Tranquility® 20 High Efficiency (TS) Series

Submittal Data

Models TSD/H/V 006-070 60Hz - HFC-410A

CLIMATEMASTER®
A NIBE GROUP MEMBER

LC377

Rev.: April 17, 2023

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TS High Efficiency Series

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TS High Efficiency Series

THE TRANQUILITY® 20 SINGLE-STAGE (TS) SERIES

The award winning Tranquility® Series raises the bar for water-source heat pump efficiencies, features and application flexibility. Not only does the Tranquility 20 far exceed ASHRAE 90.1 efficiencies, but it also uses EarthPure® (HFC-410A) zero ozone depletion refrigerant, making it an extremely environmentally-friendly option. Tranquility 20 is eligible for additional LEED® (Leadership in Energy and Environmental Design) points because of the "green" technology design.

Available in sizes 1/2 tons (1.76 kW) through 6 tons (21.1 kW) with multiple cabinet options (vertical upflow, vertical downflow and horizontal) the Tranquility 20 offers a wide range of units for most any installation. The Tranquility 20 has an extended range refrigerant circuit, capable of ground loop (geothermal) applications as well as water loop (boiler-tower) applications. Standard features are many. Copeland scroll compressors, microprocessor controls, galvanized steel cabinet, polyester powder coat paint, stainless steel drain pan and foil-backed air handler insulation are just some of the features of the Tranquility 20 Series.

ClimateMaster's exclusive double isolation compressor mounting system makes the Tranquility 20 the quietest unit on the market. Compressors are mounted on specially engineered sound tested EPDM grommets to a heavy gauge mounting plate, which is then isolated from the cabinet base with rubber grommets for maximized vibration/sound attenuation. The unique low profile slanted control box makes installing and maintaining the unit easier than any other water-source heat pump currently in production.

Options such as ECM variable speed fan motor, coated air coil, DDC controls, internal pump and high efficiency MERV 11 two-inch (51mm) air filters allow customized design solutions. Optional high static fan motors help overcome some of the challenges associated with ductwork for retrofit installations.

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 start-up, 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 20 (TS) Series Water-Source Heat Pumps are designed to meet the challenges of today's HVAC demands with one of the most innovative products available on the market.

Features, Options and Accessories

FEATURES

- Sizes 006 (1/2 ton, 1.76 kW) through 070 (6 tons, 21.1 kW)
- EarthPure® (HFC-410A) refrigerant
- Exceeds ASHRAE 90.1 efficiencies
- Galvanized steel construction with attractive black matte polyester powder coat paint
- Foil-backed insulation in air handler section
- Unique double isolation compressor mounting with vibration isolation for quiet operation
- Insulated divider and separate compressor/air handler compartments
- Copeland scroll compressors
- TXV metering device
- Field convertible discharge air arrangement for horizontal units
- Flush securely-mounted corner post water connections (no backup wrench required)
- Unit Performance Sentinel performance monitoring system
- Eight Safeties Standard
- iGate® 2 Communicating Controls Powered by CXM2
  - Multiple communication pathways,
    - Cloud-based connectivity via iGate 2 Wi-Fi communicating color touch screen thermostat for remote monitoring, access, and diagnosis. Including the new functionality for contractors/ building engineers to monitor and make mass changes on multi-unit systems
    - Connect directly to the system with use of a handheld service tool
  - Provides real-time unit operating conditions
  - Reduces start-up, commissioning, and service time by removing the need for hard tooling to take temperature measurements
  - Captures operating conditions in the event of a safety shutdown

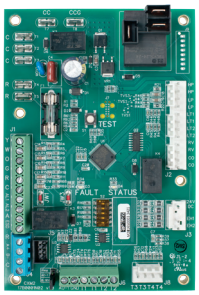
OPTIONS

- iGate® 2 Communicating Controls Powered by DXM2.5
  - Includes all of the features listed above for CXM2 controls including cloud-based connectivity via iGate 2 Wi-Fi communicating color touch screen thermostat for remote monitoring, access, and diagnosis
  - Provides direct control over intelligent Constant Volume (CV) ECM fan motor
  - Controls ClimaDry® II hydronic modulating reheat
  - Allows operation of domestic Hot Water Generator (HWG)
- High efficient intelligent Constant Volume (CV) ECM motors for ultimate airflow control
- Stainless steel drain pan
- Extended range insulation for geothermal applications
- BACnet, Modbus and Johnson N2 compatibility options for DDC controls
- High static blowers available
- ClimaDry® II modulating reheat
- Corrosive resistant cupro-nickel water heat exchanger
- Internally mounted water pump for single pipe systems
- UltraQuiet sound attenuation package
- Hot water generator for domestic hot water generation
- Unit integrated power disconnect
- Auto flow regulators that limit water flow to the unit preventing system over pumping
- Two-way motorized water valves that prevent water flow through the unit when it is not in operation increasing system pumping efficiency

ACCESSORIES

- Wi-Fi communicating color touch screen thermostat
- Wide variety of thermostat options to meet your application needs
- Various length braided hose kits with optional water valves, PT plugs, blowdown valve, flow limiting, and strainer options
- Externally mounted manual and motorized water valves
- 1” Merv 8 filter
- 2” Merv 8 or 13 filters
- Architecturally pleasing wall sensors for connection to DDC (MPC) controls
- Electric emergency duct heaters

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



Tranquility® 20 Single Stage (TS) Series 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, iGate 2 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.

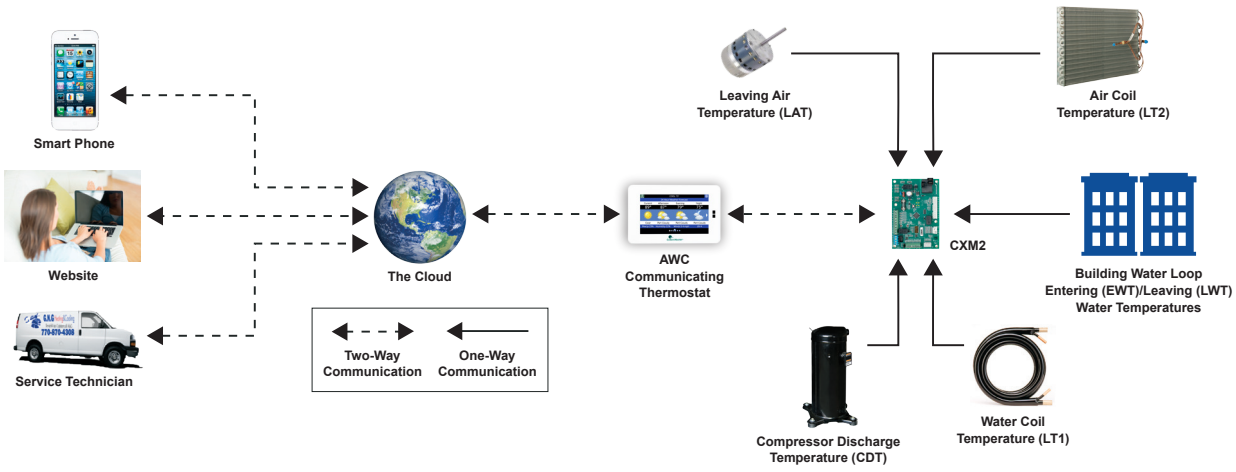
Precise Control – The new CXM2 board enables intelligent, 2-way communication between the CXM2 board and smart components like the communicating thermostat and diagnostic tool. The advanced CXM2 board uses information received from the temperature sensors to precisely control operation to deliver high 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 Thermostat 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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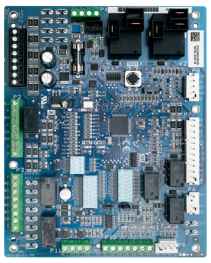

Tranquility® 20 Single Stage (TS) Series is equipped with industry-first, iGate® 2 communication information gateway that allows users to interact with their water-source system in easy to read clear language AND delivers improved reliability/efficiency by precisely controlling smart components.

Monitor/Configure – Installers can configure from the myUplink PRO website, mobile app, iGate 2 Communicating AWC Thermostat, or diagnostic tool, including: Airflow, 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 DXM2.5 board enables intelligent, 2-way communication between the DXM2.5 board and smart components like the communicating thermostat/diagnostic tool and constant volume (CV) EC fan motor. The advanced DXM2.5 board uses information received from the smart components and temperature sensors to precisely control operation of the variable speed CV EC fan motor to deliver higher efficiency, reliability and increased comfort.

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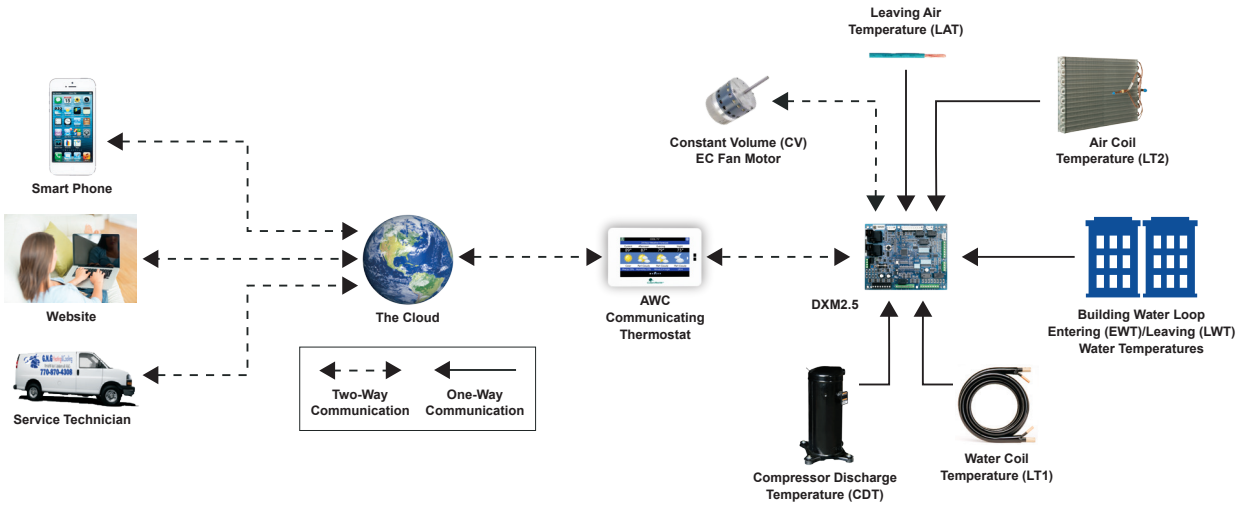
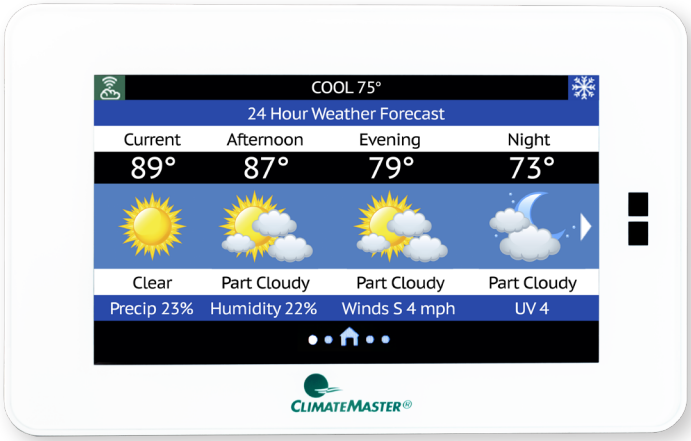


iGate® 2 Communication – Cloud connected, web-enabled information gateway to monitor, control, and diagnose your system



The iGate® 2 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 iGate® 2 Communicating (AWC) Thermostat and Tranquility comfort system.

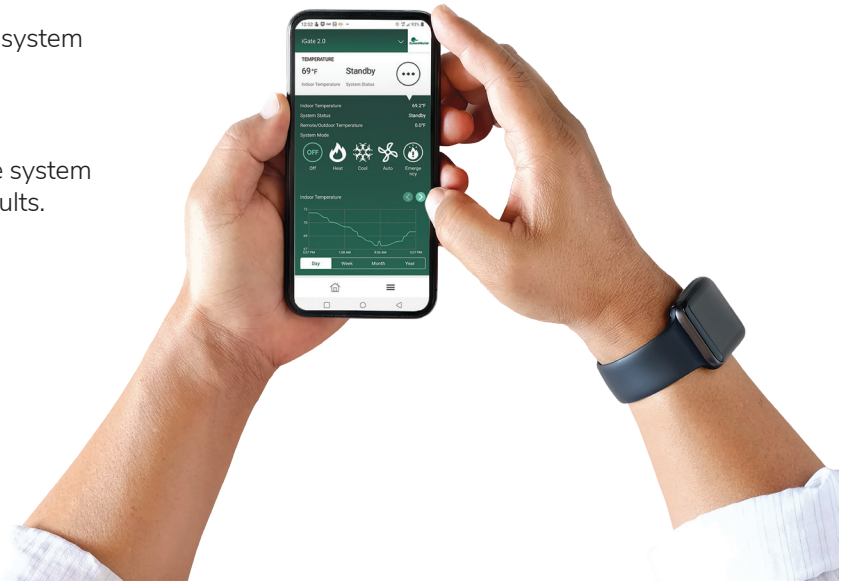
(Mobile) Remote System Control
Control temperature and schedule from anywhere in the world.

Early Fault Warnings
Alerts you and your contractor of potential system faults in the future.

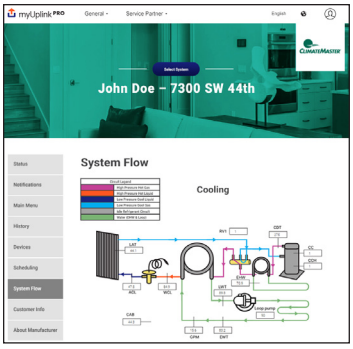
Remote Diagnostics
Enable the contractor to remotely diagnose system issues, adjust system settings, and reset faults.

Real-Time Operations Data & 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 diagnosis capabilities without the large expense of a building management system.



HVAC Professional | User Experience



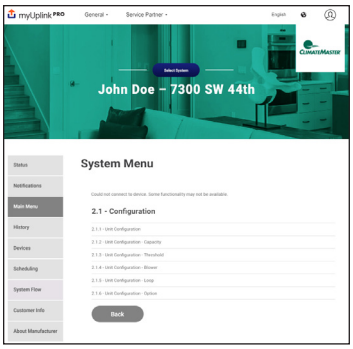
The iGate® 2 is more than just a smart thermostat for your residential or commercial customer, it's a business opportunity. Our new thermostat works with your customers' Tranquility comfort systems to provide the most efficient link between their system and your services. The customization of monitoring 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.

myUplink PRO

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 diagnosis systems remotely
- Secure internet connection keeps homeowner information private
- Access thermostat(s) through Android and iPhone mobile apps

Homeowner | User Experience



The iGate® 2 combines a Wi-Fi thermostat and advanced unit controls to communicate the systems operation information to the cloud. From any internet connected device or smart phone, homeowners can control and monitor their systems from anywhere in the world. iGate 2 offers homeowners 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 diagnosis issues remotely. This gives the HVAC technician the upper hand when showing up to perform service, saving time which in turn saves money.

myUplink

Benefits

- Communicates personal settings and reminders through the iGate 2 communication system
- Easy-to-use, full-color, high-resolution interface
- Sleek, intuitive button control
- 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

The Intelligent Constant Volume (CV) ECM blower motor provides unmatched functionality that saves installing and service technicians time while also providing increased comfort levels to occupants.

CV ECM's are programed to maintain a constant CFM across a wide range of external static pressures (ESP). This functionality differs from traditional PSC or even Constant Torque (CT) ECM's. With traditional PSC and CT ECM fan motors, as ESP is increased CFM is reduced. To increase or decrease the speed of the fan motor requires a fan motor switch or a technician to wire into a different motor tap. CT ECM's provide increased efficiency over PSC motors but with no additional functionality. With a CV ECM, as changes in ESP occur the fan motor will adjust its speed to deliver the desired CFM (within its operating range). This ensures the system is delivering the airflow and capacity it was designed for.

A major benefit of the CV ECM over other fan motor types its ability to adjust airflow remotely through the iGate® 2 web portal/mobile app or directly at the unit with a communicating diagnostic service tool or thermostat. Airflow levels can be adjusted in increments of 25 CFM from the units minimum and maximum CFM range (see CV ECM configuration table for details). This functionality allows technicians to dial in airflow during start-up and commissioning via an easy to use service tool. During operation occupants may have a desire for airflow adjustments. Reducing CFM can reduce airflow sound levels and increase cooling dehumidification (latent capacity). Technicians can easily make these adjustments without making wiring changes reducing service time with minimal disruption to the occupants.

The fan motor operating modes include:

- First Stage Cooling (Y1 & O)
- Second Stage Cooling (Y1, Y2, & O)
- First Stage Heating (Y1)
- Second Stage Heating (Y1 & Y2)
- Fan (G with no Y1, Y2, or W)

Airflow Configuration Screen on Mobile App

The CV ECM motor includes **"soft start"** and **"ramp down"** features. The soft start feature gently increases the motors rpm at blower start up resulting quieter blower start cycles. Likewise, the ramp down feature allows the blower to slowly decrease rpm to a full stop resulting in a quieter end to each blower cycle. The ramp down feature (also known as the heating or cooling "Off Delay") also has the functionality to be field selected by the technician in the allowable range of 0 to 255 seconds.

Reference Calculations

HEATING

$$LWT = EWT - \frac{HE}{GPM \times Constant}$$

$$LAT = EAT + \frac{HC}{CFM \times 1.08}$$

COOLING

$$LWT = EWT + \frac{HR}{GPM \times Constant} \qquad LC = TC - SC$$

$$LAT\ (DB) = EAT\ (DB) - \frac{SC}{CFM \times 1.08} \qquad S/T = \frac{SC}{TC}$$

Constant = 500 for water, 485 for antifreeze

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

Airflow	Water Flow	Est 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
CDT	Compressor discharge temperature
CFM	Airflow, cubic feet per minute
COP	Coefficient of performance = Btuh output/Btuh input
CT ECM	Electronic commutated constant torque fan motor
CV ECM	Electronic commutated constant volume fan motor
DB	Dry bulb temperature, °F
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
HWC	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
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

Step 1 Determine the actual heating and cooling loads at the desired dry bulb and wet bulb conditions.

Step 2 Obtain the following design parameters: Entering water temperature, water flow rate in GPM, air flow in CFM, water flow pressure drop and design wet and dry bulb temperatures. Air flow 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.

Step 3 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.

Step 4 Enter tables at the design water flow and water temperature. Read the total and sensible cooling capacities **(Note: interpolation is permissible, extrapolation is not).**

Step 5 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.

Step 6 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.

Step 7 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.

Step 8 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 ..... 23,000 BTUH
Sensible Cooling ..... 17,000 BTUH
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.) ..... 6.0 GPM
Air Flow ..... 690 CFM

Steps 3, 4 & 5 HP Selection:

After making our preliminary selection (TS024), we enter the tables at design water flow and water temperature and read Total Cooling, Sens. Cooling and Heat of Rej. capacities:

Total Cooling ..... 25,200 BTUH
Sensible Cooling ..... 18,400 BTUH
Heat of Rejection ..... 31,100 BTUH

Steps 6 & 7 Entering Air and Airflow Corrections:

Next, we determine our correction factors.

	Table	Ent Air	Air Flow	Corrected
Corrected Total Cooling =	25,200	x 0.9705	x 0.9724	= 23,782
Corrected Sens Cooling =	18,400	x 1.0809	x 0.8733	= 17,368
Corrected Heat of Reject =	31,100	x 0.9757	x 0.9728	= 29,519

Step 8 Water Temperature Rise Calculation and Assessment:

Actual Temperature Rise ..... 9.8°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 Btuh of the actual indicated load.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
T	S	V	0	2	4	C	G	C	3	0	C	L	T	S

Model Type
TS = Tranquility® 20
Single Stage Scroll

Configuration
V = Vertical Upflow
H = Horizontal
D = Vertical Downflow

Unit Size
006 - E,G
009 - E,G
012 - E,G
018 - E,G
024 - E,F,G,H
030 - E,F,G,H
036 - E,F,G,H
042 - E,F,G,H,N
048 - E,F,G,H,N
060 - E,F,G,H,N
070 - F,G,H,N
AVAILABLE VOLTAGES

Revision Level
A = Current Revision Sizes 006-012
B = Current Revision Sizes 018
C = Current Revision Sizes 024-070

Voltage
G = 208/230-1-60
E = 265-1-60
H = 208/230-3-60
F = 460-3-60
N = 575-3-60

Controls

Control	w/o Disconnect	w/ Disconnect
CXM2	C	A
DXM2.5	D	B
CXM2 w/MPC	N	R
DXM2.5 w/MPC	P	S

Cabinet

OPTION	RANGE	ULTRA QUIET	1" FILTER RAIL	2" FILTER RAIL	1" FILTER FRAME	2" FILTER FRAME
1	EXTENDED RANGE	NO	YES	NO		
A			NO			YES
J			NO	YES	NO	
K			NO		YES	NO
2		YES	YES	NO		
C			NO			YES
L			NO	YES	NO	
M			NO		YES	NO
3	STANDARD RANGE	NO	YES	NO		
E			NO			YES
N			NO	YES	NO	
P			NO		YES	NO
4		YES	YES	NO		
G			NO			YES
R			NO	YES	NO	
S			NO		YES	NO

Water Circuit Options
0 = None
2 = HWG (Coil Only)
5 = Secondary Circulating Pump
6 = HWG (Coil Only) w/Auto Flow Regulator 2.5 GPM/Ton
7 = HWG (Coil Only) w/Auto Flow Regulator 3.0 GPM/Ton
8 = Auto Flow Regulator 2.5 GPM/Ton
9 = Auto Flow Regulator 3.0 GPM/Ton

Heat Exchanger Options

	Non Coated Air Coil		Tin Plated Air Coil / Microchannel Air Coil*	
	Copper	Cupro-Nickel	Copper	Cupro-Nickel
Standard	C	N	A	J
ClimaDry® II Reheat	E	P	D	F
Motorized Valve	T	S	U	W

ClimaDry® II reheat coil not coated
*Microchannel On Sizes 024-048
ClimaDry® II units are equiped with DMX2.5

Return Air
L = Left Return
R = Right Return

Supply Air & Motor Option

Option	Supply	Configuration	Motor
T	Top	TSV	PSC
D	Down	TSD	PSC
B	Back	TSH	PSC
S	Straight	TSH	PSC
*V	Top	TSV	PSC Hi Static
*U	Down	TSD	PSC Hi Static
*Y	Back	TSH	PSC Hi Static
*Z	Straight	TSH	PSC Hi Static
*K	Top	TSV	ECM
*N	Down	TSD	ECM
*P	Back	TSH	ECM
*W	Straight	TSH	ECM

* N/A for Sizes 006-012

Standard
S = Standard

ClimaDry® II Option Notes:

1. Unit must have DXM2 control option. 460 volt unit units require a four wire power supply with neutral.
2. ClimaDry® II may not be combined with motorized water valve, internal secondary circulating pump, or automatic flow regulator options.
3. Unit minimum entering air temperature while in the dehumidification, cooling, or continuous fan modes is 65°F DB/55°F WB. Operation below this minimum may result in nuisance faults.
4. A thermostat with dehumidification mode or thermostat and separate humidistat/dehumidistat is required for activation and control of ClimaDry® II.
5. Downflow and 575 volt units are not eligible for ClimaDry® II.

AHRI/ASHRAE/ISO 13256-1. English (I-P) Units

Model	Fan Motor	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
		Cooling 86°F		Heating 68°F		Cooling 59°F		Heating 50°F		Cooling 77°F		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
TSH/V006	PSC	6,300	15.7	8,000	5.4	7,400	25.5	6,300	4.4	6,700	18.5	4,800	3.4
TSH/V009	PSC	9,300	15.3	11,100	4.8	11,100	25.2	9,400	4.3	10,000	18.1	7,100	3.4
TSH/V012	PSC	11,700	15.4	13,800	4.5	13,300	24.6	11,800	4.0	12,300	18.1	9,500	3.5
TSH/V/D 018	PSC	18,600	15.0	23,000	5.2	21,300	24.8	18,600	4.5	19,500	18.4	14,500	3.6
	ECM	19,200	16.5	23,300	5.9	22,100	26.3	18,900	4.9	20,200	19.4	14,500	3.9
TSH/V/D 024	PSC	23,800	16.9	30,800	5.9	26,500	24.9	24,100	5.0	25,300	18.9	19,200	4.0
	ECM	23,900	17.9	30,400	6.1	26,900	26.9	23,800	5.2	25,500	20.9	19,100	4.2
TSH/V/D 030	PSC	28,000	16.3	35,500	5.5	31,000	24.9	28,400	4.7	29,200	18.5	22,200	3.9
	ECM	28,000	17.3	35,100	5.8	30,800	26.7	28,000	4.9	29,200	19.4	22,000	4.1
TSH/V/D 036	PSC	33,400	17.0	40,400	5.6	35,400	23.2	33,200	4.7	34,300	19.2	25,900	4.1
	ECM	33,500	18.1	39,900	5.9	35,400	24.9	32,600	4.9	34,600	20.4	25,600	4.3
TSH/V/D 042	PSC	38,500	17.2	46,300	5.6	43,700	25.4	36,200	4.7	40,100	19.4	28,700	3.8
	ECM	39,400	19.6	45,100	6.0	44,400	29.5	35,200	5.2	40,700	21.9	27,400	4.1
TSH/V/D 048	PSC	47,100	14.8	58,000	4.7	53,600	21.3	47,500	4.0	49,600	16.8	36,600	3.4
	ECM	48,900	17.2	57,700	5.2	53,700	23.9	45,700	4.4	50,600	18.8	36,100	3.7
TSH/V/D 060	PSC	62,400	15.9	73,900	5.0	68,500	23.1	58,200	4.2	63,900	17.2	46,900	3.7
	ECM	63,200	17.2	73,200	5.4	68,900	24.9	58,200	4.6	64,400	18.4	46,400	3.9
TSH/V/D 070	PSC	71,000	14.6	82,100	4.6	78,000	21.1	66,100	4.0	72,900	16.2	53,800	3.4
	ECM	71,100	15.7	82,000	4.8	78,100	23.0	65,200	4.1	73,000	17.2	53,000	3.6

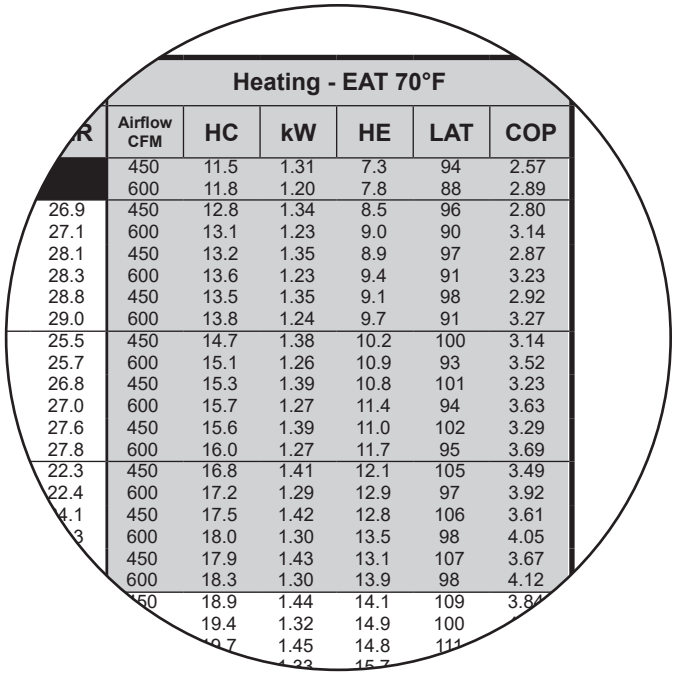
Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature
Heating capacities based upon 68°F DB, 59°F WB entering air temperature
All ratings based upon operation at lower voltage of dual voltage rated models

AHRI/ASHRAE/ISO 13256-1. Metric (S-I) Units

Model	Fan Motor	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
		Cooling 30°C		Heating 20°C		Cooling 15°C		Heating 10°C		Cooling 25°C		Heating 0°C	
		Capacity kW	EER W/W	Capacity kW	COP	Capacity kW	EER Watts	Capacity kW	COP	Capacity kW	EER W/W	Capacity kW	COP
TSH/V006	PSC	1.85	4.6	2.34	5.4	2.17	7.5	1.85	4.4	1.96	5.4	1.41	3.4
TSH/V009	PSC	2.74	4.5	3.26	4.8	3.26	7.4	2.76	4.3	2.94	5.3	2.09	3.4
TSH/V012	PSC	3.43	4.5	4.05	4.5	3.90	7.2	3.46	4.0	3.60	5.3	2.78	3.5
TSH/V/D 018	PSC	5.47	4.4	6.76	5.2	6.26	7.3	5.45	4.5	5.74	5.4	4.27	3.6
	ECM	5.65	4.8	6.85	5.9	6.50	7.7	5.56	4.9	5.94	5.7	4.43	3.9
TSH/V/D 024	PSC	6.98	4.9	9.03	5.9	7.77	7.3	7.06	5.0	7.42	5.5	5.63	4.0
	ECM	7.00	5.2	8.91	6.1	7.88	7.8	6.98	5.2	7.47	6.1	5.60	4.2
TSH/V/D 030	PSC	8.21	4.8	10.40	5.5	9.09	7.3	8.32	4.7	8.56	5.4	6.51	3.9
	ECM	8.21	5.1	10.29	5.8	9.03	7.8	8.21	4.9	8.56	5.7	6.45	4.1
TSH/V/D 036	PSC	9.79	5.0	11.84	5.6	10.38	6.8	9.73	4.7	10.05	5.6	7.59	4.1
	ECM	9.82	5.3	11.69	5.9	10.38	7.3	9.55	4.9	10.14	6.0	7.50	4.3
TSH/V/D 042	PSC	11.28	5.0	13.57	5.6	12.81	7.4	10.61	4.7	11.75	5.7	8.41	3.8
	ECM	11.55	5.7	13.22	6.0	13.01	8.6	10.32	5.2	11.93	6.4	8.03	4.1
TSH/V/D 048	PSC	13.80	4.3	17.00	4.7	15.71	6.2	13.92	4.0	14.54	4.9	10.73	3.4
	ECM	14.33	5.1	16.91	5.2	15.74	7.0	13.39	4.4	14.83	5.5	10.58	3.7
TSH/V/D 060	PSC	18.29	4.7	21.66	5.0	20.08	6.8	17.06	4.2	18.73	5.0	13.75	3.7
	ECM	18.52	5.0	21.45	5.4	20.19	7.3	17.06	4.6	18.87	5.4	13.60	3.9
TSH/V/D 070	PSC	20.81	4.3	24.06	4.6	22.86	6.2	19.37	4.0	21.37	4.8	15.77	3.4
	ECM	20.84	4.6	24.03	4.8	22.89	6.7	19.10	4.1	21.40	5.0	15.53	3.6

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
All ratings based upon operation at lower voltage of dual voltage rated models

For operation in the shaded area when water is used in lieu 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.



Heating - EAT 70°F

R	Airflow CFM	HC	kW	HE	LAT	COP
	450	11.5	1.31	7.3	94	2.57
	600	11.8	1.20	7.8	88	2.89
26.9	450	12.8	1.34	8.5	96	2.80
27.1	600	13.1	1.23	9.0	90	3.14
28.1	450	13.2	1.35	8.9	97	2.87
28.3	600	13.6	1.23	9.4	91	3.23
28.8	450	13.5	1.35	9.1	98	2.92
29.0	600	13.8	1.24	9.7	91	3.27
25.5	450	14.7	1.38	10.2	100	3.14
25.7	600	15.1	1.26	10.9	93	3.52
26.8	450	15.3	1.39	10.8	101	3.23
27.0	600	15.7	1.27	11.4	94	3.63
27.6	450	15.6	1.39	11.0	102	3.29
27.8	600	16.0	1.27	11.7	95	3.69
22.3	450	16.8	1.41	12.1	105	3.49
22.4	600	17.2	1.29	12.9	97	3.92
4.1	450	17.5	1.42	12.8	106	3.61
3	600	18.0	1.30	13.5	98	4.05
	450	17.9	1.43	13.1	107	3.67
	600	18.3	1.30	13.9	98	4.12
	50	18.9	1.44	14.1	109	3.84
		19.4	1.32	14.9	100	
		19.7	1.45	14.8	111	

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

TD = HE / (GPM x 500)

TD = 22,500 / (4.5 x 500)

TD = 10°F

LWT = EWT - TD

LWT = 50 - 10 = 40°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).

Performance Data – TSH/V006 (PSC Blower)

300 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V006 PSC													
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F					HEATING - EAT 68°F				
		PSI	Ft	TC	SC	KW	HR	EER	HC	KW	HE	LAT	COP
20	2.0	3.2	7.4	Operation not recommended					3.9	0.4	2.5	83.1	2.7
30	1.0	0.3	0.7	6.9	5.0	0.3	7.8	25.5	4.7	0.4	3.2	86.1	3.1
	1.5	1.6	3.7	7.1	5.0	0.3	8.0	26.8	4.9	0.4	3.4	86.9	3.2
	2.0	3.0	6.9	7.2	5.1	0.3	8.1	27.6	5.0	0.4	3.5	87.3	3.3
40	1.0	0.3	0.7	7.2	5.3	0.3	8.2	24.7	5.6	0.5	4.0	89.5	3.6
	1.5	1.5	3.5	7.2	5.3	0.3	8.2	25.8	5.8	0.5	4.2	90.3	3.7
	2.0	2.8	6.5	7.3	5.3	0.3	8.2	26.6	5.9	0.5	4.3	90.8	3.8
50	1.0	0.3	0.7	7.1	5.5	0.3	8.2	22.1	6.3	0.5	4.7	92.4	4.0
	1.5	1.4	3.2	7.2	5.5	0.3	8.3	23.8	6.6	0.5	5.0	93.3	4.1
	2.0	2.6	6.0	7.3	5.5	0.3	8.3	24.6	6.7	0.5	5.1	93.7	4.2
60	1.0	0.2	0.5	6.9	5.6	0.4	8.1	19.4	7.0	0.5	5.4	95.0	4.4
	1.5	1.3	3.0	7.1	5.6	0.3	8.2	21.0	7.3	0.5	5.7	96.0	4.5
	2.0	2.4	5.5	7.1	5.7	0.3	8.3	21.9	7.4	0.5	5.8	96.5	4.6
70	1.0	0.2	0.5	6.5	5.5	0.4	7.9	16.4	7.7	0.5	6.1	97.6	4.7
	1.5	1.2	2.8	6.8	5.6	0.4	8.0	18.0	8.0	0.5	6.3	98.7	4.9
	2.0	2.2	5.1	6.9	5.6	0.4	8.1	18.8	8.1	0.5	6.5	99.3	5.0
80	1.0	0.2	0.5	6.1	5.3	0.4	7.6	13.7	8.4	0.5	6.8	100.3	5.1
	1.5	1.1	2.5	6.3	5.4	0.4	7.8	15.0	8.8	0.5	7.1	101.7	5.3
	2.0	2.0	4.6	6.4	5.5	0.4	7.8	15.8	9.0	0.5	7.3	102.5	5.4
90	1.0	0.2	0.5	5.6	5.1	0.5	7.3	11.3	9.2	0.5	7.5	103.4	5.6
	1.5	1.0	2.3	5.8	5.2	0.5	7.4	12.4	9.7	0.5	8.0	105.2	5.8
	2.0	1.8	4.2	6.0	5.3	0.5	7.5	13.0	10.0	0.5	8.3	106.3	6.0
100	1.0	0.1	0.2	5.1	4.8	0.6	6.9	9.2	Operation not recommended				
	1.5	0.8	1.8	5.3	4.9	0.5	7.1	10.1					
	2.0	1.6	3.7	5.4	5.0	0.5	7.2	10.6					
110	1.0	0.1	0.2	4.5	4.4	0.6	6.6	7.5					
	1.5	0.7	1.6	4.8	4.6	0.6	6.8	8.2					
	2.0	1.4	3.2	4.9	4.6	0.6	6.8	8.6					
120	1.0	0.1	0.2	4.1	4.1	0.7	6.3	6.1					
	1.5	0.6	1.4	4.3	4.2	0.6	6.4	6.6					
	2.0	1.2	2.8	4.4	4.3	0.6	6.5	6.9					

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V009 (PSC Blower)

300 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V009 PSC													
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F					HEATING - EAT 68°F				
		PSI	Ft	TC	SC	KW	HR	EER	HC	KW	HE	LAT	COP
20	2.8	2.8	6.5	Operation not recommended					5.8	0.6	3.8	86.0	2.8
30	1.4	0.8	1.8	12.0	8.3	0.4	13.3	31.3	6.8	0.6	4.6	88.9	3.1
	2.1	1.5	3.5	12.2	8.4	0.4	13.4	34.8	7.1	0.6	4.9	89.8	3.2
	2.8	2.7	6.2	12.3	8.4	0.3	13.5	36.8	7.2	0.6	5.0	90.3	3.3
40	1.4	0.8	1.7	11.6	8.0	0.4	13.1	26.6	8.0	0.7	5.7	92.6	3.5
	2.1	1.5	3.3	11.8	8.2	0.4	13.2	29.5	8.3	0.7	6.1	93.6	3.7
	2.8	2.6	5.9	12.0	8.2	0.4	13.3	31.1	8.5	0.7	6.2	94.2	3.7
50	1.4	0.7	1.6	11.1	7.8	0.5	12.8	22.6	9.1	0.7	6.8	96.1	3.9
	2.1	1.4	3.2	11.4	8.0	0.5	13.0	25.0	9.5	0.7	7.2	97.3	4.1
	2.8	2.4	5.6	11.6	8.0	0.4	13.1	26.4	9.7	0.7	7.4	97.9	4.2
60	1.4	0.7	1.5	10.6	7.6	0.6	12.5	19.3	10.2	0.7	7.9	99.4	4.3
	2.1	1.3	3.0	10.9	7.7	0.5	12.7	21.3	10.6	0.7	8.3	100.7	4.5
	2.8	2.3	5.3	11.1	7.8	0.5	12.8	22.4	10.9	0.7	8.5	101.4	4.5
70	1.4	0.6	1.5	10.0	7.3	0.6	12.1	16.4	11.2	0.7	8.8	102.6	4.7
	2.1	1.2	2.8	10.4	7.5	0.6	12.3	18.0	11.7	0.7	9.3	104.0	4.8
	2.8	2.2	5.0	10.6	7.6	0.6	12.4	19.0	11.9	0.7	9.5	104.8	4.9
80	1.4	0.6	1.4	9.4	7.1	0.7	11.7	13.9	12.2	0.7	9.8	105.7	5.0
	2.1	1.1	2.6	9.8	7.2	0.6	11.9	15.3	12.7	0.7	10.3	107.2	5.2
	2.8	2.0	4.6	9.9	7.3	0.6	12.1	16.0	13.0	0.7	10.5	108.0	5.2
90	1.4	0.6	1.3	8.7	6.8	0.7	11.2	11.7	13.2	0.7	10.7	108.7	5.3
	2.1	1.1	2.5	9.1	7.0	0.7	11.5	12.8	13.8	0.7	11.2	110.4	5.5
	2.8	1.9	4.3	9.3	7.1	0.7	11.6	13.5	14.0	0.7	11.5	111.2	5.5
100	1.4	0.5	1.2	7.9	6.5	0.8	10.7	9.7	Operation not recommended				
	2.1	1.0	2.3	8.3	6.7	0.8	11.0	10.7					
	2.8	1.7	4.0	8.6	6.8	0.8	11.1	11.3					
110	1.4	0.5	1.1	7.1	6.2	0.9	10.2	8.0					
	2.1	0.9	2.1	7.6	6.4	0.9	10.5	8.8					
	2.8	1.6	3.7	7.8	6.5	0.8	10.6	9.3					
120	1.4	0.4	1.0	6.3	5.8	1.0	9.6	6.5					
	2.1	0.8	1.9	6.7	6.0	0.9	9.9	7.2					
	2.8	1.5	3.4	6.9	6.1	0.9	10.0	7.6					

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

350 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V012 PSC													
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F					HEATING - EAT 68°F				
		PSI	Ft	TC	SC	KW	HR	EER	HC	KW	HE	LAT	COP
20	3.5	4.0	9.2	Operation not recommended					8.0	0.8	5.3	89.1	2.9
30	1.8	0.6	1.4	12.5	8.2	0.5	14.2	24.3	9.2	0.8	6.3	92.2	3.2
	2.6	2.1	4.8	12.7	8.3	0.5	14.4	25.8	9.5	0.8	6.7	93.2	3.3
	3.5	3.8	8.8	13.1	8.6	0.5	14.7	27.2	9.8	0.8	6.9	93.8	3.4
40	1.8	0.6	1.3	13.1	8.7	0.6	15.0	23.2	10.6	0.9	7.7	96.0	3.6
	2.6	2.0	4.6	13.2	8.7	0.5	15.0	24.7	11.0	0.9	8.0	97.1	3.7
	3.5	3.6	8.3	13.3	8.8	0.5	15.1	25.6	11.2	0.9	8.2	97.7	3.7
50	1.8	0.5	1.1	13.1	8.8	0.6	15.2	21.0	11.9	0.9	8.8	99.3	3.9
	2.6	1.9	4.3	13.2	8.8	0.6	15.2	22.5	12.2	0.9	9.1	100.3	4.0
	3.5	3.4	7.9	13.3	8.9	0.6	15.3	23.3	12.4	0.9	9.3	100.8	4.0
60	1.8	0.4	1.0	12.9	8.7	0.7	15.3	18.6	12.9	0.9	9.7	102.0	4.1
	2.6	1.8	4.0	13.1	8.8	0.7	15.3	20.1	13.2	0.9	10.0	102.8	4.1
	3.5	3.2	7.4	13.2	8.8	0.6	15.4	20.9	13.3	0.9	10.1	103.2	4.2
70	1.8	0.4	0.9	12.3	8.5	0.8	15.0	16.0	13.6	0.9	10.4	103.9	4.2
	2.6	1.6	3.8	12.7	8.6	0.7	15.1	17.5	13.8	1.0	10.6	104.5	4.3
	3.5	3.0	6.9	12.8	8.7	0.7	15.2	18.2	13.9	1.0	10.7	104.8	4.3
80	1.8	0.3	0.7	11.6	8.2	0.9	14.5	13.6	14.1	1.0	10.8	105.2	4.3
	2.6	1.5	3.5	12.0	8.4	0.8	14.8	14.9	14.2	1.0	10.9	105.5	4.3
	3.5	2.8	6.5	12.2	8.4	0.8	14.9	15.6	14.3	1.0	11.0	105.7	4.3
90	1.8	0.3	0.6	10.7	7.9	0.9	14.0	11.4	14.3	1.0	11.0	105.8	4.4
	2.6	1.4	3.3	11.2	8.1	0.9	14.3	12.6	14.3	1.0	11.0	105.8	4.4
	3.5	2.6	6.0	11.5	8.2	0.9	14.4	13.2	14.3	1.0	11.1	105.9	4.4
100	1.8	0.2	0.5	9.8	7.6	1.0	13.3	9.4	Operation not recommended				
	2.6	1.3	3.0	10.3	7.8	1.0	13.7	10.4					
	3.5	2.4	5.6	10.5	7.8	1.0	13.8	11.0					
110	1.8	0.1	0.3	8.8	7.3	1.1	12.6	7.7					
	2.6	1.2	2.7	9.3	7.4	1.1	13.0	8.5					
	3.5	2.2	5.1	9.5	7.5	1.1	13.1	9.0					
120	1.8	0.1	0.2	7.7	6.9	1.2	11.9	6.2					
	2.6	1.1	2.5	8.2	7.1	1.2	12.3	6.9					
	3.5	2.0	4.6	8.45	7.19	1.16	12.42	7.27					

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D018 (PSC Blower)

600 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D018 PSC													
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F					HEATING - EAT 68°F				
		PSI	Ft	TC	SC	KW	HR	EER	HC	KW	HE	LAT	COP
20	5.5	3.9	9.0	Operation not recommended					12.5	1.2	8.4	87.3	3.0
30	2.8	0.7	1.6	21.3	14.9	0.8	24.0	26.5	14.1	1.3	9.8	89.7	3.3
	4.1	2.1	4.9	21.6	14.9	0.8	24.2	28.3	14.7	1.3	10.4	90.6	3.4
	5.5	3.5	8.1	21.8	14.9	0.7	24.3	29.2	15.0	1.3	10.6	91.1	3.5
40	2.8	0.6	1.4	21.4	15.2	0.9	24.4	24.5	16.3	1.3	11.9	93.1	3.7
	4.1	2.0	4.6	21.6	15.3	0.8	24.4	25.9	17.0	1.3	12.6	94.2	3.8
	5.5	3.2	7.4	21.8	15.3	0.8	24.6	26.9	17.4	1.3	12.9	94.7	3.9
50	2.8	0.5	1.0	21.2	15.3	1.0	24.6	21.7	18.5	1.3	14.0	96.5	4.1
	4.1	1.7	3.9	21.6	15.5	0.9	24.7	23.5	19.3	1.3	14.8	97.8	4.3
	5.5	2.5	6.5	21.7	15.5	0.9	24.7	24.3	19.8	1.3	15.2	98.4	4.4
60	2.8	0.3	0.7	20.5	14.9	1.1	24.2	18.8	20.8	1.3	16.2	100.0	4.5
	4.1	1.5	3.5	21.0	15.2	1.0	24.4	20.6	21.7	1.4	17.1	101.4	4.7
	5.5	2.6	6.0	21.2	15.3	1.0	24.5	21.4	22.2	1.4	17.6	102.2	4.8
70	2.8	0.3	0.7	19.4	14.3	1.2	23.6	16.1	23.0	1.4	18.3	103.4	4.9
	4.1	1.4	3.2	20.1	14.7	1.1	23.9	17.7	24.1	1.4	19.3	105.1	5.1
	5.5	2.4	5.5	20.3	14.8	1.1	24.1	18.5	24.7	1.4	19.9	106.0	5.1
80	2.8	0.2	0.5	18.3	13.6	1.4	22.9	13.5	25.4	1.4	20.5	107.0	5.2
	4.1	1.2	2.8	18.9	14.0	1.3	23.3	14.9	26.6	1.5	21.6	109.0	5.3
	5.5	2.2	5.1	19.3	14.2	1.2	23.5	15.7	27.3	1.5	22.2	110.0	5.4
90	2.8	0.2	0.5	17.0	13.0	1.5	22.1	11.2	27.8	1.5	22.7	110.8	5.4
	4.1	1.1	2.5	17.7	13.3	1.4	22.5	12.5	29.2	1.6	23.9	113.0	5.5
	5.5	2.0	4.6	18.0	13.5	1.4	22.7	13.1	30.1	1.6	24.6	114.3	5.5
100	2.8	0.2	0.5	15.7	12.4	1.7	21.5	9.3	Operation not recommended				
	4.1	1.1	2.5	16.4	12.7	1.6	21.8	10.3					
	5.5	1.9	4.4	16.7	12.8	1.5	22.0	10.8					
110	2.8	0.1	0.2	14.4	11.9	1.9	20.9	7.6					
	4.1	0.9	2.1	15.1	12.1	1.8	21.2	8.4					
	5.5	1.7	3.9	15.4	12.2	1.7	21.3	8.9					
120	2.8	0.1	0.2	13.2	11.6	2.1	20.5	6.2					
	4.1	0.8	1.8	13.8	11.7	2.0	20.6	6.9					
	5.5	1.6	3.7	14.1	11.8	1.9	20.8	7.2					

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D018 (ECM Blower)

750 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D018 ECM													
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F					HEATING - EAT 68°F				
		PSI	Ft	TC	SC	KW	HR	EER	HC	KW	HE	LAT	COP
20	5.5	3.9	9.0	Operation not recommended					12.3	1.1	8.5	83.2	3.2
30	2.8	0.7	1.6	20.9	15.3	0.8	23.6	26.5	13.7	1.2	9.7	84.9	3.4
	4.1	2.1	4.9	21.3	15.5	0.8	23.9	28.3	14.2	1.2	10.2	85.5	3.5
	5.5	3.5	8.1	21.9	15.9	0.7	24.4	29.7	14.5	1.2	10.4	85.8	3.6
40	2.8	0.6	1.4	21.3	15.9	0.9	24.3	24.8	15.9	1.2	11.7	87.5	3.9
	4.1	2.0	4.6	21.9	16.1	0.8	24.6	26.9	16.5	1.2	12.4	88.4	4.0
	5.5	3.2	7.4	22.1	16.2	0.8	24.8	27.8	16.9	1.2	12.8	88.8	4.1
50	2.8	0.5	1.0	21.8	16.6	0.9	25.1	23.1	18.2	1.2	14.0	90.4	4.4
	4.1	1.7	3.9	22.1	16.6	0.9	25.1	24.8	19.0	1.2	14.8	91.4	4.5
	5.5	2.5	6.5	22.2	16.7	0.9	25.2	25.7	19.5	1.2	15.3	92.0	4.6
60	2.8	0.3	0.7	21.2	16.7	1.1	24.8	20.2	20.5	1.2	16.3	93.3	4.9
	4.1	1.5	3.5	21.7	16.8	1.0	25.1	22.0	21.5	1.2	17.3	94.5	5.1
	5.5	2.6	6.0	21.9	16.8	1.0	25.2	22.9	22.1	1.3	17.8	95.2	5.2
70	2.8	0.3	0.7	20.2	16.5	1.2	24.2	17.2	22.9	1.3	18.6	96.2	5.3
	4.1	1.4	3.2	20.8	16.7	1.1	24.6	19.0	24.0	1.3	19.6	97.6	5.5
	5.5	2.4	5.5	21.1	16.7	1.1	24.7	19.9	24.6	1.3	20.2	98.3	5.6
80	2.8	0.2	0.5	18.9	16.1	1.3	23.4	14.4	25.2	1.3	20.7	99.1	5.6
	4.1	1.2	2.8	19.7	16.4	1.2	23.9	16.0	26.4	1.3	21.8	100.5	5.7
	5.5	2.2	5.1	20.0	16.5	1.2	24.1	16.8	27.0	1.4	22.3	101.2	5.8
90	2.8	0.2	0.5	17.6	15.7	1.5	22.7	11.9	27.4	1.4	22.6	101.7	5.8
	4.1	1.1	2.5	18.4	15.9	1.4	23.1	13.3	28.5	1.5	23.5	103.1	5.7
	5.5	2.0	4.6	18.7	16.1	1.3	23.3	14.0	29.0	1.5	23.9	103.8	5.7
100	2.8	0.2	0.5	16.3	15.2	1.7	22.0	9.8	Operation not recommended				
	4.1	1.1	2.5	17.0	15.4	1.6	22.3	10.9					
	5.5	1.9	4.4	17.4	15.6	1.5	22.5	11.5					
110	2.8	0.1	0.2	15.1	14.7	1.9	21.6	8.0					
	4.1	0.9	2.1	15.7	15.0	1.8	21.8	8.9					
	5.5	1.7	3.9	16.1	15.1	1.7	21.9	9.4					
120	2.8	0.1	0.2	14.2	14.2	2.1	21.5	6.6					
	4.1	0.8	1.8	14.6	14.5	2.0	21.5	7.3					
	5.5	1.6	3.7	14.9	14.7	1.9	21.5	7.7					

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D024 (PSC Blower)

950 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D024 PSC															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	6.0	1.9	4.4	Operation not recommended						16.4	1.5	11.3	83.2	3.2	1.5
30	3.0	0.9	2.1	30.4	19.4	0.9	33.6	32.3	0.8	18.2	1.5	13.1	84.8	3.6	1.8
	4.5	1.2	2.7	29.7	18.3	0.9	32.7	34.1	0.7	19.1	1.5	14.0	85.7	3.7	1.9
	6.0	1.7	4.0	29.1	17.6	0.8	31.9	34.6	0.6	19.6	1.5	14.5	86.1	3.8	1.9
40	3.0	0.7	1.5	30.4	20.2	1.1	34.0	29.0	1.1	21.1	1.5	15.9	87.5	4.1	2.1
	4.5	1.0	2.4	30.5	19.7	1.0	33.8	31.5	0.9	22.2	1.5	17.0	88.5	4.3	2.3
	6.0	1.6	3.6	30.4	19.3	0.9	33.5	32.6	0.8	22.8	1.5	17.6	89.1	4.4	2.3
50	3.0	0.5	1.2	29.6	20.2	1.2	33.6	25.5	1.5	24.0	1.5	18.8	90.2	4.6	2.5
	4.5	0.9	2.1	30.3	20.2	1.1	34.0	28.2	1.2	25.3	1.5	20.0	91.3	4.8	2.6
	6.0	1.5	3.4	30.5	20.1	1.0	34.0	29.5	1.1	26.0	1.5	20.7	92.0	4.9	2.7
60	3.0	0.4	0.9	28.3	19.7	1.3	32.7	21.9	1.9	26.9	1.6	21.6	92.8	5.1	2.8
	4.5	0.8	1.8	29.3	20.1	1.2	33.4	24.5	1.6	28.4	1.6	23.1	94.2	5.3	3.0
	6.0	1.4	3.1	29.8	20.2	1.2	33.7	25.9	1.4	29.2	1.6	23.9	95.0	5.5	3.1
70	3.0	0.3	0.6	26.6	19.0	1.4	31.5	18.5	2.4	29.8	1.6	24.5	95.6	5.6	3.2
	4.5	0.7	1.7	27.8	19.5	1.3	32.4	20.9	2.0	31.6	1.6	26.2	97.2	5.8	3.4
	6.0	1.3	2.9	28.4	19.8	1.3	32.8	22.2	1.9	32.6	1.6	27.1	98.1	6.0	3.5
80	3.0	0.2	0.5	24.7	18.1	1.6	30.1	15.5	3.0	32.9	1.6	27.4	98.4	6.0	3.5
	4.5	0.7	1.5	26.0	18.7	1.5	31.0	17.6	2.6	34.9	1.6	29.3	100.2	6.3	3.7
	6.0	1.2	2.7	26.7	19.0	1.4	31.5	18.7	2.4	36.0	1.7	30.4	101.3	6.4	3.8
90	3.0	0.1	0.3	22.7	17.1	1.8	28.7	12.8	3.7	36.0	1.7	30.4	101.2	6.4	3.8
	4.5	0.6	1.4	24.0	17.7	1.7	29.6	14.5	3.2	38.3	1.7	32.5	103.4	6.6	4.0
	6.0	1.1	2.5	24.7	18.1	1.6	30.1	15.5	3.0	39.6	1.7	33.8	104.6	6.8	4.1
100	3.0	0.1	0.2	20.7	16.2	2.0	27.4	10.5	4.4	Operation not recommended					
	4.5	0.5	1.2	21.9	16.7	1.9	28.2	11.9	3.9						
	6.0	1.0	2.2	22.6	17.1	1.8	28.6	12.7	3.7						
110	3.0	0.0	0.1	18.9	15.5	2.2	26.5	8.6	5.3						
	4.5	0.5	1.0	20.0	15.9	2.1	27.0	9.7	4.8						
	6.0	0.8	1.9	20.5	16.1	2.0	27.3	10.3	4.5						
120	3.0	-0.0	0.1	17.5	15.1	2.5	26.0	7.1	6.3						
	4.5	0.3	0.8	18.3	15.3	2.3	26.2	7.9	5.7						
	6.0	0.6	1.5	18.7	15.4	2.2	26.4	8.4	5.4						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D024 (ECM Blower)

950 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D024 ECM															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	6.0	1.9	4.4	Operation not recommended						16.1	1.5	11.1	83.6	3.2	1.5
30	3.0	0.9	2.1	30.4	19.4	0.9	33.5	33.5	0.8	17.8	1.5	12.8	85.4	3.6	1.8
	4.5	1.2	2.7	29.7	18.3	0.8	32.5	35.4	0.7	18.7	1.5	13.7	86.2	3.7	1.9
	6.0	1.7	4.0	29.1	17.6	0.8	31.8	36.1	0.6	19.2	1.5	14.2	86.7	3.8	1.9
40	3.0	0.7	1.5	30.4	20.2	1.0	33.9	30.0	1.1	20.7	1.5	15.6	88.1	4.1	2.1
	4.5	1.0	2.4	30.5	19.7	0.9	33.7	32.7	0.9	21.7	1.5	16.7	89.1	4.3	2.3
	6.0	1.6	3.6	30.4	19.3	0.9	33.4	33.8	0.8	22.3	1.5	17.2	89.7	4.4	2.3
50	3.0	0.5	1.2	29.6	20.2	1.1	33.5	26.3	1.5	23.5	1.5	18.4	90.9	4.6	2.5
	4.5	0.9	2.1	30.3	20.2	1.0	33.8	29.1	1.2	24.7	1.5	19.6	92.1	4.8	2.6
	6.0	1.5	3.4	30.5	20.1	1.0	33.9	30.5	1.1	25.4	1.5	20.3	92.7	5.0	2.7
60	3.0	0.4	0.9	28.3	19.7	1.3	32.6	22.5	1.9	26.4	1.5	21.2	93.6	5.1	2.8
	4.5	0.8	1.8	29.3	20.1	1.2	33.3	25.3	1.6	27.8	1.5	22.6	95.0	5.4	3.0
	6.0	1.4	3.1	29.8	20.2	1.1	33.6	26.7	1.4	28.6	1.5	23.4	95.8	5.5	3.1
70	3.0	0.3	0.6	26.6	19.0	1.4	31.4	19.0	2.4	29.3	1.5	24.0	96.5	5.6	3.2
	4.5	0.7	1.7	27.8	19.5	1.3	32.3	21.5	2.0	31.0	1.6	25.7	98.1	5.8	3.4
	6.0	1.3	2.9	28.4	19.8	1.2	32.7	22.9	1.9	31.9	1.6	26.6	99.0	6.0	3.5
80	3.0	0.2	0.5	24.7	18.1	1.6	30.0	15.8	3.0	32.2	1.6	26.9	99.4	6.0	3.5
	4.5	0.7	1.5	26.0	18.7	1.5	30.9	18.0	2.6	34.2	1.6	28.8	101.3	6.3	3.7
	6.0	1.2	2.7	26.7	19.0	1.4	31.4	19.2	2.4	35.3	1.6	29.8	102.3	6.4	3.8
90	3.0	0.1	0.3	22.7	17.1	1.7	28.6	13.0	3.7	35.3	1.6	29.8	102.4	6.4	3.8
	4.5	0.6	1.4	24.0	17.7	1.6	29.5	14.8	3.2	37.6	1.7	31.9	104.5	6.7	4.0
	6.0	1.1	2.5	24.7	18.1	1.6	30.0	15.8	3.0	38.9	1.7	33.1	105.8	6.8	4.1
100	3.0	0.1	0.2	20.7	16.2	1.9	27.3	10.7	4.4	Operation not recommended					
	4.5	0.5	1.2	21.9	16.7	1.8	28.1	12.1	3.9						
	6.0	1.0	2.2	22.6	17.1	1.8	28.5	12.9	3.7						
110	3.0	0.0	0.1	18.9	15.5	2.2	26.4	8.7	5.3						
	4.5	0.5	1.0	20.0	15.9	2.0	26.9	9.8	4.8						
	6.0	0.8	1.9	20.5	16.1	2.0	27.2	10.5	4.5						
120	3.0	-0.0	0.1	17.5	15.1	2.4	25.8	7.2	6.3						
	4.5	0.3	0.8	18.3	15.3	2.3	26.1	8.0	5.7						
	6.0	0.6	1.5	18.7	15.4	2.2	26.3	8.5	5.4						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D030 (PSC Blower)

1,000 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D030 PSC															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	7.5	2.7	6.2	Operation not recommended						19.4	1.8	13.2	85.9	3.1	1.5
30	3.8	0.9	2.0	34.4	21.4	1.2	38.5	28.6	0.8	21.6	1.9	15.2	88.0	3.4	1.7
	5.6	1.6	3.7	33.4	20.4	1.1	37.2	29.5	0.7	22.6	1.9	16.2	88.9	3.5	1.8
	7.5	2.5	5.7	32.6	19.7	1.1	36.4	29.8	0.6	23.1	1.9	16.7	89.3	3.6	1.9
40	3.8	0.8	1.9	34.7	22.1	1.3	39.2	26.2	1.1	25.0	1.9	18.5	91.1	3.8	2.0
	5.6	1.5	3.4	34.6	21.7	1.2	38.9	27.9	0.9	26.2	1.9	19.6	92.2	4.0	2.2
	7.5	2.3	5.3	34.4	21.3	1.2	38.5	28.6	0.8	26.8	1.9	20.3	92.8	4.1	2.3
50	3.8	0.8	1.8	34.0	22.1	1.5	39.0	23.4	1.4	28.4	1.9	21.8	94.2	4.3	2.4
	5.6	1.4	3.2	34.6	22.2	1.4	39.3	25.4	1.2	29.8	2.0	23.1	95.5	4.5	2.6
	7.5	2.2	5.0	34.7	22.1	1.3	39.2	26.3	1.0	30.6	2.0	23.9	96.2	4.6	2.7
60	3.8	0.7	1.7	32.6	21.6	1.6	38.1	20.3	1.8	31.8	2.0	25.1	97.4	4.7	2.7
	5.6	1.3	3.1	33.7	22.0	1.5	38.8	22.4	1.5	33.4	2.0	26.6	98.9	4.9	2.9
	7.5	2.1	4.8	34.1	22.1	1.5	39.0	23.5	1.4	34.3	2.0	27.5	99.7	5.0	3.0
70	3.8	0.7	1.7	30.8	20.9	1.8	36.8	17.4	2.3	35.2	2.0	28.4	100.5	5.1	3.0
	5.6	1.3	3.0	32.1	21.4	1.7	37.7	19.4	2.0	37.0	2.0	30.1	102.2	5.3	3.3
	7.5	2.0	4.7	32.7	21.7	1.6	38.1	20.4	1.8	38.0	2.0	31.0	103.1	5.5	3.4
80	3.8	0.7	1.7	28.7	19.9	2.0	35.4	14.7	2.9	38.6	2.1	31.6	103.6	5.5	3.4
	5.6	1.3	3.0	30.1	20.5	1.8	36.3	16.4	2.5	40.6	2.1	33.5	105.5	5.7	3.6
	7.5	2.0	4.6	30.8	20.9	1.8	36.8	17.4	2.3	41.7	2.1	34.5	106.5	5.8	3.7
90	3.8	0.7	1.7	26.5	18.9	2.2	33.9	12.2	3.6	41.9	2.1	34.7	106.7	5.8	3.7
	5.6	1.3	2.9	27.9	19.5	2.0	34.8	13.7	3.2	44.1	2.2	36.8	108.7	6.0	3.9
	7.5	2.0	4.5	28.6	19.9	2.0	35.3	14.5	3.0	45.3	2.2	37.8	109.8	6.1	4.1
100	3.8	0.7	1.7	24.3	18.0	2.4	32.5	10.1	4.3	Operation not recommended					
	5.6	1.3	2.9	25.6	18.5	2.3	33.3	11.3	3.9						
	7.5	1.9	4.5	26.3	18.8	2.2	33.7	12.0	3.7						
110	3.8	0.7	1.7	22.4	17.3	2.7	31.5	8.4	5.2						
	5.6	1.2	2.9	23.5	17.7	2.5	32.0	9.3	4.7						
	7.5	1.9	4.4	24.0	17.9	2.4	32.4	9.9	4.5						
120	3.8	0.7	1.6	20.9	17.0	3.0	31.1	7.0	6.2						
	5.6	1.2	2.8	21.7	17.1	2.8	31.2	7.7	5.6						
	7.5	1.9	4.3	22.1	17.2	2.7	31.4	8.1	5.4						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D030 (ECM Blower)

1,000 CFM Nominal Airflow Cooling, 1,100 CFM NominaAirflow Heating

Performance capacities shown in thousands of Btuh

TSH/V/D030 ECM															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	7.5	2.7	6.2	Operation not recommended						19.7	1.9	13.3	86.2	3.1	1.5
30	3.8	0.9	2.0	34.4	21.4	1.2	38.4	29.5	0.8	21.9	1.9	15.4	88.2	3.4	1.7
	5.6	1.6	3.7	33.4	20.3	1.1	37.1	30.6	0.7	22.9	1.9	16.4	89.1	3.5	1.8
	7.5	2.5	5.7	32.6	19.7	1.1	36.2	30.9	0.6	23.4	1.9	16.9	89.6	3.6	1.9
40	3.8	0.8	1.9	34.7	22.1	1.3	39.1	27.0	1.1	25.3	1.9	18.7	91.4	3.8	2.0
	5.6	1.5	3.4	34.6	21.7	1.2	38.7	28.9	0.9	26.5	2.0	19.9	92.5	4.0	2.2
	7.5	2.3	5.3	34.4	21.3	1.2	38.3	29.6	0.8	27.2	2.0	20.5	93.1	4.1	2.3
50	3.8	0.8	1.8	34.0	22.1	1.4	38.9	24.0	1.4	28.7	2.0	22.0	94.6	4.3	2.4
	5.6	1.4	3.2	34.6	22.2	1.3	39.1	26.2	1.2	30.2	2.0	23.4	95.9	4.5	2.6
	7.5	2.2	5.0	34.7	22.1	1.3	39.1	27.2	1.0	31.0	2.0	24.2	96.6	4.6	2.7
60	3.8	0.7	1.7	32.7	21.6	1.6	38.0	20.9	1.8	32.2	2.0	25.4	97.7	4.7	2.7
	5.6	1.3	3.1	33.7	22.0	1.5	38.7	23.0	1.5	33.8	2.0	26.9	99.2	4.9	2.9
	7.5	2.1	4.8	34.1	22.1	1.4	38.9	24.1	1.4	34.7	2.0	27.8	100.1	5.0	3.0
70	3.8	0.7	1.7	30.8	20.9	1.7	36.7	17.8	2.3	35.6	2.0	28.7	100.9	5.1	3.0
	5.6	1.3	3.0	32.1	21.4	1.6	37.6	19.8	2.0	37.4	2.1	30.4	102.6	5.3	3.3
	7.5	2.0	4.7	32.7	21.7	1.6	38.0	20.9	1.8	38.5	2.1	31.4	103.5	5.5	3.4
80	3.8	0.7	1.7	28.7	19.9	1.9	35.2	15.0	2.9	39.0	2.1	31.9	104.0	5.5	3.4
	5.6	1.3	3.0	30.1	20.6	1.8	36.2	16.8	2.5	41.0	2.1	33.9	105.9	5.7	3.6
	7.5	2.0	4.6	30.8	20.9	1.7	36.7	17.8	2.3	42.1	2.1	34.9	106.9	5.8	3.7
90	3.8	0.7	1.7	26.5	18.9	2.1	33.8	12.5	3.6	42.4	2.1	35.1	107.2	5.8	3.7
	5.6	1.3	2.9	27.9	19.6	2.0	34.7	14.0	3.2	44.6	2.2	37.2	109.2	6.0	3.9
	7.5	2.0	4.5	28.6	19.9	1.9	35.2	14.8	3.0	45.8	2.2	38.2	110.3	6.1	4.1
100	3.8	0.7	1.7	24.3	18.0	2.4	32.4	10.3	4.3	Operation not recommended					
	5.6	1.3	2.9	25.6	18.5	2.2	33.2	11.5	3.9						
	7.5	1.9	4.5	26.3	18.8	2.2	33.6	12.2	3.7						
110	3.8	0.7	1.7	22.4	17.3	2.6	31.4	8.5	5.2						
	5.6	1.2	2.9	23.5	17.7	2.5	31.9	9.5	4.7						
	7.5	1.9	4.4	24.1	17.9	2.4	32.2	10.0	4.5						
120	3.8	0.7	1.6	20.9	17.0	3.0	31.0	7.1	6.2						
	5.6	1.2	2.8	21.7	17.1	2.8	31.1	7.8	5.6						
	7.5	1.9	4.3	22.12	17.21	2.68	31.28	8.2	5.4						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D036 (PSC Blower)

1,200 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D036 PSC															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	9.0	4.3	9.9	Operation not recommended						23.3	2.1	16.1	86.0	3.2	2.1
30	4.5	1.2	2.8	35.8	21.9	1.4	40.5	25.9	1.0	25.5	2.1	18.2	87.6	3.5	2.4
	6.8	2.4	5.5	33.7	20.2	1.3	38.2	25.6	0.8	26.5	2.1	19.2	88.4	3.6	2.6
	9.0	3.8	8.8	32.5	19.4	1.3	36.9	25.1	0.8	27.1	2.1	19.8	88.8	3.7	2.7
40	4.5	1.0	2.3	37.8	23.9	1.5	42.9	24.9	1.3	29.2	2.2	21.8	90.5	4.0	2.9
	6.8	2.1	4.8	36.8	22.8	1.4	41.6	25.7	1.1	30.5	2.2	23.1	91.5	4.1	3.1
	9.0	3.4	7.9	36.0	22.1	1.4	40.8	25.9	1.0	31.3	2.2	23.8	92.1	4.2	3.2
50	4.5	0.9	2.0	38.3	25.0	1.7	44.0	22.9	1.8	33.2	2.2	25.6	93.5	4.4	3.4
	6.8	1.9	4.4	38.1	24.4	1.6	43.4	24.3	1.5	34.8	2.2	27.2	94.8	4.6	3.6
	9.0	3.2	7.3	37.8	24.0	1.5	43.0	24.9	1.3	35.8	2.3	28.1	95.5	4.7	3.7
60	4.5	0.8	1.9	37.7	25.4	1.9	44.0	20.4	2.5	37.3	2.3	29.6	96.7	4.8	3.9
	6.8	1.8	4.1	38.2	25.2	1.7	44.1	22.1	2.0	39.2	2.3	31.4	98.2	5.0	4.1
	9.0	3.0	6.9	38.3	25.0	1.7	44.0	22.9	1.8	40.3	2.3	32.4	99.0	5.1	4.2
70	4.5	0.8	1.8	36.3	25.3	2.0	43.3	17.8	3.3	41.4	2.3	33.5	99.9	5.2	4.4
	6.8	1.7	3.9	37.3	25.5	1.9	43.8	19.5	2.7	43.5	2.4	35.4	101.5	5.4	4.6
	9.0	2.9	6.6	37.6	25.4	1.9	44.0	20.4	2.5	44.6	2.4	36.5	102.4	5.5	4.7
80	4.5	0.8	1.8	34.5	24.7	2.3	42.2	15.2	4.2	45.3	2.4	37.1	102.9	5.5	4.8
	6.8	1.7	3.8	35.7	25.1	2.1	42.9	16.8	3.6	47.5	2.4	39.1	104.5	5.7	5.1
	9.0	2.8	6.4	36.3	25.3	2.1	43.3	17.7	3.3	48.5	2.5	40.1	105.4	5.8	5.2
90	4.5	0.8	1.8	32.3	23.8	2.5	40.8	12.9	5.2	48.9	2.5	40.5	105.6	5.8	5.3
	6.8	1.6	3.8	33.7	24.4	2.4	41.7	14.3	4.6	50.8	2.5	42.3	107.1	6.0	5.5
	9.0	2.7	6.3	34.3	24.7	2.3	42.1	15.1	4.2	51.75	2.52	43.16	107.8	6	5.7
100	4.5	0.8	1.8	30.0	22.6	2.8	39.4	10.8	6.4	Operation not recommended					
	6.8	1.6	3.7	31.4	23.3	2.6	40.2	12.0	5.7						
	9.0	2.7	6.2	32.1	23.7	2.5	40.7	12.7	5.3						
110	4.5	0.7	1.7	27.6	21.2	3.1	38.1	9.0	7.7						
	6.8	1.6	3.6	29.0	22.0	2.9	38.8	10.0	7.0						
	9.0	2.6	6.1	29.7	22.4	2.8	39.2	10.6	6.6						
120	4.5	0.6	1.5	25.5	19.9	3.4	37.0	7.6	9.2						
	6.8	1.5	3.4	26.6	20.6	3.2	37.5	8.3	8.4						
	9.0	2.5	5.9	27.28	21.02	3.1	37.87	8.8	8						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D036 (ECM Blower)

1,200 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D036 ECM															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	9.0	4.3	9.9	Operation not recommended						22.7	1.9	16.3	85.5	3.6	2.1
30	4.5	1.2	2.8	36.9	22.7	1.1	40.8	32.5	1.0	24.8	1.9	18.4	87.1	3.9	2.4
	6.8	2.4	5.5	34.8	20.6	1.1	38.4	32.7	0.8	25.8	1.9	19.4	87.9	4.0	2.6
	9.0	3.8	8.8	33.5	19.5	1.0	37.0	32.5	0.8	26.4	1.9	20.0	88.3	4.1	2.7
40	4.5	1.0	2.3	39.0	25.3	1.3	43.3	30.5	1.3	28.5	1.9	22.0	90.0	4.4	2.9
	6.8	2.1	4.8	37.9	23.9	1.2	41.9	31.9	1.1	29.9	1.9	23.3	91.0	4.5	3.1
	9.0	3.4	7.9	37.2	23.0	1.2	41.1	32.4	1.0	30.6	1.9	24.0	91.6	4.6	3.2
50	4.5	0.9	2.0	39.4	26.7	1.4	44.3	27.5	1.8	32.5	2.0	25.8	93.0	4.9	3.4
	6.8	1.9	4.4	39.3	25.9	1.3	43.8	29.5	1.5	34.1	2.0	27.4	94.3	5.1	3.6
	9.0	3.2	7.3	39.0	25.4	1.3	43.4	30.4	1.3	35.0	2.0	28.2	95.0	5.2	3.7
60	4.5	0.8	1.9	38.9	27.2	1.6	44.3	24.1	2.5	36.6	2.0	29.7	96.1	5.3	3.9
	6.8	1.8	4.1	39.3	27.0	1.5	44.4	26.3	2.0	38.5	2.0	31.5	97.6	5.5	4.1
	9.0	3.0	6.9	39.4	26.7	1.4	44.4	27.4	1.8	39.5	2.1	32.5	98.4	5.6	4.2
70	4.5	0.8	1.8	37.5	27.0	1.8	43.6	20.8	3.3	40.6	2.1	33.5	99.3	5.7	4.4
	6.8	1.7	3.9	38.5	27.2	1.7	44.2	22.9	2.7	42.7	2.1	35.5	100.9	5.9	4.6
	9.0	2.9	6.6	38.8	27.2	1.6	44.3	24.1	2.5	43.8	2.1	36.6	101.7	6.0	4.7
80	4.5	0.8	1.8	35.6	26.3	2.0	42.5	17.6	4.2	44.5	2.1	37.2	102.3	6.1	4.8
	6.8	1.7	3.8	36.8	26.8	1.9	43.3	19.6	3.6	46.6	2.2	39.2	103.9	6.3	5.1
	9.0	2.8	6.4	37.4	27.0	1.8	43.6	20.7	3.3	47.7	2.2	40.3	104.7	6.4	5.2
90	4.5	0.8	1.8	33.3	25.2	2.3	41.0	14.8	5.2	48.1	2.2	40.6	105.0	6.4	5.3
	6.8	1.6	3.8	34.7	25.9	2.1	41.9	16.5	4.6	50.1	2.2	42.5	106.6	6.6	5.5
	9.0	2.7	6.3	35.4	26.2	2.0	42.4	17.4	4.2	51.0	2.3	43.4	107.3	6.7	5.7
100	4.5	0.8	1.8	30.9	24.0	2.5	39.5	12.3	6.4	Operation not recommended					
	6.8	1.6	3.7	32.4	24.7	2.4	40.4	13.7	5.7						
	9.0	2.7	6.2	33.1	25.1	2.3	40.9	14.5	5.3						
110	4.5	0.7	1.7	28.4	22.6	2.8	38.0	10.1	7.7						
	6.8	1.6	3.6	29.8	23.4	2.6	38.8	11.3	7.0						
	9.0	2.6	6.1	30.6	23.8	2.6	39.3	12.0	6.6						
120	4.5	0.6	1.5	26.1	21.4	3.1	36.8	8.3	9.2						
	6.8	1.5	3.4	27.3	22.1	3.0	37.4	9.3	8.4						
	9.0	2.5	5.9	28.0	22.4	2.9	37.8	9.8	8.0						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D042 (PSC Blower)

1,400 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D042 PSC															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	10.5	3.7	8.6	Operation not recommended						27.2	2.5	18.8	86.0	3.2	3.3
30	5.3	1.0	2.3	42.7	27.1	1.4	47.6	30.1	1.8	30.0	2.5	21.6	87.8	3.6	3.5
	7.9	2.0	4.6	39.4	23.7	1.3	43.9	29.5	1.9	31.3	2.4	23.0	88.6	3.8	3.6
	10.5	3.4	7.9	37.4	21.8	1.3	41.8	28.8	1.9	32.0	2.4	23.7	89.1	3.8	3.6
40	5.3	0.9	2.0	45.7	30.7	1.6	51.1	29.0	1.9	34.5	2.4	26.2	90.8	4.2	3.8
	7.9	1.9	4.3	44.2	28.8	1.5	49.3	29.9	1.8	36.1	2.4	27.8	91.8	4.3	3.8
	10.5	3.2	7.5	43.1	27.5	1.4	48.0	30.1	1.8	37.1	2.4	28.7	92.5	4.5	3.9
50	5.3	0.8	1.9	46.2	32.0	1.8	52.2	26.4	2.3	39.2	2.5	30.9	93.9	4.7	4.1
	7.9	1.7	4.0	46.1	31.4	1.6	51.7	28.2	2.0	41.2	2.5	32.8	95.2	4.9	4.2
	10.5	3.1	7.1	45.8	30.8	1.6	51.2	28.9	2.0	42.3	2.5	33.9	95.9	5.0	4.2
60	5.3	0.8	1.8	45.1	31.9	1.9	51.7	23.3	2.8	44.1	2.5	35.6	97.1	5.2	4.4
	7.9	1.7	3.9	46.0	32.1	1.8	52.1	25.4	2.5	46.4	2.5	37.9	98.6	5.4	4.6
	10.5	3.0	6.9	46.2	32.0	1.8	52.2	26.4	2.3	47.7	2.5	39.2	99.5	5.6	4.7
70	5.3	0.8	1.7	43.0	30.8	2.1	50.3	20.1	3.5	49.0	2.5	40.4	100.3	5.7	4.8
	7.9	1.6	3.8	44.5	31.6	2.0	51.3	22.2	3.1	51.8	2.6	43.0	102.1	5.9	5.0
	10.5	2.9	6.8	45.1	31.9	1.9	51.7	23.3	2.8	53.3	2.6	44.4	103.1	6.0	5.1
80	5.3	0.8	1.8	40.4	29.2	2.4	48.5	17.0	4.4	54.0	2.6	45.1	103.7	6.1	5.3
	7.9	1.6	3.7	42.1	30.2	2.2	49.7	18.9	3.8	57.1	2.7	48.0	105.7	6.3	5.5
	10.5	2.9	6.7	42.9	30.7	2.2	50.3	19.9	3.6	58.8	2.7	49.6	106.8	6.3	5.7
90	5.3	0.8	1.8	37.5	27.4	2.6	46.5	14.2	5.4	59.1	2.7	49.8	107.0	6.4	5.8
	7.9	1.6	3.7	39.2	28.5	2.5	47.7	15.9	4.8	62.5	2.8	52.9	109.2	6.5	6.1
	10.5	2.9	6.6	40.1	29.0	2.4	48.3	16.8	4.5	64.4	2.9	54.6	110.5	6.6	6.3
100	5.3	0.8	1.8	34.6	25.8	2.9	44.6	11.8	6.7	Operation not recommended					
	7.9	1.6	3.7	36.2	26.7	2.8	45.7	13.1	5.9						
	10.5	2.8	6.5	37.1	27.2	2.7	46.2	13.9	5.6						
110	5.3	0.8	1.7	32.2	24.6	3.3	43.4	9.8	8.1						
	7.9	1.6	3.6	33.5	25.2	3.1	44.0	10.8	7.3						
	10.5	2.8	6.4	34.2	25.5	3.0	44.4	11.4	6.9						
120	5.3	0.7	1.6	30.5	24.3	3.7	43.1	8.2	9.8						
	7.9	1.5	3.5	31.3	24.3	3.5	43.1	9.0	8.8						
	10.5	2.7	6.3	31.8	24.4	3.4	43.2	9.5	8.4						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D042 (ECM Blower)

1,400 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D042 ECM															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	10.5	3.7	8.6	Operation not recommended						25.6	2.3	17.7	84.9	3.3	3.3
30	5.3	1.0	2.3	42.6	27.0	1.3	47.0	33.7	1.8	28.3	2.3	20.5	86.6	3.6	3.5
	7.9	2.0	4.6	39.3	23.6	1.2	43.3	33.3	1.9	29.4	2.3	21.6	87.4	3.8	3.6
	10.5	3.4	7.9	37.3	21.8	1.1	41.2	32.6	1.9	30.0	2.3	22.3	87.8	3.9	3.6
40	5.3	0.9	2.0	45.7	30.7	1.4	50.5	32.1	1.9	32.5	2.3	24.8	89.5	4.2	3.8
	7.9	1.9	4.3	44.2	28.7	1.3	48.7	33.4	1.8	34.0	2.3	26.2	90.4	4.4	3.8
	10.5	3.2	7.5	43.1	27.5	1.3	47.5	33.7	1.8	34.8	2.3	27.0	91.0	4.5	3.9
50	5.3	0.8	1.9	46.2	32.0	1.6	51.6	29.0	2.3	37.0	2.3	29.2	92.4	4.7	4.1
	7.9	1.7	4.0	46.1	31.4	1.5	51.2	31.1	2.0	38.8	2.3	31.0	93.6	4.9	4.2
	10.5	3.1	7.1	45.7	30.7	1.4	50.6	32.0	2.0	39.8	2.3	31.9	94.3	5.1	4.2
60	5.3	0.8	1.8	45.1	31.9	1.8	51.2	25.4	2.8	41.6	2.3	33.7	95.5	5.3	4.4
	7.9	1.7	3.9	46.0	32.1	1.7	51.6	27.8	2.5	43.8	2.3	35.8	96.9	5.5	4.6
	10.5	3.0	6.9	46.2	32.0	1.6	51.6	29.0	2.3	45.0	2.4	36.9	97.7	5.6	4.7
70	5.3	0.8	1.7	43.1	30.8	2.0	49.8	21.7	3.5	46.4	2.4	38.3	98.6	5.7	4.8
	7.9	1.6	3.8	44.5	31.6	1.9	50.8	24.1	3.1	48.9	2.4	40.6	100.3	5.9	5.0
	10.5	2.9	6.8	45.1	31.9	1.8	51.2	25.3	2.8	50.3	2.4	41.9	101.2	6.0	5.1
80	5.3	0.8	1.8	40.4	29.2	2.2	48.0	18.2	4.4	51.3	2.5	42.8	101.8	6.1	5.3
	7.9	1.6	3.7	42.1	30.2	2.1	49.2	20.4	3.8	54.1	2.5	45.5	103.7	6.3	5.5
	10.5	2.9	6.7	42.9	30.7	2.0	49.7	21.5	3.6	55.7	2.6	46.9	104.7	6.4	5.7
90	5.3	0.8	1.8	37.5	27.4	2.5	46.0	15.1	5.4	56.2	2.6	47.4	105.1	6.4	5.8
	7.9	1.6	3.7	39.3	28.5	2.3	47.2	16.9	4.8	59.4	2.7	50.3	107.2	6.5	6.1
	10.5	2.9	6.6	40.2	29.1	2.2	47.8	17.9	4.5	61.1	2.7	51.8	108.3	6.6	6.3
100	5.3	0.8	1.8	34.7	25.8	2.8	44.2	12.5	6.6	Operation not recommended					
	7.9	1.6	3.7	36.3	26.7	2.6	45.2	13.9	5.9						
	10.5	2.8	6.5	37.1	27.2	2.5	45.7	14.8	5.6						
110	5.3	0.8	1.7	32.2	24.6	3.1	42.9	10.3	8.1						
	7.9	1.6	3.6	33.5	25.2	2.9	43.5	11.4	7.3						
	10.5	2.8	6.4	34.2	25.6	2.8	43.9	12.1	6.9						
120	5.3	0.7	1.6	30.5	24.2	3.5	42.6	8.6	9.8						
	7.9	1.5	3.5	31.3	24.3	3.3	42.6	9.5	8.8						
	10.5	2.7	6.3	31.8	24.5	3.2	42.7	9.9	8.4						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D048 (PSC Blower)

1,600 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D048 PSC															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	12.0	4.2	9.6	Operation not recommended						36.1	3.4	24.6	88.9	3.1	3.3
30	6.0	1.1	2.6	51.7	31.0	2.1	58.9	24.5	1.8	39.0	3.4	27.6	90.5	3.4	3.5
	9.0	2.3	5.3	48.0	27.7	2.0	54.7	24.6	1.9	40.7	3.4	29.2	91.5	3.5	3.5
	12.0	3.8	8.7	45.9	25.9	1.9	52.3	24.4	1.9	41.6	3.4	30.1	92.0	3.6	3.6
40	6.0	0.9	2.2	54.8	34.5	2.4	62.8	23.3	2.0	44.2	3.4	32.7	93.5	3.8	3.7
	9.0	2.1	4.8	53.1	32.4	2.2	60.5	24.3	1.8	46.3	3.4	34.7	94.7	4.0	3.8
	12.0	3.5	8.0	51.8	31.1	2.1	59.0	24.5	1.8	47.5	3.4	35.8	95.4	4.1	3.9
50	6.0	0.8	1.9	55.4	36.0	2.6	64.3	21.4	2.4	49.7	3.5	37.9	96.7	4.2	4.0
	9.0	1.9	4.4	55.2	35.1	2.4	63.5	22.8	2.1	52.2	3.5	40.3	98.1	4.4	4.1
	12.0	3.3	7.6	54.7	34.4	2.3	62.7	23.4	2.0	53.6	3.5	41.6	98.9	4.5	4.2
60	6.0	0.8	1.8	54.4	36.3	2.9	64.1	19.1	2.9	55.3	3.6	43.2	99.9	4.6	4.3
	9.0	1.8	4.2	55.3	36.2	2.7	64.4	20.7	2.5	58.2	3.6	45.9	101.6	4.7	4.5
	12.0	3.1	7.3	55.4	36.0	2.6	64.2	21.5	2.3	59.8	3.6	47.4	102.5	4.8	4.6
70	6.0	0.8	1.7	52.3	35.6	3.1	63.0	16.7	3.7	61.0	3.7	48.5	103.2	4.9	4.7
	9.0	1.8	4.1	53.9	36.1	2.9	63.9	18.4	3.1	64.2	3.7	51.5	105.1	5.1	5.0
	12.0	3.1	7.1	54.5	36.3	2.8	64.2	19.2	2.9	66.0	3.8	53.2	106.1	5.1	5.1
80	6.0	0.8	1.7	49.4	34.3	3.4	61.2	14.4	4.6	66.6	3.8	53.8	106.5	5.2	5.2
	9.0	1.7	4.0	51.5	35.2	3.2	62.5	16.0	3.9	70.1	3.9	57.0	108.5	5.3	5.5
	12.0	3.0	7.0	52.4	35.6	3.1	63.0	16.8	3.6	72.0	3.9	58.8	109.6	5.4	5.6
90	6.0	0.8	1.8	46.2	32.7	3.8	59.1	12.2	5.7	72.1	3.9	58.9	109.7	5.4	5.7
	9.0	1.7	4.0	48.4	33.8	3.6	60.5	13.6	4.9	75.8	4.0	62.3	111.8	5.6	6.0
	12.0	3.0	6.9	49.5	34.3	3.4	61.2	14.4	4.6	77.8	4.0	64.1	112.9	5.7	6.2
100	6.0	0.8	1.7	42.8	31.0	4.2	57.1	10.2	6.9	Operation not recommended					
	9.0	1.7	3.9	45.0	32.1	3.9	58.4	11.5	6.1						
	12.0	3.0	6.8	46.1	32.7	3.8	59.1	12.2	5.7						
110	6.0	0.7	1.7	39.5	29.4	4.6	55.3	8.5	8.4						
	9.0	1.7	3.9	41.5	30.4	4.3	56.3	9.6	7.5						
	12.0	2.9	6.7	42.6	30.9	4.2	57.0	10.1	7.0						
120	6.0	0.7	1.5	36.6	28.2	5.2	54.2	7.1	10.0						
	9.0	1.6	3.7	38.3	28.9	4.8	54.8	7.9	9.0						
	12.0	2.8	6.5	39.3	29.3	4.7	55.2	8.4	8.5						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D048 (ECM Blower)

1,550 CFM Nominal Airflow Cooling, 1,650 CFM Nominal Airflow Heating

Performance capacities shown in thousands of Btuh

TSH/V/D048 ECM															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	12.0	4.2	9.6	Operation not recommended						33.1	3.1	22.7	86.5	3.2	3.3
30	6.0	1.1	2.6	51.5	30.9	1.8	57.7	28.6	1.8	36.0	3.1	25.5	88.1	3.4	3.5
	9.0	2.3	5.3	47.9	27.6	1.7	53.5	29.0	1.9	37.4	3.1	26.9	88.9	3.6	3.5
	12.0	3.8	8.7	45.7	25.8	1.6	51.1	28.9	1.9	38.2	3.1	27.7	89.4	3.6	3.6
40	6.0	0.9	2.2	54.7	34.4	2.1	61.7	26.7	2.0	40.9	3.1	30.3	90.9	3.9	3.7
	9.0	2.1	4.8	53.0	32.3	1.9	59.4	28.1	1.8	42.7	3.1	32.0	91.9	4.0	3.8
	12.0	3.5	8.0	51.7	31.0	1.8	57.9	28.5	1.8	43.7	3.1	33.0	92.5	4.1	3.9
50	6.0	0.8	1.9	55.4	36.0	2.3	63.2	24.2	2.4	46.0	3.2	35.2	93.8	4.2	4.0
	9.0	1.9	4.4	55.2	35.1	2.1	62.4	26.0	2.1	48.2	3.2	37.3	95.0	4.4	4.1
	12.0	3.3	7.6	54.7	34.3	2.0	61.6	26.8	2.0	49.4	3.2	38.4	95.7	4.5	4.2
60	6.0	0.8	1.8	54.5	36.3	2.6	63.2	21.4	2.9	51.4	3.3	40.2	96.8	4.6	4.3
	9.0	1.8	4.2	55.3	36.2	2.4	63.4	23.4	2.5	53.9	3.3	42.6	98.2	4.8	4.5
	12.0	3.1	7.3	55.4	36.0	2.3	63.2	24.3	2.3	55.3	3.4	43.9	99.0	4.8	4.6
70	6.0	0.8	1.7	52.4	35.6	2.8	62.0	18.5	3.7	56.8	3.4	45.3	99.8	4.9	4.7
	9.0	1.8	4.1	53.9	36.1	2.6	62.9	20.5	3.1	59.7	3.4	47.9	101.4	5.1	5.0
	12.0	3.1	7.1	54.5	36.3	2.5	63.2	21.5	2.9	61.2	3.5	49.4	102.3	5.2	5.1
80	6.0	0.8	1.7	49.6	34.3	3.1	60.2	15.8	4.6	62.2	3.5	50.2	102.8	5.2	5.2
	9.0	1.7	4.0	51.5	35.3	2.9	61.5	17.6	3.9	65.3	3.6	53.1	104.6	5.4	5.5
	12.0	3.0	7.0	52.5	35.6	2.8	62.1	18.6	3.6	67.0	3.6	54.7	105.5	5.5	5.6
90	6.0	0.8	1.8	46.3	32.8	3.5	58.2	13.3	5.7	67.4	3.6	55.1	105.8	5.5	5.7
	9.0	1.7	4.0	48.5	33.8	3.3	59.6	14.9	4.9	70.7	3.7	58.2	107.6	5.6	6.0
	12.0	3.0	6.9	49.6	34.4	3.1	60.3	15.8	4.6	72.5	3.7	59.8	108.6	5.7	6.2
100	6.0	0.8	1.7	42.9	31.0	3.9	56.1	11.1	6.9	Operation not recommended					
	9.0	1.7	3.9	45.1	32.1	3.6	57.4	12.5	6.1						
	12.0	3.0	6.8	46.2	32.7	3.5	58.1	13.2	5.7						
110	6.0	0.7	1.7	39.6	29.4	4.3	54.4	9.2	8.4						
	9.0	1.7	3.9	41.6	30.4	4.0	55.4	10.3	7.5						
	12.0	2.9	6.7	42.7	30.9	3.9	56.0	11.0	7.0						
120	6.0	0.7	1.5	36.7	28.2	4.8	53.2	7.6	10.0						
	9.0	1.6	3.7	38.4	28.9	4.5	53.8	8.5	9.0						
	12.0	2.8	6.5	39.3	29.3	4.4	54.2	9.0	8.5						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D060 (PSC Blower)

1,950 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D060 PSC															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	15.0	7.2	16.6	Operation not recommended						41.2	4.0	27.7	87.5	3.1	3.8
30	7.5	1.3	3.0	74.0	51.3	2.5	82.6	29.2	2.0	44.9	4.1	31.1	89.3	3.3	4.0
	11.3	3.5	8.1	71.4	49.0	2.4	79.5	30.0	1.8	46.8	4.1	32.8	90.2	3.4	4.1
	15.0	6.1	14.1	69.5	47.6	2.3	77.4	30.0	1.8	47.8	4.1	33.8	90.7	3.4	4.1
40	7.5	0.9	2.0	75.1	52.8	2.8	84.6	27.1	2.3	51.5	4.2	37.3	92.4	3.6	4.3
	11.3	2.9	6.7	74.5	51.8	2.6	83.4	28.8	2.0	54.0	4.2	39.6	93.6	3.7	4.4
	15.0	5.3	12.2	73.7	51.0	2.5	82.3	29.4	1.9	55.4	4.3	40.9	94.2	3.8	4.5
50	7.5	0.6	1.4	74.1	52.9	3.0	84.5	24.4	2.9	58.7	4.3	44.0	95.8	4.0	4.6
	11.3	2.5	5.7	75.0	52.9	2.8	84.7	26.5	2.4	61.8	4.4	46.9	97.3	4.1	4.8
	15.0	4.7	10.9	75.1	52.7	2.7	84.4	27.4	2.3	63.5	4.4	48.5	98.1	4.2	4.9
60	7.5	0.5	1.1	71.7	52.2	3.3	83.1	21.4	3.6	66.2	4.4	51.0	99.3	4.4	5.0
	11.3	2.2	5.1	73.6	52.8	3.1	84.2	23.7	3.1	69.9	4.5	54.5	101.1	4.5	5.2
	15.0	4.3	10.0	74.3	53.0	3.0	84.6	24.8	2.8	71.9	4.5	56.4	102.1	4.6	5.3
70	7.5	0.5	1.1	68.3	50.8	3.7	80.9	18.5	4.5	73.8	4.6	58.2	103.0	4.7	5.4
	11.3	2.1	4.8	70.9	51.9	3.4	82.6	20.6	3.8	78.1	4.7	62.2	105.0	4.9	5.7
	15.0	4.1	9.5	72.0	52.3	3.3	83.3	21.8	3.5	80.4	4.7	64.4	106.1	5.0	5.9
80	7.5	0.5	1.1	64.4	49.1	4.1	78.3	15.7	5.6	81.5	4.7	65.4	106.6	5.1	5.9
	11.3	2.0	4.6	67.2	50.4	3.8	80.2	17.7	4.8	86.1	4.8	69.7	108.8	5.2	6.3
	15.0	4.0	9.2	68.6	51.0	3.7	81.1	18.7	4.4	88.7	4.9	72.0	110.0	5.3	6.5
90	7.5	0.5	1.2	60.2	47.3	4.6	75.8	13.2	6.8	88.9	4.9	72.3	110.1	5.3	6.5
	11.3	2.0	4.5	63.1	48.6	4.2	77.5	14.9	6.0	93.8	5.0	76.8	112.5	5.5	6.9
	15.0	3.9	9.1	64.5	49.2	4.1	78.5	15.8	5.5	96.4	5.1	79.1	113.7	5.6	7.1
100	7.5	0.5	1.1	56.1	45.5	5.1	73.5	11.0	8.3	Operation not recommended					
	11.3	1.9	4.5	58.8	46.7	4.7	75.0	12.4	7.3						
	15.0	3.9	9.0	60.2	47.3	4.6	75.8	13.2	6.8						
110	7.5	0.4	0.8	52.5	44.2	5.7	72.1	9.2	9.9						
	11.3	1.8	4.2	54.8	45.0	5.3	72.9	10.3	8.8						
	15.0	3.8	8.8	56.1	45.5	5.1	73.5	11.0	8.3						
120	7.5	0.1	0.3	49.8	43.7	6.5	71.9	7.7	11.9						
	11.3	1.6	3.8	51.4	43.9	6.0	71.8	8.6	10.6						
	15.0	3.7	8.5	52.4	44.2	5.8	72.0	9.1	10.0						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D060 (ECM Blower)

1,950 CFM Nominal Airflow Cooling, 2,050 CFM Nominal Airflow Heating

Performance capacities shown in thousands of Btuh

TSH/V/D060 ECM															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	15.0	7.2	16.6	Operation not recommended						40.2	3.6	27.8	85.7	3.3	3.8
30	7.5	1.3	3.0	74.0	51.3	2.5	82.6	29.2	2.0	43.9	3.7	31.3	87.3	3.5	4.0
	11.3	3.5	8.1	71.4	49.0	2.4	79.5	30.0	1.8	45.7	3.7	33.0	88.1	3.6	4.1
	15.0	6.1	14.1	69.5	47.6	2.3	77.4	30.0	1.8	46.7	3.7	34.0	88.6	3.7	4.1
40	7.5	0.9	2.0	75.1	52.8	2.8	84.6	27.1	2.3	50.4	3.8	37.5	90.2	3.9	4.3
	11.3	2.9	6.7	74.5	51.8	2.6	83.4	28.8	2.0	52.9	3.8	39.8	91.3	4.1	4.4
	15.0	5.3	12.2	73.7	51.0	2.5	82.3	29.4	1.9	54.2	3.9	41.1	91.9	4.1	4.5
50	7.5	0.6	1.4	74.1	52.9	3.0	84.5	24.4	2.9	57.5	3.9	44.2	93.3	4.3	4.6
	11.3	2.5	5.7	75.0	52.9	2.8	84.7	26.5	2.4	60.6	4.0	47.2	94.7	4.5	4.8
	15.0	4.7	10.9	75.1	52.7	2.7	84.4	27.4	2.3	62.4	4.0	48.8	95.4	4.6	4.9
60	7.5	0.5	1.1	71.7	52.2	3.3	83.1	21.4	3.6	65.0	4.0	51.3	96.6	4.7	5.0
	11.3	2.2	5.1	73.6	52.8	3.1	84.2	23.7	3.1	68.7	4.1	54.8	98.2	4.9	5.2
	15.0	4.3	10.0	74.3	53.0	3.0	84.6	24.8	2.8	70.8	4.1	56.7	99.1	5.0	5.3
70	7.5	0.5	1.1	68.3	50.8	3.7	80.9	18.5	4.5	72.7	4.2	58.5	100.0	5.1	5.4
	11.3	2.1	4.8	70.9	51.9	3.4	82.6	20.6	3.8	76.9	4.2	62.4	101.8	5.3	5.7
	15.0	4.1	9.5	72.0	52.3	3.3	83.3	21.8	3.5	79.2	4.3	64.6	102.8	5.4	5.9
80	7.5	0.5	1.1	64.4	49.1	4.1	78.3	15.7	5.6	80.2	4.3	65.5	103.3	5.5	5.9
	11.3	2.0	4.6	67.2	50.4	3.8	80.2	17.7	4.8	84.7	4.4	69.7	105.3	5.6	6.3
	15.0	4.0	9.2	68.6	51.0	3.7	81.1	18.7	4.4	87.2	4.5	72.0	106.3	5.7	6.5
90	7.5	0.5	1.2	60.2	47.3	4.6	75.8	13.2	6.8	87.4	4.5	72.2	106.5	5.7	6.5
	11.3	2.0	4.5	63.1	48.6	4.2	77.5	14.9	6.0	92.1	4.6	76.4	108.5	5.9	6.9
	15.0	3.9	9.1	64.5	49.2	4.1	78.5	15.8	5.5	94.4	4.6	78.6	109.5	6.0	7.1
100	7.5	0.5	1.1	56.1	45.5	5.1	73.5	11.0	8.3	Operation not recommended					
	11.3	1.9	4.5	58.8	46.7	4.7	75.0	12.4	7.3						
	15.0	3.9	9.0	60.2	47.3	4.6	75.8	13.2	6.8						
110	7.5	0.4	0.8	52.5	44.2	5.7	72.1	9.2	9.9						
	11.3	1.8	4.2	54.8	45.0	5.3	72.9	10.3	8.8						
	15.0	3.8	8.8	56.1	45.5	5.1	73.5	11.0	8.3						
120	7.5	0.1	0.3	49.8	43.7	6.5	71.9	7.7	11.9						
	11.3	1.6	3.8	51.4	43.9	6.0	71.8	8.6	10.6						
	15.0	3.7	8.5	52.4	44.2	5.8	72.0	9.1	10.0						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D070 (PSC Blower)

2,100 CFM Nominal Airflow

Performance capacities shown in thousands of Btuh

TSH/V/D070 PSC															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	18.0	9.5	22.0	Operation not recommended						47.9	4.8	31.6	89.1	2.9	5.0
30	9.0	2.7	6.3	82.5	51.0	3.4	94.2	24.0	3.7	52.1	4.8	35.6	90.9	3.2	5.3
	13.5	5.2	12.0	80.9	48.7	3.3	92.0	24.8	3.7	54.0	4.9	37.4	91.8	3.3	5.4
	18.0	8.1	18.8	79.6	47.3	3.2	90.5	25.0	3.7	55.1	4.9	38.4	92.2	3.3	5.5
40	9.0	2.1	4.9	83.0	52.9	3.7	95.7	22.2	3.9	59.3	5.0	42.3	94.1	3.5	5.8
	13.5	4.4	10.1	82.8	51.8	3.5	94.9	23.5	3.7	61.8	5.0	44.7	95.2	3.6	6.0
	18.0	7.1	16.4	82.4	50.9	3.4	94.1	24.0	3.7	63.2	5.1	46.0	95.8	3.7	6.1
50	9.0	1.7	4.0	81.7	53.4	4.1	95.6	20.1	4.5	67.1	5.1	49.6	97.5	3.8	6.4
	13.5	3.8	8.8	82.8	53.2	3.8	95.8	21.6	4.1	70.2	5.2	52.4	98.9	4.0	6.7
	18.0	6.4	14.8	83.0	52.8	3.7	95.7	22.3	3.9	71.9	5.2	54.0	99.6	4.0	6.8
60	9.0	1.6	3.6	79.2	52.9	4.4	94.4	17.8	5.5	75.1	5.3	57.0	101.0	4.1	7.1
	13.5	3.5	8.1	81.1	53.4	4.2	95.3	19.4	4.8	78.7	5.4	60.3	102.6	4.3	7.5
	18.0	5.9	13.7	81.9	53.4	4.1	95.7	20.2	4.5	80.6	5.4	62.1	103.5	4.4	7.7
70	9.0	1.5	3.5	75.8	51.7	4.9	92.4	15.6	6.7	83.1	5.5	64.3	104.5	4.4	8.0
	13.5	3.3	7.7	78.3	52.6	4.6	93.8	17.1	5.8	87.0	5.6	67.9	106.3	4.6	8.5
	18.0	5.7	13.1	79.4	52.9	4.4	94.5	17.9	5.4	89.0	5.6	69.8	107.2	4.6	8.7
80	9.0	1.5	3.5	71.7	50.0	5.4	90.0	13.4	8.3	90.7	5.7	71.3	107.9	4.7	9.0
	13.5	3.2	7.5	74.6	51.2	5.0	91.7	14.9	7.2	94.7	5.8	74.9	109.7	4.8	9.6
	18.0	5.5	12.7	75.9	51.7	4.9	92.5	15.6	6.7	96.7	5.8	76.8	110.5	4.9	9.9
90	9.0	1.6	3.6	67.3	48.1	5.9	87.4	11.4	10.2	97.7	5.9	77.7	111.0	4.9	10.1
	13.5	3.2	7.4	70.3	49.4	5.5	89.1	12.7	8.9	101.4	6.0	81.0	112.6	5.0	10.8
	18.0	5.5	12.6	71.7	50.0	5.4	90.0	13.4	8.3	103.1	6.0	82.6	113.4	5.0	11.3
100	9.0	1.6	3.6	62.8	46.2	6.5	85.0	9.7	12.4	Operation not recommended					
	13.5	3.2	7.4	65.7	47.4	6.1	86.5	10.8	10.9						
	18.0	5.4	12.5	67.2	48.0	5.9	87.4	11.4	10.2						
110	9.0	1.4	3.3	58.5	44.5	7.2	83.0	8.1	14.9						
	13.5	3.1	7.1	61.2	45.5	6.8	84.2	9.1	13.3						
	18.0	5.3	12.3	62.6	46.1	6.5	84.9	9.6	12.5						
120	9.0	1.2	2.7	54.5	43.3	8.0	81.8	6.8	17.8						
	13.5	2.9	6.6	56.8	44.0	7.5	82.4	7.6	16.0						
	18.0	5.2	11.9	58.1	44.4	7.3	82.9	8.0	15.1						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Performance Data – TSH/V/D070 (ECM Blower)

1,950 CFM Nominal Airflow Cooling, 2,050 CFM Nominal Airflow Heating

Performance capacities shown in thousands of Btuh

TSH/V/D070 ECM															
EWT °F	GPM	WPD		COOLING - EAT 80.6/66.2 °F						HEATING - EAT 68°F					
		PSI	Ft	TC	SC	KW	HR	EER	HWG Cap	HC	KW	HE	LAT	COP	HWG Cap
20	18.0	9.5	22.0	Operation not recommended						46.7	4.4	31.6	89.0	3.1	5.0
30	9.0	2.7	6.3	83.2	52.7	3.0	93.5	27.6	3.7	50.9	4.5	35.5	90.9	3.3	5.3
	13.5	5.2	12.0	82.1	51.3	2.8	91.6	29.2	3.7	52.7	4.5	37.3	91.8	3.4	5.4
	18.0	8.1	18.8	81.1	50.3	2.7	90.4	30.0	3.7	53.8	4.6	38.2	92.2	3.5	5.5
40	9.0	2.1	4.9	83.4	53.6	3.3	94.7	25.1	3.9	58.0	4.7	42.2	94.1	3.7	5.8
	13.5	4.4	10.1	83.5	53.1	3.1	94.0	26.9	3.7	60.5	4.7	44.5	95.3	3.8	6.0
	18.0	7.1	16.4	83.2	52.7	3.0	93.4	27.7	3.7	61.9	4.7	45.8	95.9	3.8	6.1
50	9.0	1.7	4.0	82.0	53.5	3.7	94.5	22.4	4.5	65.8	4.8	49.4	97.6	4.0	6.4
	13.5	3.8	8.8	83.1	53.7	3.4	94.8	24.3	4.1	68.9	4.9	52.2	99.0	4.1	6.7
	18.0	6.4	14.8	83.4	53.6	3.3	94.7	25.2	3.9	70.6	4.9	53.8	99.8	4.2	6.8
60	9.0	1.6	3.6	79.5	52.5	4.0	93.2	19.8	5.5	73.8	5.0	56.8	101.3	4.3	7.1
	13.5	3.5	8.1	81.3	53.2	3.8	94.2	21.6	4.8	77.4	5.1	60.1	102.9	4.5	7.5
	18.0	5.9	13.7	82.1	53.5	3.6	94.5	22.6	4.5	79.3	5.1	61.9	103.8	4.5	7.7
70	9.0	1.5	3.5	76.2	51.0	4.4	91.3	17.2	6.7	81.8	5.2	64.1	104.9	4.6	8.0
	13.5	3.3	7.7	78.5	52.1	4.1	92.7	19.0	5.8	85.7	5.3	67.7	106.6	4.8	8.5
	18.0	5.7	13.1	79.6	52.5	4.0	93.3	19.9	5.4	87.8	5.3	69.6	107.6	4.8	8.7
80	9.0	1.5	3.5	72.3	49.2	4.9	89.0	14.8	8.3	89.5	5.4	71.1	108.3	4.9	9.0
	13.5	3.2	7.5	74.9	50.4	4.6	90.6	16.4	7.2	93.5	5.5	74.7	110.1	5.0	9.6
	18.0	5.5	12.7	76.2	51.0	4.4	91.3	17.2	6.7	95.5	5.6	76.5	111.0	5.0	9.9
90	9.0	1.6	3.6	68.0	47.3	5.4	86.6	12.5	10.2	96.5	5.6	77.4	111.5	5.0	10.1
	13.5	3.2	7.4	70.8	48.5	5.1	88.2	13.9	8.9	100.2	5.7	80.6	113.2	5.1	10.8
	18.0	5.5	12.6	72.2	49.2	4.9	89.0	14.7	8.3	102.0	5.8	82.1	113.9	5.1	11.3
100	9.0	1.6	3.6	63.6	45.3	6.1	84.3	10.5	12.4	Operation not recommended					
	13.5	3.2	7.4	66.4	46.5	5.7	85.7	11.7	10.9						
	18.0	5.4	12.5	67.8	47.2	5.5	86.5	12.4	10.2						
110	9.0	1.4	3.3	59.2	43.6	6.8	82.4	8.7	14.9						
	13.5	3.1	7.1	61.9	44.6	6.3	83.5	9.8	13.3						
	18.0	5.3	12.3	63.3	45.2	6.1	84.1	10.4	12.5						
120	9.0	1.2	2.7	55.2	42.2	7.6	81.1	7.3	17.8						
	13.5	2.9	6.6	57.6	43.0	7.1	81.8	8.1	16.0						
	18.0	5.2	11.9	58.9	43.4	6.8	82.2	8.6	15.1						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
All performance data is based upon the lower voltage of dual voltage rated units.
See performance correction tables for operating conditions other than those listed above..

Airflow

Airflow Corr	Heating			Cooling				
% of Nominal	Htg Cap	Power	Heat of Ext	Total Cap	Sens Cap	S/T	Power	Heat of Rej
60	0.933	1.216	0.907	0.878	0.774	0.882	0.936	0.920
72	0.957	1.124	0.942	0.925	0.850	0.919	0.951	0.950
80	0.973	1.072	0.963	0.954	0.903	0.946	0.966	0.968
88	0.984	1.037	0.979	0.974	0.941	0.966	0.977	0.982
96	0.995	1.010	0.994	0.992	0.981	0.989	0.992	0.995
100	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
104	1.005	0.993	1.006	1.007	1.018	1.011	1.009	1.005
112	1.012	0.986	1.015	1.017	1.052	1.035	1.027	1.013
120	1.019	0.990	1.022	1.023	1.082	1.058	1.047	1.019

Entering Air Heating

	EAT Heating Corrections		
Ent Air DB F	Htg Cap	Power	Heat of Ext
45	1.032	0.777	1.089
50	1.029	0.817	1.077
55	1.025	0.859	1.062
60	1.018	0.903	1.044
65	1.010	0.950	1.024
70	1.000	1.000	1.000
75	0.988	1.052	0.974
80	0.974	1.107	0.944
120	1.019	0.990	1.022

Entering Air Cooling

Cooling Corrections												
Sensible Clg Cap Multipliers - Entering DB °F												
Ent Air WB F	Total Clg Cap	60	65	70	75	80	85	90	95	100	Power	Heat of Rej
45	0.6634	*	*	*	*	*	*	*	*	*	0.9856	0.7829
50	0.7399	0.7663	*	*	*	*	*	*	*	*	0.9889	0.8322
55	0.8164	0.5937	0.8724	1.0816	*	*	*	*	*	*	0.9921	0.8816
60	0.8929		0.6709	0.8826	1.1211	*	*	*	*	*	0.9954	0.9309
65	0.9694			0.6624	0.8850	1.0986	*	*	*	*	0.9987	0.9803
67	1.0000			0.5685	0.7879	1.0000	1.1891	1.3838	*	*	1.0000	1.0000
70	1.0459				0.6391	0.8521	1.0361	1.2347	1.4461	*	1.0020	1.0296
75	1.1224					0.6056	0.7783	0.9861	1.2256	1.4690	1.0052	1.0789

* = Sensible capacity equals total capacity
AHRI/ASHRAE/ISO 13256-1 uses entering air conditions of Cooling - 80.6° F DB/66.2° F WB, 1 and Heating - 68° F DB/59° F WB entering air temperature
For Condenser Hot Water Reheat equipped units the minimum entering air temperature when cooling is 65° F DB / 55° F WB. Operation below this minimum may result in nuisance faults.

Antifreeze Correction Table

EWT	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

Antifreeze Correction Table

Table Continued from Previous Page

EWT	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

Correction Tables – Water Pressure Drop Adder for Options

Motorized Water Valve Option Corrections

Model	Cv	MOPD	WPD Adders		
			GPM	PSI	FT
006	4.9	150	1.0	0.04	0.10
	4.9	150	1.5	0.09	0.22
	4.9	150	2.0	0.17	0.38
009	4.9	150	1.4	0.08	0.19
	4.9	150	2.1	0.18	0.42
	4.9	150	2.8	0.33	0.75
012	4.9	150	1.8	0.13	0.31
	4.9	150	2.6	0.28	0.65
	4.9	150	3.5	0.51	1.18
018	10.3	125	2.8	0.07	0.16
	10.3	125	4.1	0.16	0.37
	10.3	125	5.5	0.29	0.66
024	10.3	125	4.0	0.15	0.35
	10.3	125	6.0	0.34	0.78
	10.3	125	8.0	0.60	1.39
030	10.3	125	4.0	0.15	0.35
	10.3	125	6.0	0.34	0.78
	10.3	125	8.0	0.60	1.39
036	10.3	125	4.5	0.19	0.44
	10.3	125	6.8	0.43	0.99
	10.3	125	9.0	0.76	1.76
042	10.3	125	5.5	0.29	0.66
	10.3	125	8.3	0.64	1.48
	10.3	125	11.0	1.14	2.63
048	10.3	125	6.0	0.34	0.78
	10.3	125	9.0	0.76	1.76
	10.3	125	12.0	1.36	3.14
060	8.9	125	7.5	0.71	1.64
	8.9	125	11.3	1.60	3.69
	8.9	125	15.0	2.84	6.56
070	8.9	125	8.3	0.86	1.98
	8.9	125	12.4	1.93	4.47
	8.9	125	16.5	3.44	7.94

ClimaDry® II Option Corrections (When Operating in Non-ClimaDry® Mode)

Model	WPD Adders		
	GPM	PSI	FT
018	2.8	0.77	1.77
	4.1	1.65	3.80
024	4.0	1.57	3.62
	6.0	3.53	8.14
030	4.0	0.69	1.59
	6.0	1.55	3.58
036	4.5	0.87	2.02
	6.8	1.99	4.60
042	5.5	1.30	3.01
	8.3	6.75	15.58
048	6.0	1.55	3.58
	9.0	3.49	8.06
060	7.5	1.49	3.45
	11.3	3.39	7.82
070	8.3	1.83	4.22
	12.4	4.08	9.42

Blower Performance Data – Standard Unit

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
6	240	150	PSC	HI	CFM	305	285	271	250	230	203	168			
				MED	CFM	245	230	214	190	167					
				LO	CFM	201	189	156							
9	300	225	PSC	HI	CFM	378	364	346	325	253					
				MED	CFM	353	341	326	310	230					
12	350	300	PSC	HI	CFM	500	479	453	403	347	312				
				MED	CFM	447	428	411	368	317					
				LO	CFM	368	358	345	315						

Airflow in CFM with wet coil and clean air filter

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
18	600	450	PSC	HI	CFM	711	693	690	675	640	598	515			
				MED	CFM	599	581	585	573	547	492				
				LO	CFM	527	517	506	495	462					
			HI Stitic PSC	HI	CFM	877	841	812	760	728	659				
				MED	CFM	755	738	711	668	640	602				
				LO	CFM	661	636	596	571	549					
	750		ECM CV	MIN	RPM	571	666	754	852	942	1012	1073	1134	1196	1254
					Power (W)	44	56	69	84	99	111	122	135	149	161
					CFM	450	450	450	450	450	450	450	450	450	450
				DEFAULT	RPM	717	787	855	920	982	1045	1113	1182	1248	1307
					Power (W)	95	110	125	142	157	175	195	216	237	258
					CFM	750	750	750	750	750	750	750	750	750	750
				MAX	RPM	739	807	873	937	997	1054	1113	1184	1248	1306
					Power (W)	105	119	136	153	170	186	205	228	250	271
					CFM	800	800	800	800	800	800	800	800	800	800

Airflow in CFM with wet coil and clean air filter

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
24	950	600	PSC	HI	CFM	1105	1066	1006	934	854	765	662			
				MED	CFM	879	854	818	770	708					
				LO	CFM	745	730	704	662						
			HI Stitic PSC	HI	CFM	1351	1296	1228	1159	1090	1016	919	775		
				MED	CFM	1151	1128	1091	1047	997	934	844	705		
				LO	CFM	1015	999	945	911	863	785	656			
			ECM CV	MIN	RPM	674	759	835	902	969	1035	1101	1161	1219	1273
					Power (W)	71	85	100	114	127	143	159	174	190	205
					CFM	600	600	600	600	600	600	600	600	600	600
				DEFAULT	RPM	906	945	990	1047	1102	1153	1202	1248	1292	1337
					Power (W)	180	195	209	230	251	272	291	311	331	351
					CFM	950	950	950	950	950	950	950	950	950	950
				MAX	RPM	988	1027	1069	1109	1160	1212	1260	1304	1347	1390
					Power (W)	236	253	270	288	311	336	359	382	404	428
					CFM	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050

Airflow in CFM with wet coil and clean air filter

Blower Performance Data – Standard Unit

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
30	1000	750	PSC	HI	CFM			1228	1159	1090	1016	919	775		
				MED	CFM	1151	1128	1091	1047	997	934	844			
				LO	CFM	1015	999	945	911	863	785				
			HI Stitic PSC	HI	CFM		1249	1166	1083	1006	927	830			
				MED	CFM	1250	1183	1110	1039	969	894	796			
				LO	CFM	1172	1112	1046	982	919	850	758			
			ECM CV	MIN	RPM	721	797	865	930	991	1049	1105	1157	1209	1259
					Power (W)	93	108	124	140	156	173	189	205	221	237
					CFM	750	750	750	750	750	750	750	750	750	750
				DEFAULT	RPM	884	946	1007	1061	1115	1165	1214	1260	1304	1349
					Power (W)	187	209	232	252	274	295	316	338	358	380
					CFM	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
				MAX	RPM	1091	1148	1202	1255	1305					
					Power (W)	373	405	438	471	503					
					CFM	1250	1250	1250	1250	1250					

Airflow in CFM with wet coil and clean air filter

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
36	1200	900	PSC	HI	CFM	1387	1377	1350	1307	1251	1182	1099	1003	890	
				MED	CFM	1013	1013	1002	986	967	941	900			
				LO	CFM	900	897								
			HI Stitic PSC	HI	CFM	1717	1664	1592	1503	1399	1285	1163	1039	919	
				MED	CFM	1520	1485	1432	1361	1271	1165	1049	926		
				LO	CFM	1294	1263	1226	1182	1130	1064	980			
			ECM CV	MIN	RPM	646	730	805	873	936	996	1083	1127	1171	1215
					Power (W)	104	128	152	176	199	223	260	281	302	324
					CFM	900	900	900	900	900	900	900	900	900	900
				DEFAULT	RPM	777	849	913	973	1028	1080	1129	1178	1223	1270
					Power (W)	199	232	263	294	323	353	383	413	444	477
					CFM	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
				MAX	RPM	906	968	1025	1077	1129					
					Power (W)	346	387	426	465	505					
					CFM	1500	1500	1500	1500	1500					

Airflow in CFM with wet coil and clean air filter

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
42	1400	1000	PSC	HI	CFM	1759	1723	1680	1617	1524	1399	1247	1075		
				MED	CFM	1518	1494	1459	1408	1338	1247	1134	1001		
				LO	CFM	1309	1284	1246	1192	1122	1036				
			HI Stitic PSC	HI	CFM	1791	1760	1720	1674	1620	1552	1457	1318	1116	
				MED	CFM	1297	1299	1299	1293	1276	1240	1176	1072		
				LO	CFM	998	1013	1019	1004	963					
			ECM CV	MIN	RPM	533	617	679	725	781	838	805	942	988	1030
					Power (W)	95	124	147	167	192	220	252	277	303	330
					CFM	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
				DEFAULT	RPM	650	722	788	844	893	937	966	996	1038	1078
					Power (W)	203	244	286	324	357	390	413	437	471	506
					CFM	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
				MAX	RPM	749	809	862	918	968	1015	1060	1099	1135	
					Power (W)	352	402	449	500	547	596	645	688	733	
					CFM	1750	1750	1750	1750	1750	1750	1750	1750	1750	

Airflow in CFM with wet coil and clean air filter

Blower Performance Data – Standard Unit

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
48	1600	1100	PSC	HI	CFM	1791	1760	1720	1674	1620	1552	1457	1318	1116	
				MED	CFM	1297	1299	1299	1293	1276	1240	1176			
				LO	CFM	Operation not recommended									
			HI Stitic PSC	HI	CFM	1889	1873	1833	1777	1706	1617	1504	1353	1150	
				MED	CFM	1680	1686	1678	1650	1599	1520	1409	1262		
				LO	CFM	1508	1521	1516	1492	1446	1376	1249			
			ECM CV	MIN	RPM	560	628	692	754	810	863	911	955	1007	1059
					Power (W)	125	152	179	208	234	262	289	315	347	380
					CFM	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
				DEFAULT	RPM	707	763	815	863	910	954	997	1038	1082	1122
					Power (W)	291	329	367	404	441	478	516	554	596	637
					CFM	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
				MAX	RPM	827	880	926	970	1011	1050	1086	1122	1158	1193
					Power (W)	508	561	610	658	706	754	798	845	892	939
					CFM	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000

Airflow in CFM with wet coil and clean air filter

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
60	1950	1500	PSC	HI	CFM	2300	2279	2257	2209	2140	2088	1990	1901	1856	1752
				MED	CFM	2039	2016	1983	1949	1920	1874	1807	1750	1670	1582
				LO	CFM	1858	1858	1838	1806	1792	1749	1699	1636	1570	
			HI Stitic PSC	HI	CFM	2486	2455	2424	2377	2318	2247	2161	2078	1986	1855
				MED	CFM	2162	2162	2153	2117	2085	2024	1971	1891	1823	1691
				LO	CFM	2006	2006	2006	1977	1947	1892	1851	1782	1705	1600
			ECM CV	MIN	RPM	770	812	848	886	926	965	1006	1047		
					Power (W)	305	330	351	375	400	427	455	483		
					CFM	1500	1500	1500	1500	1500	1500	1500	1500		
				DEFAULT	RPM	937	972	581	1036	1068	1100	1130	1164	1196	1228
					Power (W)	570	600	628	659	690	720	750	783	819	857
					CFM	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
				MAX	RPM	1005	1036	1068	1096	1125					
					Power (W)	724	758	792	822	854					
					CFM	2150	2150	2150	2150	2150					

Airflow in CFM with wet coil and clean air filter

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
70	2100	1750	PSC	HI	CFM	2486	2455	2424	2377	2318	2247	2161	2078	1986	1855
				MED	CFM	2162	2162	2153	2117	2085	2024	1971	1891	1823	
				LO	CFM	2006	2006	2006	1977	1947	1892	1851			
	1950		ECM CV	MIN	RPM	846	892	934	974	1013	1049	1085	1120	1158	1196
					Power (W)	417	458	499	537	577	615	654	694	737	782
					CFM	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
				DEFAULT	RPM	959	997	1035	1070	1103	1137	1170	1189		
					Power (W)	620	664	710	754	796	842	886	888		
					CFM	2050	2050	2050	2050	2050	2050	2050	2050		
				MAX	RPM	1019	1055	1089	1118						
					Power (W)	759	805	851	885						
					CFM	2250	2250	2250	2250						

Airflow in CFM with wet coil and clean air filter

Blower Performance Data – Units with ClimaDry® II

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
18	600	450	PSC	HI	CFM	700	704	694							
				MED	CFM										
				LO	CFM										
			HI Stitic PSC	HI	CFM	874	844	808	766						
				MED	CFM	757	734	706							
				LO	CFM										
	750		ECM CV	MIN	RPM										
					Power (W)										
					CFM										
				DEFAULT	RPM										
					Power (W)										
					CFM	750	750	750	750	750	750	750	750	750	
				MAX	RPM										
					Power (W)										
					CFM	800	800	800	800	800	800	800	800	800	

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
24	950	600	PSC	HI	CFM	1106	1060	1003	935						
				MED	CFM	877	853								
				LO	CFM										
			HI Stitic PSC	HI	CFM	1343	1295	1237	1168	1090	1000				
				MED	CFM	1141	1128	1099	1055	994	918				
				LO	CFM	1007	993	962	914	849					
			ECM CV	MIN	RPM										
					Power (W)										
					CFM										
				DEFAULT	RPM										
					Power (W)										
					CFM	950	950	950	950	950	950	950	950	950	
				MAX	RPM										
					Power (W)										
					CFM	1050	1050	1050	1050	1050	1050	1050	1050	1050	

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
30	1000	750	PSC	HI	CFM			1218	1166	1096	1008				
				MED	CFM	1148	1126	1093	1049	993	926				
				LO	CFM	1015	990	955	909	854					
			HI Stitic PSC	HI	CFM		1246	1168	1087	1005	920				
				MED	CFM	1247	1183	1114	1042	965	885				
				LO	CFM	1169	1112	1050	985	915					
			ECM CV	MIN	RPM										
					Power (W)										
					CFM										
				DEFAULT	RPM										
					Power (W)										
					CFM	1000	1000	1000	1000	1000	1000	1000	1000	1000	
				MAX	RPM										
					Power (W)										
					CFM	1250	1250	1250	1250						

Blower Performance Data – Units with ClimaDry® II

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
36	1200	900	PSC	HI	CFM	1384	1378	1351	1308	1250	1181	1097			
				MED	CFM	1012	1011	1003	987						
				LO	CFM										
			HI Stitic PSC	HI	CFM	1726	1659	1582	1494	1397	1289	1172			
				MED	CFM	1521	1482	1426	1356	1270	1168				
				LO	CFM	1290	1264	1228	1182	1125	1059				
			ECM CV	MIN	RPM										
					Power (W)										
					CFM										
				DEFAULT	RPM										
					Power (W)										
					CFM	1200	1200	1200	1200	1200	1200	1200	1200	1200	
				MAX	RPM										
					Power (W)										
					CFM	1500	1500	1500	1500						

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
42	1400	1000	PSC	HI	CFM	1748	1728	1682	1611	1515	1393				
				MED	CFM	1512	1495	1460	1406	1333	1242				
				LO	CFM	1307	1283	1244	1190						
			HI Stitic PSC	HI	CFM	1767	1763	1737	1691	1624	1535	1426	1296		
				MED	CFM	1283	1305	1310	1298	1270	1225				
				LO	CFM										
			ECM CV	MIN	RPM										
					Power (W)										
					CFM										
				DEFAULT	RPM										
					Power (W)										
					CFM	1400	1400	1400	1400	1400	1400	1400	1400	1400	
				MAX	RPM										
					Power (W)										
					CFM	1750	1750	1750	1750	1750	1750	1750	1750		

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
48	1600	1100	PSC	HI	CFM	1767	1763	1737	1691	1624	1535	1426	1296		
				MED	CFM	1289	1303	1304	1292	1268	1231				
				LO	CFM										
			HI Stitic PSC	HI	CFM	1877	1870	1840	1786	1709	1608	1484	1336		
				MED	CFM	1669	1688	1682	1650	1592	1509	1400			
				LO	CFM	1499	1522	1520	1492	1438	1360				
			ECM CV	MIN	RPM										
					Power (W)										
					CFM										
				DEFAULT	RPM										
					Power (W)										
					CFM	1600	1600	1600	1600	1600	1600	1600	1600	1600	
				MAX	RPM										
					Power (W)										
					CFM	2000	2000	2000	2000	2000	2000	2000	2000	2000	

Blower Performance Data – Units with ClimaDry® II

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
60	1950	1500	PSC	HI	CFM	2310	2280	2242	2195	2140	2077	2006	1927	1839	
				MED	CFM	2032	2015	1990	1957	1915	1866	1808	1742	1668	
				LO	CFM	1857	1852	1839	1816	1785	1745	1695	1637		
			HI Stitic PSC	HI	CFM	2484	2459	2422	2375	2316	2246	2166	2075	1973	
				MED	CFM	2161	2160	2146	2120	2082	2031	1967	1891	1803	
				LO	CFM	2004	2007	1998	1978	1945	1901	1845	1777	1697	
			ECM CV	MIN	RPM										
					Power (W)										
					CFM	1500	1500	1500	1500	1500	1500	1500			
				DEFAULT	RPM										
					Power (W)										
					CFM	1950	1950	1950	1950	1950	1950	1950	1950	1950	
				MAX	RPM										
					Power (W)										
					CFM	2150	2150	2150	2150						

Size	Rated Airflow	Min CFM	Motor	Fan Speed	Value	Airflow (cfm) at External Static Pressure (in. wg)									
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
70	2100	1750	PSC	HI	CFM	2484	2459	2422	2375	2316	2246	2166	2075	1973	
				MED	CFM	2165	2160	2144	2117	2079	2029	1969	1897		
				LO	CFM	2005	2007	1998	1976	1944	1900				
	1950		ECM CV	MIN	RPM										
					Power (W)										
					CFM	1750	1750	1750	1750	1750	1750	1750	1750	1750	
				DEFAULT	RPM										
					Power (W)										
					CFM	2050	2050	2050	2050	2050	2050	2050			
				MAX	RPM										
					Power (W)										
					CFM	2250	2250	2250							

Electrical Data - PSC Blower

Standard Unit - PSC Blower

TS Commercial Electrical Table							STANDARD PSC				HI STATIC PSC			
MODEL	VOLTAGE CODE	RATED VOLTAGE	VOLTAGE MIN/MAX	COMPRESSOR			FAN MOTOR FLA	TOTAL UNIT FLA	MIN CIRCUIT AMP	MAX FUSE/ HACR	FAN MOTOR FLA	TOTAL UNIT FLA	MIN CIRCUIT AMP	MAX FUSE/ HACR
				QTY	RLA	LRA								
006	G	208-230 / 60 / 1	187.2 / 253	1	2.50	17.70	0.32	2.82	3.45	15.00				
	E	265 / 60 / 1	238.5 / 291.5	1	2.10	13.50	0.36	2.46	2.99	15.00				
009	G	208-230 / 60 / 1	187.2 / 253	1	3.70	22.00	0.52	4.22	5.15	15.00				
	E	265 / 60 / 1	238.5 / 291.5	1	3.50	22.00	0.40	3.90	4.78	15.00				
012	G	208-230 / 60 / 1	187.2 / 253	1	4.40	25.00	0.80	5.20	6.30	15.00				
	E	265 / 60 / 1	238.5 / 291.5	1	3.50	22.00	0.69	4.19	5.07	15.00				
018	G	208-230 / 60 / 1	187.2 / 253	1	9.00	48.02	0.91	9.91	12.16	20.00	1	10.00	12.25	20.00
	E	265 / 60 / 1	238.5 / 291.5	1	7.10	43.00	0.70	7.80	9.58	15.00	0.8	7.90	9.68	15.00
024	G	208-230 / 60 / 1	187.2 / 253	1	13.50	58.30	1.60	15.10	18.48	30.00	2.6	16.10	19.48	30.00
	E	265 / 60 / 1	238.5 / 291.5	1	9.00	54.00	1.50	10.50	12.75	20.00	2.0	11.00	13.25	20.00
	H	208-230 / 60 / 3	187.2 / 253	1	7.10	55.40	1.60	8.70	10.48	15.00	2.6	9.70	11.48	15.00
	F	460 / 60 / 3	414 / 506	1	3.50	28.00	0.85	4.35	5.23	15.00	1.2	4.70	5.58	15.00
030	G	208-230 / 60 / 1	187.2 / 253	1	12.80	64.00	2.60	15.40	18.60	30.00	2.2	15.00	18.20	30.00
	E	265 / 60 / 1	238.5 / 291.5	1	10.90	60.00	2.00	12.90	15.63	25.00	1.66	12.56	15.29	25.00
	H	208-230 / 60 / 3	187.2 / 253	1	8.30	58.00	2.60	10.90	12.98	20.00	2.2	10.50	12.58	20.00
	F	460 / 60 / 3	414 / 506	1	5.10	28.00	1.20	6.30	7.58	15.00	1.0	6.10	7.38	15.00
036	G	208-230 / 60 / 1	187.2 / 253	1	16.00	77.00	2.60	18.60	22.60	35.00	2.2	18.20	22.20	35.00
	E	265 / 60 / 1	238.5 / 291.5	1	12.20	72.00	2.00	14.20	17.25	25.00	1.66	13.86	16.91	25.00
	H	208-230 / 60 / 3	187.2 / 253	1	10.00	71.00	2.60	12.60	15.10	25.00	2.2	12.20	14.70	20.00
	F	460 / 60 / 3	414 / 506	1	4.70	38.00	1.20	5.90	7.08	15.00	1.0	5.70	6.88	15.00
042	G	208-230 / 60 / 1	187.2 / 253	1	16.70	79.00	2.20	18.90	23.08	35.00	2.7	19.40	23.58	40.00
	E	265 / 60 / 1	238.5 / 291.5	1	13.50	72.00	1.66	15.16	18.54	30.00	2.9	16.40	19.78	30.00
	H	208-230 / 60 / 3	414 / 506	1	10.40	73.00	2.20	12.60	15.20	25.00	2.7	13.10	15.70	25.00
	F	460 / 60 / 3	238.5 / 291.5	1	5.80	38.00	1.00	6.80	8.25	15.00	1.7	7.50	8.95	15.00
	N	575 / 60 / 3	187.2 / 253	1	3.80	36.50	0.82	4.62	5.57	15.00	1.4	5.20	6.15	15.00
048	G	208-230 / 60 / 1	187.2 / 253	1	21.80	117.00	2.70	24.50	29.95	50.00	3.4	25.20	30.65	50.00
	E	265 / 60 / 1	238.5 / 291.5	1	16.30	98.00	2.90	19.20	23.28	35.00	NA			
	H	208-230 / 60 / 3	414 / 506	1	13.70	83.10	2.70	16.40	19.83	30.00	3.4	17.10	20.53	30.00
	F	460 / 60 / 3	238.5 / 291.5	1	6.20	41.00	1.70	7.90	9.45	15.00	1.8	8.00	9.55	15.00
	N	575 / 60 / 3	187.2 / 253	1	4.80	33.00	1.40	6.20	7.40	15.00	1.4	6.20	7.40	15.00
060	G	208-230 / 60 / 1	187.2 / 253	1	26.40	134.00	4.90	31.30	37.90	60.00	5.8	32.20	38.80	60.00
	E	265 / 60 / 1	238.5 / 291.5	1	19.90	130.00	NA							
	H	208-230 / 60 / 3	414 / 506	1	16.00	110.00	4.90	20.90	24.90	40.00	5.8	21.80	25.80	40.00
	F	460 / 60 / 3	238.5 / 291.5	1	7.80	52.00	2.50	10.30	12.25	20.00	2.6	10.40	12.35	20.00
	N	575 / 60 / 3	187.2 / 253	1	5.70	38.90	1.80	7.50	8.93	15.00	2	7.70	9.13	15.00
070	G	208-230 / 60 / 1	187.2 / 253	1	30.80	178.00	5.80	36.60	44.30	70.00				
	H	208-230 / 60 / 3	414 / 506	1	19.60	136.00	5.80	25.40	30.30	45.00				
	F	460 / 60 / 3	238.5 / 291.5	1	8.20	66.10	2.60	10.80	12.85	20.00				
	N	575 / 60 / 3	187.2 / 253	1	6.60	55.30	2.00	8.60	10.25	15.00				

Electrical Data - ECM Blower

Standard Unit - ECM Blower

TS Commercial Electrical Table							ECM-CV			
MODEL	VOLTAGE CODE	RATED VOLTAGE	VOLTAGE MIN/MAX	COMPRESSOR			FAN MOTOR FLA	TOTAL UNIT FLA	MIN CIRCUIT AMP	MAX FUSE/ HACR
				QTY	RLA	LRA				
018	G	208-230 / 60 / 1	187.2 / 253	1	9.00	48.02	4.20	13.20	15.45	20.00
	E	265 / 60 / 1	238.5 / 291.5	1	7.10	43.00	3.40	10.50	12.28	15.00
024	G	208-230 / 60 / 1	187.2 / 253	1	13.50	58.30	4.20	17.70	21.08	30.00
	E	265 / 60 / 1	238.5 / 291.5	1	9.00	54.00	3.40	12.40	14.65	20.00
	H	208-230 / 60 / 3	187.2 / 253	1	7.10	55.40	4.20	11.30	13.08	20.00
	F*	460 / 60 / 3	414 / 506	1	3.50	28.00	3.40	6.90	7.78	15.00
030	G	208-230 / 60 / 1	187.2 / 253	1	12.80	64.00	5.90	18.70	21.90	30.00
	E	265 / 60 / 1	238.5 / 291.5	1	10.90	60.00	4.80	15.70	18.43	25.00
	H	208-230 / 60 / 3	187.2 / 253	1	8.30	58.00	5.90	14.20	16.28	20.00
	F*	460 / 60 / 3	414 / 506	1	5.10	28.00	4.80	9.90	11.18	15.00
036	G	208-230 / 60 / 1	187.2 / 253	1	16.00	77.00	4.20	20.20	24.20	40.00
	E	265 / 60 / 1	238.5 / 291.5	1	12.20	72.00	3.40	15.60	18.65	30.00
	H	208-230 / 60 / 3	187.2 / 253	1	10.00	71.00	4.20	14.20	16.70	25.00
	F*	460 / 60 / 3	414 / 506	1	4.70	38.00	3.40	8.10	9.28	15.00
042	G	208-230 / 60 / 1	187.2 / 253	1	16.70	79.00	5.90	22.60	26.78	40.00
	E	265 / 60 / 1	238.5 / 291.5	1	13.50	72.00	4.80	18.30	21.68	35.00
	H	208-230 / 60 / 3	414 / 506	1	10.40	73.00	5.90	16.30	18.90	25.00
	F*	460 / 60 / 3	238.5 / 291.5	1	5.80	38.00	4.80	10.60	12.05	15.00
048	G	208-230 / 60 / 1	187.2 / 253	1	21.80	117.00	7.50	29.30	34.75	50.00
	E	265 / 60 / 1	238.5 / 291.5	1	16.30	98.00	6.20	22.50	26.58	40.00
	H	208-230 / 60 / 3	414 / 506	1	13.70	83.10	7.50	21.20	24.63	35.00
	F*	460 / 60 / 3	238.5 / 291.5	1	6.20	41.00	6.20	12.40	13.95	20.00
060	G	208-230 / 60 / 1	187.2 / 253	1	26.40	134.00	7.50	33.90	40.50	60.00
	E	265 / 60 / 1	238.5 / 291.5	1	19.90	130.00	6.20	26.10	31.08	50.00
	H	208-230 / 60 / 3	414 / 506	1	16.00	110.00	7.50	23.50	27.50	40.00
	F*	460 / 60 / 3	238.5 / 291.5	1	7.80	52.00	6.20	14.00	15.95	20.00
070	G	208-230 / 60 / 1	187.2 / 253	1	30.80	178.00	7.50	38.30	46.00	70.00
	H	208-230 / 60 / 3	414 / 506	1	19.60	136.00	7.50	27.10	32.00	50.00
	F*	460 / 60 / 3	238.5 / 291.5	1	8.20	66.10	6.20	14.40	16.45	20.00

*460 volt units with ECM-CV Require a Neutral

Electrical Data - PSC Blower with Internal Secondary Pump

Standard Unit with Internal Secondary Pump - PSC Blower

TS Commercial Electrical Table ISP								STANDARD PSC				HI STATIC PSC			
MODEL	VOLTAGE CODE	RATED VOLTAGE	VOLTAGE MIN/MAX	COMPRESSOR			PUMP FLA	FAN MOTOR FLA	TOTAL UNIT FLA	MIN CIRCUIT AMP	MAX FUSE/ HACR	FAN MOTOR FLA	TOTAL UNIT FLA	MIN CIRCUIT AMP	MAX FUSE/ HACR
				QTY	RLA	LRA									
006	G	208-230 / 60 / 1	187.2 / 253	1	2.50	17.70	0.43	0.32	3.25	3.88	15.00	NA			
	E	265 / 60 / 1	238.5 / 291.5	1	2.10	13.50	0.7	0.36	3.16	3.69	15.00				
009	G	208-230 / 60 / 1	187.2 / 253	1	3.70	22.00	0.43	0.52	4.65	5.58	15.00				
	E	265 / 60 / 1	238.5 / 291.5	1	3.50	22.00	0.7	0.40	4.60	5.48	15.00				
012	G	208-230 / 60 / 1	187.2 / 253	1	4.40	25.00	0.43	0.80	5.63	6.73	15.00				
	E	265 / 60 / 1	238.5 / 291.5	1	3.50	22.00	0.7	0.69	4.89	5.77	15.00				
018	G	208-230 / 60 / 1	187.2 / 253	1	9.00	48.02	0.43	0.91	10.34	12.59	20.00	1	10.43	12.68	20.00
	E	265 / 60 / 1	238.5 / 291.5	1	7.10	43.00	0.7	0.70	8.50	10.28	15.00	0.8	8.60	10.38	15.00
024	G	208-230 / 60 / 1	187.2 / 253	1	13.50	58.30	0.8	1.60	15.90	19.28	30.00	2.6	16.90	20.28	30.00
	E	265 / 60 / 1	238.5 / 291.5	1	9.00	54.00	0.7	1.50	11.20	13.45	20.00	2.0	11.70	13.95	20.00
	H	208-230 / 60 / 3	187.2 / 253	1	7.10	55.40	0.8	1.60	9.50	11.28	15.00	2.6	10.50	12.28	15.00
	F*	460 / 60 / 3	414 / 506	1	3.50	28.00	0.7	0.85	5.05	5.93	15.00	1.2	5.40	6.28	15.00
030	G	208-230 / 60 / 1	187.2 / 253	1	12.80	64.00	0.8	2.60	16.20	19.40	30.00	2.2	15.80	19.00	30.00
	E	265 / 60 / 1	238.5 / 291.5	1	10.90	60.00	0.7	2.00	13.60	16.33	25.00	1.66	13.26	15.99	25.00
	H	208-230 / 60 / 3	187.2 / 253	1	8.30	58.00	0.8	2.60	11.70	13.78	20.00	2.2	11.30	13.38	20.00
	F*	460 / 60 / 3	414 / 506	1	5.10	28.00	0.7	1.20	7.00	8.28	15.00	1.0	6.80	8.08	15.00
036	G	208-230 / 60 / 1	187.2 / 253	1	16.00	77.00	0.8	2.60	19.40	23.40	35.00	2.2	19.00	23.00	35.00
	E	265 / 60 / 1	238.5 / 291.5	1	12.20	72.00	0.7	2.00	14.90	17.95	30.00	1.66	14.56	17.61	25.00
	H	208-230 / 60 / 3	187.2 / 253	1	10.00	71.00	0.8	2.60	13.40	15.90	25.00	2.2	13.00	15.50	25.00
	F*	460 / 60 / 3	414 / 506	1	4.70	38.00	0.7	1.20	6.60	7.78	15.00	1.0	6.40	7.58	15.00
042	G	208-230 / 60 / 1	187.2 / 253	1	16.70	79.00	0.8	2.20	19.70	23.88	40.00	2.7	20.20	24.38	40.00
	E	265 / 60 / 1	238.5 / 291.5	1	13.50	72.00	0.7	1.66	15.86	19.24	30.00	2.9	17.10	20.48	30.00
	H	208-230 / 60 / 3	414 / 506	1	10.40	73.00	0.8	2.20	13.40	16.00	25.00	2.7	13.90	16.50	25.00
	F*	460 / 60 / 3	238.5 / 291.5	1	5.80	38.00	0.7	1.00	7.50	8.95	15.00	1.7	8.20	9.65	15.00
048	G	208-230 / 60 / 1	187.2 / 253	1	21.80	117.00	0.8	2.70	25.30	30.75	50.00	3.4	26.00	31.45	50.00
	E	265 / 60 / 1	238.5 / 291.5	1	16.30	98.00	0.7	2.90	19.90	23.98	40.00	NA			
	H	208-230 / 60 / 3	414 / 506	1	13.70	83.10	0.8	2.70	17.20	20.63	30.00	3.4	17.90	21.33	35.00
	F*	460 / 60 / 3	238.5 / 291.5	1	6.20	41.00	0.7	1.70	8.60	10.15	15.00	1.8	8.70	10.25	15.00
060	G	208-230 / 60 / 1	187.2 / 253	1	26.40	134.00	1.1	4.90	32.37	38.97	60.00	5.8	33.27	39.87	60.00
	E	265 / 60 / 1	238.5 / 291.5	1	19.90	130.00	1.3	NA							
	H	208-230 / 60 / 3	414 / 506	1	16.00	110.00	1.1	4.90	21.97	25.97	40.00	5.8	22.87	26.87	40.00
	F*	460 / 60 / 3	238.5 / 291.5	1	7.80	52.00	1.3	2.50	11.60	13.55	20.00	2.6	11.70	13.65	20.00
070	G	208-230 / 60 / 1	187.2 / 253	1	30.80	178.00	1.1	5.80	37.67	45.37	70.00	NA			
	H	208-230 / 60 / 3	414 / 506	1	19.60	136.00	1.1	5.80	26.47	31.37	50.00				
	F*	460 / 60 / 3	238.5 / 291.5	1	8.20	66.10	1.3	2.60	12.10	14.15	20.00				

*460 volt units with Internal Source Pump Require a Neutral

Electrical Data - ECM Blower with Internal Secondary Pump

Standard Unit with Internal Secondary Pump - ECM Blower

TS Commercial Electrical Table ISP								ECM-CV			
MODEL	VOLTAGE CODE	RATED VOLTAGE	VOLTAGE MIN/MAX	COMPRESSOR			PUMP FLA	FAN MOTOR FLA	TOTAL UNIT FLA	MIN CIRCUIT AMP	MAX FUSE/ HACR
				QTY	RLA	LRA					
018	G	208-230 / 60 / 1	187.2 / 253	1	9.00	48.02	0.43	4.20	13.63	15.88	20.00
	E	265 / 60 / 1	238.5 / 291.5	1	7.10	43.00	0.7	3.40	11.20	12.98	20.00
024	G	208-230 / 60 / 1	187.2 / 253	1	13.50	58.30	0.8	4.20	18.50	21.88	35.00
	E	265 / 60 / 1	238.5 / 291.5	1	9.00	54.00	0.7	3.40	13.10	15.35	20.00
	H	208-230 / 60 / 3	187.2 / 253	1	7.10	55.40	0.8	4.20	12.10	13.88	20.00
	F*	460 / 60 / 3	414 / 506	1	3.50	28.00	0.7	3.40	7.60	8.48	15.00
030	G	208-230 / 60 / 1	187.2 / 253	1	12.80	64.00	0.8	5.90	19.50	22.70	35.00
	E	265 / 60 / 1	238.5 / 291.5	1	10.90	60.00	0.7	4.80	16.40	19.13	30.00
	H	208-230 / 60 / 3	187.2 / 253	1	8.30	58.00	0.8	5.90	15.00	17.08	25.00
	F*	460 / 60 / 3	414 / 506	1	5.10	28.00	0.7	4.80	10.60	11.88	15.00
036	G	208-230 / 60 / 1	187.2 / 253	1	16.00	77.00	0.8	4.20	21.00	25.00	40.00
	E	265 / 60 / 1	238.5 / 291.5	1	12.20	72.00	0.7	3.40	16.30	19.35	30.00
	H	208-230 / 60 / 3	187.2 / 253	1	10.00	71.00	0.8	4.20	15.00	17.50	25.00
	F*	460 / 60 / 3	414 / 506	1	4.70	38.00	0.7	3.40	8.80	9.98	15.00
042	G	208-230 / 60 / 1	187.2 / 253	1	16.70	79.00	0.8	5.90	23.40	27.58	40.00
	E	265 / 60 / 1	238.5 / 291.5	1	13.50	72.00	0.7	4.80	19.00	22.38	35.00
	H	208-230 / 60 / 3	414 / 506	1	10.40	73.00	0.8	5.90	17.10	19.70	30.00
	F*	460 / 60 / 3	238.5 / 291.5	1	5.80	38.00	0.7	4.80	11.30	12.75	15.00
048	G	208-230 / 60 / 1	187.2 / 253	1	21.80	117.00	0.8	7.50	30.10	35.55	50.00
	E	265 / 60 / 1	238.5 / 291.5	1	16.30	98.00	0.7	6.20	23.20	27.28	40.00
	H	208-230 / 60 / 3	414 / 506	1	13.70	83.10	0.8	7.50	22.00	25.43	35.00
	F*	460 / 60 / 3	238.5 / 291.5	1	6.20	41.00	0.7	6.20	13.10	14.65	20.00
060	G	208-230 / 60 / 1	187.2 / 253	1	26.40	134.00	1.1	7.50	34.97	41.57	60.00
	E	265 / 60 / 1	238.5 / 291.5	1	19.90	130.00	1.3	6.20	27.40	32.38	50.00
	H	208-230 / 60 / 3	414 / 506	1	16.00	110.00	1.1	7.50	24.57	28.57	40.00
	F*	460 / 60 / 3	238.5 / 291.5	1	7.80	52.00	1.3	6.20	15.30	17.25	25.00
070	G	208-230 / 60 / 1	187.2 / 253	1	30.80	178.00	1.1	7.50	39.37	47.07	70.00
	H	208-230 / 60 / 3	414 / 506	1	19.60	136.00	1.1	7.50	28.17	33.07	50.00
	F*	460 / 60 / 3	238.5 / 291.5	1	8.20	66.10	1.3	6.20	15.70	17.75	25.00

*460 volt units with Internal Source Pump and/or ECM-CV Require a Neutral

Electrical Data - PSC Blower with Reheat

Standard Unit with ClimaDry - PSC Blower

TS Commercial Electrical Table Reheat								STANDARD PSC				HI STATIC PSC			
MODEL	VOLTAGE CODE	RATED VOLTAGE	VOLTAGE MIN/MAX	COMPRESSOR			PUMP FLA	FAN MOTOR FLA	TOTAL UNIT FLA	MIN CIRCUIT AMP	MAX FUSE/ HACR	FAN MOTOR FLA	TOTAL UNIT FLA	MIN CIRCUIT AMP	MAX FUSE/ HACR
				QTY	RLA	LRA									
018	G	208-230 / 60 / 1	187.2 / 253	1	9.00	48.02	0.43	0.91	10.34	12.59	20.00	1	10.43	12.68	20.00
	E	265 / 60 / 1	238.5 / 291.5	1	7.10	43.00	0.7	0.70	8.50	10.28	15.00	0.8	8.60	10.38	15.00
024	G	208-230 / 60 / 1	187.2 / 253	1	13.50	58.30	0.8	1.60	15.90	19.28	30.00	2.6	16.90	20.28	30.00
	E	265 / 60 / 1	238.5 / 291.5	1	9.00	54.00	0.7	1.50	11.20	13.45	20.00	2.0	11.70	13.95	20.00
	H	208-230 / 60 / 3	187.2 / 253	1	7.10	55.40	0.8	1.60	9.50	11.28	15.00	2.6	10.50	12.28	15.00
	F*	460 / 60 / 3	414 / 506	1	3.50	28.00	0.7	0.85	5.05	5.93	15.00	1.2	5.40	6.28	15.00
030	G	208-230 / 60 / 1	187.2 / 253	1	12.80	64.00	0.8	2.60	16.20	19.40	30.00	2.2	15.80	19.00	30.00
	E	265 / 60 / 1	238.5 / 291.5	1	10.90	60.00	0.7	2.00	13.60	16.33	25.00	1.66	13.26	15.99	25.00
	H	208-230 / 60 / 3	187.2 / 253	1	8.30	58.00	0.8	2.60	11.70	13.78	20.00	2.2	11.30	13.38	20.00
	F*	460 / 60 / 3	414 / 506	1	5.10	28.00	0.7	1.20	7.00	8.28	15.00	1.0	6.80	8.08	15.00
036	G	208-230 / 60 / 1	187.2 / 253	1	16.00	77.00	0.8	2.60	19.40	23.40	35.00	2.2	19.00	23.00	35.00
	E	265 / 60 / 1	238.5 / 291.5	1	12.20	72.00	0.7	2.00	14.90	17.95	30.00	1.66	14.56	17.61	25.00
	H	208-230 / 60 / 3	187.2 / 253	1	10.00	71.00	0.8	2.60	13.40	15.90	25.00	2.2	13.00	15.50	25.00
	F*	460 / 60 / 3	414 / 506	1	4.70	38.00	0.7	1.20	6.60	7.78	15.00	1.0	6.40	7.58	15.00
042	G	208-230 / 60 / 1	187.2 / 253	1	16.70	79.00	0.8	2.20	19.70	23.88	40.00	2.7	20.20	24.38	40.00
	E	265 / 60 / 1	238.5 / 291.5	1	13.50	72.00	0.7	1.66	15.86	19.24	30.00	2.9	17.10	20.48	30.00
	H	208-230 / 60 / 3	414 / 506	1	10.40	73.00	0.8	2.20	13.40	16.00	25.00	2.7	13.90	16.50	25.00
	F*	460 / 60 / 3	238.5 / 291.5	1	5.80	38.00	0.7	1.00	7.50	8.95	15.00	1.7	8.20	9.65	15.00
048	G	208-230 / 60 / 1	187.2 / 253	1	21.80	117.00	1.1	2.70	25.57	31.02	50.00	3.4	26.27	31.72	50.00
	E	265 / 60 / 1	238.5 / 291.5	1	16.30	98.00	1.3	2.90	20.50	24.58	40.00	NA			
	H	208-230 / 60 / 3	414 / 506	1	13.70	83.10	1.1	2.70	17.47	20.90	30.00	3.4	18.17	21.60	35.00
	F*	460 / 60 / 3	238.5 / 291.5	1	6.20	41.00	1.3	1.70	9.20	10.75	15.00	1.8	9.30	10.85	15.00
060	G	208-230 / 60 / 1	187.2 / 253	1	26.40	134.00	1.1	4.90	32.37	38.97	60.00	5.8	33.27	39.87	60.00
	E	265 / 60 / 1	238.5 / 291.5	1	19.90	130.00	1.3	NA							
	H	208-230 / 60 / 3	414 / 506	1	16.00	110.00	1.1	4.90	21.97	25.97	40.00	5.8	22.87	26.87	40.00
	F*	460 / 60 / 3	238.5 / 291.5	1	7.80	52.00	1.3	2.50	11.60	13.55	20.00	2.6	11.70	13.65	21.00
070	G	208-230 / 60 / 1	187.2 / 253	1	30.80	178.00	1.1	5.80	37.67	45.37	70.00	NA			
	H	208-230 / 60 / 3	414 / 506	1	19.60	136.00	1.1	5.80	26.47	31.37	50.00				
	F*	460 / 60 / 3	238.5 / 291.5	1	8.20	66.10	1.3	2.60	12.10	14.15	20.00				

*460 volt units with Internal Source Pump Require a Neutral

Electrical Data - ECM Blower with Reheat

Standard Unit with ClimaDry - ECM Blower

TS Commercial Electrical Table Reheat								ECM-CV**			
MODEL	VOLTAGE CODE	RATED VOLTAGE	VOLTAGE MIN/MAX	COMPRESSOR			PUMP FLA	FAN MOTOR FLA	TOTAL UNIT FLA	MIN CIRCUIT AMP	MAX FUSE/ HACR
				QTY	RLA	LRA					
018	G	208-230 / 60 / 1	187.2 / 253	1	9.00	48.02	0.43	4.20	13.63	15.88	20.00
	E	265 / 60 / 1	238.5 / 291.5	1	7.10	43.00	0.7	3.40	11.20	12.98	20.00
024	G	208-230 / 60 / 1	187.2 / 253	1	13.50	58.30	0.8	4.20	18.50	21.88	35.00
	E	265 / 60 / 1	238.5 / 291.5	1	9.00	54.00	0.7	3.40	13.10	15.35	20.00
	H	208-230 / 60 / 3	187.2 / 253	1	7.10	55.40	0.8	4.20	12.10	13.88	20.00
	F*	460 / 60 / 3	414 / 506	1	3.50	28.00	0.7	3.40	7.60	8.48	15.00
030	G	208-230 / 60 / 1	187.2 / 253	1	12.80	64.00	0.8	5.90	19.50	22.70	35.00
	E	265 / 60 / 1	238.5 / 291.5	1	10.90	60.00	0.7	4.80	16.40	19.13	30.00
	H	208-230 / 60 / 3	187.2 / 253	1	8.30	58.00	0.8	5.90	15.00	17.08	25.00
	F*	460 / 60 / 3	414 / 506	1	5.10	28.00	0.7	4.80	10.60	11.88	15.00
036	G	208-230 / 60 / 1	187.2 / 253	1	16.00	77.00	0.8	4.20	21.00	25.00	40.00
	E	265 / 60 / 1	238.5 / 291.5	1	12.20	72.00	0.7	3.40	16.30	19.35	30.00
	H	208-230 / 60 / 3	187.2 / 253	1	10.00	71.00	0.8	4.20	15.00	17.50	25.00
	F*	460 / 60 / 3	414 / 506	1	4.70	38.00	0.7	3.40	8.80	9.98	15.00
042	G	208-230 / 60 / 1	187.2 / 253	1	16.70	79.00	0.8	5.90	23.40	27.58	40.00
	E	265 / 60 / 1	238.5 / 291.5	1	13.50	72.00	0.7	4.80	19.00	22.38	35.00
	H	208-230 / 60 / 3	414 / 506	1	10.40	73.00	0.8	5.90	17.10	19.70	30.00
	F*	460 / 60 / 3	238.5 / 291.5	1	5.80	38.00	0.7	4.80	11.30	12.75	15.00
048	G	208-230 / 60 / 1	187.2 / 253	1	21.80	117.00	1.1	7.50	30.37	35.82	50.00
	E	265 / 60 / 1	238.5 / 291.5	1	16.30	98.00	1.3	6.20	23.80	27.88	40.00
	H	208-230 / 60 / 3	414 / 506	1	13.70	83.10	1.1	7.50	22.27	25.70	35.00
	F*	460 / 60 / 3	238.5 / 291.5	1	6.20	41.00	1.3	6.20	13.70	15.25	20.00
060	G	208-230 / 60 / 1	187.2 / 253	1	26.40	134.00	1.1	7.50	34.97	41.57	60.00
	E	265 / 60 / 1	238.5 / 291.5	1	19.90	130.00	1.3	6.20	27.40	32.38	50.00
	H	208-230 / 60 / 3	414 / 506	1	16.00	110.00	1.1	7.50	24.57	28.57	40.00
	F*	460 / 60 / 3	238.5 / 291.5	1	7.80	52.00	1.3	6.20	15.30	17.25	25.00
070	G	208-230 / 60 / 1	187.2 / 253	1	30.80	178.00	1.1	7.50	39.37	47.07	70.00
	H	208-230 / 60 / 3	414 / 506	1	19.60	136.00	1.1	7.50	28.17	33.07	50.00
	F*	460 / 60 / 3	238.5 / 291.5	1	8.20	66.10	1.3	6.20	15.70	17.75	25.00

*460 volt units with Internal Source Pump Require a Neutral

Tranquility® 20 (TS) Series with ClimaDry® II Reheat Option (ECM Motor)

All Tranquility® 20 (TS) units with optional ECM fan motor automatically adjusts for the reheat coil. The small additional pressure drop of the reheat coil causes the ECM motor to slightly increase RPM to overcome the added pressure drop, and maintain selected CFM up to the maximum ESP.

ClimaDry® II Modulating Reheat Option

ClimateMaster's patented ClimaDry® II Dehumidification option is an innovative means of providing modulating reheat without the complication of refrigeration controls. ClimaDry II is hot gas generated reheat, which utilizes one of the biggest advantages of a Water-Source Heat Pump (WSHP), the transfer of energy through the water piping system. ClimaDry II simply diverts condenser water through a water-to-air coil that is placed after the evaporator coil. If condenser water is not warm enough, the internal "run-around" loop increases the water temperature with each pass through the condenser coil (see Figure 1, below).

ClimaDry® II Benefits

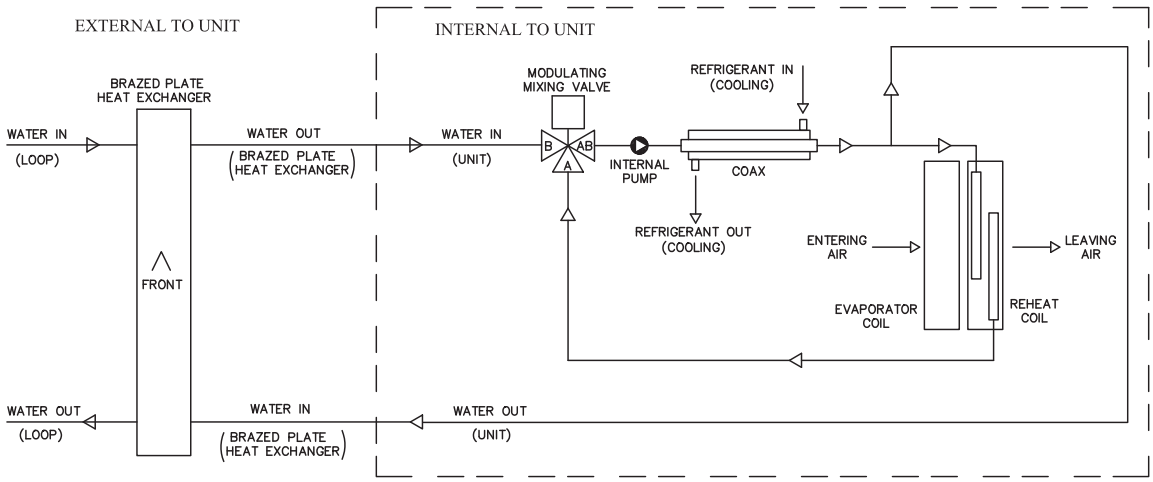
ClimaDry II is like no other reheat option on the market. Proportional reheat is controlled to the desired leaving air temperature set point (factory set point of 69°F, 20.5°C), no matter what the water loop temperature is. Since dehumidification operation will occur under less than full load cooling conditions a good percentage of the time, it is important to have a reheat function that provides 100% reheat in the spring and fall when the water loop is cool. Supply air temperature is field adjustable to +/- 3°F [+/- 1.7°C] for even greater flexibility with the optional potentiometer. It is recommended that the ClimaDry II supply air temperature be set to match the space cooling setpoint so that ClimaDry II does not impact room temperature. Competitors without ClimaDry II typically use an on/off (non-modulating) refrigeration based reheat circuit, typically referred to as "Hot gas reheat" (HGR). HGR needs higher condensing temperatures to work well, typically 85°F [29°C] entering water temperature (EWT). With HGR, cooler water temperatures produce cooler supply air temperatures, which could over cool the space, requiring additional space heating from another source or a special auto-change-over relay to allow the unit to switch back and forth between reheat and heating. Rarely does HGR provide 100% reheat, like ClimaDry II. ClimaDry II has a simple and easy to troubleshoot refrigerant circuit. No switching valves or hard to diagnose leaky check valves are utilized. No unusual refrigerant pressures occur during the reheat mode. The ClimaDry II refrigerant circuit is like every other ClimateMaster unit (without reheat), so everything the technician already knows applies to troubleshooting the ClimaDry II refrigeration circuit. Plus, the water loop portion of the ClimaDry II option is easy to understand and diagnose.

ClimaDry® II Applications

ClimaDry II can be applied to a number of common applications, such as:

- Classrooms
- Condominiums
- Apartments
- Computer rooms

Figure 1: ClimaDry® II Schematic



NOTE:
Brazed plate heat exchanger is used when connecting to a loop with no antifreeze.

- Spaces with high latent loads like auditoriums, theaters, convention centers, etc.
- Most applications where humidity is a problem

(Note: ClimaDry II is not for use in high fraction outdoor air applications or in applications with corrosive atmospheres, such as pool rooms.)

With the ClimaDry II option, return air from the space is cooled by the air-to-refrigerant (evaporator) coil, and then reheated by the water-to-air (reheat) coil to dehumidify the air, but maintain the constant space temperature (thus operating as a dehumidifier).

The moisture removal capability of the heat pump is determined by the unit's latent capacity rating. Latent capacity equals Total capacity minus Sensible capacity. Using unit performance data from submittals (http://www.climatemaster.com) select the correct model, use your maximum entering water temperature (EWT) and flow rate to select TC and SC. For example, at 80°F [26.7°C] EWT and 6.8 GPM, the moisture removal capability (latent capacity) of a ClimateMaster TS036 is 10.1 Mbtuh [3.0kW] as shown below.

Dividing the latent capacity by 1,069 BTU/LB of water vapor at 80°F DB and 67°F WB [26.7°C DB and 19.4°C WB] moist air enthalpy, converts the amount of moisture removal to pounds per hour (multiply pounds per hour by 0.4536 to obtain kg/hr). Calculations are shown in Figure 2.

Most ClimateMaster heat pumps have a sensible-to-total heat ratio (SHR) of 0.72 to 0.82. Therefore, approximately, 25% of the cooling capacity is dedicated to latent cooling capacity (moisture removal). When selecting a unit with ClimaDry II, the space sensible and latent loads should be calculated. If the unit will be used for space cooling, a unit with at least enough capacity to satisfy the building sensible load should be selected. If the latent cooling load is not satisfied by the selection, a larger unit with enough latent capacity will be required. If the unit will be used for dehumidification purposes only, the latent capacity is the only consideration necessary. In this case, sensible load is immaterial.

Figure 2: Example TS036 ECM Performance

LC = TC - SC = 35.3 - 25.2 = 10.1 Mbtuh
10,100 Btuh ÷ 1069 = 9.4 lbs/hr

	WPD			Cooling - EAT 80/67°F					Heating - EAT 70°F				
EWT °F	FLOW GPM	PSI	FT	TC	SC	Power kW	HR	EER	HC	Power kW	HE	LAT	COP
70	4.50	1.2	2.8	36.0	25.5	2.52	44.6	14.3	44.0	3.08	33.5	101.0	4.2
	6.75	2.1	4.9	37.3	25.9	2.54	45.3	15.9	46.2	3.15	35.4	102.0	4.3
	9.00	3.8	8.8	37.9	26.1	2.25	45.6	16.8	47.4	3.18	36.5	103.0	4.4
80	4.50	1.1	2.5	33.8	24.7	2.84	43.5	11.9	48.0	3.20	37.1	104.0	4.4
	6.75	2.0	4.6	35.3	25.2	2.63	44.3	13.4	50.2	3.26	39.1	105.0	4.5
	9.00	3.6	8.3	35.9	25.5	2.53	44.5	14.2	51.4	3.30	40.1	106.0	4.6
85	4.50	1.0	2.3	32.8	24.4	3.01	43.1	10.9	49.9	3.25	38.8	105.0	4.5
	6.75	1.9	4.4	34.1	24.8	2.80	43.7	12.2	52.0	3.31	40.7	107.0	4.6
	9.00	3.5	8.1	34.7	25.0	2.69	43.9	12.9	53.1	3.34	41.7	108.0	4.7
90	4.50	1.0	2.3	31.8	24.0	3.19	42.7	10.0	51.7	3.30	40.4	107.0	4.6
	6.75	1.9	4.4	33.0	24.4	2.96	43.1	11.1	53.8	3.36	42.3	108.0	4.7
	9.00	3.4	7.9	33.5	24.5	2.85	43.2	11.7	54.8	3.39	43.2	109.0	4.7

Dividing the latent capacity by 1,069 BTU/LB of water vapor at 80°F DB and 67°F WB [26.7°C DB and 19.4°C WB] moist air enthalpy, converts the amount of moisture removal to pounds per hour (multiply pounds per hour by 0.4536 to obtain kg/hr).

ClimaDry® II Sequence of Operation

A heat pump equipped with ClimaDry® II can operate in three modes; cooling, cooling with reheat (dehumidification), and heating. The cooling/heating modes are like any other ClimateMaster® WSHP. The reversing valve ("O" signal) is energized in cooling, along with the compressor contactor(s) and blower relay. In the heating mode the reversing valve is de-energized. Almost any thermostat will activate the heat pump in heating or cooling modes. The DXM2.5 microprocessor board, which is required with the ClimaDry II option, will accept either heat pump (Y,O) thermostats or non-heat pump (Y,W) thermostats.

The reheat mode requires either a separate humidistat/ dehumidistat or a thermostat that has an integrated dehumidification function for activation. The DXM2.5 board is configured to work with either a humidistat or dehumidistat input to terminal "H" (DIP switch settings for the DXM2.5 board are shown below in table 2). Upon receiving an "H" input, the DXM2.5 board will activate the cooling mode and engage reheat. Tables 1 and 2 show the relationship between thermostat input signals and unit operation.

There are four operational inputs for single stage units and six operational inputs for dual stage units:

- Fan Only
- 1st Stage Cooling
- 2nd Stage Cooling
- 1st Stage Heating
- 2nd Stage Heating
- Reheat Mode

Fan Only: A (G) call from the thermostat to the (G) terminal of the DXM2.5 control board will bring the unit on in fan only mode.

1st Stage Cooling: A simultaneous call from (G), (Y1), and (O) to the (G), (Y1), (O/W2) terminals of the DXM2.5 control board will bring the unit on in 1st Stage Cooling.

2nd Stage Cooling: A simultaneous call from (G), (Y1), (Y2), and (O) to the (G), (Y1), (Y2), and (O/W2) terminals of the DXM2.5 control board will bring the unit on in 2nd Stage Cooling. When the call is satisfied at the thermostat the unit will continue to run in 1st Stage Cooling until the 1st Stage Cooling call is removed or satisfied, shutting down the unit.

Table 1: Humidistat/Dehumidistat Logic and DXM2.5 (2.1, 2.2, 2.3) DIP settings

Sensor	2.1	2.2	2.3	Logic	Reheat (ON)–H	Reheat (OFF)–H
Humidistat	OFF	OFF	OFF	Reverse	0 VAC	24 VAC
Dehumidistat	OFF	ON	OFF	Standard	24 VAC	0 VAC

Table 2: ClimaDry® II Operating Modes

Mode	Input					Output				
	O	G	Y1	Y2[3]	H	RV	Fan	1st stg H/C	2nd stg H/C[3]	Reheat
No Demand	ON/OFF	OFF	OFF	OFF	OFF	ON/OFF	OFF	OFF	OFF	OFF
Fan Only	ON/OFF	ON	OFF	OFF	OFF	ON/OFF	ON	OFF	OFF	OFF
Cooling 1st Stage	ON	ON	ON	OFF	OFF	ON	ON	ON	OFF	OFF
Cooling 2nd Stage	ON	ON	ON	ON	OFF	ON	ON	ON	ON	OFF
Cooling & Dehumidistat[1]	ON	ON	ON	ON/OFF	ON	ON	ON	ON	ON/OFF	OFF
Dehumidistat Only	ON/OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
Heating 1st Stage	OFF	ON	ON	OFF	OFF	OFF	ON	ON	OFF	OFF
Heating 2nd Stage	OFF	ON	ON	ON	OFF	OFF	ON	ON	ON	OFF
Heating & Dehumidistat[2]	OFF	ON	ON	ON/OFF	ON	OFF	ON	ON	ON/OFF	OFF

[1]Cooling input takes priority over dehumidify input.
[2]DXM2.5 is programmed to ignore the H demand when the unit is in heating mode.
[3]N/A for single stage units; Full load operation for dual capacity units.
[4]ON/OFF = Either ON or OFF.

1st Stage Heating: A simultaneous call from (G) and (Y1) to the (G) and (Y1) terminals of the DXM2.5 control board will bring the unit on in 1st Stage Heating.

2nd Stage Heating: A simultaneous call from (G), (Y1), and (Y2) to the (G), (Y1), and (Y2) terminals of the DXM2.5 control board will bring the unit on in 2nd Stage Heating. When the call is satisfied at the thermostat the unit will continue to run in 1st Stage Heating until the call is removed or satisfied, shutting down the unit.

Reheat Mode: A call from the Humidistat/Dehumidistat to the (H) terminal of the DXM2.5 control board will bring the unit on in Reheat Mode if there is no call for cooling at the thermostat. When the Humidistat/Dehumidification call is removed or satisfied the unit will shut down. **NOTE: Cooling always overrides Reheat Mode.** In the Cooling mode, the unit cools and dehumidifies. If the cooling thermostat is satisfied but there is still a call for dehumidification, the unit will continue to operate in Reheat Mode.

NOTE: Care must be taken when using a humidistat to operate ClimaDry II. When the DIP switch on the DXM2.5 controller is set for 'humidistat' it reverses the control logic so that an "open" control circuit initiates a ClimaDry II run cycle. If a humidistat is not connected, or if a manual switch on the humidistat is set to "off", ClimaDry II will see the open circuit and call for dehumidification.

ClimaDry® II Component Functions

The ClimaDry II option consists of the following components:

- Intelligent DXM2.5 Controller
- Motorized Modulating Water Valve
- Supply Air Sensor
- Loop Pump
- Hydronic Coil
- Low Pressure Switch

The DXM2.5 Controller operates on 24 VAC power supply and automatically adjusts the water valve based upon the Supply Air Sensor. The Supply Air Sensor senses supply air temperature at the blower inlet providing the input signal necessary for the DXM2.5 control to drive the motorized modulating water valve during the reheat mode of operation.

The Motorized Modulating Water Valve is a proportional actuator/three-way valve combination used to divert the condenser water from the coax to the hydronic reheat coil during the reheat mode of operation. The proportional controller signals the valve based on the supply air temperature sensor.

The Loop Pump circulates condenser water through the hydronic reheat coil during the reheat mode of operation. In this application, the loop pump is only energized during the reheat mode of operation. The Hydronic Coil is utilized during the reheat mode of operation to reheat the air to the setpoint of the DXM2.5 controller. Condenser water is diverted by the motorized modulating water valve and pumped through the hydronic coil by the loop pump in proportion to the control setpoint. The amount of reheating is dependent on the setpoint and how far from setpoint the supply air temperature is. The factory setpoint is 69°F [20.5°C], generally considered "neutral" air.

ClimaDry® II Application Considerations

The reheat coil adds a small amount of resistance to the air stream. In some cases the high static option may be required for applications with higher static ductwork. Consult the submittal data or the Installation/Operation/Maintenance (IOM) manual for the specific heat pump to review blower tables.

Unlike most hot gas reheat options, the ClimaDry II option will operate over a wide range of EWTs. Special flow regulation (water regulating valve) is not required for low EWT conditions.

Units with the ClimaDry II option shall have an antifreeze solution to protect the coil in low ambient conditions. ASHRAE minimums for the region shall be considered during the calculation of the antifreeze solution.

In applications where antifreeze is not specified, a secondary heat exchanger can be used to isolate the unit from the water loop, thus requiring less antifreeze to be used with the a Secondary brazed plate heat exchanger. Figure 1 shows the heat exchanger connections.

Water-source heat pumps with ClimaDry II should not be used as make-up air units. These applications should use equipment specifically designed for make-up air.

Physical Data

Model	006	009	012	018	024	030	036	042	048	060	070
Compressor (1 Each)	Rotary			Scroll							
Factory Charge HFC-410A (oz) [kg]	24 [0.68]	32 [0.91]	34 [0.96]	50 [1.13]	41 [1.16]	41 [1.16]	48 [1.36]	68 [1.93]	68 [1.93]	136 [3.86]	141 [4.0]
Water Connection Size											
FPT (in)	1/2"	1/2"	1/2"	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1"
HWG Connection Size											
FPT (in)	N/A	N/A	N/A	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Coax Volume											
Volume (US Gallons) [liters]	0.17 [0.64]	0.29 [1.10]	0.45 [1.70]	0.56 [2.12]	0.76 [2.88]	0.76 [2.88]	0.92 [3.48]	1.24 [4.69]	1.24 [4.69]	1.56 [5.91]	1.56 [5.91]
Vertical Upflow/Downflow											
Standard Filter - 1" [25.4mm] Throwaway, qty (in) [mm]	16 x 20 [406 x 508]	16 x 20 [406 x 508]	16 x 20 [406 x 508]	24 x 24 [610 x 610]	28 x 24 [711 x 610]	28 x 24 [711 x 610]	28 x 30 [711 x 762]	2 - 16 x 30 [2 - 406 x 762]	2 - 16 x 30 [2 - 406 x 762]	1 - 16 x 30; 1 - 20 x 30 [1 - 406 x 762; 1 - 508 x 762]	1 - 16 x 30; 1 - 20 x 30 [1 - 406 x 762; 1 - 508 x 762]
Weight - Operating, (lbs) [kg]	136 [62]	156 [71]	160 [73]	257 [117]	266 [121]	268 [122]	327 [148]	414 [188]	416 [189]	441 [200]	443 [201]
Weight - Packaged, (lbs) [kg]	146 [66]	166 [75]	170 [77]	267 [121]	276 [125]	278 [126]	337 [153]	424 [192]	426 [193]	451 [205]	453 [205]
Horizontal											
Standard Filter - 1" [25.4mm] Throwaway, qty (in) [mm]	16 x 20 [406 x 508]	16 x 20 [406 x 508]	16 x 20 [406 x 508]	2 - 18 x 18 [2 - 457 x 457]	2 - 18 x 18 [2 - 457 x 457]	2 - 18 x 18 [2 - 457 x 457]	1 - 12 x 20; 1- 20 x 25 [1 - 305 x 508; 1 - 508 x 635]	1 - 18 x 20; 1 - 20 x 24 [1 - 457 x 508; 1 - 508 x 610]	1 - 18 x 20; 1 - 20 x 24 [1 - 457 x 508; 1 - 508 x 610]	2 - 20 x 24 [2 - 508 x 610]	2 - 20 x 24 [2 - 508 x 610]
Weight - Operating, (lbs) [kg]	136 [62]	156 [71]	160 [73]	257 [117]	266 [121]	268 [122]	327 [148]	414 [188]	416 [189]	441 [200]	443 [201]
Weight - Packaged, (lbs) [kg]	146 [66]	166 [75]	170 [77]	267 [121]	276 [125]	278 [126]	337 [153]	424 [192]	426 [193]	451 [205]	453 [205]

Notes:
All units have TXV expansion device and 1/2" & 3/4" electrical knockouts.
575 volt motors are two speed.
For units with ClimaDry® II option add 66lbs (30kg) to weights.

Unit Maximum Water Working Pressure	
Options	Max Pressure PSIG [kPa]
Base Unit	500 [3,447]
Internal Secondary Pump (ISP)	145 [999]
ClimaDry® II	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.

TS Horizontal – Dimensional Data

Horizontal Model		Overall Cabinet		
		*A Width	B Length	C Height
006 - 012	in	22.4	43.1	17.3
	cm	56.8	107.8	43.1
018	in	22.4	62.2	19.3
	cm	56.8	158.0	48.9
024 - 030	in	22.4	62.2	19.3
	cm	56.8	158.0	48.9
036	in	25.4	71.2	21.3
	cm	64.5	180.8	54.0
042 - 048	in	25.4	76.2	21.3
	cm	64.5	193.5	54.0
060 - 070	in	25.4	81.2	21.3
	cm	64.5	206.2	54.0

*Does not include air filter supports. Add 2 in. (5.1 cm) when a 1 in. (25.4 mm) filter is used, add 3 in. (7.6 cm) when a 2 in. (50.8 mm) filter is used.

Horizontal Model		Water Connections						
		1	2	3	4	5		
		Loop In D	Loop Out E	HWG In F	HWG Out G	H	Water Loop FPT	HWG FPT
006 - 012	in	3.7	9.7	N/A	N/A	0.8	1/2”	N/A
	cm	9.3	24.2			2.0		
018	in	2.1	10.0	13.9	16.9	0.6	3/4”	1/2”
	cm	5.2	25.4	35.2	42.9	1.5		
024 - 030	in	2.1	10.0	13.9	16.9	0.6	3/4”	1/2”
	cm	5.2	25.4	35.2	42.9	1.5		
036	in	3.4	10.8	15.6	18.9	0.6	3/4”	1/2”
	cm	8.6	27.5	39.7	47.9	1.5		
042 - 048	in	3.4	10.8	15.6	18.9	0.6	1”	1/2”
	cm	8.6	27.5	39.7	47.9	1.5		
060 - 070	in	3.4	10.8	15.6	18.9	0.6	1”	1/2”
	cm	8.6	27.5	39.7	47.9	1.5		

Water Connections - Units with Condenser Hot Water Reheat	
1	2
Loop In D	Loop Out E
N/A	N/A
2.1	10.0
5.2	25.4
5.96	13.13
15.14	33.35
5.96	13.13
15.14	33.35
5.96	13.13
15.14	33.35
5.96	13.13
15.14	33.35

Horizontal Model		Electrical Knockouts		
		J 1/2”	K 1/2”	L 3/4”
		Low Voltage	External Pump	Power Supply
006 - 012	in	3.8	6.3	8.8
	cm	9.4	15.6	21.9
018	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
024 - 030	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
036	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
042 - 048	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
060 - 070	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9

Notes:

1. While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.
2. Horizontal units shipped with filter bracket only. This bracket should be removed for return duct connection
3. Discharge flange and hanger brackets are factory installed.
4. Condensate is 3/4” NPT.
5. CCP and BSP requires 2’ service access.
6. Blower service access is through back panel on straight discharge units or through panel opposite air coil on back discharge units.

Legend:

CCP = Control/Compressor Access Panel
BSP = Blower Service Panel
*ASP = Additional Service Panel (not required)

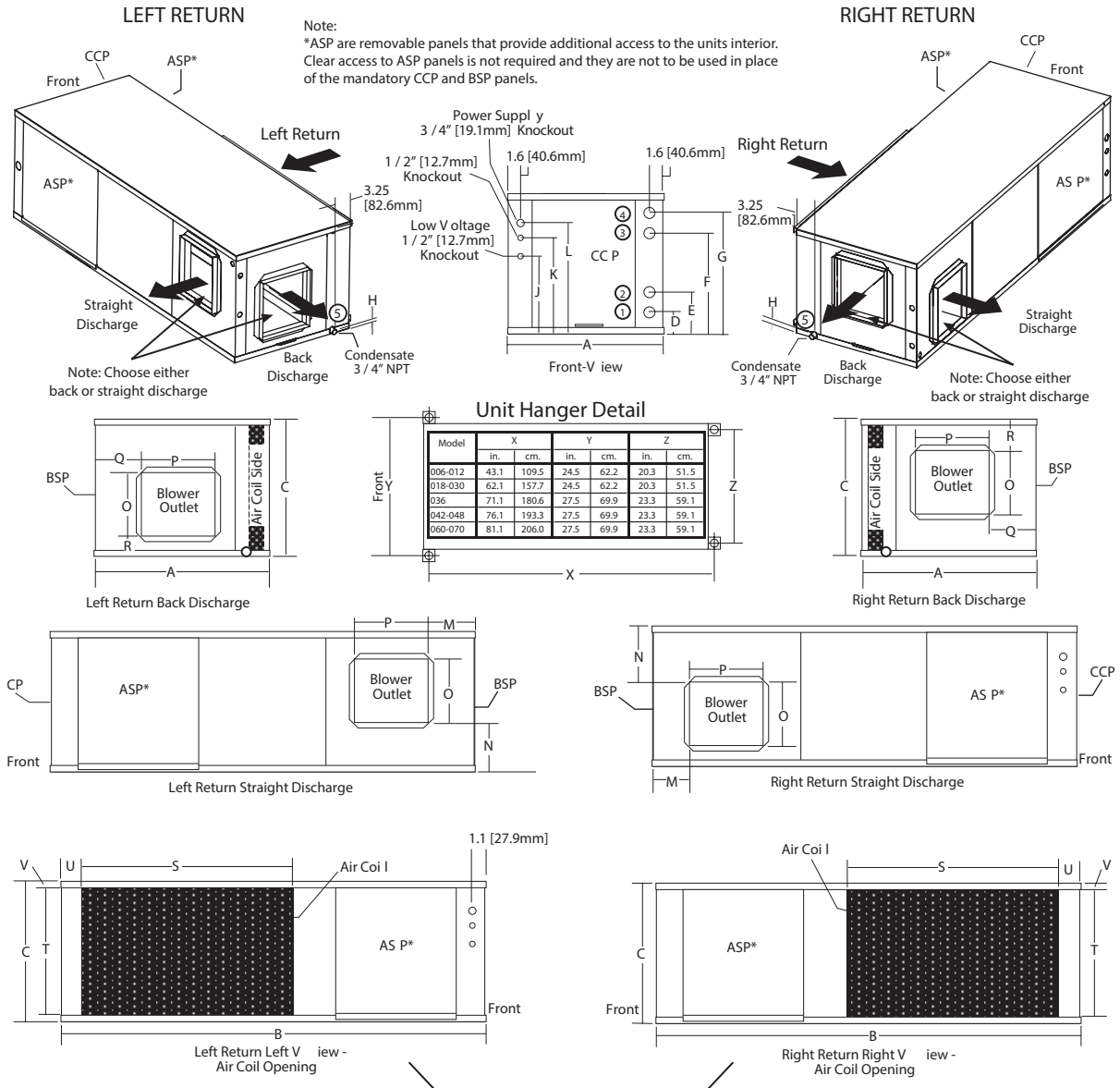
Note:

*ASP are removable panels that provide additional access to the units interior. Clear access to ASP panels is not required and they are not to be used in place of the mandatory CCP and BSP panels.

TS Horizontal – Dimensional Data

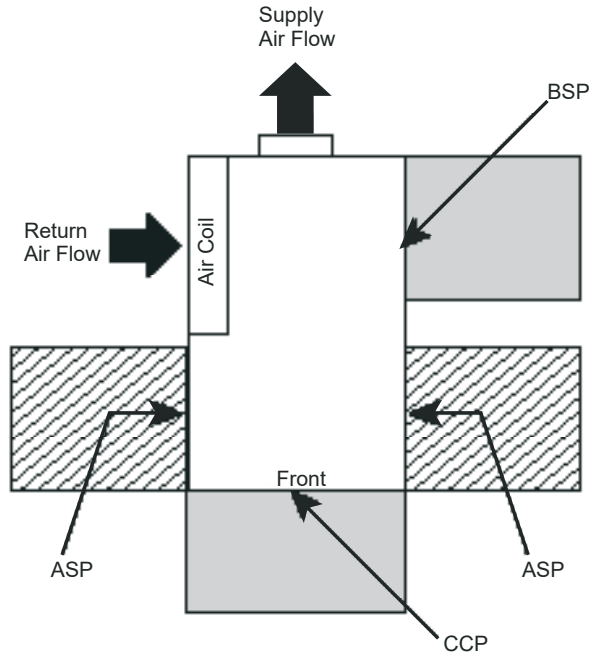
Horizontal Model		Discharge Connection Duct Flange Installed						Return Connection Using Return Air Opening				Return Connection Using Optional Air Filter Frame			
		M	N	O Supply Height	P Supply Width	Q	R	S Return Width	T Return Height	U	V	S Return Width	T Return Height	U	V
006 - 012	in	5.3	4.1	9.0	9.0	5.3	4.1	17.1	15.3	2.1	1.0	17.7	14.2	2.3	1.7
	cm	13.4	10.3	22.5	22.5	13.4	10.3	43.4	38.9	5.3	2.5	45.0	36.1	5.8	4.3
018	in	3.6	2.0	15.5	12.5	3.6	2.0	28.1	17.3	6.2	1.0	33.8	16.2	2.3	1.7
	cm	9.3	5.1	39.4	31.8	9.2	5.2	71.4	43.9	15.7	2.5	85.8	41.0	5.8	4.3
024 - 030	in	3.6	2.0	15.5	12.5	3.6	2.0	32.1	17.3	2.3	1.0	33.8	16.2	2.3	1.7
	cm	9.3	5.1	39.4	31.8	9.2	5.2	81.5	43.9	5.8	2.5	85.8	41.0	5.8	4.3
036	in	*3.1	1.2	19.0	17.5	*3.1	1.0	36.1	19.3	2.3	1.0	34.8	18.2	3.1	1.7
	cm	7.9	3.1	48.3	44.5	7.9	2.6	91.7	49.0	5.7	2.5	88.3	46.1	7.8	4.3
042 - 048	in	3.1	1.2	19.0	17.5	3.1	1.0	41.1	19.3	2.3	1.0	39.8	18.2	3.1	1.7
	cm	7.9	3.1	48.3	44.5	7.9	2.6	104.4	49.0	5.7	2.5	101.0	46.1	7.8	4.3
060 - 070	in	3.1	1.2	19.0	17.5	3.1	1.0	46.1	19.3	2.3	1.0	44.8	18.2	3.1	1.7
	cm	7.9	3.1	48.3	44.5	7.9	2.6	117.1	49.0	57	2.5	113.7	46.1	7.8	4.3

*For units with modulating reheat option this dimension is 2.9 in. (7.4 cm).
All dimensions +/- 0.20 in. (5.1 mm).

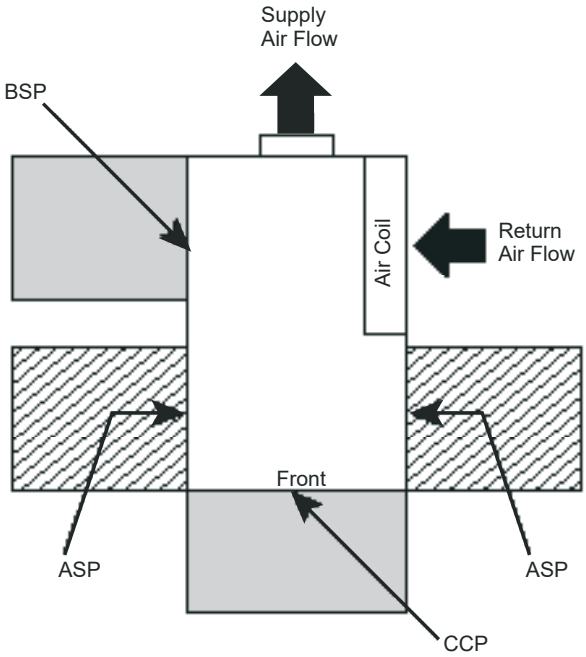


TS Horizontal – Service Access

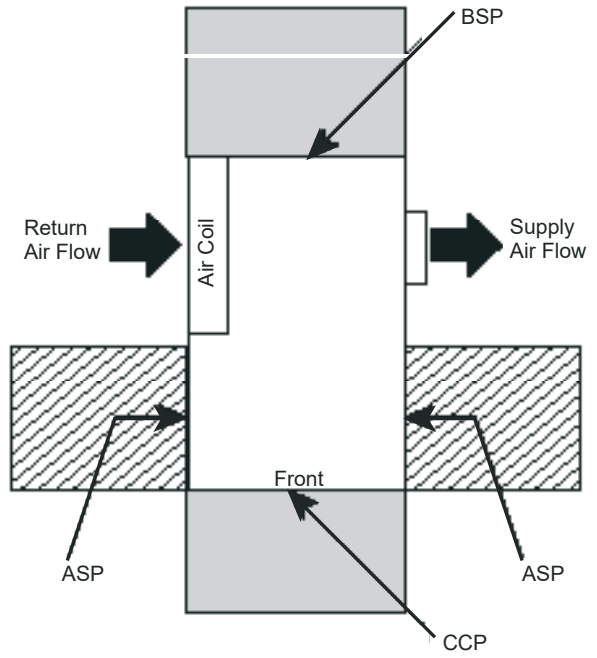
Left Return Back Discharge



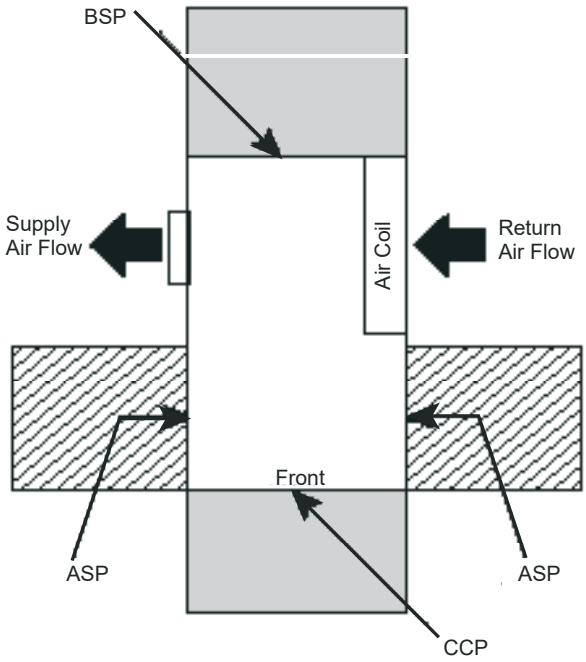
Right Return Back Discharge



Left Return Straight Discharge



Right Return Straight Discharge



Notes:

1. While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.
2. CCP and BSP requires 2' service access.
3. Blower service access is through back panel on straight discharge units or through panel opposite air coil on back discharge units.
4. ASP are removable panels that provide additional access to the units interior. Clear access to ASP panels is not required and they are not to be used in place of the mandatory CCP and BSP panels.

= mandatory 2' (61cm) service access

= (optional) additional 2' (61cm) service access

Legend:

CCP = Control/Compressor Access Panel
BSP = Blower Service Panel
ASP = Additional Service Panel (not required)

TS Vertical Upflow – Dimensional Data

Vertical Upflow Model		Overall Cabinet *A Width	B Depth	C Height
006 - 012	in	22.4	21.6	34.5
	cm	56.8	54.9	87.6
018	in	22.4	25.6	44.6
	cm	56.8	65.1	113.3
024 - 030	in	22.4	25.6	48.5
	cm	56.8	65.1	123.2
036	in	25.4	30.6	50.5
	cm	64.5	77.8	128.3
042 - 048	in	25.4	30.6	54.5
	cm	64.5	77.8	138.4
060 - 070	in	25.4	30.6	58.5
	cm	64.5	77.8	148.6

*Does not include air filter supports. Add 2 in. (5.1 cm) when a 1 in. (25.4 mm) filter is used, add 3 in. (7.6 cm) when a 2 in. (50.8 mm) filter is used.

Vertical Upflow Model		Water Connections 1 Loop In D	2 Loop Out E	3 HWG In F	4 HWG Out G	5 H	Water Loop FPT	HWG FPT
006 - 012	in	3.7	9.7	N/A	N/A	7.4	1/2”	N/A
	cm	9.4	24.6			18.7		
018	in	2.1	10.0	13.9	16.9	7.8	3/4”	1/2”
	cm	5.2	25.4	35.2	42.9	19.8		
024 - 030	in	2.1	10.0	13.9	16.9	7.8	3/4”	1/2”
	cm	5.2	25.4	35.2	42.9	19.8		
036	in	3.4	10.8	15.6	18.9	7.8	3/4”	1/2”
	cm	8.6	27.5	39.7	47.9	19.8		
042 - 048	in	3.4	10.8	15.6	18.9	7.8	1”	1/2”
	cm	8.6	27.5	39.7	47.9	19.8		
060 - 070	in	3.4	10.8	15.6	18.9	7.8	1”	1/2”
	cm	8.6	27.5	39.7	47.9	19.8		

Vertical Upflow Model		Electrical Knockouts J 1/2” Low Voltage	K 1/2” External Pump	L 3/4” Power Supply
006 - 012	in	3.8	6.3	8.8
	cm	9.5	15.9	22.2
018	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
024 - 030	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
036	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
042 - 048	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
060 - 070	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9

Notes:

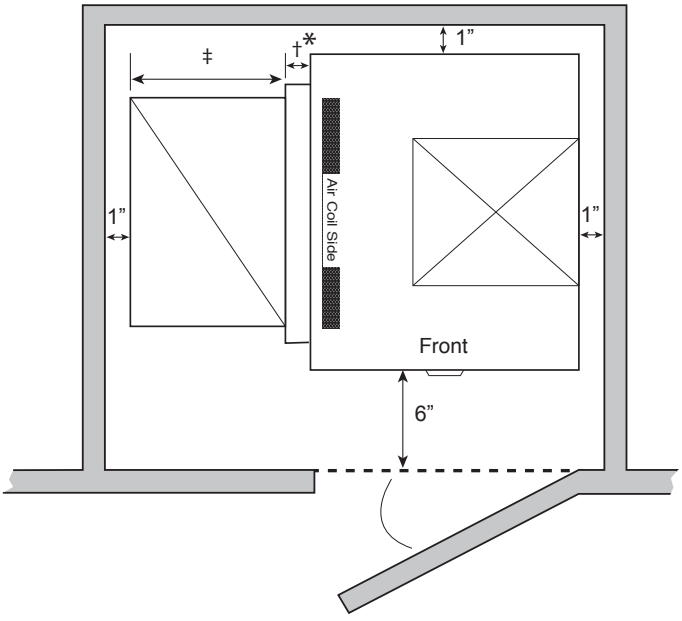
1. While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.
2. Front & Side access is preferred for service access. However, all components may be serviced from the front access panel if side access is not available.
3. Discharge flange is field installed.
4. Condensate is 3/4” NPT.

Legend:

CCP = Control/Compressor Access Panel
BSP = Blower Service Panel
ASP = Additional Service Panel (not required)

Recommended Minimum Installation Clearances for Vertical Units*	
1”	Back of unit
	Side opposite return air
6”	Front if hard piped
Return Air Side	
1”	Ducted return - ‡ *Add for duct width - † Add 2” for 1” filter frame/rail or 3” for 2” filter frame/rail
	Free (open) return - calculate required dimension for a maximum velocity of 600 fpm

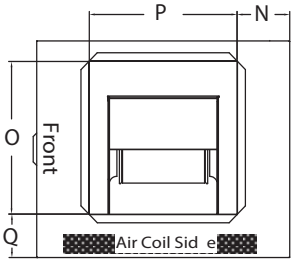
*Field installed accessories (hoses, air cleaners, etc.) and factory WSE option will require additional space. Top supply air is shown, the same clearances apply to bottom supply air units.



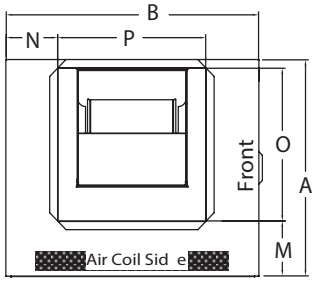
TS Vertical Upflow – Dimensional Data

Vertical Upflow Model		Discharge Connection Duct Flange Installed					Return Connection Using Return Air Opening				Return Connection Using Optional Air Filter Frame			
		M	N	O Supply Width	P Supply Depth	Q	R	S Return Depth	T Return Height	U	R	S Return Depth	T Return Height	U
006 - 012	in	6.7	6.3	9.0	9.0	6.7	2.3	17.1	15.3	1.0	1.7	17.7	14.2	1.7
	cm	17.0	16.0	22.9	22.9	17.0	5.8	43.3	38.9	2.5	4.3	45.0	36.1	4.3
018	in	7.2	5.8	14.0	14.0	4.9	2.3	21.1	23.7	1.0	1.7	22.2	22.2	1.7
	cm	18.3	14.8	35.6	35.6	12.4	5.8	53.6	60.2	2.5	4.3	56.4	66.5	4.3
024 - 030	in	7.2	5.8	14.0	14.0	4.9	2.3	21.1	27.7	1.0	1.7	22.2	26.2	1.7
	cm	18.3	14.8	35.6	35.6	12.4	5.8	53.6	70.4	2.5	4.3	56.4	66.5	4.3
036	in	6.4	6.3	18.0	18.0	5.3	2.3	26.1	27.7	1.0	1.7	27.2	26.2	1.7
	cm	16.1	16.0	45.7	45.7	13.5	5.8	66.3	70.4	2.5	4.3	69.1	66.5	4.3
042 - 048	in	6.4	6.3	18.0	18.0	5.3	2.3	26.1	30.5	1.0	1.7	27.2	30.2	1.7
	cm	16.1	16.0	45.7	45.7	13.5	5.8	66.3	77.5	2.5	4.3	69.1	76.7	4.3
060 - 070	in	6.4	6.3	18.0	18.0	5.3	2.3	26.1	35.7	1.0	1.7	27.2	34.2	1.7
	cm	16.1	16.0	45.7	45.7	13.5	5.8	66.3	90.7	2.5	4.3	69.1	86.9	4.3

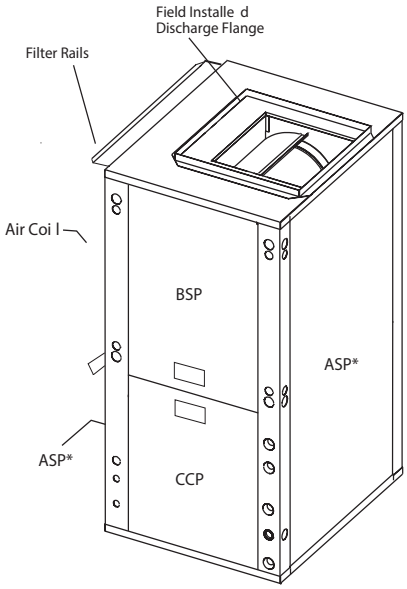
All dimensions +/- .20 in, (+/- 5.1 mm).



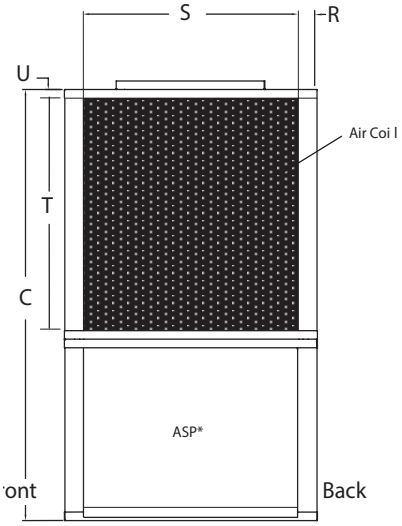
Top View-Right Return



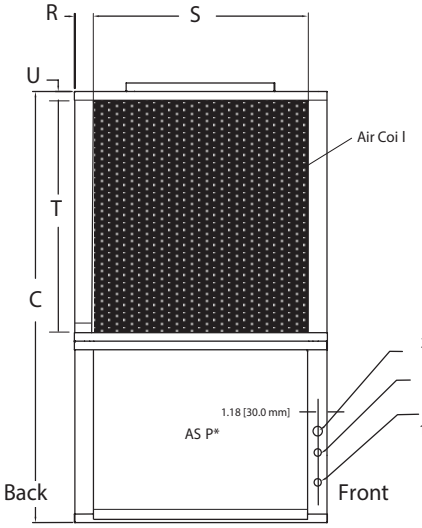
Top View-Left Return



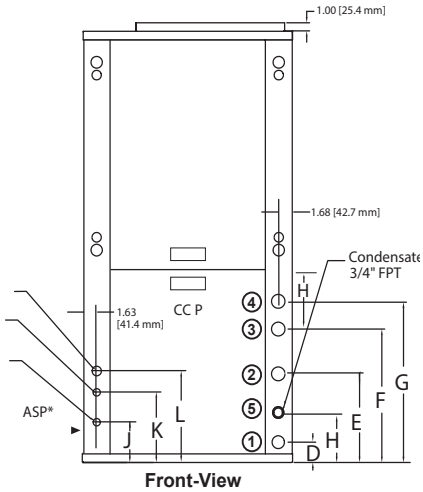
Isometric (Left Return) View



Right Return Right View - Air Coil Opening



Left Return Left View - Air Coil Opening

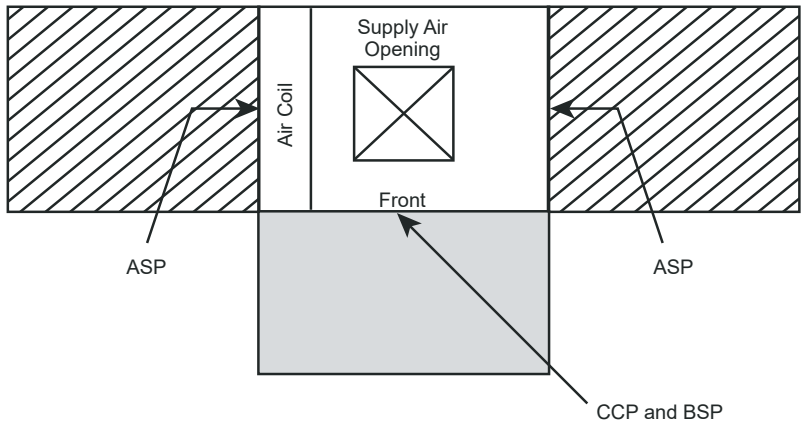


Front-View

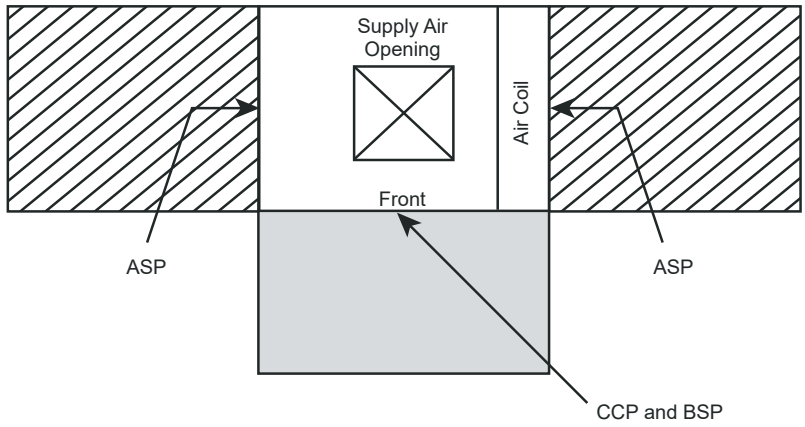
Note:
*ASP are removable panels that provide additional access to the units interior. Clear access to ASP panels is not required and they are not to be used in place of the mandatory CCP and BSP panels.

Vertical Units

Left Return



Right Return



= mandatory 2' (61 cm) service access

= (optional) additional 2' (61 cm) service access

Notes:

1. While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.
2. Front & Side access is preferred for service access. However, all components may be serviced from the front access panel if side access is not available
3. ASP are removable panels that provide additional access to the units interior. Clear access to ASP panels is not required and they are not to be used in place of the mandatory CCP and BSP panels.
4. Top supply air is shown, the same clearances apply to bottom supply air units.

Legend:

CCP = Control/Compressor Access Panel
BSP = Blower Service Panel
ASP = Additional Service Panel (not required)

TS Vertical Downflow – Dimensional Data

Vertical Downflow Model		Overall Cabinet *A Width	B Depth	C Height
018	in	22.4	25.6	48.4
	cm	56.8	65.1	122.9
024 - 030	in	22.4	25.6	52.5
	cm	56.8	65.1	133.4
036	in	25.4	30.6	54.5
	cm	64.5	77.8	138.4
042 - 048	in	25.4	30.6	58.5
	cm	64.5	77.8	148.6
060 - 070	in	25.4	30.6	62.5
	cm	64.5	77.8	158.8

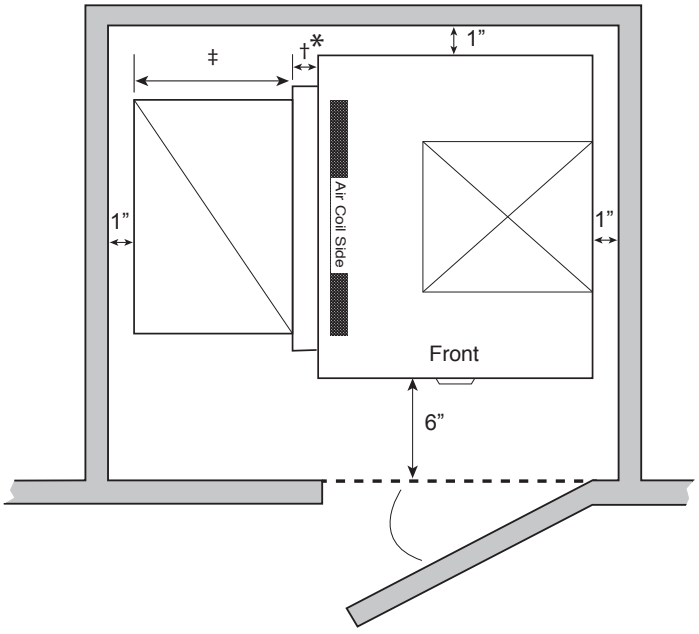
*Does not include air filter supports. Add 2 in. (5.1 cm) when a 1 in. (25.4 mm) filter is used, add 3 in. (7.6 cm) when a 2 in. (50.8 mm) filter is used.

Vertical Downflow Model		Electrical Knockouts J 1/2" Low Voltage	K 1/2" External Pump	L 3/4" Power Supply
018	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
024 - 030	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
036	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
042 - 048	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9
060 - 070	in	3.6	6.1	8.6
	cm	9.2	15.6	21.9

Vertical Downflow Model		Water Connections 1 Loop In D	2 Loop Out E	3 HWG In F	4 HWG Out G	5 H	Water Loop FPT	HWG FPT
018	in	17.2	9.3	5.4	2.4	3.6	3/4"	1/2"
	cm	43.7	23.6	13.7	6.1	9.2		
024 - 030	in	17.9	10.5	5.7	2.4	3.6	3/4"	1/2"
	cm	45.5	26.7	14.5	6.1	9.2		
036	in	17.9	10.5	5.7	2.4	3.6	3/4"	1/2"
	cm	45.5	26.7	14.5	6.1	9.2		
042 - 048	in	17.9	10.5	5.7	2.4	3.6	1"	1/2"
	cm	45.5	26.7	14.5	6.1	9.2		
060 - 070	in	17.9	10.5	5.7	2.4	3.6	1"	1/2"
	cm	45.5	26.7	14.5	6.1	9.2		

Recommended Minimum Installation Clearances for Vertical Units*	
1"	Back of unit
	Side opposite return air
6"	Front if hard piped
Return Air Side	
1"	Ducted return - ‡ *Add for duct width - † Add 2" for 1" filter frame/rail or 3" for 2" filter frame/rail
	Free (open) return - calculate required dimension for a maximum velocity of 600 fpm

*Field installed accessories (hoses, air cleaners, etc.) and factory WSE option will require additional space. Top supply air is shown, the same clearances apply to bottom supply air units.

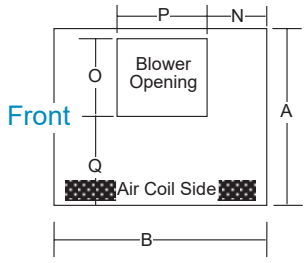


TS Vertical Downflow – Dimensional Data

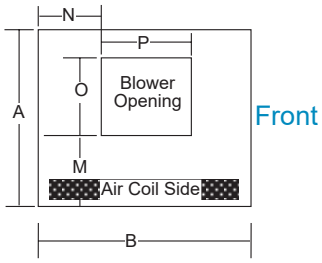
Vertical Downflow Model		Discharge Connection Duct Flange Installed					Return Connection Using Return Air Opening				Return Connection Using Optional Air Filter Frame			
		M	N	O Supply Width	P Supply Depth	Q	R	S Return Depth	T Return Height	U	R	S Return Depth	T Return Height	U
018	in	6.7	8.4	10.1	9.1	10.8	2.2	21.1	23.7	21.2	1.7	22.2	22.2	21.9
	cm	17.1	21.4	25.7	23.0	27.4	5.6	53.6	60.2	53.8	4.3	56.4	56.4	55.6
024 - 030	in	6.7	8.4	10.1	9.1	10.8	2.2	21.1	27.7	21.2	1.7	22.2	26.2	21.9
	cm	17.1	21.4	25.7	23.0	27.4	5.6	53.6	70.4	53.8	4.3	56.4	66.5	55.6
036	in	7.2	9.0	13.4	12.9	10.4	2.2	26.1	27.7	23.2	1.7	27.2	26.2	23.9
	cm	18.3	22.9	34.0	32.7	26.5	5.6	66.3	70.4	58.9	4.3	69.1	66.5	60.7
042 - 048	in	7.2	9.0	13.4	12.9	10.4	2.2	26.1	30.5	23.2	1.7	27.2	30.2	23.9
	cm	18.3	22.9	34.0	32.7	26.5	5.6	66.3	77.5	58.9	4.3	69.1	76.7	60.7
060 - 070	in	7.2	9.0	13.4	12.9	10.4	2.2	26.1	35.7	23.2	1.7	27.2	34.2	23.9
	cm	18.3	22.9	34.0	32.7	26.5	5.6	66.3	90.7	58.9	4.3	69.1	86.9	60.7

All dimensions +/- .20 in, (+/- 5.1 mm).

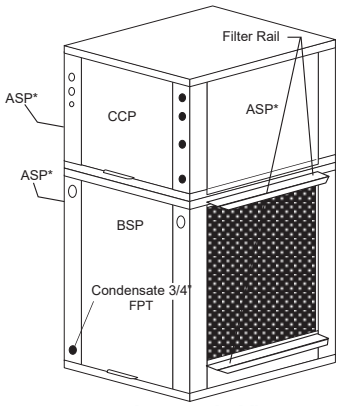
Legend:
CCP = Control/Compressor Access Panel
BSP = Blower Service Panel
ASP = Additional Service Panel (not required)



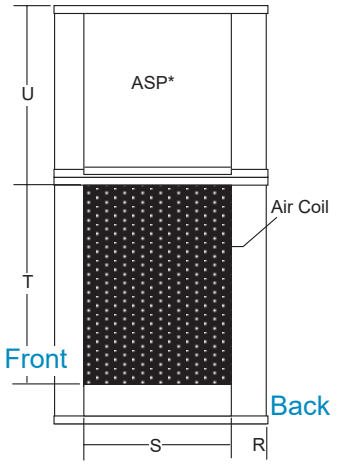
Right Return Discharge Floor Foot Print



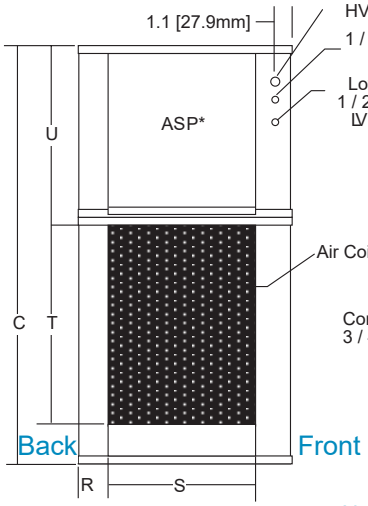
Left Return Discharge Floor Foot Print



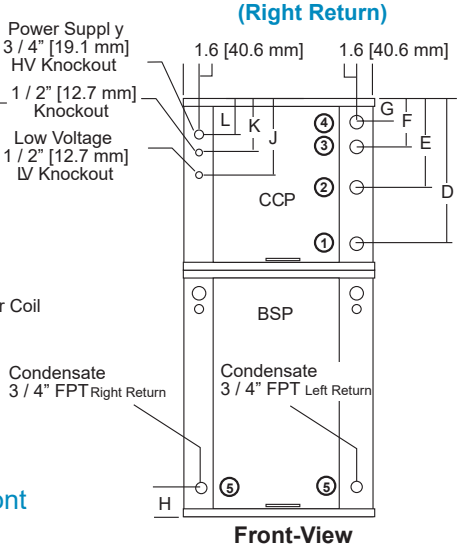
Isometric View (Right Return)



Right Return Right View - Air Coil Opening



Left Return Left View - Air Coil Opening



Front-View

Filter Rails Removed

Units come standard with air filter rails.
For duct connections, optional filter frames should be ordered.
See product options decoder for details.
Filter rails can be converted in the field with an accessory air filter frame kit.
Please see the accessory submittal for details.

Notes:

1. While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.
2. Front & Side access is preferred for service access. However, all components may be serviced from the front access panel if side access is not available.
3. Condensate is 3/4" FPT PVC.
4. ASP are removable panels that provide additional access to the units interior. Clear access to ASP panels is not required and they are not to be used in place of the mandatory CCP and BSP panels.

Corner Weights for TSH Series Unit

Model		Total	Left-Front*	Right-Front*	Left-Back*	Right-Back*
006	Lbs	136	45.0	30.0	33.0	28.0
	kg	62	20.4	13.6	15.0	12.7
009	Lbs	156	55.0	33.0	36.0	32.0
	kg	71	24.9	15.0	16.3	14.5
012	Lbs	160	56.0	34.0	37.0	33.0
	kg	73	25.4	15.4	16.8	15.0
018	Lbs	257	78.1	64.6	66.2	47.5
	kg	117	35.4	29.3	30.0	21.6
024	Lbs	266	78.8	67.2	69.9	50.2
	kg	122	35.7	30.5	31.7	22.7
030	Lbs	268	79.4	67.7	70.4	50.5
	kg	122	36.0	30.7	31.9	22.9
036	Lbs	327	104.4	74.9	83.7	64.0
	kg	148	47.4	34.0	38.0	29.0
042	Lbs	414	144.3	92.1	97.7	79.9
	kg	188	65.4	41.8	44.3	36.2
048	Lbs	416	145.0	92.6	98.1	80.3
	kg	189	65.8	42.0	44.5	36.4
060	Lbs	441	182.3	72.5	78.4	107.8
	kg	200	82.7	32.9	35.6	48.9
070	Lbs	443	183.1	72.8	78.8	108.3
	kg	201	83.1	33.0	35.7	49.1

*Front is control box end.

TS Series Wiring Diagram Matrix

All current diagrams can be located online at climatemaster.com. Click 'Commercial Professional'.

1. Click 'Products' in the main navigation
2. Select 'Small Packaged Units'
3. Select the TS product series
4. Click the Wire Diagrams tab in the middle of the page
5. Select your voltage and controls

Unit Controller	Fan Motor	Hydronic Options	208/60/1 - 265/60/1		208/60/3	460/60/3	575/60/3
			006-012	018-070	024-060	024-060	042-070
CXM2	PSC	None	96B0514N11		96B0514N21	96B0514N31	
	CT ECM	None	96B0514N12		96B0514N22	96B0514N32	
DXM2.5	PSC	None	96B0521N11		96B0521N21	96B0521N31	
		Reheat		96B0524N11	96B0524N21	96B0524N31	
	CT ECM	None	96B0527N11		96B0527N21	96B0527N31	
		Reheat		96B0528N11	96B0528N21	96B0528N31	
	CV ECM	None	96B0523N01	96B0523N11	96B0523N21	96B0523N31	
		Reheat		96B0525N11	96B0525N21	96B0525N31	
Auxiliary WD for MPC Controls			96B0147N14				

Tranquility® 20 (TS) Series 60 Hz
Engineering Specifications – Page 1

General:

Furnish and install ClimateMaster Tranquility® "TS" 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-1995 for the United States and CAN/CSA-C22.2 NO.236 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:

Horizontal Units shall have one of the following air flow arrangements: Left Inlet/Straight (Right) Discharge; Right Inlet/Straight (Left) Discharge; Left Inlet/Back Discharge; or Right Inlet/Back Discharge as shown on the plans. Units must have the ability to be field convertible from straight to back or back to straight discharge with no additional parts or unit structure modification. Horizontal units will have factory installed hanger brackets with rubber isolation grommets packaged separately.

Vertical Units shall have one of the following air flow arrangements: Left Return/Top Discharge, Right Return/Top Discharge, Left Return/Bottom Discharge, Right Return/Bottom Discharge 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. All units (horizontal and vertical) must have a minimum of three access panels for serviceability of compressor compartment. **Units having only one access panel to compressor/heat exchangers/expansion device/refrigerant piping shall not be acceptable.**

Compressor section interior surfaces shall be lined with 1/2 inch (12.7 mm) thick, 1-1/2 lb/ft3 (24 kg/m3) acoustic type glass fiber insulation. Air handling section interior surfaces shall be lined with 1/2 inch (12.7 mm) thick, 1-1/2 lb/ft3 (24 kg/m3) foil faced fiber insulation for ease of cleaning. 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. **Units without foil faced insulation in the air handling section will not be accepted.**

The heat pumps shall be fabricated from heavy gauge galvanized steel with powder coat paint finish. Both sides of the steel shall be painted for added protection.

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) are not accepted**

All horizontal units to have factory installed 1inch (25.4 mm) discharge air duct collars, 1inch (25.4 mm) filter rails with 1inch (25.4 mm) filters factory installed, and factory installed unit-mounting brackets. Vertical units to have field installed discharge air duct collar, shipped loose and 1inch (25.4 mm) filter rails with 1inch (25.4 mm) filters factory installed. **If units with these factory-installed provisions are not used, the contractor is responsible for any extra costs to field install these provisions, and/or the extra costs for his sub-contractor to install these provisions.**

All units must have an insulated panel separating the fan compartment from the compressor compartment. **Units with the compressor in the air stream are not acceptable.** Units shall have a factory installed 1 inch (25.4 mm) wide filter bracket for filter removal from either side. Units shall have a 1 inch (25.4 mm) thick throwaway type glass fiber filter. The contractor shall purchase one spare set of filters and replace factory shipped filters on completion of start-up. Filters shall be standard sizes. If units utilize non-standard filter sizes, then the contractor shall provide 12 spare filters for each unit.

Cabinets shall have separate holes and knockouts for entrance of line voltage and low voltage control wiring. All factory-installed wiring passing through factory knockouts and openings shall be protected from sheet metal edges at openings by plastic ferrules. Supply and return water connections shall be copper FPT fittings and shall be securely mounted flush to the cabinet corner post allowing for connection to a flexible hose without the use of a back-up wrench. **Water connections that protrude through the cabinet or require the use of a backup wrench shall not be allowed.** All water connections and electrical knockouts must be in the compressor compartment corner post as to not interfere with the serviceability of unit. **Contractor shall be responsible for any extra costs involved in the installation of units that do not have this feature.** Contractor must ensure that units can be easily removed for servicing and coordinate locations of electrical conduit and lights with the electrical contractor.

Option: Contractor shall install 2 inch (50.8 mm) filter racks with removable access door and 2 inch (50.8 mm) MERV rated pleated throwaway filters on all units.

Option: UltraQuiet package (available on TS018-070 Units) shall consist of high technology sound attenuating material that is strategically applied to the compressor and air handling compartment casings and fan scroll in addition to the standard ClimaQuiet system design, to further dampen and attenuate sound transmissions.

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, including one-pipe systems. Externally mounted secondary pump will not be accepted.

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.

Fan and Motor Assembly:

Blower shall have inlet rings to allow removal of wheel and motor from one side without removing housing. Units shall have a direct-drive centrifugal fan. The fan motor shall be 3-speed (2-speed for 575 V), 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 on small and medium size units (006-048) shall be isolated from the fan housing by a torsionally flexible motor mounting system with rubber type grommets to inhibit vibration induced high noise levels associated with “hard wire belly band” motor mounting. The fan motor on larger units (060 & 070) shall be isolated with flexible rubber type isolation grommets only. The fan and motor assembly must be capable of overcoming the external static pressures as shown on the schedule. Airflow/Static pressure rating of the unit shall be based on a wet coil and a clean filter in place. **Ratings shall NOT be acceptable based on a dry coil and/or no air filter.**

Option: **Constant Volume ECM motors (sizes 018 to 070): ECM variable speed ball bearing type motor. The ECM fan motor shall provide a soft low noise fan start by ramping fan up to full selected speed over a 30 second period, and slowly ramp down fan at the end of each blower cycle, maintain constant CFM, maximize motor efficiency over its static operating range, and provide airflow adjustment in 25 CFM increments. The fan motor shall be isolated from the housing by rubber grommets. The motor shall be permanently lubricated and have thermal overload protection. A special dehumidification mode shall be provided to allow lower airflows in cooling for better dehumidification. The dehumidification mode may be constant or automatic (humidistat controlled). Constant Volume ECM motors without controlled ramp up and ramp down features, with constant CFM speed taps, or with no microprocessor controller are not acceptable.**

Option: **High static PSC motors (sizes 018-060).**

Refrigerant Circuit:

All units shall contain an EarthPure® (HFC-410A) sealed refrigerant circuit including a high efficiency scroll or rotary compressor designed for heat pump operation, a thermostatic expansion valve for refrigerant metering, an enhanced corrugated aluminum lanced fin and rifled copper tube or all aluminum micro channel 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 factory installed or contractor supplied disconnect switch. **Units that cannot be reset at the thermostat shall not be acceptable.**

Hermetic compressors shall be internally sprung. The compressor shall have a dual level vibration isolation system. The compressor will be mounted on specially engineered sound-tested EPDM vibration isolation grommets to a large heavy gauge compressor mounting plate, which is then isolated from the cabinet base with rubber grommets for maximized vibration attenuation. All units (except units with rotary compressors) shall include a discharge muffler to further enhance sound 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 or all aluminum micro channel construction rated to withstand 625 PSIG (4309 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 (4309 kPa) working refrigerant pressure and 500 PSIG (3445 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 types 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.

Option: **The unit shall be supplied with a hot water generator (desuperheater).**

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

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

Option: **Unit shall include ClimaDry®II reheat option. Only modulating reheat that will adjust capacity based upon supply air temperature to provide "neutral" (72° F, 22.2° C) constant air temperature will be accepted. "Neutral" supply air temperature shall be provided regardless of entering loop water temperatures (above 55° F, 12.8° C) or refrigerant condensing pressures. Control of reheat must be accomplished via a humidistat or dehumidistat contact closure. Refrigerant circuit must be AHRI certified. Approved equal manufacturers may provide pre-engineered integrated modulating hot gas reheat within the unit cabinet, or the installing contractor in conjunction with the "approved equal" unit manufacturer can provide for approval (during the submittal phase) an engineered system consisting of: a duct mounted hot water coil, small circulating pump, modulating control valve, and associated piping using the discharge condenser water off of the unit as the heating medium. All design costs and costs of field installed items including additional power wiring to pump, and control wiring to and from pump and control valve to unit shall be borne by mechanical contractor. Refrigerant circuits that are not AHRI certified when the reheat option is applied will not be accepted.**

Drain Pan:

The drain pan shall be constructed of 201LN Stainless Steel to inhibit corrosion. This corrosion protection system shall meet the stringent 1,000 hour salt spray test per ASTM B117. To avoid thermal cycling shock stress failure over the lifetime of the unit. Drain pan shall be fully insulated. Drain outlet shall be located at pan as to allow unobstructed drainage of condensate. Drain outlet for horizontal units shall be connected from pan directly to FPT fitting. **No hidden internal tubing extensions from pan outlet extending to unit casing (that can create drainage problems) will be accepted.** The unit as standard will be supplied with solid-state electronic condensate overflow protection. **Mechanical float switches will NOT be accepted.**

Vertical units shall be furnished with a PVC FPT condensate drain connection and an internal factory installed condensate trap. If units without an internal trap are used, the contractor is responsible for any extra costs to field install these provisions, and/or the extra costs for his sub-contractor to install these provisions.

Electrical:

A control box shall be located within the unit compressor compartment and shall contain a 50 VA transformer, 24 Volt activated, 2 or 3 pole compressor contactor, terminal block for thermostat wiring 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. Unit controls shall be 24 Volt and provide heating or cooling as required by the remote thermostat/sensor.

Option: **Units shall be supplied with factory installed non-fused electrical service disconnect switch.**

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 3 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 8 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.**

Option: Enhanced Solid State Control System (DXM2.5)

This control system is a communicating controller.

Control shall have the above-mentioned features of the CXM2 control system along with the following expanded features:

a. Removable thermostat connector.
b. Night setback control.
c. Random start on return from night setback.
d. Override temperature control with 2-hour timer for room occupant to override setback temperature at the thermostat.
e. Dry contact night setback output for digital night setback thermostats.
f. Ability to work with heat pump or heat/cool (Y, W) type thermostats.

g. Ability to work with heat pump thermostats using O or B reversing valve control.
h. Boilerless system heat control at low loop water temperature.
i. Ability to allow up to 3 units to be controlled by one thermostat.
j. Relay to operate an external damper.
k. Relay to start system pump.
l. 75 VA control transformer. Control transformer shall have load side short circuit and overload protection via a built-in circuit breaker.

NOTE: Units not providing the 8 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 protection for both drain pans will not be accepted.

When DXM2.5 is connected to AWC99U01 communicating thermostat or handheld service tool, the installer/service technician can; check and set CFM; check DIP switch S1, S2, and S3 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 with the only portal or mobile app. **Systems not providing remote access, diagnosis, and adjustment functionality will not be accepted.**

Digital Night Setback with Pump Restart (DXM2.5 w/ ATP32U03C/04C, AWC99U01):

The unit will be provided with a Digital Night Setback feature using an accessory relay on the DXM2.5 controller with an ATP32U03C/04C or AWC99U01 thermostat and an external, field-provided time clock. The external time clock will initiate and terminate the night setback period. The thermostat will have a night setback override feature with a programmable override time period. An additional accessory relay on the unit DXM2.5 controller will energize the building loop pump control for the duration of the override period. **(Note: This feature requires additional low voltage wiring. Consult Application Drawings for details.)**

Remote Service Sentinel (CXM2/DXM2.5):

Solid state control system shall communicate with thermostat 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 fault light, indicating a lockout. Upon cycling the G (fan) input 3 times within a 60 second time period, the fault light shall display the specific code as indicated by a sequence of flashes. A detailed flashing code shall be provided at the thermostat LED to display unit status 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 (either CXM2 or DXM2.5) 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 7)

This option also provides the upgraded 75 VA 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 start up 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/DXM2.5 control board for a total of 5 years.

FIELD INSTALLED OPTIONS

Hose Kits:

All units shall be connected with hoses. The hoses shall be 2 feet (61 cm) long, braided stainless steel; fire rated hoses complete with adapters. Only fire rated hoses will be accepted.

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, 24 v, 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. 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 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)

Thermostat shall be a single-stage, digital, auto or manual changeover with HEAT-OFF-COOL-AUTO system switch and fan ON-AUTO switch. 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. Thermostat shall provide temperature display offset for custom applications.

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

Thermostat shall be 5 day/2 day programmable (with up to 4 setpoints per day), multi-stage (2H/1C), manual changeover with HEAT-OFF-COOL-EM HEAT system settings and fan ON-AUTO settings. 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. Thermostat shall provide convenient override feature to temporarily change setpoint.

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

Thermostat shall be 7 day programmable (with up to 4 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. 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 (when used with

ClimateMaster CXM2 or DXM2.5 controls) 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. 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 options and for setup of servicing contractor name and contact information. 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)

Thermostat shall be 7 day programmable (with up to 4 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 thermostat dehumidification mode to operate with ClimaDry® II reheat or with ECM fan dehumidification mode via settings changes. 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 (when used with ClimateMaster CXM2 or DXM2.5 controls) 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. 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 options and for setup of servicing contractor name and contact information. 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. 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.

g. CM300 – Multi-stage, Automatic or Manual Changeover, 7-day Programmable with Wi-Fi and Humidity Control (AVB32V02C)
Residential version shall be 7 day programmable with up to 4 setpoints per day. Commercial version shall be 7 day programmable with 4 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.

h. 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 4 setpoints per day. Commercial version shall be 7 day programmable with 4 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 Skyport 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:

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

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 submittal.

SUBMITTAL DATA - S-I UNITS

Unit Designation: _____

Job Name: _____

Architect: _____

Engineer: _____

Contractor: _____

PERFORMANCE DATA

Cooling Capacity: _____ kW

EER: _____

Heating Capacity: _____ kW

COP: _____

Ambient Air Temp: _____ °C

Entering Water Temp (Clg): _____ °C

Entering Air Temp (Clg): _____ °C

Entering Water Temp (Htg): _____ °C

Entering Air Temp (Htg): _____ °C

Airflow: _____ l/s

Fan Speed or Motor/RPM/Turns: _____

Operating Weight: _____ (kg)

ELECTRICAL DATA

Power Supply: _____ Volts

_____ Phase _____ Hz

Minimum Circuit Ampacity: _____

Maximum Overcurrent Protection: _____

SUBMITTAL DATA - I-P UNITS

Unit Designation: _____

Job Name: _____

Architect: _____

Engineer: _____

Contractor: _____

PERFORMANCE DATA

Cooling Capacity: _____ Btuh

EER: _____

Heating Capacity: _____ Btuh

COP: _____

Ambient Air Temp: _____ °F

Entering Water Temp (Clg): _____ °F

Entering Air Temp (Clg): _____ °F

Entering Water Temp (Htg): _____ °F

Entering Air Temp (Htg): _____ °F

Airflow: _____ CFM

Fan Speed or Motor/RPM/Turns: _____

Operating Weight: _____ (lb)

ELECTRICAL DATA

Power Supply: _____ Volts

_____ Phase _____ Hz

Minimum Circuit Ampacity: _____

Maximum Overcurrent Protection: _____

Notes

Revision History

Date:	Item:	Action:
04/17/23	All	Transitioned from CXM to CXM2 and DXM2 to DXM2.5 unit controls. Upgraded the ECM fan motor functionality and blower/electrical data tables. Introduced new communicating Wi-Fi color touch screen iGate 2 thermostat
09/23/21	All	Removed LON option, discontinued
05/26/20	Pgs 10-28, pg 30	Updated Performance Data Tables and Antifreeze Correction Table
01/29/20	page 29	Updated Performance Correction Tables
01/17/20	page 8	Update Table
10/03/19	ALL	Update for DXM2
09/20/17	Page 59	Update Wiring Diagram Matrix
06/14/17	Page 37	Update drawing
11/1/16	Updated Document Design	Updated
10/16/16	Page 37	Added ClimaDry Note
03/4/16	Pages 35 to 37 and 64	Edits to ECM control and run test
10/22/15	Pages 48 and 51	Edited dimensions “T” on sizes 42,48
08/04/15	Engineering Specifications and Unit Features	Updated, ECM Options Text, Edited Compressors Mount Text, Fan and Motor Assembly Text
07/22/15	Page 13 & 14	Updated HWC Data
06/17/15	Decoder - Page 7; Tables - Pages 13 & 53-58	Updated
03/25/15	Table - Page 43	Updated Maximum Working Water Pressure
03/05/15	Decoder - Page 7	Updated
01/23/15	Table - Page 56	Updated
12/16/14	Edits - Page 45 & 47	Updated
09/30/14	Text Edit - Page 67	Updated
08/15/14	TS060 E Voltage Elec. Tables	Added ECM with ISP and CWR
06/12/14	Rev. C Size 036 E Voltage	Added
05/12/14	Air Coil Description page 66-67	Updated
03/31/14	Illustration - Page 48	Updated
03/24/14	ECM Blower Data - Page 38	Updated Max ESP
02/10/14	Page 41	Updated Table 2
01/27/14	All	Updated Sizes 024-070 to Rev. C, added service clearances
7/17/13	EAT Minimum Limit ClimaDry	Updated
02/26/13	AHRI Table	Size 018 PSC Updated
01/07/13	Physical Data Table TS Vertical Upflow - Dimensional Data - TSV Right Return	Updated Updated Blower Orientation
09/27/12	EAT Limits Recommended Minimum Installation Clearances for Vertical Units *	Updated
02/20/12	Engineering Specifications	Updated
02/02/12	ClimaDry® II option Information	Merge data from ClimaDry® II Submittal
12/14/11	ECM Control	Updated CFM adjust settings
11/02/11	Decoder	Updated
10/19/11	Dimensional Data, Optional Filter Frame	Added
08/09/11	Unit Maximum Working Water Pressure	Updated to Reflect New Safeties

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