Product Catalog

Water Source Heat Pump
Axiom™ High Efficiency Vertical Stack — GET

¾–3 Tons—60 Hz

November 2013

WSHP-PRC020D-EN

Introduction

Water-Source Vertical High-Rise

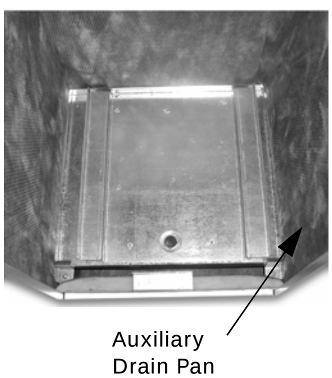
The 3/4-ton through 3-ton vertical high-rise water-source heat pump is a floor mounted, “furred-in” unit, designed to be hidden from view behind drywall to blend with the room’s natural decor. In multi-story buildings, the units may be stacked one on top of the other to minimize piping and electrical costs. Supply, return and condensate riser piping may be factory mounted to simplify job site installation of the equipment.

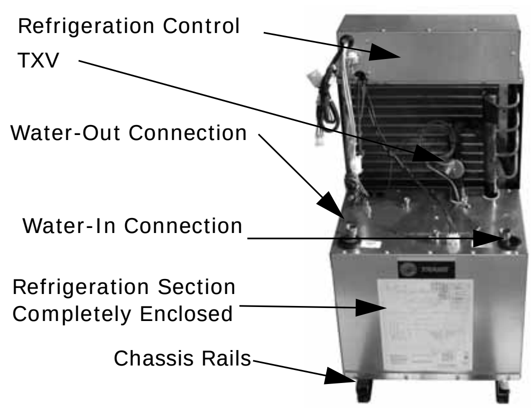
The high-rise configuration is often used in hotels, dorms and assisted living facilities where a single unit could provide comfort to a single or multiple room dwelling. Because the units are mounted directly in the space, ductwork is optional.

All water-source heat pumps are commissioned, tested and quality certified prior to leaving the factory. This assures global quality standards from controls, water, refrigeration, and aesthetics to the building owner and installing contractor.

Key features of the water-source, vertical stack heat pump include:

1. Removable/replaceable chassis
2. Ducted and free discharge cabinet selections available
3. Factory mounted flow control with strainer and isolation valve option
4. Plug-in chassis and plug-in thermostat design
5. Factory supplied riser options
6. Maintenance accessibility for coil fin cleaning
7. Extra quiet design includes enhanced and deluxe sound proofing choice
8. Through the front high and low pressure service ports accessible
9. Tamper proof hinged acoustical door option
10. Unit mounted switch and fuse option
11. Lower height cabinet for ducted applications
12. Auxiliary drain pan
13. Rust resistant chassis drain pan
14. Intelligent controls





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Revision Summary

WSHP-PRC020D-EN (09 November 2013): Performance Data (Efficiency Upgrades); WPRD Chassis

Table of Contents

Features and Benefits

Unit Description

The vertical high-rise water-source heat pump is a floor mounted configuration available in a ¾ ton, 1 ton, 1¼ ton, 1½ ton, 2 ton and 3 ton sizes.

The unit cabinet may be ordered for early shipment to aid in early installation of drywall, plumbing and electrical. See "Model Number Descriptions," p. 14. The cabinet design is available in either an 88-inch height (free discharge) or 80-inch height (ducted) configuration. As many as 3 supply-air discharges are available for the 1¼ ton-3 ton, free discharge cabinets to provide multiple supply-air through one unit.

Air distribution is made through a rigid bar type extruded aluminum grille mounted to the sheetrock. It is both durable and attractive in design.

The return-air panel is a hinged acoustical door, see Figure 1, p. 4. The door allows for easy access to the unit's filter and for maintenance of the equipment.

The hinged acoustical panel provides greater sound attenuation, and is mounted flush to the wall. This panel is easily removed for filter maintenance or chassis removal through the magnetic catch door. An optional tamper proof latch is available on the hinged door design to impede access if required.

Figure 1. Return-air flush mounted hinged door

Blower/Motor Assembly

The unit's blower/motor assembly includes double width, double inlet (DWDI) blower with direct drive PSC motor or optional ECM motor for improved efficiency and power factor. It may be easily removed for cleaning or service after removal of the unit chassis. The PSC motor is a multi-speed design, factory wired to high speed or low speed (order specific). The tap will be wired and capped inside the unit control box for easy field convertibility. The ECM motor is programmed to provide four constant CFM profiles and is shipped on Profile B – the rated CFM of the unit. To change the PSC speed tap or the ECM CFM profile, see installation manual WSHP-SVX03*-EN for instructions.

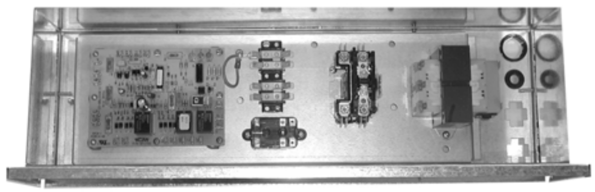
Controls

Standard controls include a 24V, micro-processor Deluxe controller for a wall-mounted thermostat option. The thermostat is typically placed above the return-air door. Even though the thermostat is considered to be unit mounted, the thermostat is mounted to the dry-wall that covers the front of the unit.

Thermostat selections are provided in the "Thermostats and Zone Sensors," p. 55 section of the catalog. They are available in manual or automatic changeover options.

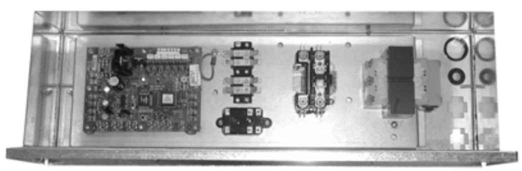
The deluxe controller includes relays for: anti-short cycle compressor protection, random start delay, brown-out protection low pressure time delay, compressor delay on start and night setback control. These extended control features offer greater system performance to extend the equipment's life.

Figure 2. Deluxe control box



The Tracer™ ZN510 controller (option) is provided on the vertical stack design for direct digital control (DDC) systems. This controller offers the building owner innovative ways to optimize heating and cooling energy for the building. Faults and sensors include: random start delay, heating/cooling status, occupied/unoccupied mode, and fan/filter status.

Figure 3. ZN510 control box



The Tracer™ Loop Controller (TLC) may be added to either the Deluxe controls or the ZN510 controls to maintain system loop operation. See WMCA-IOP-1 for more information on the TLC.

The ZN510 controller may also be applied with the Tracker and Summit building management systems to further enhance system operation.

Non-fused switch and fused entrance block may be factory added to the equipment to save installation time of these components in the field where local building codes allow.

Deluxe 24V Electronic Controls

General alarm is accomplished through the lockout relay and is used to drive light emitting diodes. This feature will drive dry contacts only, and may not be used to drive field installed control inputs.

Factory Installed Flow Control

Optional factory mounting of the isolation valve and flow control valves is available to speed field equipment installation, and help provide optimum water flow balancing support.

Refrigeration Section

The unit's compressor is a highly efficient, hermetically sealed with internal vibration isolation. External isolation is provided between the compressor and mounting plate to help reduce radiated noise that is typically associated with compressor start.

The air-to-refrigerant coil is easily accessible for cleaning purposes behind the unit's removable return-air door/panel.

The water-to-refrigerant coil is a copper or cupro-nickel (option) co-axial tube-within-a-tube design. The inner-water tube is deeply fluted to enhance heat transfer and minimize fouling and scaling. The outer refrigerant gas tube is made from steel material. The coil is leak tested to assure there is no cross leakage between the water tube and the refrigerant gas (steel tube) coil. The ½" (009/012/015/018) and ¾"(024/036) threaded water connections to the water-coil are available on the exterior chassis top. A flexible hose connection with shut-off is typically used between the riser and water-coil in/out connections on the chassis to reduce water vibration.

The refrigerant flow metering is made through a thermal expansion valve (TXV). The TXV allows the unit to operate with an entering fluid temperature from 25°F to 120°F, and an entering air temperature from 40°F to 90°F. The valve precisely meters refrigerant flow through the circuitry to achieve desired heating or cooling.

Unlike cap-tube assemblies, the TXV allows the exact amount of refrigerant required to meet the coil load demands. This precise metering increases the over-all efficiency of the unit.

The unit's reversing valve is piped to be energized in the cooling mode. All vertical high-rise units ship in a heat pump configuration with a system reversing valve.

Supply/Return/Condensate Risers

Supply, return and condensate risers are available as a factory mounted and shipped option. The risers are constructed from type L or M copper. The top of each riser is swaged to accept the same size diameter riser from above. This helps facilitate installation of the water supply, return and condensate to and from the unit. Insulation may be factory installed or field installed per order selection. The insulation helps keep moisture from forming on the pipes and damaging building construction.

The riser length may be ordered as standard in 96" to 120" lengths. See "Equipment Risers," p. 9 for riser application information.

Unit Safety

All unit safety devices are provided to help prevent compressor damage. Low pressure switch and high pressure switch are added to help protect the compressor operation under a low charge (40 psig) or during high discharge (650 psig) pressures. In cases where a low charge, or excessive loss of charge occurs, each compressor comes equipped with an overload device to halt the compressor operation.

A safety lockout provides the mechanical communication of the low and high pressure switches to prevent compressor operation if the unit is under low or high refrigerant pressures, or during a condensate overflow condition. The lockout relay may be reset at the thermostat, by cycling power to the unit or through a LonTalk™ front end device (ZN510 control option).

Application Considerations

Advantages of Geothermal

The advantages of a geothermal heat pump system can literally decrease heating and cooling operating costs by 30%-40%. The units are durable, and typically last longer than conventional systems. They are protected from harsh outdoor weather conditions, because the unit is installed indoors and the loop underground. According to ASHRAE, the estimated service life for a commercial water-to-air heat pump is 19 years.

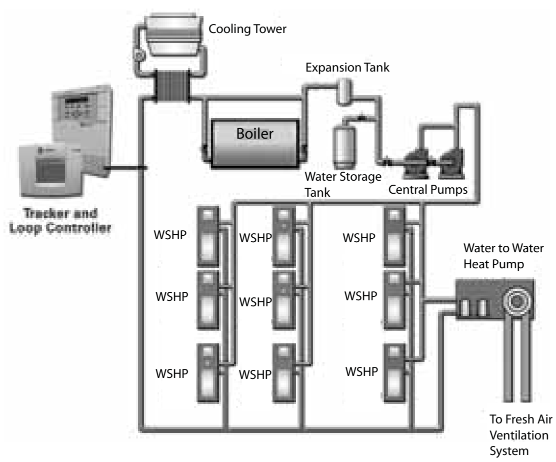
Geothermal heat pumps have fewer mechanical components, making them more reliable and less prone to failure.

Geothermal heat pumps work toward the preservation of the environment by reducing the environmental impacts of electric power generation.

Flexibility

The vertical, high-rise water-source heat pump system is versatile for installation in boiler/cooling tower applications, as well as ground-source (geothermal) applications. The system typically employs a central pumping design. The central pumping design involves a single pump design, usually located within a basement or mechanical room to fulfill pumping requirements for the entire building system. An auxiliary pump is typically applied to lessen the likelihood of system downtime if the main pump malfunctions.

Furring-In the Unit



The vertical high-rise water-source heat pump is designed to be a furred-in application. Dry-wall (sheetrock) is attached to furring studs (not unit cabinet) until the entire cabinet, except the front access panel, is enclosed. Access to the unit is made entirely through the front panel which spans approximately one-half of the unit height. The dry-wall enclosure allows the unit to blend in with the decor of the room. If renovations are needed, the drywall portion of the unit can simply be re-papered or repainted with the remainder of the room. With careful design, the high-rise WSHP can be incorporated into a room design, while occupying minimum floor space.

Installation Tips

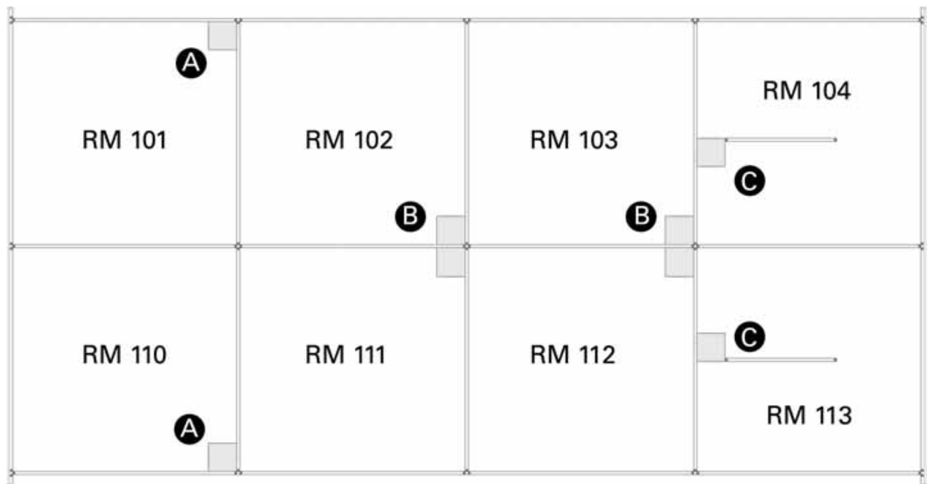
When installing a high-rise water-source heat pump, there are specific installation requirements that should be taken into consideration. These include:

- Noise control
- Riser location
- Furring-in the unit

Sound Attenuation

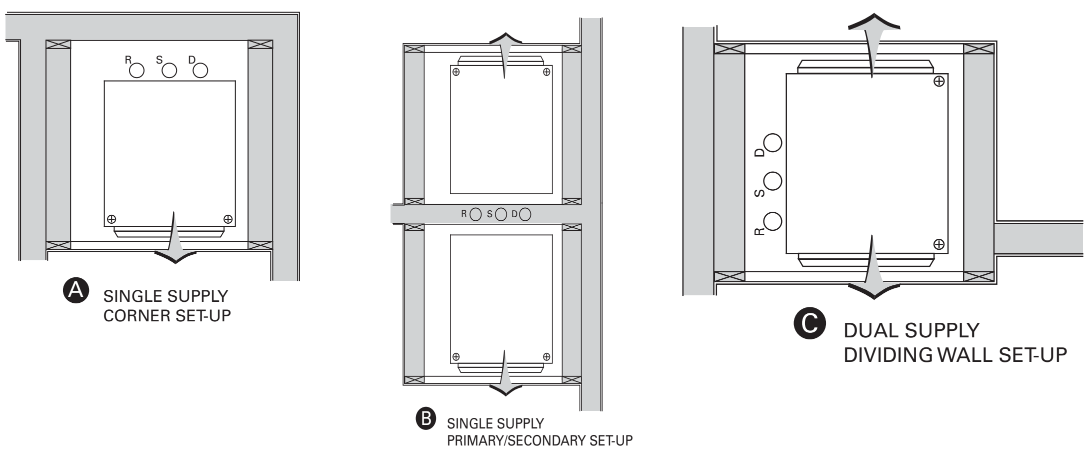
The high-rise heat pump is better suited for acoustically sensitive water-source heat pump applications than other water-source products. Compressor and water noise are attenuated by the filter panel, sheet rock and the acoustically lined door. Air noise is silenced through the extended and insulated duct portion at the top of the vertical cabinet.

Figure 4. Installation illustration

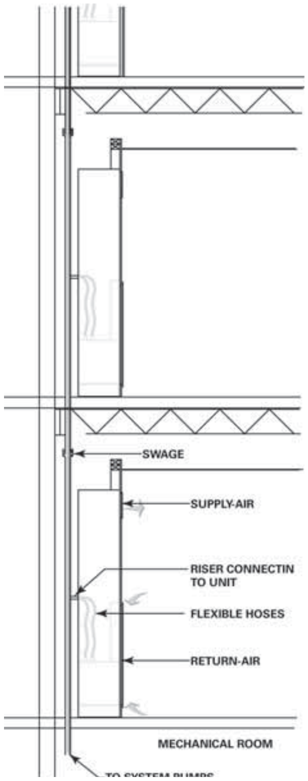


Equipment Installation

The vertical high-rise unit is versatile in design to fit numerous applications. It is typically applied to dorm rooms, hotels and motels where multiple supply air configurations may be required for individual tenant heating and cooling. The equipment requires little space, and is tucked away from sight, and rough handling. The vertical stack design is economical to install, requiring no ductwork for air supply. The riser design may be stacked one on top of another for multi-story applications, or shared between two units (see example B) when architectural design permits. Because the chassis is removable, serviceability to the equipment is enhanced. If service does become a requirement, the chassis is simple to remove from the cabinet, replaced with a back-up chassis, then repaired off-site at a convenient time.



Equipment Risers



The riser provides an easy way to facilitate the water flow through a multi-story building and the high-rise heat pump. The high-rise heat pump is best applied to a building with identical zones on each floor, and zones that are typically small. An example building might include a hotel, dorm, condominium or assisted living facility. With these types of buildings, the riser column (external to the unit cabinet) can be stacked one on top of the other. The piping installation for the entire HVAC system becomes very simple to install because it is pre-measured, and pre-fabricated at the factory.

Factory risers are available as Type K (design special), L (standard design), and M (standard design). The differences between these types of materials is the wall thickness of the copper. Table 1, p. 9 shows the wall thickness for the most common diameters of risers. It is recommended for most jobs to use type L or M copper. Type K risers are generally not necessary for most high-rise heat pump applications.

The riser design contains threaded stubouts to facilitate connection of the supply and return risers to the hose kits. The hose kits are then connected to the water-in/out of the unit's chassis.

Note: *Supply/return/drain risers that are ordered and supplied through the factory may be ordered as insulated.*

Drain risers are generally made of type M copper. If copper, drain risers are used, the risers should be insulated since the typical temperatures of condensate may cause the riser to sweat.

Table 1. Riser characteristics

Type K (special design)			
Riser Size (in.)	**I.D. (in.)**	**O.D. (in.)**	**Copper Wall Thickness (in.)**
1	0.995	1.125	0.065
1¼	1.245	1.375	0.065
1½	1.481	1.625	0.072
2	1.959	2.125	0.083
2½	2.435	2.625	0.095
3	2.907	3.125	0.109
Type L (standard)			
1	1.025	1.125	0.05
1¼	1.265	1.375	0.055
1½	1.505	1.625	0.06
2	1.985	2.125	0.07
2½	2.465	2.625	0.08
3	2.945	3.125	0.09
Type M (standard)			
Riser Size (in.)	**I.D. (in.)**	**O.D. (in.)**	**Copper Wall Thickness (in.)**
1	1.055	1.125	0.035
1¼	1.291	1.375	0.042

Table 1. Riser characteristics (continued)

Type M (standard)			
Riser Size (in.)	I.D. (in.)	O.D. (in.)	Copper Wall Thickness (in.)
1½	1.527	1.625	0.049
2	2.009	2.125	0.058
2½	2.495	2.625	0.065
3	2.981	3.125	0.072

Note: *Pressure ratings for risers are typically greater than the maximum pressure rating of the coaxial water-to-refrigerant heat exchangers. This is true with exception of Type M copper in a 3" diameter. The maximum pressure rating for Type M, 3" diameter copper is 380 psig. All other diameters for Type M copper, and all 1" through 3" Type L copper are greater than the 400 psig rating on the coaxial water-to-refrigerant heat exchanger.*

Riser Sizing

The proper selection of riser diameter is critical when designing a cost effective job. If the riser diameter is too small, the flow of water to the heat pump may be restricted, making the pumping power requirement excessive. On the other hand, if the riser diameter is too large, the cost of the equipment may become unnecessarily high.

To determine the riser size, calculate the flow at a particular riser. Riser columns will begin with large diameters at the bottom of the column and decrease diameter as the water travels up toward the top floor. The GPM at the first floor is determined by totaling the GPM of all the units on the riser column. The GPM for the second floor is then determined by taking the total GPM and subtracting the flow from the first floor.

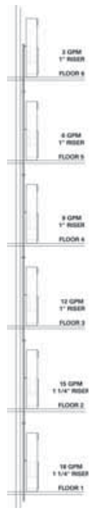
The proper size of the riser is determined by calculating the velocity of the water in the riser. The maximum water velocity that a riser should experience is about 6 or 7 feet/second. Table 2, p. 10 can be used as a quick reference chart for determining the maximum GPM allowed for a given riser size. Riser flow diagram can be found in the 2009 ASHRAE Fundamentals Handbook and may be used to calculate the precise water velocity for a given riser diameter and flow.

Table 2. Maximum riser flow rate

Riser Size (in.)	Max. GPM	Water Velocity (ft./sec.)	Head Loss (ft.100 ft.)
1	16	6.2	15.6
1¼	24	6.1	11.8
1½	34	6.1	9.38
2	58	6.0	6.6
2½	90	6.0	5.1
3	130	6.1	4.2

Note: *Table 2, p. 10 is for general design calculation reference. It is not intended to take the place of an engineered piping design.*

Riser Size Example

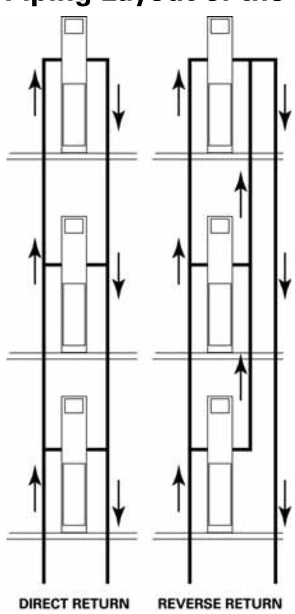


Assume a six story building is served by a high-rise water-source heat pump. When referencing the catalog, determine each high-rise heat pump uses 3 gallons per minute to meet the required capacity of the 1-ton unit. What is the minimum riser diameter that can be used on each floor?

With this arrangement, determine the volume of water used at each floor is 3 GPM. The top floor riser therefore only needs to be sized for 3 GPM. Referring to Table 2, p. 10, we know that a 1-inch type M riser can handle up to 16 GPM, therefore the riser size is determined to be 1-inch.

The first floor will see 18 GPM through the riser. Since 18 GPM will result in more than 6 ft./second in a 1" riser, it would be advisable to move to a 1¼" riser.

Piping Layout of the Riser



Two methods may be used when piping a riser column. These include direct return or reverse return.

Advantages may be seen in both types of piping methods. For a direct return installation, the riser system is straightforward leaving little confusion about properly sized risers. This provides a more cost effective advantage during the installation process.

The disadvantages of this system is the pressure drop. The total pressure drop on the unit for the sixth floor is much greater than the total pressure drop on the unit for the first floor. This means that the riser column will require balancing from floor-to-floor during installation.

Piping advantages for the reverse return system include the ability to design the riser column so that the total system pressure drop through each unit is equalized. The overall pressure drop is also lower, allowing some energy savings potential. This piping method however does not eliminate the need for proper balancing at each unit.

The disadvantage of this system relates to cost and complexity. The reverse return method typically costs more because of the additional pipe required for each riser column.

Central Plant Control

Proper central plant control is critical to the operation of a water-source heat pump system. Loss of waterflow or loop temperatures outside of the recommended range will severely impact the operation of the equipment. The following should be followed as minimum operational recommendation for the central plant:

- Heat rejector control (i.e. closed circuit cooling tower, or geothermal loop)
- Heat adder (i.e. boiler or geothermal loop)
- Circulating pumps
- Sensing elements

Heat Rejection through a Closed Circuit Cooling Tower

Cooling towers serve to reject heat from the condenser water loop to the atmosphere. Two types of cooling towers are used with water-source heat pump systems: open or closed-circuit. The towers themselves are different, but when an open tower is used in conjunction with a water-to-water heat exchanger, the control of the two tower types is essentially the same.

Control for the closed-circuit cooling towers may be made with a Trane® Tracer™ Loop Controller (TLC). With the TLC, up to four stages of cooling tower control are possible.

When the loop supply temperature is 4°F below the loop supply high setpoint, the first stage of cooling is initiated by opening the closure dampers on the cooling tower.

At 2° F below the setpoint the next stage of cooling is initiated which is the starting of the tower's circulating pump. If the amount of heat rejected by the first two stages is not enough, the loop temperature will continue to rise. When the temperature reaches the loop supply high setpoint, the next stage of cooling is initiated. This is the first stage of cooling tower fans.

The differential between the stages now become 3°F and the temperature must remain above the differential for three minutes. Up to three individual fan stages may be sequenced or the second stage of fan can be the high speed of a multi-speed motor.

There are five different fan arrangements that the TLC supports: A single fan with a single motor, a single fan with dual motors (pony motors), a maximum of three fans with a maximum of three motors, a variable speed fan with a field supplied variable frequency drive, and a single multi-speed motor.

Multiple cooling towers can be supported only if the cooling tower stages are controlled in parallel.

Boiler Operation

The TLC will operate a boiler and the mixing valve respectively. Boiler control is traditionally controlled by a separate boiler controller, provided by the boiler manufacturer. The boiler mixing valve will control the mixture of the boiler water into the main loop to achieve the desired loop supply water.

When the loop temperature falls below the low loop-supply setpoint, the TLC enables the boiler. The ideal arrangement is for the boiler to have its own bypass loop so the boiler pump can circulate water through the heat exchanger. The boiler will maintain the temperature of the water to the desired setting in the packaged boiler control.

The three-way mixing valve is controlled by the TLC to add heat to the main loop by mixing in water from the boiler loop. A proportional-integral-derivative algorithm controls the valve. The boiler is not disable until the main loop temperature is 5°F greater than the low loop supply setpoint for more than 5 minutes.

The TLC will also monitor the boiler loop temperature and provide an alarm if the temperature is below the boiler loop low limit after 30 minutes of run time. The TLC will provide an alarm if the boiler loop temperature exceeds the boiler loop high limit after 30 minutes continually.

Facilities Management

Water-source heat pump systems are naturally decentralized; thus they inherently provide individual zone control. Typical installations use mechanical thermostats to provide localized control. Central plant control is typically handled by a control panel located in the main mechanical room. Minimal coordination is usually required between the central plant and the individual water-source heat pumps for successful operation of the system. A direct digital control system is recommended to help support coordination efforts between the central plant and the individual water-source heat pumps. This enhanced coordination can result in reductions in operating cost of the entire system. The following items are typical of the additional coordination: Night setback and setup; After hour usage for tracking and billing; Pump cycling for occupied/unoccupied control; Zone scheduling; Maintenance reporting for monitoring unit fault conditions; Trend logging of the system water temperatures; Monitoring of system levels for items such as waterflow, temperature, faults, heat rejector status, heat adder status and circulating pump status.

Selection Procedures

Model Number

Two model number designators have been defined for the cabinet configuration, and the chassis configuration. Both model numbers require input for the order to be complete and built to specification.

Typically the vertical stack equipment ships in two sections. (1)The cabinet and riser section ship first to allow the contractor to furr-in the equipment during sheetrock installation, and (2) the chassis (refrigeration/water) section ship approximately two to four weeks later eliminating storage requirements of the chassis and possible damage at the job site while waiting for installation. For this reason, there are two model number designators specific to the unit chassis, and the cabinet for the equipment.

Model Number Descriptions

Vertical High-Rise Cabinet WSHP

Digits 1-3: Unit Configuration

GET = High Efficiency Vertical High Rise Heat Pump

Digit 4: Development Sequence

E = R-410A

Digits 5-7: Nominal Size (Tons)

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

Digit 14: Open Digit

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

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 = 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
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

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
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 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 Data

Table 3. General Data

Model Number		009	012	015	018	024	036
Compressor Type		Rotary	Rotary	Rotary	Rotary	Scroll	Scroll
Cabinet Size	Depth (in.)	16.0	16.0	18.0	18.0	24.0	24.0
	Height (in.)	88.0	88.0	88.0	88.0	88.0	88.0
	Width (in.)	16.0	16.0	20.0	20.0	24.0	24.0
	Depth (mm)	406.4	406.4	457.2	457.2	609.6	609.6
	Height (mm)	2235.2	2235.2	2235.2	2235.2	2235.2	2235.2
	Width (mm)	406.4	406.4	508.0	508.0	609.6	609.6
Approximate weight cabinet	with Pallet (lb.)	135	135	175	175	225	225
Approximate weight cabinet	without Pallet (lb.)	115	115	150	150	195	195
Approximate weight chassis	with Pallet (lb.)	88	107	112	117	174	190
Approximate weight chassis	without Pallet (lb.)	78	97	102	107	164	180
Air-to-Refrigerant Coil	Face Area (ft.2)	1.35	1.35	2.11	2.11	2.88	2.88
	Face Area (cm2)	1254	1254	1959	1959	2676	2676
	Rows	2	4	4	4	3	4
	Fins Per Inch	14	14	14	14	14	14
	Fins Per cm.	5.5	5.5	5.5	5.5	5.5	5.5
Nominal 1" Filter Size	Inches	14 x 20	14 x 20	18 x 25	18 x 25	20 x 30	20 x 30
	mm	356 x 508	356 x 508	457 x 635	457 x 635	508 x 762	508 x 762
Water In/Out size	NPTI	½"	½"	½"	½"	¾"	¾"
Condensate	Plastic Hose ID (in)	¾"	¾"	¾"	¾"	¾"	¾"
Riser Connection	NPTE	½"	½"	½"	½"	¾"	¾"
PSC Ducted Discharge	Blower	90-6TDD	90-6TDD	90-6RDD	100-6TDD	100-6TDD	120-8TDD11
	Motor HP	0.05	0.125	0.125	0.2	0.33	0.5
PSC Free Discharge	Blower	90-6TDD	90-6TDD	90-6RDD	100-6TDD	100-6TDD	120-8TDD11
	Motor HP	0.05	0.125	0.125	0.125	0.33	0.5
ECM Motor	Blower	90-6TDD	90-6TDD	100-6TDD	100-6TDD	120-8TDD11	120-8TDD11
	Motor HP	0.33	0.33	0.5	0.5	0.5	0.75
Water-to-Refrigerant Coil	Refrig. Side (PSIG)	650	650	650	650	650	650
	Water Side (PSIG)	400	400	400	400	400	400
	Internal Volume (gal)	0.081	0.081	0.228	0.228	0.271	0.368

Performance Data

Table 4. AHRI-ISO performance

Unit Size	Rated Flow Rate (GPM)	Rated Air Flow (CFM)	Water Loop Cooling Capacity (Mbtuh)	Water Loop EER	Water Loop Heating Capacity (Mbtuh)	Water Loop COP	Ground Water Cooling Capacity (Mbtuh)	Ground Water EER	Ground Water Heating Capacity (Mbtuh)	Ground Water COP	Ground Loop Cooling Capacity (Mbtuh)	Ground Loop EER	Ground Loop Heating Capacity (Mbtuh)	Ground Loop COP
PSC Motor														
GET 009	2.1	340	8200	12.8	10800	4.6	9700	18.4	8700	3.8	8800	14.9	6600	3.2
GET 012	2.8	440	11900	13.5	14100	4.6	13100	18.9	11800	4.0	12300	15.1	9000	3.2
GET 015	3.5	540	14700	13.1	17700	4.6	16600	20.1	13700	3.7	15400	14.8	11800	3.3
GET 018	4.2	650	18100	13.0	22900	4.5	19500	18.0	17900	3.7	18700	14.3	14800	3.3
GET 024	5.6	820	23300	13.1	26600	4.3	25600	18.6	23600	3.9	24300	14.9	18700	3.2
GET 036	8.4	1170	33700	13.0	41300	4.3	37900	18.7	34400	3.7	35100	14.6	27300	3.2
ECM Motor														
GET 009	2.1	340	8300	13.9	10500	4.6	9600	21.1	8500	3.9	8700	16.2	6500	3.2
GET 012	2.8	440	12000	14.2	14300	4.8	14100	23.2	11600	4.0	12600	16.5	8700	3.2
GET 015	3.5	540	14900	15.0	18000	5	17000	23.9	14800	4.3	15600	17.5	11300	3.5
GET 018	4.2	650	18500	14.6	22300	4.6	21100	22.6	18400	4.2	19500	17	14200	3.4
GET 024	5.6	820	24200	16.0	26300	4.8	26800	24	23100	4.4	25200	18.4	17800	3.5
GET 036	8.4	1170	34200	15.2	40200	4.6	38200	24	33500	4.1	35600	17.8	26300	3.3

Note: Certified in accordance with AHRI Water to Air and Brine to Air Heat Pump Certification Program which is based on ISO Standard 13256-1: 1998. Certified conditions are 80.6°F DB/66.2°F WB EAT in cooling and 68°F DB/59°F WB EAT in heating.

Table 5. GET 009 cooling performance

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
45	1.1	10.3	8.0	0.77	11.7	0.41	65.7	2.1
45	1.5	10.4	8.0	0.77	11.8	0.40	60.7	3.4
45	1.8	10.5	8.0	0.76	11.9	0.39	58.2	4.7
45	2.1	10.6	8.1	0.76	12.0	0.39	56.4	6.2
45	2.3	10.8	8.1	0.75	12.1	0.39	55.7	6.9
45	2.4	10.8	8.1	0.75	12.1	0.39	55.1	7.8
45	2.6	10.8	8.1	0.75	12.2	0.39	54.3	9.1
55	1.1	9.8	7.8	0.79	11.3	0.44	75.1	2.0
55	1.5	10.0	7.9	0.79	11.4	0.42	70.2	3.3
55	1.8	10.1	7.9	0.78	11.5	0.42	67.8	4.5
55	2.1	10.2	7.9	0.78	11.6	0.41	66.0	5.9
55	2.3	10.2	7.9	0.78	11.6	0.41	65.3	6.7
55	2.4	10.2	7.9	0.78	11.6	0.41	64.7	7.5
55	2.6	10.3	8.0	0.77	11.7	0.41	63.9	8.7
68	1.1	9.4	7.7	0.82	11.1	0.49	87.7	1.9
68	1.5	9.5	7.7	0.81	11.1	0.47	82.8	3.1
68	1.8	9.6	7.7	0.81	11.1	0.46	80.4	4.3
68	2.1	9.6	7.7	0.80	11.2	0.46	78.6	5.6
68	2.3	9.6	7.8	0.80	11.2	0.45	77.9	6.4
68	2.4	9.7	7.8	0.80	11.2	0.45	77.3	7.1
68	2.6	9.7	7.8	0.80	11.2	0.45	76.5	8.3
75	1.1	9.2	7.6	0.83	11.0	0.53	94.5	1.8
75	1.5	9.3	7.6	0.82	11.0	0.51	89.7	3.1

Table 5. GET 009 cooling performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
75	1.8	9.3	7.7	0.82	11.0	0.49	87.2	4.2
75	2.1	9.4	7.7	0.82	11.0	0.49	85.5	5.5
75	2.3	9.4	7.7	0.82	11.0	0.48	84.8	6.2
75	2.4	9.4	7.7	0.82	11.1	0.48	84.2	7.0
75	2.6	9.4	7.7	0.82	11.1	0.48	83.4	8.2
77	1.1	9.1	7.6	0.83	11.0	0.54	96.5	1.8
77	1.5	9.2	7.6	0.83	11.0	0.52	91.6	3.0
77	1.8	9.3	7.6	0.82	11.0	0.51	89.2	4.2
77	2.1	9.3	7.7	0.82	11.0	0.50	87.5	5.5
77	2.3	9.3	7.7	0.82	11.0	0.49	86.8	6.2
77	2.4	9.3	7.7	0.82	11.0	0.49	86.2	6.9
77	2.6	9.3	7.7	0.82	11.0	0.49	85.4	8.1
86	1.1	8.9	7.5	0.85	10.9	0.60	105.4	1.8
86	1.5	8.9	7.5	0.84	10.9	0.57	100.5	3.0
86	1.8	9.0	7.5	0.84	10.9	0.56	98.1	4.1
86	2.1	9.0	7.6	0.84	10.9	0.55	96.4	5.3
86	2.3	9.0	7.6	0.84	10.9	0.55	95.7	6.0
86	2.4	9.0	7.6	0.84	10.9	0.54	95.0	6.7
86	2.6	9.0	7.6	0.84	10.9	0.54	94.3	7.9
95	1.1	8.6	7.4	0.86	10.9	0.67	114.4	1.7
95	1.5	8.7	7.5	0.86	10.8	0.64	109.5	2.8
95	1.8	8.7	7.5	0.86	10.8	0.62	107.0	3.8
95	2.1	8.7	7.5	0.86	10.8	0.61	105.3	5.1
95	2.3	8.7	7.5	0.86	10.8	0.61	104.6	5.7
95	2.4	8.7	7.5	0.86	10.8	0.61	104.0	6.4
95	2.6	8.7	7.5	0.86	10.8	0.60	103.2	7.5
105	1.1	8.4	7.4	0.88	10.9	0.76	124.4	1.6
105	1.5	8.4	7.4	0.88	10.8	0.72	119.5	2.7
105	1.8	8.4	7.4	0.88	10.8	0.71	117.0	3.7
105	2.1	8.4	7.4	0.88	10.8	0.70	115.2	4.9
105	2.3	8.4	7.4	0.88	10.8	0.69	114.6	5.5
105	2.4	8.4	7.4	0.88	10.7	0.69	113.9	6.2
105	2.6	8.4	7.4	0.88	10.7	0.69	113.2	7.3
115	1.1	8.1	7.3	0.90	11.0	0.86	134.6	1.6
115	1.5	8.1	7.3	0.90	10.9	0.83	129.6	2.6
115	1.8	8.1	7.3	0.90	10.9	0.81	127.1	3.6
115	2.1	8.1	7.3	0.90	10.8	0.80	125.3	4.8
115	2.3	8.1	7.3	0.90	10.8	0.80	124.6	5.4
115	2.4	8.1	7.3	0.90	10.8	0.79	124.0	6.1
115	2.6	8.1	7.3	0.90	10.8	0.79	123.2	7.1
120	1.1	8.0	7.3	0.91	11.2	0.94	139.9	1.6
120	1.5	8.0	7.2	0.91	11.0	0.90	134.7	2.6
120	1.8	8.0	7.2	0.91	11.0	0.88	132.2	3.6
120	2.1	8.0	7.2	0.91	10.9	0.87	130.4	4.7

Table 5. GET 009 cooling performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
120	2.3	8.0	7.2	0.91	10.9	0.86	129.7	5.3
120	2.4	7.9	7.2	0.91	10.9	0.86	129.0	6.0
120	2.6	7.9	7.2	0.91	10.8	0.85	128.3	7.0

Notes: Cooling performance data is tabulated at 80.6°F DB/66.2°F WB entering air at AHRI/ISO 13256-1 rated cfm.For AHRI/ISO 13256-1 certified ratings, see Table 4, p. 17. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 2.1; Minimum cfm 292; Rated cfm 340; Maximum cfm 408.

Table 6. GET 009 heating performance

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
25	1.1	6.0	4.2	0.52	17.5	2.7
25	1.5	6.2	4.4	0.52	19.1	4.5
25	1.8	6.3	4.5	0.53	20.0	6.2
25	2.1	6.4	4.6	0.53	20.6	8.1
25	2.3	6.4	4.6	0.53	20.9	9.1
25	2.4	6.5	4.7	0.53	21.1	10.2
25	2.6	6.5	4.7	0.53	21.4	11.9
32	1.1	6.7	4.8	0.53	23.4	2.7
32	1.5	6.9	5.1	0.54	25.3	4.4
32	1.8	7.0	5.2	0.54	26.2	6.0
32	2.1	7.1	5.3	0.54	27.0	7.9
32	2.3	7.2	5.3	0.54	27.3	8.9
32	2.4	7.2	5.3	0.54	27.6	9.9
32	2.6	7.3	5.4	0.54	27.9	11.6
45	1.1	8.1	6.2	0.56	34.0	2.1
45	1.5	8.4	6.5	0.57	36.4	3.4
45	1.8	8.6	6.6	0.57	37.6	4.7
45	2.1	8.7	6.7	0.57	38.6	6.2
45	2.3	8.7	6.8	0.57	39.0	6.9
45	2.4	8.8	6.8	0.57	39.3	7.8
45	2.6	8.8	6.9	0.57	39.8	9.1
55	1.1	9.2	7.2	0.58	42.2	2.0
55	1.5	9.5	7.5	0.58	45.0	3.3
55	1.8	9.7	7.7	0.59	46.4	4.5
55	2.1	9.9	7.9	0.59	47.5	5.9
55	2.3	9.9	7.9	0.59	48.0	6.7
55	2.4	10.0	8.0	0.59	48.4	7.5
55	2.6	10.1	8.0	0.59	48.9	8.7
68	1.1	10.6	8.6	0.60	52.8	1.9
68	1.5	11.1	9.0	0.61	56.0	3.1
68	1.8	11.3	9.2	0.61	57.8	4.3
68	2.1	11.5	9.4	0.61	59.1	5.6
68	2.3	11.5	9.4	0.61	59.6	6.4
68	2.4	11.6	9.5	0.61	60.1	7.1
68	2.6	11.7	9.6	0.61	60.7	8.3

Table 6. GET 009 heating performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
75	1.1	11.4	9.3	0.61	58.5	1.8
75	1.5	11.9	9.8	0.62	62.0	3.1
75	1.8	12.2	10.0	0.62	63.9	4.2
75	2.1	12.4	10.2	0.63	65.3	5.5
75	2.3	12.5	10.3	0.63	65.8	6.2
75	2.4	12.5	10.4	0.63	66.4	7.0
75	2.6	12.6	10.5	0.63	67.0	8.2
77	1.1	11.6	9.5	0.62	60.1	1.8
77	1.5	12.1	10.0	0.62	63.7	3.0
77	1.8	12.4	10.3	0.63	65.6	4.2
77	2.1	12.6	10.5	0.63	67.0	5.5
77	2.3	12.7	10.5	0.63	67.6	6.2
77	2.4	12.8	10.6	0.63	68.2	6.9
77	2.6	12.9	10.7	0.63	68.9	8.1
86	1.1	12.7	10.5	0.63	67.3	1.8
86	1.5	13.3	11.1	0.64	71.3	3.0
86	1.8	13.5	11.3	0.65	73.4	4.1
86	2.1	13.8	11.6	0.65	75.0	5.3
86	2.3	13.8	11.6	0.65	75.7	6.0
86	2.4	14.0	11.7	0.66	76.2	6.7
86	2.6	14.0	11.8	0.65	77.0	7.9

Notes: Heating performance data is tabulated at 68°F DB entering air at AHRI/ISO 13256-1 rated cfm. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 2.1; Minimum cfm 272; Rated cfm 340; Maximum cfm 408.

Table 7. GET 012 cooling performance

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
45	1.5	13.1	10.3	0.78	14.7	0.45	64.6	4.9
45	2.0	13.2	10.3	0.78	14.7	0.43	59.7	8.1
45	2.4	13.2	10.3	0.78	14.7	0.42	57.2	11.2
45	2.8	13.3	10.3	0.78	14.7	0.41	55.5	14.6
45	3.0	13.3	10.3	0.78	14.7	0.41	54.8	16.5
45	3.2	13.3	10.3	0.78	14.7	0.41	54.2	18.4
45	3.5	13.3	10.3	0.78	14.7	0.41	53.4	21.5
55	1.5	13.0	10.2	0.79	14.8	0.52	74.7	4.7
55	2.0	13.1	10.2	0.78	14.7	0.49	69.7	7.8
55	2.4	13.1	10.2	0.78	14.7	0.48	67.3	10.7
55	2.8	13.1	10.2	0.78	14.7	0.47	65.5	14.1
55	3.0	13.1	10.2	0.78	14.7	0.46	64.8	15.9
55	3.2	13.1	10.3	0.78	14.7	0.46	64.2	17.8
55	3.5	13.1	10.3	0.78	14.7	0.46	63.4	20.7
68	1.5	12.7	10.1	0.79	14.8	0.62	87.7	4.5
68	2.0	12.8	10.1	0.79	14.8	0.59	82.8	7.4
68	2.4	12.8	10.1	0.79	14.7	0.57	80.3	10.2

Table 7. GET 012 cooling performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
68	2.8	12.8	10.1	0.79	14.7	0.56	78.5	13.4
68	3.0	12.8	10.1	0.79	14.7	0.56	77.8	15.1
68	3.2	12.8	10.1	0.79	14.7	0.55	77.2	16.9
68	3.5	12.8	10.1	0.79	14.7	0.55	76.4	19.8
75	1.5	12.5	10.0	0.80	14.8	0.68	94.8	4.4
75	2.0	12.6	10.0	0.80	14.8	0.64	89.8	7.3
75	2.4	12.6	10.0	0.80	14.7	0.63	87.3	10.0
75	2.8	12.6	10.1	0.80	14.7	0.62	85.5	13.1
75	3.0	12.6	10.1	0.80	14.7	0.61	84.8	14.8
75	3.2	12.6	10.1	0.80	14.7	0.61	84.2	16.5
75	3.5	12.6	10.1	0.80	14.7	0.60	83.4	19.4
77	1.5	12.5	10.0	0.80	14.8	0.69	96.8	4.4
77	2.0	12.5	10.0	0.80	14.8	0.66	91.8	7.2
77	2.4	12.5	10.0	0.80	14.7	0.64	89.3	9.9
77	2.8	12.5	10.0	0.80	14.7	0.63	87.5	13.0
77	3.0	12.6	10.0	0.80	14.7	0.63	86.8	14.7
77	3.2	12.6	10.0	0.80	14.7	0.62	86.2	16.4
77	3.5	12.6	10.0	0.80	14.7	0.62	85.4	19.2
86	1.5	12.2	9.9	0.81	14.9	0.78	105.8	4.2
86	2.0	12.2	9.9	0.81	14.8	0.75	100.8	7.0
86	2.4	12.2	9.9	0.81	14.7	0.73	98.3	9.7
86	2.8	12.2	9.9	0.81	14.7	0.71	96.5	12.6
86	3.0	12.2	9.9	0.81	14.7	0.71	95.8	14.3
86	3.2	12.2	9.9	0.81	14.7	0.71	95.2	16.0
86	3.5	12.2	9.9	0.81	14.6	0.70	94.4	18.7
95	1.5	11.8	9.8	0.82	14.9	0.89	114.8	3.7
95	2.0	11.9	9.7	0.82	14.8	0.85	109.8	6.2
95	2.4	11.9	9.8	0.82	14.7	0.83	107.2	8.6
95	2.8	11.9	9.8	0.82	14.6	0.81	105.5	11.3
95	3.0	11.9	9.8	0.82	14.6	0.81	104.8	12.7
95	3.2	11.9	9.8	0.82	14.6	0.80	104.1	14.2
95	3.5	11.9	9.8	0.82	14.6	0.80	103.3	16.7
105	1.5	11.4	9.5	0.84	14.9	1.01	124.8	3.8
105	2.0	11.4	9.6	0.84	14.7	0.97	119.7	6.1
105	2.4	11.4	9.6	0.84	14.7	0.95	117.2	8.3
105	2.8	11.4	9.6	0.84	14.6	0.93	115.4	10.9
105	3.0	11.4	9.6	0.84	14.6	0.93	114.7	12.3
105	3.2	11.4	9.6	0.84	14.6	0.94	114.1	13.8
105	3.5	11.4	9.6	0.84	14.6	0.93	113.3	16.2
115	1.5	10.9	9.3	0.86	14.8	1.15	134.8	3.8
115	2.0	10.9	9.3	0.86	14.7	1.11	129.7	6.0
115	2.4	10.9	9.3	0.86	14.6	1.09	127.2	8.1
115	2.8	10.9	9.3	0.86	14.6	1.07	125.4	10.6
115	3.0	10.9	9.3	0.86	14.5	1.06	124.7	12.0

Table 7. GET 012 cooling performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
115	3.2	10.9	9.3	0.86	14.5	1.06	124.1	13.4
115	3.5	10.9	9.3	0.86	14.5	1.05	123.3	15.8
120	1.5	10.6	9.2	0.87	14.8	1.23	139.8	3.8
120	2.0	10.6	9.2	0.87	14.7	1.19	134.7	5.9
120	2.4	10.6	9.2	0.87	14.6	1.16	132.2	8.0
120	2.8	10.6	9.2	0.87	14.5	1.14	130.4	10.5
120	3.0	10.6	9.2	0.87	14.5	1.13	129.7	11.8
120	3.2	10.6	9.2	0.87	14.5	1.13	129.0	13.3
120	3.5	10.6	9.2	0.87	14.4	1.12	128.2	15.6

Notes: Cooling performance data is tabulated at 80.6°F DB/66.2°F WB entering air at AHRI/ISO 13256-1 rated cfm.For AHRI/ISO 13256-1 certified ratings, see Table 4, p. 17. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 2.8; Minimum cfm 303; Rated cfm 380; Maximum cfm 456.

Table 8. GET 012 heating performance

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
25	1.5	7.7	5.4	0.67	17.8	6.9
25	2.0	7.9	5.6	0.68	19.4	11.4
25	2.4	8.1	5.7	0.68	20.2	16.5
25	2.8	8.1	5.8	0.68	20.9	21.2
25	3.0	8.2	5.8	0.68	21.1	23.8
25	3.2	8.2	5.9	0.68	21.3	25.7
25	3.5	8.2	5.8	0.68	21.7	30.6
32	1.5	8.5	6.1	0.69	23.8	6.7
32	2.0	8.7	6.4	0.69	25.6	11.0
32	2.4	8.9	6.5	0.69	26.6	15.1
32	2.8	9.0	6.6	0.69	27.3	19.8
32	3.0	9.0	6.7	0.69	27.6	22.3
32	3.2	9.1	6.7	0.69	27.8	24.9
32	3.5	9.1	6.8	0.70	28.1	29.1
45	1.5	10.1	7.7	0.71	34.8	4.9
45	2.0	10.4	8.0	0.71	37.0	8.1
45	2.4	10.6	8.2	0.71	38.2	11.2
45	2.8	10.7	8.3	0.71	39.1	14.6
45	3.0	10.8	8.3	0.71	39.5	16.5
45	3.2	10.8	8.4	0.71	39.8	18.4
45	3.5	10.9	8.4	0.72	40.2	21.5
55	1.5	11.3	8.9	0.72	43.2	4.7
55	2.0	11.7	9.2	0.73	45.8	7.8
55	2.4	11.9	9.4	0.73	47.1	10.7
55	2.8	12.1	9.6	0.73	48.2	14.1
55	3.0	12.2	9.7	0.73	48.6	15.9
55	3.2	12.2	9.7	0.73	49.0	17.8
55	3.5	12.3	9.7	0.73	49.4	20.7
68	1.5	13.0	10.5	0.74	54.1	4.5

Table 8. GET 012 heating performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
68	2.0	13.4	10.9	0.75	57.1	7.4
68	2.4	13.7	11.1	0.75	58.7	10.2
68	2.8	13.9	11.3	0.75	59.9	13.4
68	3.0	14.0	11.4	0.75	60.4	15.1
68	3.2	14.0	11.5	0.76	60.8	16.9
68	3.5	14.1	11.6	0.76	61.4	19.8
75	1.5	13.9	11.3	0.75	59.9	4.4
75	2.0	14.4	11.8	0.76	63.2	7.3
75	2.4	14.7	12.1	0.76	65.0	10.0
75	2.8	14.9	12.3	0.77	66.2	13.1
75	3.0	15.0	12.3	0.77	66.8	14.8
75	3.2	15.0	12.4	0.77	67.3	16.5
75	3.5	15.2	12.5	0.77	67.9	19.4
77	1.5	14.1	11.6	0.76	61.6	4.4
77	2.0	14.7	12.1	0.77	64.9	7.2
77	2.4	14.9	12.3	0.77	66.7	9.9
77	2.8	15.2	12.5	0.77	68.1	13.0
77	3.0	15.2	12.6	0.77	68.6	14.7
77	3.2	15.3	12.7	0.77	69.1	16.4
77	3.5	15.4	12.8	0.78	69.7	19.2
86	1.5	15.4	12.7	0.78	69.1	4.2
86	2.0	15.9	13.3	0.79	72.8	7.0
86	2.4	16.3	13.6	0.79	74.7	9.7
86	2.8	16.5	13.7	0.80	76.2	12.6
86	3.0	16.6	13.8	0.80	76.8	14.3
86	3.2	16.7	13.9	0.80	77.3	16.0
86	3.5	16.8	14.0	0.80	78.0	18.7

Notes: Heating performance data is tabulated at 68°F DB entering air at AHRI/ISO 13256-1 rated cfm. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 2.8; Minimum cfm 303; Rated cfm 380; Maximum cfm 456.

Table 9. GET 015 cooling performance

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
45	1.9	16.9	14.0	0.83	18.5	0.49	64.8	4.6
45	2.3	16.9	14.0	0.83	18.4	0.45	61.0	6.6
45	2.8	17.0	14.1	0.83	18.4	0.42	58.2	9.3
45	3.5	17.1	14.1	0.83	18.4	0.39	55.5	13.8
45	3.8	17.1	14.1	0.82	18.5	0.38	54.7	15.9
45	4.1	17.1	14.1	0.82	18.4	0.38	54.0	18.2
45	4.4	17.1	14.1	0.83	18.3	0.37	53.4	20.4
55	1.9	16.7	14.0	0.84	18.8	0.61	75.0	4.4
55	2.3	16.7	13.9	0.83	18.7	0.57	71.2	6.4
55	2.8	16.8	14.0	0.83	18.6	0.54	68.3	9.0
55	3.5	16.8	14.0	0.83	18.6	0.51	65.6	13.3

Table 9. GET 015 cooling performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
55	3.8	16.8	14.0	0.83	18.5	0.50	64.8	15.3
55	4.1	16.8	14.0	0.83	18.5	0.50	64.0	17.5
55	4.4	16.8	14.0	0.83	18.5	0.49	63.5	19.6
68	1.9	16.3	13.8	0.85	18.9	0.76	88.2	4.2
68	2.3	16.4	13.8	0.85	18.8	0.72	84.4	6.1
68	2.8	16.4	13.8	0.84	18.8	0.69	81.4	8.6
68	3.5	16.4	13.9	0.84	18.7	0.67	78.7	12.7
68	3.8	16.5	13.9	0.84	18.7	0.66	77.8	14.6
68	4.1	16.5	13.9	0.84	18.7	0.65	77.1	16.7
68	4.4	16.5	13.9	0.84	18.7	0.65	76.5	18.7
75	1.9	16.1	13.7	0.85	18.9	0.84	95.2	4.1
75	2.3	16.1	13.7	0.85	18.9	0.81	91.4	5.9
75	2.8	16.1	13.8	0.85	18.8	0.78	88.4	8.4
75	3.5	16.2	13.8	0.85	18.7	0.75	85.7	12.4
75	3.8	16.2	13.8	0.85	18.7	0.74	84.8	14.3
75	4.1	16.2	13.8	0.85	18.7	0.74	84.1	16.3
75	4.4	16.2	13.8	0.85	18.7	0.73	83.5	18.3
77	1.9	16.0	13.7	0.86	19.0	0.87	97.2	4.1
77	2.3	16.0	13.7	0.86	18.9	0.83	93.4	5.9
77	2.8	16.1	13.7	0.85	18.8	0.80	90.4	8.3
77	3.5	16.1	13.7	0.85	18.7	0.78	87.7	12.3
77	3.8	16.1	13.7	0.85	18.7	0.77	86.8	14.2
77	4.1	16.1	13.8	0.86	18.7	0.76	86.1	16.2
77	4.4	16.1	13.7	0.85	18.7	0.75	85.5	18.1
86	1.9	15.6	13.6	0.87	19.0	0.99	106.2	4.0
86	2.3	15.6	13.6	0.87	18.9	0.95	102.4	5.7
86	2.8	15.6	13.6	0.87	18.8	0.92	99.4	8.1
86	3.5	15.7	13.6	0.87	18.7	0.89	96.7	11.9
86	3.8	15.7	13.6	0.87	18.7	0.88	95.8	13.8
86	4.1	15.7	13.6	0.87	18.6	0.87	95.1	15.7
86	4.4	15.7	13.6	0.87	18.6	0.87	94.5	17.6
95	1.9	15.2	13.4	0.89	19.0	1.13	115.3	3.7
95	2.3	15.2	13.4	0.88	18.9	1.08	111.4	5.3
95	2.8	15.2	13.4	0.88	18.8	1.05	108.4	7.5
95	3.5	15.2	13.4	0.88	18.7	1.02	105.7	11.2
95	3.8	15.2	13.4	0.88	18.6	1.01	104.8	12.9
95	4.1	15.2	13.4	0.88	18.6	1.00	104.1	14.8
95	4.4	15.2	13.4	0.88	18.6	1.00	103.5	16.6
105	1.9	14.6	13.2	0.90	19.1	1.30	125.3	3.6
105	2.3	14.6	13.2	0.91	18.9	1.25	121.4	5.2
105	2.8	14.6	13.2	0.91	18.8	1.22	118.4	7.3
105	3.5	14.6	13.2	0.91	18.6	1.19	115.7	10.9
105	3.8	14.6	13.2	0.91	18.6	1.18	114.8	12.6
105	4.1	14.6	13.2	0.91	18.6	1.17	114.1	14.4

Table 9. GET 015 cooling performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
105	4.4	14.6	13.2	0.91	18.5	1.16	113.5	16.1
115	1.9	14.1	13.1	0.93	19.4	1.54	135.7	3.5
115	2.3	14.1	13.0	0.93	19.1	1.48	131.6	5.0
115	2.8	14.0	13.0	0.93	19.0	1.44	128.5	7.1
115	3.5	14.0	13.0	0.93	18.8	1.40	125.7	10.6
115	3.8	14.0	13.0	0.93	18.8	1.39	124.9	12.2
115	4.1	14.0	13.0	0.93	18.7	1.38	124.1	14.0
115	4.4	14.0	13.0	0.93	18.7	1.37	123.5	15.7
120	1.9	13.7	13.0	0.94	19.2	1.60	140.4	3.7
120	2.3	13.7	13.0	0.94	19.0	1.56	136.6	5.1
120	2.8	13.7	12.9	0.94	18.9	1.52	133.5	7.0
120	3.5	13.7	12.9	0.95	18.7	1.48	130.7	10.4
120	3.8	13.7	12.9	0.95	18.7	1.47	129.8	12.0
120	4.1	13.6	12.9	0.95	18.6	1.46	129.1	13.7
120	4.4	13.6	12.9	0.95	18.6	1.45	128.5	15.4

Notes: Cooling performance data is tabulated at 80.6°F DB/66.2°F WB entering air at AHRI/ISO 13256-1 rated cfm.For AHRI/ISO 13256-1 certified ratings, see Table 4, p. 17. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 3.5; Minimum cfm 432; Rated cfm 540; Maximum cfm 648.

Table 10. GET 015 heating performance

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
25	1.9	9.7	6.9	0.82	17.7	6.2
25	2.3	9.9	7.0	0.83	18.9	8.9
25	2.8	10.0	7.2	0.83	19.9	12.5
25	3.5	10.2	7.4	0.83	20.8	18.4
25	3.8	10.3	7.4	0.83	21.1	21.2
25	4.1	10.3	7.5	0.83	21.4	24.2
25	4.4	10.3	7.5	0.83	21.6	27.1
32	1.9	10.6	7.7	0.84	23.8	6.0
32	2.3	10.8	8.0	0.84	25.1	8.6
32	2.8	11.0	8.1	0.85	26.2	12.1
32	3.5	11.2	8.3	0.85	27.3	17.8
32	3.8	11.3	8.4	0.85	27.6	20.6
32	4.1	11.3	8.4	0.85	27.9	23.5
32	4.4	11.4	8.5	0.85	28.1	26.3
45	1.9	12.6	9.6	0.87	34.7	4.6
45	2.3	12.9	9.9	0.87	36.4	6.6
45	2.8	13.2	10.2	0.88	37.7	9.3
45	3.5	13.4	10.4	0.88	39.1	13.8
45	3.8	13.5	10.5	0.88	39.5	15.9
45	4.1	13.6	10.5	0.88	39.9	18.2
45	4.4	13.6	10.6	0.88	40.2	20.4
55	1.9	14.1	11.1	0.89	43.2	4.4
55	2.3	14.5	11.5	0.89	45.0	6.4

Table 10. GET 015 heating performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
55	2.8	14.8	11.8	0.90	46.6	9.0
55	3.5	15.1	12.1	0.90	48.1	13.3
55	3.8	15.2	12.2	0.90	48.6	15.3
55	4.1	15.3	12.2	0.90	49.0	17.5
55	4.4	15.4	12.3	0.90	49.4	19.6
68	1.9	16.3	13.2	0.91	54.0	4.2
68	2.3	16.7	13.6	0.90	56.2	6.1
68	2.8	17.1	14.0	0.91	58.0	8.6
68	3.5	17.4	14.4	0.91	59.8	12.7
68	3.8	17.6	14.5	0.91	60.4	14.6
68	4.1	17.7	14.6	0.91	60.9	16.7
68	4.4	17.8	14.7	0.91	61.3	18.7
75	1.9	17.4	14.3	0.91	59.7	4.1
75	2.3	17.9	14.8	0.91	62.1	5.9
75	2.8	18.3	15.2	0.91	64.1	8.4
75	3.5	18.7	15.6	0.91	66.1	12.4
75	3.8	18.9	15.8	0.91	66.7	14.3
75	4.1	19.0	15.9	0.91	67.3	16.3
75	4.4	19.1	16.0	0.91	67.7	18.3
77	1.9	17.7	14.6	0.91	61.4	4.1
77	2.3	18.3	15.2	0.91	63.8	5.9
77	2.8	18.7	15.6	0.91	65.9	8.3
77	3.5	19.1	16.0	0.91	67.9	12.3
77	3.8	19.2	16.1	0.91	68.5	14.2
77	4.1	19.4	16.3	0.91	69.1	16.2
77	4.4	19.5	16.4	0.91	69.5	18.1
86	1.9	19.3	16.2	0.91	68.8	4.0
86	2.3	19.8	16.7	0.91	71.4	5.7
86	2.8	20.3	17.2	0.91	73.7	8.1
86	3.5	20.8	17.7	0.90	75.9	11.9
86	3.8	20.9	17.9	0.90	76.6	13.8
86	4.1	21.1	18.1	0.90	77.2	15.7
86	4.4	21.2	18.1	0.90	77.7	17.6

Notes: Heating performance data is tabulated at 68°F DB entering air at AHRI/ISO 13256-1 rated cfm. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 3.5; Minimum cfm 432; Rated cfm 540; Maximum cfm 648.

Table 11. GET 018 cooling performance

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
45	2.3	20.1	15.9	0.79	22.5	0.72	65.0	3.8
45	2.9	19.9	15.8	0.79	22.2	0.67	60.3	6.0
45	3.6	19.8	15.8	0.80	22.0	0.64	57.2	8.7
45	4.2	19.7	15.8	0.80	21.8	0.62	55.4	11.4
45	4.6	19.7	15.7	0.80	21.8	0.61	54.5	13.4

Table 11. GET 018 cooling performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
45	5.0	19.6	15.6	0.80	21.6	0.60	53.6	15.5
45	5.3	19.6	15.7	0.80	21.6	0.60	53.2	16.9
55	2.3	20.0	15.9	0.79	22.9	0.84	75.3	3.7
55	2.9	20.0	15.8	0.79	22.7	0.79	70.6	5.7
55	3.6	19.9	15.8	0.79	22.5	0.76	67.5	8.4
55	4.2	19.9	15.8	0.79	22.4	0.74	65.7	11.0
55	4.6	19.9	15.8	0.79	22.4	0.73	64.7	12.9
55	5.0	19.9	15.8	0.80	22.4	0.73	63.9	14.9
55	5.3	19.9	15.8	0.80	22.3	0.72	63.5	16.2
68	2.3	19.6	15.7	0.80	23.0	1.01	88.4	3.5
68	2.9	19.6	15.7	0.80	22.9	0.96	83.8	5.5
68	3.6	19.6	15.7	0.80	22.8	0.92	80.6	8.0
68	4.2	19.6	15.7	0.80	22.7	0.90	78.8	10.5
68	4.6	19.6	15.7	0.80	22.7	0.90	77.9	12.3
68	5.0	19.6	15.7	0.80	22.6	0.89	77.1	14.2
68	5.3	19.6	15.7	0.80	22.6	0.88	76.6	15.5
75	2.3	19.2	15.6	0.81	23.0	1.10	95.4	3.4
75	2.9	19.3	15.6	0.81	22.8	1.05	90.8	5.4
75	3.6	19.3	15.6	0.81	22.8	1.02	87.6	7.8
75	4.2	19.3	15.6	0.81	22.7	1.00	85.8	10.2
75	4.6	19.3	15.6	0.81	22.7	0.99	84.9	12.0
75	5.0	19.3	15.6	0.81	22.7	0.98	84.1	13.9
75	5.3	19.3	15.6	0.81	22.6	0.98	83.6	15.1
77	2.3	19.1	15.5	0.81	23.0	1.13	97.4	3.4
77	2.9	19.2	15.6	0.81	22.8	1.08	92.7	5.3
77	3.6	19.2	15.6	0.81	22.8	1.04	89.6	7.8
77	4.2	19.2	15.6	0.81	22.7	1.03	87.8	10.2
77	4.6	19.2	15.6	0.81	22.7	1.02	86.9	11.9
77	5.0	19.2	15.6	0.81	22.6	1.01	86.1	13.8
77	5.3	19.2	15.6	0.81	22.6	1.00	85.6	15.0
86	2.3	18.6	15.3	0.83	22.9	1.26	106.3	3.3
86	2.9	18.6	15.4	0.83	22.7	1.21	101.7	5.2
86	3.6	18.6	15.4	0.82	22.6	1.17	98.6	7.5
86	4.2	18.6	15.4	0.82	22.6	1.15	96.7	9.9
86	4.6	18.7	15.4	0.82	22.6	1.14	95.8	11.6
86	5.0	18.7	15.4	0.82	22.5	1.13	95.0	13.4
86	5.3	18.7	15.4	0.82	22.5	1.13	94.6	14.6
95	2.3	17.9	15.1	0.84	22.7	1.41	115.2	3.0
95	2.9	18.0	15.1	0.84	22.6	1.35	110.6	4.8
95	3.6	18.0	15.1	0.84	22.5	1.32	107.5	7.0
95	4.2	18.0	15.2	0.84	22.4	1.30	105.7	9.1
95	4.6	18.0	15.2	0.84	22.4	1.28	104.7	10.7
95	5.0	18.0	15.2	0.84	22.4	1.28	104.0	12.4
95	5.3	18.0	15.2	0.84	22.4	1.27	103.5	13.6

Table 11. GET 018 cooling performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
105	2.3	17.2	14.9	0.86	22.7	1.60	125.2	2.9
105	2.9	17.2	14.9	0.86	22.5	1.54	120.5	4.6
105	3.6	17.3	14.9	0.86	22.4	1.50	117.4	6.8
105	4.2	17.3	14.9	0.86	22.3	1.47	115.6	8.9
105	4.6	17.3	14.9	0.86	22.3	1.46	114.7	10.4
105	5.0	17.3	14.9	0.86	22.2	1.45	113.9	12.1
105	5.3	17.3	14.9	0.86	22.2	1.45	113.5	13.2
115	2.3	16.5	14.6	0.89	22.7	1.83	135.2	2.9
115	2.9	16.5	14.6	0.88	22.5	1.76	130.5	4.5
115	3.6	16.5	14.6	0.89	22.3	1.72	127.4	6.6
115	4.2	16.5	14.6	0.89	22.2	1.69	125.6	8.7
115	4.6	16.5	14.6	0.89	22.2	1.68	124.6	10.2
115	5.0	16.5	14.6	0.89	22.2	1.67	123.9	11.8
115	5.3	16.5	14.6	0.89	22.1	1.66	123.4	12.8
120	2.3	15.7	14.2	0.90	22.2	1.90	139.8	3.0
120	2.9	15.8	14.3	0.90	22.1	1.85	135.2	4.5
120	3.6	15.8	14.3	0.90	22.0	1.81	132.2	6.5
120	4.2	15.9	14.3	0.90	21.9	1.78	130.4	8.5
120	4.6	15.9	14.3	0.90	21.9	1.76	129.5	10.0
120	5.0	15.9	14.3	0.90	21.9	1.75	128.8	11.6
120	5.3	15.9	14.4	0.90	21.9	1.75	128.3	12.7

Notes: Cooling performance data is tabulated at 80.6°F DB/66.2°F WB entering air at AHRI/ISO 13256-1 rated cfm.For AHRI/ISO 13256-1 certified ratings, see Table 4, p. 17. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 4.2; Minimum cfm 501; Rated cfm 650; Maximum cfm 780.

Table 12. GET 018 heating performance

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
25	2.3	12.3	8.8	1.03	17.2	5.2
25	2.9	12.6	9.1	1.03	18.7	8.1
25	3.6	12.8	9.3	1.04	19.8	11.7
25	4.2	12.9	9.3	1.04	20.6	15.8
25	4.6	12.9	9.4	1.04	20.9	18.3
25	5.0	12.9	9.4	1.04	21.3	21.0
25	5.3	12.9	9.3	1.04	21.5	22.7
32	2.3	13.5	9.9	1.05	23.2	5.0
32	2.9	13.9	10.3	1.06	24.9	7.8
32	3.6	14.1	10.5	1.06	26.2	11.4
32	4.2	14.4	10.7	1.07	26.9	14.9
32	4.6	14.4	10.8	1.07	27.3	17.5
32	5.0	14.5	10.9	1.07	27.7	20.2
32	5.3	14.6	10.9	1.07	27.9	22.0
45	2.3	16.3	12.5	1.11	33.9	3.8
45	2.9	16.8	13.0	1.12	36.1	6.0

Table 12. GET 018 heating performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
45	3.6	17.2	13.3	1.13	37.6	8.7
45	4.2	17.4	13.6	1.13	38.5	11.4
45	4.6	17.6	13.7	1.14	39.1	13.4
45	5.0	17.7	13.8	1.14	39.5	15.5
45	5.3	17.7	13.9	1.14	39.7	16.9
55	2.3	18.5	14.5	1.16	42.1	3.7
55	2.9	19.1	15.1	1.17	44.6	5.7
55	3.6	19.6	15.6	1.18	46.4	8.4
55	4.2	19.9	15.8	1.18	47.5	11.0
55	4.6	20.0	15.9	1.18	48.1	12.9
55	5.0	20.1	16.1	1.19	48.6	14.9
55	5.3	20.2	16.1	1.19	48.9	16.2
68	2.3	21.3	17.2	1.21	52.7	3.5
68	2.9	22.2	18.0	1.22	55.6	5.5
68	3.6	22.6	18.5	1.22	57.7	8.0
68	4.2	22.9	18.7	1.23	59.1	10.5
68	4.6	23.0	18.8	1.22	59.8	12.3
68	5.0	23.2	19.0	1.23	60.4	14.2
68	5.3	23.3	19.1	1.23	60.7	15.5
75	2.3	22.9	18.7	1.23	58.4	3.4
75	2.9	23.7	19.5	1.24	61.6	5.4
75	3.6	24.2	20.0	1.24	63.9	7.8
75	4.2	24.5	20.3	1.24	65.4	10.2
75	4.6	24.6	20.4	1.24	66.1	12.0
75	5.0	24.8	20.6	1.24	66.8	13.9
75	5.3	24.9	20.7	1.24	67.1	15.1
77	2.3	23.4	19.1	1.24	60.0	3.4
77	2.9	24.2	19.9	1.25	63.3	5.3
77	3.6	24.6	20.4	1.24	65.7	7.8
77	4.2	25.0	20.7	1.25	67.1	10.2
77	4.6	25.1	20.9	1.24	67.9	11.9
77	5.0	25.2	21.0	1.24	68.6	13.8
77	5.3	25.3	21.0	1.24	69.0	15.0
86	2.3	25.2	20.9	1.26	67.4	3.3
86	2.9	26.0	21.7	1.25	71.0	5.2
86	3.6	26.4	22.2	1.25	73.7	7.5
86	4.2	26.7	22.5	1.24	75.3	9.9
86	4.6	26.8	22.6	1.24	76.2	11.6
86	5.0	26.9	22.7	1.24	76.9	13.4
86	5.3	27.0	22.8	1.23	77.3	14.6

Notes: Heating performance data is tabulated at 68°F DB entering air at AHRI/ISO 13256-1 rated cfm. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 4.2; Minimum cfm 501; Rated cfm 650; Maximum cfm 780.

Table 13. GET 024 cooling performance

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
45	3.0	27.4	20.9	0.76	30.3	0.84	65.2	3.4
45	3.9	27.8	21.0	0.76	30.4	0.77	60.6	5.5
45	4.7	28.0	21.1	0.75	30.5	0.73	58.0	7.6
45	5.6	28.2	21.1	0.75	30.6	0.70	55.9	10.3
45	6.1	28.3	21.2	0.75	30.6	0.69	55.0	12.0
45	6.5	28.4	21.2	0.75	30.7	0.68	54.4	13.4
45	7.0	28.3	21.2	0.75	30.6	0.67	53.7	15.2
55	3.0	26.6	20.5	0.77	30.0	1.01	75.0	3.3
55	3.9	26.9	20.7	0.77	30.1	0.94	70.4	5.2
55	4.7	27.1	20.7	0.76	30.2	0.91	67.8	7.3
55	5.6	27.2	20.7	0.76	30.2	0.87	65.8	9.9
55	6.1	27.3	20.8	0.76	30.3	0.86	64.9	11.5
55	6.5	27.4	20.8	0.76	30.3	0.85	64.3	12.9
55	7.0	27.4	20.8	0.76	30.3	0.84	63.7	14.6
68	3.0	25.6	20.2	0.79	29.8	1.23	87.9	3.2
68	3.9	25.9	20.3	0.78	29.9	1.17	83.3	5.0
68	4.7	26.0	20.3	0.78	29.9	1.13	80.7	6.9
68	5.6	26.1	20.4	0.78	29.9	1.10	78.7	9.4
68	6.1	26.2	20.4	0.78	29.9	1.09	77.8	11.0
68	6.5	26.2	20.4	0.78	29.9	1.08	77.2	12.3
68	7.0	26.3	20.4	0.78	29.9	1.07	76.6	14.0
75	3.0	25.0	19.9	0.80	29.6	1.36	94.8	3.1
75	3.9	25.3	20.0	0.79	29.7	1.30	90.2	4.9
75	4.7	25.4	20.1	0.79	29.7	1.26	87.6	6.8
75	5.6	25.5	20.1	0.79	29.7	1.23	85.6	9.2
75	6.1	25.6	20.1	0.79	29.7	1.22	84.7	10.7
75	6.5	25.6	20.2	0.79	29.7	1.21	84.1	12.0
75	7.0	25.6	20.2	0.79	29.7	1.20	83.5	13.6
77	3.0	24.8	19.9	0.80	29.6	1.40	96.7	3.1
77	3.9	25.1	19.9	0.80	29.6	1.33	92.2	4.9
77	4.7	25.2	20.0	0.79	29.6	1.30	89.6	6.7
77	5.6	25.3	20.1	0.79	29.7	1.27	87.6	9.2
77	6.1	25.4	20.1	0.79	29.7	1.25	86.7	10.6
77	6.5	25.4	20.1	0.79	29.7	1.25	86.1	11.9
77	7.0	25.5	20.1	0.79	29.7	1.24	85.5	13.5
86	3.0	24.0	19.5	0.81	29.3	1.57	105.6	3.0
86	3.9	24.2	19.6	0.81	29.3	1.50	101.0	4.7
86	4.7	24.3	19.7	0.81	29.4	1.47	98.5	6.6
86	5.6	24.5	19.7	0.81	29.4	1.44	96.5	8.9
86	6.1	24.5	19.7	0.81	29.4	1.43	95.6	10.3
86	6.5	24.6	19.8	0.80	29.4	1.42	95.0	11.6
86	7.0	24.6	19.8	0.80	29.4	1.41	94.4	13.2
95	3.0	23.0	19.2	0.83	29.1	1.77	114.4	2.7

Table 13. GET 024 cooling performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
95	3.9	23.3	19.3	0.83	29.1	1.70	109.9	4.3
95	4.7	23.4	19.3	0.82	29.1	1.66	107.4	6.0
95	5.6	23.5	19.3	0.82	29.1	1.63	105.4	8.2
95	6.1	23.6	19.3	0.82	29.1	1.61	104.5	9.5
95	6.5	23.6	19.4	0.82	29.1	1.60	103.9	10.6
95	7.0	23.6	19.4	0.82	29.1	1.59	103.3	12.1
105	3.0	21.9	18.7	0.86	28.8	2.01	124.2	2.6
105	3.9	22.2	18.8	0.85	28.8	1.93	119.7	4.2
105	4.7	22.3	18.9	0.85	28.7	1.89	117.2	5.8
105	5.6	22.4	18.9	0.85	28.7	1.86	115.3	7.9
105	6.1	22.4	18.9	0.84	28.7	1.84	114.4	9.2
105	6.5	22.4	19.0	0.84	28.7	1.84	113.8	10.3
105	7.0	22.5	19.0	0.84	28.7	1.83	113.2	11.8
115	3.0	20.7	18.3	0.88	28.4	2.28	134.0	2.6
115	3.9	20.9	18.4	0.88	28.4	2.20	129.6	4.1
115	4.7	21.0	18.4	0.88	28.4	2.15	127.1	5.7
115	5.6	21.1	18.4	0.87	28.3	2.12	125.1	7.7
115	6.1	21.1	18.5	0.87	28.3	2.11	124.3	9.0
115	6.5	21.2	18.5	0.87	28.3	2.09	123.7	10.1
115	7.0	21.2	18.5	0.87	28.3	2.08	123.1	11.5
120	3.0	20.1	18.0	0.89	28.3	2.39	138.8	2.7
120	3.9	20.3	18.1	0.89	28.2	2.32	134.5	4.1
120	4.7	20.4	18.1	0.89	28.2	2.27	132.0	5.6
120	5.6	20.5	18.2	0.89	28.2	2.24	130.1	7.6
120	6.1	20.6	18.2	0.88	28.1	2.22	129.2	8.9
120	6.5	20.6	18.2	0.88	28.1	2.21	128.6	9.9
120	7.0	20.6	18.2	0.88	28.1	2.20	128.0	11.3

Notes: Cooling performance data is tabulated at 80.6°F DB/66.2°F WB entering air at AHRI/ISO 13256-1 rated cfm.For AHRI/ISO 13256-1 certified ratings, see Table 4, p. 17. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 5.6; Minimum cfm 656; Rated cfm 820; Maximum cfm 984.

Table 14. GET 024 heating performance

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
25	3.0	14.8	10.4	1.30	18.1	4.7
25	3.9	15.3	10.8	1.30	19.5	7.4
25	4.7	15.5	11.1	1.31	20.3	10.3
25	5.6	15.8	11.3	1.30	21.0	14.0
25	6.1	15.9	11.4	1.31	21.3	16.2
25	6.5	15.9	11.5	1.31	21.5	18.1
25	7.0	16.0	11.6	1.31	21.7	20.6
32	3.0	16.4	12.0	1.31	24.0	4.6
32	3.9	17.0	12.5	1.32	25.6	7.2
32	4.7	17.3	12.8	1.32	26.6	10.0
32	5.6	17.6	13.1	1.32	27.3	13.5

Table 14. GET 024 heating performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
32	6.1	17.7	13.2	1.33	27.7	15.7
32	6.5	17.8	13.3	1.33	27.9	17.5
32	7.0	17.9	13.3	1.33	28.2	20.0
45	3.0	19.9	15.3	1.35	34.8	3.4
45	3.9	20.6	15.9	1.36	36.8	5.5
45	4.7	20.9	16.3	1.36	38.1	7.6
45	5.6	21.3	16.6	1.37	39.1	10.3
45	6.1	21.4	16.8	1.37	39.5	12.0
45	6.5	21.5	16.8	1.37	39.8	13.4
45	7.0	21.6	17.0	1.37	40.2	15.2
55	3.0	22.5	17.8	1.38	43.1	3.3
55	3.9	23.3	18.5	1.39	45.5	5.2
55	4.7	23.7	19.0	1.40	46.9	7.3
55	5.6	24.1	19.3	1.40	48.1	9.9
55	6.1	24.3	19.5	1.40	48.6	11.5
55	6.5	24.4	19.6	1.40	49.0	12.9
55	7.0	24.5	19.7	1.41	49.4	14.6
68	3.0	26.0	21.1	1.43	53.9	3.2
68	3.9	26.8	21.9	1.44	56.8	5.0
68	4.7	27.4	22.4	1.45	58.5	6.9
68	5.6	27.8	22.9	1.46	59.8	9.4
68	6.1	28.0	23.0	1.46	60.5	11.0
68	6.5	28.1	23.1	1.46	60.9	12.3
68	7.0	28.3	23.3	1.46	61.4	14.0
75	3.0	27.8	22.9	1.46	59.8	3.1
75	3.9	28.8	23.8	1.48	62.8	4.9
75	4.7	29.4	24.3	1.49	64.7	6.8
75	5.6	29.8	24.7	1.49	66.2	9.2
75	6.1	30.0	24.9	1.49	66.8	10.7
75	6.5	30.1	25.0	1.49	67.3	12.0
75	7.0	30.3	25.1	1.50	67.8	13.6
77	3.0	28.4	23.4	1.47	61.4	3.1
77	3.9	29.3	24.3	1.49	64.6	4.9
77	4.7	29.9	24.8	1.49	66.4	6.7
77	5.6	30.3	25.2	1.50	68.0	9.2
77	6.1	30.5	25.4	1.50	68.7	10.6
77	6.5	30.7	25.6	1.51	69.1	11.9
77	7.0	30.9	25.7	1.51	69.7	13.5
86	3.0	30.7	25.6	1.51	69.0	3.0
86	3.9	31.8	26.6	1.53	72.4	4.7
86	4.7	32.4	27.1	1.54	74.5	6.6
86	5.6	32.8	27.5	1.56	76.2	8.9
86	6.1	33.0	27.7	1.56	76.9	10.3
86	6.5	33.1	27.8	1.56	77.5	11.6

Table 14. GET 024 heating performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
86	7.0	33.3	27.9	1.57	78.0	13.2

Notes: Heating performance data is tabulated at 68°F DB entering air at AHRI/ISO 13256-1 rated cfm. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 5.6; Minimum cfm 656; Rated cfm 820; Maximum cfm 984.

Table 15. GET 036 cooling performance

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
45	4.5	41.9	31.5	0.75	46.1	1.23	65.5	5.6
45	5.8	42.1	31.7	0.75	46.0	1.14	60.9	8.8
45	7.1	42.3	31.7	0.75	46.0	1.08	57.9	12.5
45	8.4	42.4	31.8	0.75	46.0	1.04	55.9	16.8
45	9.1	42.5	31.9	0.75	46.0	1.02	55.1	19.3
45	9.8	42.6	31.9	0.75	46.0	1.01	54.4	22.0
45	10.5	42.6	31.9	0.75	46.0	0.99	53.8	24.8
55	4.5	40.6	31.0	0.76	45.6	1.45	75.2	5.4
55	5.8	40.9	31.2	0.76	45.6	1.36	70.7	8.4
55	7.1	41.1	31.2	0.76	45.5	1.31	67.8	12.0
55	8.4	41.2	31.2	0.76	45.5	1.27	65.8	16.1
55	9.1	41.2	31.3	0.76	45.5	1.26	65.0	18.5
55	9.8	41.2	31.3	0.76	45.5	1.25	64.3	21.1
55	10.5	41.3	31.3	0.76	45.5	1.23	63.7	23.8
68	4.5	38.9	30.4	0.78	44.9	1.74	87.9	5.2
68	5.8	39.1	30.5	0.78	44.8	1.66	83.4	8.0
68	7.1	39.3	30.5	0.78	44.7	1.60	80.6	11.5
68	8.4	39.4	30.6	0.78	44.7	1.57	78.6	15.4
68	9.1	39.4	30.5	0.77	44.7	1.55	77.8	17.7
68	9.8	39.4	30.6	0.78	44.7	1.54	77.1	20.1
68	10.5	39.5	30.6	0.78	44.7	1.53	76.5	22.7
75	4.5	37.9	30.0	0.79	44.4	1.91	94.7	5.0
75	5.8	38.1	30.1	0.79	44.4	1.82	90.3	7.9
75	7.1	38.3	30.1	0.79	44.3	1.77	87.5	11.2
75	8.4	38.3	30.1	0.78	44.3	1.74	85.5	15.0
75	9.1	38.4	30.1	0.79	44.3	1.72	84.7	17.3
75	9.8	38.4	30.2	0.78	44.2	1.71	84.0	19.7
75	10.5	38.4	30.2	0.78	44.2	1.70	83.4	22.2
77	4.5	37.6	29.9	0.80	44.3	1.96	96.7	5.0
77	5.8	37.8	30.0	0.79	44.2	1.87	92.2	7.8
77	7.1	38.0	30.0	0.79	44.2	1.82	89.4	11.1
77	8.4	38.1	30.1	0.79	44.1	1.78	87.5	14.9
77	9.1	38.1	30.1	0.79	44.1	1.77	86.7	17.2
77	9.8	38.1	30.1	0.79	44.1	1.76	86.0	19.5
77	10.5	38.1	30.1	0.79	44.1	1.75	85.4	22.0
86	4.5	36.2	29.3	0.81	43.7	2.19	105.4	4.9
86	5.8	36.4	29.4	0.81	43.6	2.10	101.0	7.6

Table 15. GET 036 cooling performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Gross Sen (Mbtuh)	SHR	Heat of Rej (Mbtuh)	Comp Pwr (kW)	LWT	WPD (feet head)
86	7.1	36.5	29.4	0.80	43.5	2.05	98.3	10.8
86	8.4	36.6	29.5	0.80	43.5	2.01	96.4	14.5
86	9.1	36.7	29.5	0.80	43.5	1.99	95.5	16.7
86	9.8	36.7	29.6	0.81	43.5	1.98	94.9	19.0
86	10.5	36.7	29.5	0.80	43.5	1.97	94.3	21.4
95	4.5	34.7	28.8	0.83	43.1	2.46	114.2	4.5
95	5.8	34.9	28.9	0.83	43.0	2.36	109.8	7.0
95	7.1	35.0	28.9	0.82	42.9	2.30	107.1	10.0
95	8.4	35.1	28.9	0.82	42.9	2.27	105.2	13.5
95	9.1	35.2	28.9	0.82	42.8	2.24	104.4	15.5
95	9.8	35.2	29.0	0.82	42.8	2.23	103.7	17.7
95	10.5	35.2	29.0	0.82	42.8	2.22	103.1	20.0
105	4.5	32.9	28.1	0.85	42.4	2.79	123.9	4.3
105	5.8	33.1	28.2	0.85	42.3	2.68	119.6	6.8
105	7.1	33.2	28.2	0.85	42.2	2.62	116.9	9.7
105	8.4	33.3	28.2	0.85	42.1	2.58	115.0	13.1
105	9.1	33.4	28.2	0.85	42.1	2.56	114.2	15.1
105	9.8	33.4	28.3	0.85	42.1	2.54	113.6	17.2
105	10.5	33.4	28.3	0.85	42.0	2.53	113.0	19.4
115	4.5	31.0	27.3	0.88	41.8	3.16	133.6	4.2
115	5.8	31.2	27.4	0.88	41.6	3.05	129.3	6.6
115	7.1	31.3	27.5	0.88	41.5	2.98	126.7	9.5
115	8.4	31.4	27.5	0.88	41.4	2.94	124.9	12.8
115	9.1	31.4	27.5	0.88	41.4	2.92	124.1	14.7
115	9.8	31.4	27.5	0.87	41.3	2.90	123.4	16.7
115	10.5	31.5	27.5	0.87	41.3	2.89	122.9	18.9
120	4.5	30.0	26.9	0.89	41.3	3.30	138.4	4.4
120	5.8	30.2	26.9	0.89	41.2	3.21	134.2	6.7
120	7.1	30.3	27.0	0.89	41.1	3.15	131.6	9.4
120	8.4	30.4	27.0	0.89	41.0	3.10	129.8	12.5
120	9.1	30.4	27.0	0.89	40.9	3.08	129.0	14.4
120	9.8	30.4	27.0	0.89	40.9	3.06	128.3	16.5
120	10.5	30.4	27.0	0.89	40.9	3.05	127.8	18.7

Notes: Cooling performance data is tabulated at 80.6°F DB/66.2°F WB entering air at AHRI/ISO 13256-1 rated cfm.For AHRI/ISO 13256-1 certified ratings, see Table 4, p. 17. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 8.4; Minimum cfm 936; Rated cfm 1170; Maximum cfm 1404.

Table 16. GET 036 heating performance

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
25	4.5	23.4	16.9	1.90	17.5	7.6
25	5.8	23.9	17.4	1.90	19.0	11.8
25	7.1	24.3	17.8	1.90	20.0	16.8
25	8.4	24.6	18.1	1.90	20.7	22.5

Table 16. GET 036 heating performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
25	9.1	24.6	18.1	1.90	21.0	25.8
25	9.8	24.7	18.2	1.90	21.3	29.4
25	10.5	24.8	18.3	1.90	21.5	33.2
32	4.5	25.7	19.1	1.92	23.5	7.4
32	5.8	26.4	19.8	1.93	25.2	11.5
32	7.1	26.8	20.2	1.93	26.3	16.3
32	8.4	27.0	20.5	1.92	27.1	21.8
32	9.1	27.2	20.6	1.92	27.5	25.1
32	9.8	27.3	20.7	1.92	27.8	28.5
32	10.5	27.3	20.8	1.92	28.0	32.2
45	4.5	30.9	24.0	2.00	34.3	5.6
45	5.8	31.6	24.8	1.99	36.5	8.8
45	7.1	32.1	25.3	1.99	37.9	12.5
45	8.4	32.4	25.6	1.99	38.9	16.8
45	9.1	32.5	25.7	1.99	39.4	19.3
45	9.8	32.6	25.8	1.99	39.7	22.0
45	10.5	32.7	25.9	1.98	40.1	24.8
55	4.5	34.7	27.7	2.05	42.7	5.4
55	5.8	35.7	28.7	2.05	45.1	8.4
55	7.1	36.2	29.2	2.05	46.8	12.0
55	8.4	36.6	29.6	2.05	48.0	16.1
55	9.1	36.7	29.7	2.05	48.5	18.5
55	9.8	36.8	29.8	2.05	48.9	21.1
55	10.5	36.9	29.9	2.05	49.3	23.8
68	4.5	40.1	32.8	2.13	53.4	5.2
68	5.8	41.2	33.9	2.14	56.3	8.0
68	7.1	41.8	34.5	2.13	58.3	11.5
68	8.4	42.2	34.9	2.13	59.7	15.4
68	9.1	42.3	35.0	2.13	60.3	17.7
68	9.8	42.5	35.2	2.13	60.8	20.1
68	10.5	42.6	35.3	2.13	61.3	22.7
75	4.5	42.9	35.5	2.17	59.2	5.0
75	5.8	44.2	36.8	2.19	62.3	7.9
75	7.1	44.9	37.5	2.19	64.5	11.2
75	8.4	45.4	37.9	2.19	66.0	15.0
75	9.1	45.5	38.0	2.18	66.6	17.3
75	9.8	45.6	38.1	2.19	67.2	19.7
75	10.5	45.7	38.2	2.18	67.7	22.2
77	4.5	43.8	36.3	2.19	60.9	5.0
77	5.8	45.1	37.6	2.20	64.0	7.8
77	7.1	45.8	38.3	2.21	66.2	11.1
77	8.4	46.2	38.7	2.20	67.8	14.9
77	9.1	46.4	38.8	2.20	68.5	17.2
77	9.8	46.5	38.9	2.20	69.1	19.5

Table 16. GET 036 heating performance (continued)

EWT	GPM	Total Gross (Mbtuh)	Heat of Absorb (Mbtuh)	Compr Power (kW)	LWT	WPD (feet head)
77	10.5	46.6	39.0	2.20	69.6	22.0
86	4.5	47.7	39.9	2.27	68.3	4.9
86	5.8	49.1	41.3	2.29	71.8	7.6
86	7.1	49.9	42.1	2.30	74.2	10.8
86	8.4	50.3	42.5	2.30	75.9	14.5
86	9.1	50.5	42.6	2.30	76.6	16.7
86	9.8	50.6	42.7	2.30	77.3	19.0
86	10.5	50.6	42.8	2.30	77.9	21.4

Notes: Heating performance data is tabulated at 68°F DB entering air at AHRI/ISO 13256-1 rated cfm. See Performance correction tables to correct performance at conditions other than those tabulated. Interpolation of data is permissible, extrapolation is not. Rated GPM 8.4; Minimum cfm 936; Rated cfm 1170; Maximum cfm 1404.

Table 17. Correction factors for variation in entering air temperature

Cooling Entering Air WB°F	Cooling Capacity	Cooling Input Watts	Sensible vs. Entering Dry Bulb Multipliers				
			65.6	70.6	75.6	80.6	85.6
49.4	0.954	1.005	0.995	1.059	1.123	*	*
56.3	0.953	1.005	0.816	1.036	1.122	*	*
60.3	0.952	1.006	0.612	0.846	1.070	*	*
63.2	0.963	1.004	0.466	0.700	0.926	1.150	*
66.2	1.000	1.000	—	0.545	0.773	1.000	1.221
72.1	1.087	0.992	—	—	0.464	0.696	0.920
77.1	1.166	0.983	—	—	—	0.431	0.653

Heating Entering Air DB°F	Heating Capacity	Heating Input Watts
53.0	1.025	0.853
58.0	1.017	0.899
63.0	1.012	0.950
68.0	1.000	1.000
73.0	0.992	1.055
78.0	0.984	1.116
83.0	0.975	1.179

Table 18. Correction factors for variation in air flow

Model	Entering CFM	Cooling Capacity	Sensible Capacity	Cooling Input Watts	Heating Capacity	Heating Input Watts
GET 009	272	0.961	0.868	1.004	0.989	1.098
GET 009	289	0.972	0.902	1.003	0.993	1.068
GET 009	306	0.982	0.934	1.002	0.996	1.043
GET 009	323	0.991	0.967	1.001	0.998	1.020
GET 009	340	1.000	1.000	1.000	1.000	1.000
GET 009	357	1.009	1.032	0.999	1.003	0.984
GET 009	374	1.017	1.064	0.998	1.004	0.968
GET 009	391	1.024	1.094	0.998	1.006	0.954
GET 009	408	1.031	1.124	0.997	1.008	0.942
GET 012	303	0.961	0.879	1.006	0.975	1.086
GET 012	323	0.972	0.910	1.004	0.984	1.061
GET 012	342	0.982	0.940	1.003	0.991	1.038
GET 012	361	0.991	0.970	1.001	0.996	1.018
GET 012	380	1.000	1.000	1.000	1.000	1.000
GET 012	399	1.009	1.032	0.999	1.004	0.984
GET 012	418	1.016	1.061	0.998	1.009	0.970
GET 012	437	1.023	1.090	0.997	1.013	0.958
GET 012	487	1.035	1.162	0.994	1.025	0.929

Table 18. Correction factors for variation in air flow (continued)

Model	Entering CFM	Cooling Capacity	Sensible Capacity	Cooling Input Watts	Heating Capacity	Heating Input Watts
GET 015	432	0.961	0.865	1.010	0.975	1.082
GET 015	459	0.972	0.899	1.007	0.982	1.057
GET 015	486	0.982	0.933	1.006	0.989	1.036
GET 015	513	0.990	0.968	1.003	0.995	1.017
GET 015	540	1.000	1.000	1.000	1.000	1.000
GET 015	567	1.008	1.034	0.997	1.005	0.984
GET 015	594	1.015	1.067	0.995	1.009	0.971
GET 015	621	1.022	1.098	0.993	1.013	0.958
GET 015	648	1.029	1.125	0.991	1.017	0.947
GET 018	501	0.954	0.866	1.015	0.994	1.074
GET 018	553	0.973	0.907	1.003	0.995	1.061
GET 018	585	0.983	0.939	1.002	0.997	1.038
GET 018	618	0.992	0.970	1.001	0.998	1.018
GET 018	650	1.000	1.000	1.000	1.000	1.000
GET 018	683	1.008	1.030	0.999	1.002	0.985
GET 018	715	1.015	1.060	0.998	1.001	0.969
GET 018	748	1.022	1.087	0.997	1.003	0.956
GET 018	780	1.028	1.117	0.996	1.002	0.944
GET 024	656	0.962	0.877	1.003	0.974	1.079
GET 024	697	0.973	0.910	1.002	0.981	1.055
GET 024	738	0.983	0.940	1.000	0.988	1.034
GET 024	779	0.992	0.970	1.001	0.995	1.016
GET 024	820	1.000	1.000	1.000	1.000	1.000
GET 024	861	1.008	1.029	0.999	1.005	0.985
GET 024	902	1.014	1.058	0.998	1.010	0.972
GET 024	943	1.022	1.088	0.997	1.014	0.961
GET 024	984	1.028	1.117	0.996	1.018	0.950
GET 036	936	0.957	0.876	1.002	0.974	1.077
GET 036	995	0.969	0.907	1.001	0.981	1.052
GET 036	1053	0.980	0.939	1.001	0.989	1.033
GET 036	1112	0.990	0.970	1.000	0.994	1.015
GET 036	1170	1.000	1.000	1.000	1.000	1.000
GET 036	1229	1.009	1.032	1.000	1.005	0.987
GET 036	1287	1.017	1.062	0.999	1.010	0.974
GET 036	1346	1.024	1.090	0.999	1.014	0.963
GET 036	1404	1.033	1.121	0.999	1.018	0.953

Unit Fan Performance

Table 19. 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 20. 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	487	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	442	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	403	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	368	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. The ECM motor will reduce airflow to 50% in fan only mode for additional energy savings.

Figure 5. ECM control board and dip switch setting

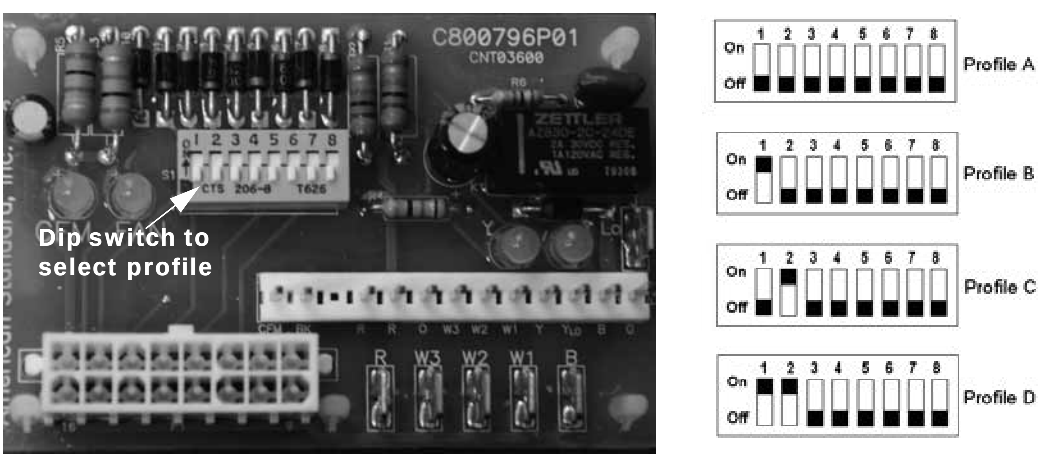


Table 21. Pressure drop due to return air door (RAD)

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.

Table 22. Antifreeze correction factors

	Methanol					
	Concentration by Volume					
Item	**0%**	**10%**	**20%**	**30%**	**40%**	**50%**
Cooling Capacity	1.000	0.998	0.997	0.995	0.993	0.992
Heating Capacity	1.000	0.995	0.990	0.985	0.979	0.974
Pressure Drop	1.000	1.023	1.057	1.091	1.122	1.160
	Ethylene Glycol					
	Concentration by Volume					
Item	**0%**	**10%**	**20%**	**30%**	**40%**	**50%**
Cooling Capacity	1.000	0.996	0.991	0.987	0.983	0.979
Heating Capacity	1.000	0.993	0.985	0.977	0.969	0.961
Pressure Drop	1.000	1.024	1.068	1.124	1.188	1.263
	Propylene Glycol					
	Concentration by Volume					
Item	**0%**	**10%**	**20%**	**30%**	**40%**	**50%**
Cooling Capacity	1.000	0.993	0.987	0.980	0.974	0.968
Heating Capacity	1.000	0.986	0.973	0.960	0.948	0.935
Pressure Drop	1.000	1.040	1.098	1.174	1.273	1.405
	Brine (NaCL)					
	Concentration by Volume					
Item	**0%**	**10%**	**20%**	**30%**	**40%**	**50%**
Cooling Capacity	1.000	0.994	0.987	0.979	0.971	0.963
Heating Capacity	1.000	0.993	0.987	0.982	0.978	0.976
Pressure Drop	1.000	1.154	1.325	1.497	1.669	1.841

Figure 6. Cooling capacity correction factor

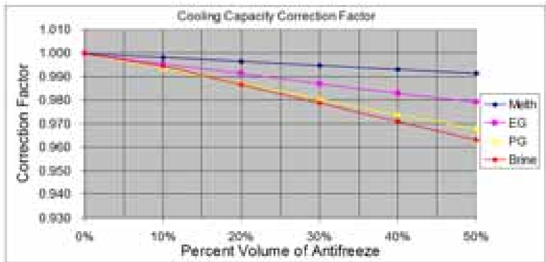


Figure 7. Heating capacity correction factor

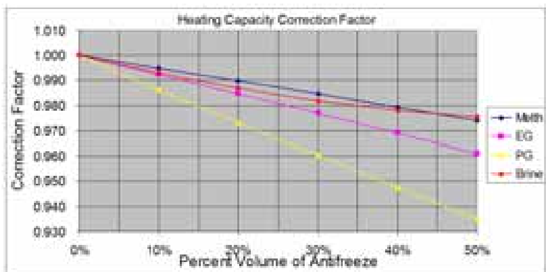
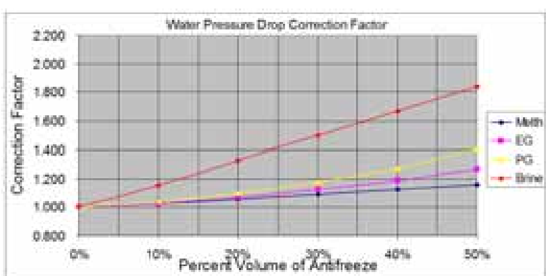


Figure 8. Water pressure drop correction factor



Example 1 (Ethylene Glycol): The antifreeze solution is 20% by volume of Ethylene Glycol. Determine the corrected cooling capacity and waterside pressure drop for a GET009 when the EWT is 86°F and the GPM is 2.3.

From the catalog data, the cooling capacity at these conditions with 100% water is 8.3 Mbtuh, and the waterside pressure drop is 9.1 feet of head. At 20% Ethylene Glycol, the correction factor for cool capacity is 0.9912 and the pressure drop is 1.068.

The corrected cooling capacity (Mbtuh) = 8.50* 0.9912 = 8.43. The corrected water side pressure drop (Ft. head) = 9.1 * 1.068 = 9.72.

Example 2 (Propylene Glycol): The antifreeze solution is 30% by volume of Propylene Glycol. Determine the corrected heating capacity and waterside pressure drop for a GET009 when the EWT is 45°F and the GPM is 2.3.

From the catalog data, the heating capacity at these conditions with 100% water is 8.3 Mbtuh, and the waterside pressure drop is 11.1 feet of head. At 30% Propylene Glycol, the correction factor for heat capacity is 0.9603 and the pressure drop is 1.174.

The corrected heating capacity (Mbtuh) = 8.3 * 0.9603 = 7.97. The corrected water side pressure drop (Ft. head) = 11.1 * 1.174 = 13.03.

Electrical Data

Table 23. 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

Dimensional Data

Figure 9. Unit cabinet/riser

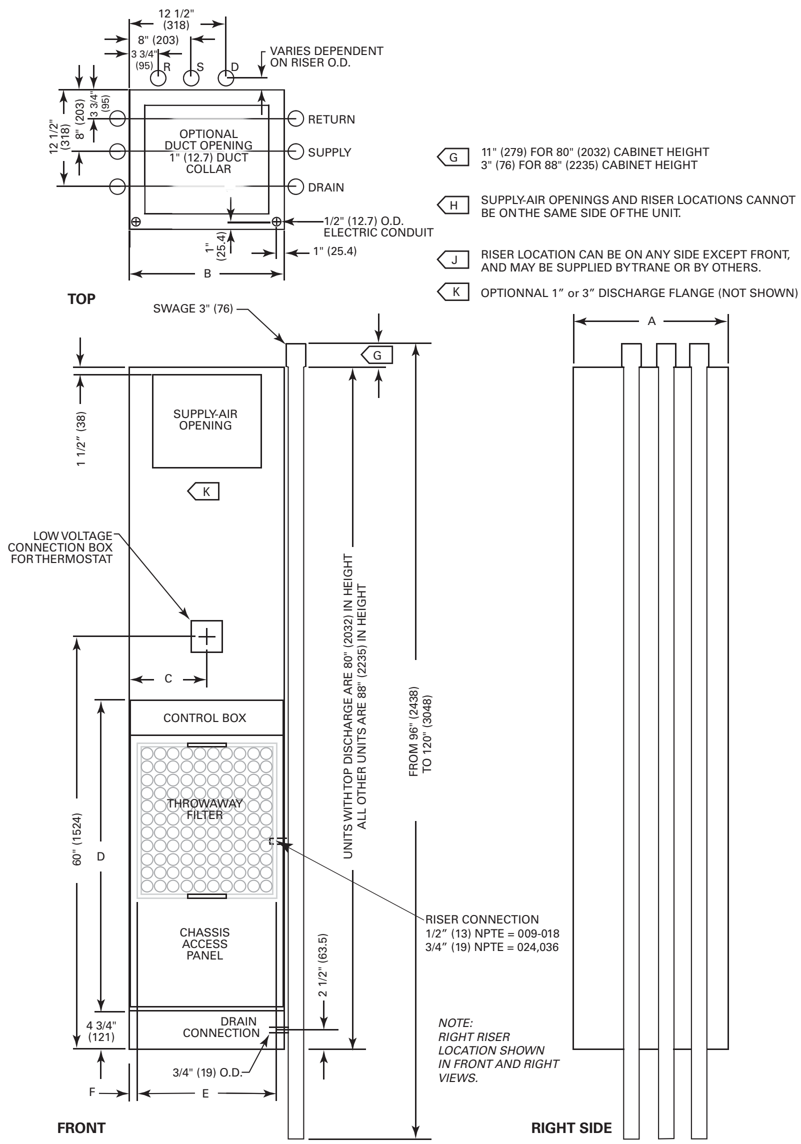


Table 24. Unit cabinet/riser

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

Dimensional Data

Figure 10. Unit cabinet/riser

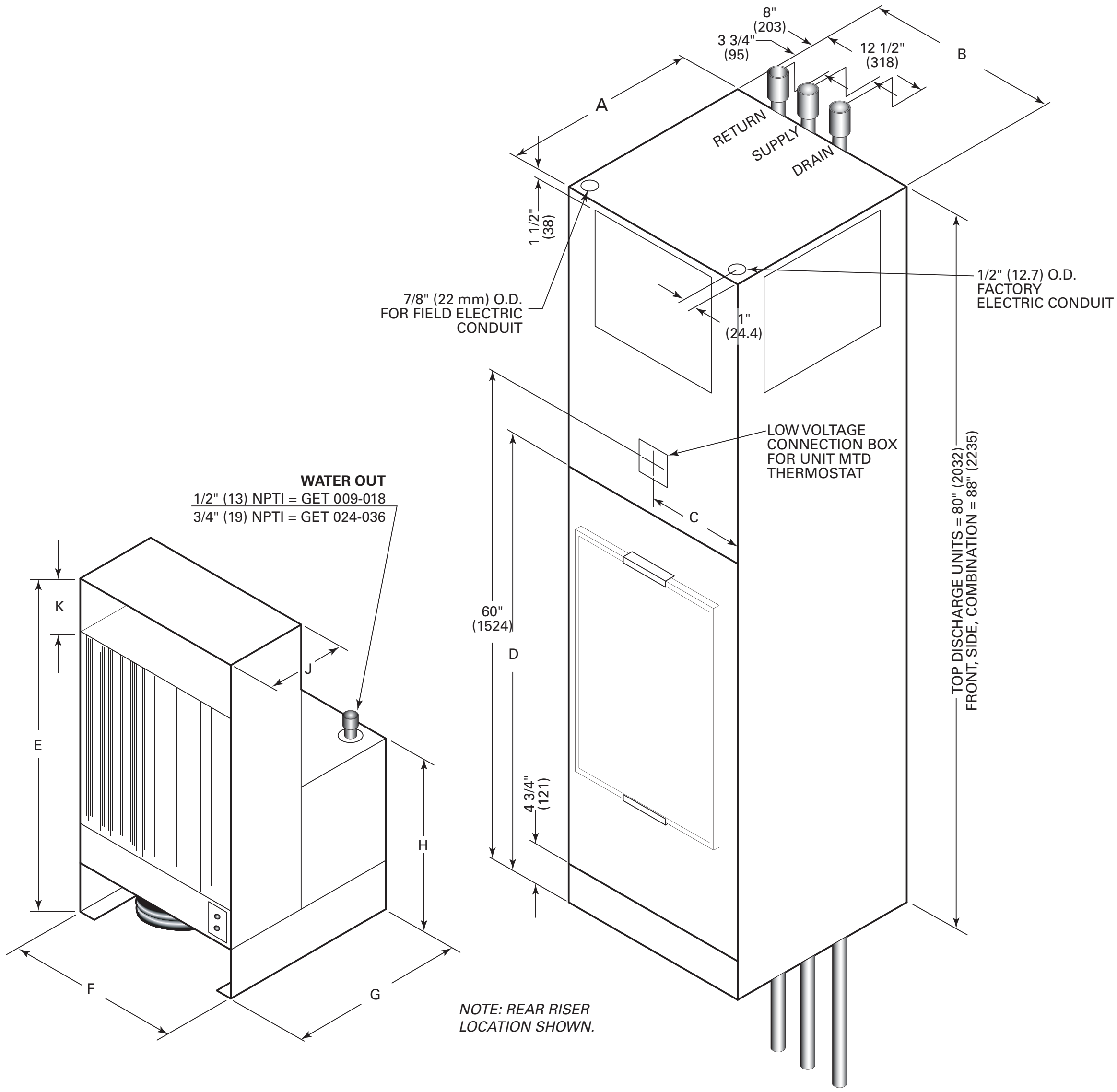


Table 25. Dimensional data - unit cabinet/riser

Unit Size	A	B	C	D	E	F	G	H	J	K
009	16¼" (413)	16¼" (413)	8 1/8" (206)	43 7/8" (1114)	32½" (826)	13 5/8" (346)	14" (356)	16 7/8" (429)	4 3/8" (111)	6¾" (171)
012	16¼" (413)	16¼" (413)	8 1/8" (206)	43 7/8" (1114)	32½" (826)	13 5/8" (346)	14" (356)	16 3/8" (416)	4 3/8" (111)	6¾" (171)
015-018	18" (457)	20" (508)	10" (254)	45 3/8" (1153)	34 8/9" (886)	17 3/8" (441)	16 1/8" (410)	18½" (470)	5¾" (146)	4¾" (121)
024-036	24" (610)	24" (610)	12" (305)	54 3/8" (1381)	41" (1041)	21 3/8" (543)	22" (559)	21¾" (552)	4" (102)	6" (152)

Water Flow Control

The factory installed water flow control option is hard piped to the copper or cupro-nickel water coil. The selection is available in a high or low flow option. An isolation valve and strainer are standard when the factory flow device is selected.

Two foot hose and ball valves are recommended for these units. The hoses and ball valves are optional and can be selected with the chassis portion of the order, or can be field provided. These items are shipped separate from the chassis.

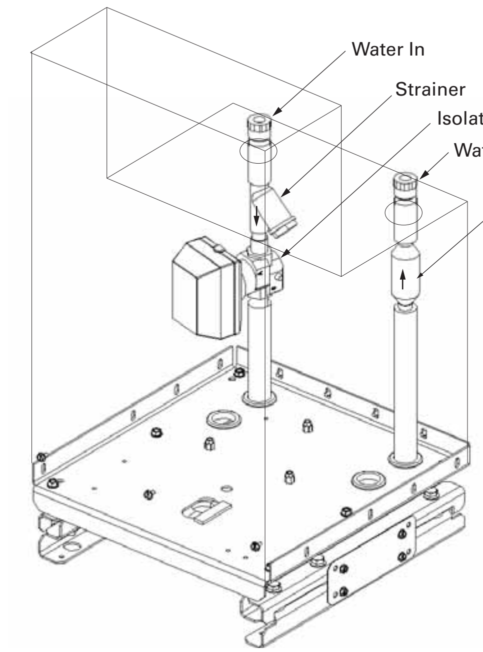
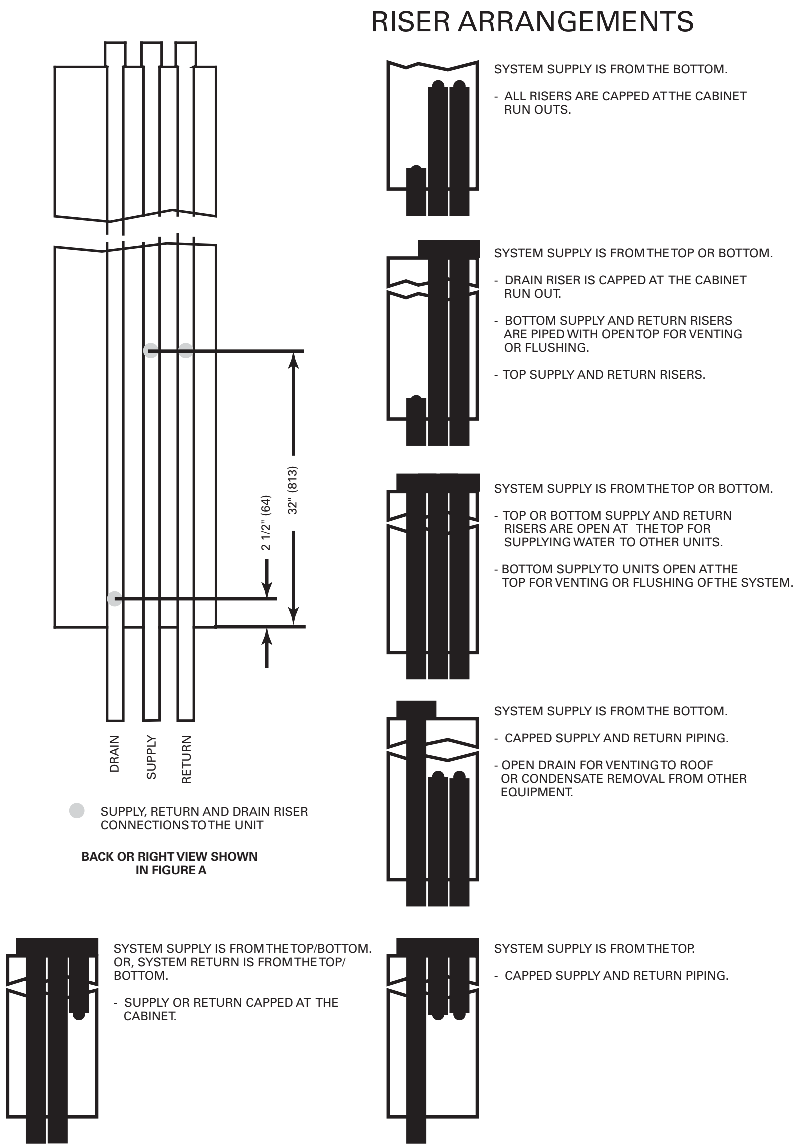


Table 26. Factory hose kit flow options

Unit Size	Low Flow Digit 9 = 3,4	High Flow Digit 9 = 5,6
009	1.5 GPM	2.0 GPM
012	2.0 GPM	2.5 GPM
015	2.5 GPM	3.5 GPM
018	3.0 GPM	4.0 GPM
024	4.0 GPM	6.0 GPM
036	6.0 GPM	8.0 GPM

Dimensional Data

Figure 11. Riser to unit connection



Note: *This page may be used in riser schedule preparation for field installed risers.*

Factory installed risers are only available as shown in Figure 11, p. 46.

Modification to the factory riser may be required in the field to fit the contractor's riser schedule.

Riser location and appropriate hose length for ease of service is an important factor during unit installation. Recommended hose length per riser location includes:

- 2" hose = All riser locations.

Trapping the main condensate riser is recommended but not mandatory as the unit condensate line is trapped internal to the equipment.

Figure 12. Supply-air arrangements

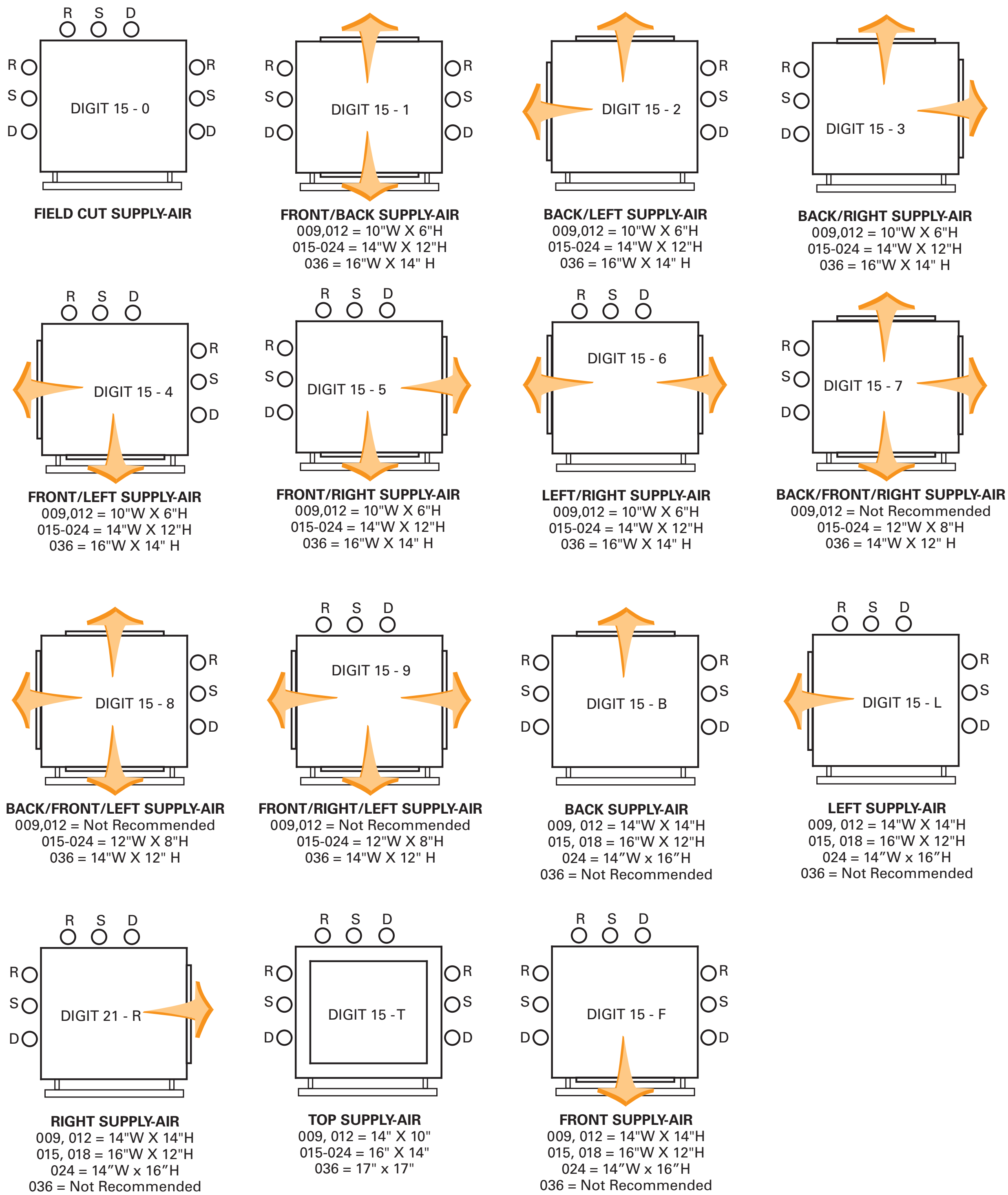
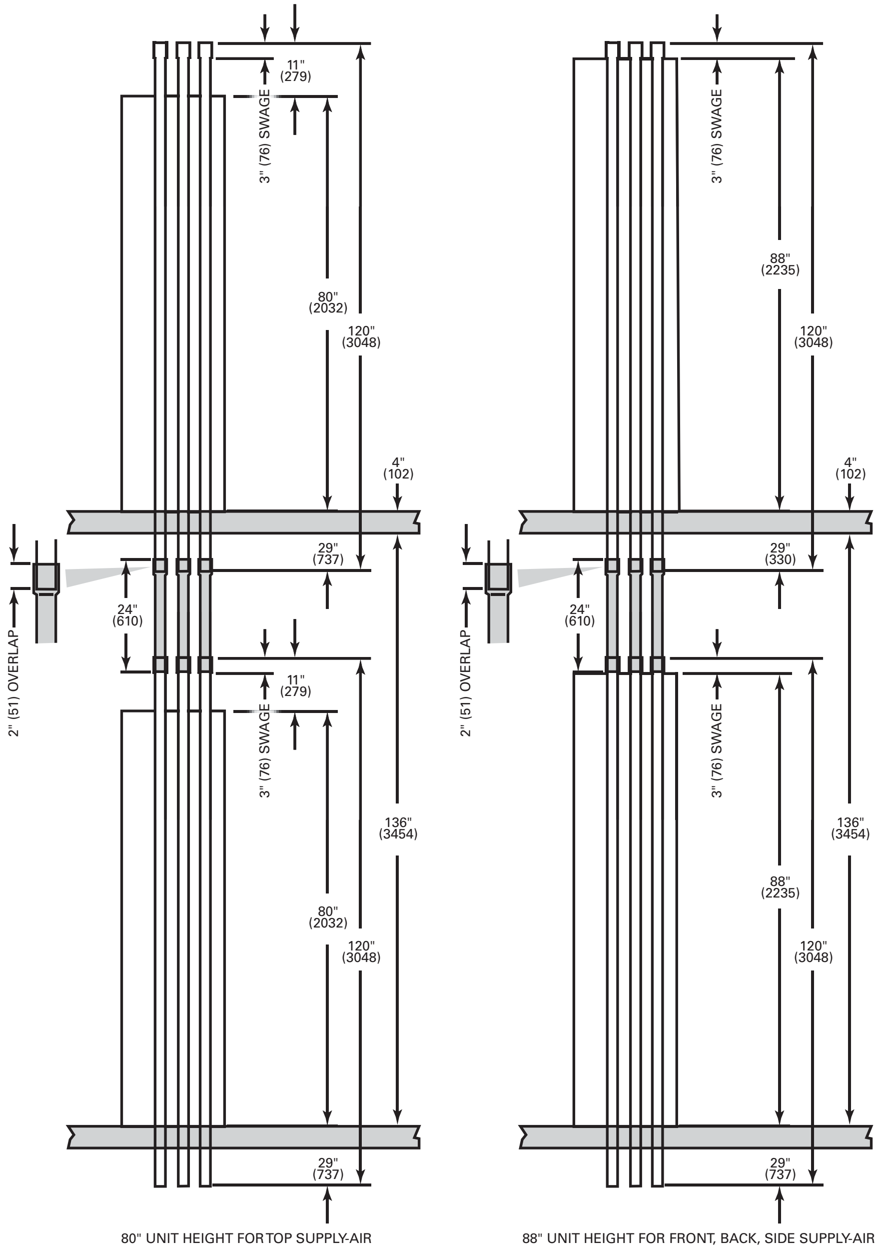


Figure 13. Riser extensions



Riser Extensions are field provided and installed.

Note: *Riser expansion must be considered when calculating total riser length.*

Figure 14. Hinged acoustical door

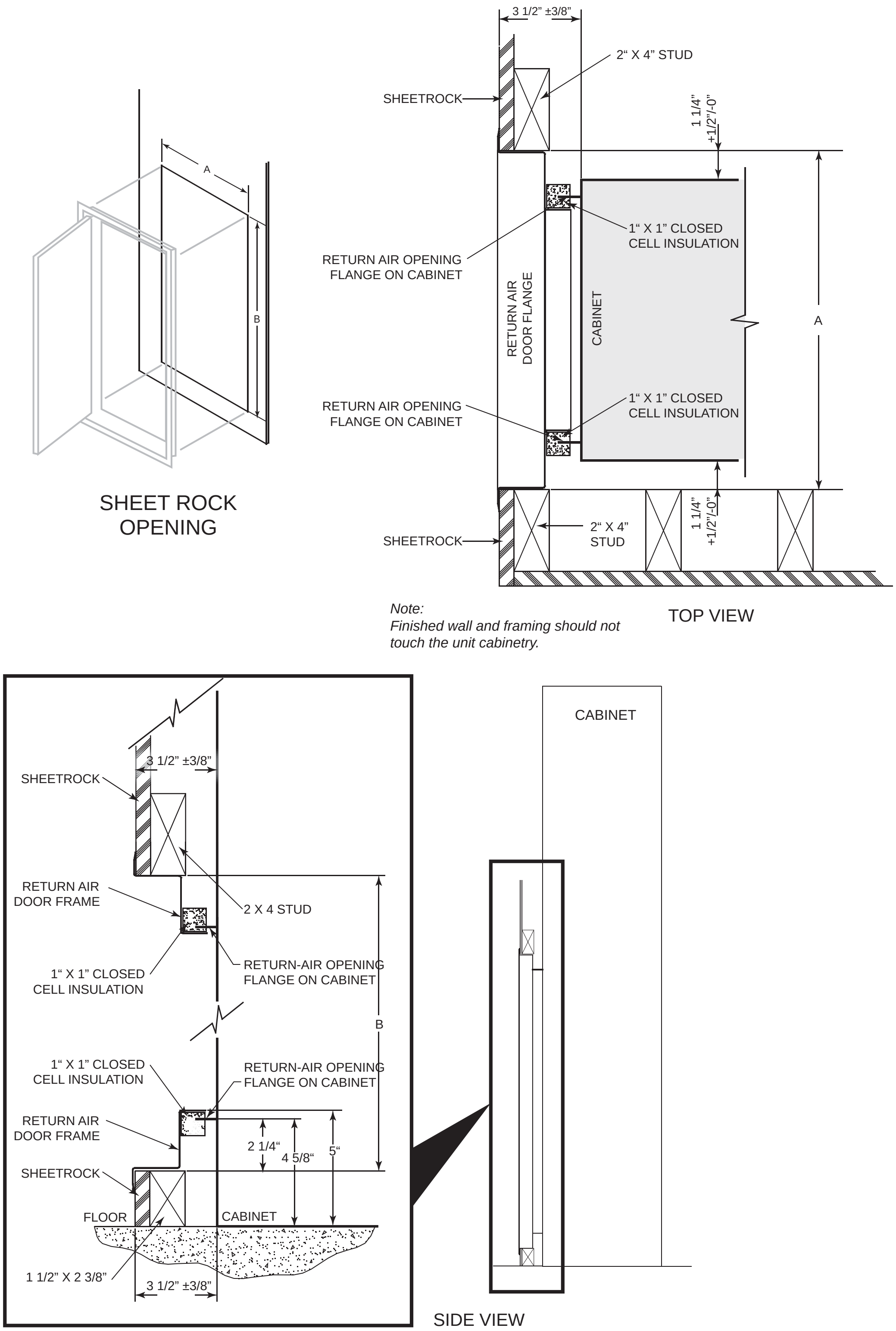


Table 27. Return air hinged acoustical door

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)

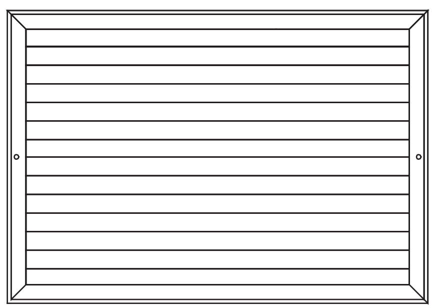
Return Air (hinged) Acoustical Door

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 WSHP-SVN08*-EN.

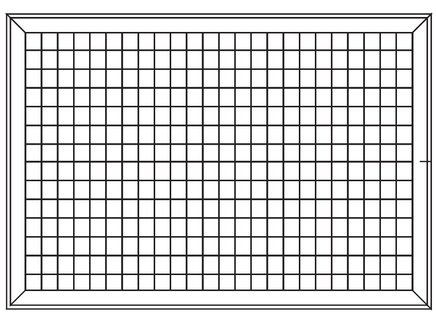
The dimensional data shown is based on Trane's factory supplied return air door.

Figure 15. Single deflection grille



Blades are adjustable for controlling horizontal discharge path.

Figure 16. Double deflection grille



Blades are adjustable for controlling discharge path in both horizontal and vertical paths.

Table 28. 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

Controls

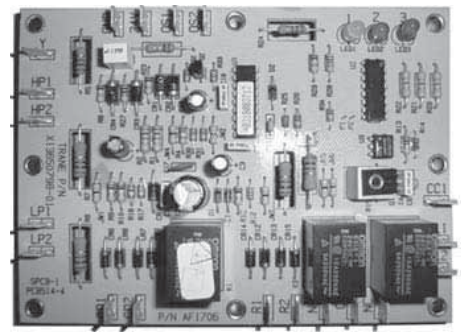
Deluxe 24V Electronic Controls

The 24V deluxe design is a microprocessor-based control board conveniently located in the control box. The board is unique to Trane water-source products and is designed to control the unit as well as provide outputs for unit status and fault detection.

The board is factory wired to a terminal strip to provide all necessary terminals for field connections.

The deluxe 24V electronic unit control contains upgraded features to maximize system performance to extend the system life. Each device, is factory mounted, wired, and tested in the unit. Other features include compressor contactor, compressor lockout function, anti-short cycle compressor protection, random start delay, brown-out protection, low pressure time delay, low pressure switch, condensate overflow, freeze protection, high pressure switch, compressor delay on start, reversing valve coil (for heating and cooling units), multi-speed fan motor, soft lockout mode.

Note: *Electric heat is optional.*



Deluxe 24V features include:

Anti-short Cycle Timer

The anti-short cycle timer provides a three minute time delay between compressor stop and compressor restart. Once thermostat is enabled, an automatic 3 minute delay is provided for compressor protection.

Brown-out Protection

The brown-out protection function measures the input voltage to the controller and halts the compressor operation. Once a brown-out situation has occurred, the anti-short cycle timer will become energized. The general fault contact will not be affected by this condition. The voltage will continue to be monitored until the voltage increases. The compressors will be enabled at this time if all start-up time delays have expired, and all safeties have been satisfied.

Compressor Disable

The compressor disable relay provides a temporary disable in compressor operation. The signal would be provided from a water loop controller in the system. It would disable the compressor because of low water flow, peak limiting or if the unit goes into an unoccupied state. Once the compressor has been disabled, the anti-short cycle time period will begin. Once the compressor disable signal is no longer present, and all safeties are satisfied, the control will allow the compressor to restart.

Diagnostics

Three LEDs (light emitting diodes) are provided for indicating the operating mode of the controller. See the unit IOM for diagnostics or troubleshooting through the use of the LEDs.

Random Start

The random start relay provides a time delay start-up of the compressor when cycling in the occupied mode. A new start delay time between 3 and 10 seconds is applied each time power is enabled to the unit.

Safety Control

The deluxe microprocessor receives separate input signals from the refrigerant high pressure switch, low suction pressure switch and condensate overflow.

In a high pressure situation, the compressor contactor is de-energized, which suspends compressor operation. The control will go into soft lockout mode initializing a three minute time delay and a random start of 3 to 10 second time delays. Once these delays have expired, the unit will be allowed to run. If a high pressure situation occurs within one hour of the first situation, the control will be placed into a manual lockout mode, halting compressor operation, and initiating the general alarm.

In a low temperature situation, the low pressure switch will transition open after the compressor starts. If the switch is open for 45 seconds during compressor start, the unit will go into soft lockout mode initializing a three minute time delay and a random start of 3 to 10 second time delays. Once these delays have expired, the unit will be allowed to run. If the low pressure situation occurs again within 30 minutes, and the device is open for more than 45 seconds, the control will be placed into a manual lockout mode, halting compressor operation, and initiating the general alarm.

In a condensate overflow situation, the control will go into manual lockout mode, halting compressor operation, and initiating the general alarm.

The general alarm is initiated when the control goes into a manual lockout mode for either high pressure, low pressure or condensate overflow conditions. The alarm can be reset at the thermostat or by cycling power to the unit.

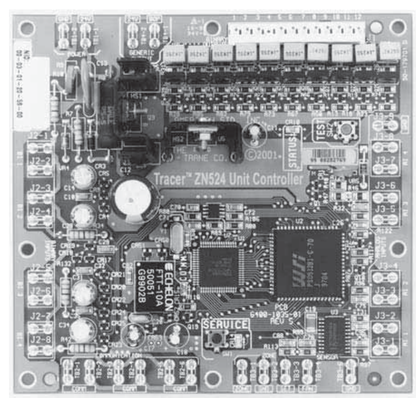
Small Building Control

The deluxe 24V electro-mechanical design may be applied as a stand-alone control system or as a multi-unit installation system. With a stand-alone design, units run independently of one another with an electronic digital thermostat.

With a multiple unit installation, the units may be daisy-chained directly to the Trane Tracer loop controller (TLC), pump(s), boiler, and tower for a complete net worked water-source system.

Direct Digital Controls

When the ZN510 controller is linked directly to the Tracer Summit, each Tracer Summit building automation system can connect a maximum of 120 Tracer ZN510 controllers.



Tracer ZN510 Controls

The Tracer ZN510 direct digital control (DDC) system is specifically designed for single water-source equipment to provide control of the entire unit, as well as outputs for unit status and fault detection. This device is factory installed, commissioned, and tested to ensure the highest level of quality in unit design.

Each of the controller's features and options were selected to coordinate with the unit hardware to provide greater energy efficiency and equipment safety to prolong the equipment life.

Because the ZN510 is LonTalk certified, it is capable of working with, and talking to other LonTalk certified controllers providing the building owner more choices, and the design engineers more flexibility to meet the challenges of building automation. Features include 75 VA transformer, compressor contactor, compressor lockout relay, compressor run capacitor, random start delay, heating/cooling status, occupied/unoccupied mode, low pressure switch, high pressure switch, fan and filter status, reversing valve coil, two-speed fan motor and water isolation valve support (for variable speed pumping).

Note: *Optional: condensate overflow*

Tracer ZN510 functions include:

Building Control Advantages

The Tracer ZN510 controller has the ability to share information with one or several units on the same communication link. This sharing of information is made possible via a twisted pair of wire and a building automation system or through Trane's Rover™ service tool.

An advantage of installing a ZN510 is its capability to work with other LonTalk™ certified controllers. This provides greater flexibility to the building owner, as well as greater flexibility in design.

Integrating the ZN510 on water-source equipment, and tying it to a Tracer Summit system provides a complete building management system. Each Tracer Summit can connect to a maximum of 120 controllers. With the ICS system, the Tracer can initiate an alarm on a loss of performance on equipment malfunctions; allowing problems to be handled in a timely manner before compromising comfort.

This type of application would most commonly be used for a large space(s) that may require more than one unit. In addition to this application design, the Tracer ZN510 controller provides a way for units located within the same space to share the same zone sensor to prevent units from simultaneously heating and cooling in the same space.

Compressor Operation

The compressor is cycled on and off to meet heating or cooling zone demands. The control of the unit uses the units' capacity and pulse width modulation (PWM) logic along with minimum on/off timers to determine the compressor's operation. The compressor is controlled ON for longer periods as capacity increases and shorter periods as capacity decreases.

Condensate Overflow

When condensate reaches the trip point, a condensate overflow signal generates a diagnostic which disables the fan, unit water valves (if present), and compressor. The unit will remain in a halted state until the condensation returns to a normal level. At this time, the switch in the drain pan will automatically reset. However, the controller's condensate overflow diagnostic must be manually reset to clear the diagnostic and restart the unit.

Data Sharing

The Tracer ZN510 controller is capable of sending or receiving data (setpoints, fan request, or space temperature) to and from other controllers on the communication link. This allows multiple units to share a common space temperature sensor in both stand-alone and building automation applications.

Fan Operation

The supply air fan operates at the factory wired speed in the occupied or occupied standby mode. When switch is set to AUTO, the fan is configured for cycling ON with heating or cooling. In heat mode, the fan will run for 30 seconds beyond compressor shutdown in both occupied and unoccupied mode.

Fan Run Timer

The controller's filter status is based on the unit fan's cumulative run hours. The controller compares the fan run time against an adjustable fan run hours limit and recommends unit maintenance as required.

High and Low Pressure Safety Controls

The Tracer ZN510 controller detects the state of the high pressure or low pressure switches. When a fault is sensed by one of these switches, the corresponding message is sent to the controller to be logged into the fault log. When the circuit returns to normal, the high pressure control and low pressure control automatically reset. If a second fault is detected within a thirty-minute time span, the unit must be manually reset.

Random Start

To prevent all of the units in a building from energizing major loads at the same time, the controller observes a random start from 0 to 25 seconds. This timer halts the controller until the random start time expires.

Reversing Valve Operation

For cooling, the reversing valve output is energized simultaneously with the compressor. It will remain energized until the controller turns on the compressor for heating. At this time, the reversing valve moves to a de-energized state. In the event of a power failure or controller OFF situation, the reversing valve output will default to the heating (de-energized) state.

Thermostats and Zone Sensors

Table 29. Thermostat/sensor selection

Thermostat / Sensor	Part Number	Description
	X13511211010	3 Heat/2 Cool Digital Display Thermostat • 3 H/2 C • Non Programmable
	X13511212010	2 Heat/2 Cool Digital Display Programmable Thermostat • 2 H/2 C • 7-Day Programmable
	X13511213010	2 Heat/2 Cool Digital Display Programmable Thermostat with Touch Screen • 2 H/2 C • 7-Day Programmable with Touch Screen
	X13511214010	3 Heat/2 Cool Digital Display Programmable Thermostat with Relative Humidity Sensing Built-in • 3 H/2 C • 7-Day Programmable • Humidity Sensing
	X13651467020	Communication Module • Sold in packs of 12 • Compatible with X1351529010 and X13511527010
	X13511529010	Zone Sensor • Tracer ZN510 and ZN524 compatible • External setpoint adjustment wheel
	X13511527010	Zone Sensor • Tracer ZN510 and ZN524 compatible • External setpoint adjustment wheel • ON and CANCEL buttons
	X1379084501	Zone Sensor • Tracer ZN510 and ZN524 compatible • External setpoint adjustment wheel • ON and CANCEL buttons • Fan switch AUTO-OFF

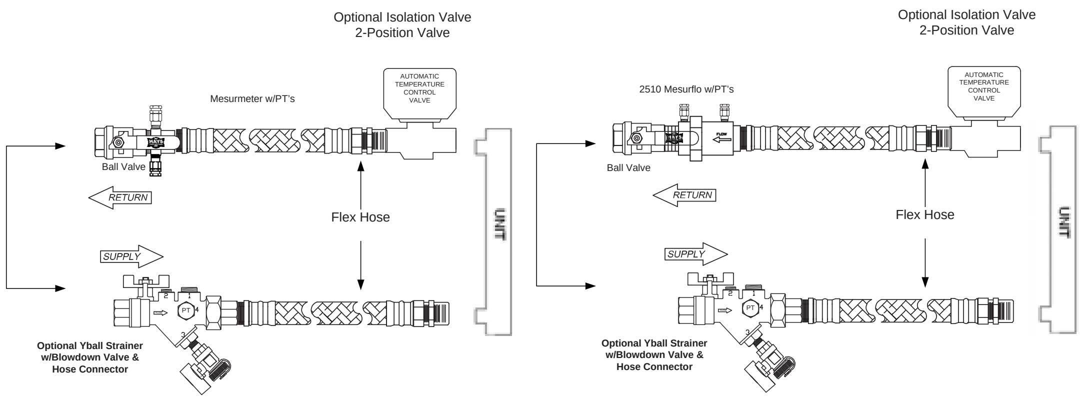
Accessories

System balancing hose kit

For automatic system balancing of a water source heat pump, the Mesurflo® self-balancing hose kit provides a constant flow rate over the pressure differential rage of 2 to 80 psid. As system pressure changes (through further addition of heat pumps, for example) each individual flow control valve will automatically adjust to the new system conditions. In variable water volume applications, a self-balancing hose kit can provide continuous balancing because of its ability to automatically adjust to the varying system conditions.

Note: *At low differential pressure the flow area required to achieve higher flow can exceed the flow area available for the respective series. Therefore, the minimum pressure differential requirement is increased for the higher flow ranges of each series Mesurflo valve.*

Figure 17. Ball valve kit (manual)/MeasurfloVac kit (automatic)



Tracer Loop Controller

Trane's Tracer Loop Controller (TLC) is a cost effective way of controlling the WSHP equipment, as well as the mechanical components of the system. Fluid coolers, boilers, pumps and water-source heat pump units can be connected and controlled by the loop controller for total system optimization. The Tracer loop control panel has the ability to lower or raise the water loop temperature during low energy use hours (typically during the night time hours) to provide a greater optimization during the time of day where energy consumption may be at it's greatest. Using the loop controller as a means of coordinating cooling or heating storage, the building owner can expect better efficiencies from the WSHP equipment.

Mechanical Specifications

General

Equipment is factory assembled, piped, internally wired, fully charged with R-410A refrigerant and oil. Units are tested at the factory.

Products are certified in accordance with AHRI Water to Air and Brine to Air Heat Pump Certification Program which is based ISO Standard 13256-1: 1998. All units have an ETL label that meets USA (UL std) and Canadian (CSA std).

Casing

The cabinet assembly is constructed of heavy-gauge galvanized steel. It houses the blower, fan and control hook-up to the unit thermostat or zone sensor. A basepan with condensate hose is included with the cabinet design. Base rails allow ease of chassis installation/removal for service or maintenance. One, two or three supply air openings shall are factory provided. Optional one or three inch flanges are provided on all free discharge openings.

The chassis is constructed of heavy-gauge galvanized steel. The chassis houses the compressor, reversing valve, water-to-refrigerant heat exchanger, air-to-refrigerant heat exchanger, thermal expansion valve, corrosive resistant condensate pan, and water inlet/outlet connections. The chassis is installed into the cabinet by sliding it in place on the locating rails within the cabinet design.

The insulation contains a flame spread rating of less than 25 and smoke density rating of less than 50 (as tested in accordance with ASTM-85). The elastomer insulation has a UL 94-5V rating.

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.

Filters

One inch, throwaway filters are standard and factory installed. The filters have an average resistance of 76% and dust holding capacity of 26-grams per square foot.

Compressors

All units have direct-drive, hermetic, rotary (unit sizes 009-018) and scroll (unit sizes 024 and 036) type compressors. The compressor contains rubber isolation to aid in noise reduction during compressor start/stop.

Internal thermal overload protection and compressor anti-short cycle timers are also provided. Protection against excessive discharge pressure is provided by means of a high pressure switch. Loss of charge protection is provided by a low pressure switch.

Refrigerant Circuits

The refrigerant circuit contains a thermal expansion device, service pressure ports, and system safety devices factory-installed as standard.

Air-to-Refrigerant Coil

Internally finned, 3/8″ copper tubes mechanically bonded to a configured aluminum plate fin are standard. Coils are leak tested at the factory to ensure the pressure integrity. The coil is leak tested to 200 psig and pressure tested to 650 psig.

Drain Pan

The condensate pan is constructed of corrosive resistant material. The bottom of the drain pan is sloped in two planes to pitch the condensate towards the drain connection. Condensate is piped to a lower base pan through condensate hose for ease of chassis removal. A clear drain hose is factory clamped onto the drain connection for field hook-up.

Water-to-Refrigerant Heat Exchanger

The water-to-refrigerant heat exchanger is of a high quality co-axial coil for maximum heat transfer. The copper or optional cupro-nickel coil is deeply fluted to enhance heat transfer and minimize fouling and scaling. The coil has a working pressure of 650 psig on the refrigerant side and 400 psig on the water side.

Indoor Fan

The blower is a double width, double inlet (DWDI) forward curved wheel. The blower is a direct drive PSC or optional ECM fractional horsepower motor. The blower/motor assembly is designed for efficient and quiet operation. The PSC motor is multi-speed and is wired for a HIGH or LOW setting. The ECM motor is programmed to provide four constant CFM profiles and is shipped on Profile B – the rated CFM of the unit. The motor is also factory programmed to provide 50% airflow in the fan only mode for additional energy savings. Service or maintenance to the blower/motor is easily achieved by removal of a single bracket.

Risers

Factory provided supply and return risers are Type L copper. The drain riser is Type M copper. Swages from one diameter to another are performed as specified by the engineer in the field. Diameters and length are specified by the equipment model number. Riser insulation (optional) contains a flame rating per UL94-5V with flame spread rate of no more than 25.

Controls

The unit control box contains all necessary devices to allow heating and cooling operation to occur from a unit mounted, plug-in thermostat or sensor. The devices are as follows:

- 24 VAC energy limiting class II 75 VA breaker type transformer.
- 24 VAC blower motor relay
- 24 VAC compressor contactor for compressor control
- Lockout relay which controls cycling of the compressor is provided to protect the compressor during adverse operating conditions. The device may be reset by interrupting the 24 VAC control circuit. Reset may be done either at the thermostat or by momentary main power interruption.
- A high pressure switch protects the compressor against operation at refrigerant system pressures exceeding 650 psig.
- A low pressure switch is provides that trips at 40 psig. A freezestat is provided - tripping at either 35° or 20°F.
- Factory installed wire harness is available for the Deluxe and ZN510 control packages.
- Power connections are made through a factory installed conduit located at the top of the unit's cabinet. An optional disconnect is provided. The conduit grants access directly to the control box.

Nameplate information is given for the application of either time-delay fuses or HACR circuit breakers for branch circuit protection from the primary source of power.

Single phase, single voltage rated equipment is designed to operate between plus or minus 10% of nameplate utilization voltage.

Operation outside of this range may adversely effect the service life of the equipment.

Deluxe Controls (option)

The deluxe control package provides a 75 VA transformer with circuit breaker. The Micro-processor based controller is designed to include a lockout relay, anti-short cycle compressor protection, random start delay, brown-out protection, low pressure time delay, compressor delay on start and an open relay for night setback or pump request. Optional wiring from the factory for condensate overflow and compressor enable are also supplied. LEDs (light emitting diodes) are included for diagnostics of the equipment. The deluxe controller accepts a standard 24V digital thermostat.

ZN510 Controller (option)

This system utilizes factory furnished and mounted DDC controls for operation on a COMM 5 (LonMark) link. The Tracer™ ZN510 control package includes a 75 VA transformer. The controller provides random start delay, heating/cooling status, occupied/unoccupied mode, fan status and filter maintenance options. Optional wiring from the factory for condensate overflow is also available. Three LEDs (light emitting diodes) are included for diagnostics of the equipment.

Return-Air Hinged Acoustical Door (option)

A frame mounted acoustical door is provided to attenuate noise. The door is hinged to the wall frame, and contains magnetic latches to keep the door aesthetically in place. It is flush mounted to the wall as to not protrude into the owner space. The door allows access to the unit for ease of filter replacement

The door is constructed from heavy-gauge formed galvanized steel and painted Polar white. It is made available in a keylock design and a keyless design to fit several design applications.

Supply-Air Grilles (option)

Supply air grilles are available for air discharge from the unit. The grilles are made in either a vertical louver, or a bi-directional louver option. The grilles are painted the Polar White to match the door assembly.

Ball Valves (option)

Ball valves are field installed between the riser stub out and the flexible hose.

Hoses (option)

Hoses shall consist of a stainless steel outer braid with an inner core of tube made of a nontoxic synthetic polymar material. The hoses shall be suitable for water temperatures ranging between 33°F and 211°F without the use of glycol.

Automatic Flow Devices (option)

The automatic self-balancing device shall automatically limit the rate of flow to within 10-percent of the specified amount, over a 40 to 1 differential pressure operating range of 2 to 80 PSID. The operational temperature shall be rated from fluid freezing, to 225°F.

The valve body shall be suited for working pressures of 400 PSIG. The valve internal core shall consist of one or more high temperature elastomeric diaphragms and precision orifice with sculptured orifice seat.

Dual pressure/temperature test ports shall be standard for verifying the pressure differential and system temperature.

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