



**COMMERCIAL**  
TRANQUILITY<sup>®</sup> CONSOLE (SD) SERIES

# PRODUCT CATALOG

Part#: LC3022 | Revised: October 22, 2024

Models: SD 09-18  
60Hz - R-454B

Preliminary

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## THE TRANQUILITY CONSOLE (SD) SERIES

The Tranquility Console (SD) Series unit provides a high-efficiency WSHP “ductless” solution for spaces where individual, quiet control of the heating and cooling system is important. Tranquility SD units are especially ideal where ceiling height and space are limited, or when preserving the integrity of an existing structure. Not only does the Tranquility SD exceed ASHRAE 90.1 efficiency standards, but it also uses R-454B low Global Warming Potential (GWP) refrigerant, making it an extremely environmentally friendly space conditioning product solution.

Available in sizes ¾ ton (2.64 kW) through 1½ tons (5.3 kW) with numerous cabinet, water piping and control choices, the Tranquility SD offers a wide range of units for most any installation. The Tranquility SD has an extended-range refrigerant circuit, capable of ground-loop (geothermal) applications as well as water-loop (boiler-tower) applications. Standard features are many. Microprocessor controls, galvanized steel cabinet, polyester powder coat paint and TXV refrigerant metering device are just some of the features of the flexible Tranquility SD.

Recent EPA mandates require an industry transition to low-GWP refrigerants, such as R-454B which is a gas that is classified as having low-toxicity, low-flammability rating. Due to these characteristics, R-454B systems charged with over 62 ounces of refrigerant must contain an integrated Refrigerant Detection System (RDS). In the unlikely event of a system-refrigerant leak, the RDS shuts down compressor operation and runs the unit blower motor to disperse any concentration of leaked refrigerant in compliance with UL 60335-2-40 safety standards. For Tranquility SD products, the RDS is optional on all sizes.

Compressors are mounted on specially-engineered sound-tested EPDM grommets for quiet operation. Options such as coated air coil, DDC controls, internal pump and factory-installed water-solenoid valves allow customized-design solutions.

iGate® 2 technology provides technicians an interface into the operation of the system in real time without the need for hard tooling. On-board advanced controls communicate the key operating system temperatures enabling technicians to startup, commission, and service the equipment remotely by smart phone or website via the cloud. Communication can also be done at the unit via a communicating thermostat or handheld service tool. Not only does iGate 2 monitor current performance, it also allows the functionality to make system adjustments and captures operating conditions at time of fault. All this information is displayed in an easy-to-read format maximizing the usability of the experience.

The Tranquility Console (SD) Series console water-source heat pumps are designed to meet the challenges of today’s HVAC demands with a low-cost, high-value, ductless solution.

## FEATURES

- Sizes 09 (¾ ton, 2.64 kW) through 18 (1½ ton, 5.3 kW)
- High-efficiency rotary compressors
- Exceeds ASHRAE 90.1 efficiencies
- Two-piece chassis/cabinet design
- Galvanized-steel cabinet with durable Polar Ice powder-coat finish
- Slope-top/aluminum rigid bar supply-air grille
- TXV metering device
- Microprocessor controls with eight standard safety features
- Right- or left-hand piping arrangement
- Front or bottom return-air configuration
- Unit Performance Sentinel performance-monitoring system
- Communicating Controls Powered by CXM2:
  - Multiple communication pathways for unit access and diagnosis:
    - Cloud-based remote monitoring via Wi-Fi communicating color-touchscreen thermostat
    - Connect directly to the system with a handheld service tool
  - Provides real-time unit operating conditions
  - Reduces startup, commissioning, and service time by providing key system temperatures electronically
  - Captures operating conditions in the event of a safety shutdown
- Digital auto change-over unit-mounted controls with temperature display and high/low fan-speed selection
- Remote-mounted controls
- BACnet, Modbus, and Johnson Controls N2 compatibility options for Building Management Systems (BMS)
- Unit-integrated power disconnect
- Easy-to-clean rust-prohibitive stainless-steel drain pans
- Extended-range insulation for geothermal applications
- Auto-flow regulators that limit water flow to the unit preventing system overpumping
- Two-way motorized water valves that prevent water flow through the unit when it is not in operation, increasing system-pumping efficiency
- Internally-mounted water pump for single-pipe systems
- Corrosive-resistant cupro-nickel water-heat exchanger
- E-Coated air coils for added protection
- 115V-1ph-60Hz with or without 20-AMP plug and cord
- Locking control door
- No cabinet, chassis-only replacements
- Extended cabinets

## OPTIONS

- Refrigerant Detection System (RDS) (optional for all sizes)
- Unit subbase with black-matte finish
  - Available with or without fresh-air motorized damper
- UltraQuiet sound-attenuation package

## ACCESSORIES

- Louvered, black-painted, matte-finish subbase with decorative grille for field installation
- Accessory subbases

## iGATE 2 COMMUNICATION – CLOUD CONNECTED, WEB-ENABLED INFORMATION GATEWAY TO MONITOR, CONTROL, AND DIAGNOSE YOUR SYSTEM

iGate 2 Communication – Cloud connected, web-enabled information gateway to monitor, control, and diagnose your system.

The Tranquility (SD) is equipped with industry-first, iGate 2 communication information gateway that allows users to interact with their water-source system in easy to read clear language.

**Monitor/Configure** – Installers can configure from the myUplink PRO website, mobile app, Communicating (AWC) Thermostat, or diagnostic tool, including: Unit family, size, accessory configuration, and demand reduction (optional, to limit unit operation during peak times). Users can look up the current system status: temperature sensor readings and operational status of the blower.

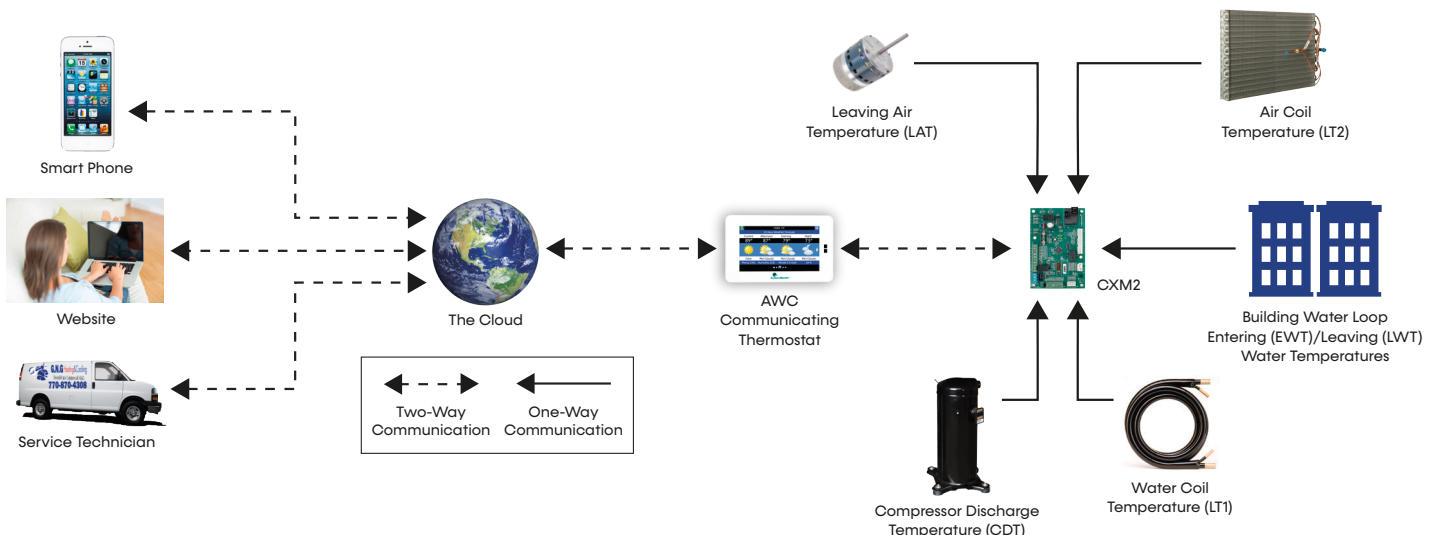
**Precise Control** – The new CXM2 board enables intelligent, two-way communication between the CXM2 board and smart components like the communicating thermostat and diagnostic tool. The advanced CXM2 board uses information received from the temperature sensors to precisely control operation to deliver high efficiency, reliability and increased comfort.

**Diagnostics** – iGate 2 takes diagnosing water source heat pump units to a next level of simplicity, by providing a dashboard of system and fault information, in clear language, on the AWC Communicating Thermostat, handheld service tool and the web portal/mobile app on the internet.

iGate 2 Service Warnings notify the homeowner and contractor of a fault and displays fault descriptions by app notifications/email with possible causes. Additionally, the current system status can be viewed graphically on the web portal and mobile app.

In iGate 2 Service Mode, the service personnel can access fault description, possible causes and most importantly, the conditions (temp, flow, i/o conditions, configuration) at the time of the fault. Manual Operation mode allows the service personnel to manually command operation for any of the thermostat outputs, blower speed, to help troubleshoot specific components. This operation can either be conducted at the unit with a communicating thermostat/diagnostic tool or remotely with mobile app/website when the AWC Communicating Thermostat controls are used.

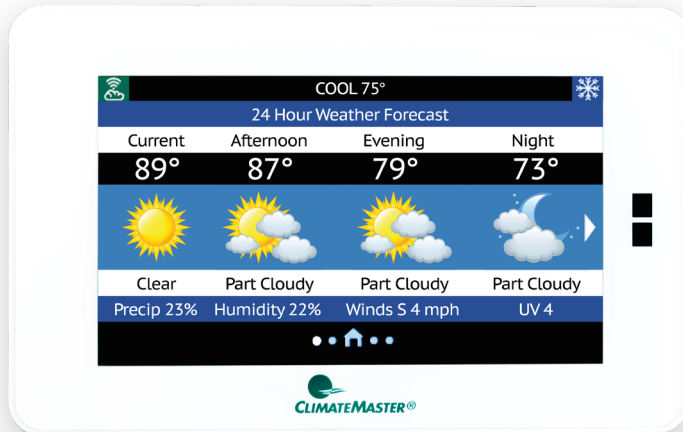
With an iGate 2 communicating system, users and contractors have a web-enabled gateway to system information never before available and exclusive to ClimateMaster products.



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# Communicating (AWC) Thermostat

## IGATE 2 COMMUNICATION – CLOUD CONNECTED, WEB-ENABLED INFORMATION GATEWAY TO MONITOR, CONTROL, AND DIAGNOSE YOUR SYSTEM



The Communicating (AWC) Thermostat is innovating the future of comfort technology, one building at a time. The inspired design of the touch screen interface allows you to see real-time data for the efficiency and health of your system, with early warnings for potential system faults. The cloud based information gateway allows technicians to remotely diagnose system issues before occupants even know there is a problem. Control and monitor the system in your home or business from anywhere in the world with an easy to use app on your phone.

## Features with Efficiency in Mind



### Touch Screen Interface

A brilliantly customizable touch screen monitor for simple control.



### Seamless Integration

Between your Communicating (AWC) Thermostat and comfort system.



### (Mobile) Remote System Control

Control temperature and schedule from anywhere in the world.



### Early Fault Warnings

Alerts the building owner and the contractor of potential system faults in the future.



### Remote Diagnostics

Enable the contractor to remotely diagnose system issues, adjust system settings, and reset faults.



### Real-Time Operations Data and System Schematics

Access simply via the myUplink Pro Account and web portal to view system diagrams with current operating temperatures.



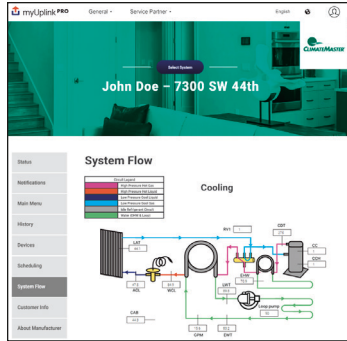
### Revenue Stream

HVAC professionals can offer owners service contracts with remote monitoring and diagnostic capabilities without the large expense of a building management system.





## HVAC Professional | User Experience



The iGate 2 establishes a two-way link between the communicating (AWC) thermostat and the cloud, adding significant value for both residential and commercial customers. Our new thermostat works

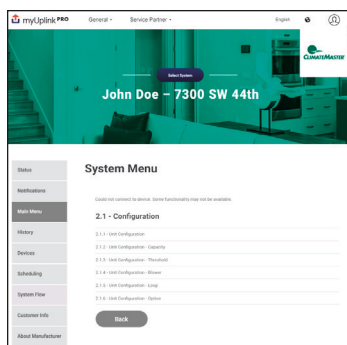
with your customers' Tranquility comfort systems to provide the most efficient link between their system and your services. The customizable monitoring from the myUplink PRO web portal or phone app account allows for continuous system monitoring, analysis, repair recognition, and early warnings for potential system faults that are sent to you and your customer.



### Benefits

- Remote login from anywhere, anytime from any internet connected device
- View system fault history with possible root causes
- Information is available for contractors to troubleshoot and diagnose systems remotely
- Secure internet connection keeps homeowner information private
- Access thermostat(s) through Android and iPhone mobile apps

## Homeowner | User Experience



The iGate 2 advanced unit controls enable a two-way communication link for critical system information between the unit and the cloud. From any internet connected device or smart phone, building owners can control and monitor their systems

from anywhere in the world. iGate 2 offers building owners peace of mind their systems are operating at peak performance with advanced operational performance issue notifications. HVAC professionals get notifications when systems are operating out of range. They can log in remotely to check system faults, review current operating conditions, and diagnose issues remotely. This gives the HVAC technician the upper hand when showing up to perform service, saving time which in turn, saves money.



### Benefits

- Communicates personal settings and reminders through the iGate 2 communication system
- Easy-to-use, full-color, high-resolution user interface
- Sleek, intuitive control panel
- Secure internet connection keeps your information private
- Contains unit model, serial number and your HVAC professionals contact information
- System monitoring automatically contacts HVAC system providers when service is needed

# Selection Procedure

Models:  
SD  
09-18

## Reference Calculations

| Heating   | Cooling  |
|---|--|
| $LWT = EWT - \frac{HE}{GPM \times \text{Constant}}$ | $LWT = EWT + \frac{HR}{GPM \times \text{Constant}} \quad LC = TC - SC$       |
| $LAT = EAT + \frac{HC}{CFM \times 1.08}$            | $LAT (DB) = EAT (DB) - \frac{SC}{CFM \times 1.08} \quad S/T = \frac{SC}{TC}$ |

Constant = 500 for water, 485 for antifreeze

## Conversion Table - to convert inch-pound (English) to S-I (Metric)

| Airflow                     | Water Flow                      | External Static Pressure        | Water Pressure Drop             |
|-----------------------------|---------------------------------|---------------------------------|---------------------------------|
| Airflow (L/s) = CFM x 0.472 | Water Flow (L/s) = GPM x 0.0631 | ESP (Pa) = ESP (in of wg) x 249 | PD (kPa) = PD (ft of hd) x 2.99 |

## Legend and Glossary of Abbreviations

| Abbreviations | Descriptions   |
|---------------|--|
| Btuh          | Btu (British Thermal Unit) per hour                    |
| BMS           | Building Management System                             |
| CDT           | Compressor discharge temperature                       |
| CFM           | Airflow, cubic feet per minute                         |
| COP           | Coefficient of performance = Btuh output/Btuh input    |
| CT EC         | Electronically commutated constant torque blower motor |
| CV EC         | Electronically commutated constant volume blower motor |
| DB            | Dry bulb temperature, °F                               |
| DT            | Delta T  |
| EAT           | Entering air temperature                               |
| EER           | Energy efficient ratio = Btuh output/Watt input        |
| ESP           | External static pressure, inches w.g.                  |
| EWT           | Entering water temperature                             |
| FPT           | Female pipe thread                                     |
| GPM           | Water flow in U.S., gallons per minute                 |
| HC            | Air heating capacity, Btuh                             |
| HE            | Total heat of extraction, Btuh                         |
| HR            | Total heat of rejection, Btuh                          |

| Abbreviations | Descriptions  |
|---------------|---|
| HWG           | Hot water generator (desuperheater) capacity, MBtuh |
| kW            | Total power unit input, kilowatts                   |
| LAT           | Leaving air temperature, °F                         |
| LC            | Latent cooling capacity, Btuh                       |
| LOC           | Loss of charge                                      |
| LWT           | Leaving water temperature, °F                       |
| MBtuh         | 1,000 Btu per hour                                  |
| MPT           | Male pipe thread                                    |
| MWV           | Motorized water valve                               |
| PSC           | Permanent split capacitor                           |
| RDS           | Refrigerant Detection System                        |
| SC            | Sensible cooling capacity, Btuh                     |
| S/T           | Sensible to total cooling ratio                     |
| TC            | Total cooling capacity, Btuh                        |
| TD or delta T | Temperature differential                            |
| VFD           | Variable frequency drive                            |
| WB            | Wet bulb temperature, °F                            |
| WPD           | Waterside pressure drop, psi or feet of head        |
| WSE           | Waterside economizer                                |

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## USE THE FOLLOWING SELECTION STEPS

- Determine the actual heating and cooling loads at the desired dry bulb and wet bulb conditions.
- Obtain the following design parameters: Entering water temperature, water flow rate in GPM, airflow in CFM, water flow pressure drop and design wet and dry bulb temperatures. Airflow CFM should be between 300 and 450 CFM per ton. Unit water pressure drop should be kept as close as possible to each other to make water balancing easier. Go to the appropriate tables and find the proper indicated water flow and water temperature.
- Select a unit based on total and sensible cooling conditions. Select a unit which is closest to, but no larger than, the actual cooling load.
- Enter tables at the design water flow and water temperature. Read the total and sensible cooling capacities. **NOTE: interpolation is permissible, extrapolation is not.**
- Read the heating capacity. If it exceeds the design criteria it is acceptable. It is quite normal for water-source heat pumps to be selected on cooling capacity only since the heating output is usually greater than the cooling capacity.
- Determine the correction factors associated with the variable factors of dry bulb and wet bulb.  
  
Corrected Total Cooling =  
tabulated total cooling x wet bulb correction.  
  
Corrected Sensible Cooling =  
tabulated sensible cooling x wet/dry bulb correction.
- Compare the corrected capacities to the load requirements. Normally if the capacities are within 10% of the loads, the equipment is acceptable. It is better to undersize than oversize, as undersizing improves humidity control, reduces sound levels and extends the life of the equipment.
- When completed, calculate water temperature rise and assess the selection. If the units selected are not within 10% of the load calculations, then review what effect changing the GPM, water temperature and/or air flow and air temperature would have on the corrected capacities. If the desired capacity cannot be achieved, select the next larger or smaller unit and repeat the procedure. Remember, when in doubt, undersize slightly for best performance.

## EXAMPLE EQUIPMENT SELECTION FOR COOLING

### Step 1: Load Determination

Assume we have determined that the appropriate cooling load at the desired dry bulb 80°F and wet bulb 65°F conditions is as follows:

Total Cooling ..... 10,200 Btu/h  
Sensible Cooling ..... 8,350 Btu/h  
Entering Air Temp..... 80°F Dry Bulb / 65°F Wet Bulb

### Step 2: Design Conditions

Similarly, we have also obtained the following design parameters:

Entering Water Temp ..... 90°F  
Water Flow (Based upon 10°F rise in temp) .2.3 GPM  
Airflow ..... 350 CFM

### Steps 3, 4 & 5: HP Selection

After making our preliminary selection (SD12), we enter the tables at design water flow and water temperature and read Total Cooling, Sensible Cooling and Heat of Rejection capacities:

Total Cooling ..... 10,800 Btu/h  
Sensible Cooling ..... 9,200 Btu/h  
Heat of Rejection ..... 13,900 Btu/h

### Steps 6 and 7: Entering Airflow Corrections

Next, we determine our correction factors.

| Corrected Values            | Table    | Ent Air | Airflow | Corrected |
|-----------------------------|----------|---------|---------|-----------|
| Corrected Total Cooling     | = 10,800 | x 0.976 | x 0.954 | = 10,056  |
| Corrected Sensible Cooling  | = 9,200  | x 1.071 | x 0.927 | = 9,134   |
| Corrected Heat of Rejection | = 13,900 | x 0.979 | x 0.958 | = 13,037  |

### Step 8: Water Temperature Rise Calculation and Assessment

Actual Temperature Rise ..... 11.3°F

When we compare the Corrected Total Cooling and Corrected Sensible Cooling figures with our load requirements stated in Step 1, we discover that our selection is within ± 10% of our sensible load requirement. Furthermore, we see that our Corrected Total Cooling figure is within 1,000 Btu/h the actual indicated load.

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# Model Nomenclature

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15  
**| S | D | M | T | O | 9 | A | G | C | S | O | C | S | P | S |**

### PRODUCT NAME

S = R-454B Refrigerant

### MODEL TYPE

D = Console Water-Source Series

### CABINET, RETURN, AND COLOR

| Option               | Polar Ice |       | Bright White |       |
|----------------------|-----------|-------|--------------|-------|
|                      | Bottom    | Front | Bottom       | Front |
| Standard             | B         | F     | D            | G     |
| Locking Control Door | L         | C     | M            | Q     |
| Extended Vabinet     | E         | A     | H            | J     |
| No Cabinet           | N         | T     | P            | R     |

### SUBBASE

| Color        | Size | No Damper | Damper |
|--------------|------|-----------|--------|
| No Subbase   | None | N         | -      |
| Black        | *3"  | 3         | T      |
|              | 5"   | 5         | F      |
| Bright White | *3"  | 4         | U      |
|              | 5"   | 6         | G      |

### SIZE

09 15  
12 18

### REVISION

A = Current

### VOLTAGE

A = 115-1-60  
 G = 208/230-1-60  
 E = 265-1-60  
 B = 115-1-60 Refrigerant Detection System  
 J = 208/230-1-60 Refrigerant Detection System  
 D = 265-1-60 Refrigerant Detection System

### CONTROLS

| CXM2                          | Unit Mounted |             | Remote Tstat | Remote Wall Sensor/ Internally Mounted MPC |
|-------------------------------|--------------|-------------|--------------|--|
|                               | CM100 Tstat  | CM300 Tstat |              |  |
| Field Connected               | A            | F           | R            | L  |
| Disconnect                    | B            | G           | S            | M  |
| Circuit Breaker               | C            | H           | T            | N  |
| Plug and Cord                 | D            | J           | U            | P  |
| Receptacle with Disc and Plug | E            | K           | V            | Q  |

\*If a 3-inch subbase is selected, the blower motor's LOW speed tap cannot be utilized. Use ClimateMaster's selection software at <https://climatemastersolutions.com/eRep/> to configure your Tranquility SD model.

### STANDARD

S = Standard

### BLOWER MOTOR

P = PSC  
T = Constant Torque (CT) EC

### COPPER CONNECTIONS

| Pipe Location | Right | Left |
|---------------|-------|------|
| Sweat         | R     | L    |
| FPT           | S     | M    |
| MPT           | T     | N    |

### DRAIN PAN/HEAT EXCHANGER OPTIONS

C = Standard Drain Pan, Non-Coated Air Coil  
 S = Stainless Steel Drain Pan, Non-Coated Air Coil

### WATER OPTIONS

| Option | Description                                |
|--------|--|
| 0      | None                                       |
| M      | Motorized Water Valve                      |
| C      | Modulating Valve, Low System Pressure Drop |
| 7      | Internal Secondary Pump                    |
| A      | AFR 2.25 GPM/ton                           |
| W      | MWV and AFR 2.25 GPM/ton                   |
| F      | AFR 3.0 GPM/ton                            |
| T      | MWV and AFR 3.0 GPM/ton                    |

### CHASSIS OPTIONS

| Range          | UltraQuiet |   |
|----------------|------------|---|
|                | No         | E |
| Extended Range | Yes        | F |
|                | No         | S |
| Standard       | Yes        | T |
|                | No         |   |

# Performance Data: ASHRAE/AHRI/ISO 13256-1

Models:  
SD  
09-18

## Tested in Accordance with ASHRAE/AHRI/ISO 13256-1 English (I-P) Units

| Model | Motor Type | Water Loop Heat Pump |            |               |     | Ground Water Heat Pump |            |               |     | Ground Loop Heat Pump |            |                   |     |
|-------|------------|----------------------|------------|---------------|-----|------------------------|------------|---------------|-----|-----------------------|------------|-------------------|-----|
|       |            | Cooling 86°F         |            | Heating 68°F  |     | Cooling 59°F           |            | Heating 50°F  |     | Full Cooling 77°F     |            | Full Heating 32°F |     |
|       |            | Capacity Btuh        | EER Btuh/W | Capacity Btuh | COP | Capacity Btuh          | EER Btuh/W | Capacity Btuh | COP | Capacity Btuh         | EER Btuh/W | Capacity Btuh     | COP |
| SD09  | PSC        | 8,600                | 13.3       | 11,400        | 4.6 | 9,200                  | 18.6       | 9,500         | 4.0 | 8,800                 | 14.9       | 7,300             | 3.3 |
|       | EC         | 8,600                | 13.4       | 11,400        | 4.6 | 9,200                  | 18.8       | 9,500         | 4.0 | 8,800                 | 15.0       | 7,300             | 3.3 |
| SD12  | PSC        | 11,300               | 12.8       | 14,100        | 4.5 | 12,500                 | 18.7       | 11,800        | 3.9 | 11,800                | 14.5       | 9,300             | 3.3 |
|       | EC         | 11,300               | 12.9       | 14,100        | 4.5 | 12,500                 | 18.9       | 11,800        | 3.9 | 11,800                | 14.6       | 9,300             | 3.3 |
| SD15  | PSC        | 13,700               | 12.8       | 17,500        | 5.1 | 15,700                 | 19.4       | 14,600        | 4.0 | 14,500                | 14.7       | 11,400            | 3.3 |
|       | EC         | 13,700               | 13.3       | 17,500        | 5.2 | 15,700                 | 19.9       | 14,600        | 4.1 | 14,500                | 15.2       | 11,400            | 3.4 |
| SD18  | PSC        | 15,600               | 12.2       | 20,100        | 4.5 | 17,200                 | 17.9       | 16,500        | 3.9 | 16,100                | 13.8       | 13,200            | 3.3 |
|       | EC         | 15,600               | 12.7       | 20,100        | 4.6 | 17,200                 | 18.4       | 16,500        | 4.0 | 16,100                | 14.3       | 13,200            | 3.4 |

Notes:

- Where dual voltages are available, ratings are based on the lower voltage setting.
- Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature.
- Heating capacities based upon 68°F DB, 59°F WB entering air temperature.
- Ground Loop Heat Pump ratings based on 15% antifreeze solution.

## Tested in Accordance with ASHRAE/AHRI/ISO 13256-1 Metric (S-I) Units

| Model | Motor Type | Water Loop Heat Pump |         |              |     | Ground Water Heat Pump |         |              |     | Ground Loop Heat Pump |         |                  |     |
|-------|------------|----------------------|---------|--------------|-----|------------------------|---------|--------------|-----|-----------------------|---------|------------------|-----|
|       |            | Cooling 30°C         |         | Heating 20°C |     | Cooling 15°C           |         | Heating 10°C |     | Full Cooling 25°C     |         | Full Heating 0°C |     |
|       |            | Capacity kW          | EER W/W | Capacity kW  | COP | Capacity kW            | EER W/W | Capacity kW  | COP | Capacity kW           | EER W/W | Capacity kW      | COP |
| SD09  | PSC        | 3.0                  | 3.9     | 3.0          | 4.6 | 3.0                    | 5.5     | 3.0          | 4.0 | 3.0                   | 4.4     | 2.0              | 3.3 |
|       | EC         | 3.0                  | 3.9     | 3.0          | 4.6 | 3.0                    | 5.5     | 3.0          | 4.0 | 3.0                   | 4.4     | 2.0              | 3.3 |
| SD12  | PSC        | 3.0                  | 3.8     | 4.1          | 4.5 | 3.7                    | 5.5     | 3.0          | 3.9 | 3.0                   | 4.3     | 3.0              | 3.3 |
|       | EC         | 3.0                  | 3.8     | 4.1          | 4.5 | 3.7                    | 5.5     | 3.0          | 3.9 | 3.0                   | 4.3     | 3.0              | 3.3 |
| SD15  | PSC        | 4.0                  | 3.8     | 5.1          | 5.1 | 4.6                    | 5.7     | 4.0          | 4.0 | 4.0                   | 4.3     | 3.0              | 3.3 |
|       | EC         | 4.0                  | 3.9     | 5.1          | 5.2 | 4.6                    | 5.8     | 4.0          | 4.1 | 4.0                   | 4.5     | 3.0              | 3.4 |
| SD18  | PSC        | 5.0                  | 3.6     | 5.9          | 4.5 | 5.0                    | 5.2     | 5.0          | 3.9 | 5.0                   | 4.0     | 4.0              | 3.3 |
|       | EC         | 5.0                  | 3.7     | 5.9          | 4.6 | 5.0                    | 5.4     | 5.0          | 4.0 | 5.0                   | 4.2     | 4.0              | 3.4 |

Notes:

- Where dual voltages are available, ratings are based on the lower voltage setting.
- Cooling capacities based upon 27°C DB, 19°C WB entering air temperature.
- Heating capacities based upon 20°C DB, 15°C WB entering air temperature.
- Ground Loop Heat Pump ratings based on 15% antifreeze solution.

# Performance Data: Selection Notes

Models:  
SD  
09-18

For operation in the shaded area when water is used instead of an antifreeze solution, the LWT (Leaving Water Temperature) must be calculated. Flow must be maintained to a level such that the LWT is maintained above 40°F (4.4°C) when the JW3 jumper is not clipped (see example below). Otherwise, appropriate levels of a proper antifreeze solution should be used in systems with leaving water temperatures of 40°F (4.4°C) or below and the JW3 jumper should be clipped. This is due to the potential of the refrigerant temperature being as low as 32°F (0°C) with 40°F (4.4°C) LWT, which may lead to a nuisance cutout due to the activation of the Low Temperature Protection. JW3 should never be clipped for standard-range equipment or systems without antifreeze.

Example:

At 50°F EWT (Entering Water Temperature) and 1.5 GPM/ton, a 3-ton unit has a HE of 22,500 Btuh. To calculate LWT, rearrange the formula for HE as follows:

$HE = TD \times GPM \times 500$ , where HE = Heat of Extraction (Btuh); TD = temperature difference (EWT - LWT) and GPM = U.S. Gallons per Minute.

$$TD = HE / (GPM \times 500)$$

$$TD = 22,500 / (1.5 \times 500)$$

$$TD = 10^\circ F$$

$$LWT = EWT - TD$$

$$LWT = 50 - 10 = 40^\circ F$$

In this example, as long as the EWT does not fall below 50°F, the system will operate as designed. For EWTs below 50°F, higher flow rates will be required (open loop systems, for example, require at least 2 GPM/ton when EWT is below 50°F).

|                 |      | Heating - EAT 70°F |      |          |       |      |     |
|-----------------|------|--------------------|------|----------|-------|------|-----|
|                 |      | EER                | HC   | Power kW | HE    | LAT  | COP |
| Not Recommended |      |                    |      |          |       |      |     |
|                 |      |                    | 4.0  | 0.45     | 2.5   | 84.6 | 2.6 |
| 8.6             | 27.4 | 4.6                | 0.46 | 3.0      | 86.8  | 2.9  |     |
| 8.6             | 31.0 | 4.8                | 0.47 | 3.2      | 87.8  | 3.0  |     |
| 8.6             | 33.0 | 4.9                | 0.47 | 3.3      | 88.3  | 3.1  |     |
| 8.4             | 23.3 | 5.4                | 0.48 | 3.8      | 90.2  | 3.3  |     |
| 8.5             | 26.3 | 5.7                | 0.49 | 4.0      | 91.4  | 3.4  |     |
| 8.6             | 27.9 | 5.9                | 0.49 | 4.2      | 92.1  | 3.5  |     |
| 8.2             | 19.8 | 6.2                | 0.50 | 4.5      | 93.6  | 3.7  |     |
| 4               | 22.3 | 6.6                | 0.50 | 4.9      | 95.0  | 3.8  |     |
|                 | 23.7 | 6.8                | 0.51 | 5.0      | 95.8  | 3.9  |     |
|                 | 16.7 | 7.0                | 0.51 | 5.3      | 96.9  | 4.0  |     |
|                 | 8.8  | 7.4                | 0.52 | 5.6      | 98.5  | 4.1  |     |
|                 |      | 7.6                | 0.52 | 5.8      | 99.3  | 4.2  |     |
|                 |      |                    | 0.53 | 6.0      | 100.0 | 4.3  |     |

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## 350 CFM Rated Airflow

| EWT<br>°F | GPM                       | WPD |      | COOLING - EAT 80/67°F |     |     |      |      |     |     |     |      |      | GPM                       | WPD |      | HEATING - EAT 70°F |     |     |      |      |     |     |      |
|-----------|---------------------------|-----|------|-----------------------|-----|-----|------|------|-----|-----|-----|------|------|---------------------------|-----|------|--------------------|-----|-----|------|------|-----|-----|------|
|           |                           | PSI | FT   | PSC                   |     |     |      |      | EC  |     |     |      |      |                           | PSI | FT   | PSC                |     |     |      | EC   |     |     |      |
|           |                           |     |      | TC                    | SC  | KW  | HR   | EER  | TC  | SC  | KW  | HR   | EER  |                           |     |      | HC                 | kW  | COP | HE   | HC   | kW  | COP | HE   |
| 20        | Operation Not Recommended |     |      |                       |     |     |      |      |     |     |     |      |      | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
|           |                           |     |      |                       |     |     |      |      |     |     |     |      |      | 2.2                       | 5.0 | 11.6 | 6.2                | 0.7 | 2.8 | 4.0  | 6.2  | 0.7 | 2.8 | 4.0  |
| 30        | 1.1                       | 1.6 | 3.7  | 9.1                   | 6.7 | 0.4 | 10.6 | 21.1 | 9.1 | 6.7 | 0.4 | 10.6 | 21.3 | 1.1                       | 1.6 | 3.7  | 6.8                | 0.7 | 3.0 | 4.5  | 6.8  | 0.7 | 3.0 | 4.5  |
|           | 1.6                       | 2.6 | 6.0  | 8.8                   | 6.6 | 0.4 | 10.2 | 20.9 | 8.8 | 6.6 | 0.4 | 10.2 | 21.1 | 1.6                       | 2.6 | 6.0  | 7.1                | 0.7 | 3.1 | 4.8  | 7.1  | 0.7 | 3.1 | 4.8  |
| 40        | 2.2                       | 4.5 | 10.4 | 8.7                   | 6.5 | 0.4 | 10.1 | 20.7 | 8.7 | 6.5 | 0.4 | 10.1 | 20.9 | 2.2                       | 4.5 | 10.4 | 7.2                | 0.7 | 3.1 | 4.9  | 7.2  | 0.7 | 3.2 | 4.9  |
|           | 1.1                       | 1.4 | 3.2  | 9.3                   | 6.9 | 0.5 | 10.9 | 20.2 | 9.3 | 6.9 | 0.5 | 10.9 | 20.4 | 1.1                       | 1.4 | 3.2  | 7.8                | 0.7 | 3.3 | 5.5  | 7.8  | 0.7 | 3.4 | 5.5  |
| 50        | 1.6                       | 2.3 | 5.3  | 9.2                   | 6.8 | 0.4 | 10.7 | 20.9 | 9.2 | 6.8 | 0.4 | 10.7 | 21.1 | 1.6                       | 2.3 | 5.3  | 8.2                | 0.7 | 3.5 | 5.8  | 8.2  | 0.7 | 3.5 | 5.9  |
|           | 2.2                       | 4.2 | 9.7  | 9.1                   | 6.7 | 0.4 | 10.6 | 20.7 | 9.1 | 6.7 | 0.4 | 10.6 | 20.9 | 2.2                       | 4.2 | 9.7  | 8.4                | 0.7 | 3.5 | 6.0  | 8.4  | 0.7 | 3.6 | 6.1  |
| 60        | 1.1                       | 1.2 | 2.8  | 9.4                   | 7.0 | 0.5 | 11.1 | 18.8 | 9.4 | 7.0 | 0.5 | 11.1 | 19.0 | 1.1                       | 1.2 | 2.8  | 8.8                | 0.7 | 3.7 | 6.4  | 8.8  | 0.7 | 3.7 | 6.4  |
|           | 1.6                       | 2.2 | 5.1  | 9.4                   | 6.9 | 0.5 | 11.0 | 19.6 | 9.4 | 6.9 | 0.5 | 11.0 | 19.8 | 1.6                       | 2.2 | 5.1  | 9.2                | 0.7 | 3.8 | 6.8  | 9.2  | 0.7 | 3.8 | 6.8  |
| 70        | 2.2                       | 3.8 | 8.8  | 9.3                   | 6.9 | 0.5 | 10.9 | 20.2 | 9.3 | 6.9 | 0.5 | 10.9 | 20.4 | 2.2                       | 3.8 | 8.8  | 9.5                | 0.7 | 3.9 | 7.1  | 9.5  | 0.7 | 3.9 | 7.1  |
|           | 1.1                       | 1.1 | 2.5  | 9.3                   | 7.1 | 0.5 | 11.2 | 17.0 | 9.3 | 7.1 | 0.5 | 11.2 | 17.1 | 1.1                       | 1.1 | 2.5  | 9.9                | 0.7 | 4.0 | 7.4  | 9.9  | 0.7 | 4.0 | 7.5  |
| 80        | 1.6                       | 2.1 | 4.9  | 9.4                   | 7.0 | 0.5 | 11.2 | 18.1 | 9.4 | 7.0 | 0.5 | 11.2 | 18.3 | 1.6                       | 2.1 | 4.9  | 10.3               | 0.7 | 4.1 | 7.8  | 10.3 | 0.7 | 4.1 | 7.8  |
|           | 2.2                       | 3.7 | 8.5  | 9.4                   | 7.0 | 0.5 | 11.1 | 18.8 | 9.4 | 7.0 | 0.5 | 11.1 | 19.0 | 2.2                       | 3.7 | 8.5  | 10.6               | 0.7 | 4.2 | 8.1  | 10.6 | 0.7 | 4.3 | 8.1  |
| 90        | 1.1                       | 1.0 | 2.3  | 8.9                   | 7.1 | 0.6 | 11.0 | 14.7 | 8.9 | 7.1 | 0.6 | 11.0 | 14.8 | 1.1                       | 1.0 | 2.3  | 10.9               | 0.7 | 4.3 | 8.3  | 10.9 | 0.7 | 4.3 | 8.4  |
|           | 1.6                       | 2.0 | 4.6  | 9.2                   | 7.1 | 0.6 | 11.1 | 16.2 | 9.2 | 7.1 | 0.6 | 11.1 | 16.4 | 1.6                       | 2.0 | 4.6  | 11.3               | 0.8 | 4.4 | 8.7  | 11.3 | 0.7 | 4.4 | 8.7  |
| 100       | 2.2                       | 3.5 | 8.1  | 9.3                   | 7.1 | 0.5 | 11.2 | 17.0 | 9.3 | 7.1 | 0.5 | 11.2 | 17.1 | 2.2                       | 3.5 | 8.1  | 11.6               | 0.8 | 4.5 | 9.0  | 11.6 | 0.7 | 4.5 | 9.0  |
|           | 1.1                       | 1.0 | 2.3  | 8.4                   | 7.0 | 0.7 | 10.7 | 12.4 | 8.4 | 7.0 | 0.7 | 10.7 | 12.6 | 1.1                       | 1.0 | 2.3  | 11.8               | 0.8 | 4.5 | 9.2  | 11.8 | 0.8 | 4.6 | 9.2  |
| 110       | 1.6                       | 1.9 | 4.4  | 8.7                   | 7.1 | 0.6 | 10.9 | 13.7 | 8.7 | 7.1 | 0.6 | 10.9 | 13.8 | 1.6                       | 1.9 | 4.4  | 12.2               | 0.8 | 4.6 | 9.5  | 12.2 | 0.8 | 4.7 | 9.6  |
|           | 2.2                       | 3.2 | 7.4  | 8.9                   | 7.1 | 0.6 | 11.0 | 14.7 | 8.9 | 7.1 | 0.6 | 11.0 | 14.8 | 2.2                       | 3.2 | 7.4  | 12.5               | 0.8 | 4.7 | 9.8  | 12.5 | 0.8 | 4.7 | 9.8  |
| 120       | 1.1                       | 0.9 | 2.1  | 7.7                   | 6.7 | 0.8 | 10.3 | 10.2 | 7.7 | 6.7 | 0.7 | 10.3 | 10.3 | 1.1                       | 0.9 | 2.1  | 12.6               | 0.8 | 4.7 | 9.9  | 12.6 | 0.8 | 4.7 | 9.9  |
|           | 1.6                       | 1.9 | 4.4  | 8.1                   | 6.9 | 0.7 | 10.5 | 11.5 | 8.1 | 6.9 | 0.7 | 10.5 | 11.6 | 1.6                       | 1.9 | 4.4  | 13.0               | 0.8 | 4.8 | 10.3 | 13.0 | 0.8 | 4.8 | 10.3 |
| 130       | 2.2                       | 3.0 | 6.9  | 8.4                   | 7.0 | 0.7 | 10.7 | 12.4 | 8.4 | 7.0 | 0.7 | 10.7 | 12.6 | 2.2                       | 3.0 | 6.9  | 13.2               | 0.8 | 4.8 | 10.4 | 13.2 | 0.8 | 4.9 | 10.5 |
|           | 1.1                       | 0.9 | 2.1  | 6.8                   | 6.3 | 0.8 | 9.7  | 8.1  | 6.8 | 6.3 | 0.8 | 9.7  | 8.2  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
| 140       | 1.6                       | 1.8 | 4.2  | 7.3                   | 6.6 | 0.8 | 10.0 | 9.2  | 7.3 | 6.6 | 0.8 | 10.0 | 9.3  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
|           | 2.2                       | 2.9 | 6.7  | 7.6                   | 6.7 | 0.8 | 10.2 | 10.0 | 7.6 | 6.7 | 0.8 | 10.2 | 10.1 | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
| 150       | 1.1                       | 0.9 | 2.1  | 5.7                   | 5.6 | 0.9 | 9.0  | 6.1  | 5.7 | 5.6 | 0.9 | 8.9  | 6.2  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
|           | 1.6                       | 1.8 | 4.2  | 6.3                   | 6.0 | 0.9 | 9.4  | 7.1  | 6.3 | 6.0 | 0.9 | 9.3  | 7.2  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
| 160       | 2.2                       | 2.9 | 6.7  | 6.6                   | 6.2 | 0.9 | 9.5  | 7.8  | 6.6 | 6.2 | 0.8 | 9.5  | 7.9  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
|           | 1.1                       | 0.9 | 2.1  | 4.5                   | 4.6 | 1.0 | 8.0  | 4.2  | 4.5 | 4.6 | 1.0 | 8.0  | 4.3  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
| 170       | 1.6                       | 1.8 | 4.2  | 5.0                   | 5.1 | 1.0 | 8.5  | 5.1  | 5.0 | 5.1 | 1.0 | 8.4  | 5.1  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
|           | 2.2                       | 2.8 | 6.5  | 5.4                   | 5.4 | 1.0 | 8.7  | 5.7  | 5.4 | 5.4 | 1.0 | 8.7  | 5.7  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |

Notes:

- Interpolation is permissible; extrapolation is not.
- All entering air conditions are 80°F (26.6°C) DB and 67°F (19.4°C) WB in cooling, and 70°F (21°C) DB in heating.
- Table does not reflect fan or pump power corrections for AHR/ISO conditions.
- All performance is based upon the lower voltage of dual voltage rated units.
- Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
- Operation below 40°F (4.4°C) is based upon 20% methanol antifreeze solution.
- Operation below 60°F (15.5°C) EWT requires optional insulated water/refrigerant circuit.
- See performance correction tables for operating conditions other than those listed above.
- See Performance Data Selection Notes for operation in the shaded areas.
- Performance capacities shown in thousands of Btuh.

## 450 CFM Rated Airflow

| EWT<br>°F | GPM                       | WPD |      | COOLING - EAT 80/67°F |     |     |      |      |      |     |     |      |      | GPM                       | WPD |      | HEATING - EAT 70°F |     |     |      |      |     |     |      |
|-----------|---------------------------|-----|------|-----------------------|-----|-----|------|------|------|-----|-----|------|------|---------------------------|-----|------|--------------------|-----|-----|------|------|-----|-----|------|
|           |                           | PSI | FT   | PSC                   |     |     |      |      | EC   |     |     |      |      |                           | PSI | FT   | PSC                |     |     |      | EC   |     |     |      |
|           |                           |     |      | TC                    | SC  | kW  | HR   | EER  | TC   | SC  | kW  | HR   | EER  |                           |     |      | HC                 | kW  | COP | HE   | HC   | kW  | COP | HE   |
| 20        | Operation Not Recommended |     |      |                       |     |     |      |      |      |     |     |      |      | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
|           |                           |     |      |                       |     |     |      |      |      |     |     |      |      | 3.0                       | 7.8 | 18.0 | 7.2                | 0.8 | 2.7 | 4.6  | 7.2  | 0.8 | 2.8 | 4.6  |
| 30        | 1.5                       | 2.1 | 4.9  | 12.5                  | 8.2 | 0.5 | 14.3 | 22.7 | 12.5 | 8.2 | 0.5 | 14.3 | 23.0 | 1.5                       | 2.1 | 4.9  | 8.0                | 0.8 | 3.0 | 5.3  | 8.0  | 0.8 | 3.0 | 5.3  |
|           | 2.3                       | 4.5 | 10.4 | 12.3                  | 8.0 | 0.5 | 14.0 | 23.6 | 12.3 | 8.0 | 0.5 | 14.0 | 23.9 | 2.3                       | 4.5 | 10.4 | 8.4                | 0.8 | 3.1 | 5.7  | 8.4  | 0.8 | 3.1 | 5.7  |
| 40        | 3.0                       | 6.8 | 15.7 | 12.2                  | 8.0 | 0.5 | 13.9 | 23.9 | 12.2 | 8.0 | 0.5 | 13.9 | 24.1 | 3.0                       | 6.8 | 15.7 | 8.6                | 0.8 | 3.1 | 5.9  | 8.6  | 0.8 | 3.2 | 5.9  |
|           | 1.5                       | 2.0 | 4.6  | 12.6                  | 8.4 | 0.6 | 14.6 | 21.0 | 12.6 | 8.4 | 0.6 | 14.6 | 21.2 | 1.5                       | 2.0 | 4.6  | 9.3                | 0.8 | 3.4 | 6.5  | 9.3  | 0.8 | 3.4 | 6.6  |
| 50        | 2.3                       | 4.2 | 9.7  | 12.5                  | 8.2 | 0.6 | 14.4 | 21.9 | 12.5 | 8.2 | 0.6 | 14.4 | 22.2 | 2.3                       | 4.2 | 9.7  | 9.8                | 0.8 | 3.5 | 7.0  | 9.8  | 0.8 | 3.6 | 7.1  |
|           | 3.0                       | 6.1 | 14.1 | 12.5                  | 8.2 | 0.5 | 14.3 | 22.7 | 12.5 | 8.2 | 0.5 | 14.3 | 23.0 | 3.0                       | 6.1 | 14.1 | 10.1               | 0.8 | 3.6 | 7.3  | 10.1 | 0.8 | 3.6 | 7.3  |
| 60        | 1.5                       | 1.8 | 4.2  | 12.4                  | 8.7 | 0.7 | 14.6 | 18.8 | 12.4 | 8.7 | 0.7 | 14.6 | 19.0 | 1.5                       | 1.8 | 4.2  | 10.7               | 0.8 | 3.8 | 7.8  | 10.7 | 0.8 | 3.8 | 7.9  |
|           | 2.3                       | 3.8 | 8.8  | 12.5                  | 8.5 | 0.6 | 14.6 | 20.2 | 12.5 | 8.5 | 0.6 | 14.6 | 20.4 | 2.3                       | 3.8 | 8.8  | 11.3               | 0.8 | 3.9 | 8.4  | 11.3 | 0.8 | 4.0 | 8.4  |
| 70        | 3.0                       | 5.8 | 13.4 | 12.6                  | 8.4 | 0.6 | 14.6 | 21.0 | 12.6 | 8.4 | 0.6 | 14.6 | 21.2 | 3.0                       | 5.8 | 13.4 | 11.6               | 0.8 | 4.0 | 8.7  | 11.6 | 0.8 | 4.1 | 8.7  |
|           | 1.5                       | 1.7 | 3.9  | 12.0                  | 9.0 | 0.7 | 14.4 | 16.7 | 12.0 | 9.0 | 0.7 | 14.4 | 16.9 | 1.5                       | 1.7 | 3.9  | 12.1               | 0.9 | 4.2 | 9.2  | 12.1 | 0.8 | 4.2 | 9.2  |
| 80        | 2.3                       | 3.7 | 8.5  | 12.3                  | 8.8 | 0.7 | 14.6 | 18.2 | 12.3 | 8.8 | 0.7 | 14.6 | 18.3 | 2.3                       | 3.7 | 8.5  | 12.8               | 0.9 | 4.4 | 9.9  | 12.8 | 0.8 | 4.4 | 9.9  |
|           | 3.0                       | 5.2 | 12.0 | 12.4                  | 8.7 | 0.7 | 14.6 | 18.8 | 12.4 | 8.7 | 0.7 | 14.6 | 19.0 | 3.0                       | 5.2 | 12.0 | 13.1               | 0.9 | 4.4 | 10.1 | 13.1 | 0.9 | 4.5 | 10.2 |
| 90        | 1.5                       | 1.5 | 3.5  | 11.5                  | 9.2 | 0.8 | 14.2 | 14.6 | 11.5 | 9.2 | 0.8 | 14.1 | 14.8 | 1.5                       | 1.5 | 3.5  | 13.5               | 0.9 | 4.6 | 10.5 | 13.5 | 0.9 | 4.6 | 10.6 |
|           | 2.3                       | 3.5 | 8.1  | 11.9                  | 9.1 | 0.7 | 14.4 | 16.0 | 11.9 | 9.1 | 0.7 | 14.4 | 16.1 | 2.3                       | 3.5 | 8.1  | 14.2               | 0.9 | 4.8 | 11.2 | 14.2 | 0.9 | 4.8 | 11.2 |
| 100       | 3.0                       | 4.9 | 11.3 | 12.0                  | 9.0 | 0.7 | 14.4 | 16.7 | 12.0 | 9.0 | 0.7 | 14.4 | 16.9 | 3.0                       | 4.9 | 11.3 | 14.5               | 0.9 | 4.8 | 11.4 | 14.5 | 0.9 | 4.9 | 11.5 |
|           | 1.5                       | 1.4 | 3.2  | 10.9                  | 9.2 | 0.9 | 13.9 | 12.5 | 10.9 | 9.2 | 0.9 | 13.8 | 12.6 | 1.5                       | 1.4 | 3.2  | 14.7               | 0.9 | 4.9 | 11.6 | 14.7 | 0.9 | 4.9 | 11.7 |
| 110       | 2.3                       | 3.2 | 7.4  | 11.3                  | 9.2 | 0.8 | 14.1 | 13.9 | 11.3 | 9.2 | 0.8 | 14.0 | 14.0 | 2.3                       | 3.2 | 7.4  | 15.3               | 0.9 | 5.0 | 12.3 | 15.3 | 0.9 | 5.1 | 12.3 |
|           | 3.0                       | 4.8 | 11.1 | 11.5                  | 9.2 | 0.8 | 14.2 | 14.5 | 11.5 | 9.2 | 0.8 | 14.2 | 14.6 | 3.0                       | 4.8 | 11.1 | 15.6               | 0.9 | 5.1 | 12.6 | 15.6 | 0.9 | 5.2 | 12.6 |
| 120       | 1.5                       | 1.3 | 3.0  | 10.3                  | 9.1 | 1.0 | 13.6 | 10.7 | 10.3 | 9.1 | 1.0 | 13.5 | 10.8 | 1.5                       | 1.3 | 3.0  | 15.7               | 0.9 | 5.2 | 12.7 | 15.7 | 0.9 | 5.2 | 12.7 |
|           | 2.3                       | 3.0 | 6.9  | 10.7                  | 9.2 | 0.9 | 13.8 | 11.9 | 10.7 | 9.2 | 0.9 | 13.7 | 12.0 | 2.3                       | 3.0 | 6.9  | 16.3               | 0.9 | 5.3 | 13.3 | 16.3 | 0.9 | 5.4 | 13.3 |
| 130       | 3.0                       | 4.5 | 10.4 | 10.9                  | 9.2 | 0.9 | 13.9 | 12.5 | 10.9 | 9.2 | 0.9 | 13.8 | 12.6 | 3.0                       | 4.5 | 10.4 | 16.5               | 0.9 | 5.4 | 13.5 | 16.5 | 0.9 | 5.4 | 13.5 |
|           | 1.5                       | 1.3 | 3.0  | 9.6                   | 8.7 | 1.1 | 13.2 | 9.1  | 9.6  | 8.7 | 1.0 | 13.2 | 9.2  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
| 140       | 2.3                       | 2.9 | 6.7  | 10.0                  | 9.0 | 1.0 | 13.4 | 10.0 | 10.0 | 9.0 | 1.0 | 13.4 | 10.1 | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
|           | 3.0                       | 4.3 | 9.9  | 10.2                  | 9.0 | 1.0 | 13.5 | 10.5 | 10.2 | 9.0 | 1.0 | 13.5 | 10.6 | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
| 150       | 1.5                       | 1.2 | 2.8  | 8.9                   | 8.2 | 1.2 | 12.9 | 7.6  | 8.9  | 8.2 | 1.2 | 12.9 | 7.7  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
|           | 2.3                       | 2.9 | 6.7  | 9.3                   | 8.5 | 1.1 | 13.1 | 8.4  | 9.3  | 8.5 | 1.1 | 13.0 | 8.5  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
| 160       | 3.0                       | 4.2 | 9.7  | 9.5                   | 8.7 | 1.1 | 13.1 | 8.9  | 9.5  | 8.7 | 1.1 | 13.1 | 9.0  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
|           | 1.5                       | 1.2 | 2.8  | 8.3                   | 7.5 | 1.3 | 12.8 | 6.4  | 8.3  | 7.5 | 1.3 | 12.7 | 6.4  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
| 170       | 2.3                       | 2.8 | 6.5  | 8.6                   | 7.9 | 1.2 | 12.8 | 7.0  | 8.6  | 7.9 | 1.2 | 12.8 | 7.1  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |
|           | 3.0                       | 4.1 | 9.5  | 8.8                   | 8.1 | 1.2 | 12.9 | 7.4  | 8.8  | 8.1 | 1.2 | 12.8 | 7.5  | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |

Notes:

- Interpolation is permissible; extrapolation is not.
- All entering air conditions are 80°F (26.6°C) DB and 67°F (19.4°C) WB in cooling, and 70°F (21°C) DB in heating.
- Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
- All performance is based upon the lower voltage of dual voltage rated units.
- Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
- Operation below 40°F (4.4°C) is based upon 20% methanol antifreeze solution.
- Operation below 60°F (15.5°C) EWT requires optional insulated water/refrigerant circuit.
- See performance correction tables for operating conditions other than those listed above.
- See Performance Data Selection Notes for operation in the shaded areas.
- Performance capacities shown in thousands of Btuh.



## 520 CFM Rated Airflow

| EWT<br>°F | GPM                       | WPD |      | COOLING - EAT 80/67°F |      |     |      |      |      |      |     |      |                           | GPM                       | WPD |      | HEATING - EAT 70°F |     |     |      |      |     |     |      |  |
|-----------|---------------------------|-----|------|-----------------------|------|-----|------|------|------|------|-----|------|---------------------------|---------------------------|-----|------|--------------------|-----|-----|------|------|-----|-----|------|--|
|           |                           | PSI | FT   | PSC                   |      |     |      |      | EC   |      |     |      |                           |                           | PSI | FT   | PSC                |     |     |      | EC   |     |     |      |  |
|           |                           |     |      | TC                    | SC   | kW  | HR   | EER  | TC   | SC   | kW  | HR   | EER                       |                           |     |      | HC                 | kW  | COP | HE   | HC   | kW  | COP | HE   |  |
| 20        | Operation Not Recommended |     |      |                       |      |     |      |      |      |      |     |      | Operation Not Recommended |                           |     |      |                    |     |     |      |      |     |     |      |  |
|           |                           |     |      |                       |      |     |      |      |      |      |     |      |                           | 3.7                       | 5.1 | 11.8 | 8.8                | 0.9 | 2.9 | 5.7  | 8.8  | 0.7 | 3.7 | 6.4  |  |
| 30        | 1.9                       | 1.5 | 3.5  | 16.7                  | 10.9 | 0.6 | 18.8 | 27.5 | 16.7 | 10.9 | 0.4 | 18.1 | 41.0                      | 1.9                       | 1.5 | 3.5  | 9.9                | 0.9 | 3.1 | 6.8  | 9.9  | 0.7 | 4.0 | 7.4  |  |
|           | 2.8                       | 3.0 | 6.9  | 16.3                  | 10.3 | 0.6 | 18.3 | 28.7 | 16.3 | 10.3 | 0.4 | 17.6 | 44.3                      | 2.8                       | 3.0 | 6.9  | 10.4               | 0.9 | 3.3 | 7.2  | 10.4 | 0.7 | 4.2 | 7.9  |  |
| 40        | 3.7                       | 4.7 | 10.9 | 16.1                  | 10.0 | 0.5 | 18.0 | 29.4 | 16.1 | 10.0 | 0.3 | 17.3 | 46.3                      | 3.7                       | 4.7 | 10.9 | 10.6               | 0.9 | 3.3 | 7.4  | 10.6 | 0.7 | 4.2 | 8.1  |  |
|           | 1.9                       | 1.2 | 2.8  | 16.7                  | 11.3 | 0.7 | 19.1 | 24.4 | 16.7 | 11.3 | 0.5 | 18.4 | 34.4                      | 1.9                       | 1.2 | 2.8  | 11.6               | 1.0 | 3.5 | 8.3  | 11.6 | 0.8 | 4.5 | 9.0  |  |
| 50        | 2.8                       | 2.8 | 6.5  | 16.8                  | 11.1 | 0.6 | 19.0 | 26.4 | 16.8 | 11.1 | 0.4 | 18.3 | 38.5                      | 2.8                       | 2.8 | 6.5  | 12.2               | 1.0 | 3.7 | 8.9  | 12.2 | 0.8 | 4.6 | 9.5  |  |
|           | 3.7                       | 4.3 | 9.9  | 16.7                  | 10.9 | 0.6 | 18.8 | 27.5 | 16.7 | 10.9 | 0.4 | 18.1 | 41.0                      | 3.7                       | 4.3 | 9.9  | 12.5               | 1.0 | 3.8 | 9.2  | 12.5 | 0.8 | 4.7 | 9.8  |  |
| 60        | 1.9                       | 1.0 | 2.3  | 16.4                  | 11.4 | 0.8 | 19.1 | 21.2 | 16.4 | 11.4 | 0.6 | 18.4 | 28.6                      | 1.9                       | 1.0 | 2.3  | 13.3               | 1.0 | 3.9 | 9.9  | 13.3 | 0.8 | 4.9 | 10.6 |  |
|           | 2.8                       | 2.3 | 5.3  | 16.7                  | 11.4 | 0.7 | 19.2 | 23.4 | 16.7 | 11.4 | 0.5 | 18.5 | 32.5                      | 2.8                       | 2.3 | 5.3  | 14.0               | 1.0 | 4.1 | 10.5 | 14.0 | 0.8 | 5.1 | 11.2 |  |
| 70        | 3.7                       | 3.9 | 9.0  | 16.7                  | 11.3 | 0.7 | 19.1 | 24.4 | 16.7 | 11.3 | 0.5 | 18.4 | 34.4                      | 3.7                       | 3.9 | 9.0  | 14.4               | 1.0 | 4.2 | 10.9 | 14.4 | 0.8 | 5.2 | 11.6 |  |
|           | 1.9                       | 0.9 | 2.1  | 15.7                  | 11.2 | 0.9 | 18.7 | 18.0 | 15.7 | 11.2 | 0.7 | 18.0 | 23.4                      | 1.9                       | 0.9 | 2.1  | 15.0               | 1.0 | 4.3 | 11.6 | 15.0 | 0.8 | 5.4 | 12.3 |  |
| 80        | 2.8                       | 2.1 | 4.9  | 16.2                  | 11.3 | 0.8 | 19.0 | 20.2 | 16.2 | 11.3 | 0.6 | 18.3 | 26.9                      | 2.8                       | 2.1 | 4.9  | 15.8               | 1.0 | 4.5 | 12.3 | 15.8 | 0.8 | 5.6 | 13.0 |  |
|           | 3.7                       | 3.5 | 8.1  | 16.4                  | 11.4 | 0.8 | 19.1 | 21.2 | 16.4 | 11.4 | 0.6 | 18.4 | 28.6                      | 3.7                       | 3.5 | 8.1  | 16.2               | 1.0 | 4.6 | 12.7 | 16.2 | 0.8 | 5.7 | 13.4 |  |
| 90        | 1.9                       | 0.9 | 2.1  | 14.9                  | 10.8 | 1.0 | 18.2 | 15.3 | 14.9 | 10.8 | 0.8 | 17.5 | 19.3                      | 1.9                       | 0.9 | 2.1  | 16.7               | 1.0 | 4.7 | 13.2 | 16.7 | 0.8 | 5.8 | 13.9 |  |
|           | 2.8                       | 2.0 | 4.6  | 15.4                  | 11.1 | 0.9 | 18.5 | 17.1 | 15.4 | 11.1 | 0.7 | 17.8 | 22.0                      | 2.8                       | 2.0 | 4.6  | 17.6               | 1.1 | 4.9 | 14.0 | 17.6 | 0.9 | 6.0 | 14.7 |  |
| 100       | 3.7                       | 3.3 | 7.6  | 15.7                  | 11.2 | 0.9 | 18.7 | 18.0 | 15.7 | 11.2 | 0.7 | 18.0 | 23.4                      | 3.7                       | 3.3 | 7.6  | 18.0               | 1.1 | 5.0 | 14.4 | 18.0 | 0.9 | 6.2 | 15.1 |  |
|           | 1.9                       | 0.9 | 2.1  | 13.9                  | 10.4 | 1.1 | 17.5 | 12.9 | 13.9 | 10.4 | 0.9 | 16.9 | 15.8                      | 1.9                       | 0.9 | 2.1  | 18.3               | 1.1 | 5.0 | 14.7 | 18.3 | 0.9 | 6.2 | 15.4 |  |
| 110       | 2.8                       | 1.8 | 4.2  | 14.5                  | 10.7 | 1.0 | 17.9 | 14.3 | 14.5 | 10.7 | 0.8 | 17.2 | 17.9                      | 2.8                       | 1.8 | 4.2  | 19.2               | 1.1 | 5.2 | 15.5 | 19.2 | 0.9 | 6.4 | 16.2 |  |
|           | 3.7                       | 3.1 | 7.2  | 14.9                  | 10.8 | 1.0 | 18.2 | 15.2 | 14.9 | 10.8 | 0.8 | 17.5 | 19.0                      | 3.7                       | 3.1 | 7.2  | 19.6               | 1.1 | 5.3 | 15.9 | 19.6 | 0.9 | 6.5 | 16.6 |  |
| 120       | 1.9                       | 0.8 | 1.8  | 12.8                  | 10.0 | 1.2 | 16.9 | 10.7 | 12.8 | 10.0 | 1.0 | 16.2 | 12.8                      | 1.9                       | 0.8 | 1.8  | 19.8               | 1.1 | 5.3 | 16.1 | 19.8 | 0.9 | 6.5 | 16.8 |  |
|           | 2.8                       | 1.7 | 3.9  | 13.4                  | 10.2 | 1.1 | 17.2 | 11.9 | 13.4 | 10.2 | 0.9 | 16.5 | 14.4                      | 2.8                       | 1.7 | 3.9  | 20.6               | 1.1 | 5.5 | 16.8 | 20.6 | 0.9 | 6.7 | 17.5 |  |
| 130       | 3.7                       | 2.9 | 6.7  | 13.8                  | 10.4 | 1.1 | 17.5 | 12.7 | 13.8 | 10.4 | 0.9 | 16.8 | 15.5                      | 3.7                       | 2.9 | 6.7  | 21.0               | 1.1 | 5.6 | 17.2 | 21.0 | 0.9 | 6.9 | 17.9 |  |
|           | 1.9                       | 0.8 | 1.8  | 11.6                  | 9.6  | 1.3 | 16.1 | 8.8  | 11.6 | 9.6  | 1.1 | 15.4 | 10.3                      | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |  |
| 140       | 2.8                       | 1.6 | 3.7  | 12.3                  | 9.8  | 1.2 | 16.5 | 9.9  | 12.3 | 9.8  | 1.0 | 15.8 | 11.8                      | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |  |
|           | 3.7                       | 2.8 | 6.5  | 12.6                  | 10.0 | 1.2 | 16.7 | 10.4 | 12.6 | 10.0 | 1.0 | 16.0 | 12.5                      | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |  |
| 150       | 1.9                       | 0.8 | 1.8  | 10.5                  | 9.2  | 1.5 | 15.4 | 7.2  | 10.5 | 9.2  | 1.3 | 14.8 | 8.4                       | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |  |
|           | 2.8                       | 1.6 | 3.7  | 11.1                  | 9.4  | 1.4 | 15.8 | 8.1  | 11.1 | 9.4  | 1.2 | 15.1 | 9.5                       | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |  |
| 160       | 3.7                       | 2.7 | 6.2  | 11.4                  | 9.5  | 1.3 | 16.0 | 8.5  | 11.4 | 9.5  | 1.1 | 15.3 | 10.0                      | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |  |
|           | 1.9                       | 0.7 | 1.6  | 9.5                   | 9.0  | 1.6 | 14.9 | 6.0  | 9.5  | 9.0  | 1.4 | 14.2 | 6.8                       | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |  |
| 170       | 2.8                       | 1.5 | 3.5  | 10.0                  | 9.1  | 1.5 | 15.1 | 6.6  | 10.0 | 9.1  | 1.3 | 14.5 | 7.6                       | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |  |
|           | 3.7                       | 2.7 | 6.2  | 10.3                  | 9.2  | 1.5 | 15.3 | 7.0  | 10.3 | 9.2  | 1.3 | 14.7 | 8.0                       | Operation Not Recommended |     |      |                    |     |     |      |      |     |     |      |  |

Notes:

- Interpolation is permissible; extrapolation is not.
- All entering air conditions are 80°F (26.6°C) DB and 67°F (19.4°C) WB in cooling, and 70°F (21°C) DB in heating.
- Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
- All performance is based upon the lower voltage of dual voltage rated units.
- Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
- Operation below 40°F (4.4°C) is based upon 20% methanol antifreeze solution.
- Operation below 60°F (15.5°C) EWT requires optional insulated water/refrigerant circuit.
- See performance correction tables for operating conditions other than those listed above.
- See Performance Data Selection Notes for operation in the shaded areas.
- Performance capacities shown in thousands of Btuh.

## 620 CFM Rated Airflow

| EWT<br>°F | GPM                       | WPD |      | COOLING - EAT 80/67°F |      |     |      |      |      |      |     |      |                           | GPM                       | WPD  |      | HEATING - EAT 70°F |     |     |      |      |     |      |      |  |
|-----------|---------------------------|-----|------|-----------------------|------|-----|------|------|------|------|-----|------|---------------------------|---------------------------|------|------|--------------------|-----|-----|------|------|-----|------|------|--|
|           |                           | PSI | FT   | PSC                   |      |     |      |      | EC   |      |     |      |                           |                           | PSI  | FT   | PSC                |     |     |      | EC   |     |      |      |  |
|           |                           |     |      | TC                    | SC   | kW  | HR   | EER  | TC   | SC   | kW  | HR   | EER                       |                           |      |      | HC                 | kW  | COP | HE   | HC   | kW  | COP  | HE   |  |
| 20        | Operation Not Recommended |     |      |                       |      |     |      |      |      |      |     |      | Operation Not Recommended |                           |      |      |                    |     |     |      |      |     |      |      |  |
|           |                           |     |      |                       |      |     |      |      |      |      |     |      | 4.5                       | 7.5                       | 17.3 | 13.8 | 1.2                | 3.3 | 9.6 | 13.8 | 1.0  | 4.0 | 10.3 |      |  |
| 30        | 2.3                       | 2.2 | 5.1  | 18.4                  | 12.2 | 0.7 | 20.8 | 26.1 | 18.4 | 12.2 | 0.5 | 20.1 | 36.4                      | 2.3                       | 2.2  | 5.1  | 15.1               | 1.3 | 3.5 | 10.9 | 15.1 | 1.1 | 4.2  | 11.5 |  |
|           | 3.4                       | 4.4 | 10.2 | 17.4                  | 11.5 | 0.7 | 19.7 | 25.8 | 17.4 | 11.5 | 0.5 | 19.0 | 36.6                      | 3.4                       | 4.4  | 10.2 | 15.5               | 1.3 | 3.6 | 11.3 | 15.5 | 1.1 | 4.3  | 11.9 |  |
|           | 4.5                       | 6.9 | 15.9 | 16.7                  | 11.0 | 0.7 | 19.0 | 25.1 | 16.7 | 11.0 | 0.5 | 18.3 | 35.9                      | 4.5                       | 6.9  | 15.9 | 15.6               | 1.3 | 3.6 | 11.3 | 15.6 | 1.1 | 4.3  | 12.0 |  |
| 40        | 2.3                       | 2.0 | 4.6  | 19.1                  | 13.1 | 0.8 | 21.8 | 24.4 | 19.1 | 13.1 | 0.6 | 21.1 | 32.7                      | 2.3                       | 2.0  | 4.6  | 16.4               | 1.3 | 3.8 | 12.1 | 16.4 | 1.1 | 4.5  | 12.8 |  |
|           | 3.4                       | 4.1 | 9.5  | 18.8                  | 12.7 | 0.7 | 21.3 | 25.6 | 18.8 | 12.7 | 0.5 | 20.6 | 35.2                      | 3.4                       | 4.1  | 9.5  | 16.7               | 1.3 | 3.8 | 12.4 | 16.7 | 1.1 | 4.6  | 13.1 |  |
|           | 4.5                       | 6.3 | 14.6 | 18.6                  | 12.4 | 0.7 | 21.1 | 26.0 | 18.6 | 12.4 | 0.5 | 20.4 | 36.1                      | 4.5                       | 6.3  | 14.6 | 16.8               | 1.3 | 3.8 | 12.4 | 16.8 | 1.1 | 4.6  | 13.1 |  |
| 50        | 2.3                       | 1.8 | 4.2  | 18.9                  | 13.4 | 0.9 | 21.9 | 21.4 | 18.9 | 13.4 | 0.7 | 21.2 | 27.7                      | 2.3                       | 1.8  | 4.2  | 17.3               | 1.3 | 4.0 | 12.9 | 17.3 | 1.1 | 4.7  | 13.6 |  |
|           | 3.4                       | 3.8 | 8.8  | 19.1                  | 13.2 | 0.8 | 21.9 | 23.2 | 19.1 | 13.2 | 0.6 | 21.2 | 30.7                      | 3.4                       | 3.8  | 8.8  | 17.5               | 1.3 | 4.0 | 13.1 | 17.5 | 1.1 | 4.7  | 13.8 |  |
|           | 4.5                       | 6.0 | 13.9 | 19.2                  | 13.1 | 0.8 | 21.9 | 24.2 | 19.2 | 13.1 | 0.6 | 21.2 | 32.3                      | 4.5                       | 6.0  | 13.9 | 17.6               | 1.3 | 4.0 | 13.2 | 17.6 | 1.1 | 4.8  | 13.9 |  |
| 60        | 2.3                       | 1.6 | 3.7  | 18.2                  | 13.2 | 1.0 | 21.6 | 18.4 | 18.2 | 13.2 | 0.8 | 20.9 | 23.1                      | 2.3                       | 1.6  | 3.7  | 18.0               | 1.3 | 4.1 | 13.6 | 18.0 | 1.1 | 4.9  | 14.3 |  |
|           | 3.4                       | 3.6 | 8.3  | 18.7                  | 13.3 | 0.9 | 21.9 | 20.3 | 18.7 | 13.3 | 0.7 | 21.2 | 25.9                      | 3.4                       | 3.6  | 8.3  | 18.3               | 1.3 | 4.2 | 13.9 | 18.3 | 1.1 | 5.0  | 14.6 |  |
|           | 4.5                       | 5.6 | 12.9 | 18.9                  | 13.4 | 0.9 | 22.0 | 21.2 | 18.9 | 13.4 | 0.7 | 21.3 | 27.3                      | 4.5                       | 5.6  | 12.9 | 18.4               | 1.3 | 4.2 | 14.0 | 18.4 | 1.1 | 5.0  | 14.7 |  |
| 70        | 2.3                       | 1.5 | 3.5  | 17.0                  | 12.7 | 1.1 | 20.8 | 15.4 | 17.0 | 12.7 | 0.9 | 20.1 | 18.8                      | 2.3                       | 1.5  | 3.5  | 19.1               | 1.3 | 4.3 | 14.7 | 19.1 | 1.1 | 5.1  | 15.4 |  |
|           | 3.4                       | 3.4 | 7.9  | 17.7                  | 13.0 | 1.0 | 21.3 | 17.1 | 17.7 | 13.0 | 0.8 | 20.6 | 21.1                      | 3.4                       | 3.4  | 7.9  | 19.5               | 1.3 | 4.4 | 15.1 | 19.5 | 1.1 | 5.2  | 15.7 |  |
|           | 4.5                       | 5.2 | 12.0 | 18.0                  | 13.2 | 1.0 | 21.4 | 18.0 | 18.0 | 13.2 | 0.8 | 20.7 | 22.5                      | 4.5                       | 5.2  | 12.0 | 19.8               | 1.3 | 4.5 | 15.4 | 19.8 | 1.1 | 5.3  | 16.0 |  |
| 80        | 2.3                       | 1.4 | 3.2  | 15.7                  | 12.0 | 1.2 | 19.9 | 12.8 | 15.7 | 12.0 | 1.0 | 19.2 | 15.4                      | 2.3                       | 1.4  | 3.2  | 20.8               | 1.3 | 4.6 | 16.3 | 20.8 | 1.1 | 5.4  | 17.0 |  |
|           | 3.4                       | 3.2 | 7.4  | 16.5                  | 12.5 | 1.2 | 20.5 | 14.3 | 16.5 | 12.5 | 1.0 | 19.8 | 17.3                      | 3.4                       | 3.2  | 7.4  | 21.6               | 1.3 | 4.7 | 17.0 | 21.6 | 1.1 | 5.5  | 17.7 |  |
|           | 4.5                       | 5.0 | 11.6 | 16.8                  | 12.6 | 1.1 | 20.6 | 15.1 | 16.8 | 12.6 | 0.9 | 20.0 | 18.3                      | 4.5                       | 5.0  | 11.6 | 22.1               | 1.4 | 4.8 | 17.5 | 22.1 | 1.2 | 5.6  | 18.1 |  |
| 90        | 2.3                       | 1.3 | 3.0  | 14.5                  | 11.2 | 1.4 | 19.1 | 10.6 | 14.5 | 11.2 | 1.2 | 18.4 | 12.4                      | 2.3                       | 1.3  | 3.0  | 23.3               | 1.4 | 5.0 | 18.6 | 23.3 | 1.2 | 5.8  | 19.3 |  |
|           | 3.4                       | 3.0 | 6.9  | 15.1                  | 11.7 | 1.3 | 19.6 | 11.7 | 15.1 | 11.7 | 1.1 | 18.9 | 13.9                      | 3.4                       | 3.0  | 6.9  | 24.7               | 1.4 | 5.2 | 19.9 | 24.7 | 1.2 | 6.0  | 20.6 |  |
|           | 4.5                       | 4.8 | 11.1 | 15.5                  | 11.9 | 1.3 | 19.8 | 12.4 | 15.5 | 11.9 | 1.1 | 19.1 | 14.7                      | 4.5                       | 4.8  | 11.1 | 25.4               | 1.4 | 5.2 | 20.6 | 25.4 | 1.2 | 6.1  | 21.3 |  |
| 100       | 2.3                       | 1.3 | 3.0  | 13.4                  | 10.4 | 1.5 | 18.5 | 8.9  | 13.4 | 10.4 | 1.3 | 17.8 | 10.3                      | Operation Not Recommended |      |      |                    |     |     |      |      |     |      |      |  |
|           | 3.4                       | 2.9 | 6.7  | 14.0                  | 10.8 | 1.4 | 18.8 | 9.8  | 14.0 | 10.8 | 1.2 | 18.2 | 11.3                      | Operation Not Recommended |      |      |                    |     |     |      |      |     |      |      |  |
|           | 4.5                       | 4.6 | 10.6 | 14.3                  | 11.0 | 1.4 | 19.0 | 10.2 | 14.3 | 11.0 | 1.2 | 18.3 | 12.0                      | Operation Not Recommended |      |      |                    |     |     |      |      |     |      |      |  |
| 110       | 2.3                       | 1.2 | 2.8  | 12.7                  | 9.8  | 1.6 | 18.3 | 7.7  | 12.7 | 9.8  | 1.4 | 17.6 | 8.8                       | Operation Not Recommended |      |      |                    |     |     |      |      |     |      |      |  |
|           | 3.4                       | 2.8 | 6.5  | 13.0                  | 10.0 | 1.6 | 18.3 | 8.3  | 13.0 | 10.0 | 1.4 | 17.6 | 9.5                       | Operation Not Recommended |      |      |                    |     |     |      |      |     |      |      |  |
|           | 4.5                       | 4.5 | 10.4 | 13.2                  | 10.2 | 1.5 | 18.4 | 8.6  | 13.2 | 10.2 | 1.3 | 17.7 | 9.9                       | Operation Not Recommended |      |      |                    |     |     |      |      |     |      |      |  |
| 120       | 2.3                       | 1.2 | 2.8  | 12.5                  | 9.4  | 1.8 | 18.6 | 7.0  | 12.5 | 9.4  | 1.6 | 17.9 | 7.9                       | Operation Not Recommended |      |      |                    |     |     |      |      |     |      |      |  |
|           | 3.4                       | 2.8 | 6.5  | 12.5                  | 9.5  | 1.7 | 18.3 | 7.3  | 12.5 | 9.5  | 1.5 | 17.6 | 8.2                       | Operation Not Recommended |      |      |                    |     |     |      |      |     |      |      |  |
|           | 4.5                       | 4.4 | 10.2 | 12.6                  | 9.7  | 1.7 | 18.3 | 7.5  | 12.6 | 9.7  | 1.5 | 17.6 | 8.5                       | Operation Not Recommended |      |      |                    |     |     |      |      |     |      |      |  |

Notes:

- Interpolation is permissible; extrapolation is not.
- All entering air conditions are 80°F (26.6°C) DB and 67°F (19.4°C) WB in cooling, and 70°F (21°C) DB in heating.
- Table does not reflect fan or pump power corrections for AHR/ISO conditions.
- All performance is based upon the lower voltage of dual voltage rated units.
- Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
- Operation below 40°F (4.4°C) is based upon 20% methanol antifreeze solution.
- Operation below 60°F (15.5°C) EWT requires optional insulated water/refrigerant circuit.
- See performance correction tables for operating conditions other than those listed above.
- See Performance Data Selection Notes for operation in the shaded areas.
- Performance capacities shown in thousands of Btuh.

## Entering Air Cooling Corrections

| Full Load Cooling Corrections |                  |   |       |       |       |       |       |       |       |                      |
|-------------------------------|------------------|---|-------|-------|-------|-------|-------|-------|-------|----------------------|
| Ent Air<br>WB F               | Total Clg<br>Cap | Sens Clg Cap Multipliers- Entering DB F |       |       |       |       |       |       | Power | Heat of<br>Rejection |
|                               |                  | 65                                      | 70    | 75    | 80    | 80.6  | 85    | 90    |       |                      |
| 60                            | 0.926            | 0.632                                   | 0.820 | 1.004 | 1.182 | *     | *     | *     | 1.003 | 0.931                |
| 65                            | 0.976            |   | 0.615 | 0.856 | 1.071 | 1.095 | 1.260 | *     | 1.000 | 0.979                |
| 66                            | 0.990            |   | 0.555 | 0.807 | 1.030 | 1.055 | 1.224 | *     | 1.000 | 0.992                |
| 67                            | 1.000            |   | 0.507 | 0.765 | 1.000 | 1.017 | 1.188 | *     | 1.000 | 1.000                |
| 70                            | 1.039            |   |       | 0.620 | 0.865 | 0.893 | 1.076 | 1.252 | 1.001 | 1.032                |
| 75                            | 1.113            |   |       |       | 0.566 | 0.597 | 0.805 | 1.013 | 1.002 | 1.089                |

\* Sensible Capacity equals Total Capacity.  
 AHRI/ISO/ASHRAE 13256-1 uses entering air conditions of Cooling - 80.6°F DB/ 66.2°F WB, and Heating - 68°F DB/ 59°F WB entering air temperature.  
 Entering DB temperature range is based on operating limits, not on commission limits.  
 Cooling air corrections based on rated airflow.

## Entering Air Heating Corrections

| Full EAT Heating Corrections |                     |       |                       |
|------------------------------|---------------------|-------|-----------------------|
| Ent Air<br>DB °F             | Heating<br>Capacity | Power | Heat of<br>Extraction |
| 60                           | 1.036               | 0.910 | 1.068                 |
| 65                           | 1.019               | 0.955 | 1.035                 |
| 68                           | 1.008               | 0.982 | 1.014                 |
| 70                           | 1.000               | 1.000 | 1.000                 |
| 75                           | 0.980               | 1.046 | 0.964                 |
| 80                           | 0.960               | 1.091 | 0.927                 |

Heating air corrections based on rated airflow.

## Airflow Correction Table

| Full Airflow Corrections |                     |                  |                       |                   |                      |       |                      |
|--------------------------|---------------------|------------------|-----------------------|-------------------|----------------------|-------|----------------------|
| Airflow<br>% of<br>Rated | Heating             |                  |                       | Cooling           |                      |       |                      |
|                          | Heating<br>Capacity | Heating<br>Power | Heat of<br>Extraction | Total<br>Capacity | Sensible<br>Capacity | Power | Heat of<br>Rejection |
| 73                       | 0.967               | 1.084            | 0.937                 | 0.946             | 0.898                | 0.971 | 0.951                |
| 78                       | 0.976               | 1.062            | 0.954                 | 0.954             | 0.927                | 0.976 | 0.958                |
| 83                       | 0.983               | 1.042            | 0.968                 | 0.964             | 0.953                | 0.981 | 0.967                |
| 89                       | 0.990               | 1.026            | 0.981                 | 0.974             | 0.974                | 0.987 | 0.977                |
| 94                       | 0.995               | 1.012            | 0.991                 | 0.987             | 0.990                | 0.993 | 0.988                |
| 100                      | 1.000               | 1.000            | 1.000                 | 1.000             | 1.000                | 1.000 | 1.000                |
| 106                      | 1.004               | 0.991            | 1.007                 | 1.015             | 1.002                | 1.008 | 1.014                |
| 111                      | 1.006               | 0.985            | 1.011                 | 1.031             | 0.996                | 1.016 | 1.028                |

Cooling and heating air corrections based on rated airflow.

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## Motorized Water Valve

| Model | Max. Close-off Pressure (PSIG) [kPa] | Cv  | GPM | Pressure Drop Adder (PSIG) | Head (FT) |
|-------|--------------------------------------|-----|-----|----------------------------|-----------|
| SD09  | 125 [862]                            | 4.9 | 1.1 | 0.1                        | 0.1       |
|       |                                      |     | 1.6 | 0.1                        | 0.2       |
|       |                                      |     | 2.2 | 0.2                        | 0.5       |
| SD12  |                                      |     | 1.5 | 0.1                        | 0.2       |
|       |                                      |     | 2.3 | 0.2                        | 0.5       |
|       |                                      |     | 3.0 | 0.4                        | 0.9       |
| SD15  |                                      | 1.9 | 0.2 | 0.3                        |           |
|       |                                      | 2.8 | 0.3 | 0.8                        |           |
|       |                                      | 3.7 | 0.6 | 1.3                        |           |
| SD18  | 10.3                                 | 4.9 | 2.3 | 0.0                        | 0.1       |
|       |                                      |     | 3.4 | 0.1                        | 0.3       |
|       |                                      |     | 4.5 | 0.2                        | 0.4       |

## Modulating Water Valve

| Model | Max. Close-off Pressure (PSIG) [kPa] | Cv  | GPM | Pressure Drop Adder (PSIG) | Head (FT) |
|-------|--------------------------------------|-----|-----|----------------------------|-----------|
| SD09  | 125 [862]                            | 3   | 1.1 | 0.1                        | 0.3       |
|       |                                      |     | 1.6 | 0.3                        | 0.7       |
|       |                                      |     | 2.2 | 0.5                        | 1.2       |
| SD12  |                                      |     | 1.5 | 0.3                        | 0.6       |
|       |                                      |     | 2.3 | 0.6                        | 1.4       |
|       |                                      |     | 3.0 | 1.0                        | 2.3       |
| SD15  |                                      | 1.9 | 0.4 | 0.9                        |           |
|       |                                      | 2.8 | 0.9 | 2.0                        |           |
|       |                                      | 3.7 | 1.5 | 3.5                        |           |
| SD18  | 4.7                                  | 3   | 2.3 | 0.2                        | 0.6       |
|       |                                      |     | 3.4 | 0.5                        | 1.2       |
|       |                                      |     | 4.5 | 0.9                        | 2.1       |

## Optional Auto Flow Valve - GPM [LPS]

| Model | 2.25 GPM/Ton [0.142 LPS/Ton] | 3 GPM/Ton [0.189 LPS/Ton] |
|-------|------------------------------|---------------------------|
| SD09  | 2.0 [0.126]                  | 2.5 [0.158]               |
| SD12  | 2.5 [0.158]                  | 3.0 [0.189]               |
| SD15  | 3.0 [0.189]                  | 3.5 [0.221]               |
| SD18  | 3.5 [0.221]                  | 4.0 [0.252]               |

# Unit-Mounted Thermostat Options

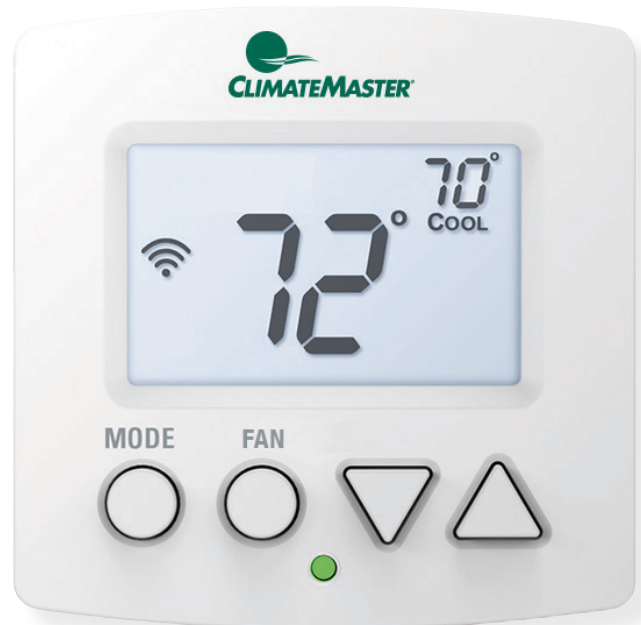
Models:  
SD  
09-18



**CM 100**  
**(ATA32V01)**

- Up to three heat and two cool stages
- For use with water-source heat pumps
- Configurable auto or manual changeover
- Time Clock with day of week

**NOTE: Additional unit-mounted thermostat options can be ordered via special quote request.**



**CM 300**  
**(AVB32V02R)**

- 7-day Programmable
- Wi-Fi enabled
- Humidity control
- For use with water-source heat pumps or gas/ electric systems
- Mobile and web apps available for remote monitoring
- California Title 24 compliant

# Antifreeze Correction Table

Models:  
SD  
09-18

| EWT<br>(°F) | Antifreeze Type  | Antifreeze % | Cooling   |              |       | Heating   |       | WPD   |
|-------------|------------------|--------------|-----------|--------------|-------|-----------|-------|-------|
|             |                  |              | Total Cap | Sensible Cap | Watts | Total Cap | Watts |       |
| 90          | Water            | 0%           | 1.000     | 1.000        | 1.000 | 1.000     | 1.000 | 1.000 |
|             | Ethanol          | 5%           | 0.998     | 0.998        | 1.002 | 0.996     | 0.999 | 1.025 |
|             |                  | 10%          | 0.996     | 0.996        | 1.003 | 0.991     | 0.997 | 1.048 |
|             |                  | 15%          | 0.994     | 0.994        | 1.005 | 0.987     | 0.996 | 1.098 |
|             |                  | 20%          | 0.991     | 0.991        | 1.006 | 0.982     | 0.994 | 1.142 |
|             |                  | 25%          | 0.986     | 0.986        | 1.009 | 0.972     | 0.991 | 1.207 |
|             |                  | 30%          | 0.981     | 0.981        | 1.012 | 0.962     | 0.988 | 1.265 |
|             |                  | 35%          | 0.977     | 0.977        | 1.015 | 0.953     | 0.985 | 1.312 |
|             |                  | 40%          | 0.972     | 0.972        | 1.018 | 0.943     | 0.982 | 1.370 |
|             |                  | 45%          | 0.966     | 0.966        | 1.023 | 0.931     | 0.978 | 1.431 |
|             |                  | 50%          | 0.959     | 0.959        | 1.027 | 0.918     | 0.974 | 1.494 |
|             | Ethylene Glycol  | 5%           | 0.998     | 0.998        | 1.002 | 0.996     | 0.999 | 1.021 |
|             |                  | 10%          | 0.996     | 0.996        | 1.003 | 0.991     | 0.997 | 1.040 |
|             |                  | 15%          | 0.994     | 0.994        | 1.004 | 0.987     | 0.996 | 1.079 |
|             |                  | 20%          | 0.991     | 0.991        | 1.005 | 0.982     | 0.995 | 1.114 |
|             |                  | 25%          | 0.988     | 0.988        | 1.008 | 0.976     | 0.993 | 1.146 |
|             |                  | 30%          | 0.985     | 0.985        | 1.010 | 0.969     | 0.990 | 1.175 |
|             |                  | 35%          | 0.982     | 0.982        | 1.012 | 0.963     | 0.988 | 1.208 |
|             |                  | 40%          | 0.979     | 0.979        | 1.014 | 0.956     | 0.986 | 1.243 |
|             |                  | 45%          | 0.976     | 0.976        | 1.016 | 0.950     | 0.984 | 1.278 |
|             |                  | 50%          | 0.972     | 0.972        | 1.018 | 0.943     | 0.982 | 1.314 |
|             | Methanol         | 5%           | 0.997     | 0.997        | 1.002 | 0.993     | 0.998 | 1.039 |
|             |                  | 10%          | 0.993     | 0.993        | 1.004 | 0.986     | 0.996 | 1.075 |
|             |                  | 15%          | 0.990     | 0.990        | 1.007 | 0.979     | 0.994 | 1.116 |
|             |                  | 20%          | 0.986     | 0.986        | 1.009 | 0.972     | 0.991 | 1.154 |
|             |                  | 25%          | 0.982     | 0.982        | 1.012 | 0.964     | 0.989 | 1.189 |
|             |                  | 30%          | 0.978     | 0.978        | 1.014 | 0.955     | 0.986 | 1.221 |
|             |                  | 35%          | 0.974     | 0.974        | 1.017 | 0.947     | 0.984 | 1.267 |
|             |                  | 40%          | 0.970     | 0.970        | 1.020 | 0.939     | 0.981 | 1.310 |
|             |                  | 45%          | 0.966     | 0.966        | 1.023 | 0.930     | 0.978 | 1.353 |
|             |                  | 50%          | 0.961     | 0.961        | 1.026 | 0.920     | 0.975 | 1.398 |
|             | Propylene Glycol | 5%           | 0.995     | 0.995        | 1.003 | 0.990     | 0.997 | 1.065 |
|             |                  | 10%          | 0.990     | 0.990        | 1.006 | 0.980     | 0.994 | 1.119 |
|             |                  | 15%          | 0.986     | 0.986        | 1.009 | 0.971     | 0.991 | 1.152 |
|             |                  | 20%          | 0.981     | 0.981        | 1.012 | 0.962     | 0.988 | 1.182 |
|             |                  | 25%          | 0.978     | 0.978        | 1.014 | 0.956     | 0.986 | 1.227 |
|             |                  | 30%          | 0.975     | 0.975        | 1.016 | 0.950     | 0.984 | 1.267 |
|             |                  | 35%          | 0.972     | 0.972        | 1.018 | 0.944     | 0.982 | 1.312 |
|             |                  | 40%          | 0.969     | 0.969        | 1.020 | 0.938     | 0.980 | 1.356 |
|             |                  | 45%          | 0.965     | 0.965        | 1.023 | 0.929     | 0.977 | 1.402 |
|             |                  | 50%          | 0.960     | 0.960        | 1.026 | 0.919     | 0.974 | 1.450 |

Table continued on next page

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# Antifreeze Correction Table

Models:  
SD  
09-18

Table continued from previous page

| EWT<br>(°F) | Antifreeze Type  | Antifreeze % | Cooling   |              |       | Heating   |       | WPD   |
|-------------|------------------|--------------|-----------|--------------|-------|-----------|-------|-------|
|             |                  |              | Total Cap | Sensible Cap | Watts | Total Cap | Watts |       |
| 30          | Water            | 0%           | 1.000     | 1.000        | 1.000 | 1.000     | 1.000 | 1.000 |
|             | Ethanol          | 5%           | 0.991     | 0.991        | 1.006 | 0.981     | 0.994 | 1.140 |
|             |                  | 10%          | 0.981     | 0.981        | 1.012 | 0.961     | 0.988 | 1.242 |
|             |                  | 15%          | 0.973     | 0.973        | 1.018 | 0.944     | 0.983 | 1.295 |
|             |                  | 20%          | 0.964     | 0.964        | 1.024 | 0.927     | 0.977 | 1.343 |
|             |                  | 25%          | 0.959     | 0.959        | 1.028 | 0.917     | 0.974 | 1.363 |
|             |                  | 30%          | 0.954     | 0.954        | 1.031 | 0.907     | 0.970 | 1.383 |
|             |                  | 35%          | 0.949     | 0.949        | 1.035 | 0.897     | 0.967 | 1.468 |
|             |                  | 40%          | 0.944     | 0.944        | 1.038 | 0.887     | 0.964 | 1.523 |
|             |                  | 45%          | 0.940     | 0.940        | 1.041 | 0.880     | 0.962 | 1.580 |
|             |                  | 50%          | 0.936     | 0.936        | 1.043 | 0.872     | 0.959 | 1.639 |
|             | Ethylene Glycol  | 5%           | 0.997     | 0.997        | 1.002 | 0.993     | 0.998 | 1.040 |
|             |                  | 10%          | 0.993     | 0.993        | 1.004 | 0.986     | 0.996 | 1.075 |
|             |                  | 15%          | 0.990     | 0.990        | 1.006 | 0.980     | 0.994 | 1.122 |
|             |                  | 20%          | 0.987     | 0.987        | 1.008 | 0.973     | 0.992 | 1.163 |
|             |                  | 25%          | 0.983     | 0.983        | 1.011 | 0.966     | 0.990 | 1.195 |
|             |                  | 30%          | 0.979     | 0.979        | 1.013 | 0.958     | 0.987 | 1.225 |
|             |                  | 35%          | 0.976     | 0.976        | 1.016 | 0.951     | 0.985 | 1.279 |
|             |                  | 40%          | 0.972     | 0.972        | 1.018 | 0.943     | 0.982 | 1.324 |
|             |                  | 45%          | 0.969     | 0.969        | 1.021 | 0.937     | 0.980 | 1.371 |
|             |                  | 50%          | 0.966     | 0.966        | 1.023 | 0.930     | 0.978 | 1.419 |
|             | Methanol         | 5%           | 0.995     | 0.995        | 1.004 | 0.989     | 0.997 | 1.069 |
|             |                  | 10%          | 0.989     | 0.989        | 1.007 | 0.978     | 0.993 | 1.127 |
|             |                  | 15%          | 0.984     | 0.984        | 1.011 | 0.968     | 0.990 | 1.164 |
|             |                  | 20%          | 0.979     | 0.979        | 1.014 | 0.957     | 0.986 | 1.197 |
|             |                  | 25%          | 0.975     | 0.975        | 1.017 | 0.949     | 0.984 | 1.216 |
|             |                  | 30%          | 0.971     | 0.971        | 1.019 | 0.941     | 0.981 | 1.235 |
|             |                  | 35%          | 0.967     | 0.967        | 1.022 | 0.933     | 0.979 | 1.286 |
|             |                  | 40%          | 0.963     | 0.963        | 1.025 | 0.924     | 0.976 | 1.323 |
|             |                  | 45%          | 0.959     | 0.959        | 1.028 | 0.917     | 0.974 | 1.360 |
|             |                  | 50%          | 0.955     | 0.955        | 1.030 | 0.910     | 0.971 | 1.399 |
|             | Propylene Glycol | 5%           | 0.995     | 0.995        | 1.004 | 0.989     | 0.997 | 1.071 |
|             |                  | 10%          | 0.989     | 0.989        | 1.007 | 0.978     | 0.993 | 1.130 |
|             |                  | 15%          | 0.985     | 0.985        | 1.010 | 0.968     | 0.990 | 1.206 |
|             |                  | 20%          | 0.980     | 0.980        | 1.013 | 0.958     | 0.987 | 1.270 |
|             |                  | 25%          | 0.974     | 0.974        | 1.017 | 0.947     | 0.983 | 1.359 |
|             |                  | 30%          | 0.968     | 0.968        | 1.021 | 0.935     | 0.979 | 1.433 |
|             |                  | 35%          | 0.963     | 0.963        | 1.025 | 0.924     | 0.976 | 1.522 |
|             |                  | 40%          | 0.957     | 0.957        | 1.029 | 0.913     | 0.972 | 1.614 |
|             |                  | 45%          | 0.949     | 0.949        | 1.034 | 0.898     | 0.967 | 1.712 |
|             |                  | 50%          | 0.941     | 0.941        | 1.039 | 0.882     | 0.962 | 1.816 |

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## PSC Blower Performance

| Model | Rated Airflow CFM | SCFM      |              |            |
|-------|-------------------|-----------|--------------|------------|
|       |                   | Low Speed | Medium Speed | High Speed |
| SD09  | 350               | 270       | 310          | 350        |
| SD12  | 450               | 290       | 360          | 450        |
| SD15  | 520               | 360       | 440          | 520        |
| SD18  | 620               | 400       | 500          | 620        |

- Blower performance data is based on the lowest nameplate voltage setting.
- Blower performance is based on a wet coil with clean 1-inch filter.
- Blower performance is based on operating conditions of 80°F DB and 67°F WB.
- CFM Tolerance is  $\pm 7\%$
- Cells in grey - option not available
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

## CT EC Blower Performance

| Model | Rated Airflow CFM | SCFM |      |      |      |
|-------|-------------------|------|------|------|------|
|       |                   | TAP1 | TAP2 | TAP3 | TAP4 |
| SD09  | 350               | 280  | 300  | 330  | 350  |
| SD12  | 450               | 290  | 310  | 360  | 450  |
| SD15  | 520               | 360  | 410  | 470  | 520  |
| SD18  | 620               | 400  | 450  | 550  | 620  |

- Blower performance data is based on the lowest nameplate voltage setting.
- Blower performance is based on a wet coil with clean 1-inch filter.
- Blower performance is based on operating conditions of 80°F DB and 67°F WB.
- CFM Tolerance is  $\pm 7\%$
- Cells in grey - option not available
- The maximum allowable altitude of installation for this product is 6,561 ft (2,000 m).

## SD Console Series

| Unit Size                          | 09               | 12         | 15         | 18               |
|------------------------------------|------------------|------------|------------|------------------|
| Number of Refrigerant Circuits     | 1                |            |            |                  |
| Factory Charge R-454B (oz) [kg]    | 22 [0.62]        | 23 [0.65]  | 26 [0.74]  | 31 [0.88]        |
| Refrigerant Leak Detection System  | Optional         |            |            |                  |
| Refrigerant Leak Detection Sensors | 1                |            |            |                  |
| <b>Water Connection Size</b>       |                  |            |            |                  |
| O.D. Sweat (in) [mm]               | 1/2 [12.7]       |            | 3/4 [19.1] |                  |
| Optional FPT Fittings (in)         | 1/2 [12.7]       |            | 3/4 [19.1] |                  |
| Optional MPT Fittings (in)         | 1/2 [12.7]       |            | 3/4 [19.1] |                  |
| <b>Condensate Connection Size</b>  |                  |            |            |                  |
| I.D. Vinyl Hose (In) [mm]          | 5/8 [15.9]       |            |            |                  |
| <b>Filter Size</b>                 |                  |            |            |                  |
| Bottom Return (in)                 | 10 x 30 x 1      |            |            | 10 x 36 x 1      |
| Front Return (In)                  | 7 x 29.5 x 0.125 |            |            | 7 x 37.5 x 0.125 |
| Weight - Operating, (lbs) [kg]     | 175 [79.3]       | 180 [81.6] | 190 [86.2] | 220 [99.8]       |
| Weight - Packaged, (lbs) [kg]      | 185 [83.9]       | 190 [86.2] | 200 [90.7] | 232 [105.2]      |

FPT = Female Pipe Thread  
MPT = Male Pipe Thread

## Unit Maximum Water Working Pressure

| Options                              | Max Pressure PSIG [kPa] |
|--------------------------------------|-------------------------|
| Base Unit                            | 300 [2,068]             |
| Internal Secondary Pump (ISP)        | 145 [999]               |
| Internal Motorized Water Valve (MWV) | 300 [2,068]             |
| Internal Auto Flow Valve             | 300 [2,068]             |

Use the lowest maximum pressure rating when multiple options are combined.

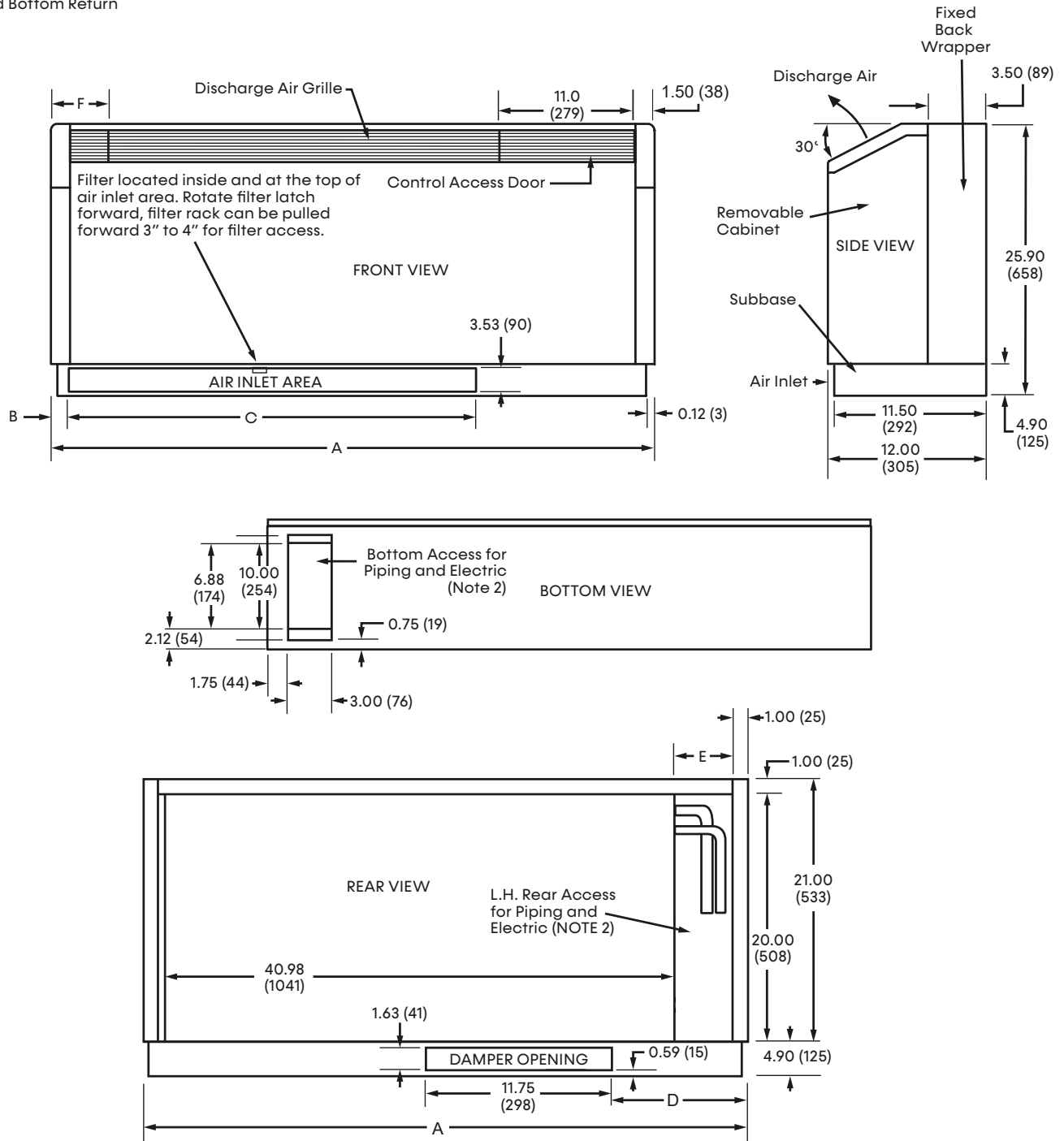
## Optional Auto-Flow Valve

| Size | 2.25 GPM/<br>Ton [0.142<br>LPS/Ton] | 3 GPM/Ton<br>[0.189 LPS/<br>Ton] |
|------|-------------------------------------|----------------------------------|
| 09   | 2.0 [0.126]                         | 2.5 [0.158]                      |
| 12   | 2.5 [0.158]                         | 3.0 [0.189]                      |
| 15   | 3.0 [0.189]                         | 3.5 [0.221]                      |
| 18   | 3.5 [0.221]                         | 4.0 [0.252]                      |

# Console Cabinet Dimensions – Sizes 09-15: Bottom Return – Left Hand Piping

Models:  
SD  
09-18

## Left Hand Bottom Return



### Notes:

1. All Dimensions are in inches (mm).
2. Access is reduced if optional disconnect box is selected.
3. Optional autoflow regulator, motorized-water valve, and disconnect box are not shown.
4. Filter is 1-inch (25) thick fiberglass throwaway.
5. All bottom return units require a subbase.

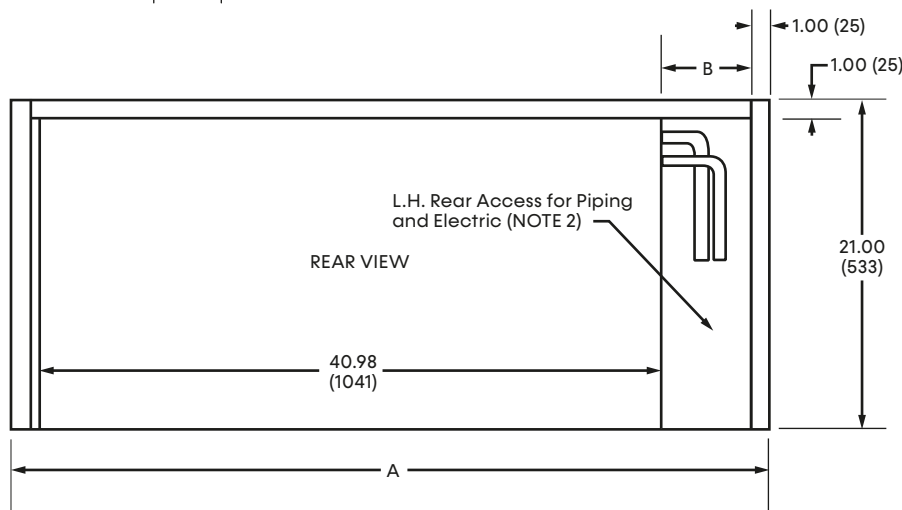
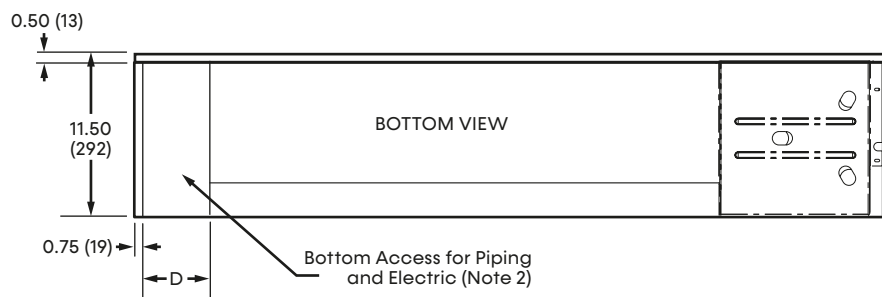
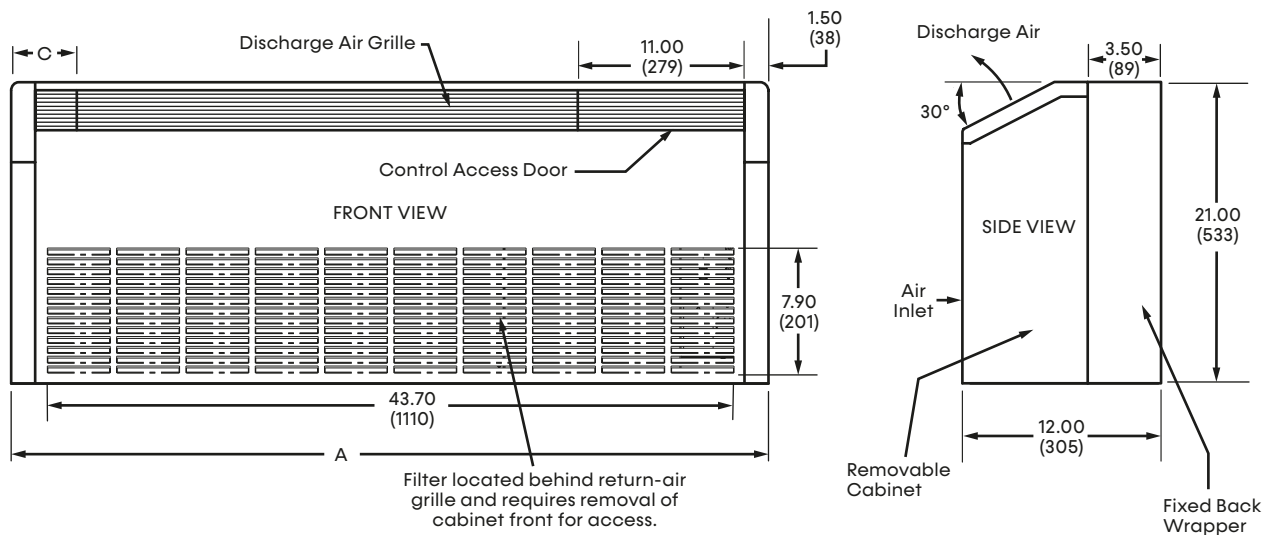
|               | A               | B              | C              | D              | E              | F              |
|---------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| Standard Unit | 48.00<br>[1219] | 1.75<br>[44.5] | 33.50<br>[851] | 9.90<br>[251]  | 4.50<br>[114]  | 5.00<br>[127]  |
| Extended Unit | 54.00<br>[1372] | 11.50<br>[292] | 34.50<br>[876] | 22.90<br>[582] | 10.50<br>[267] | 11.00<br>[279] |

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# Console Cabinet Dimensions – Sizes 09-15: Front Return – Left Hand Piping

Models:  
SD  
09-18

## Left Hand Front Return



### Notes:

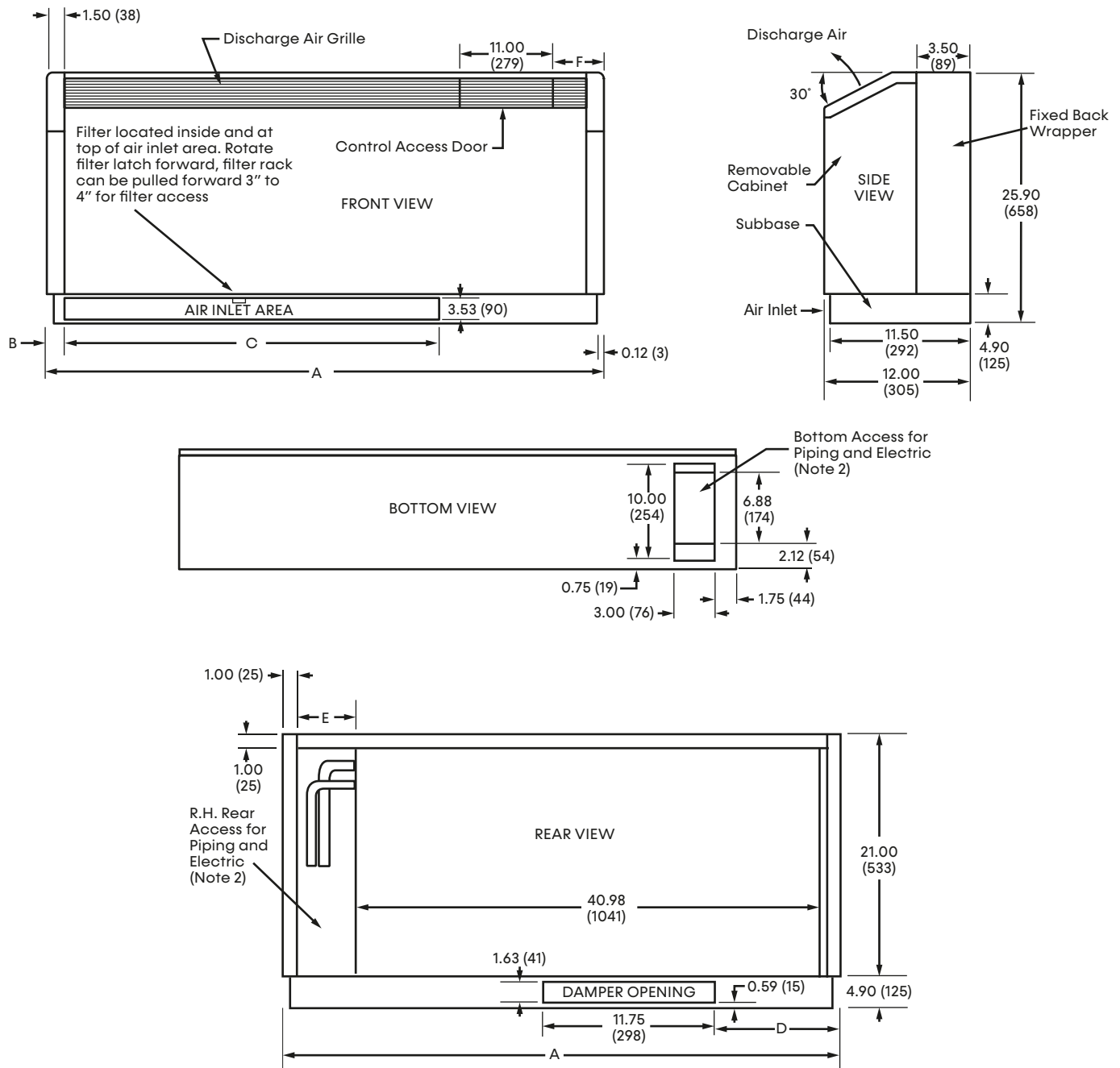
1. All Dimensions are in inches (mm).
2. Access is reduced if optional disconnect box is selected.
3. Optional autoflow regulator, motorized-water valve, and disconnect box are not shown.
4. Filter is 1-inch (25) thick fiberglass throwaway.
5. All bottom return units require a subbase.

|               | A               | B              | C              | D              |
|---------------|-----------------|----------------|----------------|----------------|
| Standard Unit | 48.00<br>[1219] | 4.50<br>[114]  | 5.00<br>[127]  | 4.12<br>[105]  |
| Extended Unit | 54.00<br>[1372] | 10.50<br>[267] | 11.00<br>[279] | 10.12<br>[257] |

# Console Cabinet Dimensions – Sizes 09-15: Bottom Return – Right Hand Piping

Models:  
SD  
09-18

## Right Hand Bottom Return



### Notes:

1. All Dimensions are in inches (mm).
2. Access is reduced if optional disconnect box is selected.
3. Optional autoflow regulator, motorized-water valve, and disconnect box are not shown.
4. Filter is 1-inch (25) thick fiberglass throwaway.
5. All bottom return units require a subbase.

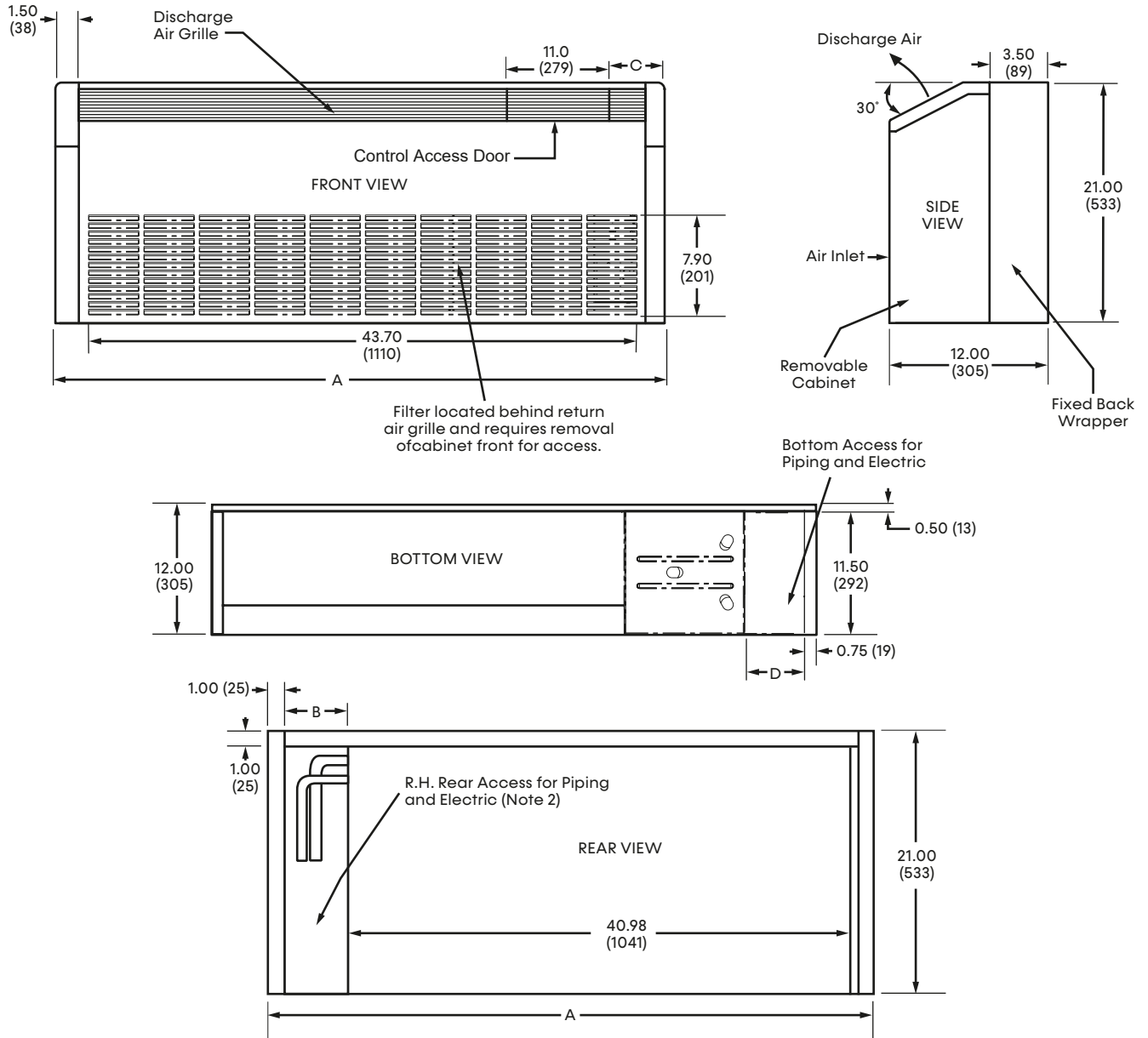
|               | A               | B              | C              | D              | E              | F              |
|---------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| Standard Unit | 48.00<br>[1219] | 1.75<br>[44.5] | 33.50<br>[851] | 9.90<br>[251]  | 4.50<br>[114]  | 5.00<br>[127]  |
| Extended Unit | 54.00<br>[1372] | 1.75<br>[44.5] | 33.72<br>[856] | 12.85<br>[326] | 10.50<br>[267] | 11.00<br>[279] |



# Console Cabinet Dimensions – Sizes 09-15: Front Return – Right Hand Piping

Models:  
SD  
09-18

## Right Hand Front Return



### Notes:

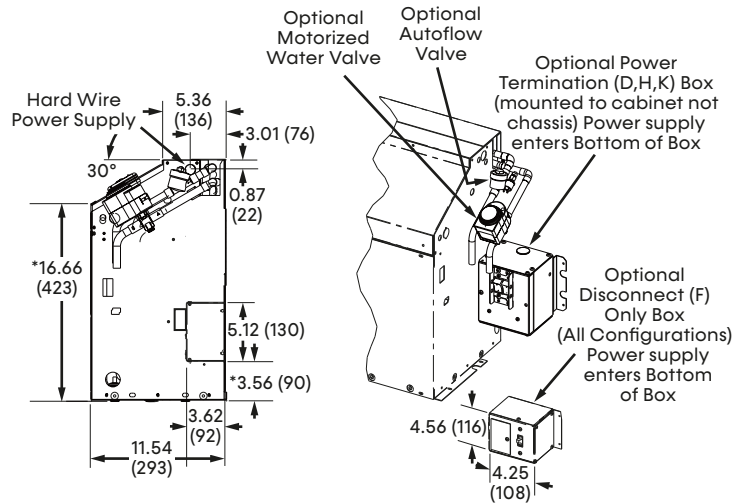
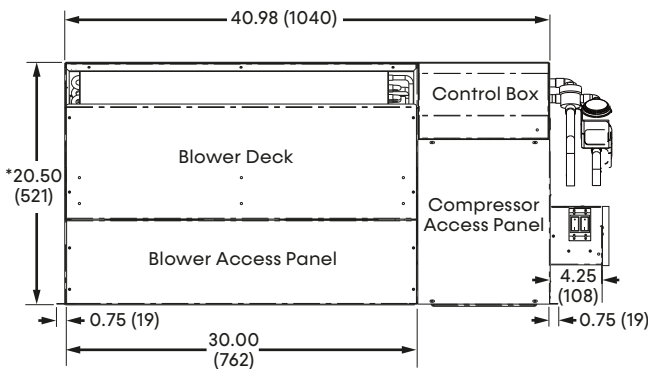
1. All Dimensions are in inches (mm).
2. Access is reduced if optional disconnect box is selected.
3. Optional autoflow regulator, motorized water valve, and disconnect box are not shown.
4. Filter is a cleanable polypropylene mesh.

|               | A               | B              | C              | D              |
|---------------|-----------------|----------------|----------------|----------------|
| Standard Unit | 48.00<br>[1219] | 4.50<br>[114]  | 5.00<br>[127]  | 4.12<br>[105]  |
| Extended Unit | 54.00<br>[1372] | 10.50<br>[267] | 11.00<br>[279] | 10.12<br>[257] |

# Console Chassis Dimensions – Sizes 09-15: Bottom Return

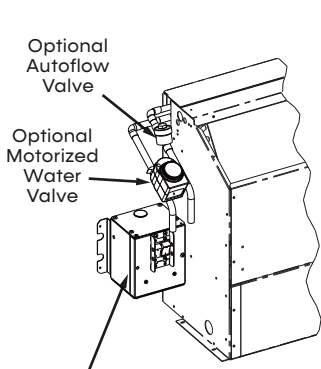
Models:  
SD  
09-18

Right Hand Configuration  
(Bottom Return)

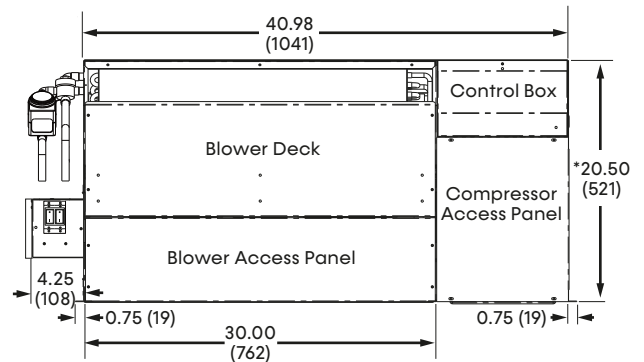
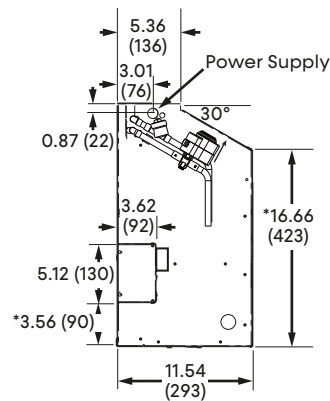


Note: Box may be 2 x 4 junction box with switch facing front or side.

Left Hand Configuration  
(Bottom Return)



Optional Power Termination Box (D,H,K)  
(mounted to cabinet not chassis)  
Power supply enters Bottom of Box



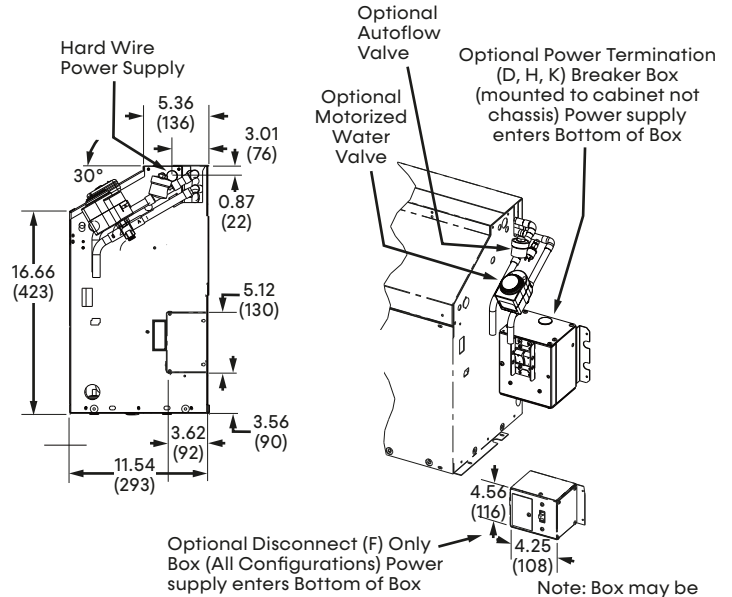
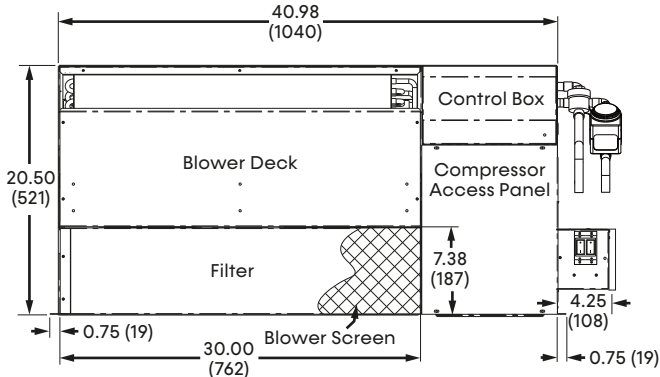
**Notes:**

1. Chassis replacements are intended to reuse the existing console front cover and subbase (optional). Option to order subbase attached (not shown). If factory attached subbase is ordered, for installed dimensions add 4.9 inches (124 mm) to dimensions shown for a 5-inch subbase.
2. Optional autoflow valve, motorized water valve and disconnect box are shown.
3. If the replacement chassis is mounted to an existing 3-inch subbase, the unit cannot use low fan speed setting. When using a 5-inch subbase, low fan speed setting is allowed.

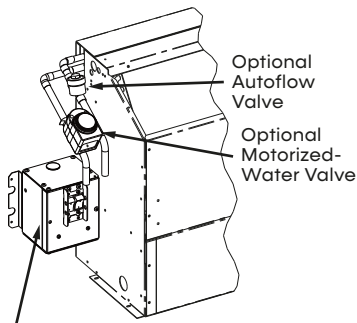
# Console Chassis Dimensions – Sizes 09-15: Front Return

Models:  
SD  
09-18

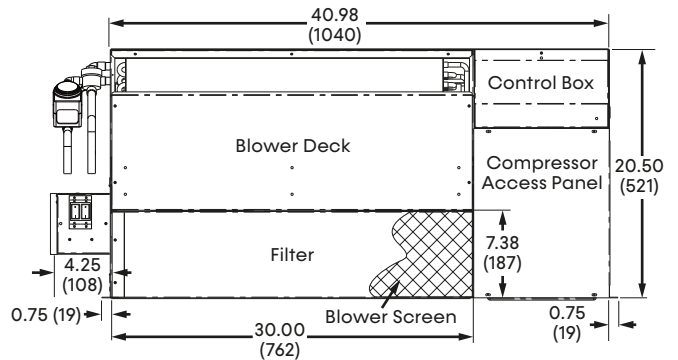
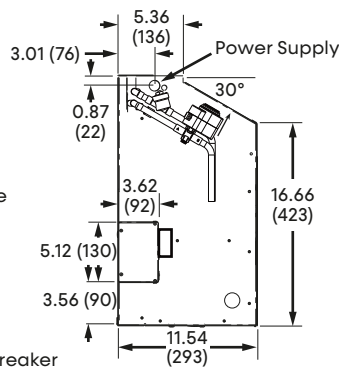
Right Hand Configuration  
(Front Return)



Left Hand Configuration  
(Front Return)



Optional Power Termination (D, H, K) Breaker Box (mounted to cabinet not chassis) Power supply enters Bottom of Box



Note: Box may be 2 x 4 junction box with switch facing front or side.

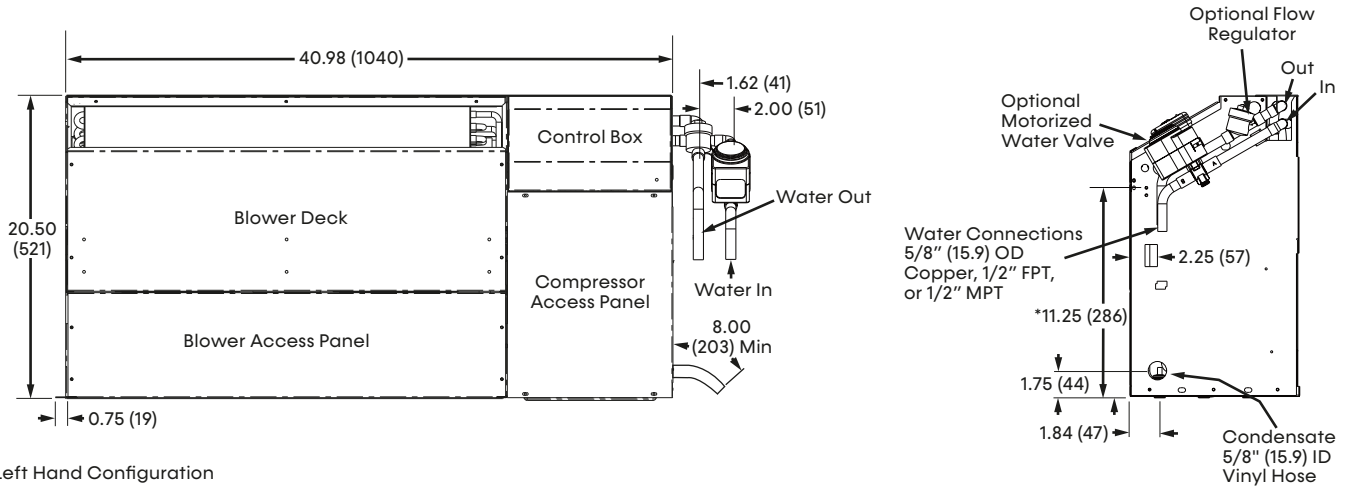
**Notes:**

1. Chassis replacements are intended to reuse existing console front cover.
2. Chassis can mount directly on floor.
3. Optional autoflow valve, motorized water valve and disconnect box are shown.

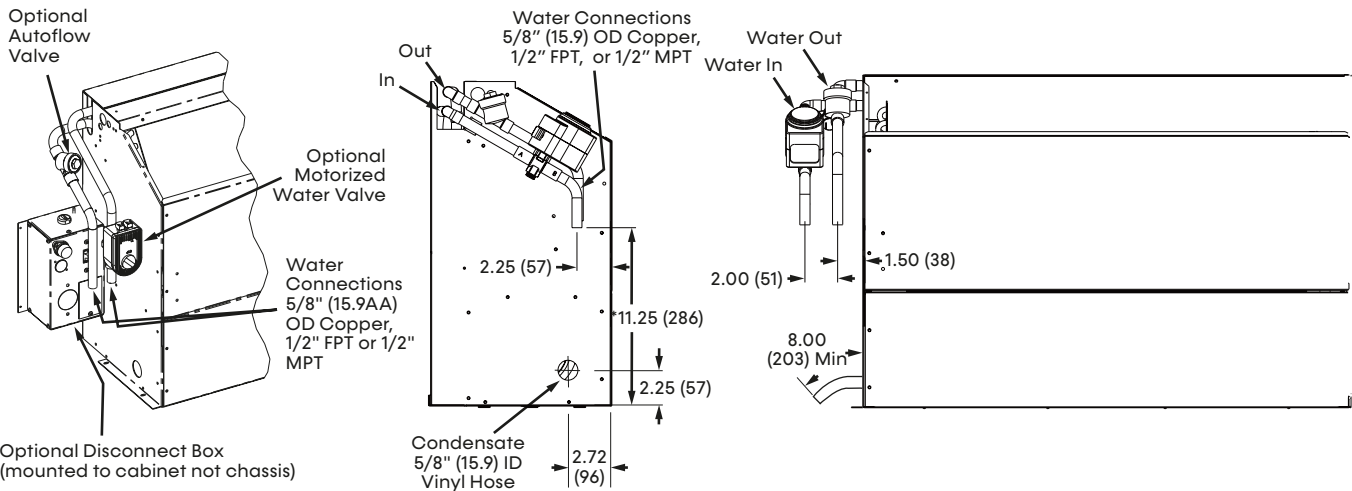
# Piping Details – Sizes 09-15

Models:  
SD  
09-18

## Right Hand Configuration



## Left Hand Configuration



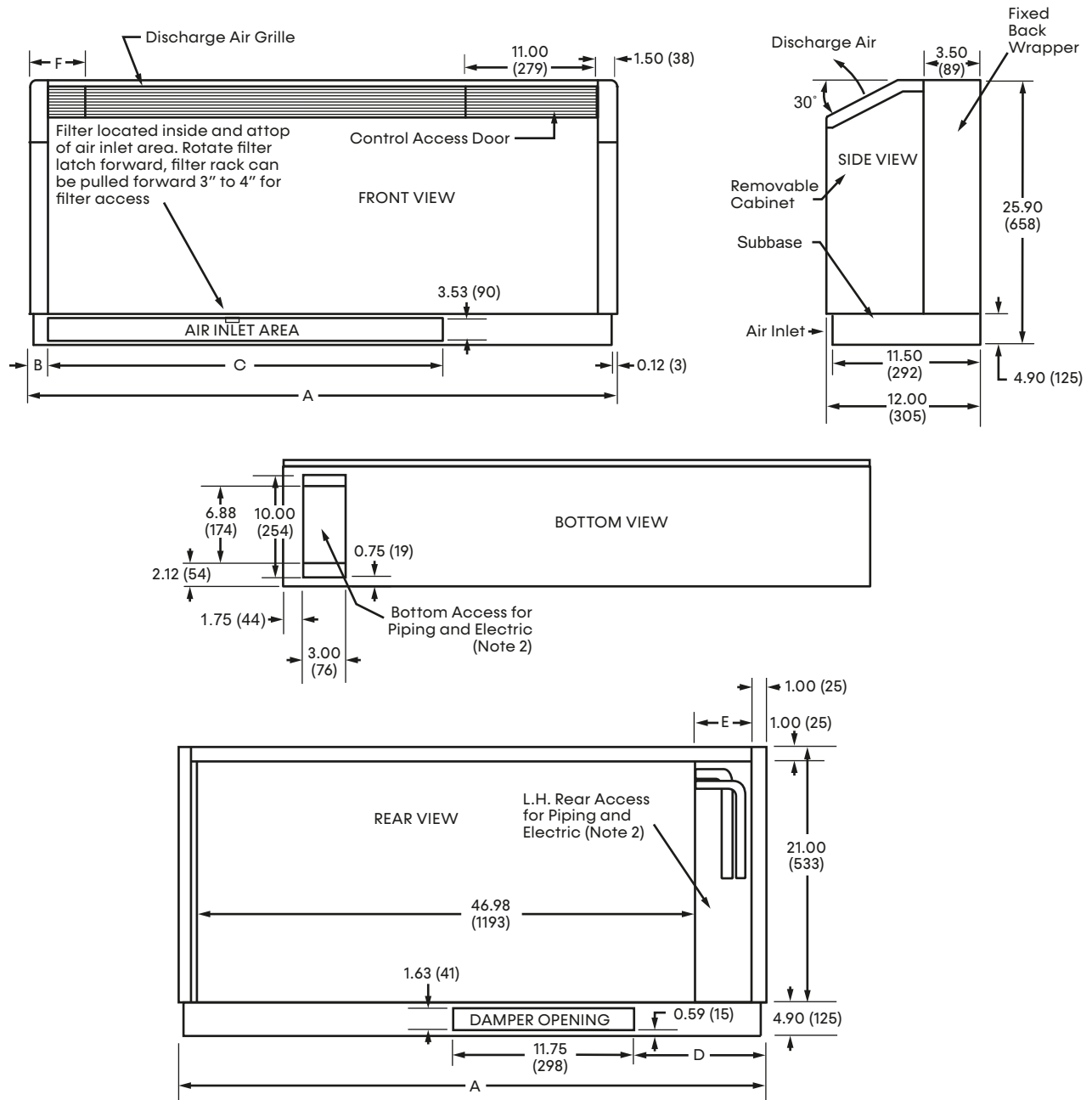
### Notes:

- \* Dimension reduced by fitting if selected

# Console Cabinet Dimensions – Size 18: Bottom Return – Left Hand Piping

Models:  
SD  
09-18

## Left Hand Bottom Return



### Notes:

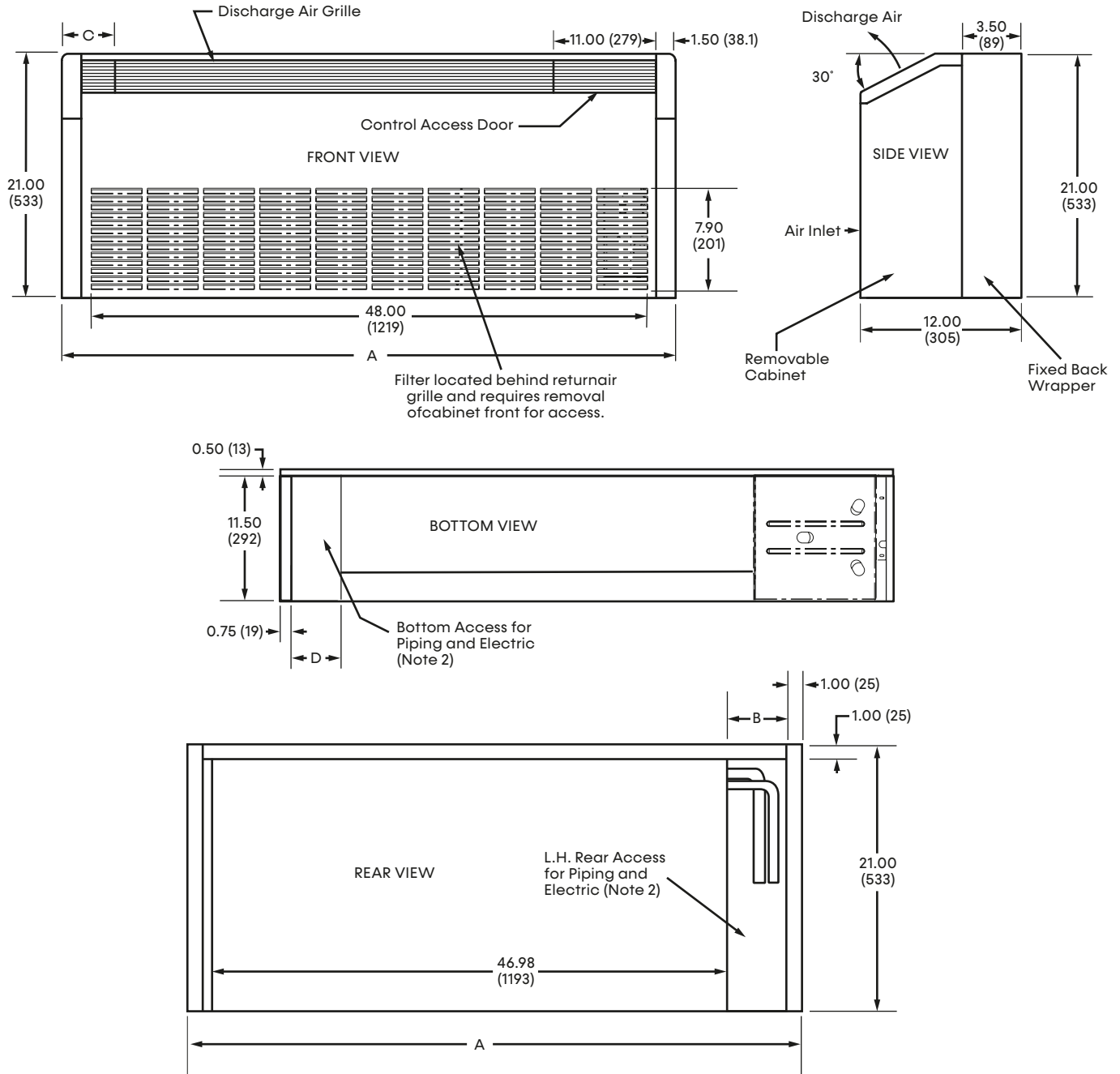
1. All Dimensions are in inches (mm).
2. Access is reduced if optional disconnect box is selected.
3. Optional autoflow regulator, motorized water valve, and disconnect box are not shown.
4. Filter is 1-inch (25-mm) thick fiberglass throwaway.
5. All bottom return units require a subbase.

|               | A               | B              | C               | D              | E              | F              |
|---------------|-----------------|----------------|-----------------|----------------|----------------|----------------|
| Standard Unit | 54.00<br>[1372] | 1.75<br>[44.5] | 39.75<br>[1010] | 15.90<br>[403] | 4.50<br>[114]  | 5.00<br>[127]  |
| Extended Unit | 60.00<br>[1524] | 11.56<br>[294] | 35.75<br>[1010] | 24.90<br>[632] | 10.50<br>[267] | 11.00<br>[279] |

# Console Cabinet Dimensions – Size 18: Front Return – Left Hand Piping

Models:  
SD  
09-18

Left Hand Front Return



**Notes:**

1. All Dimensions are in inches (mm).
2. Access is reduced if optional disconnect box is selected.
3. Optional autoflow regulator, motorized-water valve, and disconnect box are not shown.
4. Filter is a cleanable-polypropylene mesh.
5. Secondary circulation pump models are extended units.

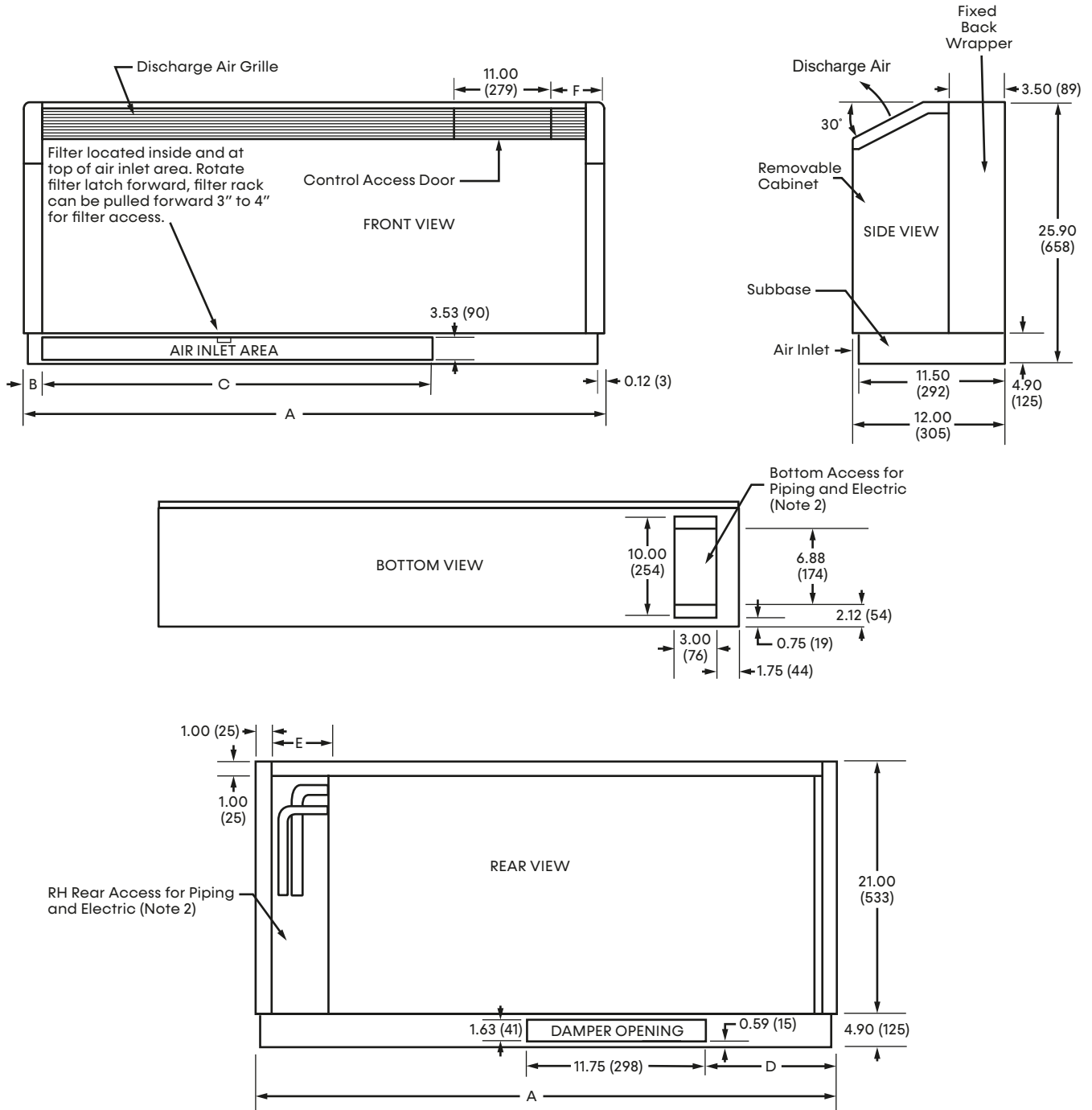
|               | A               | B              | C              | D              |
|---------------|-----------------|----------------|----------------|----------------|
| Standard Unit | 54.00<br>[1372] | 4.50<br>[114]  | 5.00<br>[127]  | 4.12<br>[105]  |
| Extended Unit | 60.00<br>[1524] | 10.50<br>[267] | 11.00<br>[279] | 10.12<br>[257] |

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# Console Cabinet Dimensions – Size 18: Bottom Return – Right Hand Piping

Models:  
SD  
09-18

Right Hand Bottom Return



**Notes:**

1. All Dimensions are in inches (mm).
2. Access is reduced if optional disconnect box is selected.
3. Optional autoflow regulator, motorized-water valve, and disconnect box are not shown.
4. Filter is a cleanable polypropylene mesh.
5. Secondary circulation pumps are extended units.

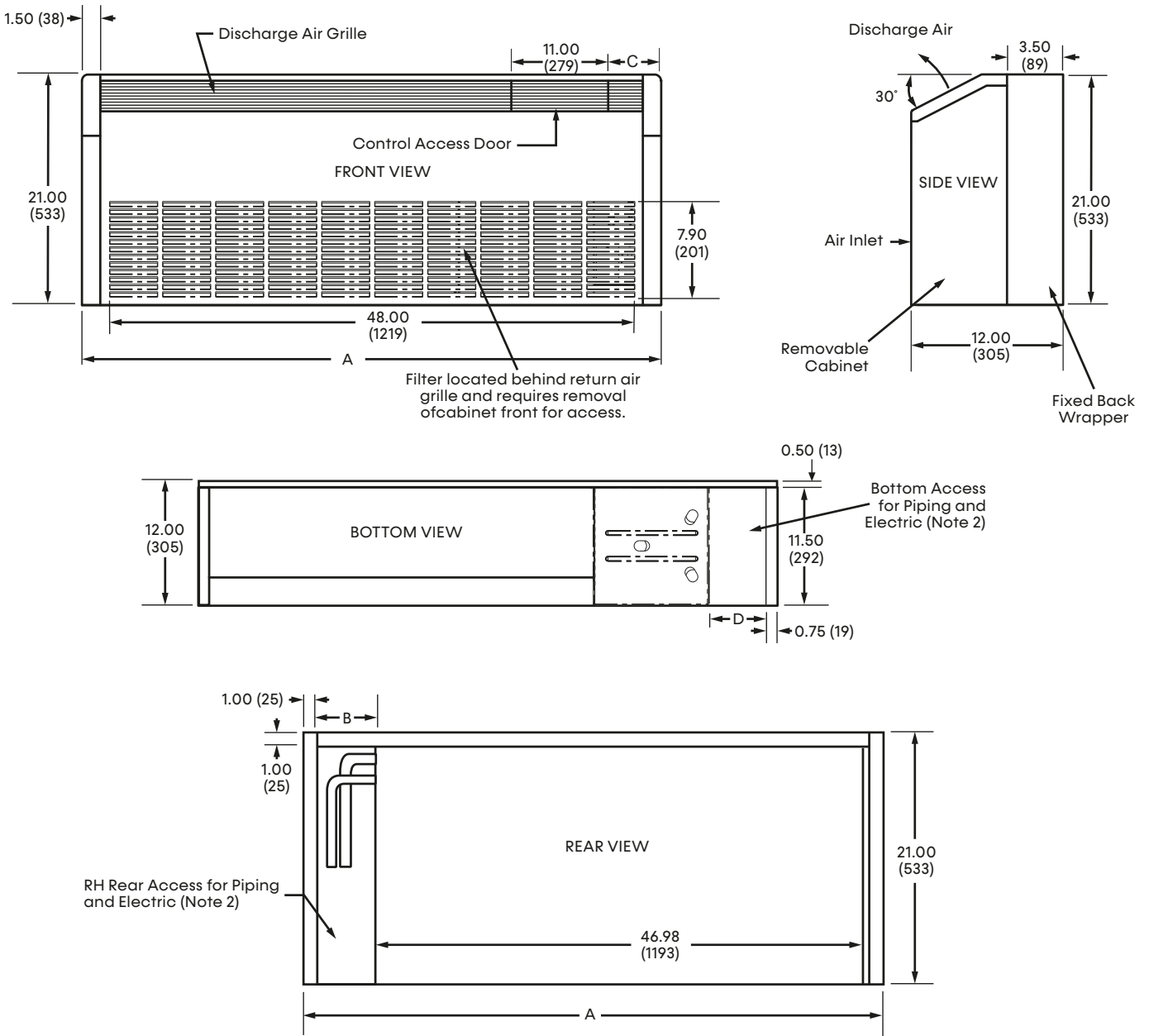
|               | A               | B              | C               | D              | E              | F              |
|---------------|-----------------|----------------|-----------------|----------------|----------------|----------------|
| Standard Unit | 54.00<br>[1372] | 1.75<br>[44.5] | 39.75<br>[1010] | 15.90<br>[403] | 4.50<br>[114]  | 5.00<br>[127]  |
| Extended Unit | 60.00<br>[1524] | 1.75<br>[44.5] | 35.75<br>[910]  | 14.00<br>[356] | 10.50<br>[267] | 11.00<br>[279] |

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# Console Cabinet Dimensions – Size 18: Front Return – Right Hand Piping

Models:  
SD  
09-18

Right Hand Front Return



**Notes:**

1. All Dimensions are in inches (mm).
2. Access is reduced if optional disconnect box is selected.
3. Optional autoflow regulator, motorized-water valve, and disconnect box are not shown.
4. Filter is a cleanable polypropylene mesh.
5. Secondary circulation pumps are extended units.

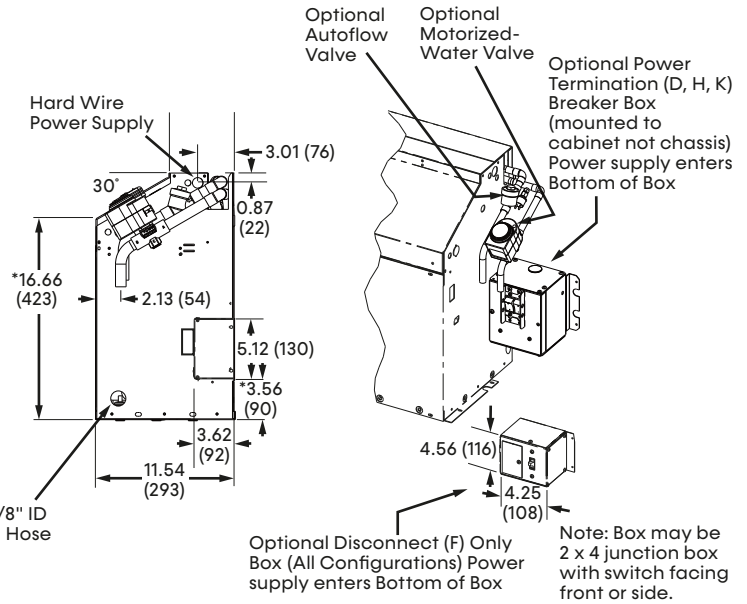
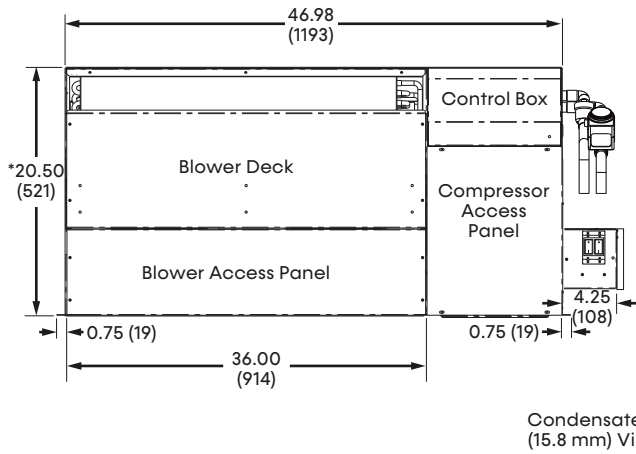
|               | A               | B              | C              | D              |
|---------------|-----------------|----------------|----------------|----------------|
| Standard Unit | 54.00<br>[1372] | 4.50<br>[114]  | 5.00<br>[127]  | 4.12<br>[105]  |
| Extended Unit | 60.00<br>[1524] | 10.50<br>[267] | 11.00<br>[279] | 10.12<br>[257] |



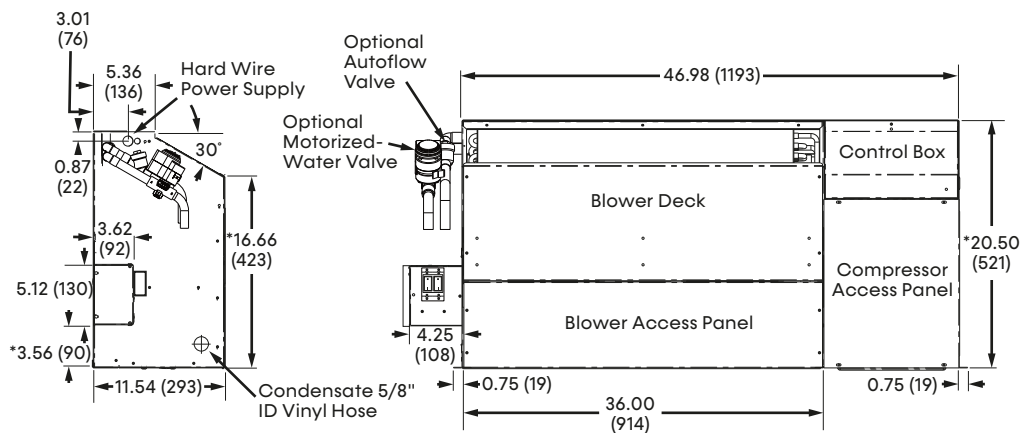
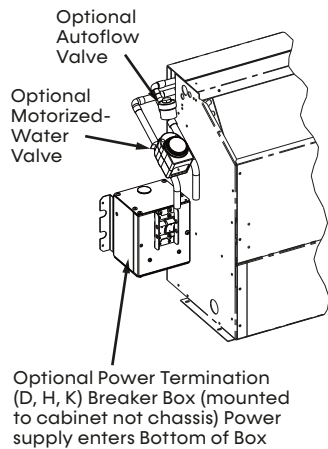
# Console Chassis Dimensions – Size 18: Bottom Return

Models:  
SD  
09-18

Right Hand Configuration  
(Bottom Return)



Left Hand Configuration  
(Bottom Return)



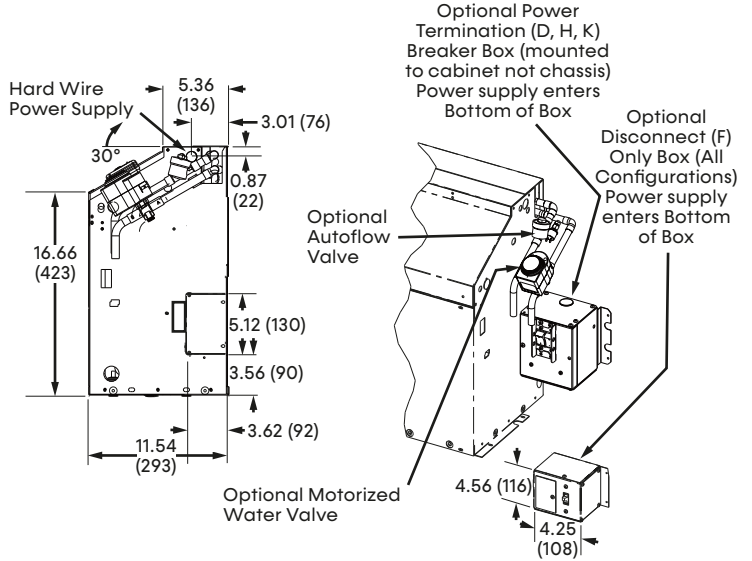
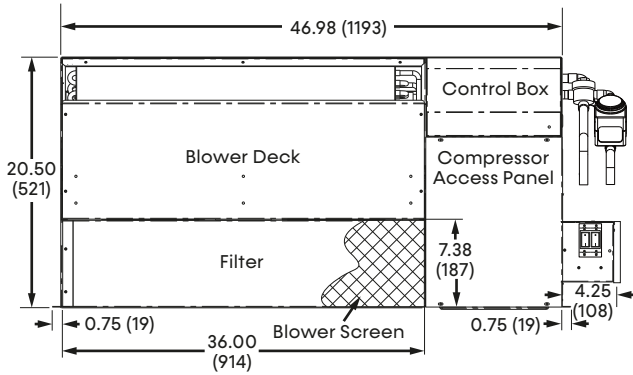
**Notes:**

1. Chassis replacements are intended to reuse existing console front cover and subbase (optional).
2. Option to order subbase attached (not shown). If factory-attached subbase is ordered, for installed dimensions add 4.9 inches (124 mm) to dimensions shown for a 5-inch subbase.
3. Optional autoflow valve, motorized-water valve and disconnect box are shown.
4. If the replacement chassis is mounted to an existing 3-inch subbase, the unit cannot use low fan-speed setting. When using a 5-inch subbase, low fan-speed setting is allowed.

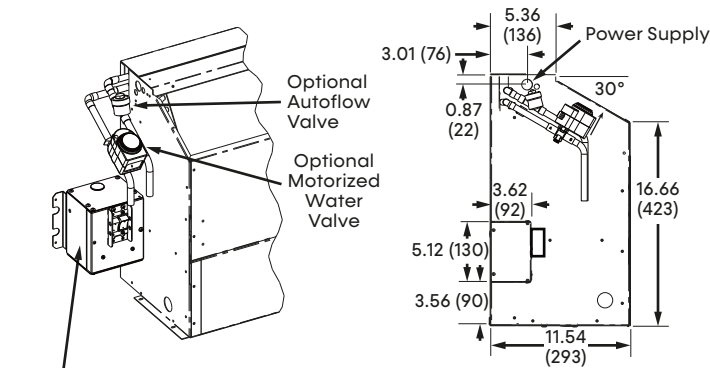
# Console Chassis Dimensions – Size 18: Front Return

Models:  
SD  
09-18

Right Hand Configuration  
(Front Return)

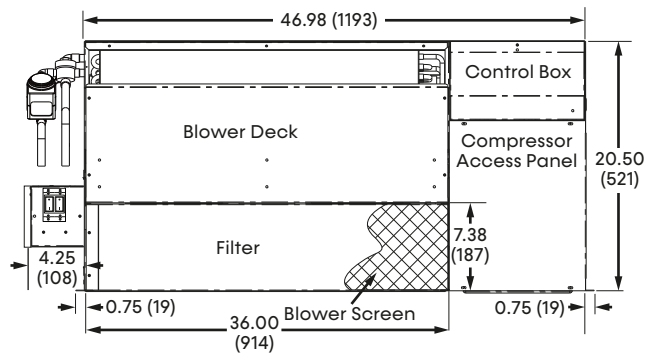


Left Hand Configuration  
(Front Return)



Optional Disconnect (F)  
Only Box (All Configurations)  
Power supply enters Bottom of Box

Note: Box may be 2 x 4 junction box with switch facing front or side.

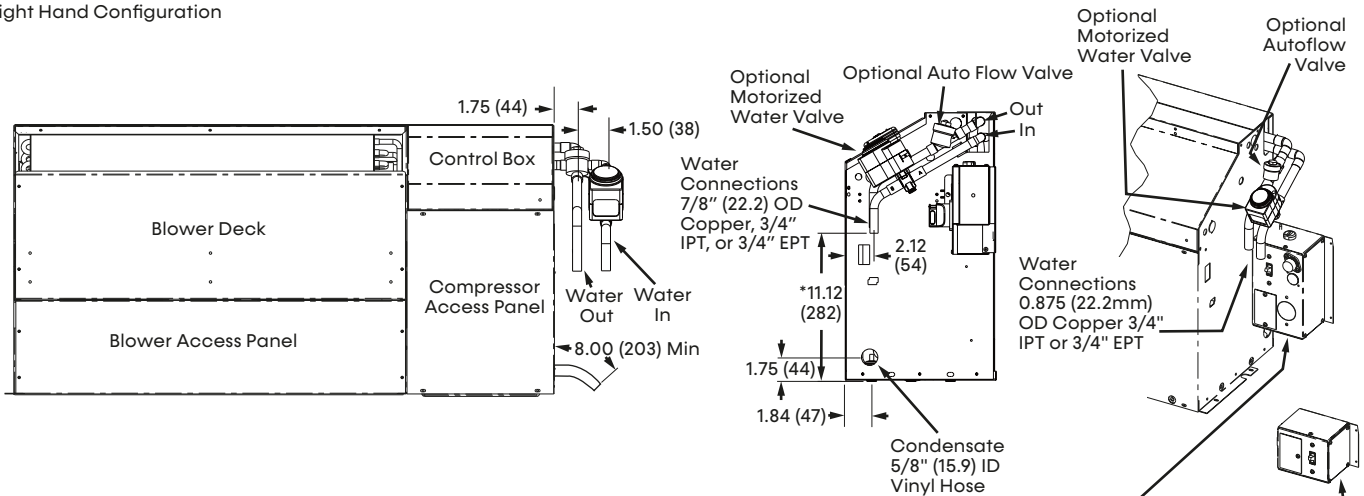


Notes:

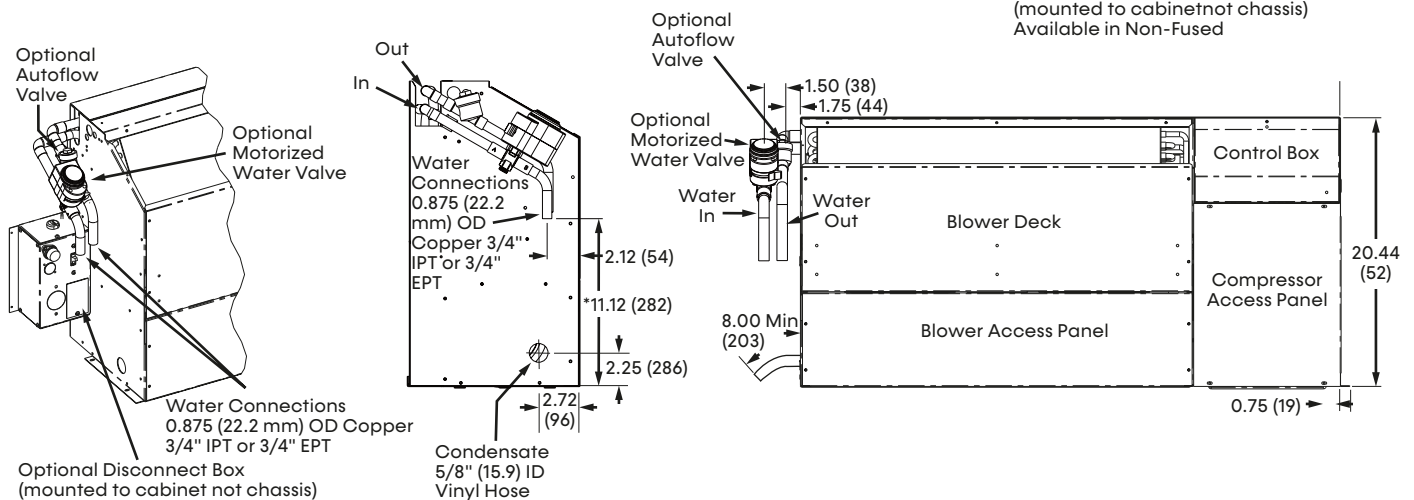
1. Chassis replacements are intended to reuse existing console front cover.
2. Chassis can mount directly on floor.
3. Optional autoflow valve, motorized-water valve and disconnect box are shown

# Piping Detail – Size 18

## Right Hand Configuration



## Left Hand Configuration



**Notes:**

- \* Dimension reduced by fitting if selected

# Electrical Data PSC Blower Motor

Models:  
SD  
09-18

## No Interlal Secondary Pump

| Model | VOLTAGE CODE | VOLTAGE      | VOLTAGE MIN/MAX | COMPRESSOR |      |      |     | FAN MOTOR FLA | TOTAL UNIT FLA | MIN CIRCUIT AMP | FUSE/HACR AMP |
|-------|--------------|--------------|-----------------|------------|------|------|-----|---------------|----------------|-----------------|---------------|
|       |              |              |                 | MCC        | RLA  | LRA  | Qty |               |                |                 |               |
| SD09  | A.B.         | 115-1-60     | 104/126         | 12.5       | 8.0  | 50.0 | 1   | 1.0           | 9.0            | 11.0            | 15            |
|       | G.J.         | 208/230-1-60 | 187/252         | 5.8        | 3.7  | 22.0 | 1   | 0.5           | 4.2            | 5.1             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 5.5        | 3.5  | 22.0 | 1   | 0.3           | 3.8            | 4.7             | 15            |
| SD12  | A.B.         | 115-1-60     | 104/126         | 12.5       | 8.0  | 50.0 | 1   | 1.0           | 9.0            | 11.0            | 15            |
|       | G.J.         | 208/230-1-60 | 187/252         | 6.9        | 4.4  | 25.0 | 1   | 0.5           | 4.9            | 6.0             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 5.5        | 3.5  | 18.7 | 1   | 0.4           | 3.9            | 4.8             | 15            |
| SD15  | G.J.         | 208/230-1-60 | 187/252         | 8.7        | 5.6  | 29.0 | 1   | 0.7           | 6.3            | 7.7             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 7.8        | 5.0  | 28.0 | 1   | 0.7           | 5.7            | 6.9             | 15            |
| SD18  | G.J.         | 208/230-1-60 | 187/252         | 20.7       | 13.3 | 35.0 | 1   | 0.7           | 14.0           | 17.3            | 30            |
|       | E.D.         | 265-1-60     | 249/291         | 10.2       | 6.5  | 40.0 | 1   | 0.7           | 7.2            | 8.8             | 15            |

Notes:

- All fuses Class RK-5.

## PSC with Interlal Secondary Pump

| Model | VOLTAGE CODE | VOLTAGE      | VOLTAGE MIN/MAX | COMPRESSOR |      |      |     | Pump FLA | FAN MOTOR FLA | TOTAL UNIT FLA | MIN CIRCUIT AMP | FUSE/HACR AMP |
|-------|--------------|--------------|-----------------|------------|------|------|-----|----------|---------------|----------------|-----------------|---------------|
|       |              |              |                 | MCC        | RLA  | LRA  | Qty |          |               |                |                 |               |
| SD09  | A.B.         | 115-1-60     | 104/126         | 12.5       | 8.0  | 50.0 | 1   | 0.8      | 1.0           | 9.8            | 11.8            | 15            |
|       | G.J.         | 208/230-1-60 | 187/252         | 5.8        | 3.7  | 22.0 | 1   | 0.8      | 0.5           | 5.0            | 5.9             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 5.5        | 3.5  | 22.0 | 1   | 0.7      | 0.3           | 4.5            | 5.4             | 15            |
| SD12  | A.B.         | 115-1-60     | 104/126         | 12.5       | 8.0  | 50.0 | 1   | 1.4      | 1.0           | 10.4           | 12.4            | 15            |
|       | G.J.         | 208/230-1-60 | 187/252         | 6.9        | 4.4  | 25.0 | 1   | 1.1      | 0.5           | 6.0            | 7.1             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 5.5        | 3.5  | 18.7 | 1   | 1.3      | 0.4           | 5.2            | 6.1             | 15            |
| SD15  | G.J.         | 208/230-1-60 | 187/252         | 8.7        | 5.6  | 29.0 | 1   | 1.1      | 0.7           | 7.4            | 8.8             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 7.8        | 5.0  | 28.0 | 1   | 1.3      | 0.7           | 7.0            | 8.2             | 15            |
| SD18  | G.J.         | 208/230-1-60 | 187/252         | 20.7       | 13.3 | 35.0 | 1   | 1.1      | 0.7           | 15.1           | 18.4            | 30            |
|       | E.D.         | 265-1-60     | 249/291         | 10.2       | 6.5  | 40.0 | 1   | 1.3      | 0.7           | 8.5            | 10.1            | 15            |

Notes:

- All fuses Class RK-5.

# Electrical Data CT EC Blower Motor

Models:  
SD  
09-18

## No Interl Secondary Pump

| Model | VOLTAGE CODE | VOLTAGE      | VOLTAGE MIN/MAX | COMPRESSOR |      |      |     | FAN MOTOR FLA | TOTAL UNIT FLA | MIN CIRCUIT AMP | FUSE/HACR AMP |
|-------|--------------|--------------|-----------------|------------|------|------|-----|---------------|----------------|-----------------|---------------|
|       |              |              |                 | MCC        | RLA  | LRA  | Qty |               |                |                 |               |
| SD09  | A.B.         | 115-1-60     | 104/126         | 12.5       | 8.0  | 50.0 | 1   | 3.5           | 11.5           | 13.5            | 20            |
|       | G.J.         | 208/230-1-60 | 187/252         | 5.8        | 3.7  | 22.0 | 1   | 2.3           | 6.0            | 6.9             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 5.5        | 3.5  | 22.0 | 1   | 2.3           | 5.8            | 6.7             | 15            |
| SD12  | A.B.         | 115-1-60     | 104/126         | 12.5       | 8.0  | 50.0 | 1   | 3.5           | 11.5           | 13.5            | 20            |
|       | G.J.         | 208/230-1-60 | 187/252         | 6.9        | 4.4  | 25.0 | 1   | 2.3           | 6.7            | 7.8             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 5.5        | 3.5  | 18.7 | 1   | 2.3           | 5.8            | 6.7             | 15            |
| SD15  | G.J.         | 208/230-1-60 | 187/252         | 8.7        | 5.6  | 29.0 | 1   | 2.3           | 7.9            | 9.3             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 7.8        | 5.0  | 28.0 | 1   | 2.3           | 7.3            | 8.6             | 15            |
| SD18  | G.J.         | 208/230-1-60 | 187/252         | 20.7       | 13.3 | 35.0 | 1   | 2.3           | 15.6           | 18.9            | 30            |
|       | E.D.         | 265-1-60     | 249/291         | 10.2       | 6.5  | 40.0 | 1   | 2.3           | 8.8            | 10.4            | 15            |

Notes:

- All fuses Class RK-5.

## CT EC with Interl Secondary Pump

| Model | VOLTAGE CODE | VOLTAGE      | VOLTAGE MIN/MAX | COMPRESSOR |      |      |     | Pump FLA | FAN MOTOR FLA | TOTAL UNIT FLA | MIN CIRCUIT AMP | FUSE/HACR AMP |
|-------|--------------|--------------|-----------------|------------|------|------|-----|----------|---------------|----------------|-----------------|---------------|
|       |              |              |                 | MCC        | RLA  | LRA  | Qty |          |               |                |                 |               |
| SD09  | A.B.         | 115-1-60     | 104/126         | 12.5       | 8.0  | 50.0 | 1   | 0.8      | 3.5           | 12.3           | 14.3            | 20            |
|       | G.J.         | 208/230-1-60 | 187/252         | 5.8        | 3.7  | 22.0 | 1   | 0.8      | 2.3           | 6.8            | 7.7             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 5.5        | 3.5  | 22.0 | 1   | 0.7      | 2.3           | 6.5            | 7.4             | 15            |
| SD12  | A.B.         | 115-1-60     | 104/126         | 12.5       | 8.0  | 50.0 | 1   | 1.4      | 3.5           | 12.9           | 14.9            | 20            |
|       | G.J.         | 208/230-1-60 | 187/252         | 6.9        | 4.4  | 25.0 | 1   | 1.1      | 2.3           | 7.8            | 8.9             | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 5.5        | 3.5  | 18.7 | 1   | 1.3      | 2.3           | 7.1            | 8.0             | 15            |
| SD15  | G.J.         | 208/230-1-60 | 187/252         | 8.7        | 5.6  | 29.0 | 1   | 1.1      | 2.3           | 9.0            | 10.4            | 15            |
|       | E.D.         | 265-1-60     | 249/291         | 7.8        | 5.0  | 28.0 | 1   | 1.3      | 2.3           | 8.6            | 9.9             | 15            |
| SD18  | G.J.         | 208/230-1-60 | 187/252         | 20.7       | 13.3 | 35.0 | 1   | 1.1      | 2.3           | 16.7           | 20.0            | 30            |
|       | E.D.         | 265-1-60     | 249/291         | 10.2       | 6.5  | 40.0 | 1   | 1.3      | 2.3           | 10.1           | 11.7            | 15            |

Notes:

- All fuses Class RK-5.

## GENERAL

Furnish and install ClimateMaster Tranquility® Console Water Source Heat Pumps, as indicated on the plans. Equipment shall be completely assembled, piped and internally wired. Capacities and characteristics as listed in the schedule and the specifications that follow.

Units shall be supplied completely factory built capable of operating over an entering water temperature range from 20° to 120°F (-6.7° to 48.9°C) as standard. Equivalent units from other manufacturers may be proposed provided approval to bid is given 10 days prior to bid closing. All equipment listed in this section must be rated and certified in accordance with Air-Conditioning, Heating and Refrigeration Institute/International Standards Organization (AHRI/ISO 13256-1). All equipment must be tested, investigated, and determined to comply with the requirements of the standards for Heating and Cooling Equipment UL 60335-2-40 4th Edition, UL 60335-1 6th Edition for the United States and Can/CSA C22.2 No. 60335-2-40:22, CAN/CSA C22.2 No 60335-1:16 for Canada, by Intertek Testing Laboratories (ETL). The units shall have AHRI/ISO and ETL-US-C labels.

All units shall pass a factory acceptance test. The quality control system shall automatically perform factory acceptance test via computer. A detailed report card from the factory acceptance test shall ship with each unit. **NOTE: If unit fails the factory acceptance test, it shall not be allowed to ship. Unit serial number shall be recorded by factory acceptance test and furnished on report card for ease of unit warranty status.**

## BASIC CONSTRUCTION

Console units shall have one of the following air flow and piping arrangements: Front Inlet/Right-hand Piping; Front Inlet/Left-hand piping; Bottom Inlet/Right-hand piping; or Bottom Inlet/Left-hand piping as shown on the plans. If units with these arrangements are NOT used, the contractor is responsible for any extra costs incurred by other trades. If other arrangements make servicing difficult, the contractor must provide access panels and clear routes to ease service. Architect/Engineer must approve any changes in layout.

The cabinet, wall mounted back wrapper and subbase shall be constructed of heavy gauge galvanized steel with a baked polyester powder coat paint finish. Corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117. **Unit corrosion protection must meet these stringent requirements or unit(s) will not be accepted.** Color will be Polar Ice. Both sides of the steel shall be painted for added protection. Additionally, the wall mounted back wrapper shall have welded corner bracing. The easily removable cabinet enclosure allows for easy service to the chassis, piping compartment and control compartment.

All interior surfaces shall be lined with ¼-inch (6.4-mm) thick, 2 lb/ft<sup>3</sup> (32 kg/m<sup>3</sup>) acoustic flexible-blanket type glass-fiber insulation with a non-woven, anti-microbial treated-mat face. Insulation placement shall be designed in a manner that will eliminate any exposed edges to prevent the introduction of glass fibers into the air stream. Standard insulation must meet NFPA Fire Hazard Classification requirements 25/50 per ASTM E84, UL 723, CAN/ULC S102-M88 and NFPA 90A requirements; air erosion and mold growth limits of UL-181; stringent fungal resistance test per ASTM-C1071 and ASTM G21; and shall meet zero level bacteria growth per ASTM G22. **Unit insulation must meet these stringent requirements or unit(s) will not be accepted.**

The cabinet shall have a 30° sloped top with aluminum rigid bar type discharge grille. Aluminum discharge grille shall be anodized charcoal grey in color including hinged control door. Cabinet shall have rounded edges (0.325-inch/8.255-mm minimum radius) on all exposed corners for safety and aesthetic purposes. **Units not having sloped top and rounded corners (0.325-inch/8.255-mm minimum) on front, side, top slope, and top corners shall not be accepted.**

Return Air Filter shall be 1-inch (25.4 mm) fiberglass disposable type media for bottom return units (units with subbase) or ½-inch (3.2 mm) permanent cleanable type media for front return type units.

**Option: The unit shall be provided with a keyed lock on the control access door.**

**Option: The unit shall be provided with a motorized outside air damper and damper assembly, factory mounted and wired.**



**Option:** The unit shall be provided in front-return air configuration. Front-return air unit shall include a front-return air grille integrally stamped into the cabinet and shall be provided without a 5-inch high subbase.

**Option:** The unit shall include an optional architectural-style field-installed return-air grille to help conceal the subbase return-air opening (units with bottom return only).

**Option:** UltraQuiet package shall consist of high-technology sound-attenuating material that is strategically applied to the compressor and compressor compartment in addition to the standard ClimaQuiet system design, to further dampen and attenuate sound transmissions. Compressor is mounted on specially-engineered sound-tested EPDM isolators.

## FAN AND MOTOR ASSEMBLY

Fan and motor assembly shall be assembled on a slide out fan deck with quick electrical disconnecting means to provide and facilitate easy field servicing. The fan motor shall be multi-speed, permanently lubricated, PSC type, with internal thermal overload protection. Units supplied without permanently lubricated motors must provide external oilers for easy service. The fan motor shall include a torsionally flexible motor mounting system or saddle mount system with resilient rings to inhibit vibration induced high noise levels associated with "hard wire belly band" motor mounting. The airflow rating of the unit shall be based on a wet coil and a clean filter in place. **Ratings based on a dry coil and/or no filter shall NOT be acceptable.**

## REFRIGERANT CIRCUIT

All units shall contain an R-454B sealed-refrigerant circuit including a high-efficiency rotary compressor designed for heat-pump operation, a thermostatic-expansion valve for refrigerant metering, an enhanced corrugated-aluminum lanced fin and rifled-copper tube refrigerant-to-air heat exchanger, reversing valve, coaxial (tube-in-tube) refrigerant-to-water heat exchanger, and safety controls including a high-pressure switch, low-pressure switch (loss of charge), water coil low-temperature sensor, and air

coil low-temperature sensor. Access fittings shall be factory installed on high and low pressure refrigerant lines to facilitate field service. Activation of any safety device shall prevent compressor operation via a microprocessor lockout circuit. The lockout circuit shall be reset at the thermostat or at the optional disconnect switch. **Units that cannot be reset at the thermostat shall not be acceptable.**

Hermetic compressors shall be internally sprung. The compressor will be mounted on specially engineered sound-tested EPDM vibration isolation grommets for maximized vibration attenuation. Compressor shall have thermal overload protection. Compressor shall be located in an insulated compartment away from air stream to minimize sound transmission.

Refrigerant-to-air heat exchangers shall utilize enhanced corrugated lanced aluminum fins and rifled copper tube construction rated to withstand 625 PSIG (4,309 kPa) refrigerant working pressure. Refrigerant-to-water heat exchangers shall be of copper inner water tube and steel refrigerant outer tube design, rated to withstand 625 PSIG (4,309 kPa) working refrigerant pressure and 300 PSIG (2,068 kPa) working water pressure. The refrigerant-to-water heat exchanger shall be "electro-coated" with a low cure cathodic epoxy material a minimum of 0.4 mils thick (0.4 – 1.5 mils range) on all surfaces. The black-colored coating shall provide a minimum of 1,000 hours salt-spray protection per ASTM B117-97 on all external steel and copper tubing. The material shall be formulated without the inclusion of any heavy metals and shall exhibit a pencil hardness of 2H (ASTM D3363-92A), crosshatch adhesion of 4B-5B (ASTM D3359-95), and impact resistance of 160 in-lbs (184 kg-cm) direct (ASTM D2794-93).

Refrigerant metering shall be accomplished by thermostatic expansion valve only. Expansion valves shall be dual port balanced type with external equalizer for optimum refrigerant metering. Units shall be designed and tested for operating ranges of entering water temperatures from 20° to 120°F (-6.7° to 48.9°C). Reversing valve shall be four-way solenoid activated refrigerant valve, which shall default to heating mode should the solenoid fail to function. If the reversing valve solenoid defaults to cooling mode, an additional low temperature thermostat must be provided to prevent over-cooling an already cold room.

ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at 800-299-9747 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products. The latest version of this document is available at [www.climatemaster.com](http://www.climatemaster.com). Engineered and assembled in the USA. © ClimateMaster, Inc. All Rights Reserved 2023

**Option:** The unit will be supplied with cupro-nickel coaxial water-to-refrigerant heat exchanger.

**Option:** The unit will be supplied with internally factory-mounted two-way water valve for variable-speed pumping requirements. A factory-mounted or field-installed high-pressure switch shall be installed in the water piping to disable compressor operation in the event water pressures build due to water freezing in the piping system.

**Option:** The unit will be supplied with internally factory-mounted automatic water flow regulators.

**Option:** The unit will be supplied with internally-mounted secondary pump for primary/secondary applications, specifically single-pipe systems. (Requires extended unit).

**Option:** The unit shall be supplied with extended-range insulation option, which adds closed-cell insulation to internal water lines, and provides insulation on suction side refrigeration tubing including refrigerant-to-water heat exchanger.

**Option:** The refrigerant-to-air heat exchanger shall be coated.

## PIPING

Water piping shall terminate in the same location regardless of the connection and valve options.

**Option:** Threaded MPT copper fittings (sweat connections are standard).

**Option:** Threaded FPT copper fittings (sweat connections are standard).

## DRAIN PAN

The drain pan shall be constructed of galvanized steel and have a powder coat paint application to further inhibit corrosion. This corrosion protection system shall meet the stringent 1,000-hour salt spray test per ASTM B117. If plastic type material is used, it must be HDPE (High Density Polyethylene) to avoid thermal cycling shock stress failure over the lifetime of the unit. Drain pan shall be insulated.

Drain outlet shall be located at pan as to allow complete and unobstructed drainage of condensate. The unit as standard will be supplied with solid-state electronic condensate overflow protection. **Mechanical float switches will NOT be accepted.**

**Option:** The unit shall be supplied with stainless steel drain pan.

## ELECTRICAL

Unit control shall be located under the hinged control door in the sloped top grille. Operating control shall consist of push buttons to select mode of operation "OFF", "HEAT," "COOL," "AUTO", Fan "AUTO" (fan cycles with compressor), Fan "ON" (continuous fan), Fan "LO" (low speed fan), and Fan "HI" (high speed fan). Temperature adjustment shall be accomplished via two push buttons, one labeled with an arrow up, and the other labeled with an arrow down. Control shall include an LCD display for display of temperature and setpoint. **Units without an LCD display shall not be accepted.**

A control box shall be located above the unit compressor compartment and shall contain operating controls as outlined in the paragraph above, 24VAC transformer, double-pole compressor relay, and solid-state controller for complete unit operation. Reversing valve and fan motor wiring shall be routed through this electronic controller. Units shall be name-plated for use with time delay fuses or HACR circuit breakers. A unit mounted digital thermostat (CM100 or CM300) with a remote sensor measuring return air temperature shall control the compressor operation for heating and cooling. Thermostat shall be a single-stage, digital, auto or manual changeover with HEAT-OFF-COOL-AUTO system switch, fan ON-AUTO switch, and fan LO-HI switch. Thermostat shall have an LCD display with temperature and setpoint(s) in °F or °C. Field can configure digital thermostat for ACO or MCO operation.

**Option:** Provisions for remote thermostat

**Option:** Disconnect Switch, Non-Fused.

**Option:** Breaker.

**Option:** 20A power plug/cord.

**Option:** 20A plug/cord, receptacle, disconnect switch, non-fused.



## ENHANCED SOLID STATE CONTROL SYSTEM (CXM2)

Units shall have a solid-state control system. Units utilizing electro-mechanical control shall not be acceptable. The control system microprocessor board shall be specifically designed to protect against building electrical system noise contamination, EMI, and RFI interference. The control system shall interface with a heat pump type thermostat. The control system shall have the following features:

- a. Anti-short cycle time delay on compressor operation.
- b. Random start on power up mode.
- c. Low-voltage protection.
- d. High-voltage protection.
- e. Unit shutdown on high- or low-refrigerant pressures.
- f. Unit shutdown on low water temperature.
- g. Condensate-overflow electronic protection.
- h. Option to reset unit at thermostat or disconnect.
- i. Automatic intelligent reset. Unit shall automatically reset the unit 5 minutes after trip if the fault has cleared. If a fault occurs three times sequentially without thermostat meeting temperature, then lockout requiring manual reset will occur.
- j. Ability to defeat time delays for servicing.
- k. The low-pressure switch shall not be monitored for the first 120 seconds after a compressor-start command to prevent nuisance safety trips.
- l. 24V output to cycle a motorized water valve or other device with compressor contactor.
- m. Unit Performance Sentinel (UPS). The UPS warns when the heat pump is running inefficiently.
- n. Water coil low-temperature sensing (selectable for water or anti-freeze).
- o. Air coil low temperature sensing.
- p. Minimized reversing valve operation (Unit control logic shall only switch the reversing valve when cooling is demanded for the first time. The reversing valve shall be held in this position until the first call for heating, ensuring quiet operation and increased valve life).

- q. Emergency-shutdown contacts.
- r. Entering and leaving-water temperature sensing.
- s. Leaving-air temperature sensing.
- t. Compressor-discharge temperature sensing.

**NOTE: Units not providing the eight safety protections of anti-short cycle, low voltage, high voltage, high refrigerant pressure, low pressure (loss of charge), air coil low temperature cut-out, water coil low temperature cut-out, and condensate overflow protections will not be accepted.**

When CXM2 is connected to AWC99U01 thermostat or handheld service tool, the installer/service technician can; check DIP switch S2 settings; run operation modes manually; check all physical inputs from thermostat and refrigerant pressure switches status, (Y1, Y2, W, O, G, H, ESD, NSB, OR, HP switch, and LOC switch); current or at time of fault the following temperatures - water coil (LT1), air coil (LT2), compressor discharge, leaving air, leaving water, entering water and control voltage; record last five faults, list possible reasons, and clear faults. When the AWC99U01 communicating thermostat is used this same functionality can be viewed and adjusted remotely in the web portal or mobile app. Systems not providing remote access, diagnosis, and adjustment functionality will not be accepted.

## REMOTE SERVICE SENTINEL (CXM2)

Solid state control system shall communicate with applicable thermostats to display (at the thermostat) the unit status, fault status, and specific fault condition, as well as retrieve previously stored fault that caused unit shutdown. The Remote Service Sentinel allows building maintenance personnel or service personnel to diagnose unit from the wall thermostat. The control board shall provide a signal to the thermostat, indicating a lockout. A detailed message shall be provided at the communicating thermostat or service tool and specific fault status such as over/under voltage fault, high pressure fault, low pressure fault, low water temperature fault, condensate overflow fault, etc. **Units that do not provide this remote service sentinel shall not be acceptable.**

**Option: MPC (Multiple Protocol Control) Interface System**

Units shall have all the features listed above and the control board will be supplied with a Multiple Protocol interface board. Available protocols are BACnet MS/TP, Modbus, or Johnson Controls N2. The choice of protocol shall be field selectable/changeable via the use of a simple selector switch.

**Protocol selection shall not require any additional programming or special external hardware or software tools.** This will permit all units to be daisy chain connected by a 2-wire twisted pair shielded cable. The following points must be available at a central or remote computer location:

- a. space temperature
- b. leaving water temperature
- c. discharge air temperature
- d. command of space temperature setpoint
- e. cooling status
- f. heating status
- g. low temperature sensor alarm
- h. low-pressure sensor alarm
- i. high-pressure switch alarm
- j. condensate-overflow alarm
- k. hi-/low-voltage alarm
- l. fan "ON/AUTO" position of space thermostat as specified above
- m. unoccupied/occupied command
- n. cooling command
- o. heating command
- p. fan "ON/AUTO" command
- q. fault reset command
- r. itemized fault code revealing reason for specific shutdown fault (any one of seven)

This option also provides the upgraded 75VA control transformer with load side short circuit and overload protection via a built in circuit breaker.

## WARRANTY

ClimateMaster shall warranty equipment for a period of 12 months from startup or 18 months from shipping (whichever occurs first).

**Option: Extended 4-year compressor warranty covers compressor for a total of 5 years.**

**Option: Extended 4-year refrigeration circuit warranty covers coils, reversing valve, expansion valve and compressor for a total of 5 years.**

**Option: Extended 4-year control board warranty covers the CXM2 control board for a total of 5 years.**

## FIELD-INSTALLED OPTIONS

### Hose Kits

Hoses shall be 1-foot (31 cm) long, braided stainless steel; fire rated hoses complete with adapters. Only fire rated hoses will be accepted. **NOTE: Threaded connection piping option must be ordered for hose kit connections.**

**Option: 2-foot (61-cm) hose lengths instead of standard 1-foot (31-cm) length.**

### Valves

The following valves are available and will be shipped loose:

- a. Ball valve; bronze material, standard port full flow design, FPT connections.
- b. Ball valve with memory stop and PT port.
- c. "Y" strainer with blowdown valve; bronze material, FPT connections
- d. Motorized water valve; slow acting, 24V, FPT connections.

## HOSE KIT ASSEMBLIES

The following assemblies ship with the valves already assembled to the hose described:

- a. Supply and return hoses having ball valve with PT port.
- b. Supply hose having ball valve with PT port; return hose having automatic flow regulator valve with PT ports, and ball valve.
- c. Supply hose having "Y" strainer with blowdown valve, and ball valve with PT port; return hose having automatic flow regulator with PT ports, and ball valve.

- d. Supply hose having "Y" strainer with blowdown valve, and ball valve with PT port; return hose having ball valve with PT port.

## THERMOSTATS

The thermostat shall be a ClimateMaster mechanical or electronic type thermostat as selected below with the described features:

- a. **CM100 - Multi-stage Automatic or Manual Changeover digital thermostat (ATA32V01)**

Multi-stage (3H/2C), automatic or manual changeover with HEAT-OFF-COOL-AUTO-EM HEAT system settings and fan ON-AUTO settings. Thermostat shall have a green backlit LED display with temperature, setpoints, mode, and status indication via a green (cooling) or red(heating) LED. The temperature indication shall be selectable for °F or °C. Time display shall be selectable for 12 or 24 hour clock. The thermostat shall provide permanent memory of setpoints without batteries. Thermostat shall provide heating setpoint range limit, cooling setpoint range limit, temperature display offset, keypad lockout, dead-band range setting, and inter-stage differential settings. Thermostat shall provide progressive recovery to anticipate time required to bring space temperature to the next programmed event. Thermostat shall provide an installer setup for configuring. Thermostat navigation shall be accomplished via four buttons (Mode/fan/down/up) with menu-driven selections for ease of use and programming.

- b. **CM300 – Multi-stage, Automatic or Manual Changeover, 7-day Programmable with Wi-Fi and Humidity Control (AVB32V02R)**

Residential version shall be 7 day programmable with up to four setpoints per day. Commercial version shall be 7 day programmable with four occupied/unoccupied periods per day with up to 4-hour override. Multi-stage (3H/2C), automatic or manual changeover with HEAT-OFF-COOL-AUTO-EM HEAT system settings and fan ON-AUTO settings, Wi-Fi, pre-occupancy purge fan option, night time control of display backlight, bi-color LED indicates a heating or

cooling demand, keypad lock, title 24 compliant, openADR2.0b certified with Skyport web portal. Compatible with condensate overflow warning systems – lockout compressor with message on.

- a. **Thermostat (Communicating) (AWC99U01)**

An electronic communicating web-enabled touchscreen thermostat shall be provided. The thermostat shall offer three stages of heating and two stages of cooling with precise temperature control and have a four-wire connection to the unit. The thermostat shall be capable of manual or automatic change-over operation and shall operate in standard or programmable mode. An integrated humidity control feature shall be included to control a humidifier and/or a dehumidifier. The thermostat shall include a utility demand reduction feature to be initiated by an independent time program or an external input. The thermostat shall provide access to via the web portal or mobile application to include temperature adjustment, schedule adjustment including occupied/unoccupied, entering-water temperature, leaving-water temperature, water-coil temperature, air-coil temperature, leaving-air temperature, and compressor-discharge temperature. A graphical system layout to be provided with real-time operating mode information of the temperature sensors for easy diagnostics. The thermostat shall display system faults with probable cause and troubleshooting guidance. The system shall provide in clear language the last five faults, time of faults, operating temps at time of fault, and possible reasons for the fault. The thermostat shall provide access for immediate manual control of all outputs via the web portal/mobile application for rapid troubleshooting.

**b. Single-Stage Digital Auto or Manual Changeover (ATA11U01)**

The thermostat shall be a single-stage, digital, auto or manual changeover with HEAT-OFF-COOL-AUTO system switch and fan ON-AUTO switch. The thermostat shall have an LCD display with temperature and setpoint(s) in °F or °C. The Thermostat shall provide permanent memory of setpoint(s) without batteries. A fault LED shall be provided to display specific fault condition. The thermostat shall provide temperature display offset for custom applications.

**c. Multi-stage Manual Changeover Programmable 5/2 Day (ATP21W02)**

The thermostat shall be 5-day/2-day programmable (with up to four setpoints per day), multi-stage (2H/1C), manual changeover with HEAT-OFF-COOL-EM HEAT system settings and fan ON-AUTO settings. The thermostat shall have an LCD display with temperature, setpoint(s), mode, and status indication. The temperature indication shall be selectable for °F or °C. The thermostat shall provide permanent memory of setpoint(s) without batteries. The thermostat shall provide convenient override feature to temporarily change setpoint.

**d. Multi-stage Automatic or Manual Changeover Programmable 7 Day (ATP32U03C)**

The thermostat shall be 7-day programmable (with up to four setpoints per day), multi-stage (3H/2C), automatic or manual changeover with HEAT-OFF-COOL-AUTO-EM HEAT system settings and fan ON-AUTO settings. The thermostat shall have a blue backlit dot matrix LCD display with temperature, setpoints, mode, and status indication. The temperature indication shall be selectable for °F or °C. Time display shall be selectable for 12- or 24-hour clock. Fault identification shall be provided to simplify troubleshooting by providing specific unit fault at the thermostat with red backlit LCD during unit lockout. The thermostat shall provide permanent memory of setpoints without batteries. The thermostat shall provide heating-setpoint range limit, cooling-setpoint range limit, temperature

display offset, keypad lockout, dead-band range setting, and inter-stage differential settings. The thermostat shall provide progressive recovery to anticipate the time required to bring space temperature to the next programmed event. The thermostat shall provide an installer setup for configuring options and for setup of servicing contractor name and contact information. The thermostat shall allow the use of an accessory remote and/or outdoor-temperature sensor (AST008). Thermostat navigation shall be accomplished via five buttons (up/down/right/left/select) with menu-driven selections for ease of use and programming.

**e. Multistage Automatic or Manual Changeover Programmable 7 Day with Humidity Control (ATP32U04C)**

The thermostat shall be 7-day programmable (with up to four setpoints per day), multi-stage (3H/2C), automatic or manual changeover with HEAT-OFF-COOL-AUTO-EM HEAT system settings and fan ON-AUTO settings. Separate dehumidification and humidification setpoints shall be configurable for discreet outputs to a dehumidification option and/or an external humidifier. Installer configuration mode shall allow the thermostat to operate with EC fan dehumidification mode via settings changes. The thermostat shall have a blue backlit dot matrix LCD display with temperature, relative humidity, setpoints, mode, and status indication. The temperature indication shall be selectable for °F or °C. Time display shall be selectable for 12- or 24-hour clock. Fault identification shall be provided to simplify troubleshooting by providing specific unit fault at the thermostat with red backlit LCD during unit lockout. The thermostat shall provide permanent memory of setpoints without batteries. Thermostat shall provide heating setpoint range limit, cooling setpoint range limit, temperature display offset, keypad lockout, dead-band range setting, and inter-stage differential settings. The thermostat shall provide progressive recovery to anticipate time required to bring space temperature to the next programmed event.

The thermostat shall provide an installer setup for configuring options and for setup of servicing contractor name and contact information. The thermostat shall allow the use of an accessory remote and/or outdoor temperature sensor (AST008). Thermostat navigation shall be accomplished via five buttons (up/down/right/left/select) with menu-driven selections for ease of use and programming.

f. **CM500 – Color Touchscreen Display, Multi-stage, Automatic or Manual Changeover, 7-day Programmable with Wi-Fi and Humidity Control (AVB32V03C)**

Thermostat shall have color resistive touchscreen display with space temperature, relative humidity, setpoints, mode, status indication and local weather (if connected to Wi-Fi). Residential version shall be 7-day programmable with up to four setpoints per day. Commercial version shall be 7-day programmable with four occupied/unoccupied periods per day with up to 4-hour override. Multi-stage (3H/2C), automatic or manual changeover with HEAT-OFF-COOL-AUTO-EM HEAT system settings and fan ON-AUTO settings, Wi-Fi, pre-occupancy purge fan option, customizable screen saver and background displays, indicator on display indicates a heating or cooling demand, set-point lock, title 24 compliant, openADR2.0b certified with Skypoint web portal. Compatible with condensate overflow warning systems – lockout compressor with message on the display. Capable of being monitored by 3rd party software. Compatible with AST014 Wi-Fi remote sensor. Configurator mobile app or web portal for easy setup. Separate dehumidification and humidification setpoints shall be configurable for discreet outputs to a dehumidification option and/or an external humidifier. The temperature indication shall be selectable for °F or °C. Time display shall be selectable for 12- or 24-hour clock.

The thermostat shall provide permanent memory of setpoints without batteries. Thermostat shall provide heating setpoint range limit, cooling setpoint range limit, temperature display offset, dead-band range setting, and inter-stage differential settings. Thermostat shall provide progressive recovery to anticipate time required to bring space temperature to the next programmed event. Thermostat shall provide access to a web portal and mobile app for installer setup for configuring options. Thermostat shall have menu-driven selections for ease of use and programming.

## DDC SENSORS

ClimateMaster wall mounted DDC sensor to monitor room temperature and interfaces with optional interface system described above. Several types as described below:

- Sensor only with no display (MPC).
- Sensor with setpoint adjustment and override (MPC only).
- Sensor with setpoint adjustment and override, LCD display, status/fault indication (MPC).

## SUBBASE RETURN AIR GRILLE

Decorative-louvered grille covers the front of subbase including the large return-air opening. Order separate and field attach.

**NOTICE! This product specification document is furnished as a means to copy and paste ClimateMaster product information into project specification. It is not intended to be a complete list of product requirements. This document is an excerpt from the product submittal and must not be used without consulting the complete product submittal. For complete product installation and application requirements, please consult the complete product submittal. ClimateMaster is not responsible for misuse of this document or a failure to adequately review specific requirements in the product catalog.**



# Revision History

Models:  
SD  
09-18

| Date     | Section            | Description  |
|----------|--------------------|--|
| 10/22/24 | Performance Data   | Updated Cooling Temperature Range                                |
|          | Blower Performance | Added note concerning maximum allowable altitude of installation |
|          | Engineering Specs  | Updated Unit Maximum Water Working Pressure                      |
| 08/21/24 | Physical Data      | Updated Unit Maximum Water Working Pressure                      |
| 05/14/24 | All                | Created  |



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