Installation, Operation, and Maintenance

Water Source Heat Pump
Axiom™ High Efficiency Vertical Stack — GET
¾ - 3 Tons - 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.

November 2013

WSHP-SVX10B-EN

Warnings, Cautions and Notices

Warnings, Cautions and Notices. Note that warnings, cautions and notices appear at appropriate intervals throughout this manual. Warnings are provide to alert installing contractors to potential hazards that could result in death or personal injury. Cautions are designed to alert personnel to hazardous situations that could result in personal injury, while notices indicate a situation that could result in equipment or property-damage-only accidents.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

Read this manual thoroughly before operating or servicing this unit.

ATTENTION: Warnings, Cautions and Notices appear at appropriate sections throughout this literature. Read these carefully:

⚠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

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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.

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

Contains Refrigerant!

System contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

Failure to follow proper procedures or the use of non-approved refrigerants, refrigerant substitutes, or refrigerant additives could result in death or serious injury or equipment damage.

⚠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 code could result in death or serious injury.

⚠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 Personal Protective Equipment (PPE) recommended for the work being undertaken. ALWAYS refer to appropriate MSDS sheets and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate MSDS sheets and OSHA guidelines for information on allowable personal exposure levels, proper respiratory protection and handling recommendations.**
- **If there is a risk of arc or flash, technicians MUST put on all Personal Protective Equipment (PPE) in accordance with NFPA 70E or other country-specific requirements for arc flash protection, PRIOR to servicing the unit.**

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

Revision Summary

WSHP-SVX10B-EN (15 November 2013)

- WPRD Chassis Model Number change

WSHP-SVX10B-EN (18 June 2013)

- Add ECM motor

Trademarks

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009 = ¾ Tons
012 = 1 Tons
015 = 1¼ Tons
018 = 1½ Tons
024 = 2 Tons
036 = 3 Tons

Digit 8: Voltage (Volts/Hz/Phase)

1 = 208/60/1
2 = 230/60/1
7 = 265/60/1

Digit 9: Heat Exchanger

1 = Copper Water Coil
2 = Cupro-Nickel Water Coil
3 = Copper Water Coil with Isolation Valve and Low Flow Control
4 = Cupro- Nickel Water Coil with Isolation Valve and Low Flow Control
5 = Copper Water Coil with Isolation Valve and High Flow Control
6 = Cupro-Nickel Water Coil with Isolation Valve and High Flow Control

Digit 10: Current Design Sequence

Digit 11: Refrigeration Circuit

0 = Heating and Cooling Circuit

Digit 12: Blower Configuration

1 = Free Discharge - PSC motor
2 = Ducted Discharge - PSC motor
3 = Free Discharge w/1" Flange - PSC motor
4 = Free Discharge w/3" Flange - PSC motor
5 = ECM motor w/o flange
6 = ECM motor w/1" flange
7 = ECM motor w/3" flange
8 = Chassis only/No motor (ECM Control)
9 = Chassis only/No motor (PSC Control)

Digit 13: Freeze Protection

A = 20° freezestat
B = 35° freezestat

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0 = Open
S = Special

Digit 15: Supply Air Arrangement

0 = No Supply Air Arrangement
1 = Back and Front Supply Air
2 = Back and Left Supply Air
3 = Back and Right Supply Air
4 = Front and Left Supply Air
5 = Front and Right Supply Air
6 = Left and Right Supply Air
7 = Back, Front and Right Supply Air
8 = Back, Front and Left Supply Air
9 = Front, Right and Left Supply Air
B = Back Supply Air
L = Left Supply Air
R = Right Supply Air
T = Top Supply Air
F = Front Supply Air

Digit 16: Return Air Arrangement

0 = No Return Air Door (Field Provided)
1 = Flush with Wall, Acoustic Hinged Return Air Door with Keyless Entry
2 = Flush with Wall, Acoustic Hinged Return Air Door with Keylock Entry

Digit 17: Control Types

D = Deluxe 24V Controls
C = Tracer™ ZN510 Controls

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0 = Wall Mounted Location

Digit 19: Fault Sensors

0 = No Fault Sensors
1 = Condensate Overflow Sensor
2 = Filter Maintenance Timer
3 = Condensate Overflow and Filter Maintenance Timer

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0 = No Unit Mounted Switch
C = Toggle Switch Only
D = Toggle Switch with Fuses

Digit 24: Filter Type

1 = 1-inch Throwaway Filter

Digit 25: Acoustic Arrangement

0 = Enhanced Sound Attenuation
1 = Deluxe Sound Attenuation

Digit 26: Factory Configuration

3 = R-410A Cabinet

Digit 27: Paint Color

8 = Polar White

Digit 28: Outside Air Option

0 = No Outside Air

Digit 29: Piping Arrangement

B = Back Riser Location
L = Left Hand Riser Location
R = Right Hand Riser Location

Digit 30: Riser Type

0 = No Riser
L = Type L Riser
M= Type M Riser

Digit 31: Supply Riser

0 = No Riser
B = 1" Dia. Riser with Insulation
C = 1¼" Dia. Riser with Insulation
D = 1½" Dia. Riser with Insulation
E = 2 Dia. Riser with Insulation
F = 2½" Dia. Riser with Insulation
G = 3" Dia. Riser with Insulation
2 = 1" Dia. Riser
3 = 1¼" Dia. Riser
4 = 1½" Dia. Riser
5 = 2" Dia. Riser
6 = 2½" Dia. Riser
7 = 3" Dia. Riser

Digit 32: Return Riser

0 = No Riser
B = 1" Dia. Riser with Insulation
C = 1¼" Dia. Riser with Insulation
D = 1½" Dia. Riser with Insulation
E = 2" Dia. Riser with Insulation
F = 2½" Dia. Riser with Insulation
G = 3" Dia. Riser with Insulation
2 = 1" Dia. Riser
3 = 1¼" Dia. Riser
4 = 1½" Dia. Riser
5 = 2" Dia. Riser
6 = 2½" Dia. Riser
7 = 3" Dia. Riser

Digit 33: Condensate Riser

0 = No Riser
B = 1" Dia. Riser with Insulation
C = 1¼" Dia. Riser with Insulation
D = 1½" Dia. Riser with Insulation
E = 2" Dia. Riser with Insulation
F = 2½" Dia. Riser with Insulation
G = 3" Dia. Riser with Insulation
2 = 1" Dia. Riser
3 = 1¼" Dia. Riser
4 = 1½" Dia. Riser
5 = 2" Dia. Riser
6 = 2½" Dia. Riser
7 = 3" Dia. Riser

Digit 34, 35, 36: Riser Length

000 = No Riser
096 = 96" Riser Length
097 = 97" Riser Length
098 = 98" Riser Length
099 = 99" Riser Length
100 = 100" Riser Length
101 = 101" Riser Length
102 = 102" Riser Length
103 = 103" Riser Length
104 = 104" Riser Length
105 = 105" Riser Length
106 = 106" Riser Length
107 = 107" Riser Length
108 = 108" Riser Length
109 = 109" Riser Length
110 = 110" Riser Length
111 = 111" Riser Length
112 = 112" Riser Length
113 = 113" Riser Length
114 = 114" Riser Length
115 = 115" Riser Length
116 = 116" Riser Length
117 = 117" Riser Length
118 = 118" Riser Length
119 = 119" Riser Length
120 = 120" Riser Length

Vertical High-Rise Chassis WSHP

Digits 1-3: Unit Configuration

GET = High Efficiency Vertical High Rise Heat Pump (cabinet with blower/motor)

Digit 4: Development Sequence

E = R-410A

Digits 5-7: Nominal Size (Tons)

009 = ¾ Tons
012 = 1 Tons
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Digit 8: Voltage (Volts/Hz/Phase)

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4 = Free Discharge w/3" Flange - PSC motor
5 = ECM motor w/o flange
6 = ECM motor w/1" flange
7 = ECM motor w/3" flange
8 = Chassis only/No motor (ECM Control)
9 = Chassis only/No motor (PSC Control)

Digit 13: Freeze Protection

0 = None or Standard
A = 20° Freezestat
B = 35° Freezestat

Digit 14: Open Digit

0 = Open

Digit 15: Supply Air Arrangement

0 = No Supply Air Arrangement
1 = Back and Front Supply Air
2 = Back and Left Supply Air
3 = Back and Right Supply Air
4 = Front and Left Supply Air
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6 = Left and Right Supply Air
7 = Back, Front and Right Supply Air
8 = Back, Front and Left Supply Air
9 = Front, Right and Left Supply Air
B = Back Supply Air
L = Left Supply Air
R = Right Supply Air
T = Top Supply Air
F = Front Supply Air

Digit 16: Return Air Arrangement

0 = No Door (Chassis Only)
1 = Flush with Wall, Acoustic Hinged Return Air Door with Keyless Entry
2 = Flush with Wall, Acoustic Hinged Return Air Door with Keylock Entry

Digit 17: Control Types

0 = Basic Controls for WPRD Retrofit Chassis
D = Deluxe 24V Controls
C = Tracer™ ZN510 Controls

Digit 18: Thermostat Sensor Location

0 = Wall Mounted Location

Digit 19: Fault Sensors

0= No Fault Sensors
1 = Condensate Overflow Sensor
2 = Filter Maintenance Timer
3 = Condensate Overflow and Filter Maintenance Timer

Digit 20-22: Open Digits

Digit 23: Unit Mounted Disconnect

0 = No Unit Mounted Switch
C = Switch Only
D = Switch with Fuses

Digit 24: Filter Type

1 = 1-inch Throwaway Filter

Digit 25: Acoustic Arrangement

0 = Enhanced Sound Attenuation
1 = Deluxe Sound Attenuation

Digit 26: Factory Configuration

2 = R-410A Chassis
R = WPRD Retrofit Chassis

Digit 27: Paint Color

8 = Polar White

Digit 28: Outside Air Option

0 = No Outside Air

Digit 29: Piping Arrangement

B = Back Riser Location
L = Left Hand Riser Location
R = Right Hand Riser Location

Digit 30: Riser Type

0 = No Riser (Chassis Only)

Digit 31: Supply Riser

0 = No Riser (Chassis Only)

Digit 32: Return Riser

0 = No Riser (Chassis Only)

Digit 33: Condensate Riser

0 = No Riser (Chassis Only)

Digit 34, 35, 36: Riser Length

000 = No Riser (Chassis Only)

General Information

Blower/Motor

The blower and motor is located inside the unit cabinet. The blower and motor may be removed from the cabinet through the chassis opening. After removing the chassis, the blower assembly is strapped into the unit cabinet through a single metal, flexible bracket. We refer to this bracket as a housing belly bracket. After detaching one screw at the bottom/front edge of the bracket, the housing and motor are free to be lifted from the fan deck.

Compressor Nameplate

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

Controls

A 75 VA transformer is factory supplied on this unit configuration. See wiring diagram on chassis access panel for field wiring connection to the 24V mechanical thermostat.

Deluxe 24V Controls

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, unit safety control, diagnostics and a generic relay (which may be available for field use). See p. 14 for diagnostic information.

Power wiring is made at the contactor. The wiring is fed through the left or right conduit tube, and into the cabinet's control box (contactor).

Schrader Connections

Connections for the low and high side of the refrigeration system are located conveniently on the chassis' front beneath a sheet metal plate.

Sound Attenuation

Sound attenuation is applied as a standard feature in the product design. The enhanced reduction package includes a heavy gage base plate, and gasket/insulation around the compressor enclosure.

An optional deluxe sound reduction package is also available. It includes a heavy gage base plate, gasket and insulation around the compressor enclosure, and vibration isolation between the chassis and cabinet. An additional dampening treatment is applied around the compressor enclosure to achieve greater acoustical reductions.

Unit Description

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

Unit Nameplate

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

Water Connections

½" or ¾" water connections are located on the chassis's upper section and clearly labeled for water-in/out hose to riser hook-up.

Water-to-Refrigerant Coils

The co-axial water-to-refrigerant heat exchanger for the ¾ ton through 3 ton equipment is constructed of copper or cupro-nickel (option) for the water section and stainless steel for the refrigeration section.

The heat exchanger is leak tested to assure there is no cross leakage between the water and refrigerant gas.

ZN510 Controls

Units incorporating the ZN510 control option design will include a digital LonTalk™ certified control board. The control board will support such options as: random start delay, heating/cooling status, occupied/unoccupied mode and fan/filter status.

Power wiring is made at the contactor. The wiring is fed through the left or right conduit tube, and into the cabinet's control box (contactor). See manual WSHP-IOP-2 for diagnostic information.

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 could result in respiratory, skin or eye irritation.

Jobsite Inspection

Always perform the following checks before accepting a unit:

1. Verify that the nameplate data matches the data on the sales order and bill of lading (including electrical data).
2. Verify that the power supply complies with the unit nameplate specifications.
3. 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 SOLDTO party and future freight claims MAY NOT be accepted by the freight company.
4. Verify that the refrigerant charge has been retained during shipment by use of gauges. Schrader taps are located external to the cabinet on the ¾-3 ton equipment.
5. After assuring that charge has been retained, reinstall the schrader caps to assure that refrigerant leakage does not occur.

Jobsite Storage

NOTICE:

Microbial Growth!

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

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:

1. Place the unit(s) on a dry surface or raise above the ground to assure adequate air circulation beneath the unit.
2. Cover the unit(s) with a water proof tarp to protect them from the elements.
3. 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.
4. Store refrigeration units (chassis) units in the normal UP orientation to maintain oil in the compressor. Cabinet configurations may be stored as crated.
5. Do not stack units.

Dimensions and Weights

⚠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.

Table 1. Unit weights

Size	Shipping weight with pallet (lb)	Shipping weight without pallet (lb)
Cabinet		
009	135	115
012	135	115
015	175	150
018	175	150
024	225	195
036	225	195
Chassis		
009	88	78
012	107	97
015	112	102
018	117	107
024	174	164
036	190	180

Unit Location and Clearances

Locate the unit in an indoor area. The ambient temperature surrounding the unit must not be less than 45°F. Do not locate the unit in areas subject to freezing.

Attention should be given to service clearance and technician safety. The unit chassis should be easily removed from the cabinet in all applications. There must be enough space for service personnel to perform maintenance or repair. Provide sufficient room to make water, and electrical connection(s). Local and national codes should be followed in providing electrical power connections.

Figure 1. Mechanical clearances

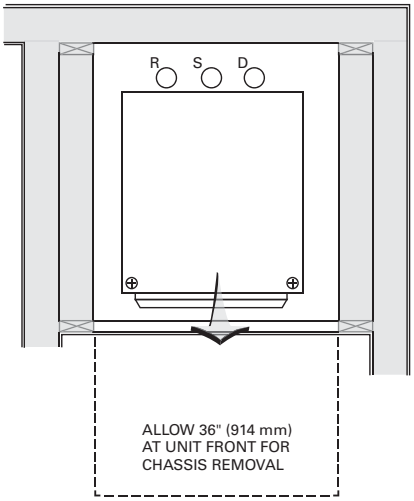


Figure 2. GET 009-036

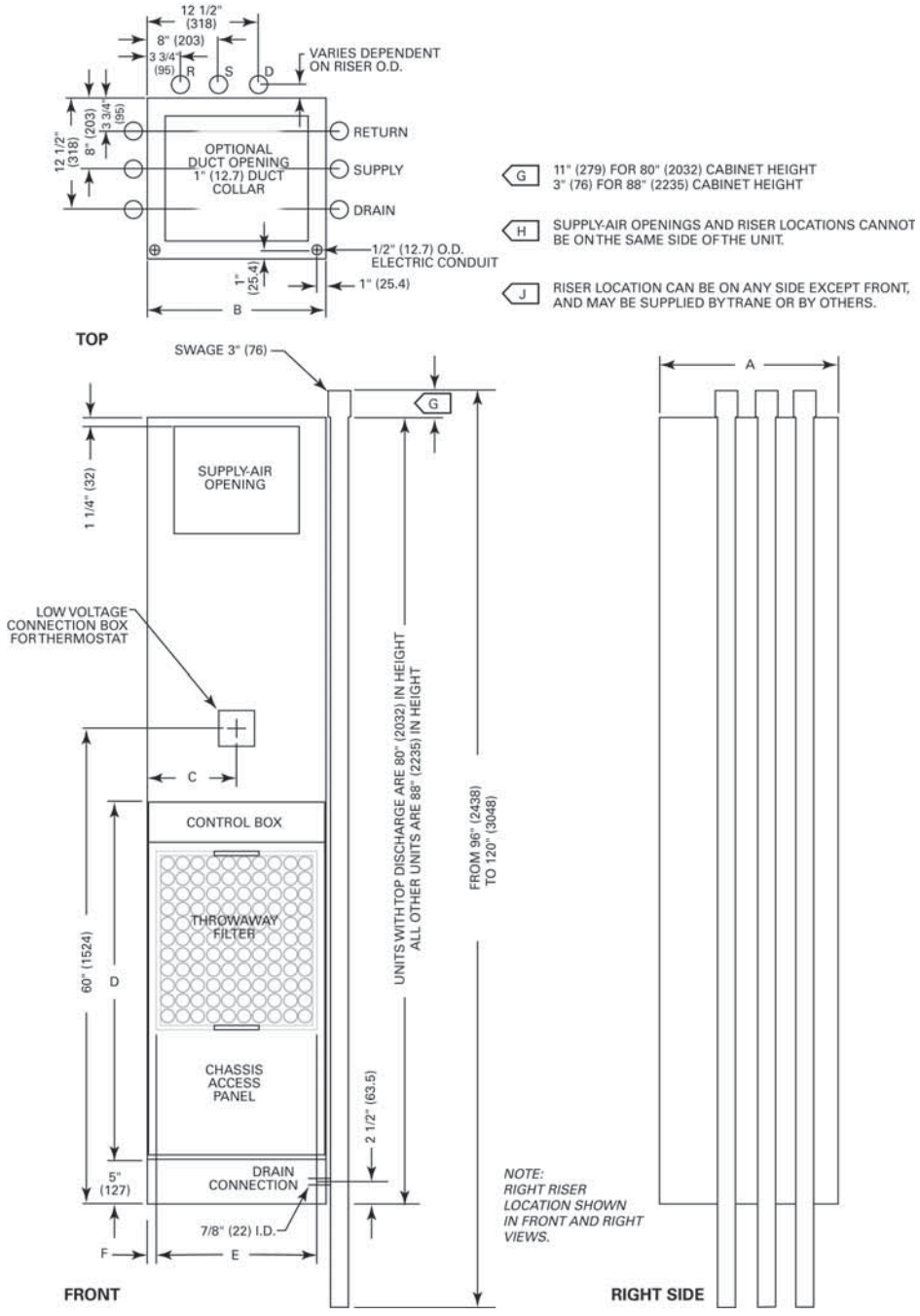


Table 2. GET 009-036

GET	A	B	C	D	E	F
009, 012	16¼" (413)	16¼" (413)	8 1/8" (206)	39 1/8" (994)	14¾" (375)	¾" (19)
015-018	18" (457)	20" (508)	10" (254)	40 5/8" (1032)	18¾" (476)	¾" (19)
024-036	24" (610)	24" (610)	12" (305)	49 5/8" (1260)	22 5/8" (575)	¾" (19)

Return Air (hinged) Acoustical Door

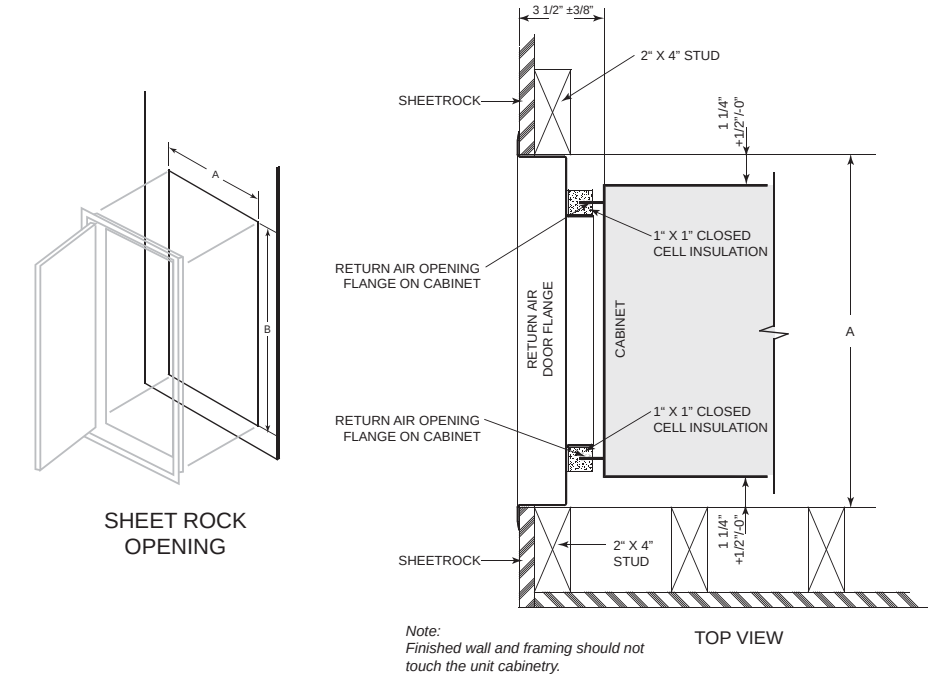
The hinged acoustical door is recessed into the wall so that the door is flush with the surface of the wall.

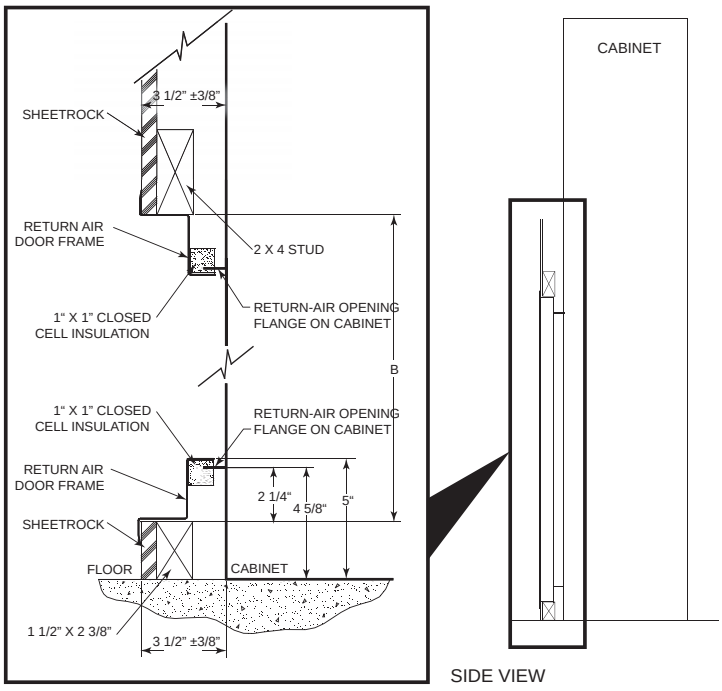
The opening through the wall for the door assembly must be centered with the return-air opening of the unit cabinet. For full installing instructions of the return-air acoustical door, see p. 14.

Table 3. Return air hinged acoustical door

Unit Size	A	B
009 012	19¼” (489)	44 1/8” (1121)
015 018	23¼” (591)	45¼” (1149)
024 036	27 1/8” (689)	54 5/8” (1387)

Figure 3. Return air (hinged) acoustical door





Installation

General Installation Checks

The checklist below is a summary of the steps required to successfully install a unit. This checklist is intended to acquaint the installing personnel with procedures required in the installation process. It does not replace the detailed instructions called out 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 unit cabinet is packaged in a wooden crate. A pry bar and/or hammer will be needed for packaging removal.*

Note: *The chassis sits inside a cardboard tray with an upper box for protection. Typically four chassis will be shrink-wrapped to a single pallet.*

2. Verify the correct model, options and voltage from the unit nameplate.
3. Verify the installation location of the unit will provide the required clearance for proper operation.
4. Remove refrigeration access panel and inspect the unit. Be certain the refrigerant tubing has clearance from adjacent parts.

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.

⚠ 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 code 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 unit power block (1TB1) in the unit's cabinet control box for equipment.
4. Install proper grounding wires to an earth ground.

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

Low Voltage Wiring (AC & DC) Requirements

Connect properly sized control wiring to the proper termination points between the field supplied thermostat and the terminal plug in the equipment's junction box.

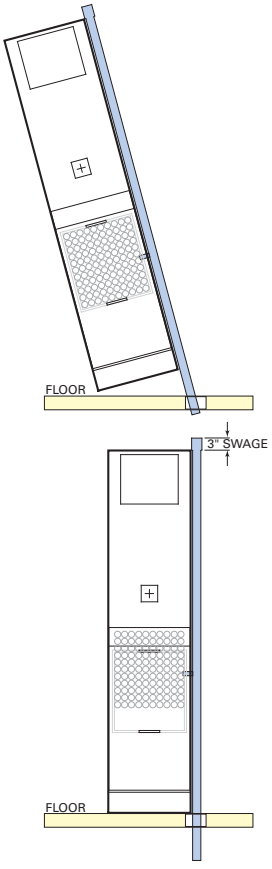
Unit Placement

⚠ 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.

Figure 4. Stacking illustration



If unit cabinet assembly includes *factory provided risers*, and "no" field provided between-the-floor riser extensions, please move to Step 1.

Note: *Risers are designed to accommodate a maximum of 1½" to 3" expansion and contraction. If the total calculated riser expansion exceeds 3", expansion devices must be field provided.*

If unit cabinet assembly includes factory provided risers and field provided between-the-floor riser extensions are required, install the extensions before installing the cabinet.

1. Install drain valve, shut-off/balancing valves, flow indicators and drain at the base of each supply and return riser to enable system flushing at start-up, balancing and service/maintenance.
2. Lift cabinet into space while aligning it into the 3"swage of the riser below.

Note: *Take extra care as not to scrape or dent risers during positioning. The riser should fall approximately 2" into the 3" swage. This will allow for the variation in floor-to-floor dimensions, and keep the riser joints from bottoming out.*

3. Level the cabinet.
4. Plumb risers in two planes to assure proper unit operation and condensate drainage.
5. Anchor all units into place.
6. For field provided risers, center the supply/return stubouts into the unit expansion slots. The stubouts should be perpendicular to the cabinet panel.
7. Verify all risers are vertical and that they penetrate the swaged joint at least 1". Riser should not be allowed to bottom out.
8. Braze riser joints. Soft solder or low-temperature alloys should not be used in this application.
9. If risers are field provided, it is recommended that the risers be anchored to the building structure with a minimum of one contact point. For expansion and contraction reasons, do not fasten risers rigidly to the building.
10. Seal access holes made through the cabinet for piping with suitable material to help eliminate air leakage.
11. See "Cleaning and Flushing the Water Loop," p. 16 for system flushing.

Note: *Remove shipping straps from risers.*

Water Connection

For vibration isolation, it is recommended that flexible steel braided hoses be installed instead of hard piping between the vertical risers and the unit chassis.

Trane offers 4-types of hose kit variations:

- Stainless steel braided flexible hose with manual shut-off (ball) valves
- Stainless steel braided flexible hose with manual deluxe shut-off (ball) valves
- Stainless steel braided flexible hose with manual circuit-setter valve
- Stainless steel braided flexible hose with automatic balancing valve

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

Note: *Hoses should be no longer than 24"*

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 code could result in death or serious injury.

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.

NOTICE:

Use Copper Conductors Only!

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

Main Unit Power Wiring

⚠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.

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 Figure 5, p. 14.

Figure 5. Power wire entrance

Route power wire to the cabinet control box through the factory installed conduit at the top of the unit cabinetry.The high voltage connection is made at the 1PB1 power block in the cabinet control box. 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.

Control Power Transformer

⚠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

The 24V control power transformers are to be used only with the accessories called out in this manual. Transformers rated greater than 75 VA are equipped with internal circuit breakers. If a circuit breaker trips, turn OFF all power to the unit before attempting to reset it.

The transformer is located in the chassis control box.

Drywall Installation

Before installing drywall around cabinet, cover the cabinet supply and return openings with plastic or cardboard to help prevent dust or construction debris from reaching unit components. Warranties will be voided if paint or foreign debris is allowed to contaminate internal unit components.

The location of the drywall may be dependent upon the type of return air access design.

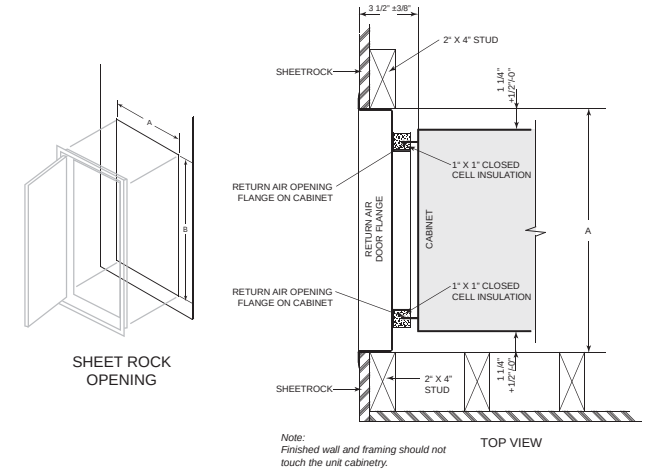
For units containing a field provided return air access assembly, the contractor must calculate location of drywall to allow for frame mounting.

Units Utilizing Hinged Acoustic Door Assembly

Figure 6. Mock-up of stud placement

1. Locate the side studs a minimum of 1¼" and a maximum of 1 3/8" from the cabinet to the side of the stud. This critical dimension, combined with "distance between studs" is used to determine the side-to-side opening for the door, dimension A.The distances provided in the table are a "minimum" dimension. Allow 3½" from the front of the cabinet to the sheet rock surface, Figure 7, p. 15 - top view, Figure 6, p. 14 - mock-up of stud placement.
2. The height of the door assembly must be positioned to recess the door 2¼" from the cabinet's return-air opening, Figure 7, p. 15 - side view blow-up.

Figure 7. Drywall installation for hinged acoustic door



3. Locate dimensions A and B for sheet rock opening size. The position of the sheet rock opening must be centered side-to-side with the return-air opening in the cabinet. Ensure the bottom of the sheet rock opening is 2¼" below the return-air opening in the cabinet. This allows the door recess to rest on the bottom of the sheet rock opening for proper vertical placement of the door.

Table 4. Sheet rock opening size

Unit Size	A	B
09 012	19¼" (489)	44 1/8" (1121)
015 018	23¼" (591)	45¼" (1149)
024 036	27 1/8" (689)	54 5/8" (1387)

4. Place the door frame into the sheet rock opening. A positive seal is critical between the back of the door frame and the front of the cabinet. Ensure that the gasket material seals properly.

Note: *When placing the sheet rock panel, make certain the opening for the door is centered with the return-air opening in the cabinet (±1/8").*

Figure 8. Door opening

5. Secure the door frame to the side studs using the holes located in the door frame and field provided screws.

Note: *If the gap between the door frame, and the side stud is over 1/16-inch, place a shim in between the door frame and the stud to prevent the door frame from bending/denting.*

Figure 9. Air panel gasket

6. Place the air panel into the door opening. The gasket on the back side of the air panel should seal around the coil perimeter.

Figure 10. Secure to door frame

7. After verifying that the air panel gasket is sealed to the coil, secure the air panel to the door frame using the slots located on the sides of the air panel.

8. Install Filter.
9. Vacuum all dust and construction debris from unit after cutting out supply/return openings.

Supply Air Ductwork

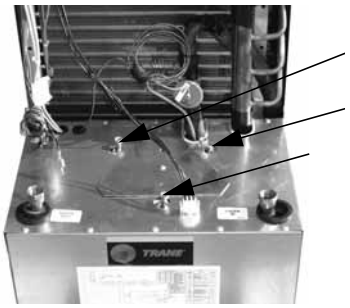
A 2" (50.8 mm) duct flange may be required to help eliminate supply air from recirculating back into the return air, air-to-refrigerant coil prior to discharging into the space.

Equipment containing a top discharge, ducted design: install field ductwork to the unit providing a water tight flexible connector at the unit. This helps 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 help reduce static pressure.

Chassis Installation

Figure 11. Shipping bolts (see arrows)

1. Remove three 18-inch bolts on the chassis and discard.
2. Rotate the triangular metal plate to cover the bolt holes in the chassis. Secure with two sheet metal screws.



(a) Not all units will include shipping bolts.

Figure 12. Bracket removal for deluxe sound package

3. Remove one shipping bracket (one on each side) attached to the chassis slide rails and discard.

Note: *Remove this bracket only if the deluxe sound package design is selected.*

4. Connect water coil pipe to the system riser with a flexible steel hose assembly.
5. Verify that the shut-off/balancing valve in the return line/supply line are closed.
6. Place shut-off valves in appropriate location (see sticker on the equipment for best placement recommendation) to allow chassis to slide easily in/out of unit cabinet.
7. Flush system. See "Cleaning and Flushing the Water Loop," p. 16," for flushing instructions.
8. Open the unit water valves and check piping for leaks.
9. Connect electrical to unit chassis via the quick connect mating plugs.

Note: *Four plugs are included (motor, optional condensate overflow, power and thermostat).*

Figure 13. Install chassis centered

10. Slide chassis into the cabinet. Center the chassis left to right to minimize sound transmission.

11. Verify unit's air filter has shipped with the cabinet.
12. Install cabinet's front cover to the hinged door.

Important: *Ensure the gasket material creates a positive seal around the entire coil to avoid coil bypass. If a field supplied door is used, ensure the front cover is attached to the building structure and not the unit cabinet.*

Supply Grille Installation

See Table 5, p. 16 for supply air dimensions.

Table 5. Supply air opening size

GET	Single Grille 100% CFM	Two Grille 50% CFM	Three Grille 33% CFM	Top Discharge up to 100% CFM
009, 012	14"W x 14"H	10"W x 6"H	Not Recommended	14"W x 10"H
015, 018	16"Wx12"H	14"Wx12"H	12"Wx8"H	16"Wx14"H
024	22"Wx18"H	14"Wx12"H	12"Wx8"H	16"Wx14"H
036	Not Recommended	16"Wx14"H	14"Wx12"H	17"Wx17"H

1. Install the supply grille(s) into the cabinet discharge opening. Ensure there are no air gaps between the cabinet supply air and the grille. This helps prevent recirculation of supply air into the return air opening behind the drywall.
2. Secure grille(s) into the drywall via two screws.

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. See "Using Antifreeze," p. 17 for antifreeze/water mixture by volume.

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

Note: *Air vents should be opened 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.*

Note: *System water pressure needs to be relieved prior to opening system.*

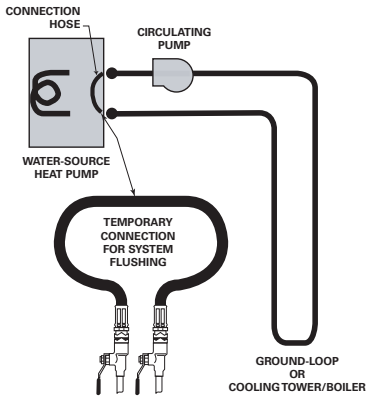
3. With the air vented and the water circulating, the entire system should be checked for leaks with repairs made as required.
4. Operate the supplementary heat system making checks per manufacturer's instructions. During this operation, visual checks should be made for leaks that

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.*

Figure 14. Flushing the water loop



Using Antifreeze

In areas of the country where entering water temperatures drop below 45°F or where piping is being run through areas subject to freezing, the loop must be freeze protected by using an approved antifreeze solution to prevent the earth loop water from freezing inside the heat exchanger. Methanol and glycols are the most commonly used antifreeze solutions. Consult your geothermal unit supplier for locally approved solutions in your area. Propylene glycol is not recommended in installations where the water temperature are expected to fall below 30°F. At extreme temperatures, the viscosity increases to the point where normal loop circulating pumps may not maintain proper flow.

If propylene glycol is the only locally approved solution for anti-freeze, good engineering practices should be used to achieve the desired flow.

Calculate the approximate volume of water in the system by using the requirements detailed in Table 8, Water Volume. Add three gallons to this total to allow for the water contained in the hose kit and geothermal unit.

Table 6. Antifreeze requirements based on volume

Type of Antifreeze	Minimum Temperature for Freeze Protection				
	10°F	15°F	20°F	25°F	30°F
Methanol	25%	21%	16%	10%	3%
Propylene Glycol	—	—	—	—	6%

Low Voltage Wiring

Factory ordered thermostats and zone sensors are pre-wired with a quick connecting plug.

1. After installing the cabinet assembly, simply plug the male portion of thermostat/zone sensor plug into the female portion of the plug located inside the unit's junction box.
2. Mount the thermostat or zone sensor on the finished drywall.

Thermostat/zone sensor connection is shown in Figure 15, p. 17.

Low Voltage Wiring for Field Provided Thermostats/Zone Sensors

Ensure that the AC control wiring between the controls and the unit's termination point does not exceed three (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.

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

Table 7. 24V AC conductors

Distance from unit to Control	Recommended Wire Size
000-460 feet	18 gauge
461-732 feet	16 gauge
733-1000 feet	14 gauge

Figure 15. Zone sensor connection

Six (6) Pin Connector/Harness

- Red = 24V
- Black = Fan
- Orange = RV
- Yellow = Compressor
- Blue = Common

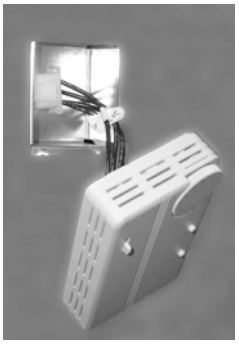


Table 8. Deluxe controller diagnostic LEDs

Color: Green	Color: Red		Controller Mode
LED1	LED2	LED3	
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

PSC Blower Motor Speed Retrofit

PSC motors installed in the unit have multiple speed configurations. To modify the rpm of the motor, the following steps may be followed.

⚠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. Locate the blower motor relay inside the chassis control box.
2. Remove the undesired speed tap.
3. Select desired speed tap wire by using information from Table 9, p. 18.
4. Connect desired tap wire to the 1K4 relay at spade 4.
5. Reconnect power to the unit.

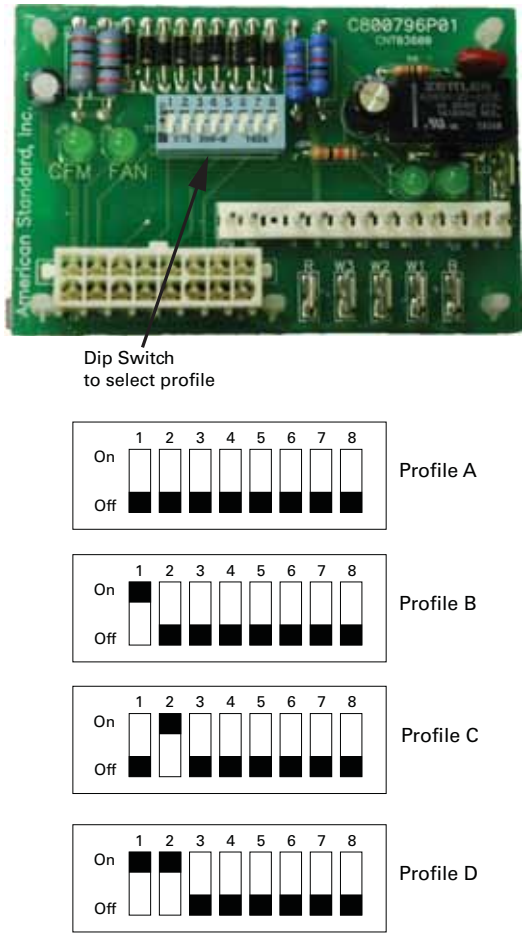
Table 9. Lead change

	Lead Colors	
Lead Speed	High	Low
Blower	1G	9A

ECM Motor CFM Settings

To adjust the CFM, disconnect the power to the unit. Set the DIP switch located in the control box to the desired profile setting. See Figure 16. Connect the power to the unit. If ht epower is not disconnected when the DIP switch is set, th emotor will not be programmed ot the new setting.

Figure 16. ECM control board and dip switch setting



Note: *Units with the optional ECM motor are shipped from the factory on Profile 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. See Figure 16. 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 = 805 of rated air flow

Table 10. PSC blower motor external static pressure without return air door (RAD) with filter

					External Static Pressure (in. of wg)															
Model No	Speed Tap	Ducted [a] Unit	CFM		0.00		0.05		0.10		0.15		0.20		0.25		0.30		0.35	
			Max	Min	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW
GET 009	High	Yes	408		421	0.108	388	0.107	354	0.106	320	0.104	283	0.103	244	0.102				
	Low	Yes			355	0.073	332	0.072	307	0.070	278	0.068	245	0.067						
	High	No			357	0.073	333	0.071	309	0.070	282	0.069	253	0.067						
	Low	No		272	307	0.061	297	0.060	280	0.059	258	0.058								
GET 012	High	Yes	453		453	0.140	433	0.137	412	0.134	390	0.130	367	0.127	342	0.124	316	0.121	288	0.118
	Low	Yes			401	0.112	383	0.109	362	0.106	340	0.103	318	0.100	295	0.097				
	High	No			418	0.125	400	0.122	379	0.120	356	0.117	332	0.113	309	0.110	286	0.107		
	Low	No		304	345	0.097	331	0.095	313	0.092	292	0.090								
GET 015	High	Yes	648						652	0.191	634	0.187	616	0.183	598	0.179	579	0.175	558	0.170
	Low	Yes			560	0.155	539	0.153	523	0.152	511	0.149	499	0.146	487	0.143	472	0.139	455	0.135
	High	No			553	0.169	538	0.167	524	0.165	510	0.162	496	0.159	481	0.155	464	0.151	444	0.147
	Low	No		432	445	0.135	433	0.135	422	0.134										
GET 018	High	Yes	780																785	0.330
	Low	Yes			665	0.253	644	0.249	625	0.246	608	0.242	592	0.237	575	0.232	556	0.227	537	0.221
	High	No			696	0.361	675	0.354	654	0.348	632	0.342	610	0.336	588	0.330	566	0.324	544	0.318
	Low	No		520	544	0.271	526	0.266	506	0.262										
GET 024	High	Yes	984												988	0.402	955	0.392	920	0.382
	Low	Yes			908	0.344	895	0.335	876	0.327	854	0.318	829	0.310	803	0.301	778	0.293	754	0.285
	High	No			850	0.317	827	0.310	806	0.303	787	0.297	768	0.291	750	0.286	730	0.280	710	0.274
	Low	No		656	799	0.292	781	0.286	764	0.280	746	0.275	727	0.269	709	0.264	690	0.258	671	0.252
GET 036	High	Yes	1404														1420	0.686	1396	0.674
	Low	Yes			1303	0.651	1293	0.638	1282	0.625	1270	0.614	1256	0.603	1240	0.592	1222	0.582	1202	0.572
	High	No			1330	0.642	1304	0.630	1277	0.618	1248	0.606	1219	0.593	1188	0.581	1155	0.568	1122	0.555
	Low	No		936	1059	0.523	1051	0.516	1042	0.510	1033	0.503	1022	0.496	1011	0.488	998	0.480	984	0.472

					External Static Pressure (in. of wg)															
Model No	Speed Tap	Ducted Unit	CFM		0.40		0.45		0.50		0.55		0.60		0.65		0.70		0.75	
			Max	Min	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW
GET 015	High	Yes	648		535	0.165	510	0.160	480	0.154	445	0.148	404	0.141						
	Low	Yes			433	0.130	405	0.125												
	High	No			421	0.142														
	Low	No		432																
GET 018	High	Yes	780		758	0.323	729	0.317	697	0.311	661	0.305	620	0.300	573	0.295	518	0.291		
	Low	Yes			517	0.215														
	High	No			521	0.312	497	0.305												
	Low	No		520																
GET 024	High	Yes	984		884	0.371	847	0.359	810	0.348	774	0.336	739	0.324	706	0.312	676	0.299	649	0.287
	Low	Yes			732	0.277	712	0.268	693	0.260	675	0.251	658	0.243	641	0.234				
	High	No			689	0.267	666	0.260	642	0.251										
	Low	No		656	651	0.246														
GET 036	High	Yes	1404		1371	0.662	1346	0.650	1320	0.638	1293	0.625	1265	0.613	1236	0.601	1206	0.588	1175	0.575
	Low	Yes			1181	0.562	1160	0.553	1138	0.543	1117	0.533	1097	0.522	1076	0.511	1055	0.498	1031	0.486
	High	No			1086	0.542	1048	0.528	1007	0.515	965	0.501	919	0.487						
	Low	No		936	967	0.464	949	0.454	927	0.444										

					External Static Pressure (in. of wg)													
Model No	Speed Tap	Ducted Unit	CFM		0.80		0.85		0.90		0.95		1.00		1.05		1.10	
			Max	Min	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW	CFM	KW
GET 036	High	Yes	1404		1142	0.563	1107	0.550	1071	0.536	1032	0.523	991	0.509	947	0.495	900	0.481
	Low	Yes			1003	0.472	967	0.456	919	0.440								
	High	No																
	Low	No		936														

(a) The NO “Ducted” option is for non-ducted (free return) units. Units specified as “non-ducted” (free return) are factory wired to low-speed. Units specified as “ducted” are factory wired to high-speed.

Table 11. ECM Blower motor external static pressure without return air door (RAD) with filter

			External Static Pressure (in. of wg)														
Model No.	Speed Profile	CFM	0.00 kW	0.05 kW	0.10 kW	0.15 kW	0.20 kW	0.25 kW	0.30 kW	0.35 kW	0.40 kW	0.45 kW	0.50 kW	0.55 kW	0.60 kW	0.65 kW	0.70 kW
GET 009	A	374	0.025	0.037	0.050	0.062	0.075	0.087	0.098	0.110	0.121	0.133	0.144	0.155	0.165	0.176	0.176
	B	344	0.023	0.035	0.046	0.057	0.068	0.079	0.090	0.100	0.110	0.120	0.130	0.140	0.149	0.159	0.159
	C	313	0.021	0.032	0.042	0.052	0.062	0.071	0.081	0.090	0.099	0.108	0.117	0.126	0.134	0.143	0.143
	D	285	0.017	0.027	0.036	0.045	0.054	0.063	0.071	0.080	0.088	0.096	0.104	0.112	0.120	0.127	0.127
GET 012	A	419	0.027	0.042	0.057	0.071	0.086	0.100	0.114	0.128	0.142	0.155	0.168	0.181	0.193	0.206	0.206
	B	382	0.025	0.038	0.052	0.065	0.077	0.090	0.103	0.115	0.127	0.139	0.151	0.162	0.173	0.184	0.184
	C	342	0.023	0.034	0.046	0.057	0.069	0.080	0.091	0.102	0.112	0.122	0.133	0.142	0.152	0.161	0.161
	D	303	0.019	0.029	0.039	0.049	0.059	0.068	0.078	0.087	0.096	0.105	0.114	0.123	0.131	0.139	0.139
GET 015	A	594	0.062	0.072	0.081	0.090	0.100	0.109	0.119	0.128	0.138	0.148	0.158	0.168	0.179	0.191	0.202
	B	540	0.044	0.054	0.064	0.073	0.083	0.092	0.101	0.111	0.121	0.131	0.141	0.151	0.162	0.173	0.185
	C	486	0.032	0.042	0.051	0.060	0.069	0.079	0.088	0.097	0.106	0.116	0.126	0.136	0.146	0.157	0.168
	D	432	0.025	0.034	0.042	0.051	0.059	0.068	0.076	0.085	0.093	0.102	0.111	0.120	0.130	0.140	0.150
GET 018	A	712	0.097	0.109	0.121	0.134	0.148	0.163	0.178	0.193	0.208	0.223	0.239	0.253	0.268	0.282	0.282
	B	648	0.077	0.087	0.098	0.110	0.123	0.136	0.150	0.163	0.177	0.191	0.205	0.218	0.230	0.242	0.242
	C	584	0.056	0.066	0.076	0.087	0.099	0.111	0.123	0.135	0.148	0.160	0.172	0.183	0.194	0.204	0.204
	D	522	0.039	0.048	0.058	0.069	0.080	0.091	0.102	0.114	0.125	0.136	0.147	0.157	0.166	0.175	0.175
GET 024	A	903	0.100	0.118	0.135	0.152	0.168	0.185	0.201	0.216	0.232	0.247	0.261	0.276	0.290	0.303	0.303
	B	827	0.081	0.096	0.111	0.125	0.140	0.154	0.168	0.182	0.196	0.209	0.222	0.236	0.248	0.261	0.261
	C	746	0.060	0.073	0.085	0.098	0.110	0.123	0.136	0.148	0.161	0.173	0.185	0.198	0.210	0.222	0.222
	D	659	0.041	0.052	0.063	0.074	0.085	0.097	0.109	0.121	0.133	0.145	0.157	0.169	0.182	0.194	0.194
GET 036	A	1293	0.285	0.306	0.328	0.349	0.370	0.392	0.413	0.433	0.454	0.475	0.496	0.516	0.537	0.557	0.557
	B	1178	0.214	0.233	0.253	0.272	0.292	0.311	0.330	0.349	0.369	0.388	0.406	0.425	0.444	0.463	0.463
	C	1063	0.158	0.175	0.193	0.210	0.227	0.245	0.262	0.279	0.296	0.313	0.331	0.348	0.365	0.382	0.382
	D	950	0.117	0.133	0.148	0.163	0.178	0.193	0.208	0.223	0.238	0.254	0.269	0.284	0.299	0.314	0.314

Note: The ECM motor is programmed for constant CFM. The CFM is factory set on Profile B.

Table 12. Pressure drop due to return air door (RAD)

Model No.	CFM	DP	CFM	DP	CFM	DP
GET 009	272	0.04	340	0.05	408	0.08
GET 012	303	0.04	380	0.07	456	0.11
GET 015	432	0.06	540	0.09	648	0.12
GET 018	520	0.08	650	0.12	780	0.16
GET 024	656	0.06	820	0.08	984	0.12
GET 036	936	0.10	1170	0.16	1404	0.23

Note: The pressure drop across the RAD door should be included in the TOTAL ESP when determining airflow and fan motor power usage. If the door is supplied by another vendor, the pressure drop across that door must be included in the TOTAL ESP when determining airflow and fan motor power usage.

Electrical Data

Table 13. Electrical performance

Model No.	Motor Option	Unit Volts	Total FLA	Comp RLA (ea)	Comp LRA	Blower Motor FLA	Blower Motor HP	Minimum Circuit Ampacity	Maximum Overcurrent Protective Device
GET 009	PSC Motor	208/60/1	4.3	3.7	16.0	0.60	1/20	5.23	15
		230/60/1	4.1	3.5	17.0	0.60	1/20	4.98	15
		265/60/1	3.3	2.8	13.0	0.50	1/20	4.00	15
	ECM Motor	208/60/1	4.3	3.7	16.0	0.55	1/3	5.18	15
		230/60/1	4.1	3.5	17.0	0.55	1/3	4.93	15
		265/60/1	3.4	2.8	13.0	0.55	1/3	4.05	15
GET 012	PSC Motor	208/60/1	7.0	6.3	30.0	0.70	0.13	8.58	15
		230/60/1	7.0	6.3	30.0	0.70	0.13	8.58	15
		265/60/1	5.6	5.0	23.0	0.60	0.13	6.85	15
	ECM Motor	208/60/1	6.9	6.3	30.0	0.60	1/3	8.48	15
		230/60/1	6.9	6.3	30.0	0.60	1/3	8.48	15
		265/60/1	5.6	5.0	23.0	0.60	1/3	6.85	15
GET 015	PSC Motor	208/60/1	8.6	7.9	36.0	0.70	1/8	10.58	15
		230/60/1	8.6	7.9	36.0	0.70	1/8	10.58	15
		265/60/1	7.0	6.4	30.0	0.60	1/8	8.60	15
	ECM Motor	208/60/1	8.5	7.9	36.0	0.60	1/2	10.48	15
		230/60/1	8.5	7.9	36.0	0.60	1/2	10.48	15
		265/60/1	7.0	6.4	30.0	0.60	1/2	8.60	15
GET 018	Free Discharge PSC Motor	208/60/1	10.3	9.6	42.0	0.70	1/8	12.70	20
		230/60/1	10.3	9.6	42.0	0.70	1/8	12.70	20
		265/60/1	8.3	7.7	35.0	0.60	1/8	10.23	15
	ECM Motor	208/60/1	10.2	9.6	42.0	0.60	1/2	12.60	20
		230/60/1	10.2	9.6	42.0	0.60	1/2	12.60	20
		265/60/1	8.3	7.7	35.0	0.60	1/2	10.23	15
	Ducted PSC Motor	208/60/1	11.3	9.6	42.0	1.70	1/5	13.70	20
		230/60/1	11.3	9.6	42.0	1.70	1/5	13.70	20
		265/60/1	8.8	7.7	35.0	1.10	1/5	10.73	15
GET 024	PSC Motor	208/60/1	15.7	13.5	58.3	2.20	1/3	19.08	30
		230/60/1	15.7	13.5	58.3	2.20	1/3	19.08	30
		265/60/1	10.8	9.0	54.0	1.80	1/3	13.05	20
	ECM Motor	208/60/1	14.5	13.5	58.3	0.95	1/2	17.83	30
		230/60/1	14.5	13.5	58.3	0.95	1/2	17.83	30
		265/60/1	10.0	9.0	54.0	0.95	1/2	12.20	20
GET 036	PSC Motor	208/60/1	17.7	14.1	77.0	3.60	1/2	21.23	35
		230/60/1	17.7	14.1	77.0	3.60	1/2	21.23	35
		265/60/1	15.0	12.2	72.0	2.77	1/2	18.02	30
	ECM Motor	208/60/1	16.1	14.1	77.0	2.00	3/4	19.63	30
		230/60/1	16.1	14.1	77.0	2.00	3/4	19.63	30
		265/60/1	14.2	12.2	72.0	2.00	3/4	17.25	25

Pre-Start-up

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? (See "Unit Location and Clearances," p. 9.)

____ 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 (if required) correctly sized, run, taped, insulated and weather proofed with proper unit arrangement?

____ Is the condensate line properly sized, run, trapped and pitched?

____ 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?

____ Are the compressor bolts removed from the chassis?

____ Have the chassis isolation rails been released?

____ Is there a good seal between the front air panel and the coil?

Initial Unit Start-up

Start-up with deluxe controls is included below:

Note: *Start-up for the Tracer™ ZN510 controller may be found in WSHP-IOP-2.*

1. Set the thermostat to the highest position. Set the thermostat system switch to COOL with the fan control to AUTO. *The compressor should NOT run.*
2. Reduce the temperature control 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°F-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.*
3. Check the cooling refrigerant pressures against values in Table 14, p. 23.
4. Turn the thermostat switch to the OFF position. *Unit should stop running and the reversing valve should de-energize.*
5. Leave unit off for approximately FIVE minutes to allow for pressure equalization.
6. Turn the thermostat to the lowest setting. Set the thermostat system switch to the HEAT position.
7. Adjust the temperature setting upward until the unit is energized. *Warm air should blow from the register. A water temperature decrease of approximately 5°F-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.*
8. Check the heating refrigerant pressures against values in Table 14, p. 23.
9. Set the thermostat to maintain the desired space temperature.
10. Instruct the owner on system operation.

Operating Pressures

Use the form on p. 26 to log system and unit temperatures during start-up.

GENERAL: There are many variables (airflow, air temperatures) in an air conditioning system that will affect operating refrigerant pressures and temperatures. The chart 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 14. Operating pressures

			Operating Data							
			Cooling				Heating			
Model	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
GETE009	35	1.80	—	—	—	—	93-107	298-379	6-8	11-15
GETE009	35	2.25	—	—	—	—	96-111	300-382	5-6	12-15
GETE009	45	1.80	138-159	177-226	12-15	11-15	111-128	315-401	6-8	13-17
GETE009	45	2.25	137-157	171-217	9-12	12-15	114-131	316-403	5-7	14-18
GETE009	55	1.80	140-161	203-258	11-14	11-14	129-149	331-421	8-10	15-19
GETE009	55	2.25	139-160	197-250	9-12	12-15	133-153	332-423	6-8	16-20
GETE009	68	1.80	143-164	244-310	11-14	11-14	156-179	354-450	9-11	18-22
GETE009	68	2.25	142-164	237-301	9-11	12-15	161-185	357-454	7-9	18-23
GETE009	75	1.80	144-166	269-342	11-14	11-14	172-197	367-467	10-12	19-24
GETE009	75	2.25	144-165	262-333	9-11	11-15	177-204	372-473	8-10	19-25
GETE009	86	1.80	146-168	313-399	11-14	11-14	199-229	389-496	11-14	21-26
GETE009	86	2.25	146-168	306-389	8-11	11-15	206-237	394-501	9-12	21-27
GETE009	95	1.80	148-170	355-452	11-13	11-14	—	—	—	—
GETE009	95	2.25	147-170	347-441	8-11	11-14	—	—	—	—
GETE012	35	2.40	—	—	—	—	91-104	279-355	6-8	19-24
GETE012	35	3.00	—	—	—	—	94-108	281-358	4-6	19-24
GETE012	45	2.40	144-166	170-216	11-14	18-23	109-125	294-374	6-8	21-27
GETE012	45	3.00	144-166	164-208	9-11	19-24	111-128	295-375	5-6	21-27
GETE012	55	2.40	145-167	197-251	11-14	18-23	127-146	308-392	7-9	24-31
GETE012	55	3.00	145-167	191-243	9-11	18-23	130-149	311-396	6-7	25-31
GETE012	68	2.40	146-168	240-305	11-14	17-22	153-176	329-419	8-10	27-35
GETE012	68	3.00	146-168	233-296	9-11	18-23	158-181	332-423	7-9	28-36
GETE012	75	2.40	147-169	266-338	11-14	17-21	169-195	341-434	9-11	29-37
GETE012	75	3.00	146-169	259-329	9-11	17-22	174-200	345-438	7-9	29-37
GETE012	86	2.40	148-170	312-397	11-14	16-20	197-226	362-460	10-13	30-39
GETE012	86	3.00	148-170	304-387	9-11	16-21	203-234	365-465	8-10	31-39
GETE012	95	2.40	149-172	357-454	11-14	15-19	—	—	—	—
GETE012	95	3.00	149-172	348-443	9-11	15-19	—	—	—	—
GETE015	35	2.80	—	—	—	—	90-103	272-346	6-8	19-24
GETE015	35	3.80	—	—	—	—	94-108	275-350	4-6	19-24
GETE015	45	2.80	146-168	173-220	12-15	18-23	108-124	286-364	6-8	21-27
GETE015	45	3.80	145-167	165-210	9-11	19-24	111-128	288-367	5-6	21-27
GETE015	55	2.80	146-169	202-257	12-15	18-23	125-144	299-381	7-9	24-31
GETE015	55	3.80	146-168	193-245	9-11	18-23	130-149	302-385	6-7	25-31
GETE015	68	2.80	148-170	245-312	12-15	17-22	151-174	317-404	9-11	27-35
GETE015	68	3.80	147-170	235-299	9-11	18-23	157-181	321-409	7-9	28-36

continued on next page

Operating Pressures

Table 14. Operating pressures (continued)

			Operating Data							
			Cooling				Heating			
Model	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
GETE015	75	2.80	148-171	272-346	12-15	17-21	167-192	328-417	10-12	29-37
GETE015	75	3.80	148-171	261-332	9-11	17-22	174-200	333-423	7-9	29-37
GETE015	86	2.80	150-172	319-406	12-15	16-20	193-222	345-440	11-14	30-39
GETE015	86	3.80	150-172	307-390	9-11	16-21	202-232	351-447	8-11	31-39
GETE015	95	2.80	151-174	364-463	12-15	15-19	—	—	—	—
GETE015	95	3.80	151-174	351-446	9-11	15-19	—	—	—	—
GETE018	35	3.60	—	—	—	—	89-103	282-358	7-8	19-24
GETE018	35	4.60	—	—	—	—	93-107	284-361	5-6	19-24
GETE018	45	3.60	140-161	174-221	11-14	18-23	107-123	299-380	7-8	21-27
GETE018	45	4.60	140-161	167-213	8-11	19-24	110-126	302-384	5-7	21-27
GETE018	55	3.60	139-160	203-258	11-14	18-23	125-143	317-404	8-10	24-31
GETE018	55	4.60	139-160	196-250	9-11	18-23	128-147	320-407	6-8	25-31
GETE018	68	3.60	140-161	246-313	11-14	17-22	150-173	341-434	9-11	27-35
GETE018	68	4.60	140-161	238-304	9-11	18-23	155-179	343-437	7-9	28-36
GETE018	75	3.60	141-162	272-346	11-14	17-21	166-191	354-450	10-12	29-37
GETE018	75	4.60	141-162	264-336	9-11	17-22	172-198	357-455	8-10	29-37
GETE018	86	3.60	142-163	317-404	11-14	16-20	193-222	373-475	11-14	30-39
GETE018	86	4.60	142-163	309-393	9-11	16-21	201-231	376-479	9-11	31-39
GETE018	95	3.60	143-165	359-457	11-14	15-19	—	—	—	—
GETE018	95	4.60	143-165	350-445	9-11	15-19	—	—	—	—
GETE024	35	4.70	—	—	—	—	84-97	272-346	6-8	19-24
GETE024	35	6.10	—	—	—	—	87-100	275-350	4-6	19-24
GETE024	45	4.70	136-156	177-226	11-15	18-23	101-116	286-364	6-8	21-27
GETE024	45	6.10	136-156	171-218	9-11	19-24	104-119	288-367	5-6	21-27
GETE024	55	4.70	137-158	205-261	11-14	18-23	118-135	299-381	7-9	24-31
GETE024	55	6.10	137-158	197-251	9-11	18-23	121-139	302-384	6-7	25-31
GETE024	68	4.70	139-160	246-313	11-14	17-22	142-164	318-405	8-11	27-35
GETE024	68	6.10	139-160	238-303	9-11	18-23	147-169	321-409	7-8	28-36
GETE024	75	4.70	140-162	271-345	11-14	17-21	157-181	328-418	9-12	29-37
GETE024	75	6.10	140-161	263-334	9-11	17-22	163-188	332-422	7-9	29-37
GETE024	86	4.70	142-164	314-399	11-14	16-20	183-211	345-439	10-13	30-39
GETE024	86	6.10	142-163	305-388	8-11	16-21	191-219	349-444	8-10	31-39
GETE024	95	4.70	144-166	352-448	11-14	15-19	—	—	—	—
GETE024	95	6.10	144-165	343-437	8-11	15-19	—	—	—	—
GETE036	35	7.10	—	—	—	—	89-103	283-361	6-8	19-24
GETE036	35	9.10	—	—	—	—	93-107	284-361	5-6	19-24
GETE036	45	7.10	136-157	177-226	11-14	18-23	107-123	297-378	6-8	21-27
GETE036	45	9.10	136-157	171-218	9-11	19-24	109-126	298-379	5-6	21-27
GETE036	55	7.10	138-159	206-262	11-14	18-23	125-144	313-398	7-9	24-31
GETE036	55	9.10	138-158	199-253	9-11	18-23	128-147	313-399	6-7	25-31
GETE036	68	7.10	140-161	248-315	11-14	17-22	151-173	334-425	9-11	27-35
GETE036	68	9.10	140-161	240-306	9-11	18-23	155-178	335-426	7-9	28-36
GETE036	75	7.10	141-162	273-347	11-14	17-21	166-191	347-442	9-12	29-37

continued on next page

Table 14. Operating pressures (continued)

			Operating Data							
			Cooling				Heating			
Model	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
GETE036	75	9.10	141-162	265-337	9-11	17-22	171-197	347-442	7-9	29-37
GETE036	86	7.10	143-165	316-402	11-14	16-20	193-222	368-468	10-13	30-39
GETE036	86	9.10	143-165	308-392	8-11	16-21	200-230	369-470	8-10	31-39
GETE036	95	7.10	145-167	355-452	11-14	15-19	—	—	—	—
GETE036	95	9.10	145-167	347-441	8-11	15-19	—	—	—	—

Water Pressure Drop

Table 15, p. 25 should be used to define feet of head/ pressure drop.

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

Table 15. Water pressure drops (WPD) in feet of head

Unit Size	GPM	Cooling		Heating	
		EWT °F	Ft. Head Pressure	EWT °F	Ft. Head Pressure
009	1.1	77	1.8	55	2.1
009	2.1	77	5.3	55	6.1
009	2.6	77	7.9	55	9.0
012	1.5	77	3.9	55	5.2
012	2.8	77	11.9	55	15.3
012	3.5	77	17.6	55	22.5
015	1.9	77	3.9	55	4.7
015	3.5	77	11.8	55	13.8
015	4.4	77	17.5	55	20.3
018	2.3	77	3.2	55	3.9
018	4.2	77	9.7	55	11.5
018	5.3	77	14.3	55	17.0
024	3.0	77	2.9	55	3.6
024	5.6	77	8.6	55	10.5
024	7.0	77	12.8	55	15.4
036	4.5	77	4.7	55	5.7
036	8.4	77	14.2	55	16.9
036	10.5	77	21.1	55	24.9

Water Volume

Table 16. Model Flow Option GPM Press Drop (Ft)

GETE009	Low	1.0	5.5
GETE009	High	1.5	6.6
GETE012	Low	1.5	6.6
GETE012	High	2.0	8.1
GETE015	Low	2.5	10.1
GETE015	High	3.5	15.4
GETE018	Low	3.0	12.6

Table 16. Model Flow Option GPM Press Drop (Ft)

GETE018	High	4.0	18.7
GETE024	Low	4.0	7.6
GETE024	High	6.0	11.4
GETE036	Low	6.0	11.4
GETE036	High	8.0	16.7

Table 17, p. 25 is provided for use in calculating glycol requirements for the unit.

Table 17. Water volume

Unit Model GET	Water Side Volume Cubic In.	Water Side Volume Cubic Ft.	Water Side Volume Gallons
009	18.7	0.011	0.081
012	24.9	0.014	0.108
015	37.2	0.022	0.161
018	40.9	0.024	0.177
024	62.6	0.036	0.271
036	85.0	0.049	0.368

Flow Checks

For the operating temperature drop (heating) and rise (cooling), refer to Table 14, p. 23 for the proper water temperature change. Depending on the unit size, entering water temperature and water flow rate, the cooling temperature rise is from 8°F-16°F. Based on the same criteria for heating, the temperature drop is from 2°F-13°F.

Pressure

Using the P/T ports and one 0-60 psi pressure gauge with the P/T port adapter, measure the pressure difference between the water-in and water-out connections. Compare the pressure differential to Table 15, p. 25 to determine flow.

Start-up

Installing Contractor: Use this form 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.

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	PSIG	PSIG
	PSIG	PSIG
	PSIG	PSIG
COMPRESSOR		
Amps		
Volts		
Discharge line temperature (after 10 minutes)	F	F

Maintenance

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 includes:

Table 18. Filter sizing

Model GET	Filter Size (nominal)
009, 012	14 x 20 (356 x 508)
015	18 x 20 (457 x 508)
018	18 x 25 (457 x 635)
024, 036	20 x 30 (508 x 762)

⚠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.

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 manufacturer's 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.

Table 19. Water quality table

Scaling	
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

Troubleshooting

⚠WARNING

Hazardous Service Procedures!

The maintenance and troubleshooting 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 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. Failure to follow all of the recommended safety warnings provided, could result in death or serious injury.

Preliminary Trouble Inspection

- If operational difficulties are encountered, be sure to perform the preliminary checks before referring to the Table 20, p. 29.
- Verify that the unit is receiving electric supply power.
- Ensure that the fuses in the fused disconnect are intact.
- After completing the preliminary checks, inspect the unit for other obvious problems such as leaking connection, broken or disconnected wires, etc. If everything appears to be in order, but the unit still fails to operate properly, refer to the troubleshooting chart on p. 29.

General Operation

The standard model is designed for indoor installation. When the unit is installed in an unconditioned space, the unit may not start in cool weather (approximately 45°F). It may then be necessary to start the unit in the cooling mode for three to five minutes. The unit may then be shut-off (there will be a two minute time-out of the unit), and restarted in the heating mode. The freeze protection thermostat should also be checked as it may be adversely affected by ambient temperature.

Like any other type of mechanical equipment, the unit performs best when it is well maintained.

Operation with a Conventional Thermostat

The unit is equipped with safety controls, including high pressure control, low pressure control and a freeze protection thermostat, set to shut off the compressor under abnormal temperature or pressure conditions. If the safeties shut off the compressor, a lockout relay prevents short cycling from the abnormal condition. When conditions are corrected, the lockout control can be reset by setting the thermostat system switch to OFF wait a few minutes for the system pressure to equalize, and then return to HEAT or COOL. If the condition continues, an authorized service person should check out the unit.

Table 20. Troubleshooting checklist

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
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

Unit Wiring

Figure 17. Tracer ZN510/1 Ph

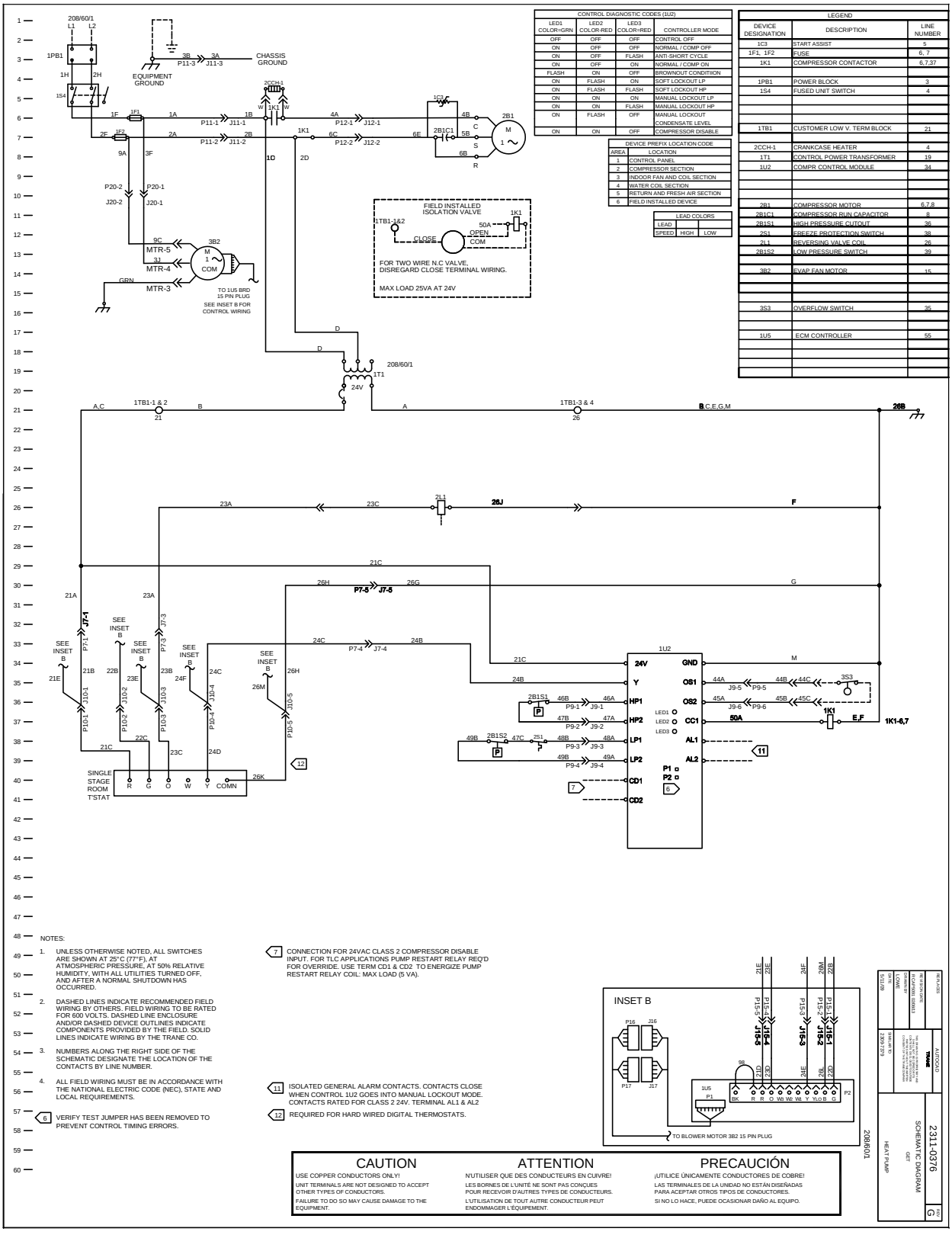
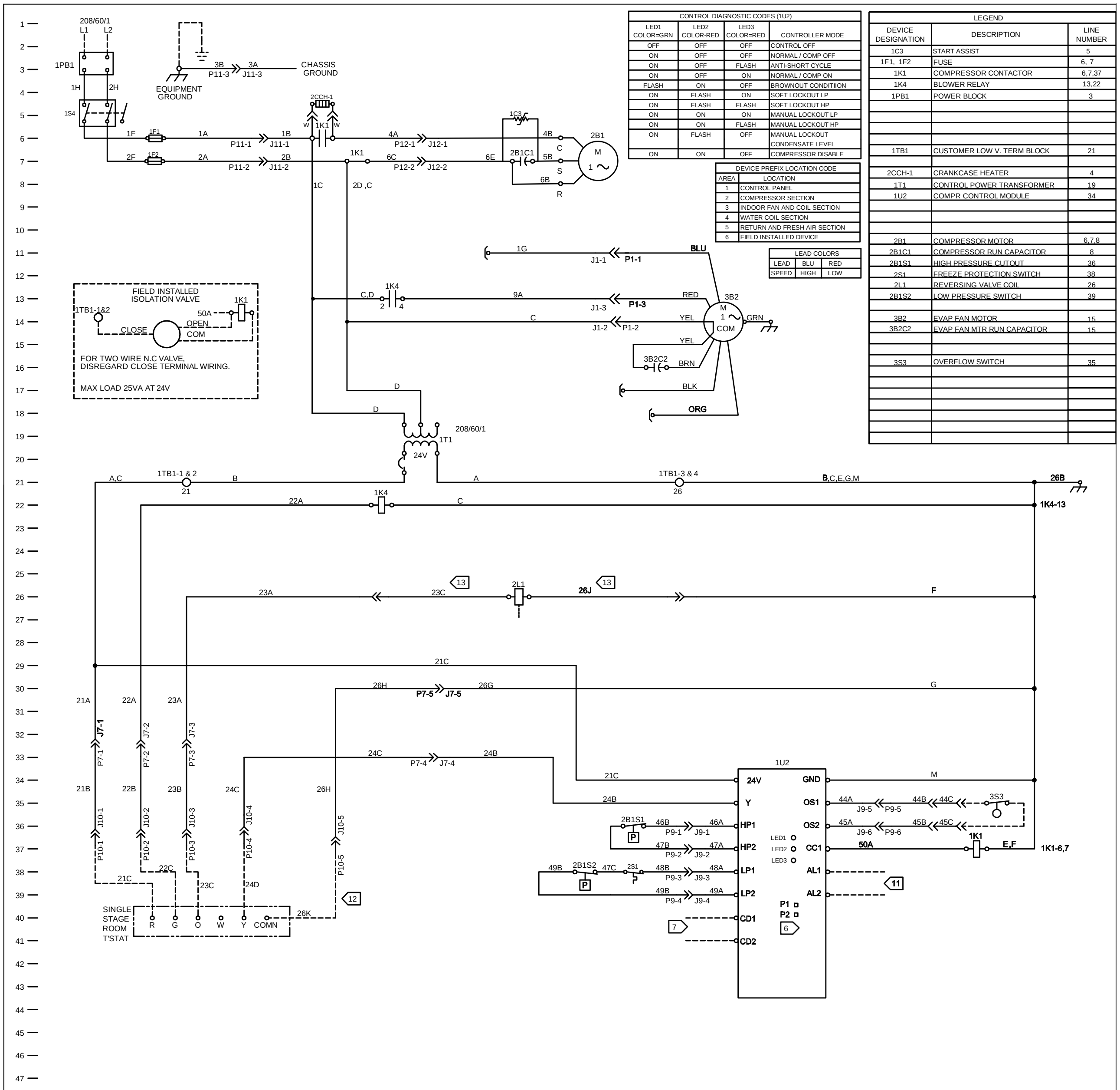


Figure 18. Deluxe 230V/60 Hz/1 Ph



CONTROL DIAGNOSTIC CODES (1U2)			
LED1 COLOR=GRN	LED2 COLOR-RED	LED3 COLOR=RED	CONTROLLER MODE
OFF	OFF	OFF	CONTROL OFF
ON	OFF	OFF	NORMAL / COMP OFF
ON	OFF	FLASH	ANTI-SHORT CYCLE
ON	OFF	ON	NORMAL / COMP ON
FLASH	ON	OFF	BROWNOUT CONDITIION
ON	FLASH	ON	SOFT LOCKOUT LP
ON	FLASH	FLASH	SOFT LOCKOUT HP
ON	ON	ON	MANUAL LOCKOUT LP
ON	ON	FLASH	MANUAL LOCKOUT HP
ON	FLASH	OFF	MANUAL LOCKOUT CONDENSATE LEVEL
ON	ON	OFF	COMPRESSOR DISABLE

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

LEAD COLORS		
LEAD	BLU	RED
SPEED	HIGH	LOW

LEGEND		
DEVICE DESIGNATION	DESCRIPTION	LINE NUMBER
1C3	START ASSIST	5
1F1, 1F2	FUSE	6, 7
1K1	COMPRESSOR CONTACTOR	6,7,37
1K4	BLOWER RELAY	13,22
1PB1	POWER BLOCK	3
1TB1	CUSTOMER LOW V. TERM BLOCK	21
2CCH-1	CRANKCASE HEATER	4
1T1	CONTROL POWER TRANSFORMER	19
1U2	COMPR CONTROL MODULE	34
2B1	COMPRESSOR MOTOR	6,7,8
2B1C1	COMPRESSOR RUN CAPACITOR	8
2B1S1	HIGH PRESSURE CUTOUT	36
2S1	FREEZE PROTECTION SWITCH	38
2L1	REVERSING VALVE COIL	26
2B1S2	LOW PRESSURE SWITCH	39
3B2	EVAP FAN MOTOR	15
3B2C2	EVAP FAN MTR RUN CAPACITOR	15
3S3	OVERFLOW SWITCH	35

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.

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

7 CONNECTION FOR 24VAC CLASS 2 COMPRESSOR DISABLE INPUT. FOR TLC APPLICATIONS PUMP RESTART RELAY REQ'D FOR OVERRIDE. USE TERM CD1 & CD2 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 AL1 & AL2

12 REQUIRED FOR HARD WIRED DIGITAL THERMOSTATS.

13 WIRES 23C & 26J ARE ONLY USED ON SIZE 024 & 036. ON ALL OTHER SIZES WIRES 23A & 26F CONNECT TO 2L1.

CAUTION	ATTENTION	PRECAUCIÓN
USE COPPER CONDUCTORS ONLY!	N'UTILISER QUE DES CONDUCTEURS EN CUIVRE!	¡UTILICE ÚNICAMENTE CONDUCTORES DE COBRE!
UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.	LES BORNES DE L'UNITÉ NE SONT PAS CONÇUES POUR RECEVOIR D'AUTRES TYPES DE CONDUCTEURS.	LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.	L'UTILISATION DE TOUT AUTRE CONDUCTEUR PEUT ENDOMMAGER L'ÉQUIPEMENT.	SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.

208/60/1

2311-0376 SCHEMATIC DIAGRAM GET WALL MOUNT T'STAT DELUXE UNIT HEAT PUMP G

Figure 19. Tracer ZN510/1 Ph with ECM motor

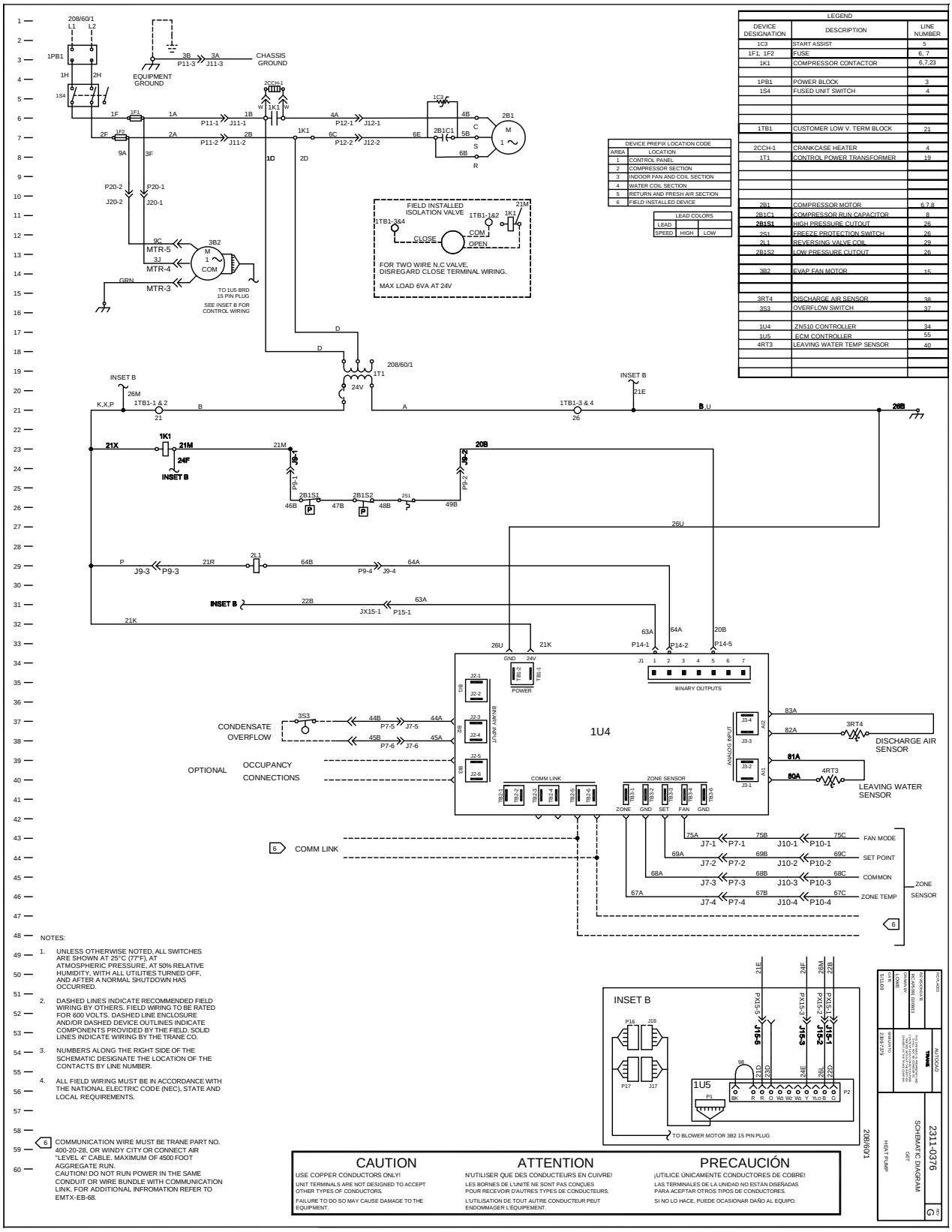
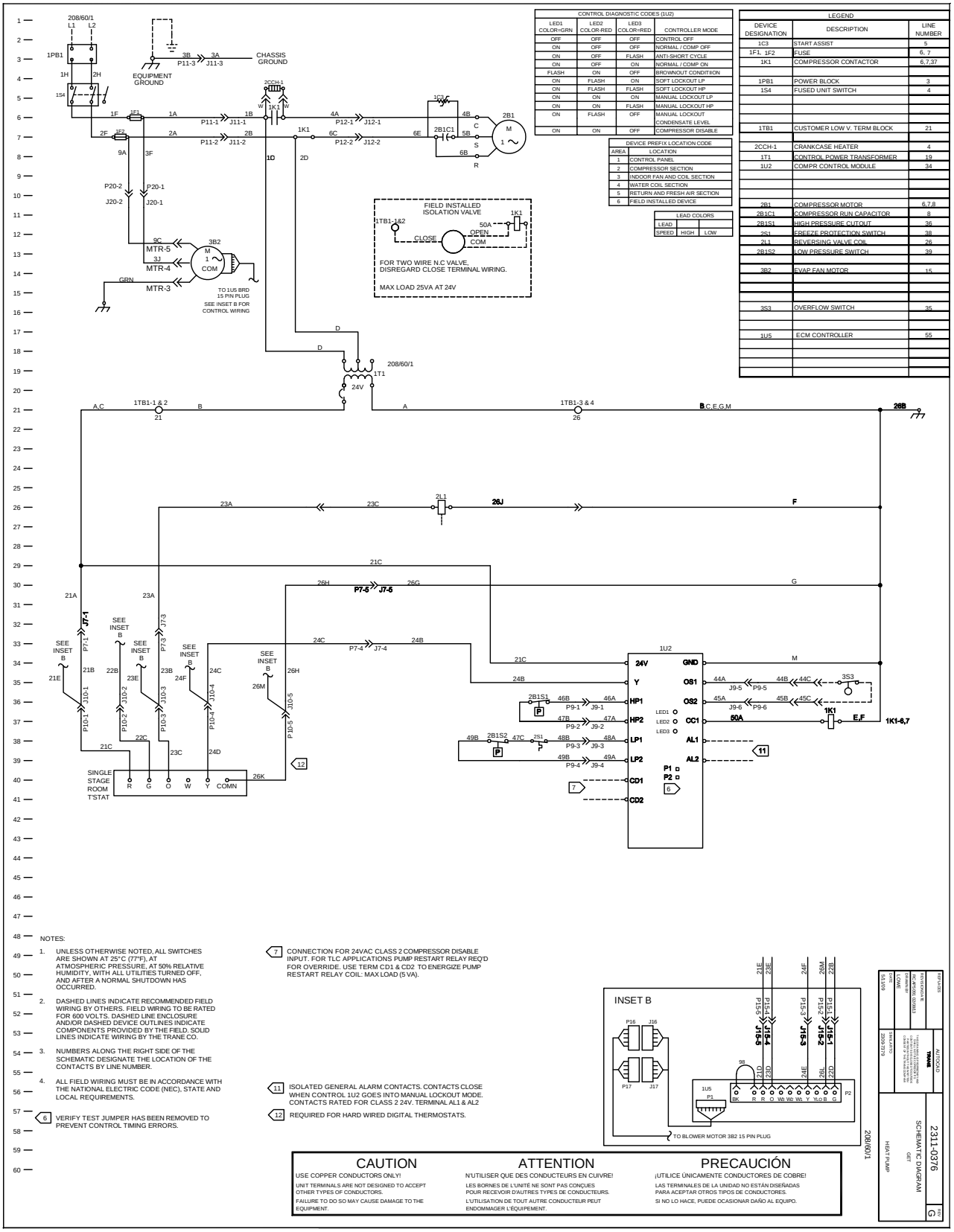


Figure 20. Deluxe 24V/1 Ph with ECM motor



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.

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.

Trane optimizes the performance of homes and buildings around the world. A business of Ingersoll Rand, the leader in creating and sustaining safe, comfortable and energy efficient environments, Trane offers a broad portfolio of advanced controls and HVAC systems, comprehensive building services, and parts. For more information, visit www.Trane.com.

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