



OMEGA VSHP SERIES

Product Guide

VERTICAL STACKED

WATER SOURCE HEAT PUMPS

MODEL: VSHP (SE), VSHP-G (HE)

STANDARD & HIGH EFFICIENCY

FAN CABINET DEV. G

CHASSIS DEV.F & DEV. G

CONTROL BOARD V3

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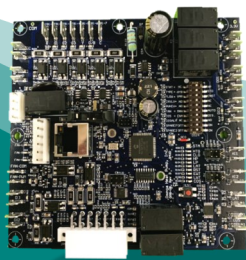




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Omega has a policy of continuous product improvement and reserves the right to change design specifications without notice.



1. GENERAL DESIGN

1.1 Product Overview

All Omega vertical stack heat pumps (VSHP) are engineered for quiet and reliable year round operation.

Reliability

Omega water-source heat pump systems provide reliable year round heating and cooling operation. Each unit features an advanced microprocessor controller for ensuring reliable and energy efficient heating and cooling comfort.

Serviceability

Omega VSHP units feature a slide out chassis and a blower assembly which are easily accessible through the front return air panel. For servicing or repairs, a spare replacement chassis can be temporarily swapped in allowing for uninterrupted operation.

Energy Efficient

A VSHP system can transfer energy to different zones in a building. During moderate weather, solar heat gain on the south side of a building may require cooling while the north side requires heating.

Customizable

Omega units can be customized to meet the specific requirements of any project. Some options include: variable cabinet height dimensions, choice of supply discharge air locations and sizes, outside fresh air duct locations, acoustic or perimeter return air panels, and remote thermostat control.

Two Phase Installation

The equipment is shipped to site in two stages for integration with the phases of construction. This avoids potential issues with storage, and on-site damage and allows mechanical units to be installed in acceptable environmental conditions.

Phase 1

- During the initial stages of construction, the cabinets are installed. As construction progresses, they become part of the interior wall structure.

Phase 2

- The refrigeration chassis is shipped as required and installed into the cabinet after riser loop commissioning and majority of construction is completed. Riser loop must be cleaned and flushed and chemically treated prior to installing chassis units.

Testing & Quality

To maintain the highest level of quality control, each refrigeration chassis is factory charged and tested before being shipped to the job site.

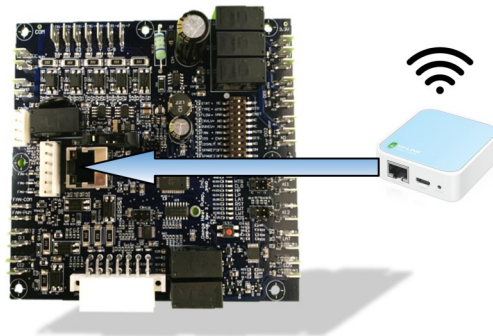
The chassis production and testing line features a computer controlled 6-step quality control (QC) system to ensure that every stage of chassis production is tested and re-tested.

Units are performance tested in Omega's in-house psychrometric test chamber facility to ensure unit performance and reliability meets or exceeds industry standards.

Each unit is 3rd party tested and is officially AHRI certified and ETL listed.

Diagnostics & Data Logging

Each unit features Omega's latest heat pump control technology. The on-board LED display provides quick troubleshooting. Using the wireless webpage tool customer can do a deep dive for greater diagnostic and data log information to make informed decisions. Easily accessed through a smartphone, tablet or laptop.





1.2 Key Features

Energy Efficient Design

- High efficiency compressors and blower motors
- Optimized air-coil circuiting of refrigerant coils
- Refrigerant metering thermal expansion valves
- High efficient water heat exchanger coils
- Coefficient of Performance (COP)/Energy Efficiency Ratio (EER) meets or exceeds ASHRAE 90.1

Quiet Operation

- High density sound insulated cabinet
- Noise attenuating return air panels
- Double isolated chassis base
- Compressor mounted on vibration isolators

Space Considerations

- Quiet operation
- Fire and mould resistant insulation
- Heavy gauge cabinet construction
- Architectural supply grilles and return air panels
- Durable, long life gasketing on chassis
- Convenient room side, front access to the air filter
- Choice of discharge air opening configurations
- Riser mounting location flexibility

Acoustical Design Features—Standard Silver Series

- 1-inch high density sound insulation throughout
- Double isolated chassis base to isolate the refrigeration chassis from the cabinet
- Compressor elastomeric isolation mounts
- Unit base with closed cell foam isolation pads
- Optimized design of refrigerant piping for reduced compressor noise

Gold Series: Enhanced Acoustic Package

- Adds a flexible canvas duct connection between the base cabinet and discharge plenum prevents noise transmission to the supply discharge ducts and grilles.

Reliability

- Factory tested and charged with R-410A
- Industry leading rotary and scroll compressors
- Modern components and microprocessor controlled safety protection devices

Environment

- Eco-friendly refrigerant (R-410A)
- Recyclable materials used in unit construction
- Energy efficient fan motors
- High-efficient DX and water coils

Service

- Slide-out chassis for easy removal and servicing
- All control components are in one location
- Plug-n-play harnesses
- Capacitor located in electrical box
- Easy disconnecting water connections
- Refrigerant service access ports
- Simple LED diagnostics on control board
- Wireless webpage diagnostics
- Test-mode and data logging for troubleshooting

Certification

All Omega products are listed by ETL (Intertek) Omega products conform to UL STD 1995 And certified to CSA C22.2 NO. 236.

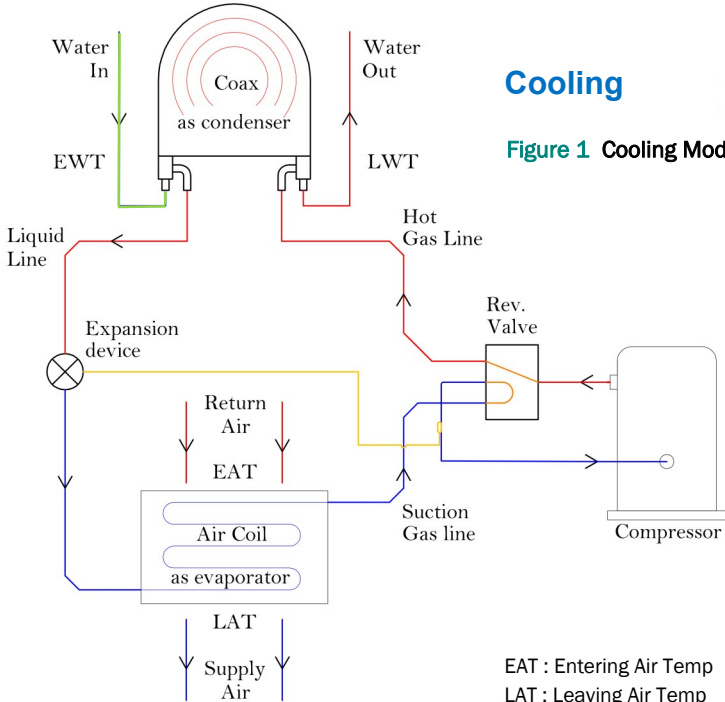


VSHP (HRP) units are AHRI certified as per ANSI/ASHRAE/ISO 13256 and conform to CAN/CSA-C13256-1.





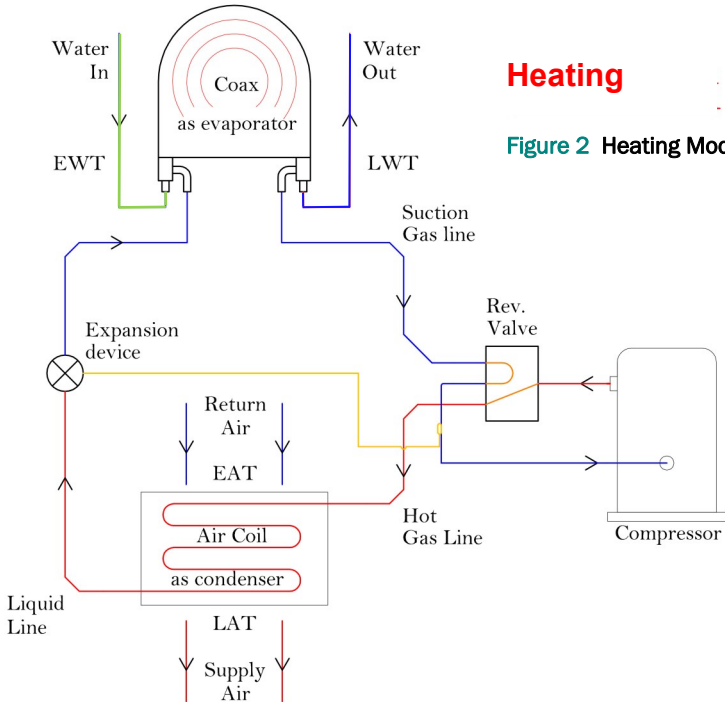
1.3 Heat Pump Operation Schematic



Cooling

Figure 1 Cooling Mode Flow Diagram

EAT : Entering Air Temp
LAT : Leaving Air Temp
EWT : Entering Water Temp
LWT : Leaving Water Temp



Heating

Figure 2 Heating Mode Flow Diagram



2. PRODUCT DETAILS

2.1 Standard & Optional Features

STANDARD FEATURES

Cabinet

The galvanized sheet metal cabinet is designed for structural rigidity, installation flexibility, and serviceability. Cabinet interior is lined with 1" thick acoustic, thermal, mould and fire resistant insulation rated to meet NFPA 90.

Standard Efficiency (SE) Chassis

Standard efficiency chassis balances cost with efficiency requirements. Unit meets or exceeds AHRI minimum efficiency requirements.

Control Panel with Advanced Microprocessor

All controls and contactors are mounted in the electrical box connected with quick connect plugs. Each unit features microprocessor controller. Unit comes with optional four temperature sensors: entering and leaving water temperature sensors (EWT & LWT), suction freeze-stat sensor (RST), and supply air temperature (SAT) sensor. All controls are accessible from the front of the unit for easy service and troubleshooting. Controller status, diagnostics, and data logger can be accessed through a webpage tool.

Blower Fan

A centrifugal forward curved double width double inlet (DWDI) blower with a direct drive motor assembly with easy removal and servicing provides air delivery.

ECM Fan Motor

High-efficient EC motors (ECM) for improved fan operating efficiency and fan performance across a wider operating range over traditional PSC motors.

Field Selectable Supply Air Discharge

Cabinets feature our standard "Knockout" style supply discharge openings for field selectable supply air openings in Left, Right, Front, Back, and/or Top configurations.

DX Coil

Air to refrigerant coils are multi-row with copper tubes and enhanced aluminum fins. Coil fins are mechanically bonded to the tubes. The coils are fully

cased with a handy grip point for chassis removal.

Compressors

High efficient R-410A compressors are standard, rotary type 1/2 to 1.5 Ton (VSHP 020-060) and scroll type 2 to 3 Ton (VSHP 080-120). Compressors are mounted to the chassis frame with elastomer vibration isolators to minimize vibration transmission. Compressor chassis is mounted on a double isolated base for enhanced noise attenuation to prevent vibration transmission into the occupied space.

Coax-Coil

The water to refrigerant coaxial coil is tube in tube with enhanced convoluted inner copper tube design. The coaxial coil provides low pressure drop, superior heat transfer and low fouling characteristics. The coils are optimized for heat pump operation.

Stainless Steel Drain Pan

Integrated cabinet stainless steel drain pan provides corrosion resistance. Drain pan is positively sloped, externally insulated with a 7/8 inch O.D. connection and factory mounted p-trap condensate hose.

Reversing Valve

A 4-way reversing valve, pilot operated, sliding piston type with solenoid coil is installed in each heat pump chassis to change refrigerant flow. Reversing valve is installed in "Energized to Cool" mode and "Fails to Heating" mode.

Thermostatic Expansion Valve (TXV)

All units come with a bi-flow thermostatic expansion valve (TXV). TXV is precision machined brass assembly providing precise refrigerant flow metering.

Air Filter

Unit comes standard with a 1-inch disposable MERV 8 media filter.



OPTIONAL FEATURES

High Efficiency (HE) Chassis

High-efficiency chassis where higher operating efficiency is required. Higher efficient components increase operating efficiency. Ideally suited for geothermal applications. Larger heat exchanger surface area provides maximum efficiency.

Gold Series Cabinet

Cabinet comes in two sections to minimize noise transmission into duct system. The lower section includes all components, chassis, and risers. The upper section is a supply discharge plenum lined with 1-inch thick acoustic insulation. The plenum is connected to lower cabinet using a flexible duct canvas for noise attenuation.

Auto Shut-Off Control Valve

Optional factory installed 2-way automatic shut-off control valves shut off water flow to the unit when compressor is not operating. Available in close-off pressures 25 psig low close-off, 40 psig, and 50 psig high close-off pressure.

Automatic Balancing Valve

Optional automatic balancing valves are factory installed for automatically limiting water flow through the unit to the nominal rated flow rate ($\pm 10\%$ of rated GPM) over a large differential pressure range of 2-80 psig (3-80 psig for VSHP 080 to 120 units).

Y-Strainer (HE Chassis)

Optional 20 mesh y-strainer installed on the water circuit inside the chassis.

Condensate Overflow Sensor (COFS)

Condensate overflow sensor (electronic) is mounted to the unit drain pan for detecting overflow conditions such as a clogged condensate drain. If condensate switch is tripped compressor operation is stopped.

Fresh Outside Air

Fresh Outside Air Duct take-off is installed at the top of the cabinet for providing fresh air into the occupied space. Ideal for designs with a remote mounted ERV specified. Comes with Omega's "Whisper Mode" ultra-low fan speed continuous fan-on operation.

Return Air Panel

Omega offers 2 styles of return air panels. **Acoustic** panel, stamped louver blade style, is designed as a narrow, removable panel making it ideal for space constrained installations. **Perimeter**, enhanced aesthetic, is a noise attenuating insulated swing door style panel.

Baffle - Acoustic RA Panel

An insulated sound baffle with 1/2" acoustic insulation is provided to be field mounted on the Acoustic return air panel. Provides enhanced sound attenuation and reduces noise transmission into occupied space. Available on Acoustic panel only.

Locking Panels - RA Panel

Cylinder key-locks are available for both Acoustic and Perimeter panels.

Supply, Return & Condensate Risers

Risers are available in Type M and Type L copper. Factory supplied risers come standard with manual shut-off isolation ball valves soldered to the riser tee. Risers can be ordered swaged or as straight pipe and with optional insulation.

Geothermal (GEO)

A geothermal option (GEO) package includes an insulated water circuit and condenser coil to prevent condensation. Geothermal option is only intended for fluid loops containing a glycol mixture for freeze protection. If a water only loop is being utilized, it is recommended to select the Low Temperature Water option.

Coaxial Freeze Protection (LTW)

A Low Temp Water (LTW) option package is designed for low temperature heating water loops below 55°F EWT providing coaxial freeze protection. Unit is fitted with high pressure water safety switches to shut compressor operation in the event of a high pressure situation.

RS-485 Communication Board

A RS-485 add-on communication board is supplied to communicate with SmartONE® building automation systems. Includes remote temperature sensor (RTS). RTS acts as back-up thermostat air temperature sensor in the event of communication disruption with in-suite wall pad.



MERV 13 Filter

Unit comes with 2-inch filter rack with MERV 13 rated pleated filter for enhanced air filtration and performance.

Corrosion Protected DX Coils (HE Chassis)

DX evaporator coils are available with two coating options: Epoxy coated (EC) meeting 1000 hours of Salt Spray ASTM B117 protection; or Electrofin® E-coat (EF) an electro-deposition coating process meets corrosion resistance of 15,000 hours salt spray resistance per ASTM B117. Coated coils provide superior corrosion protection and extended life expectancy over traditional non-coated coils.

Cupro-Nickel Heat Exchanger

Optional cupro-nickel coaxial coil provides excellent corrosion resistance versus standard copper coaxial from loop water corrosion and fouling. Ideally suited for use with open loop systems.

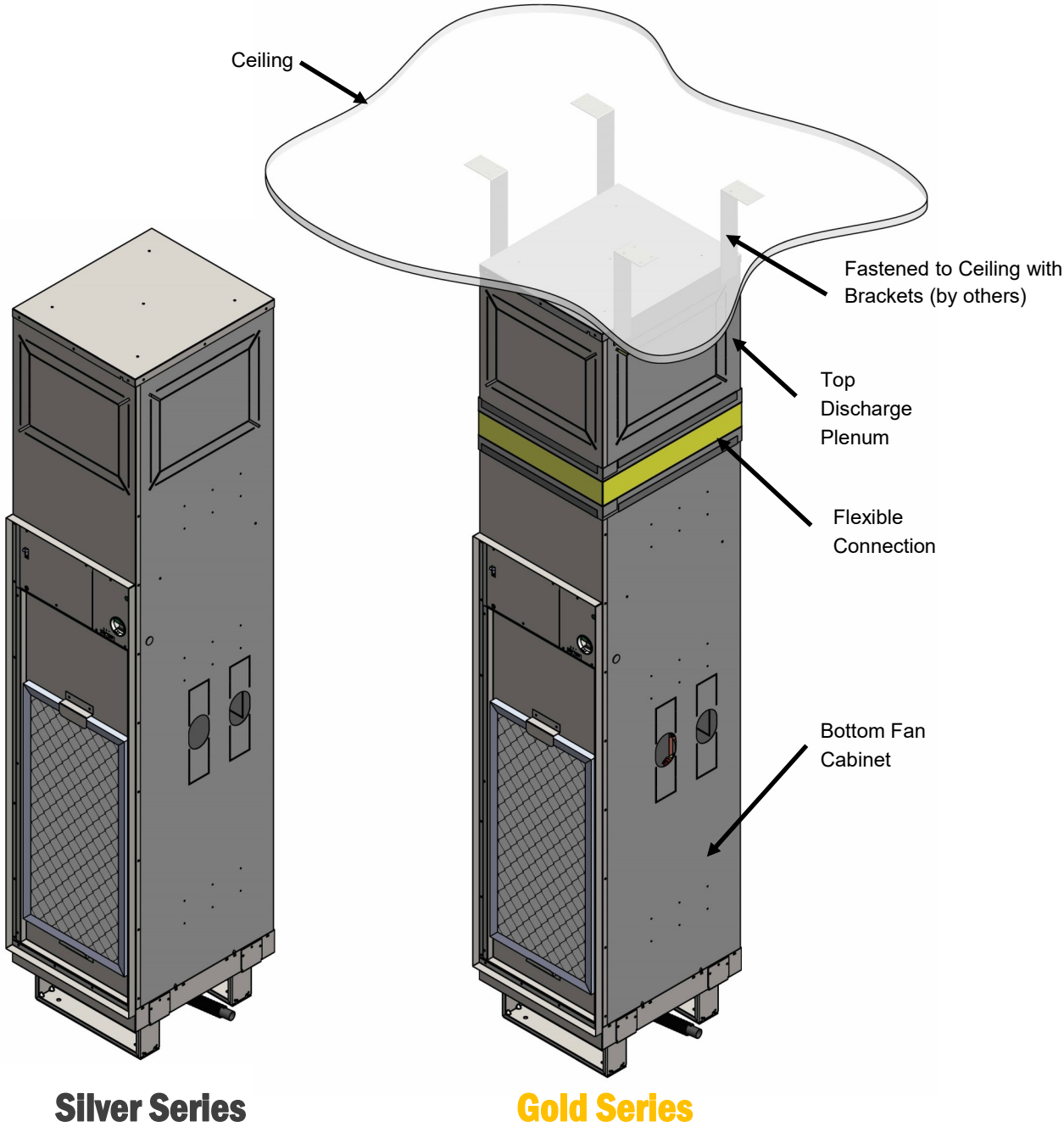
BTU Meter

Units can be configured to accept various BTU meter applications. Contact factory for more details.



2.2 Cabinet Types—Silver & Gold Series

Omega offers two distinct cabinet options for VSHP units: the Silver and optional Gold series (see below). Silver series is the Omega standard product built as a free standing design. The optional Gold series cabinet includes a factory built-in canvas flex duct collar between the base chassis/blower section and upper discharge plenum. The upper discharge plenum is field mounted to the ceiling structure creating a non-rigid, acoustically isolated connection between the discharge plenum and the cabinet compressor and blower base section.



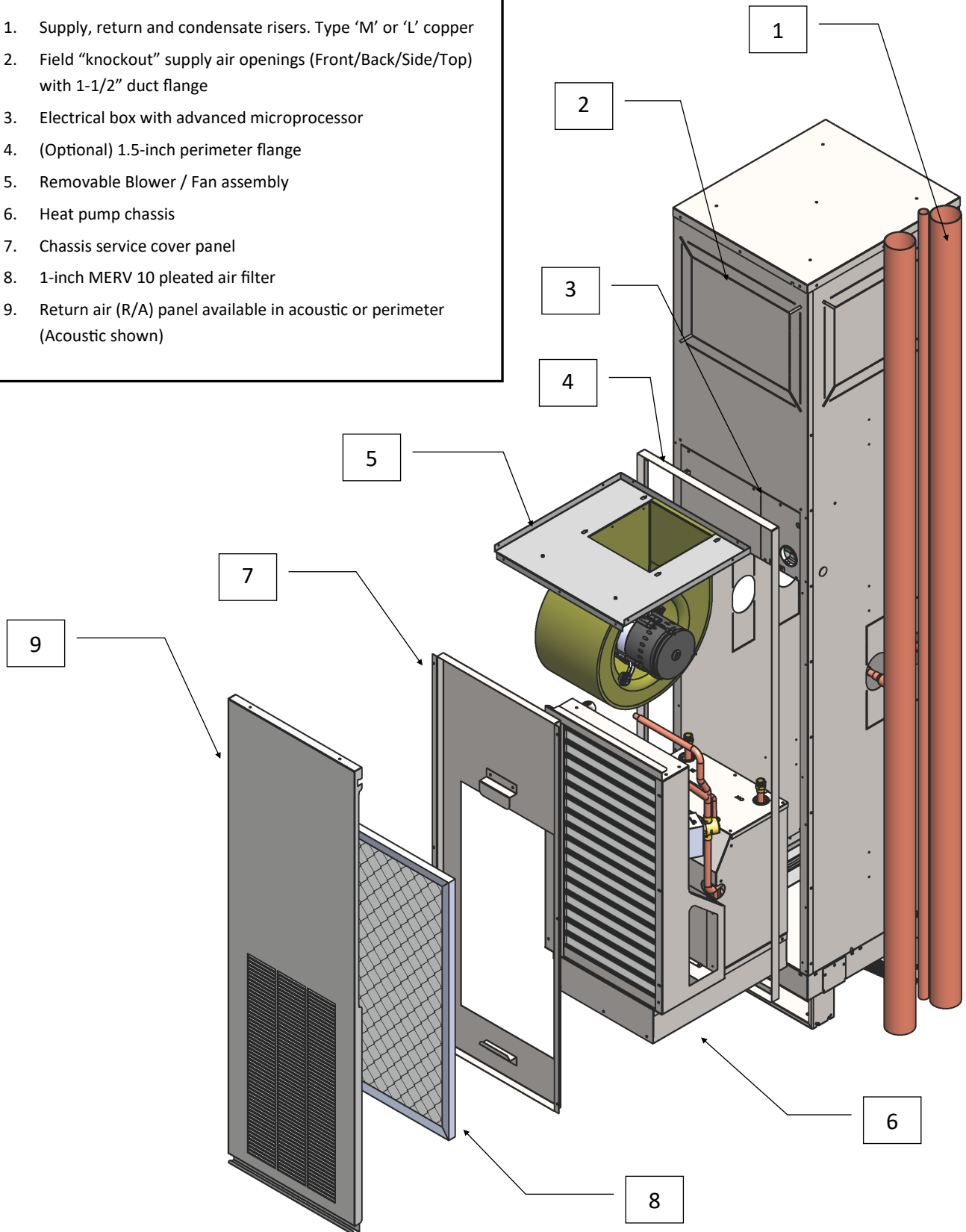
Silver Series

Gold Series



2.3 Assembly View

1. Supply, return and condensate risers. Type 'M' or 'L' copper
2. Field "knockout" supply air openings (Front/Back/Side/Top) with 1-1/2" duct flange
3. Electrical box with advanced microprocessor
4. (Optional) 1.5-inch perimeter flange
5. Removable Blower / Fan assembly
6. Heat pump chassis
7. Chassis service cover panel
8. 1-inch MERV 10 pleated air filter
9. Return air (R/A) panel available in acoustic or perimeter (Acoustic shown)





2.4 Noise Attenuation Features

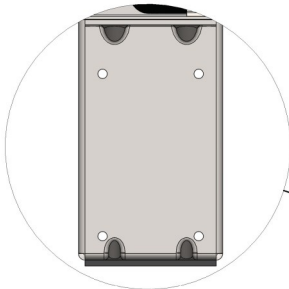
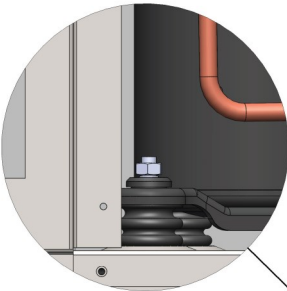
Omega Heat Pump units offer up to 5 separate methods of vibrational isolation (Shown below).

Flex Duct Isolator

Units with the optional **Gold Series** option feature a factory installed flexible canvas duct collar for added noise and vibration isolation.

Compressor Mounts

All compressors are mounted to the chassis using vibration dampening inserts.

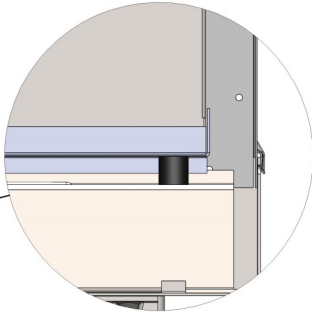
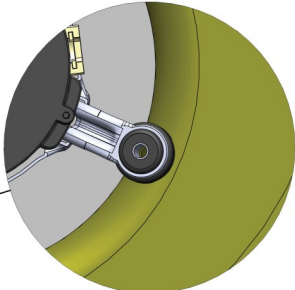


Unit Foot Insulation

1/4" closed cell foam pads are factory installed under the cabinet base to isolate the unit from the floor surface.

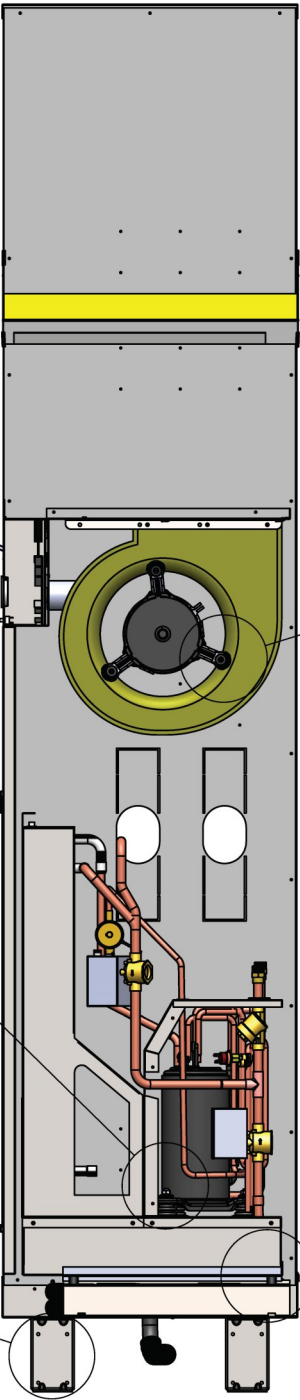
Motor Mount Isolators

Motors are attached to the blower housings with rubber isolation fasteners which reduces the vibration produced by the rotating fan assembly.



Vibrational Rail

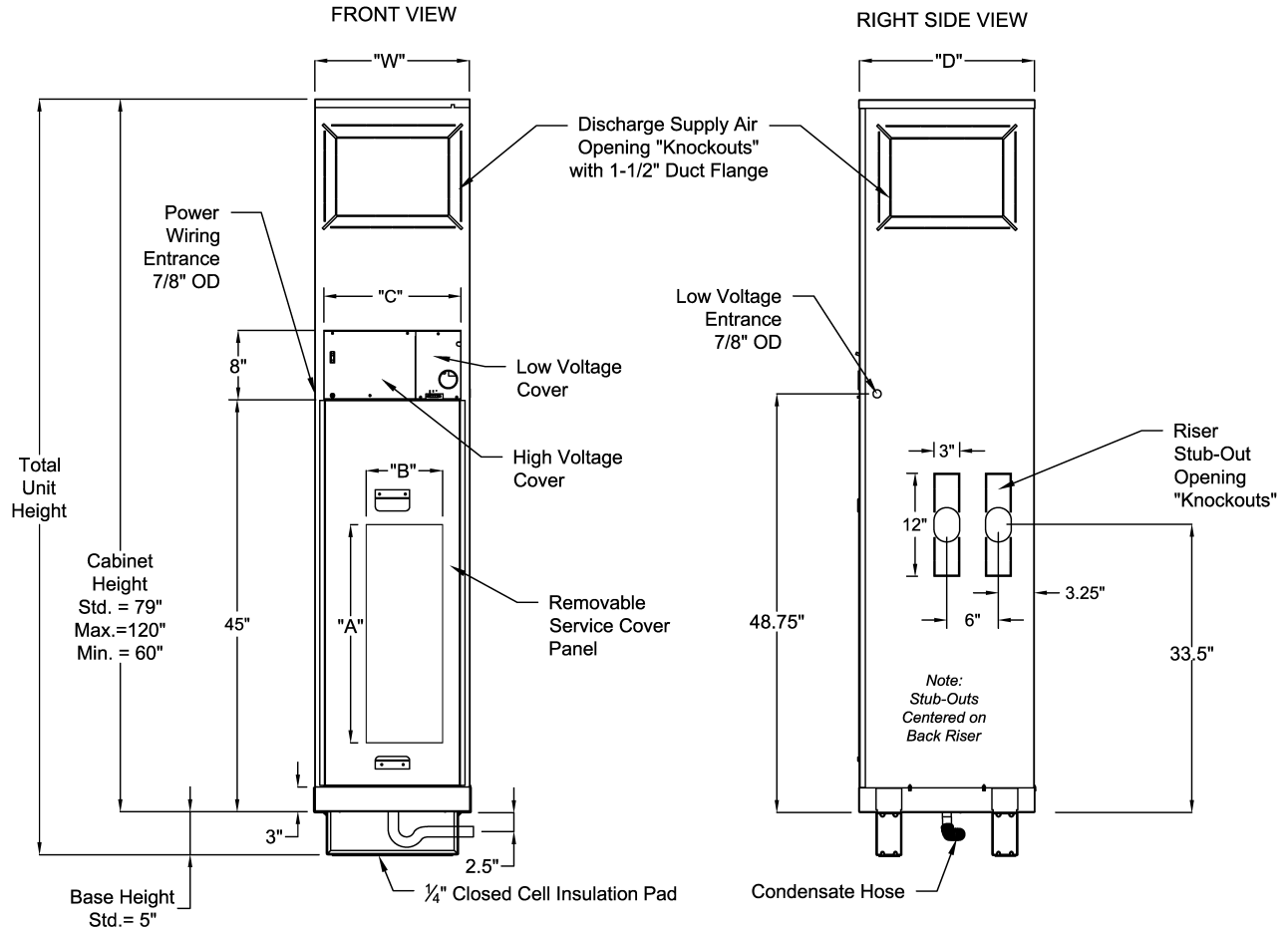
The refrigeration chassis is mounted on a double isolated base with rubberized dampeners to isolate the chassis from the cabinet to minimize noise vibrations.





3. CABINET DIMENSIONS & SUPPLY DISCHARGES

3.1 Standard Silver Series Cabinet



(Drawing not to scale, dimensions are subject to change)

VSHP Cabinet Dimensions (Silver & Gold Series)

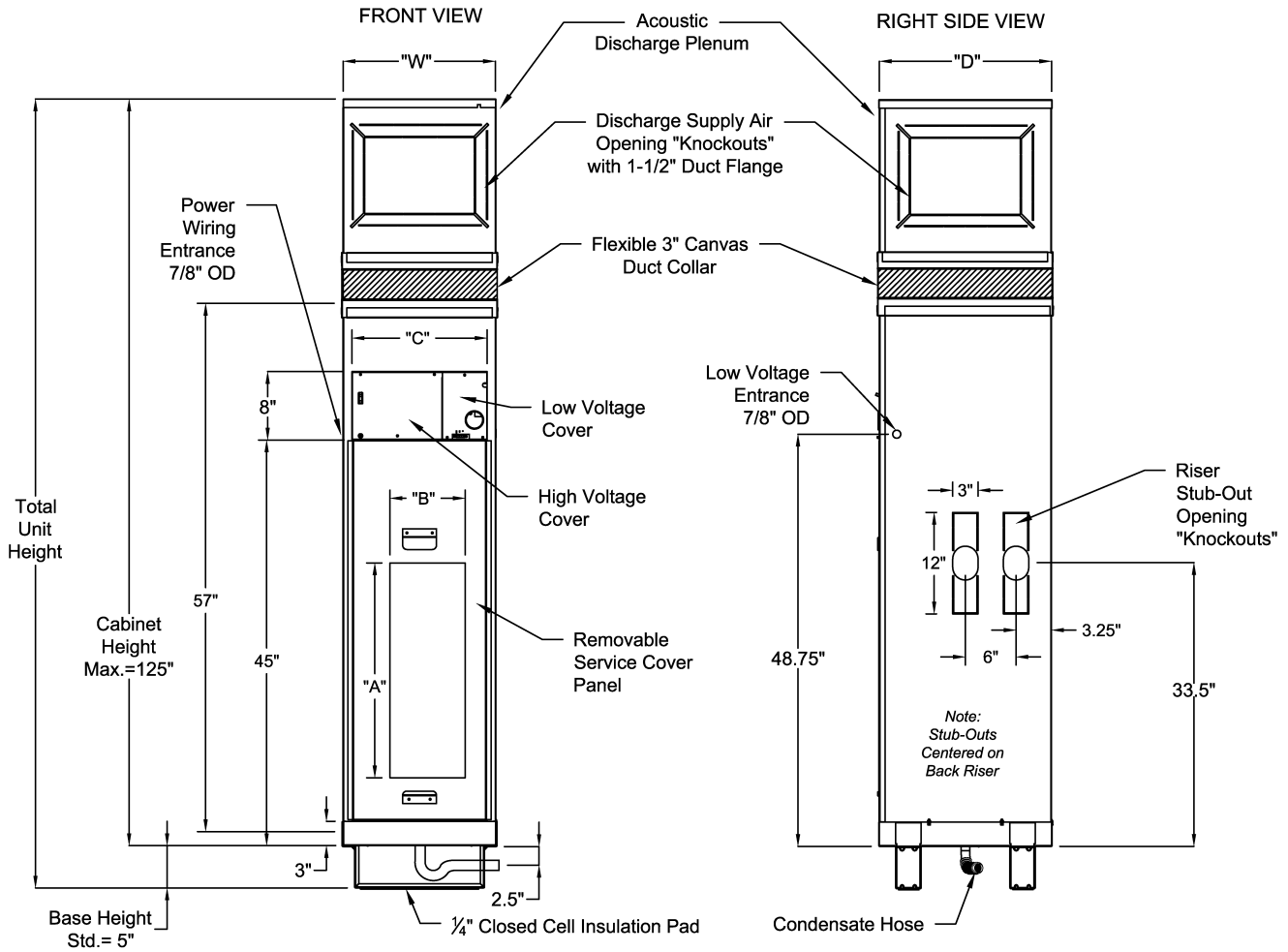
| Model | Cabinet Size | Dimensions (in) | | | VSHP Supply Discharge Opening (W X H) inches | |
|-----------|--------------|-----------------|------|-----|--|---------|
| | | "W" | "D" | "C" | Horizontal | Top |
| VSHP 020G | X | 16 | 17.5 | 14 | 14 x 8 | 12 x 12 |
| VSHP 030G | | | | | 14 x 8 | 12 x 12 |
| VSHP 040G | | | | | 14 x 10 | 12 x 12 |
| VSHP 050G | Y | 18 | 20.5 | 16 | 16 x 12 | 14 x 12 |
| VSHP 060G | | | | | 16 x 12 | 14 x 12 |
| VSHP 080G | Z | 22 | 24.5 | 20 | 18 x 14 | 14 x 14 |
| VSHP 100G | | | | | 18 x 16 | 16 x 14 |
| VSHP 120G | | | | | 18 x 16 | 16 x 16 |

Note: Discharge opening sizes are customer configurable. Published sizes shown are maximum factory default sizes. Customer to verify discharge opening sizes match design requirements for proper airflow and select appropriate discharge openings at time of order.

Lower riser knockout can be used to match previous generation fan cabinet riser stub-out locations.



3.2 Optional Gold Series Cabinet with Acoustic Plenum



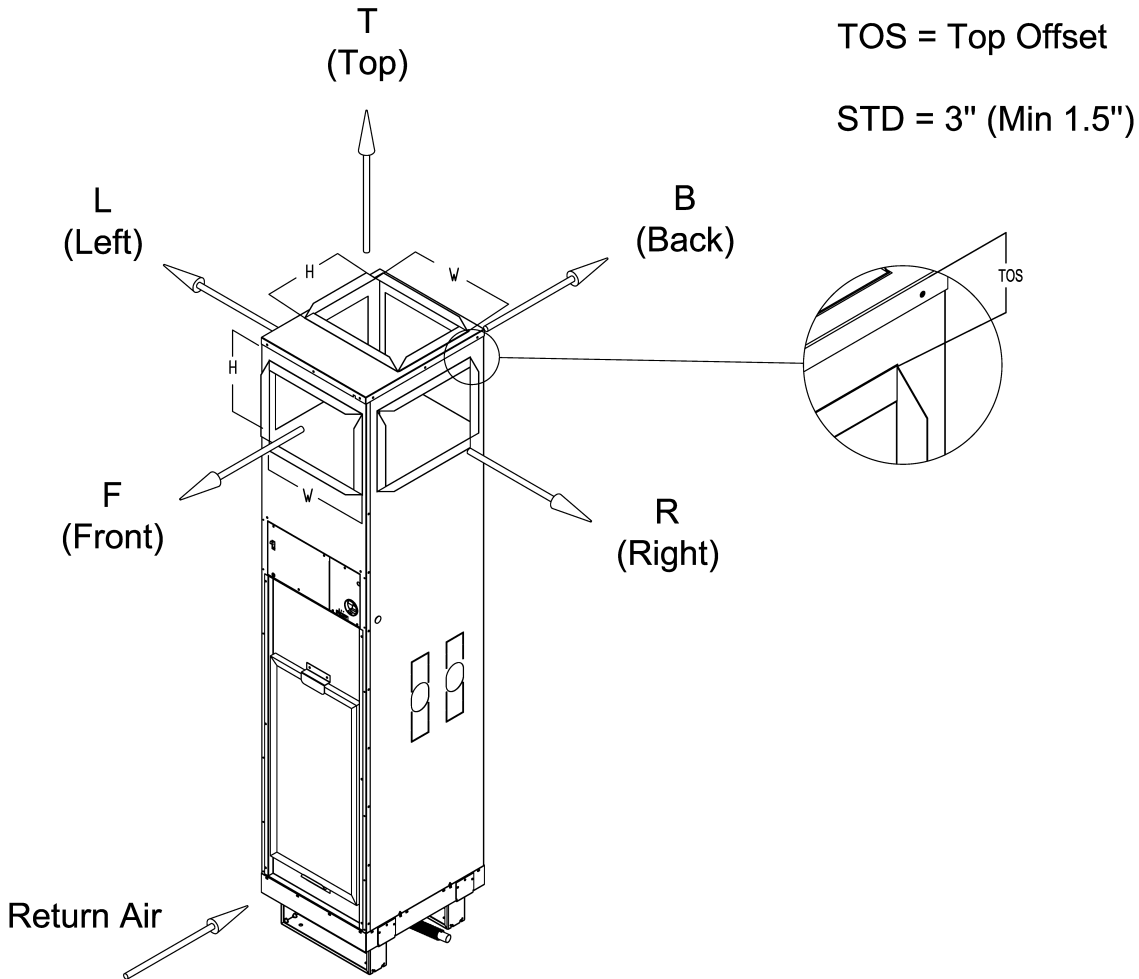
| Model | Cabinet Size | Dimensions (in) | | | Minimum Cabinet Height (in) | |
|-----------|--------------|-----------------|------|-----|-----------------------------|-------------|
| | | "W" | "D" | "C" | Silver Series* | Gold Series |
| VSHP 020G | X | 16 | 17.5 | 14 | 60 / 72 | 80 |
| VSHP 030G | | | | | | |
| VSHP 040G | | | | | | |
| VSHP 050G | Y | 18 | 20.5 | 16 | 60 / 74 | 82 |
| VSHP 060G | | | | | | |
| VSHP 080G | Z | 22 | 24.5 | 20 | 60 / 74 | 86 |
| VSHP 100G | | | | | | |
| VSHP 120G | | | | | | |

* 60in without horizontal (side) discharges



3.3 Supply Discharge Openings

Units comes with standard “Knockout” style discharge openings on top and all sides for field configuration. This allows for custom discharge configurations based on site requirements. Discharge opening sizes are configurable to meet site design conditions.



Supply Air Opening Sizes

| Model | VSHP Supply Discharge Opening (W X H) inches | | | | | | | |
|------------|--|---------|---------|---------|---------|---------|---------|---------|
| | 020 | 030 | 040 | 050 | 060 | 080 | 100 | 120 |
| Horizontal | 14 x 8 | 14 x 8 | 14 x 10 | 16 x 12 | 16 x 12 | 18 x 14 | 18 x 16 | 18 x 16 |
| Top | 12 x 12 | 12 x 12 | 12 x 12 | 14 x 12 | 14 x 12 | 14 x 14 | 16 x 14 | 16 x 16 |

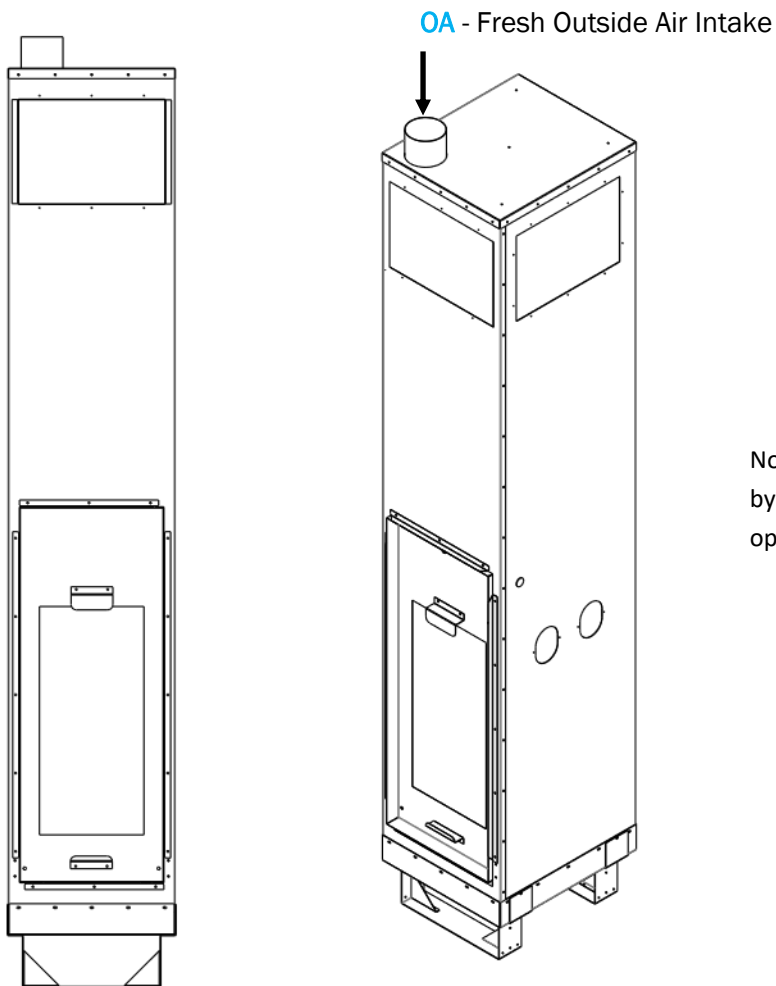
Notes:

- Discharge opening sizes are customer configurable. Published sizes shown are maximum factory default sizes. Customer to verify discharge opening sizes match design requirements for proper airflow and select appropriate discharge openings at time of order.
- Unit comes standard with field “knockout” style discharge openings on all sides. Discharge flanges are 1-1/2 inches.
- Line of Site Baffles (LOSB) are available where two or more horizontal discharge (Front, Left, Right and/or Back) openings are specified.
- All handing's determined by facing return air opening
- Top Discharge is centered left and right, and offset 2 inches from the back.



3.4 Optional Fresh Outside Air Duct

Optional built-in Fresh Air Duct is suited for applications where the Energy Recovery Ventilator (ERV) unit is remote mounted. The factory installed fresh air intake accepts fresh air connection from a remote mounted ERV. Refer to Section 3.5 to see different configurations available for location of fresh outside air duct.



Note: Handling is referenced by facing the unit return air opening (front).

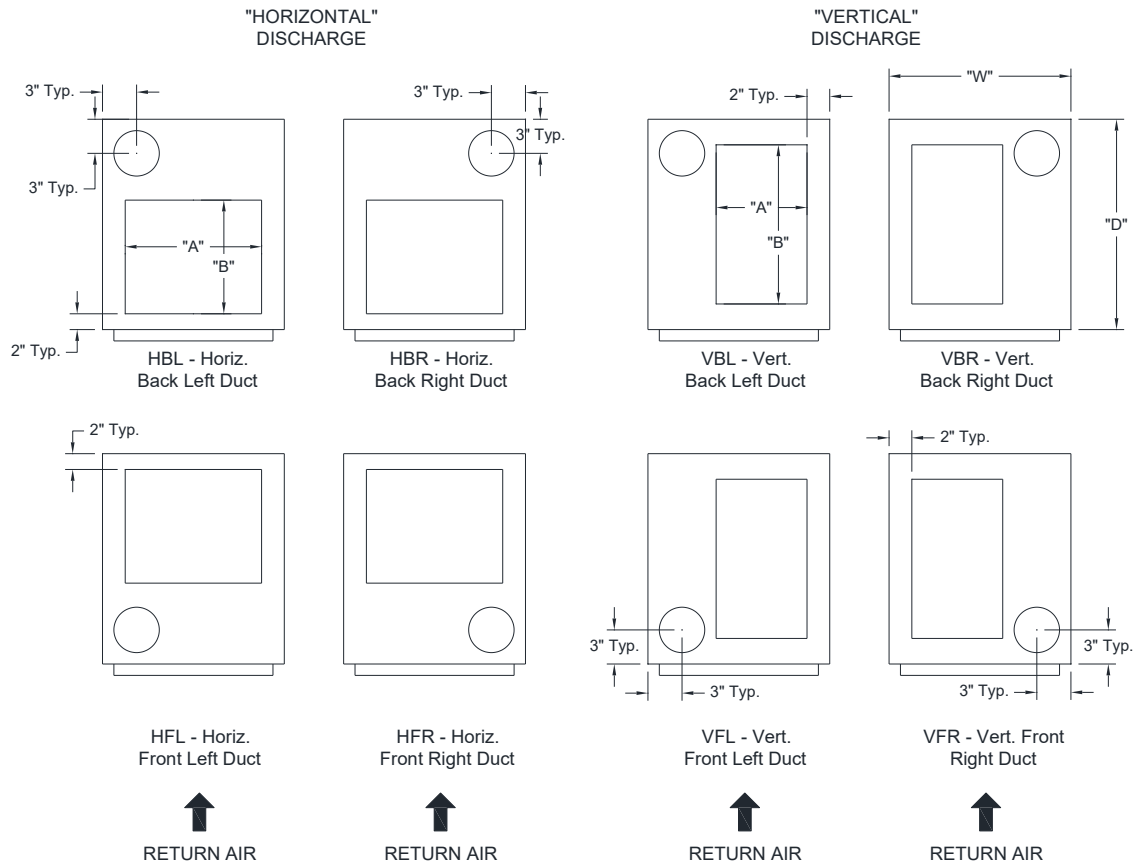
CAUTION

The introduction of cold conditioned outside air from a remote energy recovery ventilation device into the heat pump cabinet can result in potential freezing and bursting of mechanical components carrying water in the heat pump. Designer should take care to treat these considerations accordingly (e.g. utilize water glycol treatment or ensure ERV tempers Outside Air sufficiently above freezing point before entering the unit).



3.5 Top Supply Discharge Openings with Optional Fresh Outside Air Duct

Top discharge for VSHP cabinet with Fresh Outside Air duct is available in two orientations: "Horizontal" and "Vertical". Each orientation contains four possible configuration options for fresh air duct location. Discharge openings are field "knockout" style with 1.5" duct flange.



Supply Air Opening Sizes with OA in Horizontal & Vertical Configurations

Supply Air Opening Sizes w/ Fresh Air Duct

| Model | Cabinet Size | Dimensions (in) | | Top Supply Opening w/ Fresh Air Duct (A x B) inches | |
|-----------|--------------|-----------------|------|---|------------|
| | | "W" | "D" | "Horizontal" | "Vertical" |
| VSHP 020G | X | 16 | 17.5 | 12 x 8 | 8 x 12 |
| VSHP 030G | | | | 12 x 8 | 8 x 12 |
| VSHP 040G | | | | 12 x 8 | 8 x 12 |
| VSHP 050G | Y | 18 | 20.5 | 14 x 12 | 10 x 16 |
| VSHP 060G | | | | 14 x 12 | 10 x 16 |
| VSHP 080G | Z | 22 | 24.5 | 14 x 14 | 14 x 14 |
| VSHP 100G | | | | 16 x 14 | 14 x 18 |
| VSHP 120G | | | | 16 x 16 | 14 x 18 |

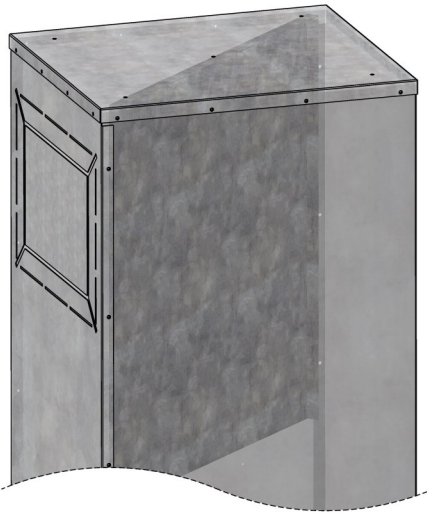
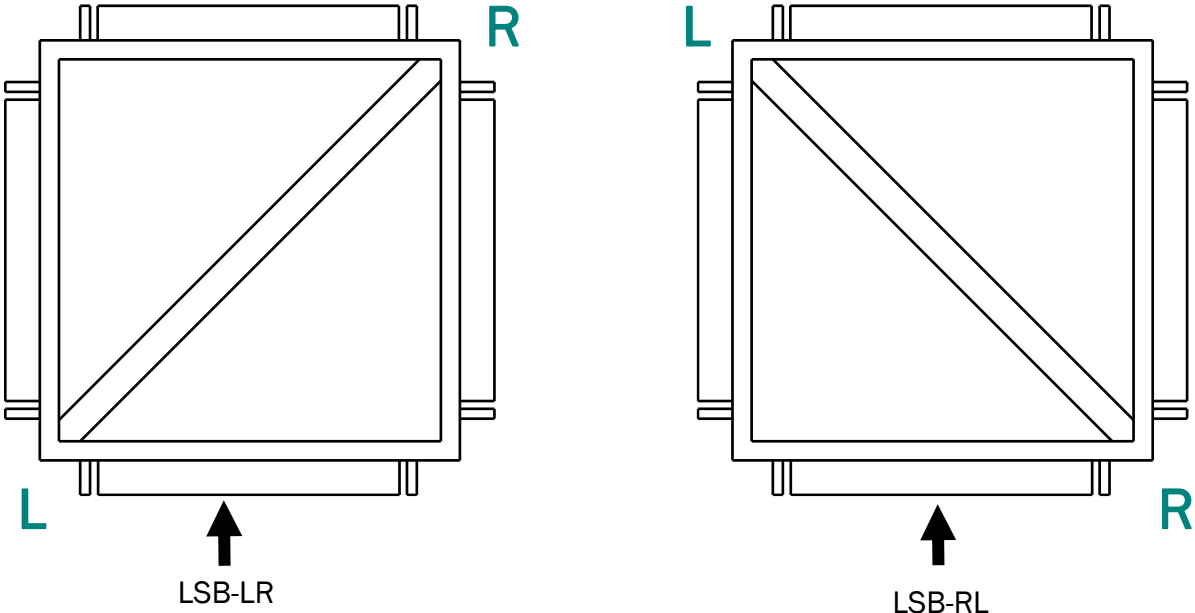
Note: Discharge opening sizes are customer configurable. Published sizes shown are maximum factory default sizes.



3.6 Line of Sight Baffle

Optional Line of Sight Baffles (LOSBS) are supplied inside discharge plenum. The LOSB provides occupant privacy between adjacent rooms. Two configurations (LSB-LR or LSB-RL) of LOSB are available based on the unit discharge arrangement. LOSB is not available with optional Fresh Outside Air Duct intake.

TOP VIEW

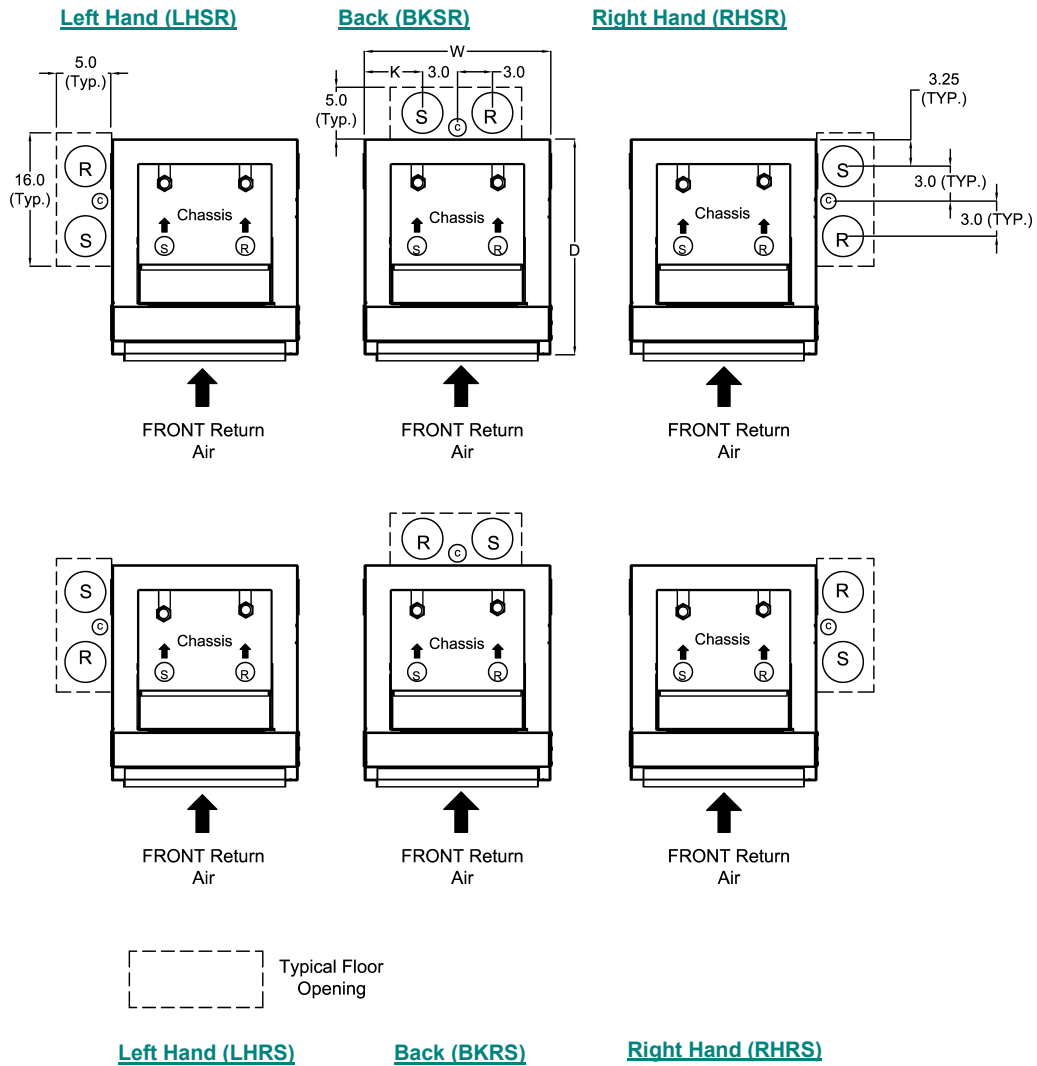


Line of Sight Baffle Configurations



4. RISERS & HOSE KITS

4.1 Riser Handling Conventions (Top View)



S = Supply Riser
 C = Condensate Riser
 R = Return Riser

VSHP Cabinet Riser Dimensions

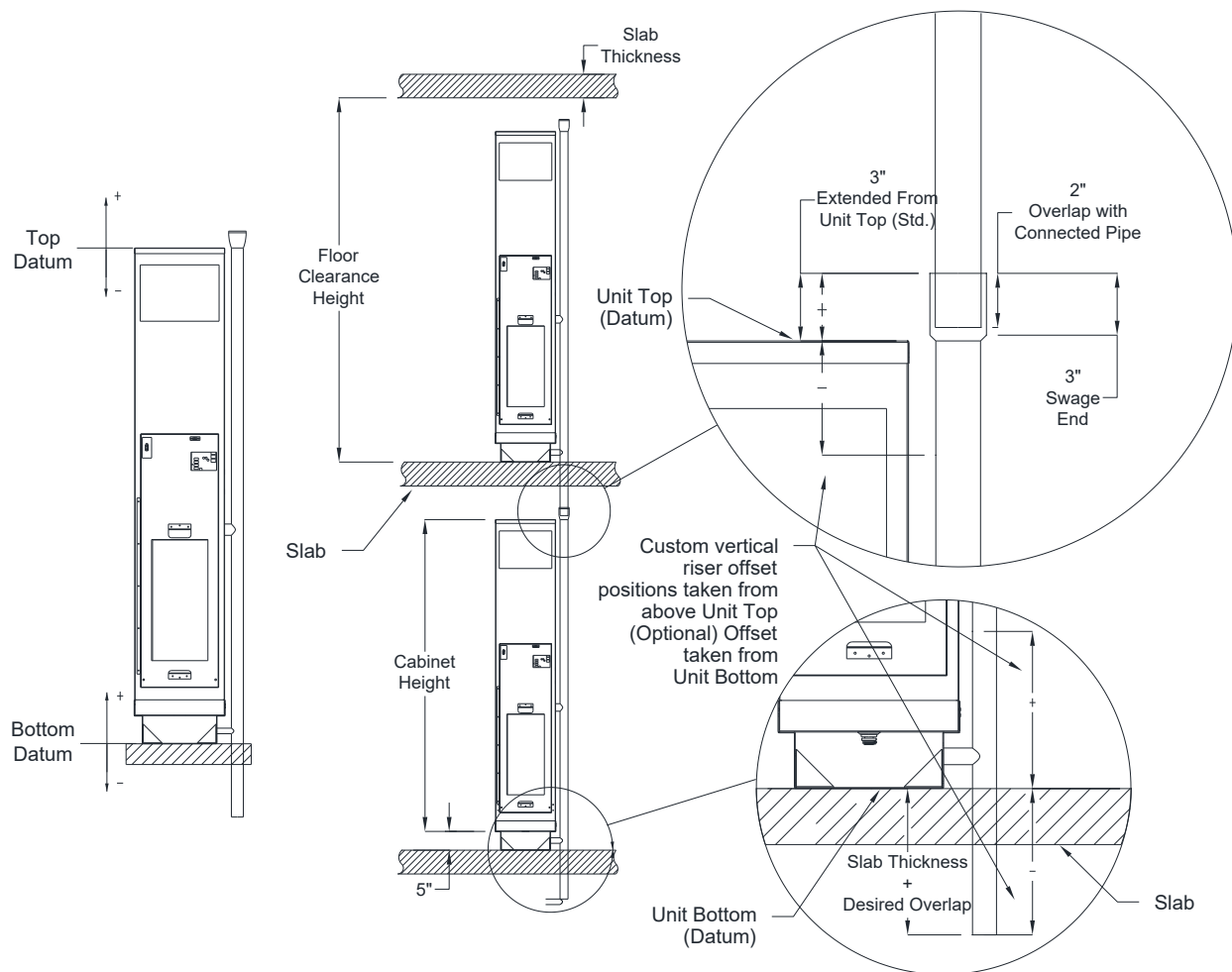
| Unit Size | Cabinet Size | W | D | "K" (in) |
|---------------|--------------|----|------|----------|
| 020, 030, 040 | X | 16 | 17.5 | 5 |
| 050, 060 | Y | 18 | 20.5 | 6 |
| 080, 100, 120 | Z | 22 | 24.5 | 8 |

Notes:

- As viewed from top, risers can be order in either SR configuration (supply, condensate, return) or RS (return, condensate, supply)
- Supply & Return risers shown are 3-inch. Condensate riser shown is 1.25-inch.
- Contractor to provide riser transition pieces when joining dissimilar riser sizes.
- Risers available in sizes, 3/4" to 3". Consult factory for larger sizes.
- All handling's determined by facing front of the unit (return air opening)



4.2 Riser Sizing Reference



Riser Length Reference Measurements

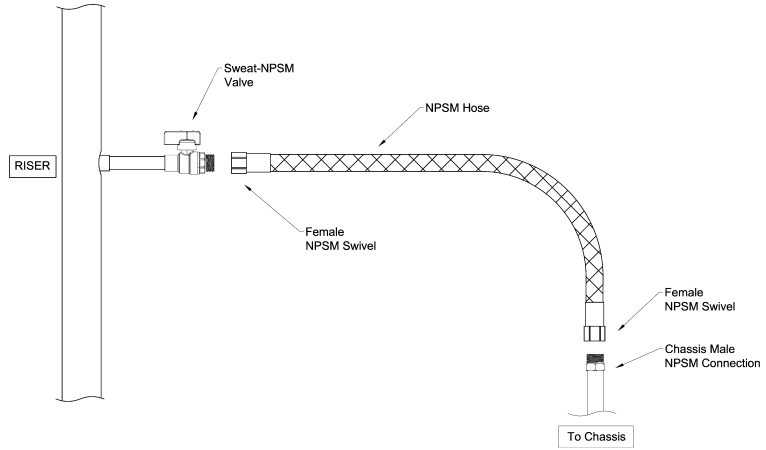
Notes:

- Risers are positioned relative to cabinet using a standard “Top” Datum reference (optional “Base” Datum). Top Datum Offset indicates where the top of riser will be located relative to top of cabinet. A Base Datum indicates where bottom of riser will be located relative to base of cabinet.
- Upon request Omega will provide 3 inch deep swage on risers of same pipe size (optional for all risers) for connection to units on the floor below.
- Risers should insert 2 inches into the 3 inch deep swage connection (minimum 1 inch insertion is required)
- Riser Length = Floor Clearance Height + Slab Thickness + 2 inch (overlap) (Rounded up to 120” or 144”).
- Omega supplies two standard riser lengths, 120” (10’) and 144” (12’), to be field cut on-site.
- Omega does not supply extension tailpieces or transition riser pieces for joining dissimilar piping sizes. Items are field provided.
- Risers available in Type L and Type M/DWV copper.
- Condensate riser comes standard with 3/8 inch thick closed cell insulation to prevent condensation.
- Optional 3/8-inch insulation on supply and return risers is also available.

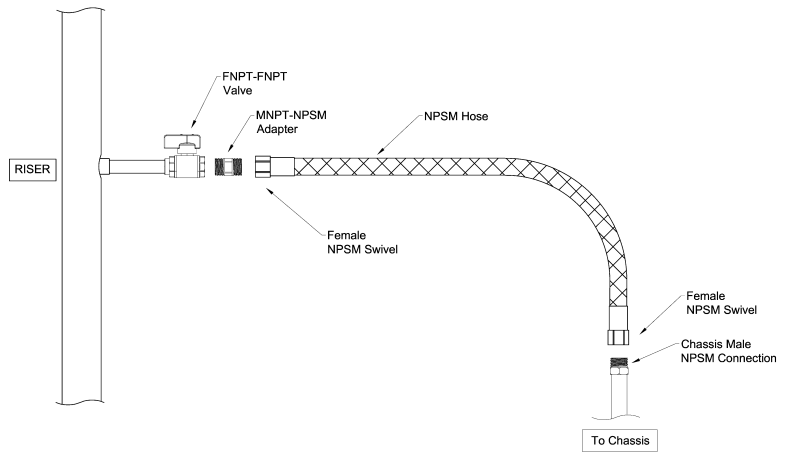


4.3 Hose Kit & Riser Stub-Out Details

STANDARD VALVE - SWEAT CONNECTED NPSM



OPTIONAL FPT VALVE - FPT to FPT



Hose Kit Sizes

| Model | Hose Kit | |
|-----------|-----------|-------------|
| | Size (in) | Length (in) |
| VSHP 020G | 1/2 | 24 |
| VSHP 030G | 1/2 | 24 |
| VSHP 040G | 1/2 | 24 |
| VSHP 050G | 1/2 | 24 |
| VSHP 060G | 1/2 | 24 |
| VSHP 080G | 3/4 | 30 |
| VSHP 100G | 3/4 | 30 |
| VSHP 120G | 3/4 | 30 |

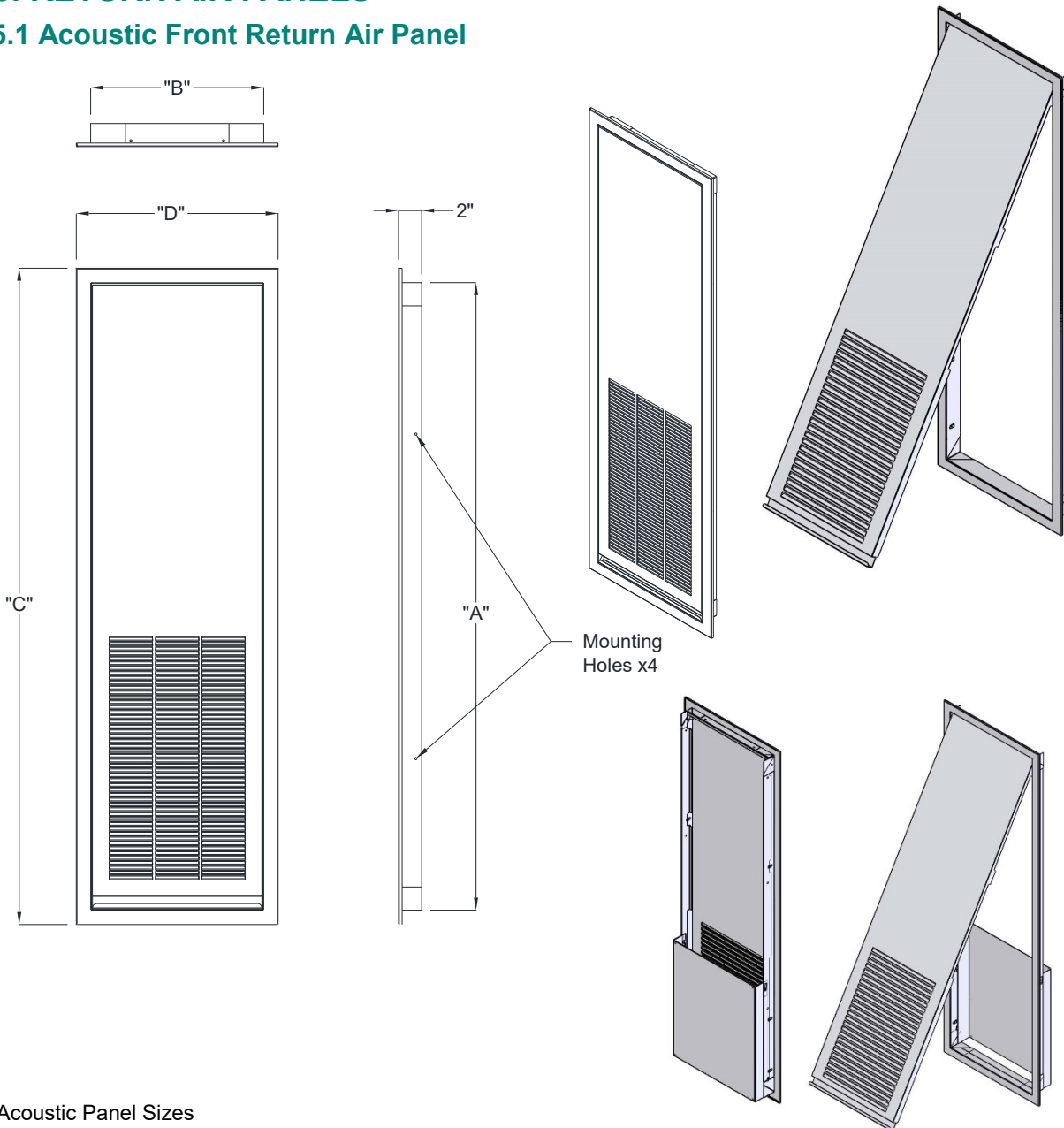
Isolation Valve Notes:

- Standard NPSM sweat connected isolation valves are provided for Factory or Field Supplied Copper Risers.
- Optional Female NPT valves are for Field Supplied Risers only. Includes MNPT-MNPSM hose adaptors with hose kit.



5. RETURN AIR PANELS

5.1 Acoustic Front Return Air Panel



Acoustic Panel Sizes

| Model | Cabinet Size | Acoustic RA Panel Dimensions (inches) | | | |
|----------|--------------|---------------------------------------|--------|--------|--------|
| | | A | B | C | D |
| VSHP 020 | X | 54 | 15 1/4 | 56 1/2 | 17 5/8 |
| VSHP 030 | | | | | |
| VSHP 040 | | | | | |
| VSHP 050 | Y | 54 | 17 1/4 | 56 1/2 | 19 5/8 |
| VSHP 060 | | | | | |
| VSHP 080 | Z | 54 | 21 1/4 | 56 1/2 | 23 5/8 |
| VSHP 100 | | | | | |
| VSHP 120 | | | | | |

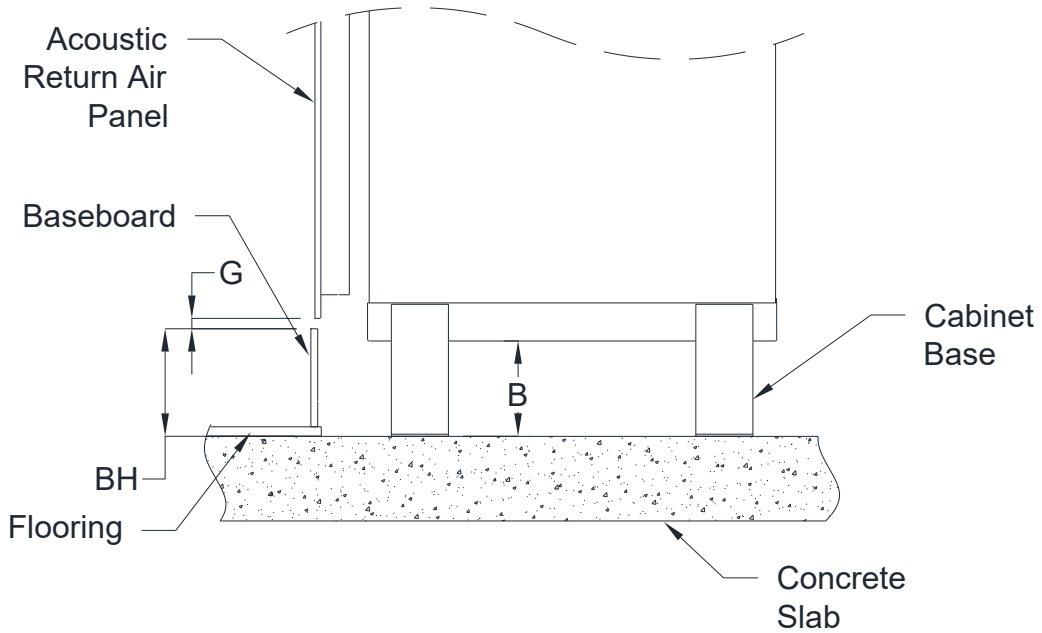
Optional Baffle¹

Notes:

Panel is lined with acoustic insulation for enhanced sound attenuation.
 Return air panel supplied in standard powder coat appliance white finish.
 1) Optional baffle requires additional 2-inch clearance.



5.2 Acoustic Panel Cabinet Base Height Calculation



Acoustic Panel Cabinet Base Height Calculation:

BH = Baseboard Height + Finish Floor Height*

G = Gap (min 0.5") between baseboard and panel.

B = Cabinet Base Height

(Min. 5", increases in 1" increments)

$$B = BH + G - 1.5''$$

Note: *Include flooring thickness, underlayment, and any concrete leveling as part of calculation.

Example:

If using a 5" baseboard, with 1" Finished Flooring height, and 0.5" gap:

$$B = (5'' + 1'') + (0.5'') - 1.5''$$

$$B = 5''$$

Therefore a 5" Cabinet Base is required.

Example: Baseboard to Base Height Table

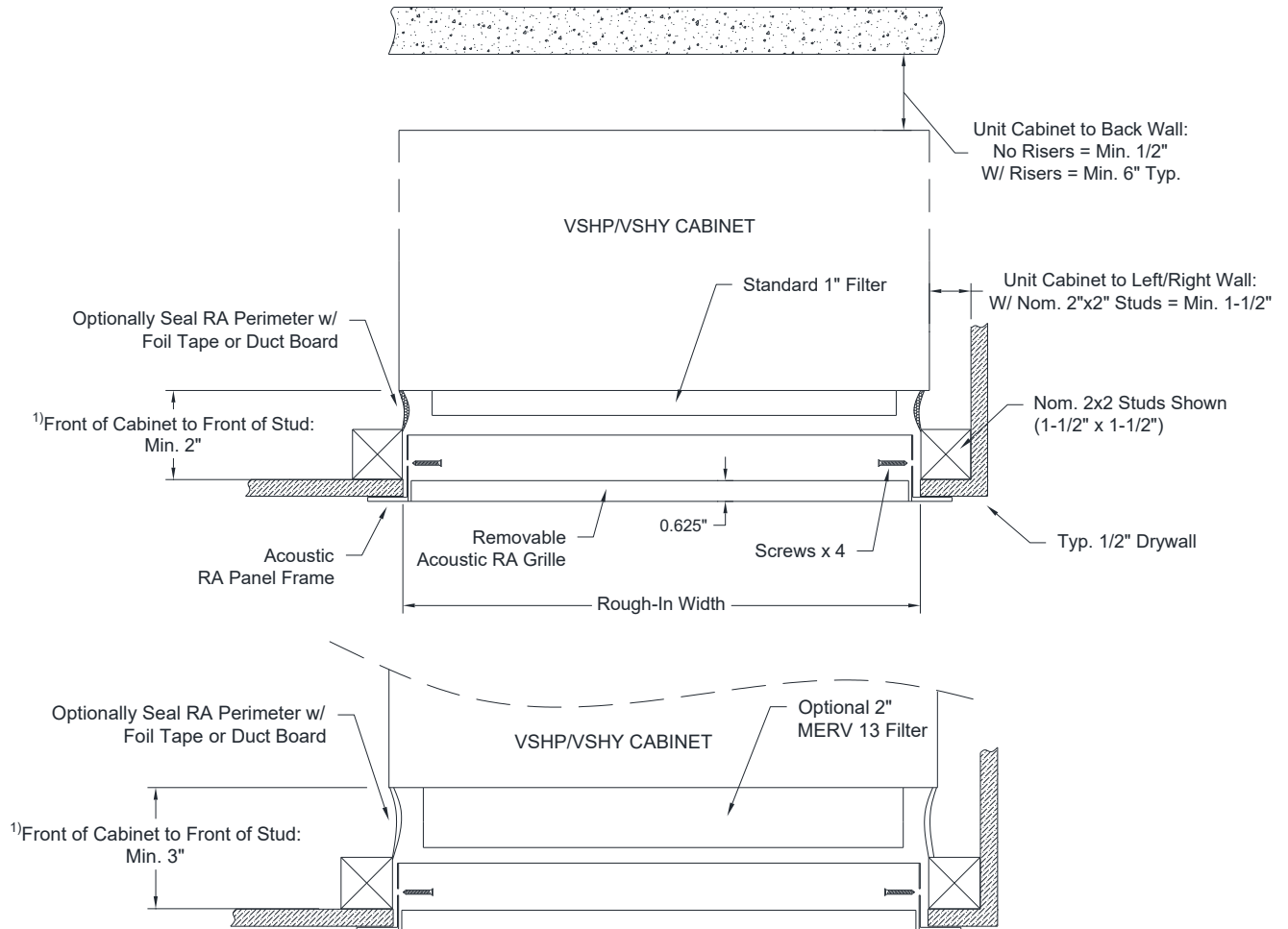
| Baseboard Height* | Cabinet Base Height |
|-------------------|---------------------|
| Up to 5" | 5" |
| >5" to 6" | 6" |
| >6" to 7" | 7" |
| >7" to 8" | 8" |

*Includes 1" Total Flooring

*Using gap G= 0.5" (from top of baseboard to return panel flange)



5.3 Acoustic Front R/A Panel Furring Details



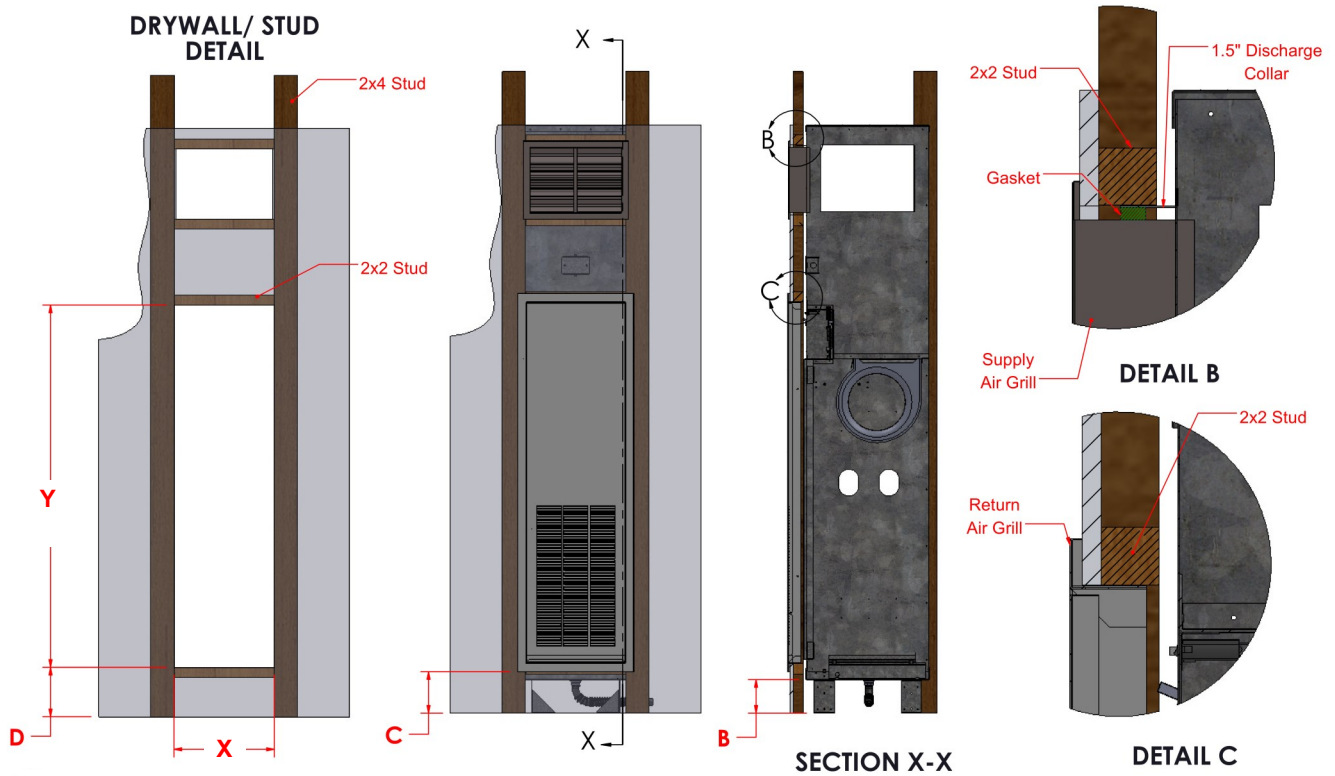
Acoustic Panel Furring Detail—Typ. 2x2 Framing Plan View

Notes:

- 1) Provide 2" from framing stud to cabinet. With optional 2-inch MERV 13 filter provide 3" from front of stud or min 1-1/2" from back of stud to cabinet. With optional flange, provide gap min. 1/2" from stud to flange.
- 2) Return air panel should be centered in front of the unit return air opening.
- 3) With rear/side risers, allow for min. 6" typical clearance at the rear/side of the units.
- 4) For additional sound attenuation insulate the closet cavity with plenum rated acoustical insulation.
- 5) With optional Baffle, allow for an additional 2-inch of clearance between stud and front of cabinet from what is indicated above.



5.3 Acoustic Front R/A Panel Furring Details (Cont'd)



Acoustic Panel Furring Detail—Front & Side View

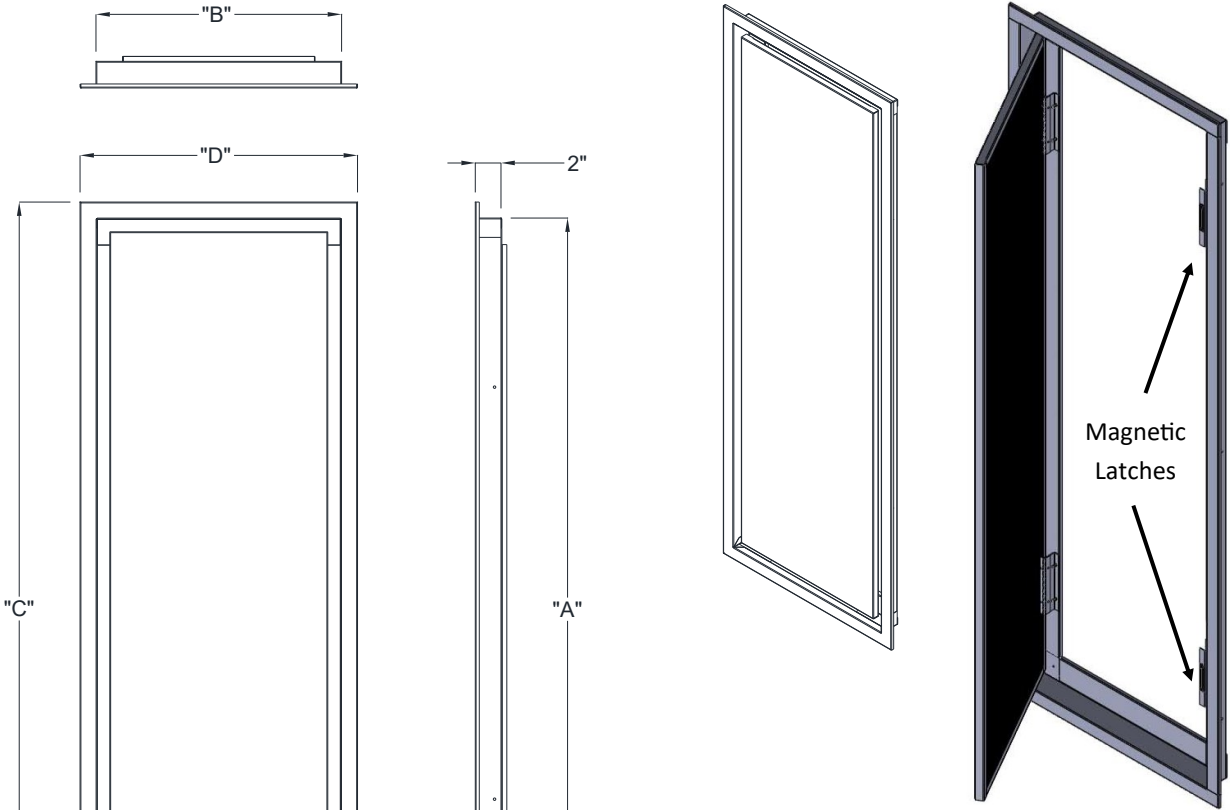
- B** = Cabinet Base Height (Min 5", increases in 1" increments)
- C** = Flange Height Above Floor (B + 1.25")
- D** = Rough-In Height Above Floor (B + 2.5")

Acoustic Panel Rough-In Dimensions

| Model | Cabinet Size | Cabinet Dimensions (in) | | Rough-In (in) | |
|-----------|--------------|-------------------------|--------|---------------|--------|
| | | W | D | "X" | "Y" |
| VSHP 020G | X | 16 | 17 1/2 | 15 3/4 | 54 1/2 |
| VSHP 030G | | | | | |
| VSHP 040G | | | | | |
| VSHP 050G | Y | 18 | 20 1/2 | 17 3/4 | 54 1/2 |
| VSHP 060G | | | | | |
| VSHP 080G | Z | 22 | 24 1/2 | 21 3/4 | 54 1/2 |
| VSHP 100G | | | | | |
| VSHP 120G | | | | | |



5.4 Perimeter Front Return Air Panel

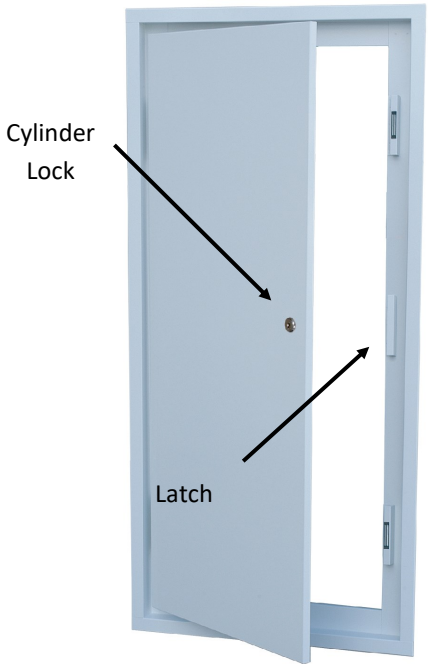


Perimeter Panel Sizes

| Model | Cabinet Size | Perimeter RA Panel Dimensions (inches) | | | |
|----------|--------------|--|--------|--------|--------|
| | | A | B | C | D |
| VSHP 020 | X | 58 1/4 | 19 1/8 | 60 3/4 | 21 5/8 |
| VSHP 030 | | | | | |
| VSHP 040 | | | | | |
| VSHP 050 | Y | 58 1/4 | 21 1/8 | 60 3/4 | 23 5/8 |
| VSHP 060 | | | | | |
| VSHP 080 | Z | 58 1/4 | 25 1/8 | 60 3/4 | 27 5/8 |
| VSHP 100 | | | | | |
| VSHP 120 | | | | | |

Notes:

- Return Panel interior is lined with 1/2 inch acoustic insulation
- Return air panel supplied in standard powder coat white finish.



Optional Perimeter Locking Panel



5.5 Perimeter Panel Cabinet Base Height Calculation

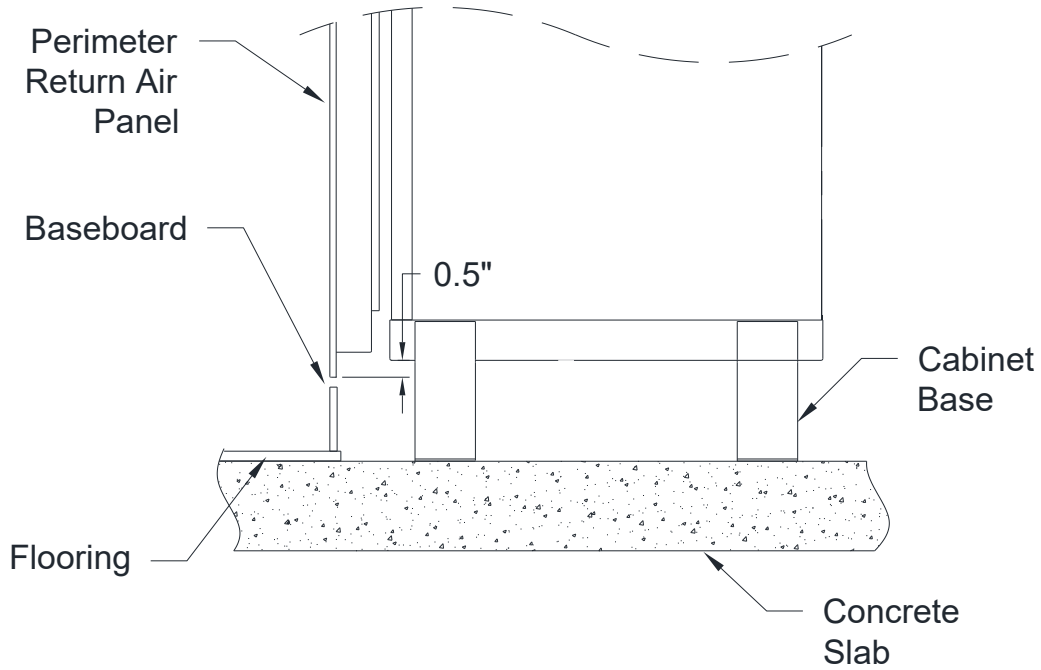


Figure 21 Perimeter Panel Cabinet Base Height Calculation

Perimeter Panel Cabinet Base Height Calculation:

BH = Baseboard Height + Finish Floor Height*

G = Gap (min 0.5")

B = Cabinet Base Height
(Min. 5", increases in 1" increments)

$B = BH + G + 0.5"$

Note: *Include flooring thickness, underlayment, and any concrete leveling as part of calculation.

Example:

If using a 5" baseboard, with 1" Finished Flooring height, and 0.5" gap:

$B = (5" + 1") + (0.5") + 0.5"$

$B = 7"$

Therefore a 7" Cabinet Base is required.

Example: Baseboard to Base Height Table

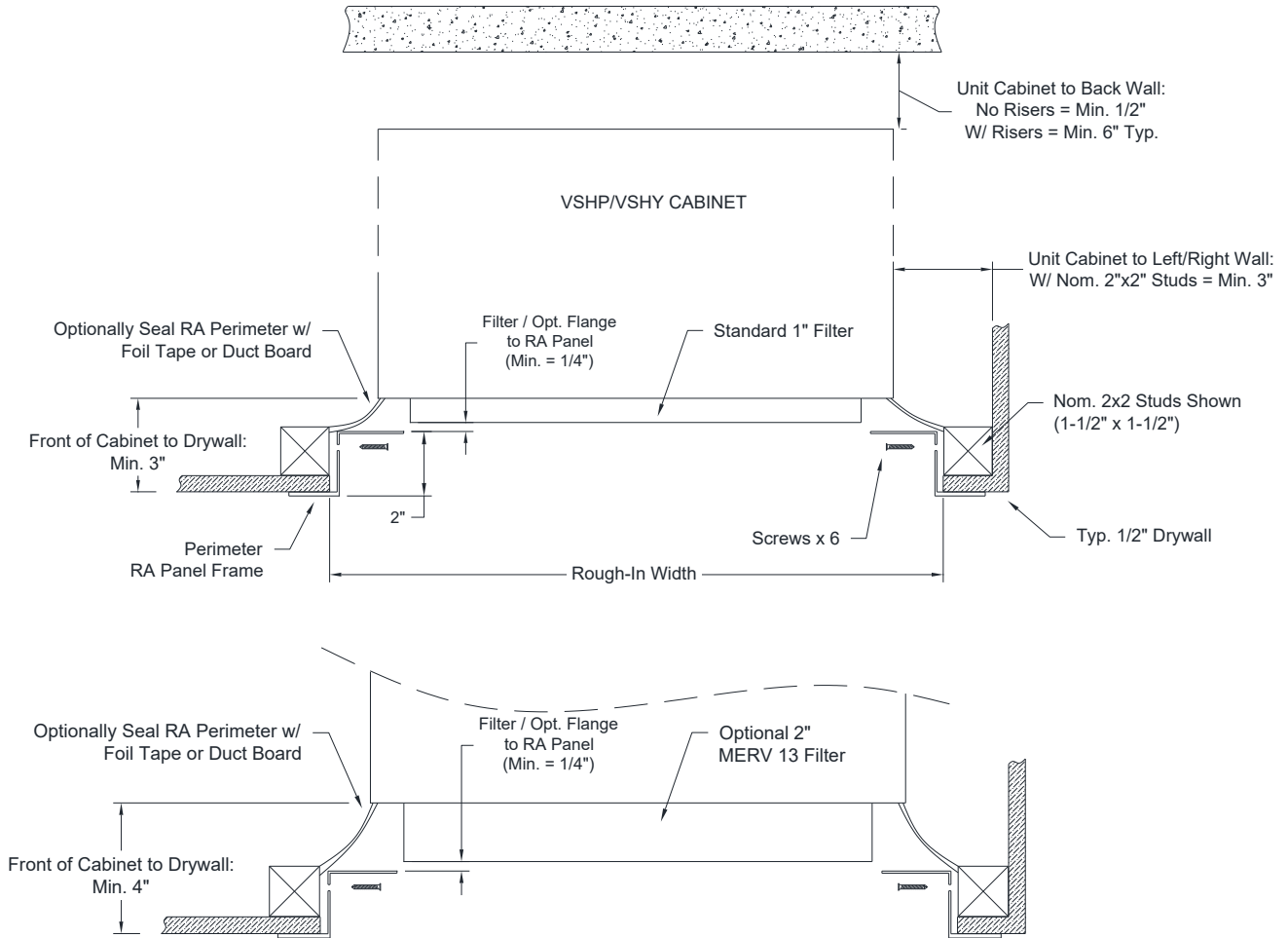
| Baseboard Height* | Cabinet Base Height |
|-------------------|---------------------|
| Up to 3" | 5" |
| >3" to 4" | 6" |
| >4" to 5" | 7" |
| >5" to 6" | 8" |

*Includes 1" Total Flooring

*Using gap G= 0.5" (from top of baseboard to return panel flange)



5.6 Perimeter Front R/A Panel Furring Details



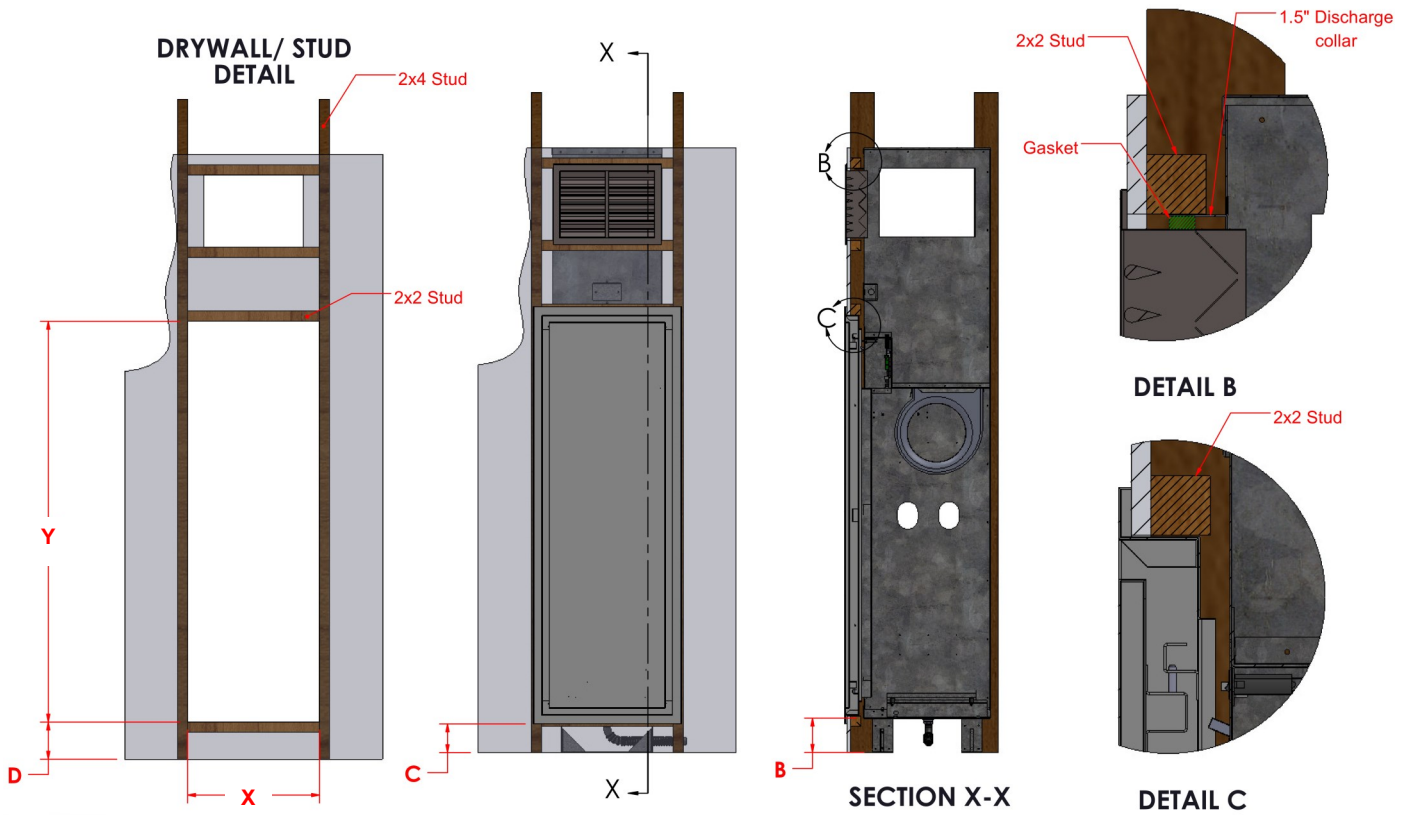
Perimeter Panel Furring Drawing—Typ. 2x2 Framing Plan View

Notes:

- 1) Provide gap of 3" from framing finished drywall to cabinet. With optional 2-inch MERV 13 filter provide 4" from finished drywall to cabinet. With optional flange, provide gap min. 1/4" from RA Panel to flange.
- 2) Return air panel should be centered in front of the unit return air opening.
- 3) With rear/side risers, allow for min. 6" typical clearance at the rear/side of the units.
- 4) For additional sound attenuation insulate the closet cavity with plenum rated acoustical insulation.



5.6 Perimeter Front R/A Panel Furring Details (Cont'd)



- B** = Cabinet Base Height (Min 5", increases in 1" increments)
- C** = Flange Height Above Floor (B - 0.5")
- D** = Rough-In Height Above Floor (B + 0.625")

Perimeter Panel Rough-In Dimensions

| Model | Cabinet Size | Cabinet Dimensions (in) | | Rough-In (in) | |
|-----------|--------------|-------------------------|--------|---------------|--------|
| | | W | D | "X" | "Y" |
| VSHP 020G | X | 16 | 17 1/2 | 19 1/2 | 58 3/4 |
| VSHP 030G | | | | | |
| VSHP 040G | | | | | |
| VSHP 050G | Y | 18 | 20 1/2 | 21 1/2 | 58 3/4 |
| VSHP 060G | | | | | |
| VSHP 080G | Z | 22 | 24 1/2 | 25 1/2 | 58 3/4 |
| VSHP 100G | | | | | |
| VSHP 120G | | | | | |



6. PERFORMANCE & ELECTRICAL DATA

6.1 VSHP (SE) Performance Data - Standard Efficiency

VSHP (SE) Performance Data

| Unit Model | Refrig. | Air Flow (SCFM) | Water Flow (GPM) | WPD (FT) | WLHP Cooling ¹ | | WLHP Heating ¹ | | GLHP Cooling ² | | GLHP Heating ² | |
|------------|---------|-----------------|------------------|----------|---------------------------|------|---------------------------|-----|---------------------------|------|---------------------------|-----|
| | | | | | Capacity (BTUH) | EER | Capacity (BTUH) | COP | Capacity (BTUH) | EER | Capacity (BTUH) | COP |
| VSHP 020 | R-410A | 200 | 1.5 | 3.3 | 5,800 | 12.2 | 7,200 | 4.3 | 6,700 | 14.1 | 5,300 | 3.2 |
| VSHP 030 | R-410A | 350 | 2.6 | 11.0 | 8,900 | 12.5 | 11,900 | 4.5 | 9,200 | 14.1 | 7,500 | 3.2 |
| VSHP 040 | R-410A | 460 | 3.5 | 11.1 | 11,600 | 13.5 | 14,700 | 4.5 | 12,000 | 15.3 | 9,200 | 3.2 |
| VSHP 050 | R-410A | 530 | 4.0 | 14.3 | 15,000 | 15.0 | 17,200 | 4.8 | 15,600 | 16.5 | 10,800 | 3.3 |
| VSHP 060 | R-410A | 630 | 5.1 | 20.2 | 17,900 | 14.5 | 22,500 | 4.5 | 18,600 | 15.7 | 14,000 | 3.2 |
| VSHP 080 | R-410A | 820 | 6.7 | 10.2 | 23,000 | 14.5 | 28,000 | 4.5 | 23,900 | 15.7 | 17,500 | 3.2 |
| VSHP 100 | R-410A | 1010 | 7.9 | 14.2 | 28,700 | 14.5 | 35,500 | 4.6 | 29,900 | 15.6 | 22,200 | 3.2 |
| VSHP 120 | R-410A | 1200 | 9.0 | 18.4 | 36,000 | 13.8 | 43,000 | 4.5 | 36,200 | 15.0 | 28,700 | 3.2 |

¹Performance based on ARI/ISO 13256-1 Water Loop conditions at 86F EWT Cooling, 68F EWT Heating.

²Performance based on ARI/ISO 13256-1 Ground Loop conditions at 77F EWT Cooling, 32F EWT Heating. Cooling performance shown is for 80.6F DB and 66.2F WB entering air.

VSHP (SE) Electrical Data

| Model | Supply Voltage | Compressor | | | Blower | | Total Unit FLA | MCA | MaxFuse/Circuit Breaker |
|----------|----------------|------------|--------|------|--------|-----|----------------|------|-------------------------|
| | | Qty | RLA | LRA | HP | FLA | | | |
| VSHP 020 | 208-230/1/60 | 1 | @ 3.0 | 15.0 | 1/4 | 1.0 | 4.0 | 4.8 | 15 |
| VSHP 030 | 208-230/1/60 | 1 | @ 3.7 | 22.0 | 1/4 | 1.1 | 4.8 | 5.7 | 15 |
| VSHP 040 | 208-230/1/60 | 1 | @ 4.7 | 25.0 | 1/4 | 1.2 | 5.9 | 7.1 | 15 |
| VSHP 050 | 208-230/1/60 | 1 | @ 5.6 | 29.0 | 1/3 | 2.1 | 7.7 | 9.1 | 15 |
| VSHP 060 | 208-230/1/60 | 1 | @ 7.4 | 33.0 | 1/3 | 2.6 | 10.0 | 11.9 | 15 |
| VSHP 080 | 208-230/1/60 | 1 | @ 10.9 | 62.9 | 1/2 | 4.2 | 15.1 | 17.8 | 25 |
| VSHP 100 | 208-230/1/60 | 1 | @ 13.5 | 72.5 | 1/2 | 4.2 | 17.7 | 21.1 | 30 |
| VSHP 120 | 208-230/1/60 | 1 | @ 15.4 | 83.9 | 1/2 | 4.2 | 19.6 | 23.5 | 35 |

Minimum voltage 200 V. Operating voltage 208-230 V, single phase

Adhere to all applicable electrical codes

RLA - Rated load amps

LRA - Locked rotor amps

FLA - Full load amps

VSHP (SE) Physical Data

| Model | Cabinet Size | Cabinet (lbs) | Chassis (lbs) | Total Chassis Fluid Volume* | |
|----------|--------------|---------------|---------------|---------------------------------|---------------------------|
| | | | | Fluid Volume (In ³) | Fluid Volume (US gallons) |
| VSHP 020 | X | 153 | 90 | 30.4 | 0.13 |
| VSHP 030 | | | 95 | 30.4 | 0.13 |
| VSHP 040 | | | 95 | 33.8 | 0.15 |
| VSHP 050 | Y | 158 | 98 | 49.8 | 0.22 |
| VSHP 060 | | | 98 | | |
| VSHP 080 | Z | 223 | 110 | 134.0 | 0.58 |
| VSHP 100 | | | 130 | | |
| VSHP 120 | | | 140 | | |



6.2 Optional VSHP-G (HE) Performance Data - High Efficiency

VSHP-G (HE) ISO Performance Data

| Unit Model | Refrig. | Air Flow (SCFM) | | Water Flow (GPM) | WPD (FT) | WLHP Cooling ¹ | | WLHP Heating ¹ | | GLHP Cooling ² | | GLHP Heating ² | |
|------------|---------|-----------------|---------|------------------|----------|---------------------------|------|---------------------------|-----|---------------------------|------|---------------------------|-----|
| | | Cooling | Heating | | | Capacity (BTUH) | EER | Capacity (BTUH) | COP | Capacity (BTUH) | EER | Capacity (BTUH) | COP |
| VSHP 020G | R-410A | 200 | 280 | 1.5 | 3.3 | 6,500 | 14.7 | 8,100 | 5.2 | 6,700 | 16.5 | 5,300 | 3.3 |
| VSHP 030G | R-410A | 330 | 380 | 2.5 | 11.0 | 9,200 | 14.6 | 11,600 | 5.2 | 9,500 | 16.0 | 7,500 | 3.3 |
| VSHP 040G | R-410A | 400 | 450 | 3.2 | 11.1 | 12,200 | 14.5 | 14,700 | 5.0 | 12,500 | 15.5 | 9,300 | 3.3 |
| VSHP 050G | R-410A | 510 | 560 | 3.9 | 14.3 | 15,000 | 15.5 | 17,200 | 5.3 | 15,400 | 17.1 | 10,600 | 3.4 |
| VSHP 060G | R-410A | 640 | 700 | 4.7 | 20.2 | 18,100 | 14.5 | 21,500 | 5.0 | 18,800 | 16.0 | 13,800 | 3.3 |
| VSHP 080G | R-410A | 830 | 900 | 6.3 | 10.2 | 23,300 | 15.0 | 30,000 | 5.2 | 23,900 | 16.5 | 17,500 | 3.4 |
| VSHP 100G | R-410A | 1020 | 1080 | 7.7 | 14.2 | 29,500 | 14.8 | 34,100 | 5.1 | 31,000 | 16.6 | 21,500 | 3.3 |
| VSHP 120G | R-410A | 1180 | 1250 | 9.0 | 18.4 | 35,900 | 14.2 | 41,000 | 5.0 | 36,200 | 15.5 | 25,100 | 3.3 |

¹Performance based on ARI/ISO 13256-1 Water Loop conditions at 86F EWT Cooling, 68F EWT Heating.

²Performance based on ARI/ISO 13256-1 Ground Loop conditions at 77F EWT Cooling, 32F EWT Heating.

Cooling performance shown is for 80.6F DB and 66.2F WB entering air.

Heating performance shown based on 68F entering air.

VSHP-G (HE) Electrical Data (ECM Fan)

| Model | Supply Voltage | Compressor | | | Blower | | Total Unit FLA | MCA | MaxFuse/ Circuit Breaker |
|-----------|----------------|------------|--------|------|--------|-----|----------------|------|-----------------------------|
| | | Qty | RLA | LRA | HP | FLA | | | |
| VSHP 020G | 208-230/1/60 | 1 | @ 3.0 | 15.0 | 1/4 | 1.0 | 4.0 | 4.8 | 15 |
| VSHP 030G | 208-230/1/60 | 1 | @ 3.7 | 22.0 | 1/4 | 1.1 | 4.8 | 5.7 | 15 |
| VSHP 040G | 208-230/1/60 | 1 | @ 4.7 | 25.0 | 1/4 | 1.2 | 5.9 | 7.1 | 15 |
| VSHP 050G | 208-230/1/60 | 1 | @ 5.6 | 29.0 | 1/3 | 2.1 | 7.7 | 9.1 | 15 |
| VSHP 060G | 208-230/1/60 | 1 | @ 7.4 | 33.0 | 1/3 | 2.6 | 10.0 | 11.9 | 15 |
| VSHP 080G | 208-230/1/60 | 1 | @ 10.9 | 62.9 | 1/2 | 4.2 | 15.1 | 17.8 | 25 |
| VSHP 100G | 208-230/1/60 | 1 | @ 13.5 | 72.5 | 1/2 | 4.2 | 17.7 | 21.1 | 30 |
| VSHP 120G | 208-230/1/60 | 1 | @ 15.4 | 83.9 | 1/2 | 4.2 | 19.6 | 23.5 | 35 |

Minimum voltage 200 V. Operating voltage 208-230 V, single phase

Adhere to all applicable electrical codes

RLA - Rated load amps

LRA - Locked rotor amps

FLA - Full load amps

VSHP-G (HE) Physical Data

| Model Series | VSHP020G | VSHP030G | VSHP040G | VSHP050G | VSHP060G | VSHP080G | VSHP100G | VSHP120G |
|--|--|----------|----------|-----------|----------|------------------------|----------|----------|
| Nominal Cooling (Ton) ¹ | 0.50 | 0.75 | 1.0 | 1.25 | 1.50 | 2.0 | 2.5 | 3.0 |
| Compressor-Type | High Efficiency Rotary | | | | | High Efficiency Scroll | | |
| Refrigerant Charge (ozs) | 16 | 23 | 29 | 36 | 38 | 36 | 45 | 47 |
| Water Coil-Type | High Efficiency Co-Axial | | | | | | | |
| Hose Size (in) | 1/2" | | | | | 3/4" | | |
| Water Connections | 1/2" NPSM | | | | | 3/4" NPSM | | |
| Total Chassis Fluid Volume (US gallons) ² | 0.13 | 0.15 | 0.22 | 0.25 | 0.27 | 0.58 | 0.61 | 0.63 |
| Drain Connection Size | 7/8" ID (Standard) | | | | | | | |
| Standard Blower / Motor | DWDI Forward-Curved Centrifugal / Direct-Drive | | | | | | | |
| Motor Type | ECM | ECM | ECM | ECM | ECM | ECM | ECM | ECM |
| Motor HP/Speeds | 0.25/3 | 0.25/3 | 0.25/3 | 0.33/3 | 0.33/3 | 0.5/3 | 0.50/3 | 0.50/3 |
| Standard 1" Filter MERV8 | 1-14x25x1 | | | 1-16x30x1 | | 1-20x30x1 | | |
| Optional 2" Filter MERV13 | 1-14x25x2 | | | 1-16x30x2 | | 1-20x30x2 | | |
| VSHP-G Chassis Weight (lb) | 65 | 72 | 77 | 105 | 110 | 150 | 165 | 175 |
| VSHP-G Cabinet Weight (lb) | 153 | 153 | 153 | 158 | 158 | 223 | 230 | 230 |

1) Nominal Capacity calculated in accordance with ARI / ISO Standard 13256-1 for Water Loop Application.

2) Fluid volume includes chassis and hose sets.



6.3 EC Motor (ECM) Fan Data

| Model | EC Motor Speed | External Static Pressure Option | Min. SCFM | Rated SCFM | External Static Pressure (in w.g.) | | | | | | | | | | | | |
|---------------|----------------|---------------------------------|-----------|------------|------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | | | | 0 | 0.05 | 0.1 | 0.15 | 0.2 | 0.25 | 0.3 | 0.35 | 0.4 | 0.45 | 0.5 | 0.55 | 0.6 |
| | | | | | SCFM | SCFM | SCFM | SCFM | SCFM | SCFM | SCFM | SCFM | SCFM | SCFM | SCFM | SCFM | SCFM |
| 020 | WHISPER* MODE | N/A | N/A | N/A | 210 | 195 | 180 | 160 | 145 | 130 | 115 | 100 | 75 | 55 | - | - | - |
| | LOW | LOW ESP | 150 | 200 | 250 | 240 | 225 | 210 | 200 | 185 | 150 | - | - | - | - | - | - |
| | MED | | | | - | - | 255 | 240 | 225 | 215 | 200 | 190 | 175 | 165 | 150 | - | - |
| | MED | HIGH ESP | | | - | - | 255 | 240 | 225 | 215 | 200 | 190 | 175 | 165 | 150 | - | - |
| | HIGH | | | | - | - | - | - | 260 | 240 | 230 | 220 | 210 | 195 | 185 | 175 | 165 |
| WHISPER* MODE | N/A | | | | N/A | N/A | 225 | 210 | 195 | 175 | 160 | 145 | 130 | 115 | 100 | 85 | 70 |
| 030 | WHISPER* MODE | N/A | N/A | N/A | 225 | 210 | 195 | 175 | 160 | 145 | 130 | 115 | 100 | 85 | 70 | - | - |
| | LOW | LOW ESP | 220 | 350 | 315 | 305 | 295 | 285 | 275 | 265 | 250 | 240 | 225 | - | - | - | - |
| | MED | | | | 350 | 340 | 335 | 325 | 315 | 305 | 295 | 285 | 275 | 265 | 255 | 245 | 235 |
| | MED | HIGH ESP | | | 350 | 340 | 335 | 325 | 315 | 305 | 295 | 285 | 275 | 265 | 255 | 245 | 235 |
| | HIGH | | | | - | - | 365 | 355 | 350 | 340 | 330 | 320 | 310 | 305 | 295 | 285 | 275 |
| WHISPER* MODE | N/A | | | | N/A | N/A | 250 | 230 | 225 | 205 | 180 | 160 | 145 | 125 | 110 | 90 | 75 |
| 040 | WHISPER* MODE | N/A | N/A | N/A | 250 | 230 | 225 | 205 | 180 | 160 | 145 | 125 | 110 | 90 | 75 | - | - |
| | LOW | LOW ESP | 300 | 460 | 410 | 400 | 390 | 380 | 370 | 365 | 350 | 340 | 330 | 325 | 310 | 300 | - |
| | MED | | | | 460 | 450 | 445 | 440 | 430 | 425 | 415 | 405 | 395 | 385 | 375 | 365 | 355 |
| | MED | HIGH ESP | | | 460 | 450 | 445 | 440 | 430 | 425 | 415 | 405 | 395 | 385 | 375 | 365 | 355 |
| | HIGH | | | | - | - | - | - | 470 | 465 | 455 | 445 | 435 | 430 | 420 | 410 | 400 |
| WHISPER* MODE | N/A | | | | N/A | N/A | 450 | 430 | 410 | 390 | 370 | 350 | 320 | 300 | 270 | 250 | 220 |
| 050 | WHISPER* MODE | N/A | N/A | N/A | 450 | 430 | 410 | 390 | 370 | 350 | 320 | 300 | 270 | 250 | 220 | - | - |
| | LOW | LOW ESP | 375 | 530 | 520 | 510 | 490 | 470 | 450 | 430 | 410 | 390 | 375 | - | - | - | - |
| | MED | | | | - | - | 550 | 540 | 520 | 505 | 485 | 470 | 450 | 430 | 410 | 390 | 375 |
| | MED | HIGH ESP | | | - | - | 550 | 540 | 520 | 505 | 485 | 470 | 450 | 430 | 410 | 390 | 375 |
| | HIGH | | | | - | - | - | - | - | - | 555 | 540 | 525 | 510 | 490 | 475 | 460 |
| WHISPER* MODE | N/A | | | | N/A | N/A | 450 | 430 | 410 | 390 | 370 | 350 | 320 | 300 | 270 | 250 | 220 |
| 060 | WHISPER* MODE | N/A | N/A | N/A | 450 | 430 | 410 | 390 | 370 | 350 | 320 | 300 | 270 | 250 | 220 | - | - |
| | LOW | LOW ESP | 450 | 630 | 580 | 565 | 550 | 540 | 520 | 505 | 485 | 470 | 450 | - | - | - | - |
| | MED | | | | 640 | 620 | 610 | 595 | 580 | 565 | 555 | 540 | 525 | 510 | 490 | 475 | 460 |
| | MED | HIGH ESP | | | 640 | 620 | 610 | 595 | 580 | 565 | 555 | 540 | 525 | 510 | 490 | 475 | 460 |
| | HIGH | | | | - | - | 675 | 670 | 655 | 650 | 640 | 620 | 610 | 595 | 580 | 565 | 550 |
| WHISPER* MODE | N/A | | | | N/A | N/A | 620 | 580 | 560 | 520 | 480 | 440 | 410 | 380 | 340 | 300 | 260 |
| 080 | WHISPER* MODE | N/A | N/A | N/A | 620 | 580 | 560 | 520 | 480 | 440 | 410 | 380 | 340 | 300 | 260 | - | - |
| | LOW | LOW ESP | 600 | 820 | 800 | 760 | 740 | 720 | 695 | 660 | 640 | 620 | - | - | - | - | - |
| | MED | | | | 880 | 860 | 840 | 820 | 800 | 780 | 750 | 720 | 700 | 670 | 650 | 625 | 600 |
| | MED | HIGH ESP | | | 880 | 860 | 840 | 820 | 800 | 780 | 750 | 720 | 700 | 670 | 650 | 625 | 600 |
| | HIGH | | | | - | - | - | - | 895 | 880 | 860 | 820 | 805 | 795 | 780 | 770 | 760 |
| WHISPER* MODE | N/A | | | | N/A | N/A | 620 | 580 | 560 | 520 | 480 | 440 | 410 | 380 | 340 | 300 | 260 |
| 100 | WHISPER* MODE | N/A | N/A | N/A | 620 | 580 | 560 | 520 | 480 | 440 | 410 | 380 | 340 | 300 | 260 | - | - |
| | LOW | LOW ESP | 750 | 1010 | 960 | 940 | 920 | 890 | 860 | 840 | 820 | 800 | 775 | 750 | - | - | - |
| | MED | | | | 1080 | 1060 | 1040 | 1010 | 990 | 970 | 950 | 930 | 900 | 880 | 860 | 840 | 820 |
| | MED | HIGH ESP | | | 1080 | 1060 | 1040 | 1010 | 990 | 970 | 950 | 930 | 900 | 880 | 860 | 840 | 820 |
| | HIGH | | | | - | - | - | - | 1110 | 1090 | 1070 | 1060 | 1040 | 1020 | 990 | 980 | 960 |
| WHISPER* MODE | N/A | | | | N/A | N/A | 620 | 580 | 560 | 520 | 480 | 440 | 410 | 380 | 340 | 300 | 260 |
| 120 | WHISPER* MODE | N/A | N/A | N/A | 620 | 580 | 560 | 520 | 480 | 440 | 410 | 380 | 340 | 300 | 260 | - | - |
| | LOW | LOW ESP | 900 | 1200 | 1120 | 1100 | 1090 | 1070 | 1050 | 1025 | 1010 | 990 | 970 | 940 | 920 | - | - |
| | MED | | | | 1230 | 1200 | 1185 | 1170 | 1150 | 1130 | 1110 | 1095 | 1080 | 1055 | 1040 | 1020 | 1000 |
| | MED | HIGH ESP | | | 1230 | 1200 | 1185 | 1170 | 1150 | 1130 | 1110 | 1095 | 1080 | 1055 | 1040 | 1020 | 1000 |
| | HIGH | | | | 1320 | 1290 | 1275 | 1260 | 1240 | 1225 | 1205 | 1190 | 1175 | 1160 | 1140 | 1120 | 1100 |
| WHISPER* MODE | N/A | | | | N/A | N/A | 620 | 580 | 560 | 520 | 480 | 440 | 410 | 380 | 340 | 300 | 260 |

Note: All airflow ratings are taken at lowest voltage rating of dual rating (ie. 208 volt).
 Airflow ratings include resistance of dry coil, Return Air panel and clean MERV10 air filters.
 *Optional "Whisper" mode is Fan On, Compressor Off mode for constant fresh air circulation.



6.4 VSHP (SE) Expanded Heating & Cooling Performance Tables

| VSHP SE 020 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 1.2 | 3.0 | | | | | | | | 20 | 18.8 | 2128 | 418 | 1.5 | 701 |
| 1.7 | 5.8 | | | | | | | | 20 | 19.2 | 2194 | 414 | 1.6 | 782 |
| 2.1 | 8.8 | | | | | | | | 20 | 19.3 | 2246 | 388 | 1.7 | 923 |
| 2.5 | 12.4 | | | | | | | | 20 | 19.4 | 2298 | 342 | 2.0 | 1132 |
| 1.2 | 5.5 | 30 | 39.4 | 7204 | 4686 | 237 | 30.4 | 8013 | 30 | 27.0 | 3276 | 436 | 2.2 | 1789 |
| 1.7 | 5.5 | 30 | 39.4 | 7204 | 4686 | 237 | 30.4 | 8013 | 30 | 27.8 | 3376 | 431 | 2.3 | 1906 |
| 2.1 | 8.3 | 30 | 37.8 | 7261 | 4743 | 229 | 31.7 | 8042 | 30 | 28.2 | 3457 | 404 | 2.5 | 2080 |
| 2.5 | 11.7 | 30 | 36.6 | 7270 | 4799 | 221 | 33.0 | 8023 | 30 | 28.5 | 3537 | 356 | 2.9 | 2323 |
| 1.2 | 2.7 | 40 | 53.2 | 7014 | 4643 | 272 | 25.8 | 7942 | 40 | 35.3 | 4361 | 452 | 2.8 | 2820 |
| 1.7 | 5.2 | 40 | 49.5 | 7151 | 4714 | 261 | 27.4 | 8040 | 40 | 36.6 | 4495 | 447 | 2.9 | 2971 |
| 2.1 | 7.9 | 40 | 47.8 | 7207 | 4771 | 252 | 28.7 | 8066 | 40 | 37.2 | 4602 | 418 | 3.2 | 3174 |
| 2.5 | 11.1 | 40 | 46.6 | 7216 | 4828 | 243 | 29.8 | 8044 | 40 | 37.6 | 4709 | 369 | 3.7 | 3451 |
| 1.2 | 2.5 | 50 | 63.2 | 6880 | 4634 | 304 | 22.6 | 7919 | 50 | 43.7 | 5385 | 466 | 3.4 | 3793 |
| 1.7 | 4.9 | 50 | 59.4 | 7015 | 4705 | 292 | 24.0 | 8010 | 50 | 45.4 | 5550 | 461 | 3.5 | 3976 |
| 2.1 | 7.5 | 50 | 57.7 | 7070 | 4762 | 282 | 25.1 | 8031 | 50 | 46.2 | 5682 | 432 | 3.9 | 4208 |
| 2.5 | 10.5 | 50 | 56.6 | 7079 | 4819 | 272 | 26.1 | 8005 | 50 | 46.7 | 5814 | 381 | 4.5 | 4515 |
| 1.2 | 2.4 | 60 | 73.0 | 6665 | 4591 | 345 | 19.3 | 7842 | 60 | 52.1 | 6346 | 480 | 3.9 | 4708 |
| 1.7 | 4.7 | 60 | 69.3 | 6795 | 4661 | 331 | 20.6 | 7924 | 60 | 54.3 | 6540 | 474 | 4.0 | 4921 |
| 2.1 | 7.1 | 60 | 67.7 | 6849 | 4717 | 319 | 21.5 | 7938 | 60 | 55.2 | 6696 | 445 | 4.4 | 5179 |
| 2.5 | 10.0 | 60 | 66.5 | 6858 | 4774 | 308 | 22.3 | 7908 | 60 | 55.9 | 6852 | 392 | 5.1 | 5515 |
| 1.2 | 2.3 | 70 | 82.8 | 6369 | 4511 | 393 | 16.2 | 7711 | 70 | 60.7 | 7245 | 492 | 4.3 | 5566 |
| 1.7 | 4.5 | 70 | 79.2 | 6493 | 4580 | 377 | 17.2 | 7780 | 70 | 63.2 | 7467 | 486 | 4.5 | 5807 |
| 2.1 | 6.8 | 70 | 77.5 | 6545 | 4636 | 364 | 18.0 | 7787 | 70 | 64.4 | 7645 | 456 | 4.9 | 6090 |
| 2.5 | 9.5 | 70 | 76.4 | 6553 | 4691 | 351 | 18.7 | 7750 | 70 | 65.2 | 7823 | 402 | 5.7 | 6452 |
| 1.2 | 2.2 | 80 | 92.5 | 5991 | 4396 | 450 | 13.3 | 7526 | 80 | 69.4 | 8081 | 503 | 4.7 | 6366 |
| 1.7 | 4.3 | 80 | 88.9 | 6108 | 4464 | 431 | 14.2 | 7580 | 80 | 72.2 | 8329 | 497 | 4.9 | 6633 |
| 2.1 | 6.5 | 80 | 87.3 | 6157 | 4518 | 416 | 14.8 | 7577 | 80 | 73.6 | 8528 | 466 | 5.4 | 6938 |
| 2.5 | 9.1 | 80 | 86.3 | 6164 | 4572 | 401 | 15.4 | 7534 | 80 | 74.5 | 8726 | 411 | 6.2 | 7325 |
| 1.2 | 2.2 | 85 | 97.3 | 5772 | 4326 | 481 | 12.0 | 7414 | 85 | 73.7 | 8476 | 508 | 4.9 | 6744 |
| 1.7 | 4.2 | 85 | 93.8 | 5885 | 4392 | 461 | 12.8 | 7458 | 85 | 76.8 | 8736 | 502 | 5.1 | 7024 |
| 2.1 | 6.4 | 85 | 92.2 | 5931 | 4445 | 445 | 13.3 | 7450 | 85 | 78.2 | 8945 | 470 | 5.6 | 7340 |
| 2.5 | 9.0 | 85 | 91.2 | 5938 | 4498 | 429 | 13.8 | 7403 | 85 | 79.2 | 9153 | 415 | 6.5 | 7738 |
| 1.2 | 2.1 | 90 | 102.1 | 5532 | 4246 | 514 | 10.8 | 7287 | 90 | 78.1 | 8856 | 512 | 5.1 | 7108 |
| 1.7 | 4.1 | 90 | 98.7 | 5640 | 4311 | 493 | 11.4 | 7323 | 90 | 81.3 | 9128 | 507 | 5.3 | 7399 |
| 2.1 | 6.3 | 90 | 97.1 | 5685 | 4363 | 476 | 11.9 | 7309 | 90 | 82.8 | 9345 | 475 | 5.8 | 7726 |
| 2.5 | 8.8 | 90 | 96.1 | 5692 | 4415 | 459 | 12.4 | 7258 | 90 | 83.9 | 9562 | 418 | 6.7 | 8135 |
| 1.2 | 2.0 | 100 | 111.6 | 4992 | 4060 | 587 | 8.5 | 6994 | | | | | | |
| 1.7 | 4.0 | 100 | 108.3 | 5090 | 4122 | 562 | 9.0 | 7009 | | | | | | |
| 2.1 | 6.1 | 100 | 106.8 | 5130 | 4172 | 543 | 9.4 | 6983 | | | | | | |
| 2.5 | 8.5 | 100 | 105.8 | 5136 | 4222 | 523 | 9.8 | 6923 | | | | | | |
| 1.2 | 2.0 | 110 | 121.0 | 4370 | 3838 | 667 | 6.6 | 6647 | | | | | | |
| 1.7 | 3.9 | 110 | 117.9 | 4456 | 3897 | 640 | 7.0 | 6638 | | | | | | |
| 2.1 | 5.9 | 110 | 116.5 | 4491 | 3944 | 617 | 7.3 | 6598 | | | | | | |
| 2.5 | 8.3 | 110 | 115.5 | 4497 | 3991 | 595 | 7.6 | 6528 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP SE 030 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 1.3 | 3.7 | | | | | | | | 20 | 15.3 | 5301 | 676 | 2.3 | 2992 |
| 1.8 | 6.9 | | | | | | | | 20 | 16.4 | 5487 | 682 | 2.4 | 3160 |
| 2.4 | 12.1 | | | | | | | | 20 | 17.2 | 5669 | 687 | 2.4 | 3323 |
| 2.6 | 14.2 | | | | | | | | 20 | 17.4 | 5719 | 689 | 2.4 | 3368 |
| 1.3 | 3.5 | 30 | 49.1 | 10775 | 7626 | 486 | 22.1 | 12435 | 30 | 23.6 | 6455 | 696 | 2.7 | 4081 |
| 1.8 | 6.6 | 30 | 43.9 | 10977 | 7700 | 471 | 23.3 | 12585 | 30 | 25.2 | 6681 | 701 | 2.8 | 4289 |
| 2.4 | 11.6 | 30 | 40.5 | 11179 | 7807 | 449 | 24.9 | 12710 | 30 | 26.3 | 6903 | 707 | 2.9 | 4491 |
| 2.6 | 13.5 | 30 | 39.7 | 11237 | 7847 | 440 | 25.5 | 12738 | 30 | 26.5 | 6965 | 709 | 2.9 | 4547 |
| 1.3 | 3.4 | 40 | 58.8 | 10456 | 7577 | 521 | 20.1 | 12235 | 40 | 31.9 | 7629 | 714 | 3.1 | 5193 |
| 1.8 | 6.3 | 40 | 53.7 | 10652 | 7651 | 505 | 21.1 | 12376 | 40 | 33.9 | 7897 | 720 | 3.2 | 5442 |
| 2.4 | 11.0 | 40 | 50.3 | 10848 | 7757 | 481 | 22.6 | 12489 | 40 | 35.3 | 8160 | 726 | 3.3 | 5684 |
| 2.6 | 12.9 | 40 | 49.6 | 10905 | 7796 | 471 | 23.1 | 12513 | 40 | 35.6 | 8233 | 727 | 3.3 | 5750 |
| 1.3 | 3.2 | 50 | 68.5 | 10102 | 7494 | 564 | 17.9 | 12028 | 50 | 40.2 | 8825 | 732 | 3.5 | 6328 |
| 1.8 | 6.0 | 50 | 63.4 | 10291 | 7567 | 547 | 18.8 | 12157 | 50 | 42.6 | 9135 | 737 | 3.6 | 6619 |
| 2.4 | 10.6 | 50 | 60.2 | 10481 | 7672 | 520 | 20.1 | 12257 | 50 | 44.3 | 9438 | 743 | 3.7 | 6901 |
| 2.6 | 12.4 | 50 | 59.4 | 10535 | 7711 | 510 | 20.6 | 12277 | 50 | 44.6 | 9522 | 745 | 3.7 | 6979 |
| 1.3 | 3.1 | 60 | 78.1 | 9712 | 7378 | 616 | 15.8 | 11813 | 60 | 48.4 | 10041 | 748 | 3.9 | 7488 |
| 1.8 | 5.8 | 60 | 73.2 | 9894 | 7450 | 596 | 16.6 | 11930 | 60 | 51.3 | 10393 | 754 | 4.0 | 7821 |
| 2.4 | 10.2 | 60 | 70.0 | 10077 | 7553 | 568 | 17.8 | 12014 | 60 | 53.2 | 10738 | 760 | 4.1 | 8144 |
| 2.6 | 11.9 | 60 | 69.2 | 10129 | 7592 | 557 | 18.2 | 12029 | 60 | 53.7 | 10834 | 762 | 4.2 | 8234 |
| 1.3 | 3.0 | 70 | 87.7 | 9287 | 7228 | 675 | 13.8 | 11592 | 70 | 56.6 | 11277 | 764 | 4.3 | 8671 |
| 1.8 | 5.6 | 70 | 82.9 | 9461 | 7299 | 654 | 14.5 | 11694 | 70 | 59.9 | 11673 | 770 | 4.4 | 9046 |
| 2.4 | 9.8 | 70 | 79.8 | 9636 | 7400 | 623 | 15.5 | 11761 | 70 | 62.2 | 12061 | 776 | 4.6 | 9412 |
| 2.6 | 11.5 | 70 | 79.0 | 9686 | 7438 | 610 | 15.9 | 11769 | 70 | 62.7 | 12169 | 778 | 4.6 | 9514 |
| 1.3 | 2.9 | 80 | 97.4 | 8827 | 7045 | 743 | 11.9 | 11362 | 80 | 64.8 | 12534 | 779 | 4.7 | 9877 |
| 1.8 | 5.4 | 80 | 92.6 | 8992 | 7114 | 720 | 12.5 | 11449 | 80 | 68.5 | 12974 | 785 | 4.8 | 10297 |
| 2.4 | 9.5 | 80 | 89.6 | 9158 | 7213 | 685 | 13.4 | 11496 | 80 | 71.1 | 13405 | 791 | 5.0 | 10705 |
| 2.6 | 11.2 | 80 | 88.8 | 9206 | 7250 | 672 | 13.7 | 11498 | 80 | 71.7 | 13525 | 793 | 5.0 | 10818 |
| 1.3 | 2.9 | 85 | 102.2 | 8584 | 6941 | 780 | 11.0 | 11245 | 85 | 68.8 | 13171 | 786 | 4.9 | 10489 |
| 1.8 | 5.4 | 85 | 97.5 | 8744 | 7009 | 755 | 11.6 | 11323 | 85 | 72.8 | 13633 | 792 | 5.0 | 10931 |
| 2.4 | 9.4 | 85 | 94.4 | 8906 | 7106 | 719 | 12.4 | 11360 | 85 | 75.5 | 14086 | 798 | 5.2 | 11361 |
| 2.6 | 11.0 | 85 | 93.7 | 8952 | 7142 | 705 | 12.7 | 11358 | 85 | 76.2 | 14212 | 800 | 5.2 | 11480 |
| 1.3 | 2.8 | 90 | 107.0 | 8331 | 6829 | 819 | 10.2 | 11126 | 90 | 72.9 | 13812 | 793 | 5.1 | 11107 |
| 1.8 | 5.3 | 90 | 102.4 | 8487 | 6895 | 793 | 10.7 | 11195 | 90 | 77.1 | 14297 | 799 | 5.2 | 11571 |
| 2.4 | 9.3 | 90 | 99.3 | 8644 | 6991 | 755 | 11.4 | 11221 | 90 | 80.0 | 14772 | 805 | 5.4 | 12023 |
| 2.6 | 10.9 | 90 | 98.6 | 8689 | 7027 | 740 | 11.7 | 11216 | 90 | 80.6 | 14904 | 807 | 5.4 | 12149 |
| 1.3 | 2.8 | 100 | 116.6 | 7800 | 6579 | 903 | 8.6 | 10882 | | | | | | |
| 1.8 | 5.2 | 100 | 112.1 | 7946 | 6643 | 875 | 9.1 | 10932 | | | | | | |
| 2.4 | 9.1 | 100 | 109.1 | 8093 | 6735 | 833 | 9.7 | 10935 | | | | | | |
| 2.6 | 10.7 | 100 | 108.4 | 8135 | 6770 | 816 | 10.0 | 10921 | | | | | | |
| 1.3 | 2.7 | 110 | 126.2 | 7234 | 6295 | 995 | 7.3 | 10631 | | | | | | |
| 1.8 | 5.2 | 110 | 121.8 | 7369 | 6357 | 964 | 7.6 | 10661 | | | | | | |
| 2.4 | 9.0 | 110 | 118.9 | 7505 | 6445 | 918 | 8.2 | 10638 | | | | | | |
| 2.6 | 10.6 | 110 | 118.2 | 7544 | 6478 | 900 | 8.4 | 10616 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP SE 040 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 1.7 | 3.8 | | | | | | | | 20 | 15.3 | 6789 | 831 | 2.4 | 3954 |
| 2.4 | 7.4 | | | | | | | | 20 | 16.6 | 7044 | 837 | 2.5 | 4189 |
| 3.3 | 13.8 | | | | | | | | 20 | 17.4 | 7267 | 843 | 2.5 | 4390 |
| 3.5 | 15.4 | | | | | | | | 20 | 17.5 | 7300 | 844 | 2.5 | 4420 |
| 1.7 | 3.6 | 30 | 48.6 | 13971 | 9838 | 530 | 26.4 | 15780 | 30 | 23.8 | 8190 | 854 | 2.8 | 5275 |
| 2.4 | 7.0 | 30 | 43.3 | 14308 | 9998 | 501 | 28.5 | 16019 | 30 | 25.4 | 8497 | 860 | 2.9 | 5562 |
| 3.3 | 13.0 | 30 | 39.7 | 14487 | 10132 | 482 | 30.1 | 16130 | 30 | 26.5 | 8765 | 866 | 3.0 | 5809 |
| 3.5 | 14.6 | 30 | 39.2 | 14488 | 10151 | 480 | 30.2 | 16125 | 30 | 26.7 | 8806 | 868 | 3.0 | 5845 |
| 1.7 | 3.4 | 40 | 58.4 | 13659 | 9772 | 582 | 23.5 | 15645 | 40 | 32.2 | 9607 | 877 | 3.2 | 6613 |
| 2.4 | 6.6 | 40 | 53.2 | 13989 | 9932 | 550 | 25.4 | 15867 | 40 | 34.2 | 9968 | 883 | 3.3 | 6953 |
| 3.3 | 12.4 | 40 | 49.6 | 14164 | 10064 | 529 | 26.8 | 15968 | 40 | 35.6 | 10283 | 890 | 3.4 | 7246 |
| 3.5 | 13.9 | 40 | 49.1 | 14164 | 10083 | 527 | 26.9 | 15962 | 40 | 35.9 | 10330 | 891 | 3.4 | 7289 |
| 1.7 | 3.2 | 50 | 68.2 | 13267 | 9652 | 643 | 20.6 | 15463 | 50 | 40.6 | 11043 | 901 | 3.6 | 7970 |
| 2.4 | 6.3 | 50 | 63.0 | 13587 | 9810 | 609 | 22.3 | 15665 | 50 | 43.0 | 11457 | 907 | 3.7 | 8363 |
| 3.3 | 11.7 | 50 | 59.5 | 13757 | 9941 | 585 | 23.5 | 15753 | 50 | 44.7 | 11819 | 914 | 3.8 | 8702 |
| 3.5 | 13.2 | 50 | 59.0 | 13758 | 9959 | 582 | 23.6 | 15746 | 50 | 45.0 | 11874 | 915 | 3.8 | 8752 |
| 1.7 | 3.1 | 60 | 77.9 | 12794 | 9478 | 715 | 17.9 | 15235 | 60 | 49.0 | 12496 | 924 | 4.0 | 9343 |
| 2.4 | 6.0 | 60 | 72.8 | 13103 | 9632 | 677 | 19.4 | 15413 | 60 | 51.9 | 12965 | 930 | 4.1 | 9790 |
| 3.3 | 11.1 | 60 | 69.3 | 13266 | 9761 | 650 | 20.4 | 15485 | 60 | 53.8 | 13375 | 937 | 4.2 | 10177 |
| 3.5 | 12.5 | 60 | 68.8 | 13267 | 9779 | 648 | 20.5 | 15477 | 60 | 54.2 | 13436 | 938 | 4.2 | 10234 |
| 1.7 | 2.9 | 70 | 87.5 | 12240 | 9249 | 797 | 15.4 | 14961 | 70 | 57.4 | 13967 | 947 | 4.3 | 10735 |
| 2.4 | 5.7 | 70 | 82.5 | 12536 | 9400 | 754 | 16.6 | 15110 | 70 | 60.6 | 14491 | 954 | 4.5 | 11236 |
| 3.3 | 10.6 | 70 | 79.2 | 12692 | 9525 | 724 | 17.5 | 15165 | 70 | 62.9 | 14949 | 961 | 4.6 | 11671 |
| 3.5 | 11.9 | 70 | 78.6 | 12693 | 9543 | 722 | 17.6 | 15156 | 70 | 63.3 | 15018 | 962 | 4.6 | 11735 |
| 1.7 | 2.8 | 80 | 97.1 | 11606 | 8965 | 889 | 13.1 | 14640 | 80 | 65.7 | 15455 | 971 | 4.7 | 12143 |
| 2.4 | 5.4 | 80 | 92.2 | 11886 | 9111 | 841 | 14.1 | 14757 | 80 | 69.4 | 16035 | 977 | 4.8 | 12700 |
| 3.3 | 10.1 | 80 | 89.0 | 12034 | 9233 | 808 | 14.9 | 14792 | 80 | 72.0 | 16542 | 984 | 4.9 | 13183 |
| 3.5 | 11.4 | 80 | 88.4 | 12035 | 9250 | 805 | 15.0 | 14782 | 80 | 72.4 | 16618 | 986 | 4.9 | 13255 |
| 1.7 | 2.7 | 85 | 101.9 | 11258 | 8803 | 939 | 12.0 | 14463 | 85 | 69.9 | 16206 | 982 | 4.8 | 12854 |
| 2.4 | 5.3 | 85 | 97.1 | 11530 | 8947 | 888 | 13.0 | 14562 | 85 | 73.8 | 16814 | 989 | 5.0 | 13439 |
| 3.3 | 9.9 | 85 | 93.8 | 11674 | 9066 | 853 | 13.7 | 14586 | 85 | 76.5 | 17345 | 996 | 5.1 | 13946 |
| 3.5 | 11.1 | 85 | 93.3 | 11675 | 9083 | 850 | 13.7 | 14576 | 85 | 77.0 | 17426 | 998 | 5.1 | 14021 |
| 1.7 | 2.7 | 90 | 106.6 | 10891 | 8627 | 991 | 11.0 | 14273 | 90 | 74.1 | 16961 | 994 | 5.0 | 13570 |
| 2.4 | 5.2 | 90 | 101.9 | 11154 | 8768 | 938 | 11.9 | 14354 | 90 | 78.2 | 17597 | 1001 | 5.2 | 14182 |
| 3.3 | 9.7 | 90 | 98.7 | 11293 | 8885 | 901 | 12.5 | 14367 | 90 | 81.1 | 18154 | 1008 | 5.3 | 14714 |
| 3.5 | 10.9 | 90 | 98.2 | 11293 | 8902 | 897 | 12.6 | 14356 | 90 | 81.5 | 18238 | 1010 | 5.3 | 14793 |
| 1.7 | 2.6 | 100 | 116.1 | 10095 | 8235 | 1103 | 9.1 | 13860 | | | | | | |
| 2.4 | 5.0 | 100 | 111.5 | 10338 | 8369 | 1044 | 9.9 | 13901 | | | | | | |
| 3.3 | 9.3 | 100 | 108.4 | 10467 | 8481 | 1003 | 10.4 | 13889 | | | | | | |
| 3.5 | 10.4 | 100 | 107.9 | 10468 | 8497 | 999 | 10.5 | 13877 | | | | | | |
| 1.7 | 2.5 | 110 | 125.5 | 9218 | 7788 | 1225 | 7.5 | 13400 | | | | | | |
| 2.4 | 4.8 | 110 | 121.1 | 9441 | 7915 | 1159 | 8.1 | 13398 | | | | | | |
| 3.3 | 9.0 | 110 | 118.1 | 9559 | 8021 | 1114 | 8.6 | 13359 | | | | | | |
| 3.5 | 10.1 | 110 | 117.7 | 9559 | 8036 | 1109 | 8.6 | 13345 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP SE 050 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 2.8 | 8.1 | | | | | | | | 20 | 16.5 | 8036 | 918 | 2.6 | 4905 |
| 3.5 | 12.5 | | | | | | | | 20 | 17.1 | 8227 | 923 | 2.6 | 5078 |
| 3.8 | 14.6 | | | | | | | | 20 | 17.3 | 8288 | 924 | 2.6 | 5134 |
| 4 | 16.1 | | | | | | | | 20 | 17.4 | 8322 | 925 | 2.6 | 5165 |
| 2.8 | 8.0 | 30 | 44.5 | 18244 | 13803 | 577 | 31.6 | 20215 | 30 | 25.3 | 9704 | 945 | 3.0 | 6479 |
| 3.5 | 12.2 | 30 | 41.7 | 18436 | 13906 | 562 | 32.8 | 20353 | 30 | 26.2 | 9934 | 950 | 3.1 | 6691 |
| 3.8 | 14.3 | 30 | 40.7 | 18475 | 13932 | 557 | 33.2 | 20377 | 30 | 26.4 | 10008 | 952 | 3.1 | 6760 |
| 4 | 15.8 | 30 | 40.2 | 18486 | 13944 | 555 | 33.3 | 20380 | 30 | 26.6 | 10049 | 953 | 3.1 | 6798 |
| 2.8 | 7.8 | 40 | 54.3 | 17710 | 13568 | 638 | 27.8 | 19888 | 40 | 34.2 | 11434 | 971 | 3.4 | 8119 |
| 3.5 | 12.0 | 40 | 51.5 | 17896 | 13669 | 621 | 28.8 | 20015 | 40 | 35.2 | 11704 | 977 | 3.5 | 8371 |
| 3.8 | 14.1 | 40 | 50.6 | 17934 | 13695 | 616 | 29.1 | 20036 | 40 | 35.6 | 11791 | 978 | 3.5 | 8453 |
| 4 | 15.5 | 40 | 50.0 | 17945 | 13707 | 613 | 29.3 | 20038 | 40 | 35.8 | 11840 | 979 | 3.5 | 8498 |
| 2.8 | 7.7 | 50 | 64.0 | 17141 | 13321 | 709 | 24.2 | 19559 | 50 | 43.0 | 13226 | 997 | 3.9 | 9823 |
| 3.5 | 11.8 | 50 | 61.3 | 17321 | 13420 | 689 | 25.1 | 19674 | 50 | 44.2 | 13539 | 1003 | 4.0 | 10118 |
| 3.8 | 13.8 | 50 | 60.4 | 17357 | 13445 | 684 | 25.4 | 19691 | 50 | 44.6 | 13640 | 1004 | 4.0 | 10213 |
| 4 | 15.3 | 50 | 59.9 | 17368 | 13457 | 681 | 25.5 | 19692 | 50 | 44.9 | 13696 | 1005 | 4.0 | 10266 |
| 2.8 | 7.5 | 60 | 73.8 | 16537 | 13061 | 788 | 21.0 | 19228 | 60 | 51.7 | 15081 | 1022 | 4.3 | 11593 |
| 3.5 | 11.6 | 60 | 71.1 | 16711 | 13158 | 767 | 21.8 | 19329 | 60 | 53.2 | 15438 | 1028 | 4.4 | 11931 |
| 3.8 | 13.6 | 60 | 70.2 | 16746 | 13183 | 761 | 22.0 | 19342 | 60 | 53.7 | 15553 | 1030 | 4.4 | 12040 |
| 4 | 15.0 | 60 | 69.7 | 16756 | 13194 | 758 | 22.1 | 19342 | 60 | 54.0 | 15617 | 1031 | 4.4 | 12100 |
| 2.8 | 7.4 | 70 | 83.5 | 15898 | 12788 | 878 | 18.1 | 18894 | 70 | 60.4 | 16998 | 1046 | 4.8 | 13428 |
| 3.5 | 11.4 | 70 | 80.9 | 16065 | 12883 | 854 | 18.8 | 18980 | 70 | 62.1 | 17401 | 1052 | 4.8 | 13811 |
| 3.8 | 13.3 | 70 | 80.0 | 16099 | 12907 | 847 | 19.0 | 18990 | 70 | 62.7 | 17530 | 1054 | 4.9 | 13934 |
| 4 | 14.7 | 70 | 79.5 | 16109 | 12918 | 844 | 19.1 | 18988 | 70 | 63.0 | 17602 | 1055 | 4.9 | 14002 |
| 2.8 | 7.3 | 80 | 93.2 | 15224 | 12502 | 977 | 15.6 | 18558 | 80 | 69.0 | 18978 | 1070 | 5.2 | 15327 |
| 3.5 | 11.2 | 80 | 90.6 | 15385 | 12595 | 950 | 16.2 | 18628 | 80 | 71.0 | 19428 | 1076 | 5.3 | 15757 |
| 3.8 | 13.1 | 80 | 89.8 | 15417 | 12619 | 943 | 16.4 | 18634 | 80 | 71.6 | 19572 | 1078 | 5.3 | 15895 |
| 4 | 14.5 | 80 | 89.3 | 15426 | 12629 | 939 | 16.4 | 18630 | 80 | 72.0 | 19653 | 1079 | 5.3 | 15972 |
| 2.8 | 7.2 | 85 | 98.1 | 14875 | 12354 | 1030 | 14.4 | 18389 | 85 | 73.3 | 19991 | 1081 | 5.4 | 16301 |
| 3.5 | 11.1 | 85 | 95.5 | 15031 | 12446 | 1002 | 15.0 | 18450 | 85 | 75.4 | 20465 | 1087 | 5.5 | 16755 |
| 3.8 | 13.0 | 85 | 94.7 | 15063 | 12470 | 994 | 15.2 | 18454 | 85 | 76.1 | 20617 | 1089 | 5.5 | 16901 |
| 4 | 14.3 | 85 | 94.2 | 15072 | 12480 | 990 | 15.2 | 18449 | 85 | 76.5 | 20702 | 1090 | 5.6 | 16982 |
| 2.8 | 7.2 | 90 | 103.0 | 14516 | 12203 | 1085 | 13.4 | 18220 | 90 | 77.6 | 21020 | 1093 | 5.6 | 17292 |
| 3.5 | 11.0 | 90 | 100.4 | 14669 | 12294 | 1056 | 13.9 | 18272 | 90 | 79.8 | 21518 | 1099 | 5.7 | 17769 |
| 3.8 | 12.9 | 90 | 99.6 | 14700 | 12317 | 1047 | 14.0 | 18274 | 90 | 80.5 | 21678 | 1101 | 5.8 | 17923 |
| 4 | 14.2 | 90 | 99.1 | 14709 | 12328 | 1043 | 14.1 | 18268 | 90 | 81.0 | 21768 | 1102 | 5.8 | 18009 |
| 2.8 | 7.0 | 100 | 112.7 | 13773 | 11892 | 1203 | 11.4 | 17879 | | | | | | |
| 3.5 | 10.8 | 100 | 110.2 | 13918 | 11980 | 1170 | 11.9 | 17913 | | | | | | |
| 3.8 | 12.7 | 100 | 109.4 | 13947 | 12003 | 1161 | 12.0 | 17909 | | | | | | |
| 4 | 14.0 | 100 | 108.9 | 13956 | 12013 | 1156 | 12.1 | 17902 | | | | | | |
| 2.8 | 6.9 | 110 | 122.4 | 12995 | 11568 | 1330 | 9.8 | 17536 | | | | | | |
| 3.5 | 10.6 | 110 | 120.0 | 13132 | 11654 | 1294 | 10.1 | 17550 | | | | | | |
| 3.8 | 12.4 | 110 | 119.2 | 13160 | 11676 | 1284 | 10.2 | 17542 | | | | | | |
| 4 | 13.7 | 110 | 118.7 | 13168 | 11686 | 1279 | 10.3 | 17531 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP SE 060 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 2.7 | 7.0 | | | | | | | | 20 | 15.0 | 11009 | 1285 | 2.5 | 6626 |
| 3.9 | 14.1 | | | | | | | | 20 | 16.4 | 11453 | 1300 | 2.6 | 7017 |
| 4 | 14.8 | | | | | | | | 20 | 16.5 | 11481 | 1301 | 2.6 | 7042 |
| 5.2 | 24.5 | | | | | | | | 20 | 17.2 | 11719 | 1311 | 2.6 | 7246 |
| 2.7 | 6.8 | 30 | 47.1 | 20687 | 15331 | 668 | 31.0 | 22967 | 30 | 23.6 | 13071 | 1317 | 2.9 | 8577 |
| 3.9 | 13.7 | 30 | 41.9 | 21118 | 15589 | 634 | 33.3 | 23282 | 30 | 25.3 | 13597 | 1333 | 3.0 | 9050 |
| 4 | 14.3 | 30 | 41.6 | 21147 | 15607 | 632 | 33.5 | 23304 | 30 | 25.4 | 13631 | 1334 | 3.0 | 9080 |
| 5.2 | 23.8 | 30 | 39.0 | 21405 | 15778 | 618 | 34.7 | 23513 | 30 | 26.4 | 13913 | 1344 | 3.0 | 9328 |
| 2.7 | 6.6 | 40 | 57.2 | 20497 | 15485 | 754 | 27.2 | 23069 | 40 | 32.1 | 15161 | 1349 | 3.3 | 10557 |
| 3.9 | 13.3 | 40 | 52.0 | 20925 | 15746 | 715 | 29.3 | 23365 | 40 | 34.3 | 15771 | 1365 | 3.4 | 11113 |
| 4 | 14.0 | 40 | 51.7 | 20953 | 15764 | 713 | 29.4 | 23385 | 40 | 34.4 | 15810 | 1366 | 3.4 | 11149 |
| 5.2 | 23.2 | 40 | 49.0 | 21209 | 15937 | 696 | 30.5 | 23586 | 40 | 35.6 | 16137 | 1377 | 3.4 | 11440 |
| 2.7 | 6.4 | 50 | 67.1 | 20128 | 15504 | 854 | 23.6 | 23041 | 50 | 40.7 | 17278 | 1381 | 3.7 | 12567 |
| 3.9 | 12.9 | 50 | 62.0 | 20548 | 15765 | 810 | 25.4 | 23311 | 50 | 43.2 | 17974 | 1397 | 3.8 | 13207 |
| 4 | 13.6 | 50 | 61.7 | 20576 | 15783 | 807 | 25.5 | 23331 | 50 | 43.4 | 18019 | 1398 | 3.8 | 13248 |
| 5.2 | 22.6 | 50 | 59.0 | 20827 | 15956 | 789 | 26.4 | 23519 | 50 | 44.8 | 18392 | 1409 | 3.8 | 13584 |
| 2.7 | 6.3 | 60 | 77.0 | 19579 | 15387 | 968 | 20.2 | 22883 | 60 | 49.2 | 19424 | 1412 | 4.0 | 14606 |
| 3.9 | 12.6 | 60 | 71.9 | 19987 | 15646 | 919 | 21.8 | 23122 | 60 | 52.1 | 20206 | 1429 | 4.1 | 15331 |
| 4 | 13.3 | 60 | 71.6 | 20015 | 15664 | 916 | 21.9 | 23139 | 60 | 52.3 | 20257 | 1430 | 4.2 | 15377 |
| 5.2 | 22.0 | 60 | 68.9 | 20259 | 15835 | 895 | 22.6 | 23313 | 60 | 53.9 | 20676 | 1441 | 4.2 | 15759 |
| 2.7 | 6.1 | 70 | 86.7 | 18851 | 15133 | 1097 | 17.2 | 22596 | 70 | 57.6 | 21597 | 1443 | 4.4 | 16674 |
| 3.9 | 12.4 | 70 | 81.7 | 19244 | 15389 | 1041 | 18.5 | 22797 | 70 | 61.0 | 22468 | 1460 | 4.5 | 17485 |
| 4 | 13.0 | 70 | 81.4 | 19270 | 15406 | 1038 | 18.6 | 22812 | 70 | 61.2 | 22523 | 1461 | 4.5 | 17537 |
| 5.2 | 21.6 | 70 | 78.8 | 19505 | 15575 | 1014 | 19.2 | 22967 | 70 | 63.1 | 22989 | 1472 | 4.6 | 17965 |
| 2.7 | 6.0 | 80 | 96.4 | 17943 | 14745 | 1241 | 14.5 | 22179 | 80 | 66.1 | 23799 | 1474 | 4.7 | 18771 |
| 3.9 | 12.1 | 80 | 91.5 | 18317 | 14993 | 1178 | 15.6 | 22336 | 80 | 69.9 | 24758 | 1491 | 4.9 | 19670 |
| 4 | 12.7 | 80 | 91.2 | 18342 | 15010 | 1174 | 15.6 | 22348 | 80 | 70.1 | 24819 | 1492 | 4.9 | 19728 |
| 5.2 | 21.2 | 80 | 88.6 | 18566 | 15175 | 1147 | 16.2 | 22481 | 80 | 72.2 | 25333 | 1503 | 4.9 | 20203 |
| 2.7 | 6.0 | 85 | 101.2 | 17421 | 14499 | 1319 | 13.2 | 21922 | 85 | 70.3 | 24910 | 1489 | 4.9 | 19831 |
| 3.9 | 12.0 | 85 | 96.3 | 17785 | 14744 | 1251 | 14.2 | 22055 | 85 | 74.3 | 25914 | 1506 | 5.0 | 20774 |
| 4 | 12.6 | 85 | 96.0 | 17809 | 14761 | 1247 | 14.3 | 22065 | 85 | 74.6 | 25978 | 1508 | 5.1 | 20834 |
| 5.2 | 21.0 | 85 | 93.5 | 18026 | 14922 | 1219 | 14.8 | 22186 | 85 | 76.8 | 26515 | 1519 | 5.1 | 21333 |
| 2.7 | 5.9 | 90 | 106.0 | 16855 | 14220 | 1400 | 12.0 | 21632 | 90 | 74.5 | 26028 | 1504 | 5.1 | 20898 |
| 3.9 | 11.9 | 90 | 101.2 | 17207 | 14460 | 1328 | 13.0 | 21739 | 90 | 78.8 | 27077 | 1522 | 5.2 | 21886 |
| 4 | 12.5 | 90 | 100.9 | 17230 | 14476 | 1324 | 13.0 | 21748 | 90 | 79.0 | 27144 | 1523 | 5.2 | 21949 |
| 5.2 | 20.8 | 90 | 98.4 | 17440 | 14635 | 1294 | 13.5 | 21856 | 90 | 81.3 | 27706 | 1534 | 5.3 | 22471 |
| 2.7 | 5.8 | 100 | 115.4 | 15588 | 13559 | 1573 | 9.9 | 20956 | | | | | | |
| 3.9 | 11.8 | 100 | 110.8 | 15913 | 13788 | 1492 | 10.7 | 21006 | | | | | | |
| 4 | 12.3 | 100 | 110.5 | 15935 | 13804 | 1488 | 10.7 | 21012 | | | | | | |
| 5.2 | 20.5 | 100 | 108.1 | 16129 | 13955 | 1454 | 11.1 | 21091 | | | | | | |
| 2.7 | 5.8 | 110 | 124.8 | 14141 | 12763 | 1761 | 8.0 | 20150 | | | | | | |
| 3.9 | 11.6 | 110 | 120.3 | 14436 | 12978 | 1670 | 8.6 | 20137 | | | | | | |
| 4 | 12.2 | 110 | 120.1 | 14456 | 12993 | 1665 | 8.7 | 20139 | | | | | | |
| 5.2 | 20.3 | 110 | 117.8 | 14632 | 13135 | 1627 | 9.0 | 20186 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP SE 080 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 3.4 | 3.9 | | | | | | | | 20 | 16.0 | 11936 | 1553 | 2.3 | 6638 |
| 4.9 | 7.6 | | | | | | | | 20 | 17.1 | 12476 | 1574 | 2.3 | 7107 |
| 6.5 | 12.9 | | | | | | | | 20 | 17.7 | 12869 | 1591 | 2.4 | 7440 |
| 6.7 | 13.6 | | | | | | | | 20 | 17.8 | 12905 | 1593 | 2.4 | 7470 |
| 3.4 | 3.6 | 30 | 47.5 | 26825 | 18423 | 850 | 31.6 | 29727 | 30 | 24.4 | 14754 | 1584 | 2.7 | 9350 |
| 4.9 | 7.2 | 30 | 42.3 | 27482 | 18737 | 802 | 34.3 | 30219 | 30 | 25.9 | 15422 | 1605 | 2.8 | 9945 |
| 6.5 | 12.2 | 30 | 39.3 | 27934 | 19046 | 767 | 36.4 | 30552 | 30 | 26.8 | 15908 | 1623 | 2.9 | 10370 |
| 6.7 | 12.9 | 30 | 39.1 | 27972 | 19083 | 764 | 36.6 | 30580 | 30 | 26.9 | 15952 | 1625 | 2.9 | 10408 |
| 3.4 | 3.5 | 40 | 57.6 | 26521 | 18448 | 961 | 27.6 | 29801 | 40 | 32.8 | 17620 | 1623 | 3.2 | 12081 |
| 4.9 | 6.8 | 40 | 52.3 | 27170 | 18762 | 907 | 30.0 | 30264 | 40 | 34.8 | 18418 | 1645 | 3.3 | 12804 |
| 6.5 | 11.6 | 40 | 49.3 | 27617 | 19071 | 867 | 31.8 | 30577 | 40 | 35.9 | 18998 | 1663 | 3.3 | 13322 |
| 6.7 | 12.3 | 40 | 49.1 | 27655 | 19108 | 864 | 32.0 | 30603 | 40 | 36.0 | 19051 | 1665 | 3.4 | 13368 |
| 3.4 | 3.3 | 50 | 67.5 | 25979 | 18324 | 1095 | 23.7 | 29715 | 50 | 41.2 | 20533 | 1671 | 3.6 | 14832 |
| 4.9 | 6.5 | 50 | 62.3 | 26615 | 18636 | 1033 | 25.8 | 30139 | 50 | 43.6 | 21463 | 1694 | 3.7 | 15685 |
| 6.5 | 11.0 | 50 | 59.3 | 27052 | 18943 | 988 | 27.4 | 30424 | 50 | 45.0 | 22139 | 1712 | 3.8 | 16296 |
| 6.7 | 11.7 | 50 | 59.0 | 27089 | 18979 | 984 | 27.5 | 30447 | 50 | 45.1 | 22201 | 1714 | 3.8 | 16351 |
| 3.4 | 3.2 | 60 | 77.3 | 25199 | 18052 | 1251 | 20.1 | 29470 | 60 | 49.6 | 23494 | 1727 | 4.0 | 17602 |
| 4.9 | 6.2 | 60 | 72.2 | 25815 | 18359 | 1180 | 21.9 | 29844 | 60 | 52.4 | 24558 | 1750 | 4.1 | 18586 |
| 6.5 | 10.6 | 60 | 69.2 | 26240 | 18662 | 1129 | 23.2 | 30094 | 60 | 54.1 | 25332 | 1770 | 4.2 | 19293 |
| 6.7 | 11.2 | 60 | 68.9 | 26276 | 18698 | 1125 | 23.4 | 30114 | 60 | 54.2 | 25402 | 1772 | 4.2 | 19357 |
| 3.4 | 3.0 | 70 | 87.1 | 24181 | 17633 | 1431 | 16.9 | 29064 | 70 | 58.0 | 26503 | 1791 | 4.3 | 20392 |
| 4.9 | 6.0 | 70 | 82.0 | 24773 | 17933 | 1350 | 18.4 | 29378 | 70 | 61.2 | 27703 | 1815 | 4.5 | 21509 |
| 6.5 | 10.2 | 70 | 79.1 | 25180 | 18228 | 1291 | 19.5 | 29586 | 70 | 63.1 | 28575 | 1835 | 4.6 | 22313 |
| 6.7 | 10.8 | 70 | 78.8 | 25214 | 18264 | 1286 | 19.6 | 29603 | 70 | 63.3 | 28655 | 1837 | 4.6 | 22385 |
| 3.4 | 2.9 | 80 | 96.7 | 22925 | 17065 | 1633 | 14.0 | 28497 | 80 | 66.4 | 29559 | 1863 | 4.6 | 23201 |
| 4.9 | 5.8 | 80 | 91.7 | 23486 | 17356 | 1540 | 15.2 | 28743 | 80 | 70.0 | 30898 | 1889 | 4.8 | 24453 |
| 6.5 | 9.8 | 80 | 88.9 | 23872 | 17642 | 1473 | 16.2 | 28901 | 80 | 72.2 | 31870 | 1909 | 4.9 | 25355 |
| 6.7 | 10.4 | 80 | 88.6 | 23905 | 17676 | 1467 | 16.3 | 28913 | 80 | 72.4 | 31959 | 1912 | 4.9 | 25436 |
| 3.4 | 2.9 | 85 | 101.5 | 22208 | 16726 | 1742 | 12.7 | 28154 | 85 | 70.5 | 31105 | 1903 | 4.8 | 24613 |
| 4.9 | 5.7 | 85 | 96.6 | 22751 | 17011 | 1644 | 13.8 | 28361 | 85 | 74.4 | 32514 | 1928 | 4.9 | 25933 |
| 6.5 | 9.7 | 85 | 93.8 | 23125 | 17291 | 1572 | 14.7 | 28491 | 85 | 76.7 | 33537 | 1950 | 5.0 | 26884 |
| 6.7 | 10.2 | 85 | 93.5 | 23157 | 17325 | 1566 | 14.8 | 28501 | 85 | 76.9 | 33630 | 1952 | 5.0 | 26970 |
| 3.4 | 2.9 | 90 | 106.2 | 21431 | 16350 | 1858 | 11.5 | 27771 | 90 | 74.7 | 32662 | 1944 | 4.9 | 26029 |
| 4.9 | 5.6 | 90 | 101.4 | 21956 | 16629 | 1752 | 12.5 | 27936 | 90 | 78.8 | 34142 | 1970 | 5.1 | 27419 |
| 6.5 | 9.5 | 90 | 98.6 | 22317 | 16903 | 1676 | 13.3 | 28038 | 90 | 81.3 | 35217 | 1992 | 5.2 | 28419 |
| 6.7 | 10.1 | 90 | 98.4 | 22347 | 16935 | 1670 | 13.4 | 28045 | 90 | 81.5 | 35314 | 1994 | 5.2 | 28509 |
| 3.4 | 2.8 | 100 | 115.7 | 19699 | 15487 | 2105 | 9.4 | 26885 | | | | | | |
| 4.9 | 5.5 | 100 | 111.0 | 20182 | 15751 | 1986 | 10.2 | 26960 | | | | | | |
| 6.5 | 9.3 | 100 | 108.3 | 20513 | 16011 | 1900 | 10.8 | 26998 | | | | | | |
| 6.7 | 9.9 | 100 | 108.1 | 20542 | 16042 | 1892 | 10.9 | 26999 | | | | | | |
| 3.4 | 2.8 | 110 | 125.0 | 17730 | 14477 | 2376 | 7.5 | 25839 | | | | | | |
| 4.9 | 5.4 | 110 | 120.5 | 18164 | 14723 | 2241 | 8.1 | 25813 | | | | | | |
| 6.5 | 9.2 | 110 | 118.0 | 18463 | 14966 | 2144 | 8.6 | 25780 | | | | | | |
| 6.7 | 9.7 | 110 | 117.7 | 18488 | 14995 | 2135 | 8.7 | 25775 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP SE 100 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 4.3 | 4.9 | | | | | | | | 20 | 15.4 | 16575 | 1993 | 2.4 | 9774 |
| 6.1 | 10.1 | | | | | | | | 20 | 16.6 | 17105 | 2003 | 2.5 | 10271 |
| 6.5 | 11.5 | | | | | | | | 20 | 16.8 | 17180 | 2005 | 2.5 | 10338 |
| 8.1 | 18.2 | | | | | | | | 20 | 17.4 | 17323 | 2013 | 2.5 | 10453 |
| 4.3 | 4.7 | 30 | 46.8 | 32087 | 21667 | 1165 | 27.5 | 36063 | 30 | 23.5 | 20897 | 2051 | 3.0 | 13899 |
| 6.1 | 9.8 | 30 | 41.9 | 32705 | 21993 | 1119 | 29.2 | 36523 | 30 | 25.2 | 21565 | 2061 | 3.1 | 14533 |
| 6.5 | 11.1 | 30 | 41.2 | 32813 | 22055 | 1113 | 29.5 | 36612 | 30 | 25.5 | 21659 | 2063 | 3.1 | 14620 |
| 8.1 | 17.6 | 30 | 39.1 | 33132 | 22262 | 1110 | 29.8 | 36921 | 30 | 26.3 | 21839 | 2071 | 3.1 | 14772 |
| 4.3 | 4.5 | 40 | 56.9 | 32010 | 22131 | 1266 | 25.3 | 36332 | 40 | 31.7 | 24852 | 2105 | 3.5 | 17669 |
| 6.1 | 9.4 | 40 | 52.0 | 32627 | 22464 | 1216 | 26.8 | 36777 | 40 | 33.9 | 25646 | 2115 | 3.6 | 18429 |
| 6.5 | 10.8 | 40 | 51.3 | 32734 | 22527 | 1210 | 27.0 | 36864 | 40 | 34.3 | 25759 | 2118 | 3.6 | 18533 |
| 8.1 | 17.0 | 40 | 49.1 | 33052 | 22738 | 1207 | 27.4 | 37171 | 40 | 35.4 | 25973 | 2126 | 3.6 | 18718 |
| 4.3 | 4.4 | 50 | 66.9 | 31635 | 22339 | 1395 | 22.7 | 36395 | 50 | 40.1 | 28440 | 2156 | 3.9 | 21083 |
| 6.1 | 9.1 | 50 | 62.0 | 32245 | 22675 | 1339 | 24.1 | 36815 | 50 | 42.8 | 29350 | 2167 | 4.0 | 21956 |
| 6.5 | 10.4 | 50 | 61.3 | 32350 | 22739 | 1333 | 24.3 | 36899 | 50 | 43.2 | 29478 | 2169 | 4.0 | 22077 |
| 8.1 | 16.4 | 50 | 59.2 | 32665 | 22952 | 1329 | 24.6 | 37201 | 50 | 44.5 | 29723 | 2178 | 4.0 | 22292 |
| 4.3 | 4.3 | 60 | 76.8 | 30962 | 22291 | 1550 | 20.0 | 36252 | 60 | 48.7 | 31662 | 2204 | 4.2 | 24141 |
| 6.1 | 8.9 | 60 | 72.0 | 31559 | 22627 | 1488 | 21.2 | 36638 | 60 | 51.7 | 32675 | 2215 | 4.3 | 25117 |
| 6.5 | 10.1 | 60 | 71.3 | 31663 | 22690 | 1481 | 21.4 | 36717 | 60 | 52.2 | 32818 | 2217 | 4.3 | 25252 |
| 8.1 | 16.0 | 60 | 69.1 | 31971 | 22903 | 1477 | 21.6 | 37012 | 60 | 53.7 | 33091 | 2226 | 4.4 | 25494 |
| 4.3 | 4.2 | 70 | 86.7 | 29992 | 21988 | 1732 | 17.3 | 35903 | 70 | 57.5 | 34518 | 2249 | 4.5 | 26844 |
| 6.1 | 8.6 | 70 | 81.9 | 30570 | 22319 | 1663 | 18.4 | 36246 | 70 | 60.8 | 35621 | 2260 | 4.6 | 27910 |
| 6.5 | 9.9 | 70 | 81.2 | 30670 | 22382 | 1655 | 18.5 | 36319 | 70 | 61.3 | 35777 | 2262 | 4.6 | 28057 |
| 8.1 | 15.5 | 70 | 79.0 | 30969 | 22591 | 1651 | 18.8 | 36602 | 70 | 63.0 | 36075 | 2272 | 4.7 | 28324 |
| 4.3 | 4.1 | 80 | 96.4 | 28724 | 21429 | 1941 | 14.8 | 35348 | 80 | 66.4 | 37007 | 2291 | 4.7 | 29190 |
| 6.1 | 8.4 | 80 | 91.7 | 29278 | 21752 | 1864 | 15.7 | 35638 | 80 | 70.0 | 38190 | 2302 | 4.9 | 30335 |
| 6.5 | 9.6 | 80 | 91.0 | 29374 | 21813 | 1855 | 15.8 | 35704 | 80 | 70.6 | 38357 | 2304 | 4.9 | 30494 |
| 8.1 | 15.2 | 80 | 88.9 | 29659 | 22017 | 1850 | 16.0 | 35972 | 80 | 72.4 | 38676 | 2314 | 4.9 | 30781 |
| 4.3 | 4.0 | 85 | 101.2 | 27978 | 21054 | 2056 | 13.6 | 34994 | 85 | 70.9 | 38114 | 2310 | 4.8 | 30230 |
| 6.1 | 8.3 | 85 | 96.5 | 28518 | 21371 | 1974 | 14.4 | 35254 | 85 | 74.7 | 39332 | 2322 | 5.0 | 31410 |
| 6.5 | 9.5 | 85 | 95.9 | 28611 | 21431 | 1964 | 14.6 | 35315 | 85 | 75.3 | 39504 | 2324 | 5.0 | 31574 |
| 8.1 | 15.0 | 85 | 93.8 | 28889 | 21632 | 1959 | 14.7 | 35575 | 85 | 77.1 | 39833 | 2334 | 5.0 | 31870 |
| 4.3 | 4.0 | 90 | 106.0 | 27158 | 20614 | 2177 | 12.5 | 34588 | 90 | 75.5 | 39129 | 2329 | 4.9 | 31181 |
| 6.1 | 8.2 | 90 | 101.4 | 27682 | 20925 | 2090 | 13.2 | 34815 | 90 | 79.4 | 40380 | 2341 | 5.1 | 32393 |
| 6.5 | 9.4 | 90 | 100.7 | 27773 | 20984 | 2080 | 13.4 | 34872 | 90 | 80.0 | 40556 | 2343 | 5.1 | 32561 |
| 8.1 | 14.8 | 90 | 98.7 | 28043 | 21180 | 2074 | 13.5 | 35123 | 90 | 81.9 | 40894 | 2353 | 5.1 | 32866 |
| 4.3 | 3.9 | 100 | 115.6 | 25295 | 19544 | 2440 | 10.4 | 33621 | | | | | | |
| 6.1 | 8.1 | 100 | 111.1 | 25782 | 19839 | 2342 | 11.0 | 33777 | | | | | | |
| 6.5 | 9.2 | 100 | 110.4 | 25867 | 19894 | 2331 | 11.1 | 33824 | | | | | | |
| 8.1 | 14.6 | 100 | 108.4 | 26119 | 20081 | 2325 | 11.2 | 34053 | | | | | | |
| 4.3 | 3.8 | 110 | 125.0 | 23134 | 18218 | 2729 | 8.5 | 32449 | | | | | | |
| 6.1 | 8.0 | 110 | 120.7 | 23580 | 18493 | 2621 | 9.0 | 32524 | | | | | | |
| 6.5 | 9.1 | 110 | 120.0 | 23657 | 18545 | 2608 | 9.1 | 32558 | | | | | | |
| 8.1 | 14.3 | 110 | 118.1 | 23887 | 18719 | 2601 | 9.2 | 32764 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP SE 120 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 5.5 | 9.6 | | | | | | | | 20 | 14.9 | 22232 | 2415 | 2.7 | 13992 |
| 7 | 14.7 | | | | | | | | 20 | 15.9 | 22789 | 2432 | 2.7 | 14491 |
| 8 | 18.7 | | | | | | | | 20 | 16.3 | 23065 | 2441 | 2.8 | 14737 |
| 9 | 23.2 | | | | | | | | 20 | 16.7 | 23265 | 2448 | 2.8 | 14912 |
| 5.5 | 9.2 | 30 | 47.4 | 42291 | 28363 | 1609 | 26.3 | 47784 | 30 | 23.5 | 26172 | 2476 | 3.1 | 17724 |
| 7 | 14.1 | 30 | 43.8 | 43038 | 28681 | 1560 | 27.6 | 48364 | 30 | 24.8 | 26828 | 2494 | 3.2 | 18320 |
| 8 | 17.9 | 30 | 42.1 | 43400 | 28826 | 1534 | 28.3 | 48635 | 30 | 25.4 | 27153 | 2503 | 3.2 | 18613 |
| 9 | 22.2 | 30 | 40.8 | 43651 | 28916 | 1513 | 28.9 | 48814 | 30 | 25.8 | 27388 | 2510 | 3.2 | 18824 |
| 5.5 | 8.9 | 40 | 57.3 | 41510 | 28328 | 1754 | 23.7 | 47498 | 40 | 32.2 | 30106 | 2543 | 3.5 | 21429 |
| 7 | 13.5 | 40 | 53.7 | 42244 | 28646 | 1701 | 24.8 | 48049 | 40 | 33.7 | 30861 | 2561 | 3.5 | 22122 |
| 8 | 17.2 | 40 | 52.0 | 42598 | 28790 | 1672 | 25.5 | 48305 | 40 | 34.4 | 31234 | 2571 | 3.6 | 22463 |
| 9 | 21.3 | 40 | 50.7 | 42845 | 28881 | 1649 | 26.0 | 48473 | 40 | 35.0 | 31505 | 2578 | 3.6 | 22709 |
| 5.5 | 8.5 | 50 | 67.1 | 40494 | 28108 | 1927 | 21.0 | 47069 | 50 | 40.8 | 34035 | 2616 | 3.8 | 25108 |
| 7 | 13.0 | 50 | 63.6 | 41209 | 28423 | 1868 | 22.1 | 47585 | 50 | 42.6 | 34888 | 2635 | 3.9 | 25898 |
| 8 | 16.6 | 50 | 61.9 | 41555 | 28566 | 1836 | 22.6 | 47823 | 50 | 43.4 | 35310 | 2644 | 3.9 | 26287 |
| 9 | 20.5 | 50 | 60.6 | 41796 | 28657 | 1811 | 23.1 | 47976 | 50 | 44.1 | 35616 | 2652 | 3.9 | 26567 |
| 5.5 | 8.2 | 60 | 76.9 | 39241 | 27702 | 2127 | 18.5 | 46499 | 60 | 49.5 | 37957 | 2695 | 4.1 | 28761 |
| 7 | 12.6 | 60 | 73.4 | 39934 | 28012 | 2062 | 19.4 | 46971 | 60 | 51.5 | 38909 | 2714 | 4.2 | 29647 |
| 8 | 16.0 | 60 | 71.8 | 40269 | 28154 | 2027 | 19.9 | 47188 | 60 | 52.5 | 39380 | 2724 | 4.2 | 30084 |
| 9 | 19.8 | 60 | 70.5 | 40502 | 28243 | 1999 | 20.3 | 47324 | 60 | 53.2 | 39720 | 2732 | 4.3 | 30398 |
| 5.5 | 8.0 | 70 | 86.6 | 37752 | 27110 | 2354 | 16.0 | 45786 | 70 | 58.2 | 41874 | 2780 | 4.4 | 32388 |
| 7 | 12.2 | 70 | 83.2 | 38419 | 27414 | 2283 | 16.8 | 46209 | 70 | 60.5 | 42924 | 2800 | 4.5 | 33370 |
| 8 | 15.5 | 70 | 81.6 | 38741 | 27552 | 2244 | 17.3 | 46400 | 70 | 61.5 | 43443 | 2810 | 4.5 | 33855 |
| 9 | 19.2 | 70 | 80.3 | 38966 | 27639 | 2213 | 17.6 | 46517 | 70 | 62.4 | 43819 | 2818 | 4.6 | 34203 |
| 5.5 | 7.8 | 80 | 96.3 | 36027 | 26332 | 2609 | 13.8 | 44932 | 80 | 66.9 | 45785 | 2871 | 4.7 | 35989 |
| 7 | 11.9 | 80 | 92.9 | 36663 | 26628 | 2530 | 14.5 | 45298 | 80 | 69.4 | 46933 | 2892 | 4.8 | 37066 |
| 8 | 15.1 | 80 | 91.3 | 36971 | 26762 | 2487 | 14.9 | 45459 | 80 | 70.6 | 47501 | 2902 | 4.8 | 37599 |
| 9 | 18.7 | 80 | 90.1 | 37185 | 26847 | 2452 | 15.2 | 45555 | 80 | 71.6 | 47912 | 2910 | 4.8 | 37981 |
| 5.5 | 7.7 | 85 | 101.1 | 35076 | 25874 | 2747 | 12.8 | 44451 | 85 | 71.3 | 47739 | 2919 | 4.8 | 37779 |
| 7 | 11.7 | 85 | 97.8 | 35695 | 26164 | 2664 | 13.4 | 44786 | 85 | 73.9 | 48935 | 2940 | 4.9 | 38905 |
| 8 | 14.9 | 85 | 96.2 | 35995 | 26296 | 2619 | 13.7 | 44932 | 85 | 75.1 | 49528 | 2950 | 4.9 | 39461 |
| 9 | 18.4 | 85 | 95.0 | 36204 | 26379 | 2582 | 14.0 | 45016 | 85 | 76.1 | 49956 | 2959 | 4.9 | 39861 |
| 5.5 | 7.6 | 90 | 105.9 | 34066 | 25369 | 2892 | 11.8 | 43935 | 90 | 75.6 | 49691 | 2968 | 4.9 | 39563 |
| 7 | 11.6 | 90 | 102.6 | 34668 | 25654 | 2804 | 12.4 | 44237 | 90 | 78.4 | 50936 | 2989 | 5.0 | 40737 |
| 8 | 14.7 | 90 | 101.1 | 34959 | 25783 | 2756 | 12.7 | 44366 | 90 | 79.7 | 51553 | 3000 | 5.0 | 41316 |
| 9 | 18.2 | 90 | 99.9 | 35161 | 25864 | 2718 | 12.9 | 44438 | 90 | 80.7 | 51999 | 3009 | 5.1 | 41733 |
| 5.5 | 7.5 | 100 | 115.5 | 31869 | 24220 | 3202 | 10.0 | 42797 | | | | | | |
| 7 | 11.4 | 100 | 112.3 | 32432 | 24492 | 3105 | 10.4 | 43028 | | | | | | |
| 8 | 14.5 | 100 | 110.8 | 32704 | 24615 | 3052 | 10.7 | 43121 | | | | | | |
| 9 | 17.9 | 100 | 109.6 | 32893 | 24693 | 3010 | 10.9 | 43165 | | | | | | |
| 5.5 | 7.4 | 110 | 125.0 | 29436 | 22885 | 3540 | 8.3 | 41516 | | | | | | |
| 7 | 11.2 | 110 | 121.9 | 29956 | 23142 | 3432 | 8.7 | 41669 | | | | | | |
| 8 | 14.3 | 110 | 120.4 | 30207 | 23259 | 3374 | 9.0 | 41723 | | | | | | |
| 9 | 17.7 | 110 | 119.3 | 30382 | 23332 | 3327 | 9.1 | 41737 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



6.5 VSHP (HE) Expanded Heating & Cooling Performance Tables

| VSHP HE 020 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 1.2 | 2.4 | | | | | | | | 20 | 16.1 | 4055 | 494 | 2.4 | 2369 |
| 1.7 | 4.8 | | | | | | | | 20 | 17.0 | 4179 | 489 | 2.5 | 2512 |
| 2.1 | 7.2 | | | | | | | | 20 | 17.4 | 4279 | 458 | 2.7 | 2716 |
| 2.5 | 10.1 | | | | | | | | 20 | 17.6 | 4378 | 404 | 3.2 | 3001 |
| 1.2 | 2.3 | 30 | 45.5 | 8197 | 5468 | 315 | 26.0 | 9274 | 30 | 24.2 | 5202 | 511 | 3.0 | 3457 |
| 1.7 | 4.4 | 30 | 41.0 | 8357 | 5552 | 302 | 27.6 | 9389 | 30 | 25.7 | 5362 | 506 | 3.1 | 3636 |
| 2.1 | 6.7 | 30 | 39.0 | 8423 | 5619 | 292 | 28.9 | 9419 | 30 | 26.3 | 5490 | 474 | 3.4 | 3873 |
| 2.5 | 9.4 | 30 | 37.5 | 8434 | 5686 | 281 | 30.0 | 9394 | 30 | 26.6 | 5617 | 418 | 3.9 | 4192 |
| 1.2 | 2.1 | 40 | 55.5 | 8145 | 5495 | 340 | 24.0 | 9305 | 40 | 32.5 | 6288 | 528 | 3.5 | 4488 |
| 1.7 | 4.1 | 40 | 51.1 | 8304 | 5580 | 326 | 25.5 | 9416 | 40 | 34.5 | 6481 | 522 | 3.6 | 4701 |
| 2.1 | 6.2 | 40 | 49.0 | 8369 | 5647 | 315 | 26.6 | 9443 | 40 | 35.3 | 6635 | 489 | 4.0 | 4967 |
| 2.5 | 8.8 | 40 | 47.5 | 8380 | 5714 | 303 | 27.6 | 9415 | 40 | 35.7 | 6789 | 431 | 4.6 | 5320 |
| 1.2 | 2.0 | 50 | 65.5 | 8011 | 5487 | 372 | 21.5 | 9282 | 50 | 40.9 | 7311 | 542 | 4.0 | 5461 |
| 1.7 | 3.9 | 50 | 61.0 | 8168 | 5571 | 357 | 22.9 | 9386 | 50 | 43.3 | 7535 | 536 | 4.1 | 5706 |
| 2.1 | 5.8 | 50 | 59.0 | 8232 | 5638 | 345 | 23.9 | 9408 | 50 | 44.3 | 7715 | 502 | 4.5 | 6001 |
| 2.5 | 8.2 | 50 | 57.5 | 8242 | 5706 | 332 | 24.8 | 9376 | 50 | 44.9 | 7894 | 443 | 5.2 | 6383 |
| 1.2 | 1.8 | 60 | 75.3 | 7796 | 5443 | 413 | 18.9 | 9205 | 60 | 49.4 | 8272 | 556 | 4.4 | 6376 |
| 1.7 | 3.6 | 60 | 70.9 | 7949 | 5527 | 396 | 20.1 | 9300 | 60 | 52.2 | 8526 | 549 | 4.5 | 6651 |
| 2.1 | 5.5 | 60 | 68.9 | 8011 | 5593 | 382 | 21.0 | 9315 | 60 | 53.4 | 8729 | 515 | 5.0 | 6972 |
| 2.5 | 7.7 | 60 | 67.4 | 8021 | 5660 | 368 | 21.8 | 9279 | 60 | 54.1 | 8932 | 454 | 5.8 | 7384 |
| 1.2 | 1.7 | 70 | 85.1 | 7500 | 5364 | 461 | 16.3 | 9075 | 70 | 57.9 | 9171 | 568 | 4.7 | 7234 |
| 1.7 | 3.4 | 70 | 80.8 | 7646 | 5446 | 442 | 17.3 | 9156 | 70 | 61.1 | 9453 | 561 | 4.9 | 7537 |
| 2.1 | 5.1 | 70 | 78.7 | 7707 | 5512 | 427 | 18.0 | 9164 | 70 | 62.5 | 9678 | 526 | 5.4 | 7883 |
| 2.5 | 7.2 | 70 | 77.3 | 7716 | 5578 | 412 | 18.7 | 9121 | 70 | 63.3 | 9903 | 464 | 6.3 | 8321 |
| 1.2 | 1.6 | 80 | 94.8 | 7122 | 5249 | 518 | 13.8 | 8890 | 80 | 66.6 | 10008 | 579 | 5.1 | 8034 |
| 1.7 | 3.2 | 80 | 90.5 | 7261 | 5329 | 496 | 14.6 | 8956 | 80 | 70.2 | 10315 | 572 | 5.3 | 8363 |
| 2.1 | 4.9 | 80 | 88.5 | 7319 | 5394 | 479 | 15.3 | 8954 | 80 | 71.7 | 10561 | 536 | 5.8 | 8731 |
| 2.5 | 6.8 | 80 | 87.1 | 7328 | 5458 | 462 | 15.9 | 8905 | 80 | 72.6 | 10806 | 473 | 6.7 | 9194 |
| 1.2 | 1.6 | 85 | 99.6 | 6903 | 5178 | 549 | 12.6 | 8777 | 85 | 71.0 | 10403 | 584 | 5.2 | 8412 |
| 1.7 | 3.1 | 85 | 95.4 | 7038 | 5258 | 526 | 13.4 | 8834 | 85 | 74.7 | 10722 | 577 | 5.4 | 8753 |
| 2.1 | 4.7 | 85 | 93.4 | 7093 | 5321 | 508 | 14.0 | 8828 | 85 | 76.3 | 10977 | 541 | 6.0 | 9133 |
| 2.5 | 6.7 | 85 | 92.0 | 7102 | 5384 | 490 | 14.5 | 8774 | 85 | 77.3 | 11233 | 477 | 6.9 | 9607 |
| 1.2 | 1.6 | 90 | 104.4 | 6663 | 5099 | 582 | 11.4 | 8651 | 90 | 75.4 | 10782 | 588 | 5.4 | 8776 |
| 1.7 | 3.1 | 90 | 100.2 | 6793 | 5177 | 558 | 12.2 | 8699 | 90 | 79.3 | 11113 | 582 | 5.6 | 9129 |
| 2.1 | 4.6 | 90 | 98.3 | 6847 | 5239 | 539 | 12.7 | 8686 | 90 | 80.9 | 11378 | 545 | 6.1 | 9519 |
| 2.5 | 6.5 | 90 | 96.9 | 6855 | 5302 | 520 | 13.2 | 8629 | 90 | 82.0 | 11643 | 480 | 7.1 | 10004 |
| 1.2 | 1.5 | 100 | 113.9 | 6123 | 4913 | 655 | 9.3 | 8358 | | | | | | |
| 1.7 | 2.9 | 100 | 109.9 | 6243 | 4988 | 628 | 9.9 | 8385 | | | | | | |
| 2.1 | 4.4 | 100 | 108.0 | 6292 | 5048 | 606 | 10.4 | 8360 | | | | | | |
| 2.5 | 6.2 | 100 | 106.6 | 6300 | 5108 | 584 | 10.8 | 8294 | | | | | | |
| 1.2 | 1.4 | 110 | 123.4 | 5501 | 4691 | 735 | 7.5 | 8011 | | | | | | |
| 1.7 | 2.8 | 110 | 119.4 | 5609 | 4763 | 705 | 8.0 | 8014 | | | | | | |
| 2.1 | 4.3 | 110 | 117.6 | 5653 | 4820 | 680 | 8.3 | 7975 | | | | | | |
| 2.5 | 6.0 | 110 | 116.3 | 5660 | 4878 | 656 | 8.6 | 7899 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP HE 030 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 1.3 | 4.3 | | | | | | | | 20 | 14.4 | 5669 | 586 | 2.8 | 3669 |
| 1.8 | 8.1 | | | | | | | | 20 | 15.7 | 5868 | 591 | 2.9 | 3853 |
| 2.4 | 14.1 | | | | | | | | 20 | 16.6 | 6063 | 596 | 3.0 | 4031 |
| 2.6 | 16.5 | | | | | | | | 20 | 16.9 | 6117 | 597 | 3.0 | 4080 |
| 1.3 | 4.1 | 30 | 49.1 | 11145 | 7922 | 373 | 29.9 | 12418 | 30 | 22.7 | 6823 | 605 | 3.3 | 4758 |
| 1.8 | 7.7 | 30 | 44.0 | 11354 | 7999 | 361 | 31.4 | 12588 | 30 | 24.5 | 7063 | 610 | 3.4 | 4981 |
| 2.4 | 13.6 | 30 | 40.6 | 11563 | 8110 | 344 | 33.6 | 12738 | 30 | 25.7 | 7298 | 615 | 3.5 | 5198 |
| 2.6 | 15.9 | 30 | 39.8 | 11623 | 8152 | 337 | 34.5 | 12775 | 30 | 26.0 | 7363 | 617 | 3.5 | 5258 |
| 1.3 | 4.0 | 40 | 58.8 | 10827 | 7872 | 408 | 26.5 | 12219 | 40 | 31.0 | 7998 | 624 | 3.8 | 5870 |
| 1.8 | 7.4 | 40 | 53.8 | 11029 | 7950 | 395 | 27.9 | 12378 | 40 | 33.2 | 8279 | 629 | 3.9 | 6134 |
| 2.4 | 13.0 | 40 | 50.4 | 11233 | 8060 | 376 | 29.9 | 12516 | 40 | 34.7 | 8554 | 634 | 4.0 | 6391 |
| 2.6 | 15.3 | 40 | 49.7 | 11291 | 8101 | 369 | 30.6 | 12550 | 40 | 35.0 | 8630 | 635 | 4.0 | 6462 |
| 1.3 | 3.8 | 50 | 68.5 | 10472 | 7790 | 451 | 23.2 | 12011 | 50 | 39.2 | 9194 | 641 | 4.2 | 7005 |
| 1.8 | 7.2 | 50 | 63.5 | 10668 | 7866 | 437 | 24.4 | 12160 | 50 | 41.9 | 9516 | 646 | 4.3 | 7311 |
| 2.4 | 12.6 | 50 | 60.2 | 10865 | 7975 | 416 | 26.1 | 12284 | 50 | 43.7 | 9832 | 652 | 4.4 | 7609 |
| 2.6 | 14.7 | 50 | 59.5 | 10922 | 8016 | 408 | 26.8 | 12313 | 50 | 44.1 | 9920 | 653 | 4.5 | 7691 |
| 1.3 | 3.7 | 60 | 78.1 | 10083 | 7674 | 502 | 20.1 | 11797 | 60 | 47.4 | 10410 | 658 | 4.6 | 8165 |
| 1.8 | 6.9 | 60 | 73.3 | 10272 | 7749 | 487 | 21.1 | 11932 | 60 | 50.5 | 10775 | 663 | 4.8 | 8513 |
| 2.4 | 12.2 | 60 | 70.0 | 10461 | 7856 | 463 | 22.6 | 12042 | 60 | 52.6 | 11133 | 669 | 4.9 | 8852 |
| 2.6 | 14.2 | 60 | 69.3 | 10515 | 7896 | 454 | 23.2 | 12065 | 60 | 53.1 | 11232 | 670 | 4.9 | 8946 |
| 1.3 | 3.6 | 70 | 87.8 | 9658 | 7524 | 562 | 17.2 | 11575 | 70 | 55.6 | 11646 | 674 | 5.1 | 9348 |
| 1.8 | 6.7 | 70 | 83.0 | 9839 | 7598 | 544 | 18.1 | 11696 | 70 | 59.2 | 12055 | 679 | 5.2 | 9739 |
| 2.4 | 11.8 | 70 | 79.8 | 10020 | 7703 | 518 | 19.3 | 11788 | 70 | 61.6 | 12455 | 684 | 5.3 | 10120 |
| 2.6 | 13.8 | 70 | 79.1 | 10072 | 7742 | 508 | 19.8 | 11806 | 70 | 62.1 | 12567 | 686 | 5.4 | 10225 |
| 1.3 | 3.5 | 80 | 97.5 | 9198 | 7341 | 629 | 14.6 | 11346 | 80 | 63.8 | 12903 | 688 | 5.5 | 10554 |
| 1.8 | 6.6 | 80 | 92.7 | 9370 | 7413 | 610 | 15.4 | 11451 | 80 | 67.8 | 13356 | 694 | 5.6 | 10989 |
| 2.4 | 11.5 | 80 | 89.6 | 9543 | 7516 | 580 | 16.4 | 11523 | 80 | 70.5 | 13799 | 699 | 5.8 | 11413 |
| 2.6 | 13.5 | 80 | 88.9 | 9592 | 7554 | 569 | 16.9 | 11534 | 80 | 71.1 | 13923 | 701 | 5.8 | 11530 |
| 1.3 | 3.5 | 85 | 102.3 | 8954 | 7237 | 666 | 13.4 | 11228 | 85 | 67.8 | 13539 | 695 | 5.7 | 11166 |
| 1.8 | 6.5 | 85 | 97.6 | 9122 | 7308 | 646 | 14.1 | 11325 | 85 | 72.1 | 14015 | 701 | 5.9 | 11623 |
| 2.4 | 11.4 | 85 | 94.5 | 9290 | 7409 | 614 | 15.1 | 11387 | 85 | 74.9 | 14480 | 707 | 6.0 | 12069 |
| 2.6 | 13.4 | 85 | 93.8 | 9338 | 7447 | 603 | 15.5 | 11395 | 85 | 75.6 | 14610 | 708 | 6.0 | 12192 |
| 1.3 | 3.4 | 90 | 107.1 | 8702 | 7125 | 705 | 12.3 | 11109 | 90 | 71.9 | 14181 | 702 | 5.9 | 11784 |
| 1.8 | 6.5 | 90 | 102.4 | 8865 | 7194 | 683 | 13.0 | 11197 | 90 | 76.4 | 14679 | 708 | 6.1 | 12264 |
| 2.4 | 11.3 | 90 | 99.4 | 9028 | 7294 | 650 | 13.9 | 11248 | 90 | 79.4 | 15166 | 714 | 6.2 | 12731 |
| 2.6 | 13.2 | 90 | 98.7 | 9075 | 7331 | 638 | 14.2 | 11252 | 90 | 80.1 | 15302 | 715 | 6.3 | 12860 |
| 1.3 | 3.4 | 100 | 116.7 | 8171 | 6875 | 789 | 10.3 | 10865 | | | | | | |
| 1.8 | 6.4 | 100 | 112.1 | 8324 | 6942 | 765 | 10.9 | 10934 | | | | | | |
| 2.4 | 11.1 | 100 | 109.1 | 8477 | 7038 | 728 | 11.6 | 10962 | | | | | | |
| 2.6 | 13.0 | 100 | 108.4 | 8521 | 7074 | 714 | 11.9 | 10958 | | | | | | |
| 1.3 | 3.3 | 110 | 126.3 | 7604 | 6591 | 882 | 8.6 | 10614 | | | | | | |
| 1.8 | 6.3 | 110 | 121.8 | 7747 | 6656 | 854 | 9.1 | 10663 | | | | | | |
| 2.4 | 11.0 | 110 | 118.9 | 7890 | 6748 | 813 | 9.7 | 10665 | | | | | | |
| 2.6 | 12.9 | 110 | 118.2 | 7930 | 6783 | 797 | 9.9 | 10652 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP HE 040 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 1.7 | 4.1 | | | | | | | | 20 | 14.2 | 7450 | 742 | 2.9 | 4919 |
| 2.4 | 8.0 | | | | | | | | 20 | 15.7 | 7730 | 747 | 3.0 | 5181 |
| 3.3 | 14.8 | | | | | | | | 20 | 16.7 | 7974 | 753 | 3.1 | 5406 |
| 3.5 | 16.6 | | | | | | | | 20 | 16.9 | 8011 | 754 | 3.1 | 5440 |
| 1.7 | 3.9 | 30 | 48.7 | 14169 | 10015 | 504 | 28.1 | 15888 | 30 | 22.7 | 8851 | 765 | 3.4 | 6240 |
| 2.4 | 7.6 | 30 | 43.4 | 14511 | 10178 | 477 | 30.4 | 16138 | 30 | 24.5 | 9182 | 770 | 3.5 | 6554 |
| 3.3 | 14.1 | 30 | 39.9 | 14692 | 10314 | 458 | 32.1 | 16255 | 30 | 25.9 | 9473 | 776 | 3.6 | 6825 |
| 3.5 | 15.8 | 30 | 39.3 | 14693 | 10333 | 456 | 32.2 | 16249 | 30 | 26.1 | 9517 | 777 | 3.6 | 6865 |
| 1.7 | 3.7 | 40 | 58.5 | 13857 | 9949 | 556 | 24.9 | 15753 | 40 | 31.1 | 10268 | 788 | 3.8 | 7579 |
| 2.4 | 7.2 | 40 | 53.3 | 14192 | 10112 | 526 | 27.0 | 15986 | 40 | 33.4 | 10654 | 794 | 3.9 | 7945 |
| 3.3 | 13.4 | 40 | 49.8 | 14369 | 10247 | 505 | 28.5 | 16092 | 40 | 35.0 | 10990 | 800 | 4.0 | 8262 |
| 3.5 | 15.1 | 40 | 49.2 | 14370 | 10266 | 503 | 28.6 | 16086 | 40 | 35.3 | 11041 | 801 | 4.0 | 8309 |
| 1.7 | 3.5 | 50 | 68.3 | 13465 | 9829 | 617 | 21.8 | 15572 | 50 | 39.5 | 11704 | 812 | 4.2 | 8935 |
| 2.4 | 6.9 | 50 | 63.2 | 13790 | 9990 | 584 | 23.6 | 15783 | 50 | 42.2 | 12143 | 817 | 4.4 | 9355 |
| 3.3 | 12.8 | 50 | 59.6 | 13962 | 10123 | 561 | 24.9 | 15877 | 50 | 44.1 | 12527 | 823 | 4.5 | 9718 |
| 3.5 | 14.4 | 50 | 59.1 | 13963 | 10142 | 559 | 25.0 | 15870 | 50 | 44.4 | 12585 | 824 | 4.5 | 9772 |
| 1.7 | 3.4 | 60 | 78.1 | 12992 | 9655 | 689 | 18.9 | 15344 | 60 | 47.9 | 13157 | 835 | 4.6 | 10309 |
| 2.4 | 6.6 | 60 | 72.9 | 13306 | 9812 | 652 | 20.4 | 15531 | 60 | 51.0 | 13650 | 841 | 4.8 | 10782 |
| 3.3 | 12.2 | 60 | 69.5 | 13472 | 9944 | 626 | 21.5 | 15609 | 60 | 53.2 | 14082 | 847 | 4.9 | 11193 |
| 3.5 | 13.7 | 60 | 68.9 | 13472 | 9962 | 624 | 21.6 | 15602 | 60 | 53.6 | 14147 | 848 | 4.9 | 11254 |
| 1.7 | 3.2 | 70 | 87.7 | 12438 | 9426 | 771 | 16.1 | 15070 | 70 | 56.2 | 14628 | 858 | 5.0 | 11700 |
| 2.4 | 6.3 | 70 | 82.7 | 12738 | 9580 | 730 | 17.5 | 15228 | 70 | 59.8 | 15176 | 864 | 5.1 | 12228 |
| 3.3 | 11.7 | 70 | 79.3 | 12897 | 9708 | 701 | 18.4 | 15289 | 70 | 62.3 | 15656 | 870 | 5.3 | 12687 |
| 3.5 | 13.1 | 70 | 78.7 | 12898 | 9726 | 698 | 18.5 | 15280 | 70 | 62.7 | 15729 | 872 | 5.3 | 12755 |
| 1.7 | 3.1 | 80 | 97.4 | 11804 | 9142 | 863 | 13.7 | 14749 | 80 | 64.6 | 16116 | 881 | 5.4 | 13109 |
| 2.4 | 6.0 | 80 | 92.4 | 12089 | 9292 | 817 | 14.8 | 14876 | 80 | 68.6 | 16721 | 888 | 5.5 | 13692 |
| 3.3 | 11.2 | 80 | 89.0 | 12240 | 9416 | 784 | 15.6 | 14916 | 80 | 71.4 | 17249 | 894 | 5.7 | 14199 |
| 3.5 | 12.6 | 80 | 88.5 | 12240 | 9433 | 781 | 15.7 | 14907 | 80 | 71.8 | 17329 | 895 | 5.7 | 14274 |
| 1.7 | 3.0 | 85 | 102.1 | 11456 | 8980 | 913 | 12.6 | 14572 | 85 | 68.7 | 16867 | 893 | 5.5 | 13820 |
| 2.4 | 5.9 | 85 | 97.2 | 11733 | 9127 | 864 | 13.6 | 14680 | 85 | 73.0 | 17500 | 899 | 5.7 | 14431 |
| 3.3 | 11.0 | 85 | 93.9 | 11879 | 9249 | 829 | 14.3 | 14710 | 85 | 75.9 | 18053 | 906 | 5.8 | 14962 |
| 3.5 | 12.3 | 85 | 93.4 | 11880 | 9266 | 826 | 14.4 | 14700 | 85 | 76.4 | 18136 | 907 | 5.9 | 15041 |
| 1.7 | 3.0 | 90 | 106.9 | 11089 | 8804 | 965 | 11.5 | 14382 | 90 | 72.9 | 17622 | 905 | 5.7 | 14535 |
| 2.4 | 5.8 | 90 | 102.1 | 11356 | 8948 | 913 | 12.4 | 14473 | 90 | 77.4 | 18283 | 911 | 5.9 | 15174 |
| 3.3 | 10.8 | 90 | 98.8 | 11498 | 9068 | 877 | 13.1 | 14491 | 90 | 80.5 | 18861 | 918 | 6.0 | 15730 |
| 3.5 | 12.1 | 90 | 98.3 | 11499 | 9085 | 874 | 13.2 | 14480 | 90 | 81.0 | 18948 | 919 | 6.0 | 15813 |
| 1.7 | 2.9 | 100 | 116.4 | 10293 | 8412 | 1077 | 9.6 | 13969 | | | | | | |
| 2.4 | 5.6 | 100 | 111.7 | 10541 | 8549 | 1019 | 10.3 | 14019 | | | | | | |
| 3.3 | 10.4 | 100 | 108.5 | 10673 | 8664 | 979 | 10.9 | 14013 | | | | | | |
| 3.5 | 11.6 | 100 | 108.0 | 10673 | 8680 | 975 | 10.9 | 14001 | | | | | | |
| 1.7 | 2.8 | 110 | 125.9 | 9416 | 7965 | 1199 | 7.9 | 13509 | | | | | | |
| 2.4 | 5.4 | 110 | 121.3 | 9643 | 8095 | 1135 | 8.5 | 13516 | | | | | | |
| 3.3 | 10.0 | 110 | 118.2 | 9764 | 8203 | 1090 | 9.0 | 13483 | | | | | | |
| 3.5 | 11.3 | 110 | 117.7 | 9764 | 8218 | 1086 | 9.0 | 13470 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP HE 050 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 2.8 | 8.5 | | | | | | | | 20 | 16.2 | 8069 | 804 | 2.9 | 5326 |
| 3.5 | 13.0 | | | | | | | | 20 | 16.9 | 8260 | 808 | 3.0 | 5502 |
| 3.8 | 15.3 | | | | | | | | 20 | 17.1 | 8322 | 810 | 3.0 | 5559 |
| 4 | 16.9 | | | | | | | | 20 | 17.2 | 8356 | 811 | 3.0 | 5590 |
| 2.8 | 8.3 | 30 | 43.9 | 17853 | 13479 | 480 | 37.2 | 19491 | 30 | 25.1 | 9736 | 831 | 3.4 | 6900 |
| 3.5 | 12.8 | 30 | 41.2 | 18041 | 13579 | 467 | 38.6 | 19634 | 30 | 25.9 | 9967 | 836 | 3.5 | 7115 |
| 3.8 | 15.0 | 30 | 40.3 | 18079 | 13605 | 463 | 39.0 | 19659 | 30 | 26.2 | 10041 | 837 | 3.5 | 7185 |
| 4 | 16.6 | 30 | 39.8 | 18090 | 13616 | 461 | 39.2 | 19663 | 30 | 26.4 | 10082 | 838 | 3.5 | 7223 |
| 2.8 | 8.2 | 40 | 53.7 | 17319 | 13244 | 541 | 32.0 | 19164 | 40 | 33.9 | 11466 | 858 | 3.9 | 8540 |
| 3.5 | 12.6 | 40 | 51.0 | 17501 | 13343 | 526 | 33.3 | 19296 | 40 | 35.0 | 11738 | 862 | 4.0 | 8795 |
| 3.8 | 14.7 | 40 | 50.2 | 17537 | 13368 | 522 | 33.6 | 19318 | 40 | 35.3 | 11825 | 864 | 4.0 | 8878 |
| 4 | 16.3 | 40 | 49.7 | 17548 | 13379 | 520 | 33.8 | 19321 | 40 | 35.5 | 11874 | 865 | 4.0 | 8923 |
| 2.8 | 8.0 | 50 | 63.5 | 16749 | 12997 | 611 | 27.4 | 18834 | 50 | 42.7 | 13259 | 883 | 4.4 | 10244 |
| 3.5 | 12.3 | 50 | 60.8 | 16925 | 13093 | 594 | 28.5 | 18954 | 50 | 44.0 | 13573 | 888 | 4.5 | 10542 |
| 3.8 | 14.5 | 50 | 60.0 | 16961 | 13118 | 590 | 28.8 | 18973 | 50 | 44.4 | 13674 | 890 | 4.5 | 10638 |
| 4 | 16.0 | 50 | 59.5 | 16971 | 13129 | 587 | 28.9 | 18975 | 50 | 44.7 | 13730 | 891 | 4.5 | 10691 |
| 2.8 | 7.9 | 60 | 73.2 | 16145 | 12737 | 691 | 23.4 | 18503 | 60 | 51.4 | 15113 | 908 | 4.9 | 12014 |
| 3.5 | 12.1 | 60 | 70.6 | 16315 | 12831 | 672 | 24.3 | 18609 | 60 | 52.9 | 15471 | 913 | 5.0 | 12355 |
| 3.8 | 14.2 | 60 | 69.8 | 16349 | 12856 | 667 | 24.5 | 18625 | 60 | 53.4 | 15587 | 915 | 5.0 | 12465 |
| 4 | 15.7 | 60 | 69.3 | 16359 | 12866 | 664 | 24.6 | 18625 | 60 | 53.7 | 15651 | 916 | 5.0 | 12526 |
| 2.8 | 7.8 | 70 | 83.0 | 15507 | 12464 | 780 | 19.9 | 18169 | 70 | 60.1 | 17031 | 933 | 5.4 | 13849 |
| 3.5 | 11.9 | 70 | 80.4 | 15670 | 12556 | 759 | 20.6 | 18260 | 70 | 61.9 | 17434 | 938 | 5.4 | 14234 |
| 3.8 | 14.0 | 70 | 79.6 | 15703 | 12580 | 753 | 20.9 | 18272 | 70 | 62.4 | 17564 | 939 | 5.5 | 14359 |
| 4 | 15.4 | 70 | 79.1 | 15712 | 12591 | 750 | 21.0 | 18271 | 70 | 62.8 | 17636 | 940 | 5.5 | 14428 |
| 2.8 | 7.6 | 80 | 92.7 | 14833 | 12178 | 879 | 16.9 | 17833 | 80 | 68.8 | 19011 | 956 | 5.8 | 15748 |
| 3.5 | 11.7 | 80 | 90.2 | 14989 | 12268 | 855 | 17.5 | 17908 | 80 | 70.8 | 19461 | 961 | 5.9 | 16181 |
| 3.8 | 13.8 | 80 | 89.4 | 15020 | 12292 | 848 | 17.7 | 17916 | 80 | 71.4 | 19606 | 963 | 6.0 | 16320 |
| 4 | 15.2 | 80 | 89.0 | 15030 | 12302 | 845 | 17.8 | 17913 | 80 | 71.8 | 19686 | 964 | 6.0 | 16397 |
| 2.8 | 7.6 | 85 | 97.6 | 14483 | 12030 | 932 | 15.5 | 17664 | 85 | 73.1 | 20024 | 968 | 6.1 | 16722 |
| 3.5 | 11.6 | 85 | 95.1 | 14635 | 12119 | 907 | 16.1 | 17731 | 85 | 75.2 | 20498 | 973 | 6.2 | 17179 |
| 3.8 | 13.6 | 85 | 94.3 | 14666 | 12143 | 900 | 16.3 | 17736 | 85 | 75.9 | 20651 | 975 | 6.2 | 17325 |
| 4 | 15.1 | 85 | 93.9 | 14675 | 12153 | 896 | 16.4 | 17732 | 85 | 76.3 | 20736 | 976 | 6.2 | 17407 |
| 2.8 | 7.5 | 90 | 102.5 | 14125 | 11879 | 988 | 14.3 | 17495 | 90 | 77.3 | 21053 | 979 | 6.3 | 17713 |
| 3.5 | 11.5 | 90 | 100.0 | 14273 | 11967 | 961 | 14.9 | 17552 | 90 | 79.6 | 21552 | 984 | 6.4 | 18193 |
| 3.8 | 13.5 | 90 | 99.2 | 14303 | 11990 | 953 | 15.0 | 17556 | 90 | 80.3 | 21712 | 986 | 6.5 | 18348 |
| 4 | 14.9 | 90 | 98.8 | 14312 | 12000 | 949 | 15.1 | 17551 | 90 | 80.8 | 21801 | 987 | 6.5 | 18434 |
| 2.8 | 7.4 | 100 | 112.3 | 13382 | 11568 | 1105 | 12.1 | 17155 | | | | | | |
| 3.5 | 11.4 | 100 | 109.8 | 13522 | 11654 | 1076 | 12.6 | 17193 | | | | | | |
| 3.8 | 13.3 | 100 | 109.0 | 13551 | 11676 | 1067 | 12.7 | 17192 | | | | | | |
| 4 | 14.7 | 100 | 108.6 | 13559 | 11686 | 1062 | 12.8 | 17185 | | | | | | |
| 2.8 | 7.3 | 110 | 122.0 | 12604 | 11244 | 1233 | 10.2 | 16812 | | | | | | |
| 3.5 | 11.2 | 110 | 119.6 | 12736 | 11327 | 1200 | 10.6 | 16830 | | | | | | |
| 3.8 | 13.1 | 110 | 118.9 | 12763 | 11349 | 1190 | 10.7 | 16824 | | | | | | |
| 4 | 14.5 | 110 | 118.4 | 12771 | 11359 | 1185 | 10.8 | 16815 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP HE 060 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 2.7 | 8.0 | | | | | | | | 20 | 14.8 | 10368 | 984 | 3.1 | 7010 |
| 3.9 | 16.1 | | | | | | | | 20 | 16.2 | 10785 | 996 | 3.2 | 7388 |
| 4 | 16.9 | | | | | | | | 20 | 16.3 | 10812 | 997 | 3.2 | 7412 |
| 5.2 | 28.1 | | | | | | | | 20 | 17.1 | 11036 | 1004 | 3.2 | 7610 |
| 2.5 | 6.7 | 30 | 47.9 | 20368 | 15084 | 594 | 34.3 | 22395 | 30 | 23.4 | 12429 | 1017 | 3.6 | 8961 |
| 4 | 16.5 | 30 | 41.4 | 20910 | 15407 | 555 | 37.7 | 22805 | 30 | 25.2 | 12930 | 1029 | 3.7 | 9420 |
| 4.7 | 22.5 | 30 | 39.8 | 21078 | 15515 | 546 | 38.6 | 22941 | 30 | 25.3 | 12962 | 1029 | 3.7 | 9450 |
| 5.2 | 27.4 | 30 | 38.9 | 21165 | 15576 | 543 | 39.0 | 23017 | 30 | 26.3 | 13230 | 1037 | 3.7 | 9691 |
| 2.5 | 6.6 | 40 | 58.0 | 20180 | 15238 | 680 | 29.7 | 22500 | 40 | 31.9 | 14519 | 1049 | 4.1 | 10941 |
| 4 | 16.1 | 40 | 51.4 | 20716 | 15564 | 636 | 32.6 | 22886 | 40 | 34.1 | 15104 | 1061 | 4.2 | 11484 |
| 4.7 | 22.0 | 40 | 49.8 | 20882 | 15673 | 625 | 33.4 | 23016 | 40 | 34.2 | 15142 | 1062 | 4.2 | 11518 |
| 5.2 | 26.8 | 40 | 48.9 | 20969 | 15735 | 621 | 33.7 | 23090 | 40 | 35.5 | 15455 | 1070 | 4.2 | 11804 |
| 2.5 | 6.4 | 50 | 68.0 | 19812 | 15256 | 781 | 25.4 | 22478 | 50 | 40.4 | 16637 | 1080 | 4.5 | 12951 |
| 4 | 15.8 | 50 | 61.4 | 20338 | 15583 | 730 | 27.8 | 22832 | 50 | 43.0 | 17307 | 1093 | 4.6 | 13577 |
| 4.7 | 21.5 | 50 | 59.8 | 20502 | 15692 | 718 | 28.5 | 22953 | 50 | 43.2 | 17350 | 1094 | 4.6 | 13617 |
| 5.2 | 26.2 | 50 | 58.9 | 20587 | 15754 | 714 | 28.8 | 23023 | 50 | 44.6 | 17709 | 1102 | 4.7 | 13948 |
| 2.5 | 6.3 | 60 | 77.9 | 19265 | 15139 | 897 | 21.5 | 22327 | 60 | 48.9 | 18782 | 1112 | 5.0 | 14990 |
| 4 | 15.4 | 60 | 71.3 | 19777 | 15464 | 839 | 23.6 | 22640 | 60 | 51.9 | 19539 | 1125 | 5.1 | 15701 |
| 4.7 | 21.1 | 60 | 69.7 | 19936 | 15572 | 825 | 24.2 | 22751 | 60 | 52.1 | 19588 | 1126 | 5.1 | 15747 |
| 5.2 | 25.6 | 60 | 68.8 | 20019 | 15633 | 820 | 24.4 | 22817 | 60 | 53.8 | 19993 | 1134 | 5.2 | 16123 |
| 2.5 | 6.2 | 70 | 87.6 | 18540 | 14887 | 1028 | 18.0 | 22047 | 70 | 57.4 | 20956 | 1142 | 5.4 | 17058 |
| 4 | 15.2 | 70 | 81.2 | 19033 | 15206 | 961 | 19.8 | 22313 | 70 | 60.8 | 21800 | 1156 | 5.5 | 17856 |
| 4.7 | 20.7 | 70 | 79.5 | 19186 | 15313 | 945 | 20.3 | 22411 | 70 | 61.0 | 21854 | 1157 | 5.5 | 17907 |
| 5.2 | 25.2 | 70 | 78.6 | 19265 | 15373 | 939 | 20.5 | 22471 | 70 | 63.0 | 22306 | 1166 | 5.6 | 18329 |
| 2.5 | 6.1 | 80 | 97.3 | 17636 | 14500 | 1173 | 15.0 | 21640 | 80 | 65.8 | 23158 | 1173 | 5.8 | 19155 |
| 4 | 14.9 | 80 | 90.9 | 18105 | 14810 | 1097 | 16.5 | 21849 | 80 | 69.7 | 24091 | 1187 | 5.9 | 20041 |
| 4.7 | 20.3 | 80 | 89.3 | 18250 | 14914 | 1079 | 16.9 | 21932 | 80 | 70.0 | 24150 | 1188 | 6.0 | 20097 |
| 5.2 | 24.7 | 80 | 88.5 | 18326 | 14972 | 1072 | 17.1 | 21985 | 80 | 72.1 | 24650 | 1197 | 6.0 | 20566 |
| 2.5 | 6.0 | 85 | 102.1 | 17117 | 14255 | 1251 | 13.7 | 21388 | 85 | 70.0 | 24269 | 1188 | 6.0 | 20215 |
| 4 | 14.8 | 85 | 95.8 | 17572 | 14560 | 1170 | 15.0 | 21566 | 85 | 74.2 | 25247 | 1202 | 6.2 | 21145 |
| 4.7 | 20.2 | 85 | 94.2 | 17713 | 14662 | 1151 | 15.4 | 21640 | 85 | 74.4 | 25309 | 1203 | 6.2 | 21204 |
| 5.2 | 24.6 | 85 | 93.3 | 17786 | 14720 | 1144 | 15.6 | 21690 | 85 | 76.7 | 25833 | 1212 | 6.2 | 21696 |
| 2.5 | 6.0 | 90 | 106.9 | 16553 | 13977 | 1333 | 12.4 | 21104 | 90 | 74.2 | 25387 | 1203 | 6.2 | 21282 |
| 4 | 14.7 | 90 | 100.6 | 16993 | 14276 | 1247 | 13.6 | 21249 | 90 | 78.6 | 26410 | 1217 | 6.4 | 22256 |
| 4.7 | 20.0 | 90 | 99.1 | 17130 | 14376 | 1226 | 14.0 | 21314 | 90 | 78.8 | 26475 | 1218 | 6.4 | 22318 |
| 5.2 | 24.4 | 90 | 98.2 | 17200 | 14432 | 1219 | 14.1 | 21360 | 90 | 81.2 | 27023 | 1228 | 6.5 | 22835 |
| 2.5 | 5.9 | 100 | 116.4 | 15291 | 13318 | 1508 | 10.1 | 20439 | | | | | | |
| 4 | 14.5 | 100 | 110.3 | 15698 | 13604 | 1411 | 11.1 | 20513 | | | | | | |
| 4.7 | 19.8 | 100 | 108.7 | 15824 | 13699 | 1387 | 11.4 | 20558 | | | | | | |
| 5.2 | 24.1 | 100 | 107.9 | 15889 | 13752 | 1379 | 11.5 | 20595 | | | | | | |
| 2.5 | 5.9 | 110 | 125.7 | 13851 | 12525 | 1698 | 8.2 | 19647 | | | | | | |
| 4 | 14.4 | 110 | 119.8 | 14219 | 12793 | 1588 | 9.0 | 19640 | | | | | | |
| 4.7 | 19.6 | 110 | 118.4 | 14333 | 12883 | 1562 | 9.2 | 19663 | | | | | | |
| 5.2 | 23.8 | 110 | 117.6 | 14392 | 12933 | 1552 | 9.3 | 19690 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP HE 080 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 3.4 | 5.1 | | | | | | | | 20 | 14.7 | 13618 | 1342 | 3.0 | 9038 |
| 4.9 | 9.9 | | | | | | | | 20 | 16.1 | 14235 | 1360 | 3.1 | 9593 |
| 6.5 | 16.9 | | | | | | | | 20 | 16.9 | 14683 | 1375 | 3.1 | 9990 |
| 6.7 | 17.9 | | | | | | | | 20 | 17.0 | 14724 | 1377 | 3.1 | 10025 |
| 3.4 | 4.9 | 30 | 47.4 | 27042 | 18611 | 761 | 35.5 | 29639 | 30 | 23.1 | 16436 | 1373 | 3.5 | 11750 |
| 4.9 | 9.5 | 30 | 42.3 | 27704 | 18928 | 718 | 38.6 | 30154 | 30 | 24.9 | 17181 | 1392 | 3.6 | 12431 |
| 6.5 | 16.2 | 30 | 39.4 | 28160 | 19240 | 687 | 41.0 | 30503 | 30 | 26.0 | 17722 | 1407 | 3.7 | 12919 |
| 6.7 | 17.2 | 30 | 39.1 | 28198 | 19277 | 684 | 41.2 | 30532 | 30 | 26.1 | 17771 | 1409 | 3.7 | 12963 |
| 3.4 | 4.7 | 40 | 57.5 | 26738 | 18635 | 872 | 30.7 | 29713 | 40 | 31.5 | 19302 | 1413 | 4.0 | 14481 |
| 4.9 | 9.2 | 40 | 52.3 | 27392 | 18952 | 822 | 33.3 | 30199 | 40 | 33.8 | 20177 | 1432 | 4.1 | 15290 |
| 6.5 | 15.6 | 40 | 49.4 | 27843 | 19265 | 787 | 35.4 | 30527 | 40 | 35.1 | 20812 | 1448 | 4.2 | 15871 |
| 6.7 | 16.5 | 40 | 49.1 | 27881 | 19302 | 783 | 35.6 | 30555 | 40 | 35.2 | 20870 | 1450 | 4.2 | 15924 |
| 3.4 | 4.5 | 50 | 67.4 | 26196 | 18511 | 1005 | 26.1 | 29627 | 50 | 39.9 | 22216 | 1461 | 4.5 | 17232 |
| 4.9 | 8.9 | 50 | 62.3 | 26837 | 18826 | 948 | 28.3 | 30074 | 50 | 42.6 | 23222 | 1480 | 4.6 | 18171 |
| 6.5 | 15.1 | 50 | 59.3 | 27278 | 19137 | 907 | 30.1 | 30375 | 50 | 44.2 | 23953 | 1497 | 4.7 | 18846 |
| 6.7 | 16.0 | 50 | 59.1 | 27315 | 19174 | 904 | 30.2 | 30399 | 50 | 44.4 | 24020 | 1498 | 4.7 | 18907 |
| 3.4 | 4.4 | 60 | 77.3 | 25415 | 18240 | 1162 | 21.9 | 29381 | 60 | 48.2 | 25177 | 1517 | 4.9 | 20002 |
| 4.9 | 8.6 | 60 | 72.2 | 26038 | 18550 | 1096 | 23.8 | 29779 | 60 | 51.4 | 26317 | 1537 | 5.0 | 21072 |
| 6.5 | 14.6 | 60 | 69.2 | 26466 | 18856 | 1049 | 25.2 | 30044 | 60 | 53.3 | 27146 | 1554 | 5.1 | 21843 |
| 6.7 | 15.5 | 60 | 69.0 | 26502 | 18892 | 1044 | 25.4 | 30066 | 60 | 53.5 | 27221 | 1556 | 5.1 | 21912 |
| 3.4 | 4.2 | 70 | 87.0 | 24397 | 17820 | 1341 | 18.2 | 28975 | 70 | 56.6 | 28185 | 1581 | 5.2 | 22792 |
| 4.9 | 8.3 | 70 | 82.0 | 24995 | 18124 | 1265 | 19.8 | 29313 | 70 | 60.2 | 29462 | 1602 | 5.4 | 23995 |
| 6.5 | 14.2 | 70 | 79.1 | 25406 | 18422 | 1210 | 21.0 | 29537 | 70 | 62.4 | 30389 | 1620 | 5.5 | 24862 |
| 6.7 | 15.0 | 70 | 78.8 | 25440 | 18458 | 1205 | 21.1 | 29555 | 70 | 62.6 | 30474 | 1622 | 5.5 | 24941 |
| 3.4 | 4.1 | 80 | 96.7 | 23142 | 17253 | 1543 | 15.0 | 28409 | 80 | 64.9 | 31241 | 1653 | 5.5 | 25601 |
| 4.9 | 8.1 | 80 | 91.7 | 23708 | 17547 | 1456 | 16.3 | 28677 | 80 | 69.0 | 32656 | 1675 | 5.7 | 26939 |
| 6.5 | 13.8 | 80 | 88.9 | 24098 | 17836 | 1393 | 17.3 | 28851 | 80 | 71.4 | 33684 | 1694 | 5.8 | 27904 |
| 6.7 | 14.7 | 80 | 88.6 | 24131 | 17870 | 1387 | 17.4 | 28865 | 80 | 71.6 | 33778 | 1696 | 5.8 | 27991 |
| 3.4 | 4.1 | 85 | 101.5 | 22424 | 16914 | 1653 | 13.6 | 28066 | 85 | 69.1 | 32787 | 1692 | 5.7 | 27013 |
| 4.9 | 8.0 | 85 | 96.5 | 22973 | 17202 | 1559 | 14.7 | 28295 | 85 | 73.4 | 34272 | 1715 | 5.9 | 28420 |
| 6.5 | 13.7 | 85 | 93.8 | 23351 | 17485 | 1492 | 15.7 | 28442 | 85 | 75.9 | 35351 | 1734 | 6.0 | 29434 |
| 6.7 | 14.5 | 85 | 93.5 | 23383 | 17519 | 1486 | 15.7 | 28453 | 85 | 76.2 | 35449 | 1736 | 6.0 | 29525 |
| 3.4 | 4.1 | 90 | 106.3 | 21648 | 16538 | 1768 | 12.2 | 27683 | 90 | 73.3 | 34345 | 1734 | 5.8 | 28430 |
| 4.9 | 8.0 | 90 | 101.4 | 22178 | 16819 | 1668 | 13.3 | 27871 | 90 | 77.8 | 35901 | 1757 | 6.0 | 29905 |
| 6.5 | 13.6 | 90 | 98.6 | 22542 | 17097 | 1596 | 14.1 | 27988 | 90 | 80.5 | 37031 | 1777 | 6.1 | 30969 |
| 6.7 | 14.4 | 90 | 98.4 | 22573 | 17130 | 1589 | 14.2 | 27997 | 90 | 80.7 | 37134 | 1779 | 6.1 | 31065 |
| 3.4 | 4.0 | 100 | 115.8 | 19916 | 15675 | 2016 | 9.9 | 26797 | | | | | | |
| 4.9 | 7.9 | 100 | 111.0 | 20404 | 15942 | 1902 | 10.7 | 26894 | | | | | | |
| 6.5 | 13.4 | 100 | 108.3 | 20739 | 16204 | 1819 | 11.4 | 26948 | | | | | | |
| 6.7 | 14.2 | 100 | 108.0 | 20768 | 16236 | 1812 | 11.5 | 26951 | | | | | | |
| 3.4 | 4.0 | 110 | 125.1 | 17947 | 14664 | 2287 | 7.8 | 25751 | | | | | | |
| 4.9 | 7.8 | 110 | 120.5 | 18386 | 14914 | 2157 | 8.5 | 25747 | | | | | | |
| 6.5 | 13.2 | 110 | 117.9 | 18688 | 15160 | 2063 | 9.1 | 25730 | | | | | | |
| 6.7 | 14.0 | 110 | 117.7 | 18714 | 15189 | 2055 | 9.1 | 25727 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP HE 100 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 4.3 | 5.3 | | | | | | | | 20 | 14.7 | 17285 | 1738 | 2.9 | 11356 |
| 6.1 | 11.1 | | | | | | | | 20 | 16.1 | 17838 | 1746 | 3.0 | 11880 |
| 6.5 | 12.6 | | | | | | | | 20 | 16.3 | 17916 | 1748 | 3.0 | 11952 |
| 8.1 | 19.9 | | | | | | | | 20 | 17.0 | 18065 | 1755 | 3.0 | 12077 |
| 4.3 | 5.1 | 30 | 47.0 | 32728 | 22151 | 1140 | 28.7 | 36617 | 30 | 22.8 | 21607 | 1795 | 3.5 | 15482 |
| 6.1 | 10.7 | 30 | 42.2 | 33358 | 22485 | 1094 | 30.5 | 37093 | 30 | 24.7 | 22298 | 1804 | 3.6 | 16143 |
| 6.5 | 12.2 | 30 | 41.4 | 33468 | 22548 | 1089 | 30.7 | 37185 | 30 | 25.0 | 22395 | 1806 | 3.6 | 16234 |
| 8.1 | 19.2 | 30 | 39.3 | 33793 | 22759 | 1086 | 31.1 | 37500 | 30 | 26.0 | 22582 | 1813 | 3.7 | 16395 |
| 4.3 | 5.0 | 40 | 57.2 | 32650 | 22615 | 1241 | 26.3 | 36886 | 40 | 31.0 | 25562 | 1849 | 4.1 | 19251 |
| 6.1 | 10.4 | 40 | 52.2 | 33280 | 22956 | 1192 | 27.9 | 37347 | 40 | 33.4 | 26379 | 1859 | 4.2 | 20038 |
| 6.5 | 11.8 | 40 | 51.5 | 33389 | 23020 | 1186 | 28.2 | 37437 | 40 | 33.8 | 26495 | 1860 | 4.2 | 20146 |
| 8.1 | 18.7 | 40 | 49.3 | 33714 | 23236 | 1183 | 28.5 | 37750 | 40 | 35.0 | 26715 | 1868 | 4.2 | 20341 |
| 4.3 | 4.8 | 50 | 67.2 | 32276 | 22823 | 1369 | 23.6 | 36949 | 50 | 39.5 | 29151 | 1901 | 4.5 | 22665 |
| 6.1 | 10.1 | 50 | 62.3 | 32898 | 23167 | 1315 | 25.0 | 37385 | 50 | 42.3 | 30083 | 1910 | 4.6 | 23566 |
| 6.5 | 11.5 | 50 | 61.5 | 33006 | 23232 | 1309 | 25.2 | 37472 | 50 | 42.7 | 30214 | 1912 | 4.6 | 23690 |
| 8.1 | 18.1 | 50 | 59.3 | 33327 | 23450 | 1305 | 25.5 | 37781 | 50 | 44.1 | 30466 | 1920 | 4.7 | 23915 |
| 4.3 | 4.7 | 60 | 77.1 | 31603 | 22776 | 1525 | 20.7 | 36806 | 60 | 48.0 | 32373 | 1949 | 4.9 | 25723 |
| 6.1 | 9.8 | 60 | 72.2 | 32212 | 23119 | 1464 | 22.0 | 37208 | 60 | 51.2 | 33408 | 1958 | 5.0 | 26726 |
| 6.5 | 11.2 | 60 | 71.5 | 32318 | 23183 | 1457 | 22.2 | 37290 | 60 | 51.7 | 33554 | 1960 | 5.0 | 26865 |
| 8.1 | 17.6 | 60 | 69.3 | 32632 | 23401 | 1453 | 22.5 | 37591 | 60 | 53.3 | 33833 | 1968 | 5.0 | 27117 |
| 4.3 | 4.6 | 70 | 87.0 | 30633 | 22472 | 1707 | 17.9 | 36457 | 70 | 56.8 | 35228 | 1994 | 5.2 | 28426 |
| 6.1 | 9.6 | 70 | 82.1 | 31223 | 22811 | 1639 | 19.1 | 36816 | 70 | 60.3 | 36354 | 2003 | 5.3 | 29519 |
| 6.5 | 10.9 | 70 | 81.4 | 31326 | 22875 | 1631 | 19.2 | 36892 | 70 | 60.9 | 36513 | 2005 | 5.3 | 29671 |
| 8.1 | 17.2 | 70 | 79.2 | 31630 | 23089 | 1626 | 19.4 | 37181 | 70 | 62.6 | 36817 | 2014 | 5.4 | 29947 |
| 4.3 | 4.5 | 80 | 96.7 | 29365 | 21913 | 1916 | 15.3 | 35903 | 80 | 65.7 | 37717 | 2035 | 5.4 | 30772 |
| 6.1 | 9.4 | 80 | 91.9 | 29931 | 22244 | 1839 | 16.3 | 36208 | 80 | 69.5 | 38923 | 2045 | 5.6 | 31944 |
| 6.5 | 10.7 | 80 | 91.2 | 30029 | 22306 | 1831 | 16.4 | 36277 | 80 | 70.1 | 39093 | 2047 | 5.6 | 32107 |
| 8.1 | 16.8 | 80 | 89.0 | 30321 | 22515 | 1826 | 16.6 | 36551 | 80 | 72.0 | 39418 | 2056 | 5.6 | 32404 |
| 4.3 | 4.5 | 85 | 101.5 | 28619 | 21538 | 2030 | 14.1 | 35548 | 85 | 70.2 | 38824 | 2055 | 5.5 | 31812 |
| 6.1 | 9.3 | 85 | 96.7 | 29171 | 21863 | 1949 | 15.0 | 35824 | 85 | 74.2 | 40065 | 2065 | 5.7 | 33019 |
| 6.5 | 10.6 | 85 | 96.0 | 29266 | 21924 | 1940 | 15.1 | 35888 | 85 | 74.8 | 40240 | 2067 | 5.7 | 33187 |
| 8.1 | 16.7 | 85 | 93.9 | 29551 | 22129 | 1935 | 15.3 | 36154 | 85 | 76.7 | 40575 | 2075 | 5.7 | 33493 |
| 4.3 | 4.4 | 90 | 106.3 | 27799 | 21099 | 2152 | 12.9 | 35142 | 90 | 74.8 | 39839 | 2074 | 5.6 | 32763 |
| 6.1 | 9.2 | 90 | 101.6 | 28335 | 21417 | 2066 | 13.7 | 35385 | 90 | 78.9 | 41113 | 2084 | 5.8 | 34002 |
| 6.5 | 10.5 | 90 | 100.9 | 28428 | 21477 | 2056 | 13.8 | 35445 | 90 | 79.5 | 41293 | 2086 | 5.8 | 34175 |
| 8.1 | 16.5 | 90 | 98.8 | 28704 | 21678 | 2050 | 14.0 | 35702 | 90 | 81.5 | 41636 | 2095 | 5.8 | 34489 |
| 4.3 | 4.3 | 100 | 115.9 | 25936 | 20029 | 2414 | 10.7 | 34176 | | | | | | |
| 6.1 | 9.0 | 100 | 111.3 | 26436 | 20330 | 2318 | 11.4 | 34347 | | | | | | |
| 6.5 | 10.3 | 100 | 110.6 | 26522 | 20387 | 2307 | 11.5 | 34396 | | | | | | |
| 8.1 | 16.2 | 100 | 108.6 | 26780 | 20579 | 2301 | 11.6 | 34633 | | | | | | |
| 4.3 | 4.3 | 110 | 125.4 | 23774 | 18703 | 2704 | 8.8 | 33003 | | | | | | |
| 6.1 | 8.9 | 110 | 120.9 | 24233 | 18985 | 2596 | 9.3 | 33094 | | | | | | |
| 6.5 | 10.2 | 110 | 120.2 | 24312 | 19038 | 2584 | 9.4 | 33131 | | | | | | |
| 8.1 | 16.0 | 110 | 118.2 | 24549 | 19216 | 2577 | 9.5 | 33343 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



| VSHP HE 120 | | | | | | | | | | | | | | |
|-------------|------|---------|-------|-------------------|----------------------|-------|------|------------|---------|------|-------------------|-------|-----|------------|
| GPM | WPD | Cooling | | | | | | | Heating | | | | | |
| | | EWT | LWT | Total Cap. (Btuh) | Sensible Cap. (Btuh) | Watts | EER | THR (Btuh) | EWT | LWT | Total Cap. (Btuh) | Watts | COP | THA (Btuh) |
| 5.5 | 10.5 | | | | | | | | 20 | 13.1 | 26346 | 2142 | 3.6 | 19038 |
| 7 | 16.0 | | | | | | | | 20 | 15.5 | 22953 | 2157 | 3.1 | 15593 |
| 8 | 20.3 | | | | | | | | 20 | 16.0 | 23231 | 2165 | 3.1 | 15844 |
| 9 | 25.2 | | | | | | | | 20 | 16.4 | 23432 | 2171 | 3.2 | 16024 |
| 5.5 | 10.1 | 30 | 46.9 | 41604 | 27369 | 1454 | 28.6 | 46566 | 30 | 23.2 | 26332 | 2203 | 3.5 | 18815 |
| 7 | 15.4 | 30 | 43.5 | 42339 | 27676 | 1410 | 30.0 | 47150 | 30 | 24.5 | 26992 | 2219 | 3.6 | 19422 |
| 8 | 19.5 | 30 | 41.9 | 42694 | 27816 | 1386 | 30.8 | 47424 | 30 | 25.1 | 27319 | 2227 | 3.6 | 19721 |
| 9 | 24.2 | 30 | 40.6 | 42942 | 27903 | 1366 | 31.4 | 47605 | 30 | 25.6 | 27555 | 2233 | 3.6 | 19936 |
| 5.5 | 9.7 | 40 | 56.8 | 40823 | 27334 | 1599 | 25.5 | 46279 | 40 | 31.8 | 30266 | 2270 | 3.9 | 22520 |
| 7 | 14.8 | 40 | 53.4 | 41544 | 27641 | 1550 | 26.8 | 46835 | 40 | 33.4 | 31025 | 2286 | 4.0 | 23224 |
| 8 | 18.8 | 40 | 51.8 | 41893 | 27780 | 1524 | 27.5 | 47094 | 40 | 34.1 | 31400 | 2295 | 4.0 | 23571 |
| 9 | 23.3 | 40 | 50.5 | 42136 | 27868 | 1503 | 28.0 | 47264 | 40 | 34.7 | 31672 | 2301 | 4.0 | 23820 |
| 5.5 | 9.4 | 50 | 66.7 | 39806 | 27114 | 1771 | 22.5 | 45851 | 50 | 40.5 | 34195 | 2343 | 4.3 | 26200 |
| 7 | 14.3 | 50 | 63.2 | 40510 | 27418 | 1717 | 23.6 | 46370 | 50 | 42.3 | 35052 | 2360 | 4.4 | 27000 |
| 8 | 18.2 | 50 | 61.7 | 40849 | 27556 | 1688 | 24.2 | 46611 | 50 | 43.2 | 35476 | 2368 | 4.4 | 27395 |
| 9 | 22.5 | 50 | 60.4 | 41086 | 27643 | 1665 | 24.7 | 46768 | 50 | 43.8 | 35783 | 2375 | 4.4 | 27679 |
| 5.5 | 9.1 | 60 | 76.5 | 38553 | 26708 | 1971 | 19.6 | 45281 | 60 | 49.1 | 38117 | 2422 | 4.6 | 29852 |
| 7 | 13.9 | 60 | 73.1 | 39235 | 27007 | 1911 | 20.5 | 45757 | 60 | 51.2 | 39073 | 2439 | 4.7 | 30749 |
| 8 | 17.6 | 60 | 71.5 | 39564 | 27144 | 1879 | 21.1 | 45976 | 60 | 52.2 | 39546 | 2448 | 4.7 | 31192 |
| 9 | 21.8 | 60 | 70.2 | 39793 | 27229 | 1853 | 21.5 | 46116 | 60 | 53.0 | 39888 | 2455 | 4.8 | 31510 |
| 5.5 | 8.8 | 70 | 86.2 | 37064 | 26116 | 2199 | 16.9 | 44568 | 70 | 57.8 | 42034 | 2507 | 4.9 | 33479 |
| 7 | 13.5 | 70 | 82.9 | 37719 | 26409 | 2132 | 17.7 | 44995 | 70 | 60.2 | 43088 | 2525 | 5.0 | 34472 |
| 8 | 17.1 | 70 | 81.3 | 38036 | 26542 | 2096 | 18.1 | 45188 | 70 | 61.3 | 43609 | 2534 | 5.0 | 34962 |
| 9 | 21.2 | 70 | 80.1 | 38256 | 26626 | 2066 | 18.5 | 45309 | 70 | 62.2 | 43987 | 2541 | 5.1 | 35315 |
| 5.5 | 8.6 | 80 | 95.9 | 35339 | 25338 | 2454 | 14.4 | 43714 | 80 | 66.5 | 45945 | 2598 | 5.2 | 37080 |
| 7 | 13.2 | 80 | 92.6 | 35964 | 25623 | 2379 | 15.1 | 44083 | 80 | 69.1 | 47097 | 2617 | 5.3 | 38169 |
| 8 | 16.7 | 80 | 91.1 | 36266 | 25752 | 2339 | 15.5 | 44248 | 80 | 70.3 | 47667 | 2626 | 5.3 | 38706 |
| 9 | 20.7 | 80 | 89.9 | 36476 | 25833 | 2306 | 15.8 | 44347 | 80 | 71.3 | 48079 | 2634 | 5.4 | 39093 |
| 5.5 | 8.5 | 85 | 100.7 | 34388 | 24880 | 2592 | 13.3 | 43233 | 85 | 70.9 | 47899 | 2646 | 5.3 | 38871 |
| 7 | 13.0 | 85 | 97.4 | 34996 | 25159 | 2513 | 13.9 | 43572 | 85 | 73.6 | 49099 | 2665 | 5.4 | 40007 |
| 8 | 16.5 | 85 | 95.9 | 35290 | 25286 | 2470 | 14.3 | 43721 | 85 | 74.9 | 49694 | 2674 | 5.4 | 40568 |
| 9 | 20.5 | 85 | 94.7 | 35494 | 25366 | 2436 | 14.6 | 43807 | 85 | 75.9 | 50124 | 2682 | 5.5 | 40972 |
| 5.5 | 8.4 | 90 | 105.5 | 33378 | 24375 | 2736 | 12.2 | 42717 | 90 | 75.2 | 49851 | 2695 | 5.4 | 40655 |
| 7 | 12.9 | 90 | 102.3 | 33968 | 24649 | 2653 | 12.8 | 43023 | 90 | 78.0 | 51100 | 2714 | 5.5 | 41839 |
| 8 | 16.4 | 90 | 100.8 | 34253 | 24773 | 2608 | 13.1 | 43155 | 90 | 79.4 | 51719 | 2724 | 5.6 | 42424 |
| 9 | 20.3 | 90 | 99.6 | 34452 | 24851 | 2572 | 13.4 | 43229 | 90 | 80.5 | 52166 | 2732 | 5.6 | 42845 |
| 5.5 | 8.3 | 100 | 115.1 | 31181 | 23226 | 3046 | 10.2 | 41579 | | | | | | |
| 7 | 12.7 | 100 | 111.9 | 31732 | 23487 | 2954 | 10.7 | 41813 | | | | | | |
| 8 | 16.1 | 100 | 110.5 | 31999 | 23605 | 2904 | 11.0 | 41909 | | | | | | |
| 9 | 19.9 | 100 | 109.3 | 32184 | 23680 | 2863 | 11.2 | 41957 | | | | | | |
| 5.5 | 8.2 | 110 | 124.7 | 28748 | 21892 | 3384 | 8.5 | 40298 | | | | | | |
| 7 | 12.5 | 110 | 121.6 | 29256 | 22137 | 3281 | 8.9 | 40455 | | | | | | |
| 8 | 15.9 | 110 | 120.1 | 29502 | 22249 | 3226 | 9.1 | 40511 | | | | | | |
| 9 | 19.7 | 110 | 119.0 | 29673 | 22319 | 3181 | 9.3 | 40529 | | | | | | |

Cooling capacity is based on 80.6°F DB and 66.2°F WB entering air.
 Heating capacity is based on 68°F DB entering air.
 Blank sections are outside the operation range.



7. CORRECTION FACTORS & DESIGN LIMITS

7.1 Correction Factor Tables

| Entering Air Correction Factors for Cooling Performance | | | | | | | | | | | |
|---|-------------------------------|-----------|------------|---|-------|-------|-------|-------|-------|-------|-------|
| EAT Wet Bulb (°F) | COOLING | | | | | | | | | | |
| | Total Cooling Capacity (BTUh) | Watts (W) | THR (BTUh) | Sensible Cooling (BTUh) @ EAT Dry Bulb (°F) | | | | | | | |
| | | | | 65 | 70 | 75 | 80 | 80.6 | 85 | 90 | 95 |
| 55 | 0.770 | 0.989 | 0.878 | 0.838 | 1.038 | S | S | S | S | S | S |
| 60 | 0.873 | 0.995 | 0.924 | 0.609 | 0.842 | 1.053 | 1.247 | 1.283 | S | S | S |
| 65 | 0.976 | 0.998 | 0.984 | | 0.636 | 0.844 | 1.054 | 1.085 | 1.260 | S | S |
| 66.2 | 1.000 | 1.000 | 1.000 | | 0.590 | 0.798 | 1.008 | 1.000 | 1.215 | 1.477 | S |
| 67 | 1.016 | 1.000 | 1.013 | | 0.553 | 0.762 | 0.971 | 1.010 | 1.177 | 1.365 | S |
| 70 | 1.077 | 1.003 | 1.058 | | | 0.639 | 0.845 | 0.883 | 1.051 | 1.257 | 1.440 |
| 75 | 1.180 | 1.006 | 1.145 | | | | 0.639 | 0.680 | 0.839 | 1.039 | 1.252 |

S = Sensible Cooling capacity is equal to Total cooling at conditions shown
The cooling capacity based on 80.6°F DB and 66.2°F WB entering air.

Actual = Catalog Data x Correction Factor (CF)

- EAT- Entering Air Temperature
- EWT - Entering Water Temperature
- DB - Dry Bulb
- WB - Wet Bulb
- THR - Total Heat of Rejection
- THA - Total Heat of Absorption

| Entering Air Correction Factors for Heating Performance | | | |
|---|-------------------------------|-----------|------------|
| EAT Dry Bulb (°F) | HEATING | | |
| | Total Heating Capacity (BTUh) | Watts (W) | THA (BTUh) |
| 45 | 1.077 | 0.768 | 1.155 |
| 50 | 1.061 | 0.818 | 1.123 |
| 55 | 1.044 | 0.868 | 1.088 |
| 60 | 1.027 | 0.918 | 1.055 |
| 65 | 1.010 | 0.968 | 1.021 |
| 68 | 1.000 | 1.000 | 1.000 |
| 70 | 0.993 | 1.023 | 0.987 |
| 75 | 0.978 | 1.071 | 0.955 |
| 80 | 0.958 | 1.124 | 0.915 |

The heating capacity based on 68°F DB entering air.

Entering air correction factors table is used to correct the catalog values if the desired EAT is outside of rated EAT. Calculate desired EAT based on the "EAT Wet Bulb" and "EAT Dry Bulb" columns. Multiply the catalog results by the value corresponding to the design EAT and the desired output.



7.1 Correction Factor Tables (Cont'd)

| Airflow Correction Factors | | | | | | | |
|----------------------------|----------------------|-------------------------|-----------|------------|----------------------|-----------|------------|
| Airflow | COOLING | | | | HEATING | | |
| % Rated CFM | Total Cooling (BTUh) | Sensible Cooling (BTUh) | Watts (W) | THR (BTUh) | Total Heating (BTUh) | Watts (W) | THA (BTUh) |
| 70 | 0.93 | 0.82 | 0.97 | 0.94 | 0.94 | 1.08 | 0.93 |
| 75 | 0.94 | 0.85 | 0.98 | 0.95 | 0.95 | 1.06 | 0.94 |
| 80 | 0.95 | 0.88 | 0.98 | 0.96 | 0.96 | 1.05 | 0.96 |
| 85 | 0.97 | 0.91 | 0.99 | 0.97 | 0.97 | 1.03 | 0.97 |
| 90 | 0.98 | 0.94 | 0.99 | 0.98 | 0.98 | 1.02 | 0.98 |
| 95 | 0.99 | 0.97 | 1.00 | 0.99 | 0.99 | 1.01 | 0.99 |
| 100 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 105 | 1.01 | 1.03 | 1.00 | 1.01 | 1.01 | 0.99 | 1.01 |
| 110 | 1.02 | 1.06 | 1.01 | 1.02 | 1.02 | 0.98 | 1.02 |
| 115 | 1.03 | 1.09 | 1.01 | 1.03 | 1.02 | 0.98 | 1.03 |

Airflow correction factor table is used to correct the catalog values if the desired CFM is outside of rated CFM. Calculate desired CFM based on the "% Rated CFM" column. Multiply the catalog results by the value corresponding to the desired % Rated CFM and the desired output.

| Antifreeze Correction Factors | | | | | | |
|-------------------------------|----------|----------------------|-------------------------|-----------|----------------------|-----------|
| Glycol Type | % Glycol | COOLING | | | HEATING | |
| | | Total Cooling (BTUh) | Sensible Cooling (BTUh) | Watts (W) | Total Heating (BTUh) | Watts (W) |
| Ethylene Glycol (E.G.) | 0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| | 10 | 0.996 | 0.997 | 1.001 | 0.990 | 0.996 |
| | 20 | 0.991 | 0.992 | 1.004 | 0.980 | 0.992 |
| | 30 | 0.987 | 0.985 | 1.009 | 0.971 | 0.988 |
| | 40 | 0.982 | 0.976 | 1.016 | 0.961 | 0.984 |
| | 50 | 0.976 | 0.965 | 1.025 | 0.952 | 0.980 |
| Propylene Glycol (P.G.) | 0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| | 10 | 0.991 | 0.991 | 1.007 | 0.984 | 0.993 |
| | 20 | 0.983 | 0.982 | 1.012 | 0.968 | 0.986 |
| | 30 | 0.975 | 0.975 | 1.017 | 0.953 | 0.979 |
| | 40 | 0.968 | 0.968 | 1.020 | 0.938 | 0.972 |
| | 50 | 0.961 | 0.963 | 1.023 | 0.923 | 0.965 |

Antifreeze correction factor table is used to correct the catalog values if glycol is being utilized. Calculate the required "% Glycol". Based on desired glycol type. Multiply the catalog results by the value corresponding to the desired glycol type and glycol ratio.



7.2 Design Limits

| Air Limits | Cooling | | Heating |
|-------------------------------------|---------|------|---------|
| | DB | WB | DB |
| Std. Entering Air Temperature (EAT) | 75°F | 63°F | 68°F |
| Min. Entering Air Temperature (EAT) | 65°F | 55°F | 50°F |
| Max. Entering Air Temperature (EAT) | 85°F | 71°F | 80°F |

| Fluid Limits | Standard Range | | Low Temp Water Range | | Geothermal Range | |
|---------------------------------------|----------------|---------|----------------------|---------|------------------|---------|
| | Cooling | Heating | Cooling | Heating | Cooling | Heating |
| Std. Entering Fluid Temperature (EFT) | 85°F | 70°F | 85°F | 55°F | 85°F | 60°F |
| Min. Entering Fluid Temperature (EFT) | 50°F | 55°F | 50°F | 45°F | 30°F | 20°F |
| Max. Entering Fluid Temperature (EFT) | 110°F | 90°F | 110°F | 90°F | 110°F | 90°F |

| CFM Limits | |
|----------------|-----|
| Min. CFM/Ton | 300 |
| Design CFM/Ton | 400 |
| Max. CFM/Ton | 450 |

| Fluid GPM Limits | |
|------------------|-----|
| Min. GPM/Ton | 1.5 |
| Design GPM/Ton | 3 |
| Max. GPM/Ton | 4 |

CAUTION

Design limits can not be combined. Combining maximum or minimum limits is not allowed. This could exceed the operation and design limits of the unit.

For example: It is not allowed to combine maximum entering air temperature (EAT) limits with maximum entering fluid temperature (EFT) limits.

7.3 Antifreeze Percentages

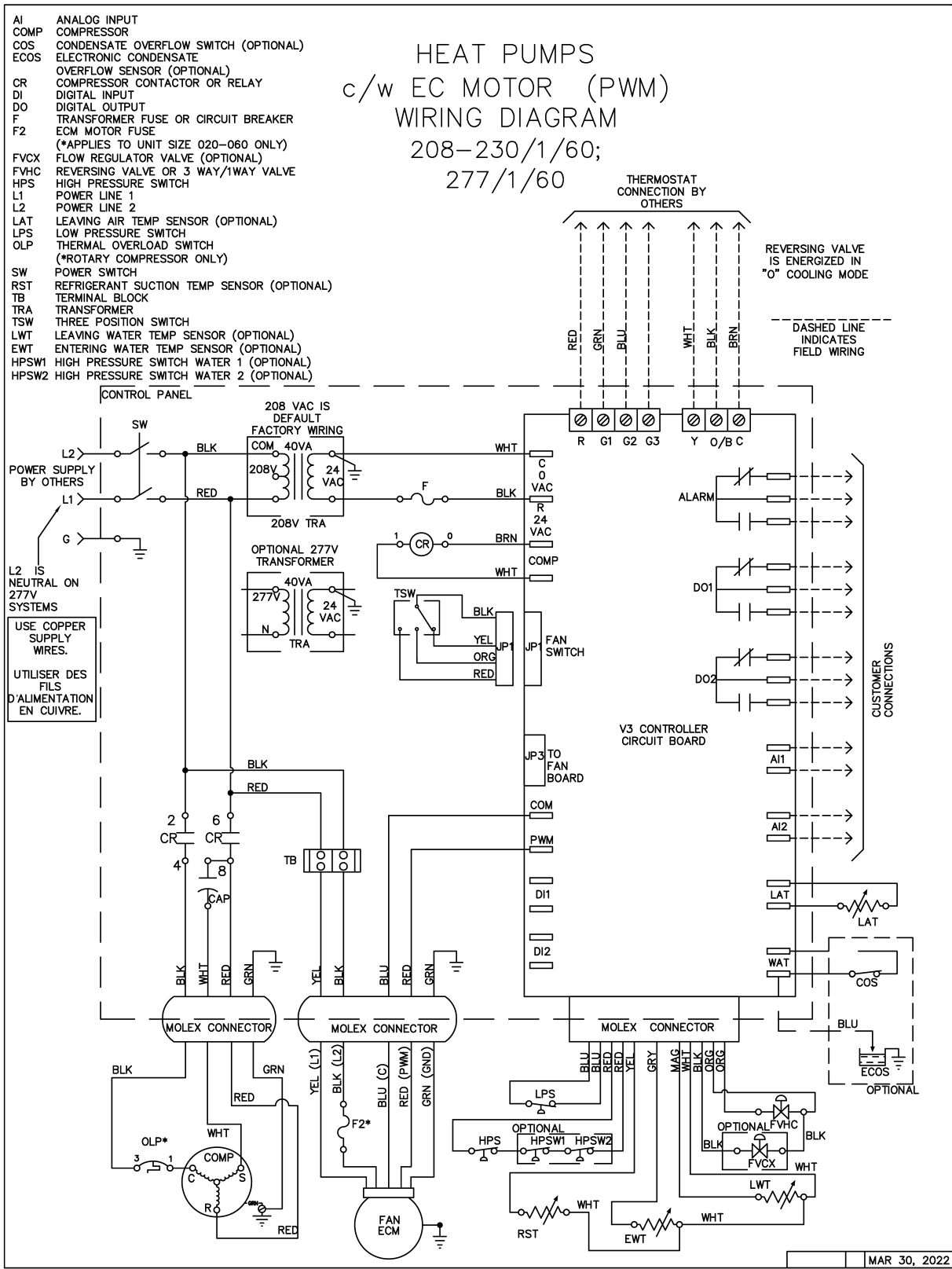
| ANTIFREEZE PERCENTAGE (by Volume) | Minimum Leaving Water Temperature F (°C) | | |
|-----------------------------------|--|-------------|---------------|
| | 25 F (-4°C) | 30 F (-1°C) | 35 F (1.5°C) |
| | Protects Fluid To: | | |
| | 10 F (-12°C) | 15 F (-9°C) | 20 F (-6.5°C) |
| Methanol | 25% | 22% | 17% |
| Propylene Glycol | 39% | 25% | 22% |

Note: Minimum glycol concentration of 20% is recommended.



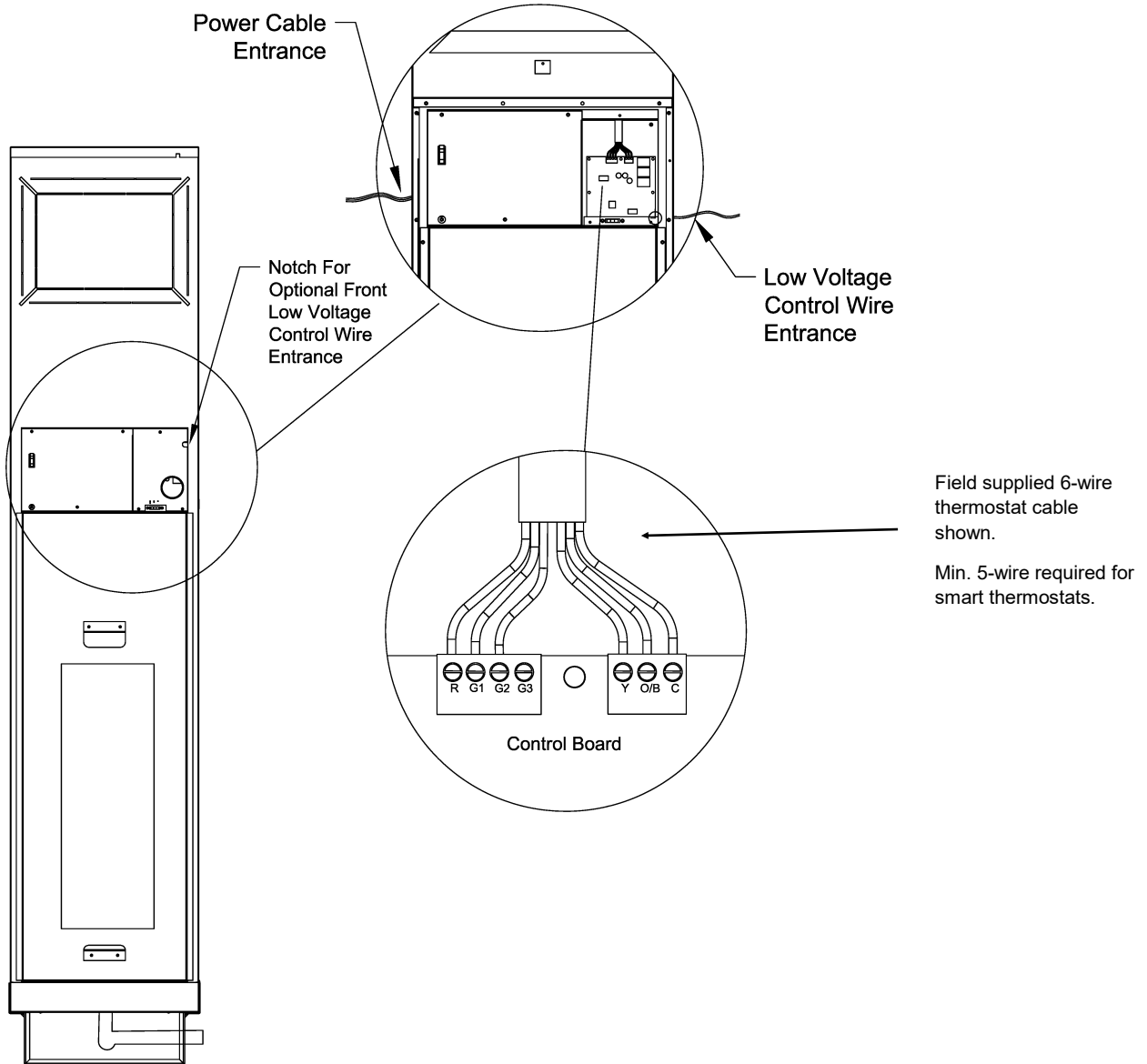
8. ELECTRICAL SCHEMATICS & CONTROL WIRING

8.1 Wiring Diagram - Standard ECM (208-230/277V/1Ph/60Hz)





8.2 Thermostat Wiring Details



Heat Pump Thermostat:

- R = 24VAC
- G1 = Low Fan Speed
- G2 = Medium Fan Speed
- G3 = High Fan Speed
- Y = Compressor On
- O/B = Reversing Valve
- C = Common

Heat/Cool Thermostat:

- R = 24VAC
- G1 = Low Fan Speed
- G2 = Medium Fan Speed
- G3 = High Fan Speed
- Y = Cooling
- O/B = Heating
- C = Common



9. SPECIFICATIONS

1 GENERAL

Install Omega series Vertical Stack Heat Pumps as indicated on the plans and capacities listed in the schedule and specifications.

Each unit shall be factory tested and ship factory-charged with R-410A refrigerant. All units from 1/2 to 3 Tons shall be tested and certified by ASHRAE/ANSI/AHRI/ ISO 13256-1 and ETL listed for United States and Canada. Each unit shall have factory affixed label showing ASHRAE/ANSI/AHRI/ISO and ETL logos. Cabinets and refrigeration chassis shall be factory wired and pre-piped.

2 CABINET

2.1 The vertical stacked heat pump units shall be **Omega VSHP Series**. Units shall provide scheduled capacities at the ampacity and voltage specified. Specified airflow shall be at the scheduled external static pressure and shall include the effects of a wet coil and clean filter.

2.2 The cabinet shall be 20-gauge galvanized steel with riveted internal components for rigidity. Cabinet shall have internal surfaces insulated with 1 inch thick, 3.5 lbs. high-density, mold resistant, thermal and acoustic insulation. Insulation shall meet NFPA 90, UL-181, and ASTM-C1071 standards and insulation shall have a flame spread of less than 25, and a smoke developed classification of less than 50 per ASTM E-84 and UL 723.

The unit shall be a single cabinet construction. Contractor shall be responsible for isolating the supply duct and supply grille from the cabinet.

(Optional GOLD Series) The cabinet shall be sectionalized using a factory installed canvas duct collar for acoustic and installation purposes. The lower section shall include the risers, blower and fan motor assembly, all controls, and removable refrigeration chassis. The upper section shall be an acoustic discharge plenum lined with 1 inch thick, 3.5 lbs. high-density, mold resistant, thermal and acoustic insulation. Final cabinet height shall be coordinated with the installing contractor and architect. The discharge plenum shall be designed to be fastened to the underside of the concrete slab with field cut "Knockout" discharge openings. Rigid connections will not be accepted. A factory supplied flexible canvas connection shall be provided between the upper and lower sections. Heat pump manufacturer shall factory attach flexible connection to the plenum section.

2.3 (Optional) Provide optional line of site baffles (LOSB) on all units with multiple unit outlets.

2.4 Physical dimensions of each unit shall be accommodated within furring / ceiling-slab spaces provided as shown on the architectural drawings

2.5 Provide a minimum 5" (optional 6", 7" and 8") high stand factory installed to the bottom of the sheet metal cabinet to elevate the unit 5" above the floor.

2.4 A removable inner chassis service panel allowing service access to the fan and compressor compartment shall be

provided with each unit.

2.5 The drain pan shall be 16-gauge stainless steel. The drain pan shall come an optional condensate overflow switch. The drain pan outlet shall be readily accessible for cleaning with a 7/8 inch OD copper drain connection. Unit shall be provided with a flexible p-trap condensate hose for connection to the condensate riser.

2.6 Factory installed supply and return risers shall be (Type L) (Type M) copper, with (factory) (field) mounted shut-off ball valves on each supply and return riser. Valves shall be brass and rated for 400 psig. A (Type L) (Type M) condensate riser shall be (factory) (field) installed. Risers sizes shall be installed according to building plans.

2.7 Risers shall have a (field) (factory) provided 3-inch deep swage. Transition pieces & expansion joints shall be field supplied.

2.8 Unit cabinet shall come with supply discharge opening "knockouts". An optional noise attenuating insulated privacy air baffle (LOSB) shall be provided, if available, for horizontal supply discharge openings. All cabinet discharge openings shall include 1-1/2 inch drywall flange around the full opening perimeter.

2.9 Supply ducts shall not be rigidly attached to the cabinet and shall be acoustically isolated from cabinet using flexible canvas connections. Contractor shall install flex connection on all discharge openings. There shall be no rigid connection to supply-air discharge grilles or supply ducts except on Gold Series units designed with split casing.

2.10 Each unit shall have an (Acoustic) (Perimeter) return air panel. The panels shall be insulated with 1/2 inch thick, lined fiberglass insulation. The panel shall be easily removable without tools to allow access to the filter, chassis compartment and (optional) service disconnect switch.

2.11 (Optional) A Baffle shall be provided with each Acoustic RA Panels for enhanced sound attenuation. Baffle contains 1/2" thick sound insulation. Installing contractor shall be provide additional clearances when framing closet opening.

2.12 (Optional) Unit shall have an optional Fresh Outside Air Duct intake located at the top of the unit for introducing fresh outside air into the unit.

2.13 (Optional) Each unit shall be (field) (factory) supplied with double deflection supply grilles as shown on the plans. (Field) (Factory) provide opposed blade balancing dampers on units with multiple outlets as indicated on the plans.

2.14 (Optional) Unit shall have an optional 2-inch filter rack with MERV 13 rated pleated filter.

2.15 (Optional) Perimeter Return Air Panels shall have provision for a unit mounted thermostat to meet ADA requirements. Thermostat cable shall use a moxex plug connector.



SPECIFICATIONS (CONT'D)

3 FAN & BLOWER

3.1 Each unit shall include a factory mounted forward curved, double inlet double width centrifugal direct drive fan and motor assembly with internal overload protection. The blower fan assembly shall be positioned horizontally from a sheet metal blower deck.

3.2 Units shall be supplied with an ECM, controlled using a PWM signal. Fan motors speeds shall be field selectable using unit mounted 3- speed fan switch or by compatible multi-speed thermostat. Units with fresh air option shall have an ultra-low 'Whisper' mode fan speed for air circulation when there is no call for compressor.

4 REFRIGERATION CHASSIS

4.1. Chassis shall be rated up to 400psig working pressure for the water side circuit. Provide high temperature and pressure rated water hoses for connection of the risers to the chassis. The hoses supplied shall be constructed with an inner core of rubber, a stainless-steel metal braid, and rubber outer covering. Fittings shall be brass construction. Hoses shall carry a pressure rating of 600 psig.

4.2. The compressor chassis shall be mounted and vibrationally isolated on 12-gauge slide rails using a double isolated base. Compressor shall have an acoustical enclosure ensuring compressor noise is isolated from air stream. Provide plug type electrical connections for chassis control and power connections allowing for easy removal of the chassis from the front of the cabinet.

4.3 The refrigeration circuit shall have two service valves, for measuring high and low refrigerant pressure, in the chassis compartment enclosure. The refrigerant circuit shall contain a thermal expansion valve (TXV) refrigerant metering device and a reversing valve.

4.4 Compressor shall be hermetically sealed type with internal thermal overload protection. Compressor shall be mounted on rubber vibration isolators.

4.5 Air side coils shall have copper tubes mechanically bonded to aluminum fins. Coil shall be sized to meet scheduled performance for cooling and heating. Provide 1" T/A filter on coil face.

4.6 Water side condenser heat exchanger shall be coaxial type with steel outer tube and copper inner tube. Condenser shall be rated at 500 psig water side and 650 psig refrigerant side.

4.7 (Optional) High-efficiency chassis shall be provided to meet higher operating efficiency requirements.

4.8 (Optional) The chassis shall employ an optional motorized auto shut-off valve to shut off water to the unit when compressor is not running. Valve shall be mounted in the chassis compartment.

4.9 (Optional) The chassis shall employ optional autoflow balancing valve mounted in the chassis compartment to maintain

specified unit water flow rate over 2-80 psig differential water pressure. Auto flow balancing valve shall be field serviceable.

4.10 (Optional) Optional 20 mesh y-strainer shall be installed on the water circuit inside the chassis.

4.11 (Optional) Low Temp Water option: The chassis shall be factory supplied with a Low Temperature Water (LTW) kit. The LTW option shall be utilized for system water loops between 45°F and 55°F in heating mode that do not contain any glycol freeze protection. The chassis shall come with high water pressure safety switches factory installed.

4.12 (Optional) Geothermal option: The chassis shall be factory supplied with a geothermal kit. The geothermal option includes geothermal rated low-pressure switch, insulated coaxial and insulated water piping. Geothermal option must only be used on loop systems with glycol freeze protection added to the riser loop.

4.12 (Optional) DX evaporator coils shall be provided in either Epoxy Coated (EC) meeting minimum 1000 hours of Salt Spray ASTM B117 protection; or Electrofin® E-coat (EF) meeting 15,000 hours salt spray resistance per ASTM B117.

4.12 (Optional) Optional cupro-nickel coaxial coil shall be provided in lieu of standard copper coaxial for protection from loop water corrosion and fouling and with use in open loop systems.

5 CONTROLS

5.1 Each unit shall be factory wired with all necessary controls. Each unit shall come standard with a microprocessor controller mounted in the electrical box. Electrical box shall contain compressor and fan motor contactor, 24-volt control power transformer, terminal block for low voltage field wiring connection, and terminal block for main power electrical connection, unit mounted service disconnect switch.

5.2 The operating and safety controls shall be monitored by the microprocessor controller. Sensor parameters and timers shall be field adjustable to meet site conditions. Controller shall have the following safety switches and sensors and timers:

- Low Pressure Safety Switch
- High Pressure Safety Switch
- **(Optional)** High Water Pressure Safety Switches
- **(Optional)** Condensate Overflow Switch
- **(Optional)** Entering Water Temperature sensor
- **(Optional)** Leaving Water Temperature sensor
- **(Optional)** Suction line freeze-stat temperature sensor
- **(Optional)** Supply Air Temperature sensor
- Compressor Anti-Short Cycle timer
- Water Valve Open and Closed timer
- Low-pressure bypass timer
- Random wait time on unit power up



SPECIFICATIONS (CONT'D)

· Fan-On and Fan-Off timer

5.3 Microprocessor controller shall have embedded webpage diagnostic capability for status updates, quick servicing and troubleshooting on site. Controller shall have data logging with stored alarm states, supply and leaving water temperature, suction line temperature, and supply air temperature readings. Access to controller status and data log shall be available through a smart phone device, tablet or laptop.

5.4 Microprocessor controller shall have 'future proof' feature to accept software updates. Microprocessor board shall be capable of being field updated with newer software patches or custom software as needed.

5.5 Thermostats shall be remote mounted. Unit will come with a 24V terminal block for field connecting a field provided thermostat pigtail to the controller board terminals. Thermostats can be either Heat/Cool or Heat Pump type. Thermostat shall provide 24V signal to G (fan) terminal during a call for cooling.

5.6 ECM fan speed % torque settings are field configurable using the imbedded Web based interface to meet site static requirements.

5.7 (Optional) Units shall come with a SmartOne compatible RS-485 communication add-on board and remote temperature sensor.

6 TESTING & WARRANTY

6.1 Each chassis unit shall be factory tested using a multi-step computer controlled testing equipment to prevent operator error during factory testing.

6.2 Warranty shall be for parts, 1 year not to exceed 18 months from date of shipment. (Optional) Provide 5 year compressor replacement parts warranty only.

7 EXECUTION

7.1 Units shall be installed neat and level on vibration isolation pads, supplied by heat pump manufacturer, and secured to floor.

7.2 Flush the system per manufacturer instructions before connecting chassis. Contractor shall join supply and return riser flexible hoses together in each cabinet for flushing purposes.

7.3 Installing contractor shall install risers and install riser transition piece connections where riser sizes change.

7.4 The hoses shall be installed in the field by the contractor. The flare fittings on the hoses shall be connected according to industry standard (Finger tighten then tighten with wrench while always using back-up wrench).

7.5 (Optional): Contractor shall make provisions for connecting fresh air duct to the optional fresh outside air duct intake located at the top of the unit cabinet.

7.6 (Add for Gold Units) Discharge plenum shall be fastened to the underside of the concrete slab for noise attenuation

using appropriate industry accepted mounting practices.

7.7 Flush the system per manufacturer instructions before connecting chassis. The riser system shall be flushed, cleaned and commissioned before connecting chassis units to the riser system.

7.8 Contractor shall provide duct and grille canvas connections on all single piece (Silver Series) units.

7.9 Start-up of units shall be supervised by trained representatives of the equipment manufacturer.