (if used) 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 4, p. 27.
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 4, p. 27.
11. Set the thermostat to maintain the desired space temperature.
12. Instruct the owner on system operation.

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

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

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 80.6°F(DB), 66.2°F(WB) in cooling, 68°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 4. Operating pressures in cooling/heating for GEC* units

	Operating Data									
			Cooling				Heating			
Model GEC*	Entering Water Temp (°F)	Water Flow (GPM)	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)
GEC*006 (60 Hz)	35°	1.4	—	—	—	—	91-105	255-325	10-13	21-26
GEC*006 (60 Hz)	35°	1.8	—	—	—	—	92-106	255-325	8-10	21-27
GEC*006 (60 Hz)	45°	1.4	142-164	188-239	12-16	23-29	107-123	267-339	11-14	24-30
GEC*006 (60 Hz)	45°	1.8	142-163	179-228	10-12	23-29	110-126	269-342	9-12	24-31
GEC*006 (60 Hz)	55°	1.4	144-165	217-276	12-15	23-29	124-143	279-355	12-16	27-34
GEC*006 (60 Hz)	55°	1.8	143-165	207-263	9-12	23-29	128-147	282-359	10-13	27-35
GEC*006 (60 Hz)	68°	1.4	146-168	259-329	12-15	22-28	149-172	297-378	14-18	31-39
GEC*006 (60 Hz)	68°	1.8	145-167	247-314	9-12	22-28	154-177	300-382	11-14	32-40
GEC*006 (60 Hz)	75°	1.4	147-169	280-357	11-15	21-27	164-189	307-391	15-19	33-42
GEC*006 (60 Hz)	75°	1.8	147-169	271-345	9-12	21-27	170-196	310-395	12-15	34-43
GEC*006 (60 Hz)	86°	1.4	147-170	331-422	12-15	20-26	190-219	323-411	16-21	36-46
GEC*006 (60 Hz)	86°	1.8	147-169	321-409	9-12	20-26	197-227	327-417	13-17	37-47
GEC*006 (60 Hz)	95°	1.4	148-170	392-498	12-15	19-24	—	—	—	—
GEC*006 (60 Hz)	95°	1.8	148-170	379-483	9-12	19-25	—	—	—	—
GEC*009 (60 Hz) GEC*006 (50 Hz)	35°	1.7	—	—	—	—	93-107	258-328	10-12	21-26
GEC*009 (60 Hz) GEC*006 (50 Hz)	35°	2.1	—	—	—	—	93-107	258-329	8-10	21-27
GEC*009 (60 Hz) GEC*006 (50 Hz)	45°	1.7	149-171	189-241	13-16	23-29	108-125	271-344	11-14	24-30
GEC*009 (60 Hz) GEC*006 (50 Hz)	45°	2.1	146-168	183-233	10-13	23-29	111-128	273-347	9-11	24-31
GEC*009 (60 Hz) GEC*006 (50 Hz)	55°	1.7	144-166	216-275	12-15	23-29	126-145	284-362	12-15	27-34
GEC*009 (60 Hz) GEC*006 (50 Hz)	55°	2.1	145-167	210-267	10-12	23-29	129-149	287-365	10-13	27-35
GEC*009 (60 Hz) GEC*006 (50 Hz)	68°	1.7	146-169	254-323	11-14	22-28	152-175	303-386	14-17	31-39
GEC*009 (60 Hz) GEC*006 (50 Hz)	68°	2.1	146-168	247-315	9-12	22-28	157-180	306-390	11-14	32-40
GEC*009 (60 Hz) GEC*006 (50 Hz)	75°	1.7	146-168	280-356	11-14	21-27	167-193	313-399	14-18	33-42
GEC*009 (60 Hz) GEC*006 (50 Hz)	75°	2.1	146-168	270-344	9-11	21-27	173-199	317-403	12-15	34-43
GEC*009 (60 Hz) GEC*006 (50 Hz)	86°	1.7	146-168	333-424	11-14	20-26	194-224	330-420	16-20	36-46
GEC*009 (60 Hz) GEC*006 (50 Hz)	86°	2.1	147-169	321-409	9-12	20-26	201-232	334-425	13-16	37-47
GEC*009 (60 Hz) GEC*006 (50 Hz)	95°	1.7	147-169	396-504	12-15	19-24	—	—	—	—
GEC*009 (60 Hz) GEC*006 (50 Hz)	95°	2.1	146-168	381-485	9-12	19-25	—	—	—	—
GEC*012 (60 Hz) GEC*009 (50 Hz)	35°	2.2	—	—	—	—	92-106	276-351	10-12	21-26
GEC*012 (60 Hz) GEC*009 (50 Hz)	35°	2.8	—	—	—	—	93-106	276-352	8-10	21-27
GEC*012 (60 Hz) GEC*009 (50 Hz)	45°	2.2	143-164	180-229	12-15	23-29	108-124	289-367	11-14	24-30
GEC*012 (60 Hz) GEC*009 (50 Hz)	45°	2.8	143-164	173-220	9-12	23-29	110-127	290-370	9-11	24-31

Table 4. Operating pressures in cooling/heating for GEC* units (continued)

	Operating Data									
			Cooling				Heating			
Model GEC*	Entering Water Temp (°F)	Water Flow (GPM)	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)
GEC*012 (60 Hz) GEC*009 (50 Hz)	55°	2.2	144-166	208-264	11-15	23-29	125-144	302-385	12-15	27-34
GEC*012 (60 Hz) GEC*009 (50 Hz)	55°	2.8	144-166	200-254	9-11	23-29	128-148	305-388	10-12	27-35
GEC*012 (60 Hz) GEC*009 (50 Hz)	68°	2.2	146-168	247-315	11-14	22-28	152-175	322-409	13-17	31-39
GEC*012 (60 Hz) GEC*009 (50 Hz)	68°	2.8	146-168	240-305	9-11	22-28	156-179	324-413	11-14	32-40
GEC*012 (60 Hz) GEC*009 (50 Hz)	75°	2.2	147-169	273-347	11-14	21-27	168-193	333-423	14-18	33-42
GEC*012 (60 Hz) GEC*009 (50 Hz)	75°	2.8	147-169	265-337	9-11	21-27	172-198	336-427	11-15	34-43
GEC*012 (60 Hz) GEC*009 (50 Hz)	86°	2.2	147-169	323-411	11-14	20-26	195-224	350-446	15-20	36-46
GEC*012 (60 Hz) GEC*009 (50 Hz)	86°	2.8	147-169	314-399	9-11	20-26	201-231	354-450	12-16	37-47
GEC*012 (60 Hz) GEC*009 (50 Hz)	95°	2.2	148-170	377-480	11-15	19-24	—	—	—	—
GEC*012 (60 Hz) GEC*009 (50 Hz)	95°	2.8	148-170	367-467	9-12	19-25	—	—	—	—
GEC*015 (60 Hz) GEC*012 (50 Hz)	35°	2.8	—	—	—	—	90-103	265-337	10-12	21-26
GEC*015 (60 Hz) GEC*012 (50 Hz)	35°	3.5	—	—	—	—	91-104	266-338	8-10	21-27
GEC*015 (60 Hz) GEC*012 (50 Hz)	45°	2.8	144-165	178-227	11-14	23-29	105-121	277-353	11-14	24-30
GEC*015 (60 Hz) GEC*012 (50 Hz)	45°	3.5	144-165	172-219	9-12	23-29	108-124	279-355	9-11	24-31
GEC*015 (60 Hz) GEC*012 (50 Hz)	55°	2.8	145-167	206-262	11-14	23-29	123-141	290-369	12-15	27-34
GEC*015 (60 Hz) GEC*012 (50 Hz)	55°	3.5	145-166	200-254	9-12	23-29	126-145	292-372	10-12	27-35
GEC*015 (60 Hz) GEC*012 (50 Hz)	68°	2.8	146-168	247-314	11-14	22-28	149-171	308-392	13-17	31-39
GEC*015 (60 Hz) GEC*012 (50 Hz)	68°	3.5	146-168	239-305	9-11	22-28	152-175	311-396	11-14	32-40
GEC*015 (60 Hz) GEC*012 (50 Hz)	75°	2.8	147-169	272-346	11-14	21-27	164-188	318-405	14-18	33-42
GEC*015 (60 Hz) GEC*012 (50 Hz)	75°	3.5	147-169	264-336	9-11	21-27	169-194	320-408	11-14	34-43
GEC*015 (60 Hz) GEC*012 (50 Hz)	86°	2.8	148-170	321-408	11-15	20-26	191-220	334-424	15-19	36-46
GEC*015 (60 Hz) GEC*012 (50 Hz)	86°	3.5	148-170	311-396	9-12	20-26	197-226	337-429	12-15	37-47
GEC*015 (60 Hz) GEC*012 (50 Hz)	95°	2.8	148-171	370-471	12-15	19-24	—	—	—	—
GEC*015 (60 Hz) GEC*012 (50 Hz)	95°	3.5	148-171	361-460	9-12	19-25	—	—	—	—
GEC*018 (60 Hz) GEC*015 (50 Hz)	35°	3.4	—	—	—	—	92-106	274-349	9-12	21-26
GEC*018 (60 Hz) GEC*015 (50 Hz)	35°	4.2	—	—	—	—	92-106	274-349	7-9	21-27

Table 4. Operating pressures in cooling/heating for GEC* units (continued)

	Operating Data									
			Cooling				Heating			
Model GEC*	Entering Water Temp (°F)	Water Flow (GPM)	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)
GEC*018 (60 Hz) GEC*015 (50 Hz)	45°	3.4	141-162	178-226	11-14	23-29	108-124	288-367	10-13	24-30
GEC*018 (60 Hz) GEC*015 (50 Hz)	45°	4.2	141-162	172-219	9-11	23-29	110-127	289-368	8-11	24-31
GEC*018 (60 Hz) GEC*015 (50 Hz)	55°	3.4	141-163	206-262	11-14	23-29	126-145	302-385	11-14	27-34
GEC*018 (60 Hz) GEC*015 (50 Hz)	55°	4.2	141-162	200-254	9-11	23-29	129-148	305-388	9-12	27-35
GEC*018 (60 Hz) GEC*015 (50 Hz)	68°	3.4	143-164	249-317	11-14	22-28	152-175	325-413	13-16	31-39
GEC*018 (60 Hz) GEC*015 (50 Hz)	68°	4.2	143-164	242-308	9-11	22-28	156-180	326-415	10-13	32-40
GEC*018 (60 Hz) GEC*015 (50 Hz)	75°	3.4	143-165	275-350	11-14	21-27	169-194	336-428	13-17	33-42
GEC*018 (60 Hz) GEC*015 (50 Hz)	75°	4.2	143-165	267-340	9-11	21-27	173-199	339-432	11-14	34-43
GEC*018 (60 Hz) GEC*015 (50 Hz)	86°	3.4	145-167	320-407	11-14	20-26	196-225	357-454	15-19	36-46
GEC*018 (60 Hz) GEC*015 (50 Hz)	86°	4.2	145-167	312-397	9-11	20-26	202-232	360-458	12-15	37-47
GEC*018 (60 Hz) GEC*015 (50 Hz)	95°	3.4	146-168	362-461	11-14	19-24	—	—	—	—
GEC*018 (60 Hz) GEC*015 (50 Hz)	95°	4.2	146-168	353-450	9-11	19-25	—	—	—	—

Water Pressure Drop

Table 5, p. 29 and Table 6, p. 29 should be used to define feet of head/pressure drop. Please note the feet of pressure (ft/head) provided is at AHRI/ISO standard.

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

Table 5. Cooling water pressure drops (WPD) in feet of head for GEC* units - 0.5 to 1.5 tons

Unit Size (60 Hz)	Unit Size (50 Hz)	EWT °F	GPM	Ft. Pressure
006	—	86	1.8	3.6
009	006	86	2.1	4.3
012	009	86	2.8	9.3
015	012	86	3.5	13.1
018	015	86	4.2	9.1

Table 6. Heating water pressure drops (WPD) in feet of head for GEC* units - 0.5 to 1.5 tons

Unit Size (60 Hz)	Unit Size (50 Hz)	EWT °F	GPM	Ft. Pressure
006	—	68	1.8	4.3
009	006	68	2.1	5.0

Table 6. Heating water pressure drops (WPD) in feet of head for GEC* units - 0.5 to 1.5 tons (continued)

Unit Size (60 Hz)	Unit Size (50 Hz)	EWT °F	GPM	Ft. Pressure
012	009	68	2.8	10.7
015	012	68	3.5	14.9
018	015	68	4.2	10.2

Water Volume

Table 7 is provided for use in calculating glycol requirements for the unit.

Table 7. Water volume for GEC* units

Unit Size (60 Hz)	Unit Size (50 Hz)	Water Side Volume (in^3)	Water Side Volume (ft^3)	Water Side Volume (gallons)
006-009	006	13.6	0.008	0.059
012-15	009-12	23.1	0.013	0.100
018	015	36	0.021	0.156

Maintenance

⚠WARNING

Hazardous Service Procedures!

Failure to follow all precautions in this manual and on the tags, stickers, and labels could result in death or serious injury.
Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the following instructions: Unless specified otherwise, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors 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 perform these tasks.

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 8, p. 30:

Table 8. Filter sizing

Unit Size (50/60 Hz)	Filter Size (Nominal) inches
006-018	10 x 32 3/8 (std height unit)
006-018	7 ¾ x 30 5/8 (low height unit)

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.

It should be noted that the water quality should be checked periodically. See Table 9, p. 30.

Table 9. 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

Filter Replacement (standard height configuration)

Filter replacement is done at the front return-air opening of the console unit. No tools are required for the replacement. The maintenance process is done via a 3-STEP process:

1. Through the return-air opening, slide filter to the back of the console unit.
2. Allow the front edge of the filter to drop to floor level.
3. Pull the filter out of the front opening.

Note: *REVERSE the cycle to install a new filter.*

Filter Replacement (low height configuration)

Filter replacement is done at the front return-air opening of the console unit. A slotted screw driver is needed for the replacement. The maintenance process is done via a 2-STEP process.

1. Insert screw-driver and depress grill tab (2-per grille). Rotate grille down, and lift grille upward to remove grille. The removal of one grille is required.
2. Slide the filter through the grille hole in the cabinet front panel.

Note: *REVERSE the cycle to install a new filter.*

Troubleshooting

⚠WARNING

Hazardous Service Procedures!

Failure to follow all precautions in this manual and on the tags, stickers, and labels could result in death or serious injury.
Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the following instructions: Unless specified otherwise, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors 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 perform these tasks.

Deluxe 24V Controls

Troubleshooting units which contain the deluxe 24V 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. The LEDs are labeled on the circuit board with numbers as referenced in Table 10, p. 31.

Table 10. Diagnostic LEDs

Color: Green	Color: Red		
LED1	LED2	LED3	**Controller Mode**
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

Table 11. Troubleshooting table

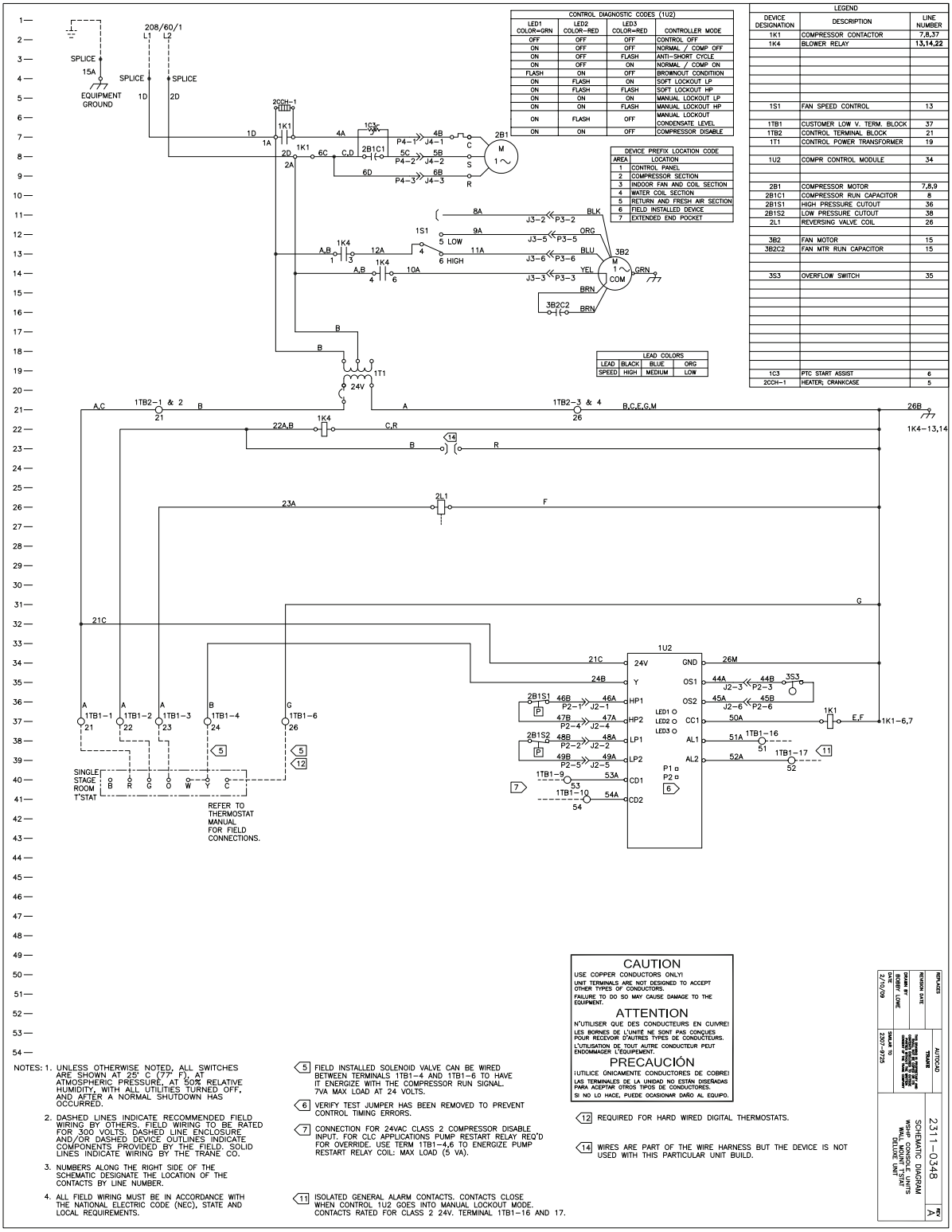
Problem	Heating	Cooling	Cause	Correction
No response to any thermostat setting	X	X	Main power off	Check fuses
	X	X	Defective control transformer	Replace
	X	X	Broken or loose connection	Repair
	X	X	Defective thermostat	Replace
	X	X	Transformer	Reset Transformer
Unit short cycles	X	X	Thermostat or sensor 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

Table 11. Troubleshooting table (continued)

Problem	Heating	Cooling	Cause	Correction
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
	X	X	Defective reversing valve	Check or 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
	X		Inadequate GPM	Increase GPM
Low pressure switch open	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

Figure 15. Deluxe 24V controls



NOTES:

1. UNLESS OTHERWISE NOTED, ALL SWITCHES ARE SHOWN AT 25° C (77° F), AT ATMOSPHERIC PRESSURE, AT 50% RELATIVE HUMIDITY, WITH ALL UTILITIES TURNED OFF, AND AFTER A NORMAL SHUTDOWN HAS OCCURRED.
2. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. FIELD WIRING TO BE RATED FOR 300 VOLTS. DASHED LINE ENCLOSURE AND/OR DASHED DEVICE OUTLINES INDICATE COMPONENTS PROVIDED BY THE FIELD. SOLID LINES INDICATE WIRING BY THE TRANE CO.
3. NUMBERS ALONG THE RIGHT SIDE OF THE SCHEMATIC DESIGNATE THE LOCATION OF THE CONTACTS BY LINE NUMBER.
4. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), STATE AND LOCAL REQUIREMENTS.

<5> FIELD INSTALLED SOLENOID VALVE CAN BE WIRED BETWEEN TERMINALS 1TB1-4 AND 1TB1-6 TO HAVE IT ENERGIZE WITH THE COMPRESSOR RUN SIGNAL. 7VA MAX LOAD AT 24 VOLTS.

<6> VERIFY TEST JUMPER HAS BEEN REMOVED TO PREVENT CONTROL TIMING ERRORS.

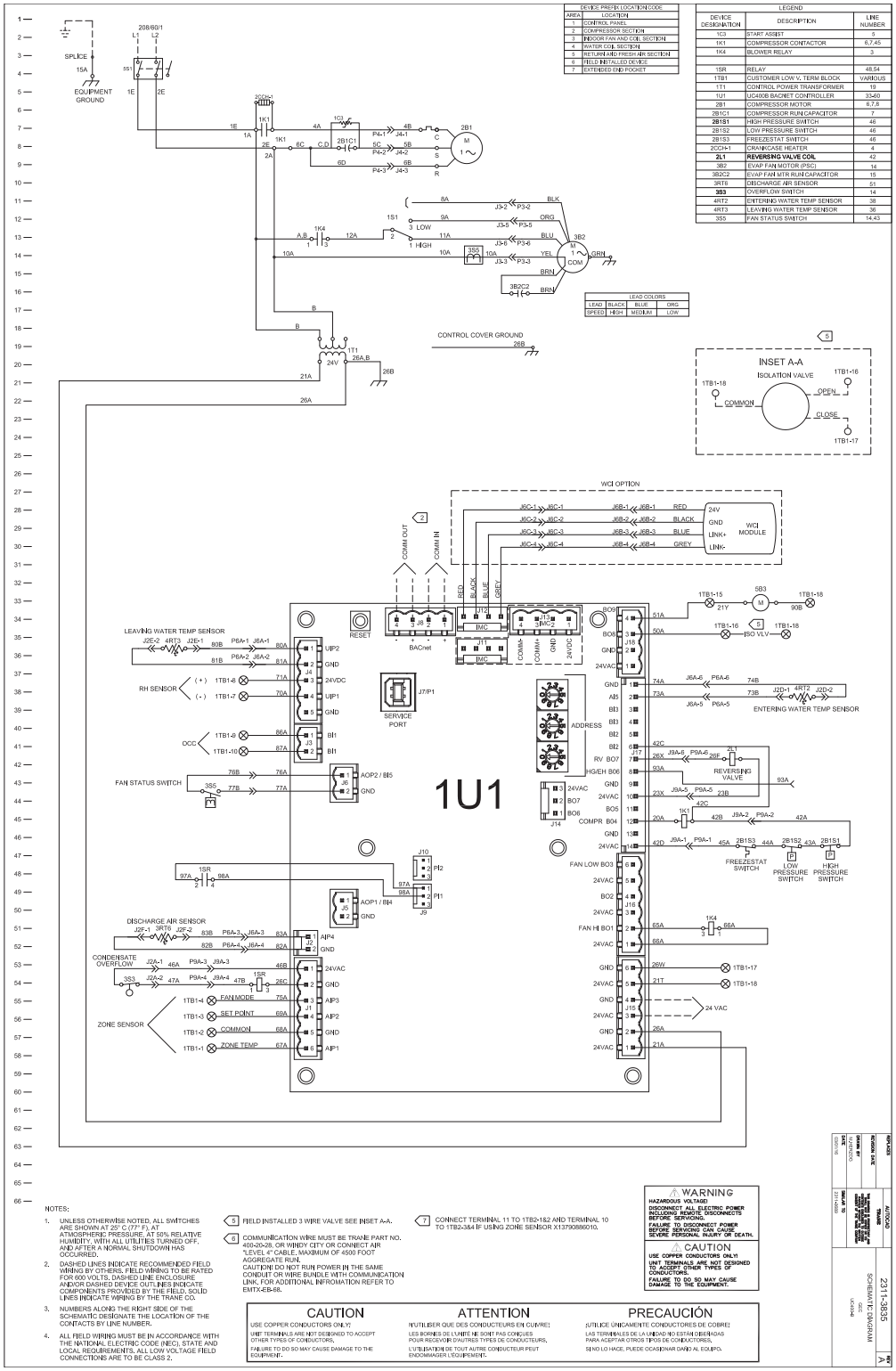
<7> CONNECTION FOR 24VAC CLASS 2 COMPRESSOR DISABLE INPUT. FOR CLC APPLICATIONS PUMP RESTART RELAY REQ'D FOR OVERRIDE. USE TERM 1TB1-4,6 TO ENERGIZE PUMP RESTART RELAY COIL: MAX LOAD (5 VA).

<11> ISOLATED GENERAL ALARM CONTACTS. CONTACTS CLOSE WHEN CONTROL 1U2 GOES INTO MANUAL LOCKOUT MODE. CONTACTS RATED FOR CLASS 2 24V. TERMINAL 1TB1-16 AND 17.

<12> REQUIRED FOR HARD WIRED DIGITAL THERMOSTATS.

<14> WIRES ARE PART OF THE WIRE HARNESS BUT THE DEVICE IS NOT USED WITH THIS PARTICULAR UNIT BUILD.

Figure 16. Symbio™ 400-B/Tracer® UC400-B - 208V-60 Hz - 1pH



DEVICE PREFIX LOCATION CODE	
AREA	LOCATION
1	CONTROL PANEL
2	COMPRESSOR SECTION
3	INDOOR FAN AND COIL SECTION
4	WATER COIL SECTION
5	RETURN AND FRESH AIR SECTION
6	FIELD INSTALLED DEVICE
7	EXTENDED END POCKET

LEGEND		
DEVICE DESIGNATION	DESCRIPTION	LINE NUMBER
1C3	START ASSIST	5
1K1	COMPRESSOR CONTACTOR	6,7,45
1K4	BLOWER RELAY	3
1SR	RELAY	48,54
1TB1	CUSTOMER LOW V, TERM BLOCK	VARIOUS
1T1	CONTROL POWER TRANSFORMER	19
1U1	UC400B BACNET CONTROLLER	33-40
2B1	COMPRESSOR MOTOR	6,7,8
2B1C1	COMPRESSOR RUN CAPACITOR	7
2B1S1	HIGH PRESSURE SWITCH	46
2B1S2	LOW PRESSURE SWITCH	46
2B1S3	FREEZESTAT SWITCH	46
2CCH-1	CRANKCASE HEATER	4
2L1	**REVERSING VALVE COIL**	42
3B2	EVAP FAN MOTOR (PSC)	14
3B2C2	EVAP FAN MTR RUN CAPACITOR	15
3RT6	DISCHARGE AIR SENSOR	51
3S3	OVERFLOW SWITCH	14
4RT2	ENTERING WATER TEMP SENSOR	38
4RT3	LEAVING WATER TEMP SENSOR	36
3S5	FAN STATUS SWITCH	14,43

LEAD COLORS			
LEAD	BLACK	BLUE	ORG
SPEED	HIGH	MEDIUM	LOW

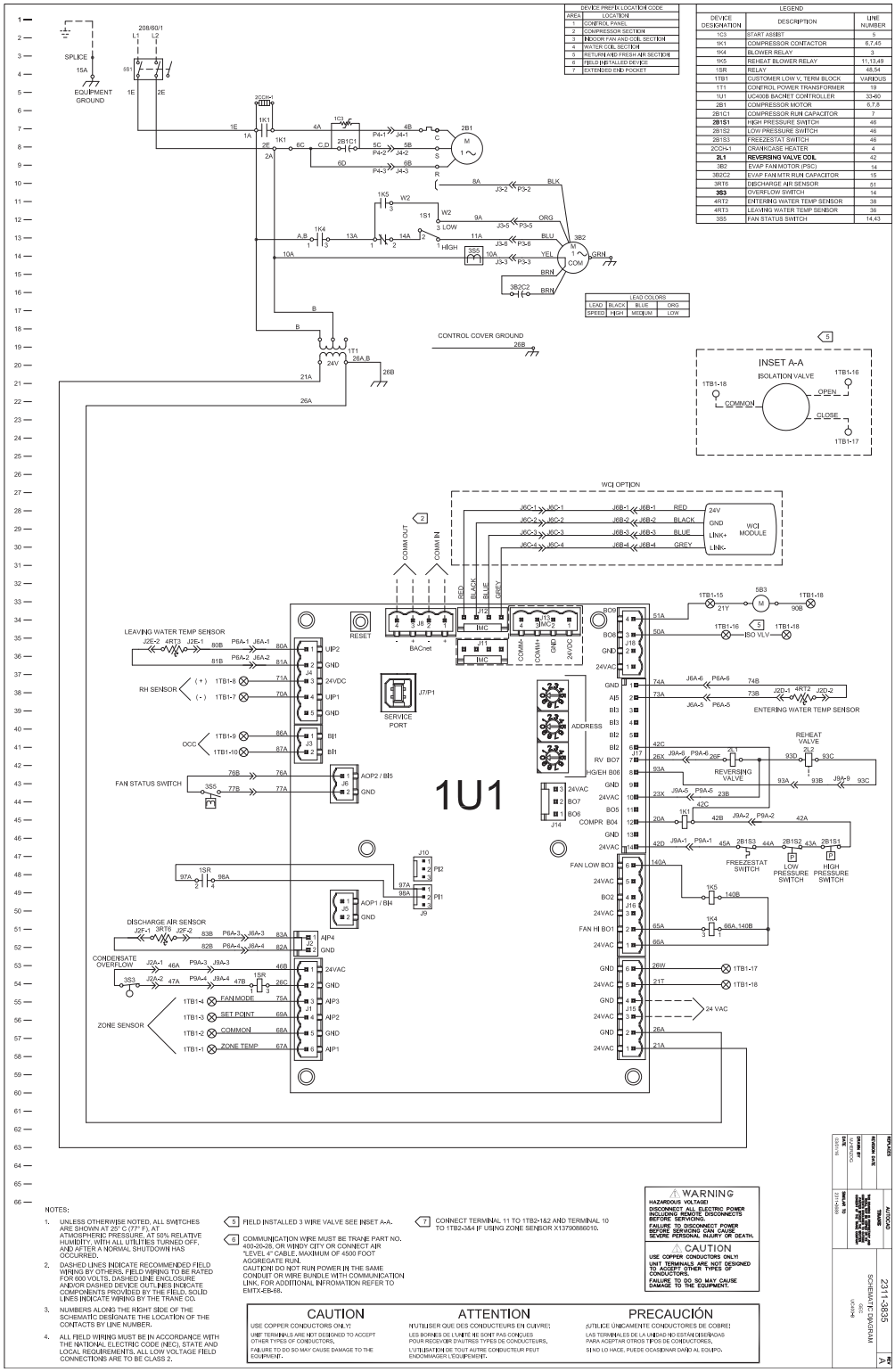
NOTES:
1. UNLESS OTHERWISE NOTED, ALL SWITCHES ARE SHOWN AT 25° C (77° F), AT ATMOSPHERIC PRESSURE, AT 50% RELATIVE HUMIDITY, WITH ALL UTILITIES TURNED OFF, AND AFTER A NORMAL SHUTDOWN HAS OCCURRED.
2. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. FIELD WIRING TO BE RATED FOR 600 VOLTS. DASHED LINE ENCLOSURE AND/OR DASHED DEVICE OUTLINES INDICATE COMPONENTS PROVIDED BY THE FIELD. SOLID LINES INDICATE WIRING BY THE TRANE CO.
3. NUMBERS ALONG THE RIGHT SIDE OF THE SCHEMATIC DESIGNATE THE LOCATION OF THE CONTACTS BY LINE NUMBER.
4. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), STATE AND LOCAL REQUIREMENTS. ALL LOW VOLTAGE FIELD CONNECTIONS ARE TO BE CLASS 2.

5 FIELD INSTALLED 3 WIRE VALVE SEE INSET A-A.

6 COMMUNICATION WIRE MUST BE TRANE PART NO. 400-20-28, OR WINDY CITY OR CONNECT AIR "LEVEL 4" CABLE, MAXIMUM OF 4500 FOOT AGGREGATE RUN.
CAUTION! DO NOT RUN POWER IN THE SAME CONDUIT OR WIRE BUNDLE WITH COMMUNICATION LINK. FOR ADDITIONAL INFROMATION REFER TO EMTX-EB-08.

7 CONNECT TERMINAL 11 TO 1TB2-1&2 AND TERMINAL 10 TO 1TB2-3&4 IF USING ZONE SENSOR X13708880010.

Figure 17. Symbio 400-B/Tracer® UC400-B - 208V-60 Hz - 1pH with hot gas reheat



Warranty

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.

There is a standard five year compressor parts warranty.

Extended Warranty

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

Notes

Trane - by Trane Technologies (NYSE: TT), a global climate innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

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