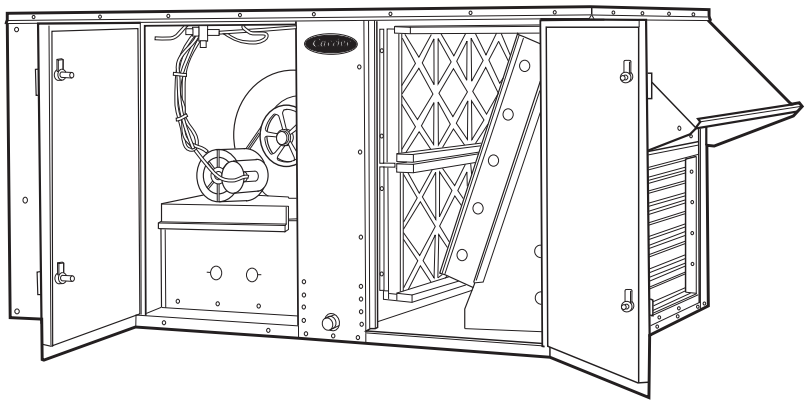
Product Data

AQUAZONE™ 50RTP03-20 Rooftop Water Source Heat Pump with PURON® Refrigerant (R-410A)

3 to 20 Nominal Tons



ASHRAE 90.1 COMPLIANT

Puron
the environmentally sound refrigerant

The 50RTP single-package outdoor rooftop water source heat pump (WSHP) with Puron refrigerant and electronic controls offers:

- Wide application use with operating temperature range of 20 to 110 F
- Thermostatic expansion valve (TXV) provides efficient and reliable refrigerant flow
- Spring mounted, scroll compressors for quiet operation and maximum energy efficiency
- High-efficiency motor and variable sheaves for flexible airflow combinations
- Slide-out blower assembly for easy access
- Multiple outdoor air options including enthalpy economizer
- Various filter options for economical IAQ (indoor air quality) solutions
- Flexible and reliable controls accomodate all systems

Features/Benefits

The Aquazone rooftop WSHPs are an economical solution to today's indoor air quality (IAQ) problems, providing year round outdoor air capabilities for conditioning larger zoned areas or to meet ventilation requirements for a WSHP system.

Operating efficiency

The Aquazone rooftop water source heat pumps are designed for quality and high performance over a lifetime of operation. Aquazone units offer cooling EERs (energy efficiency ratios) to 24.0 and COPs (coefficient of performance) to 5.2.

Features/Benefits (cont)

Efficiencies stated are in accordance with standard conditions under ISO (International Organization for Standardization) Standard 13256-1 and provide among the highest ratings in the industry, exceeding ASHRAE (American Society of Heating, Refrigerantion, and Air Conditioning Engineers) 90.1 Energy Standards.

High quality construction and testing

All units are manufactured to meet extensive quality control protocol from start to finish.

Standard construction features include:

Cabinet — High quality, heavy-duty cabinet construction ensures maximum durability. Cabinet is powder paint coated for the highest degree of corrosion resistance. The entire unit has dual density, 1-in. thick insulation for maximum thermal performance and enhanced sound absorption.

Scroll compressor — Installed in every 50RTP unit, compliant scroll compressors are proven efficient, reliable, and readily available. Scroll compressors are quiet, offer better liquid handling, and are self-compensating for wear.

Slide-out blower assembly — Units include a slide-out blower assembly for easy access and maintenance, as well as quick adjustment of drive components.

Coaxial heat exchanger — The coaxial heat exchanger provides high efficiency with no outdoor coil and no condenser fan. The heat exchanger maximizes thermal performance through true counterflow operation.

Variable pitch sheaves — Variable pitch sheaves provide optimum performance for customizing the system to meet a wide variety of airflow requirements, which may include high static or other challenging static conditions.

Refrigerant circuit — Refrigerant circuits include a standard thermostatic expansion valve (TXV) for higher accuracy and performance. In addition, the refrigerant circuit is insulated as a standard feature. Together, these features allow both standard and extended range applications, meeting the requirements of both boiler/tower and geothermal type installations.

Outdoor air capability — Features include a manual outside air damper with rain hood and bird screen sized for maximum 20% to the total unit air volume. Other outdoor air options include a two-position motorized damper, a fully modulating enthalpy controlled economizer supplied with direct gear driven outdoor air and return air dampers, as well as a gravity relief damper.

Fully insulated basepan — The insulated basepan provides a tight seal to the roof curb without using neoprene gasket material. It also contributes to the WSHP units' remarkably quiet operation.

ABS (acrylonitrile-butadiene-styrene) gear driven dampers — Dampers are low maintenance and corrosion resistant. This unit has no damper linkage to fail. Damper and motor assembly is direct drive for dependable operation.

AHRI/ISO — The Aquazone units have AHRI (Air Conditioning, Heating, and Refrigeration Institute)/ISO, NRTL (Nationally Recognized Testing Lab), or CSA (Canadian Standards Association) labels and are factory tested under normal operating conditions at nominal flow rates. Quality assurance is provided via testing report cards shipped with each unit to indicate specific unit performance under cooling and heating modes of operation.

Simple maintenance and serviceability

Aquazone WSHP units are constructed for easy maintenance.

Electrical disconnection of the blower motor and control box is easily accomplished via quick disconnects on each component.

The control box can be easily removed from the unit, providing access to all refrigeration components.

The refrigeration circuit is easily tested and serviced through high and low pressure ports integral to the refrigeration circuit.

Environmentally sound

Carrier's Puron® refrigerant (R-410A) enables you to make an environmentally responsible decision. Puron refrigerant (R-410A) is an HFC refrigerant that does not contain chlorine that is damaging to the stratospheric ozone layer. Puron refrigerant (R-410A) is unaffected by the Montreal Protocol. Puron refrigerant (R-410A) is a safe, efficient and environmentally sound refrigerant for the future.

Maximum control flexibility

Aquazone WSHPs provide reliable control operation using a standard microprocessor board with flexible alternatives for many direct digital controls (DDC) applications including the Carrier Comfort Network® (CCN) and open protocol systems.

Table of contents

The Aquazone™ standard unit solid-state control system, the Complete C, provides control of the unit compressor, reversing valve, fan, safety features, and troubleshooting fault indication features. The Complete C system is one of the most user friendly, low cost, and advanced control boards found in the WSHP industry.

Many features are field selectable to provide the ultimate in field installation flexibility. The overall features of this standard control system include:

50-va transformer — The transformer assists in accommodating accessory loads.

Anti-short cycle timer — The timer provides a minimum off time to prevent the unit from short cycling. The 5-minute timer energizes when the compressor is deenergized, resulting in a 5-minute delay before the unit can be restarted.

Random start relay — The relay ensures a random delay in energizing each different WSHP unit. This option minimizes peak electrical demand during start-up from different operating modes or after building power outages.

High and low pressure refrigerant protection — Refrigerant protection safeguards against unreliable unit operation and prevents refrigerant from leaking.

Condensate overflow sensor — The electronic sensor is mounted to the drain pan. When condensate pan liquid reaches an unacceptable level, unit is automatically deactivated and placed in a lockout condition. Thirty continuous seconds of overflow is recognized as a fault by the sensor.

High and low voltage protection — Voltage safety protection guards against excessive or low voltage conditions.

Automatic intelligent reset — The unit shall automatically restart 5 minutes after shutdown if the fault has cleared. Should a fault occur 3 times sequentially, lockout will occur.

Accessory output — A 24-v output is provided to cycle a motorized water valve or damper actuator with compressor in applications such as variable speed pumping arrangements.

Performance Monitor (PM) — This unique feature monitors water temperatures to warn when the heat pump is operating inefficiently or beyond typical operating range. Field selectable switch initiates a warning code on the unit display.

Water coil freeze protection (selectable for water or antifreeze) — The field selectable switch for water and water/glycol solution systems initiates a fault when temperatures exceed the selected limit for 30 continuous seconds.

Air coil freeze protection (check filter operation) — The field selectable switch for assessing excessive filter pressure drop initiates a fault when temperatures exceed the selected limit for 30 continuous seconds.

Alarm relay setting — The selectable 24-v or pilot duty, dry contact provides activation of a remote alarm.

Electric heat option — This output is provided on the controller for operating two stages of emergency electric heat.

Service test mode with diagnostic LED (light-emitting diode) — Test mode allows service personnel to check the WSHP and control system efficiently. Upon entering test mode, time delays speed up, and the Status LED flashes a code indicating the last fault. This mode provides easy fault diagnosis; based on the fault code the status LED flashes, Carrier provided troubleshooting tables offer easy reference to typical problems.

LED visual output — An LED panel indicates high pressure, low pressure, low voltage, high voltage, air/water freeze protection, condensate overflow, and control status.

Open protocol for diverse control (LON controller) option is ideal when building automation requires interoperability across diverse control platforms. This LONMark* compliant offering can operate as standalone or as a part of Local Operating Network (LON) via the LonWorks* FTT-10 Free Topology communication network. Factory completed, pre-engineered applications specific to Aquazone water source heat pumps and digital wall sensors communicating over Sensor Link (S-Link) communication protocol completes a system of networked control.

The PremierLink™ controller adds reliability, efficiency, and simplification

The PremierLink direct digital controller can be ordered as a factory-installed option. Designed and manufactured exclusively by Carrier, the controller can actively monitor and control all operating modes as well as monitor the following diagnostics and features: unit number, zone temperature, zone set point, zone humidity set point, discharge air temperatures, fan status, heating stages, cooling stages, outdoor-air temperature, leaving-air temperature, leaving water temperature, alarm status, and alarm lockout condition.

This controller has 38.4 kilobaud communications capability and is compatible with *Comfort*Link™ controls, CCN and ComfortVIEW™ software. The scrolling marquee and Navigator™ are optional tools used for programming and monitoring the unit for optimal performance. Adding the CO_2 sensor in the conditioned space provides ASHRAE 62-99 compliance and demand controlled ventilation (DCV). A DCV control strategy is especially beneficial for a WSHP system to minimize the energy used to condition ventilation air. The DCV approach enhances the energy efficient performance of the Aquazone unit.

The PremierLink peer-to-peer, Internet ready communicating control is designed specifically for constant volume (CV) and variable volume and temperature (VVT®) applications. This comprehensive controls system allows WSHPs to be linked together, creating a fully functional HVAC (heating, ventilation, and air conditioning) automation system.

* Registered trademark of Echelon Corporation.

Model number nomenclature

50RTP 03 1 A C A 5 – – A A

50RTP - Aquazone™ Rooftop Water Source Heat Pump with Puron® Refrigerant (R-410A)

Unit Size - Nominal Tons
03 - 3
04 - 4
05 - 5
06 - 6
08 - 8
10 - 10
12 - 12
14 - 14
20 - 20

Cabinet and Filter Options
1 - 2 in. Filter MERV 8 - Extended Range
3 - 2 in. Filter MERV 8 - Standard Range
B - 4 in. Filter MERV 8 - Extended Range
C - 4 in. Filter MERV 13 - Extended Range
D - 4 in. Filter MERV 8 - Standard Range
E - 4 in. Filter MERV 13 - Standard Range

Outside Air
A - No Fresh Air Damper
B - Manually Adjustable Fresh Air Damper
C - Motorized Fresh Air Damper
F - Modulating Enthalpy Economizer

Controls
C - Complete C Microprocessor Control
D - Deluxe D Microprocessor Control
L - Complete C Microprocessor Control with LONWorks
M - Deluxe D Microprocessor Control with LONWorks
P - Complete C Microprocessor Control with PremierLink DDC Control*
W - Deluxe D Microprocessor Control with WSHP Open
Y - Deluxe D Microprocessor Control with WSHP Open

Blower Drive Options
A - Std Motor, Std Drive
B - Std Motor, Low Rpm Drive
C - Std Motor, High Rpm Drive
D - Large Motor, Std Drive**
E - Large Motor, High Rpm Drive**

Disconnect
A - No Disconnect/Circuit Breaker
B - Disconnect
C - Disconnect and GFI Outlet (115v)
D - Circuit Breaker
E - Circuit Breaker and GFI Outlet (115v)

Revision
– – - Rev Code

Voltage
1 - 575-3-60
5 - 208/230-3-60
6 - 460-3-60

Condenser Coil / Heat Exchanger Options
NON-COATED
C - Copper (standard)
T - Copper with Motorized Water Valve†
N - Cupronickel
S - Cupronickel with Motorized Water Valve†
E-COATED
A - Copper (standard)
U - Copper with Motorized Water Valve†
J - Cupronickel
W - Cupronickel with Motorized Water Valve†

LEGEND

DDC — Direct Digital Controls
GFI — Ground Fault Interrupter
WSHP — Water Source Heat Pump

*PremierLink controls available with Complete C system only.
†Requires Deluxe D controls.
**For digit 16: Option D is not available on sizes 03, 06, 08, and 10.
Option E is not available on size 03.

AHRI*/ISO capacity ratings

50RTP 60 Hz R-410A
AHRI/ASHRAE/ISO 13256-1

50RTP UNIT SIZE	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
03	36,000	14.5	44,000	5.1	41,000	22.1	36,500	4.5	36,000	16.8	29,000	3.7
04	50,000	14.7	61,500	4.8	56,500	21.5	50,000	4.2	51,500	16.3	39,000	3.5
05	63,000	16.0	75,000	5.2	72,000	24.0	62,000	4.6	64,000	18.0	47,000	3.7
06	69,000	15.2	90,000	5.2	77,500	21.6	74,000	4.6	71,000	16.4	58,000	3.7
08	100,000	14.3	114,000	4.5	111,950	21.0	94,500	4.0	104,000	15.9	76,200	3.3
10	126,000	14.2	154,000	4.5	145,500	21.0	126,500	4.0	132,500	15.9	101,000	3.3
12	134,000	13.8	172,000	4.6	150,500	20.0	140,000	4.0	139,000	15.5	109,000	3.3
14	175,000	15.0	206,700	5.0	187,000	20.9	168,000	4.5	177,500	16.5	129,500	3.7
20	241,000	13.6	287,000	4.8	276,000	19.3	230,000	4.2	249,500	15.0	182,400	3.4

LEGEND

COP — Coefficient of Performance
EER — Energy Efficiency Ratio

NOTES:
1. Cooling capacities based upon 80.6 F dry bulb, 66.2 F wet bulb entering air temperature
2. Heating capacities based upon 68 F dry bulb, 59 F wet bulb entering air temperature.
3. All ratings based upon operation at lower voltage of dual voltage rated models.

Physical data

AQUAZONE™ 50RTP03-20 UNITS

UNIT 50RTP	03	04	05	06	08	10	12	14	20
Compressor (qty)	Scroll (1)				Scroll (2)				
Factory Charge R-410A (oz)	64	84	120	132	108	120	130	192	300
Blower Motor									
Motor Quantity					1				
Standard Motor (hp)	1	1	1	1.5	2	3	3	3	5
Large Motor (hp)	N/A	1.5	1.5	2	3	5	5	5	7.5
Blower(s)									
Number of Blowers				1				2	
Blower Wheel Size (dia x w)	10 x 6		2 x 12		15 x 11		15 x 15	15 x 11	
V-belt size, Std drive	A29	A30	A32	AX33	B40	BX42	BX46	B39	BX40
Water Connection Size									
IPT (in.)	3/4		1	1 1/4	1 1/2			2	
Coax Volume									
Volume (US Gallons)	0.61	0.77	1.11	1.30	1.69	2.29	2.68	3.83	4.77
Condensate Connection Size									
FPT (in.)					1				
Air Coil Data									
Air Coil Total Face Area (sq ft)	5		7		9.33	10.5		20	
Filter, Standard, Qty...Size (in.)	4...16 x 20				6...16 x 20			8...16 x 20, 2...20 x 20	
Operating Weight (lb)	735	785	835	880	1080	1125	1175	1770	1960
Shipping Weight (lb)	750	800	850	900	1100	1150	1200	1800	2000
Corner Weights (lb)									
Front-Left	184	196	208.5	224	292	303.5	320	479	530
Front-Right	259	276	293.5	298	380	395.5	406	623	690
Rear-Left	108.5	117	124.5	134	193	202	212.5	315	350
Rear-Right	183.5	196	208.5	224	215	224	236.5	353	390
Curb, Installed (lb)	83				94			128	

IPT — Iron (National) Pipe Thread

Options and accessories

DESCRIPTION	FACTORY-INSTALLED OPTIONS	FIELD-INSTALLED ACCESSORIES
Cupronickel Heat Exchangers	X	
Two-Way Motorized Control Valve	X	
Filtration Options	X	
Outdoor Air Control	X	
Unit-Mounted Disconnect Options	X	
Blower Drive Options	X	
WSHP Open Multiple Protocol Controller	X	
Deluxe D Control System	X	
PremierLink™ Controller	X	
Aquazone™ Thermostats		X
Loop Controller		X
Fire-Rated Hoses		X
Ball Valves		X
Y Strainers		X
Solenoid Valves		X
Hose Kit Assemblies		X
Remote Sensors		X
PremierLink Accessories		X
Roof Curb Assembly		X

Factory-installed options

Cupronickel heat exchangers are available for higher corrosion protection in applications such as open tower, geothermal, etc. Consult the water quality guidelines for proper application and selection of this option.

Two-way motorized control valve can be provided with a copper or cupronickel heat exchanger for applications involving open type systems or variable speed pumping. This valve will slowly open or close in conjunction with the compressor operation to shut off or turn on water to the unit.

Filtration options include 2-in. pleated and 4-in. pleated filtering to provide a higher degree of particulate removal and indoor air quality (IAQ).

Outdoor air control includes manual, motorized and modulating enthalpy control for meeting system ventilation requirements.

Unit-mounted disconnect options include a disconnect with a GFI (convenience) outlet or a circuit breaker with a GFI outlet. This option minimizes cost, decreases installation time, and makes implementation easy.

Blower drive options provide maximum flexibility for the most challenging applications. Three static range motors are available in low, standard, and high rpm configurations. An optional large motor arrangement is available for high-static designs.

Deluxe D control system provides the same functions as the Complete C system while incorporating additional flexibility and functions to include:

Thermostat input capabilities accommodate emergency shutdown mode and night setback (NSB) with override potential. The NSB from low temperature thermostat with 2-hour override is initiated by a momentary signal from the thermostat.

Compressor relay staging is used with dual stage units (units with 2 compressors and 2 Deluxe D controls) or in master/slave applications.

Boilerless electric heat control system allows automatic changeover to electric heat at low loop water temperature.

Intelligent reversing valve operation minimizes reversing valve operation for extended life and quiet operation.

Thermostat type select (Y, O or Y, W) provides ability to work and select heat pump or heat/cool thermostats (Y, W).

Reversing valve signal select (O or B) provides selection for heat pump O/B thermostats.

Dehumidistat input provides fan control for dehumidification operation.

Multiple units on one thermostat/wall sensor provides communication for up to three heat pumps on one thermostat.

Boilerless changeover temperature provides selection of boilerless changeover temperature set point.

Accessory relays allow configuration for multiple applications including fan and compressor cycling, digital NSB, mechanical NSB, water valve operation, and outside air damper operation.

WSHP Open multiple protocol controller is a proactive controller capable of communicating BACnet*, Modbus, N2, and LON (with separate card) protocols. The controller is designed to allow users the access and ability to change and configure multiple settings and features including indoor air quality (IAQ), waterside economizer controls, etc.

PremierLink controller is compatible with CCN and other building automation systems (BAS). This control is designed to allow users the access and ability to change factory-defined settings, thus expanding the function of the standard unit.

* Sponsored by ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers).

Options and accessories (cont)

Field-installed accessories

Carrier's line of Aquazone thermostats are both attractive and multi-functional, accommodating stand-alone WSHP installations.

Programmable 7-day thermostat offers 2-stage heat, 2-stage cool, auto changeover, 7-day programmable with copy command, 4 settings per day, fully electronic, 24-vac, backlit LCD (liquid crystal display), keypad lockout, no batteries required, 5-minute compressor protection, NEVER-LOST™ memory, 3 security levels, and temperature display in degrees F or C.

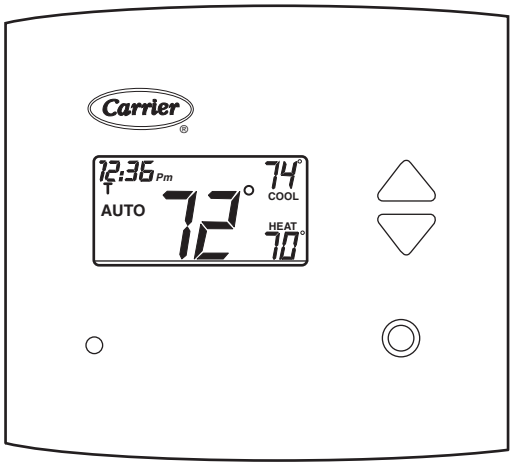
Programmable 7-day light-activated thermostat offers same features as the 7-day programmable thermostat and includes occupied comfort settings with lights on, and unoccupied energy savings with lights off.

Programmable 7-day flush-mount thermostat offers same features as the 7-day programmable thermostat and includes locking coverplate with tamper proof screws, flush-to-wall mount, holiday/vacation programming, set point limiting, dual point with adjustable deadband, O or B terminal, and optional wall or duct-mounted remote sensor.

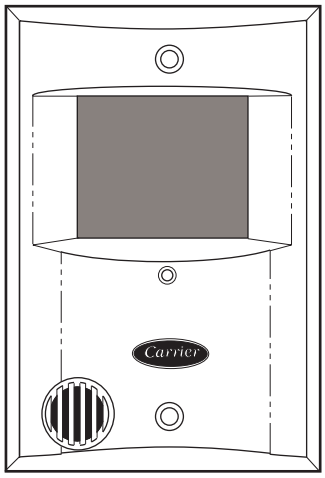
Programmable 5-day thermostat offers 2-stage heat, 2-stage cool, auto changeover, 5-minute built-in compressor protection, locking cover included, temperature display in degrees F or C, keypad lockout, backlit display, 5-1-1 programming, O or B terminal, dual set point with adjustable deadband, configurable display, self-prompting program, and 4 settings per day.

Non-programmable thermostat offers 2 heat stages, 2 cool stages, auto changeover, 5-minute built in compressor protection, locking cover included, temperature display in degrees F or C, keypad lockout, large display, back-lit display, O or B terminal, dual set point with adjustable deadband, and backplate with terminals.

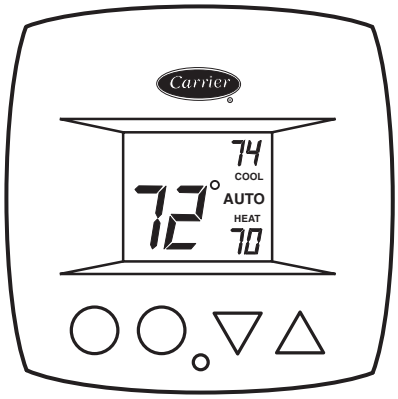
AQUAZONE™ THERMOSTATS



7-DAY PROGRAMMABLE/LIGHT-ACTIVATED PROGRAMMABLE



7-DAY PROGRAMMABLE FLUSH MOUNT



5-DAY PROGRAMMABLE/NON-PROGRAMMABLE

Loop controller with six stages (2 stages for heating and 4 stages for heat rejection) includes:

- Loop temperature alarms
- Two pump single loop flow monitoring with the ability to manually select the lead pump
- One common alarm signal and indicating light and one audible alarm
- Loop water temperature sensor test circuit
- Functional test simulation from operator keypad
- Real timeclock, industrial noise ratings
- Loop water temperature control switch
- Loop controller with 2 heating stages and 4 cooling stages.

Fire-rated hoses are 2 ft long and have a fixed MPT on one end and a swivel with an adapter on the other end. Hose kits include both a supply and return hose and can be either stainless steel or galvanized.

Ball valves (brass body) are used for shutoff and balancing water flow. Available with memory, memory stop, and pressure temperature ports. UL-listed brass body, ball and stem type with Teflon* seats and seals.

Y strainers (bronze body) are "Y" type strainers with a brass cap and stainless steel screens. Strainers have a maximum operating pressure rating of 450 psi and are available with blow down valves.

Solenoid valves (brass body) offer 3.5 watt coil, 24-v, 50/60 Hz, 740 amps inrush, and .312 amp holding. Slow operation of valves means quiet system application.

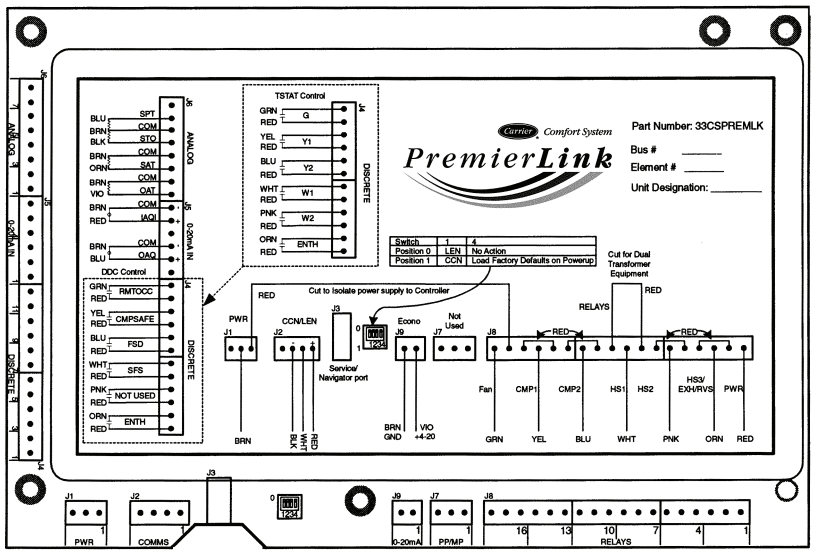
Hose kit assemblies provide all the necessary components to hook up a water-side system. Supply hose includes a ported ball valve with pressure temperature (P/T) plug ports, and flexible stainless steel hose with swivel and nipple. Return hose includes a ball valve, preset automatic balancing valve (gpm) with two P/T ports, flexible stainless steel hose with a swivel and nipple, balancing valve, and low-pressure drop water control valve.

Remote sensors are available for Aquazone™ flush mount thermostats. Sensors are available for wall (wired and wireless) or duct mounted applications.

PremierLink™ accessories can provide a fully integrated WSHP DDC system. Accessories include supply air temperature sensors (with override and/or set point adjustment), communicating room sensors, CO_2 sensors (for use in demand control ventilation), and linkage thermostats (to control multiple units from one thermostat).

Roof curb assembly provides field-installed mounting for all 50RTP units.

PREMIERLINK™ COMMUNICATING CONTROL



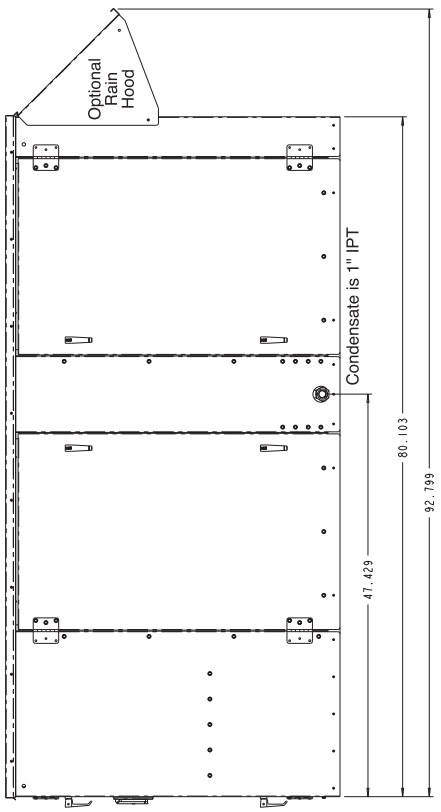
* Registered trademark of DuPont corporation.

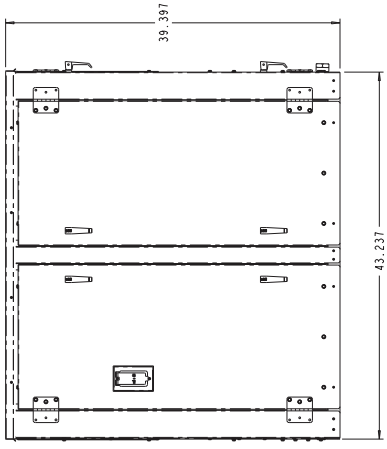
Base unit dimensions

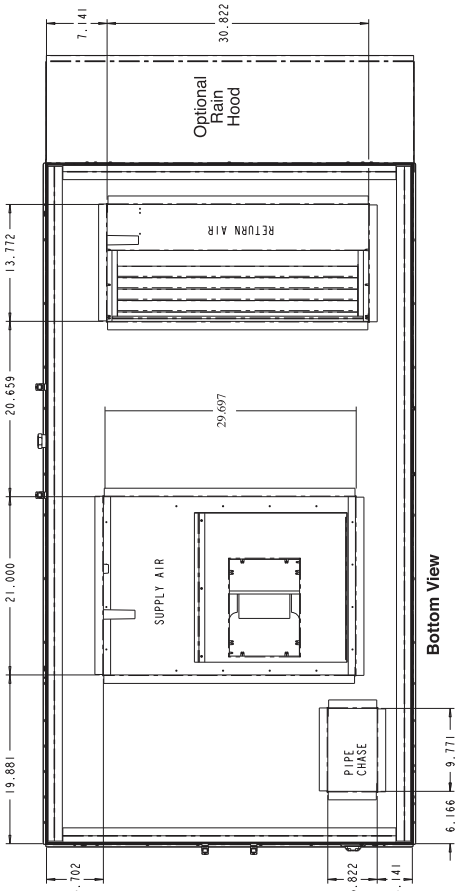
50RTP03-06 UNIT DIMENSIONS

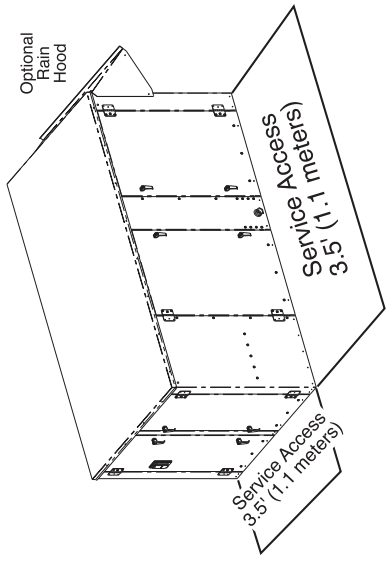
NOTES:
1. All dimensions are in inches.
2. Carrier works continuously to improve its products. As a result, the design and specification of each product at the time of order may be changed without notice.
3. Assembly tolerances ± 1/8 inch.

50RTP UNITS	DIMENSIONS (in.)		
	Outside Air Opening Size	Water In/Out (FPT)	Condensate Drain
03,04	12.57 x 30.00	3/4	1
05	12.57 x 30.00	1	1
06	12.57 x 30.00	1 1/4	1









50RTP08-12 UNIT DIMENSIONS

50RTP UNITS	DIMENSIONS (in.)		
	Outside Air Opening Size	Water In/Out (FPT)	Condensate Drain
08	18.95 x 36.00	1 1/4	1
10,12	18.95 x 36.00	1 1/2	1

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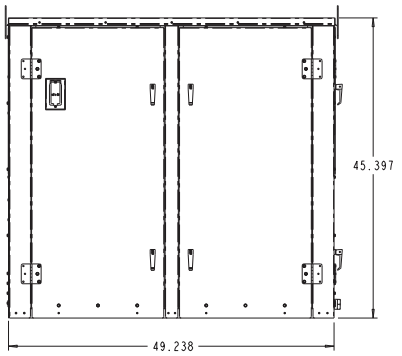
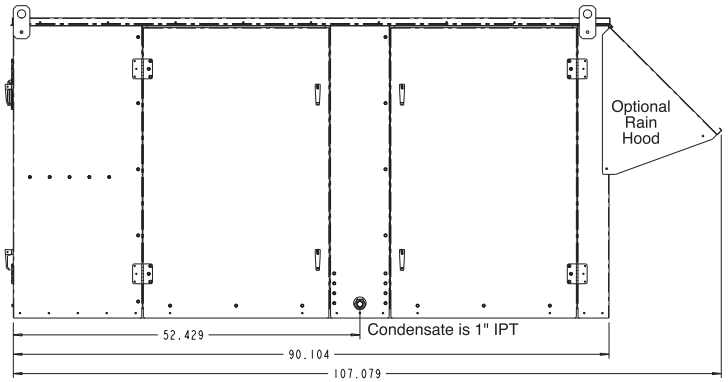
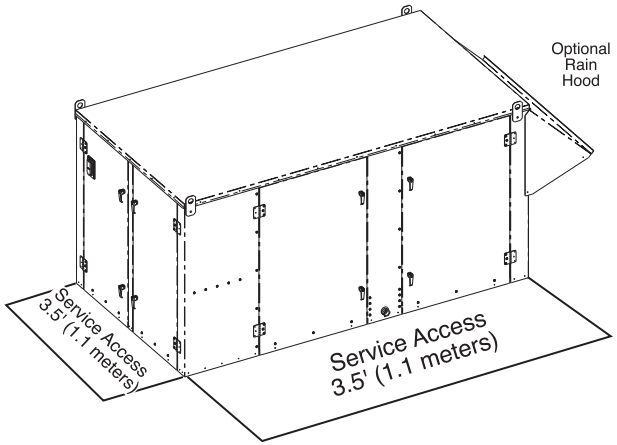
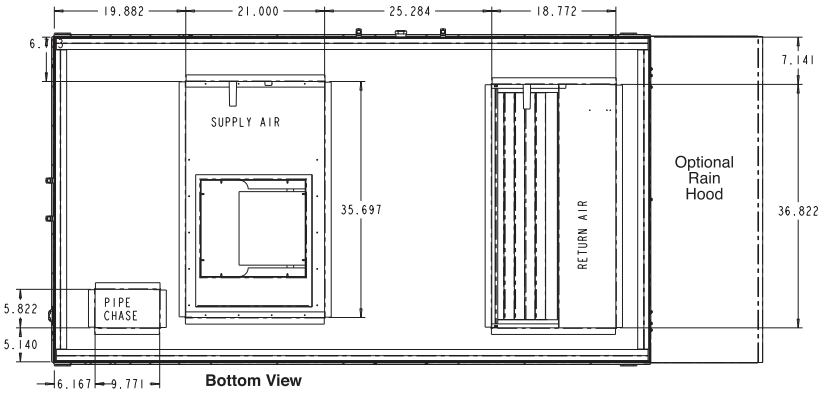






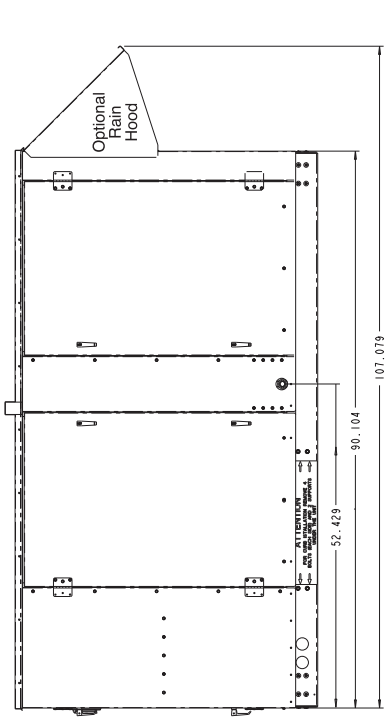


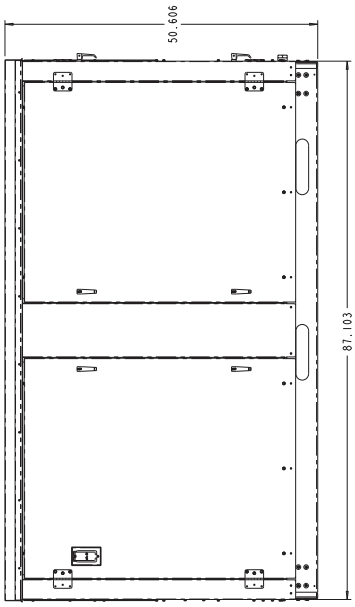
Base unit dimensions (cont)

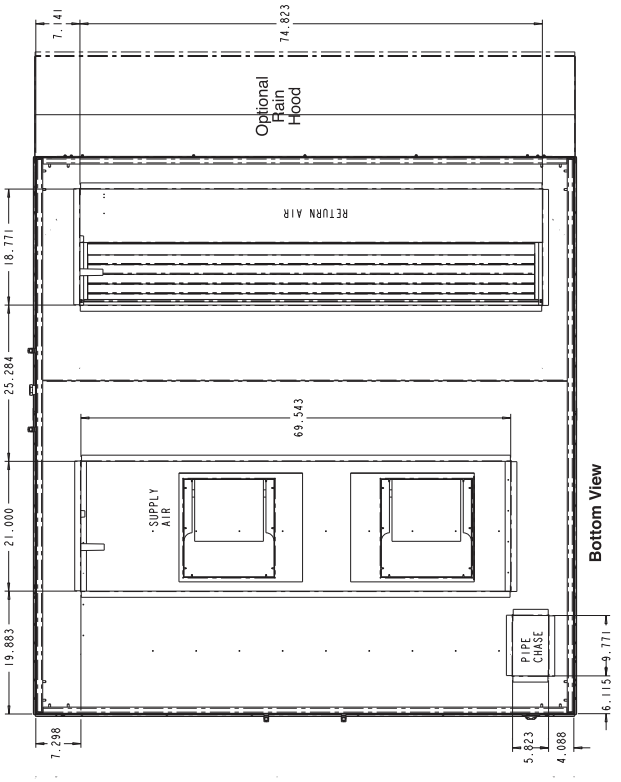
50RTP015,20 UNIT DIMENSIONS

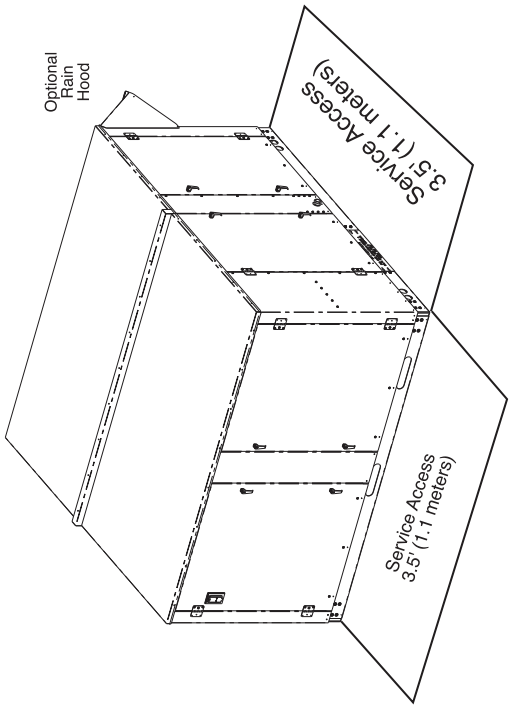
50RTP UNITS	DIMENSIONS (in.)		
	Outside Air Opening Size	Water In/Out (FPT)	Condensate Drain
14,20	18.95 x 74.00	2	1

NOTES:
1. All dimensions are in inches.
2. Carrier works continuously to improve its products. As a result, the design and specification of each product at the time of order may be changed without notice.
3. Assembly tolerances ± 1/8 inch.



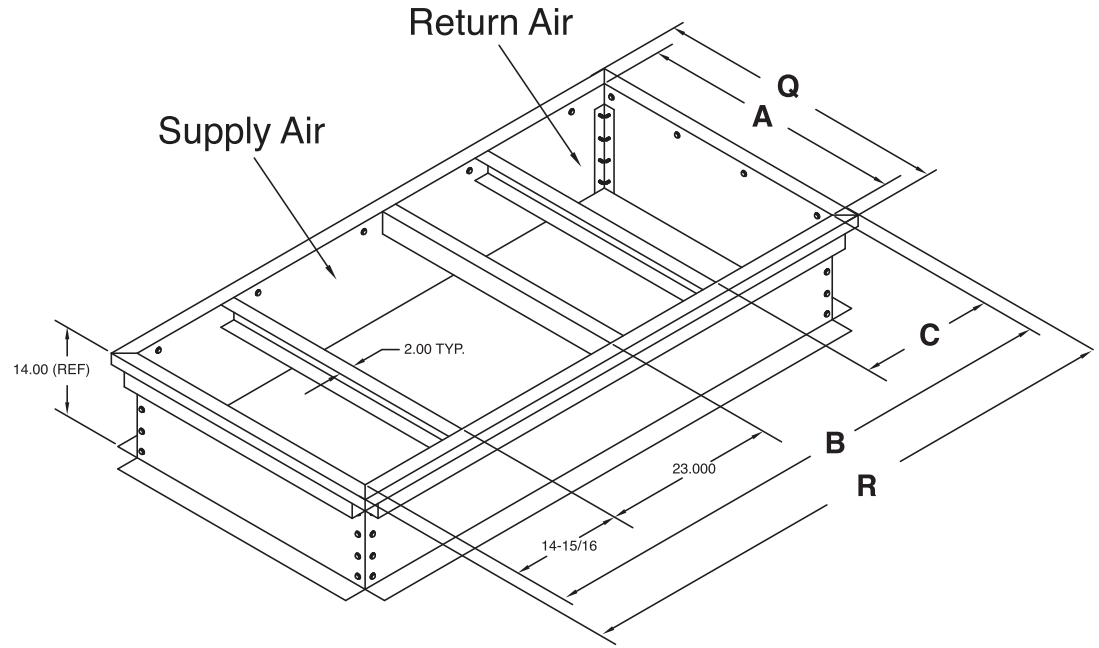


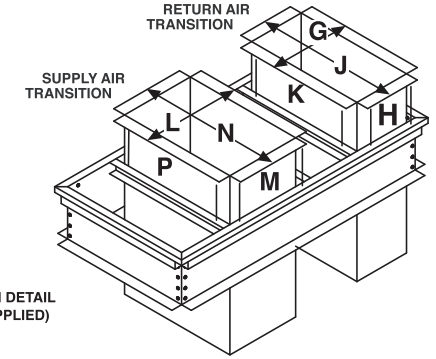




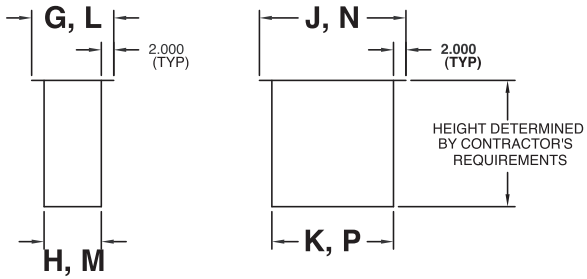
ROOF CURB ASSEMBLY DETAILS

ROOF CURB	DIMENSIONS (in.)														
	A	B	C	E	F	Return Air Transition				Supply Air Transition				Exterior Dimensions	
						G	H	J	K	L	M	N	P	Q	R
50RTPACURBAAAA	35.250	72.25	18.00	1.50	12.50	22.00	16.00	39.250	33.250	27.00	21.00	39.250	33.250	39.250	76.250
50RTPACURBBAAA	41.250	82.25	21.00	1.50	12.50	25.00	19.00	45.250	39.250	27.00	21.00	45.250	39.250	45.250	86.250
50RTPACURBCAAA	78.875	82.25	21.00	5.00	9.00	25.00	19.00	82.875	76.875	27.00	21.00	82.875	76.875	82.875	86.875

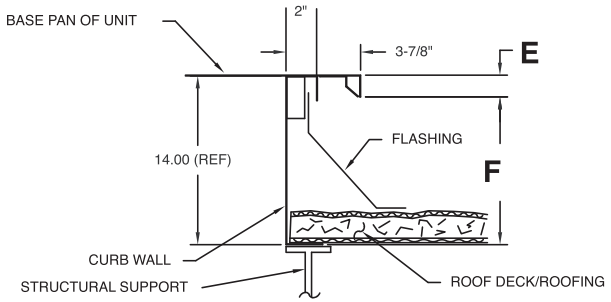




TRANSITION DETAIL
(FIELD SUPPLIED)



IMPORTANT NOTE: WHEN INSTALLING CURB, FLASHING MUST CONFORM TO THE NOTED DIMENSIONS. THIS IS TO ALLOW CLEARANCE FOR MOUNTING UNIT TO CURB.



NOTE: Dimensions are in inches.

Selection procedure (with 50RTP05 example)

I Determine the actual cooling and heating loads at the desired dry bulb (db) and wet bulb (wb) conditions.

Assume cooling load at desired dry bulb 80 F and wet bulb 65 F conditions are as follows:

Given:

Total Cooling (TC). . . . . .56,900 Btuh
Sensible Cooling (SC) . . . . . .49,400 Btuh
Entering-Air Temperature db . . . . . .80 F
Entering-Air Temperature wb . . . . . .65 F

II Determine the following design parameters.

Entering water temperature, water flow rate (gpm), airflow (cfm), water flow pressure drop and design wet and dry bulb temperatures. Airflow cfm should be between 300 and 450 cfm per ton. Unit water pressure drop should be kept as close as possible to other WSHPs to make water balancing easier.

For example:

Entering Water Temp . . . . . .90 F
Water Flow (based on 12° F rise) . . . . . 12 gpm
Airflow cfm . . . . . 2120 cfm

III Select a unit based on total cooling and total sensible cooling conditions. Unit selected should be closest to but not larger than the actual cooling load.

Enter tables at the design water flow and water temperature. Read the total and sensible cooling capacities.

NOTE: Interpolation is permissible, extrapolation is not.

For example:

Enter the 50RTP05 Performance Table at design water flow and water temperature. Read total cooling, sensible cooling and heat of rejection capacities:

Total Cooling . . . . . .63,400 Btuh
Sensible Cooling . . . . . .45,200 Btuh
Heat of Rejection . . . . . .79,200 Btuh
Airflow (cfm). . . . . 2000 cfm

NOTE: It is quite normal for WSHPs to be selected on cooling capacity only since the heating output is usually greater than the cooling capacity. Heating capacity is selected based on different entering water conditions than cooling capacity.

IV Determine the correction factors associated with the variable factors of db and wb using the Corrections Factor tables found in this book.

Using the following formulas to determine the correction factors of dry bulb and wet bulb:

a) Corrected Total Cooling = tabulated total cooling x wet bulb correction x airflow correction.

b) Corrected Sensible Cooling = tabulated sensible cooling x wet/dry bulb correction x airflow correction

V Determine entering air and airflow correction using the Corrections Factor tables found in this book.

The nominal airflow for the 50RTP05 is 2,000 cfm. The design parameter is 2,120 cfm.

2120 cfm / 2000 cfm = 106% of nominal airflow. Use the 106% row in the Airflow Correction table.

The nominal entering air temperature (EAT) is 67 F wb. The design parameter is 65 F wb. Use the 65 F row in the entering air correction table.

Using the following formulas to determine the correction factors of entering air and airflow correction:

	Table	Ent Air	Airflow	Corrected
Corrected Total Cooling	= 63,400 x	0.977 x	1.004 =	62,190
Corrected Sensible Cooling	= 45,200 x	1.084 x	1.030 =	50,467
Corrected Heat of Rejection	= 79,200 x	0.972 x	1.006 =	77,444

Compare the corrected capacities to the load requirements established in Step I. If the capacities are within 10% of the load requirements, 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.

VI Calculate and assess the water temperature rise.

Calculate the water temperature rise and assess the selection using the following calculation:

$$\text{Actual Temperature Rise} = \frac{\text{Corrected Heat of Rejection}}{\text{GPM x 500}}$$

For example, using the corrected heat of rejection from the last step:

$$\text{Actual Temperature Rise} = \frac{77{,}444}{12 \times 500} = 12.9 \text{ F}$$

If the units selected are not within 10% of the load calculations, review what effect changing the gpm, water temperature and/or airflow will have on the corrected capacities. If the desired capacity cannot be achieved, select the next larger or smaller unit and repeat Steps I through VI.

VII Determine the correction factor associated with antifreeze in system loop.

If heating EWT is 50 F or below, antifreeze may need to be used. Calculate leaving water temperature per performance data selection notes (operation is shaded areas). If antifreeze is required, use Anti-Freeze Correction table for correcting total and sensible capacities.

If the EWT for heating is 40 F, then the system requires antifreeze. If a solution of 15% propylene glycol is required, then:

Corrected Total Cooling =55,454 x 0.986
Corrected Total Cooling =54,678

Corrected Sensible Cooling =50,522 x 0.986
Corrected Sensible Cooling =49,815

ANTIFREEZE CORRECTION TABLE

ANTIFREEZE TYPE	ANTIFREEZE PERCENTAGE	COOLING			HEATING		WATER PRESSURE DROP, EWT 30 F
		EWT 90F			EWT 30 F		
		Total Capacity	Sensible Capacity	kW	Heating Capacity	kW	
Water	0	1.000	1.000	1.000	1.000	1.000	1.000
Propylene Glycol	5	0.995	0.995	1.003	0.989	0.997	1.070
	15	0.986	0.986	1.009	0.968	0.990	1.210
	25	0.978	0.978	1.014	0.947	0.983	1.360
Methanol	5	0.997	0.997	1.002	0.989	0.997	1.070
	15	0.990	0.990	1.007	0.968	0.990	1.160
	25	0.982	0.982	1.012	0.949	0.984	1.220
Ethanol	5	0.998	0.998	1.002	0.981	0.994	1.140
	15	0.994	0.994	1.005	0.944	0.983	1.300
	25	0.986	0.986	1.009	0.917	0.974	1.360
Ethylene Glycol	5	0.998	0.998	1.002	0.993	0.998	1.040
	15	0.994	0.994	1.004	0.980	0.994	1.120
	25	0.988	0.988	1.008	0.966	0.990	1.200

LEGEND

EWT — Entering Water Temperature

CORRECTION FACTORS — NOMINAL CFM — 50RTP UNITS

PERCENT OF RATED AIRFLOW	COOLING				HEATING		
	TC	TSC	THR	kW	TC	THA	kW
69%	0.976	0.858	0.968	0.938	0.982	0.972	1.021
75%	0.980	0.884	0.974	0.950	0.987	0.978	1.018
81%	0.981	0.907	0.978	0.965	0.991	0.983	1.024
87%	0.991	0.936	0.987	0.973	0.995	0.991	1.010
94%	0.997	0.966	0.995	0.986	1.000	0.999	1.005
100%	1.000	1.000	1.000	1.000	1.000	1.000	1.000
106%	1.004	1.030	1.006	1.011	1.008	1.011	0.998
113%	1.008	1.059	1.011	1.022	1.012	1.016	0.997
119%	1.011	1.079	1.017	1.042	1.018	1.020	1.007
125%	1.018	1.120	1.024	1.051	1.021	1.028	0.994

NOTE: Nominal airflow is 400 cfm per ton.

Performance data

ENTERING AIR CORRECTION TABLE — COOLING

EAT (wb, F)	TC	SENSIBLE COOLING CAPACITY MULTIPLIER, ENTERING (db, F)								kW	HR
		60	65	70	75	80	80.6	90	95		
50	0.8845	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9756	0.7757
55	0.6901	0.8885	0.8448	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9817	0.8366
60	0.0000	0.6885	0.8869	1.0871	0.0000	0.0000	0.0000	0.0000	0.0000	0.9886	0.9015
65	0.0000	0.0000	0.6839	0.8824	1.0835	1.1066	1.2837	0.0000	0.0000	0.9966	0.9724
66	0.0000	0.0000	0.6357	0.8330	1.0341	1.0579	1.2352	0.0000	0.0000	0.9986	0.9721
67	—	0.0000	0.6039	0.8001	1.0000	1.0239	1.2020	0.1548	0.0000	1.0000	1.0000
70	—	0.0000	0.0000	0.6772	0.8753	0.8994	1.0764	1.2779	0.1632	1.0052	1.0440
75	—	—	—	—	—	—	0.8662	1.0671	1.2694	1.0135	1.1185

LEGEND

AHRI — Air Conditioning, Heating, and Refrigeration Institute
ASHRAE — American Society of Heating, Refrigerating and Air Conditioning Engineers
db — Dry Bulb
EAT — Entering Air Temperature
HR — Heat of Rejection
ISO — International Organization for Standardization
kW — Total Power
TC — Total Capacity
wb — Wet Bulb

*Sensible capacity equals total capacity.
NOTE: AHRI/ISO/ASHRAE 13256-1 uses entering air conditions of cooling - 80.6 F db/66.2 F wb, and heating - 68 F db/59 F wb entering air temperature.

ENTERING AIR CORRECTION TABLE — HEATING

EAT (db, F)	HC	kW	HE
40	1.036	0.879	1.069
45	1.028	0.913	1.053
50	1.020	0.950	1.035
55	1.012	0.990	1.017
60	1.007	0.995	1.014
65	1.006	0.997	1.008
68	1.002	0.999	1.003
70	1.000	1.000	1.000
75	0.998	1.006	0.996
80	0.996	1.015	0.991

LEGEND

db — Dry Bulb
EAT — Entering Air Temperature
HC — Heating Capacity
HE — Heat of Extraction
kW — Total Power

DRY COIL TO WET COIL CONVERSION TABLE

AIR COIL FACE VELOCITY (FPM)	REQUIRED BHP MULTIPLIER	REQUIRED RPM MULTIPLIER
200	0.956	0.997
250	0.973	0.997
300	0.978	0.997
350	0.981	0.997
400	0.987	0.996
450	0.993	0.996
500	1.069	0.994

CONVERSION TABLE – ENGLISH TO SI

MEASUREMENT	CONVERSION
Airflow	Airflow (lps) = cfm x 0.472
Water Flow	Water flow (lps) = gpm x 0.0631
External Static Pressure	ESP (Pascal) = ESP (in. wg) x 249
Water Pressure Drop	PD (Pascal) = PD (ft of head) x 2,990

50RTP03 UNIT
1200 CFM NOMINAL (Rated) AIRFLOW

WATER/BRINE				COOLING — EAT 80/67 F					HEATING — EAT 70 F				
EWT (F)	GPM	PD psig	PD ft wg	TC	SC	kW	HR	EER	HC	kW	HE	LAT	COP
20	9.0	6.3	14.6	Operation Not Recommended					25.5	2.39	17.3	87.6	3.1
	4.5	1.2	2.8	43.5	28.5	1.73	49.4	25.1	27.5	2.42	19.3	89.2	3.3
30	6.8	3.2	7.5	43.6	28.7	1.66	49.3	26.2	28.6	2.43	20.3	90.0	3.4
	9.0	5.7	13.2	43.5	28.7	1.63	49.0	26.6	29.1	2.44	20.8	90.4	3.5
	4.5	1.0	2.2	42.8	28.1	1.87	49.2	22.9	31.1	2.47	22.7	92.0	3.7
40	6.8	2.7	6.3	43.4	28.4	1.77	49.4	24.6	32.5	2.49	24.0	93.0	3.8
	9.0	4.9	11.3	43.6	28.5	1.72	49.4	25.3	33.2	2.51	24.7	93.6	3.9
	4.5	0.7	1.6	41.5	27.5	2.03	48.4	20.4	35.0	2.53	26.3	94.9	4.0
50	6.8	2.2	5.1	42.5	27.9	1.91	49.0	22.3	36.6	2.56	27.9	96.2	4.2
	9.0	4.0	9.3	42.9	28.1	1.85	49.2	23.2	37.5	2.57	28.7	96.9	4.3
	4.5	0.4	0.9	39.8	26.8	2.23	47.4	17.8	39.0	2.60	30.1	98.0	4.4
60	6.8	1.8	4.1	41.1	27.3	2.09	48.2	19.7	40.9	2.63	31.9	99.5	4.6
	9.0	3.5	8.1	41.6	27.6	2.02	48.5	20.6	41.9	2.65	32.9	100.3	4.6
	4.5	0.3	0.8	37.8	26.0	2.47	46.2	15.3	43.0	2.66	33.9	101.1	4.7
70	6.8	1.6	3.8	39.2	26.6	2.30	47.1	17.0	45.1	2.70	35.9	102.7	4.9
	9.0	3.3	7.6	39.9	26.8	2.22	47.5	18.0	46.3	2.72	37.0	103.6	5.0
	4.5	0.3	0.6	35.6	25.1	2.74	45.0	13.0	47.0	2.73	37.7	104.2	5.0
80	6.8	1.5	3.5	37.1	25.7	2.55	45.8	14.5	49.3	2.78	39.8	105.9	5.2
	9.0	3.2	7.3	37.9	26.0	2.46	46.3	15.4	50.5	2.80	40.9	106.8	5.3
	4.5	0.3	0.6	34.5	24.7	2.89	44.3	12.0	48.9	2.77	39.4	105.6	5.2
85	6.8	1.5	3.4	36.0	25.3	2.70	45.2	13.4	51.2	2.82	41.6	107.4	5.3
	9.0	3.1	7.1	36.5	25.5	2.62	45.5	13.9	52.4	2.84	42.7	108.3	5.4
	4.5	0.2	0.5	33.3	24.2	3.04	43.7	11.0	50.8	2.81	41.2	107.1	5.3
90	6.8	1.4	3.3	34.8	24.8	2.84	44.5	12.3	53.1	2.86	43.4	108.9	5.5
	9.0	3.0	7.0	35.6	25.1	2.74	45.0	13.0	54.3	2.88	44.5	109.8	5.5
	4.5	0.2	0.4	31.1	23.3	3.39	42.6	9.2					
100	6.8	1.3	3.1	32.5	23.9	3.16	43.3	10.3					
	9.0	2.9	6.6	33.3	24.2	3.05	43.7	10.9					
	4.5	0.1	0.3	29.0	22.5	3.77	41.8	7.7					
110	6.8	1.3	3.0	30.3	23.0	3.52	42.3	8.6	Operation Not Recommended				
	9.0	2.8	6.5	31.0	23.3	3.41	42.6	9.1					
	4.5	0.1	0.3	27.1	21.9	4.20	41.4	6.5					
120	6.8	1.2	2.8	28.2	22.2	3.93	41.6	7.2					
	9.0	2.7	6.3	28.8	22.5	3.80	41.8	7.6					

LEGEND

COP — Coefficient of Performance
Cv — Coefficient of Velocity
db — Dry Bulb
EAT — Entering Air Temperature (F)
EER — Energy Efficiency Ratio
EWT — Entering Water Temperature (F)
HC — Heating Capacity (MBtuh)
HE — Heat of Extraction (MBtuh)
HR — Heat of Rejection (MBtuh)
kW — Total Power (Kilowatts)
MBtuh — Btuh in Thousands
LAT — Leaving Air Temperature (F)
PD — Pressure Drop
SC — Sensible Cooling Capacity (MBtuh)
TC — Total Cooling Capacity (MBtuh)
wb — Wet Bulb

NOTES:
1. Interpolation is permissible, extrapolation is not.
2. All entering air conditions are 80 F db and 67 F wb in cooling and 70 F db in heating.
3. All performance data is based upon the lower voltage of dual voltage rated units.
4. See performance correction tables for operating conditions other than those listed above.
5. Performance capacities shown in thousands of Btuh.
6. 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 so that the LWT is maintained above 42 F when the JW3 jumper is not clipped. Because the refrigerant temperature can potentially reach as low as 32 F with 40 F LWT, a nuisance cutout could occur due to the activation of the low temperature protection. The JW3 jumper should never be clipped for standard range equipment or systems without antifreeze. As an example:
   50RTP03 unit, EWT = 50 F, GPM = 6.8
   HE = (EWT – LWT) x GPM x 500
   (EWT – LWT) = HE / GPM x 500
   (EWT – LWT) = 27,900 / 6.8 x 500
   (EWT – LWT) = 8.2
   LWT = EWT – 8.2
   LWT = 50 – 8.2
   LWT = 41.8 F
   In this example, a higher flow rate will be required for EWTs at or below 50 F without antifreeze. At 9.0 gpm/ton, the calculation above results in a temperature difference of 6.2. LWT = 50 - 6.2 = 43.8 F, which is above 42 F EWT, and is acceptable for this application.

Performance data (cont)

50RTP04 UNIT
1600 CFM NOMINAL (Rated) AIRFLOW

WATER/BRINE				COOLING — EAT 80/67 F					HEATING — EAT 70 F				
EWT (F)	GPM	PD psig	PD ft wg	TC	SC	kW	HR	EER	HC	kW	HE	LAT	COP
20	12.0	12.6	29.1	Operation Not Recommended					34.5	3.42	22.8	87.9	3.0
	6.0	3.3	7.6	56.8	36.5	2.44	65.1	23.3	37.2	3.47	25.4	89.5	3.1
30	9.0	7.1	16.4	56.0	36.3	2.33	64.0	24.0	38.7	3.49	26.7	90.3	3.2
	12.0	11.4	26.4	55.4	36.1	2.28	63.2	24.3	39.4	3.51	27.5	90.8	3.3
	6.0	2.7	6.2	56.8	36.5	2.63	65.8	21.6	42.1	3.56	30.0	92.3	3.5
40	9.0	5.9	13.6	56.9	36.5	2.49	65.4	22.9	44.0	3.59	31.8	93.4	3.6
	12.0	9.7	22.4	56.7	36.4	2.43	65.0	23.4	45.1	3.61	32.8	94.0	3.7
	6.0	2.1	4.8	55.9	36.4	2.85	65.6	19.6	47.5	3.66	35.0	95.4	3.8
50	9.0	4.7	10.8	56.6	36.5	2.68	65.8	21.1	49.9	3.70	37.3	96.8	3.9
	12.0	8.0	18.4	56.9	36.5	2.61	65.8	21.8	51.2	3.73	38.5	97.6	4.0
	6.0	1.5	3.5	54.2	36.0	3.11	64.8	17.4	53.2	3.77	40.4	98.7	4.1
60	9.0	3.9	9.0	55.5	36.3	2.92	65.4	19.0	56.1	3.83	43.1	100.4	4.3
	12.0	7.0	16.1	56.0	36.4	2.83	65.6	19.8	57.8	3.86	44.6	101.3	4.4
	6.0	1.4	3.2	52.0	35.3	3.41	63.7	15.3	59.2	3.89	46.0	102.2	4.5
70	9.0	3.7	8.5	53.6	35.8	3.19	64.5	16.8	62.6	3.95	49.1	104.2	4.6
	12.0	6.6	15.3	54.4	36.0	3.09	64.9	17.6	64.5	3.99	50.9	105.3	4.7
	6.0	1.3	3.0	49.5	34.4	3.75	62.3	13.2	65.4	4.01	51.7	105.7	4.8
80	9.0	3.5	8.1	51.3	35.1	3.50	63.3	14.6	69.2	4.09	55.3	108.0	5.0
	12.0	6.4	14.7	52.2	35.4	3.39	63.7	15.4	71.4	4.13	57.3	109.2	5.1
	6.0	1.3	2.9	48.1	33.8	3.90	61.6	12.3	68.5	4.10	54.6	107.5	4.9
85	9.0	3.4	8.0	50.0	34.6	3.70	62.5	13.6	72.6	4.20	58.4	109.9	5.1
	12.0	6.3	14.4	50.7	34.8	3.59	62.9	14.1	74.9	4.20	60.5	111.2	5.2
	6.0	1.2	2.8	46.7	33.2	4.13	60.8	11.3	71.6	4.13	57.5	109.3	5.1
90	9.0	3.4	7.8	48.6	34.0	3.86	61.8	12.6	75.9	4.22	61.5	111.8	5.3
	12.0	6.2	14.2	49.6	34.4	3.73	62.3	13.3	78.3	4.27	63.7	113.2	5.4
	6.0	1.2	2.7	43.9	31.8	4.56	59.5	9.6					
100	9.0	3.2	7.5	45.8	32.8	4.27	60.4	10.7					
	12.0	6.0	13.8	46.8	33.2	4.13	60.9	11.3					
	6.0	1.1	2.5	41.1	30.2	5.05	58.4	8.2					
110	9.0	3.1	7.3	42.9	31.3	4.72	59.1	9.1	Operation Not Recommended				
	12.0	5.8	13.4	43.9	31.8	4.57	59.5	9.6					
	6.0	1.0	2.4	38.6	28.5	5.59	57.7	6.9					
120	9.0	3.0	7.0	40.2	29.6	5.23	58.1	7.7					
	12.0	5.7	13.1	41.1	30.2	5.06	58.3	8.1					

LEGEND

COP — Coefficient of Performance
Cv — Coefficient of Velocity
db — Dry Bulb
EAT — Entering Air Temperature (F)
EER — Energy Efficiency Ratio
EWT — Entering Water Temperature (F)
HC — Heating Capacity (MBtuh)
HE — Heat of Extraction (MBtuh)
HR — Heat of Rejection (MBtuh)
kW — Total Power (Kilowatts)
MBtuh — Btuh in Thousands
LAT — Leaving Air Temperature (F)
PD — Pressure Drop
SC — Sensible Cooling Capacity (MBtuh)
TC — Total Cooling Capacity (MBtuh)
wb — Wet Bulb

NOTES:
1. Interpolation is permissible, extrapolation is not.
2. All entering air conditions are 80 F db and 67 F wb in cooling and 70 F db in heating.
3. All performance data is based upon the lower voltage of dual voltage rated units.
4. See performance correction tables for operating conditions other than those listed above.
5. Performance capacities shown in thousands of Btuh.
6. 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 so that the LWT is maintained above 42 F when the JW3 jumper is not clipped. Because the refrigerant temperature can potentially reach as low as 32 F with 40 F LWT, a nuisance cutout could occur due to the activation of the low temperature protection. The JW3 jumper should never be clipped for standard range equipment or systems without antifreeze. As an example:
   50RTP03 unit, EWT = 50 F, GPM = 6.8
   HE = (EWT – LWT) x GPM x 500
   (EWT – LWT) = HE / GPM x 500
   (EWT – LWT) = 27,900 / 6.8 x 500
   (EWT – LWT) = 8.2
   LWT = EWT – 8.2
   LWT = 50 – 8.2
   LWT = 41.8 F
   In this example, a higher flow rate will be required for EWTs at or below 50 F without antifreeze. At 9.0 gpm/ton, the calculation above results in a temperature difference of 6.2. LWT = 50 - 6.2 = 43.8 F, which is above 42 F EWT, and is acceptable for this application.

50RTP05 UNIT
2000 CFM NOMINAL (Rated) AIRFLOW

WATER/BRINE				COOLING — EAT 80/67 F					HEATING — EAT 70 F				
EWT (F)	GPM	PD psig	PD ft wg	TC	SC	kW	HR	EER	HC	kW	HE	LAT	COP
20	16.0	5.8	13.4	Operation Not Recommended					38.8	3.88	25.5	85.9	2.9
	8.0	0.9	2.0	75.4	49.2	2.85	85.1	26.5	43.5	3.98	29.9	88.1	3.2
30	12.0	2.8	6.6	73.9	47.9	2.72	83.1	27.2	45.4	4.02	31.7	89.0	3.3
	16.0	5.3	12.3	72.7	47.1	2.66	81.8	27.3	46.5	4.04	32.7	89.5	3.4
	8.0	0.8	1.8	75.7	50.0	3.08	86.2	24.6	50.9	4.13	36.9	91.5	3.6
40	12.0	2.5	5.8	75.7	49.5	2.91	85.6	26.0	53.5	4.18	39.2	92.7	3.7
	16.0	4.7	10.9	75.3	49.1	2.84	85.0	26.5	54.9	4.21	40.5	93.4	3.8
	8.0	0.7	1.6	74.3	49.8	3.36	85.8	22.1	58.8	4.29	44.2	95.2	4.0
50	12.0	2.2	5.0	75.5	50.0	3.16	86.2	23.9	62.0	4.35	47.1	96.6	4.2
	16.0	4.1	9.6	75.7	49.9	3.06	86.2	24.7	63.7	4.39	48.7	97.4	4.3
	8.0	0.6	1.3	71.8	49.0	3.69	84.4	19.5	66.9	4.45	51.7	98.9	4.4
60	12.0	2.0	4.5	73.7	49.7	3.45	85.5	21.4	70.5	4.53	55.1	100.6	4.6
	16.0	3.8	8.8	74.5	49.9	3.34	85.9	22.3	72.5	4.57	56.9	101.5	4.6
	8.0	0.5	1.2	68.5	47.7	4.06	82.4	16.9	74.8	4.62	59.0	102.5	4.7
70	12.0	1.9	4.3	70.9	48.7	3.79	83.9	18.7	78.8	4.71	62.8	104.4	4.9
	16.0	3.7	8.5	72.0	49.1	3.67	84.5	19.6	81.0	4.76	64.8	105.4	5.0
	8.0	0.5	1.1	64.8	45.9	4.48	80.0	14.5	82.4	4.79	66.1	106.1	5.0
80	12.0	1.8	4.2	67.4	47.1	4.19	81.6	16.1	86.6	4.88	69.9	108.0	5.2
	16.0	3.6	8.2	68.6	47.7	4.05	82.4	17.0	88.7	4.93	71.9	109.0	5.3
	8.0	0.5	1.1	62.8	44.9	4.71	78.8	13.4	85.9	4.87	69.3	107.7	5.2
85	12.0	1.8	4.1	65.4	46.2	4.41	80.4	14.9	90.0	4.97	73.0	109.5	5.3
	16.0	3.5	8.1	66.4	46.7	4.30	81.0	15.4	92.0	5.02	74.9	110.5	5.4
	8.0	0.4	1.0	60.8	43.8	4.95	77.7	12.3	89.4	4.95	72.5	109.3	5.3
90	12.0	1.8	4.1	63.4	45.2	4.63	79.2	13.7	93.3	5.05	76.1	111.1	5.4
	16.0	3.5	8.0	64.8	45.9	4.48	80.0	14.5	95.3	5.10	77.9	112.0	5.5
	8.0	0.4	0.9	56.9	41.7	5.47	75.6	10.4					
100	12.0	1.8	4.1	59.4	43.1	5.13	76.9	11.6					
	16.0	3.5	8.0	60.7	43.8	4.96	77.6	12.2					
	8.0	0.4	0.8	53.4	39.7	6.06	74.1	8.8					
110	12.0	1.7	3.9	55.5	40.9	5.69	74.9	9.8	Operation Not Recommended				
	16.0	3.4	7.8	56.7	41.6	5.51	75.5	10.3					
	8.0	0.3	0.8	50.6	38.1	6.73	73.6	7.5					
120	12.0	1.6	3.8	52.2	39.0	6.31	73.8	8.3					
	16.0	3.3	7.6	53.2	39.6	6.11	74.0	8.7					

LEGEND

COP — Coefficient of Performance
Cv — Coefficient of Velocity
db — Dry Bulb
EAT — Entering Air Temperature (F)
EER — Energy Efficiency Ratio
EWT — Entering Water Temperature (F)
HC — Heating Capacity (MBtuh)
HE — Heat of Extraction (MBtuh)
HR — Heat of Rejection (MBtuh)
kW — Total Power (Kilowatts)
MBtuh — Btuh in Thousands
LAT — Leaving Air Temperature (F)
PD — Pressure Drop
SC — Sensible Cooling Capacity (MBtuh)
TC — Total Cooling Capacity (MBtuh)
wb — Wet Bulb

NOTES:
1. Interpolation is permissible, extrapolation is not.
2. All entering air conditions are 80 F db and 67 F wb in cooling and 70 F db in heating.
3. All performance data is based upon the lower voltage of dual voltage rated units.
4. See performance correction tables for operating conditions other than those listed above.
5. Performance capacities shown in thousands of Btuh.
6. 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 so that the LWT is maintained above 42 F when the JW3 jumper is not clipped. Because the refrigerant temperature can potentially reach as low as 32 F with 40 F LWT, a nuisance cutout could occur due to the activation of the low temperature protection. The JW3 jumper should never be clipped for standard range equipment or systems without antifreeze. As an example:
   50RTP03 unit, EWT = 50 F, GPM = 6.8
   HE = (EWT – LWT) x GPM x 500
   (EWT – LWT) = HE / GPM x 500
   (EWT – LWT) = 27,900 / 6.8 x 500
   (EWT – LWT) = 8.2
   LWT = EWT – 8.2
   LWT = 50 – 8.2
   LWT = 41.8 F
   In this example, a higher flow rate will be required for EWTs at or below 50 F without antifreeze. At 9.0 gpm/ton, the calculation above results in a temperature difference of 6.2. LWT = 50 - 6.2 = 43.8 F, which is above 42 F EWT, and is acceptable for this application.

Performance data (cont)

50RTP06 UNIT
2400 CFM NOMINAL (Rated) AIRFLOW

WATER/BRINE				COOLING — EAT 80/67 F					HEATING — EAT 70 F				
EWT (F)	GPM	PD psig	PD ft wg	TC	SC	kW	HR	EER	HC	kW	HE	LAT	COP
20	18.0	6.4	14.7	Operation Not Recommended					48.5	4.65	32.7	86.7	3.1
	9.0	1.1	2.5	76.8	52.2	3.22	87.8	23.9	53.2	4.73	37.1	88.5	3.3
30	13.5	3.2	7.4	73.7	51.3	3.09	84.2	23.9	55.5	4.76	39.2	89.4	3.4
	18.0	5.8	13.5	71.7	50.7	3.03	82.0	23.6	56.7	4.78	40.4	89.8	3.5
	9.0	0.8	1.8	79.0	52.8	3.48	90.9	22.7	61.1	4.85	44.6	91.5	3.7
40	13.5	2.5	5.8	77.9	52.5	3.30	89.2	23.6	64.0	4.89	47.3	92.6	3.8
	18.0	4.8	11.1	76.9	52.2	3.23	87.9	23.8	65.6	4.91	48.8	93.2	3.9
	9.0	0.5	1.1	78.6	52.9	3.78	91.5	20.8	69.4	4.97	52.4	94.7	4.1
50	13.5	1.8	4.2	79.1	52.9	3.57	91.3	22.1	72.9	5.02	55.7	96.0	4.3
	18.0	3.7	8.7	79.0	52.8	3.48	90.8	22.7	74.8	5.05	57.5	96.8	4.3
	9.0	0.3	0.7	76.4	52.5	4.14	90.6	18.5	77.8	5.10	60.4	98.0	4.5
60	13.5	1.5	3.4	78.1	52.8	3.89	91.3	20.0	81.8	5.16	64.2	99.5	4.6
	18.0	3.4	7.8	78.6	52.9	3.78	91.5	20.8	84.0	5.20	66.3	100.3	4.7
	9.0	0.3	0.6	73.1	51.8	4.55	88.6	16.1	86.2	5.24	68.4	101.2	4.8
70	13.5	1.3	3.1	75.4	52.3	4.27	90.0	17.7	90.7	5.32	72.5	102.9	5.0
	18.0	3.2	7.4	76.5	52.5	4.14	90.6	18.5	93.1	5.37	74.8	103.8	5.1
	9.0	0.2	0.6	69.1	50.7	5.02	86.2	13.8	94.4	5.39	76.1	104.4	5.1
80	13.5	1.3	2.9	71.8	51.5	4.71	87.8	15.2	99.2	5.49	80.4	106.2	5.3
	18.0	3.1	7.1	73.1	51.8	4.56	88.6	16.0	101.6	5.55	82.7	107.1	5.4
	9.0	0.2	0.5	66.9	50.1	5.29	84.9	12.7	98.3	5.48	79.7	105.9	5.3
85	13.5	1.2	2.8	69.6	50.9	4.96	86.5	14.1	103.1	5.59	84.0	107.7	5.4
	18.0	3.0	6.9	71.0	51.3	4.79	87.4	14.8	105.5	5.66	86.2	108.6	5.5
	9.0	0.2	0.5	64.7	49.4	5.56	83.6	11.6	102.2	5.57	83.3	107.4	5.4
90	13.5	1.2	2.7	67.5	50.3	5.21	85.2	12.9	107.0	5.69	87.6	109.2	5.5
	18.0	2.9	6.8	68.9	50.7	5.04	86.1	13.7	109.4	5.77	89.7	110.1	5.6
	9.0	0.2	0.4	60.3	47.9	6.17	81.4	9.8					
100	13.5	1.2	2.7	63.0	48.8	5.79	82.7	10.9					
	18.0	2.8	6.6	64.4	49.3	5.60	83.5	11.5					
	9.0	0.1	0.3	56.4	46.3	6.87	79.9	8.2					
110	13.5	1.1	2.6	58.7	47.2	6.44	80.7	9.1	Operation Not Recommended				
	18.0	2.8	6.4	59.9	47.7	6.24	81.2	9.6					
	9.0	0.1	0.3	53.4	45.2	7.68	79.6	7.0					
120	13.5	1.1	2.6	55.0	45.8	7.19	79.6	7.7					
	18.0	2.7	6.2	56.0	46.2	6.96	79.8	8.1					

LEGEND

COP — Coefficient of Performance
Cv — Coefficient of Velocity
db — Dry Bulb
EAT — Entering Air Temperature (F)
EER — Energy Efficiency Ratio
EWT — Entering Water Temperature (F)
HC — Heating Capacity (MBtuh)
HE — Heat of Extraction (MBtuh)
HR — Heat of Rejection (MBtuh)
kW — Total Power (Kilowatts)
MBtuh — Btuh in Thousands
LAT — Leaving Air Temperature (F)
PD — Pressure Drop
SC — Sensible Cooling Capacity (MBtuh)
TC — Total Cooling Capacity (MBtuh)
wb — Wet Bulb

NOTES:
1. Interpolation is permissible, extrapolation is not.
2. All entering air conditions are 80 F db and 67 F wb in cooling and 70 F db in heating.
3. All performance data is based upon the lower voltage of dual voltage rated units.
4. See performance correction tables for operating conditions other than those listed above.
5. Performance capacities shown in thousands of Btuh.
6. 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 so that the LWT is maintained above 42 F when the JW3 jumper is not clipped. Because the refrigerant temperature can potentially reach as low as 32 F with 40 F LWT, a nuisance cutout could occur due to the activation of the low temperature protection. The JW3 jumper should never be clipped for standard range equipment or systems without antifreeze. As an example:
   50RTP03 unit, EWT = 50 F, GPM = 6.8
   HE = (EWT – LWT) x GPM x 500
   (EWT – LWT) = HE / GPM x 500
   (EWT – LWT) = 27,900 / 6.8 x 500
   (EWT – LWT) = 8.2
   LWT = EWT – 8.2
   LWT = 50 – 8.2
   LWT = 41.8 F
   In this example, a higher flow rate will be required for EWTs at or below 50 F without antifreeze. At 9.0 gpm/ton, the calculation above results in a temperature difference of 6.2. LWT = 50 - 6.2 = 43.8 F, which is above 42 F EWT, and is acceptable for this application.

50RTP08 UNIT
3200 CFM NOMINAL (Rated) AIRFLOW

WATER/BRINE				COOLING — EAT 80/67 F					HEATING — EAT 70 F				
EWT (F)	GPM	PD psig	PD ft wg	TC	SC	kW	HR	EER	HC	kW	HE	LAT	COP
20	24.0	12.3	28.4	Operation Not Recommended					66.8	7.02	42.8	87.3	2.8
30	12.0	2.9	6.7	114.6	76.4	5.03	131.7	22.8	72.6	7.12	48.4	89.0	3.0
	18.0	6.6	15.2	113.6	75.3	4.78	129.9	23.7	75.4	7.16	50.9	89.8	3.1
	24.0	11.0	25.4	112.7	74.6	4.67	128.6	24.1	76.9	7.19	52.4	90.2	3.1
40	12.0	2.3	5.3	114.4	76.9	5.40	132.8	21.2	82.7	7.28	57.8	91.9	3.3
	18.0	5.4	12.4	114.7	76.6	5.12	132.2	22.4	86.3	7.34	61.2	92.9	3.4
	24.0	9.2	21.2	114.5	76.3	4.99	131.5	22.9	88.3	7.38	63.1	93.5	3.5
50	12.0	1.6	3.8	112.6	76.4	5.83	132.6	19.3	93.4	7.47	67.9	95.0	3.7
	18.0	4.2	9.7	114.1	76.9	5.50	132.9	20.7	97.8	7.55	72.1	96.2	3.8
	24.0	7.3	16.9	114.5	76.9	5.36	132.8	21.4	100.2	7.59	74.3	96.9	3.9
60	12.0	1.1	2.7	109.5	75.2	6.35	131.2	17.2	104.4	7.67	78.3	98.1	4.0
	18.0	3.5	8.1	111.9	76.2	5.96	132.3	18.8	109.5	7.77	83.0	99.6	4.1
	24.0	6.6	15.1	112.9	76.5	5.78	132.6	19.5	112.2	7.82	85.5	100.4	4.2
70	12.0	1.0	2.4	105.1	73.4	6.98	128.9	15.0	115.3	7.89	88.3	101.3	4.3
	18.0	3.3	7.6	108.4	74.8	6.52	130.6	16.6	120.6	8.00	93.4	102.8	4.4
	24.0	6.2	14.4	109.8	75.4	6.30	131.3	17.4	123.5	8.06	96.0	103.6	4.5
80	12.0	1.0	2.2	99.5	70.9	7.73	125.9	12.9	125.4	8.11	97.8	104.2	4.5
	18.0	3.2	7.3	103.6	72.7	7.18	128.1	14.4	130.8	8.23	102.7	105.8	4.7
	24.0	6.0	13.8	105.4	73.5	6.93	129.1	15.2	133.4	8.30	105.1	106.5	4.7
85	12.0	0.9	2.1	96.2	69.4	8.17	124.1	11.8	130.0	8.22	101.9	105.5	4.6
	18.0	3.1	7.2	100.6	71.4	7.58	126.5	13.3	135.0	8.35	106.5	107.0	4.7
	24.0	5.9	13.6	102.8	72.4	7.29	127.6	14.1	137.4	8.42	108.7	107.7	4.8
90	12.0	0.9	2.0	93.0	67.9	8.62	122.4	10.8	134.5	8.33	106.1	106.8	4.7
	18.0	3.0	7.0	97.6	70.1	7.99	124.9	12.2	139.2	8.47	110.3	108.2	4.8
	24.0	5.8	13.4	99.8	71.1	7.69	126.1	13.0	141.3	8.54	112.2	108.8	4.9
100	12.0	0.8	1.9	85.5	64.4	9.67	118.5	8.8	Operation Not Recommended				
	18.0	2.9	6.7	90.6	66.9	8.94	121.2	10.1					
	24.0	5.6	13.0	93.1	68.0	8.60	122.5	10.8					
110	12.0	0.8	1.8	77.3	60.3	10.90	114.5	7.1					
	18.0	2.8	6.5	82.7	63.1	10.08	117.1	8.2					
	24.0	5.5	12.7	85.4	64.4	9.68	118.5	8.8					
120	Operation Not Allowed												
	18.0	2.7	6.3	74.0	58.6	11.41	112.9	6.5					
	24.0	5.3	12.4	76.9	60.1	10.96	114.3	7.0					

LEGEND

COP — Coefficient of Performance
Cv — Coefficient of Velocity
db — Dry Bulb
EAT — Entering Air Temperature (F)
EER — Energy Efficiency Ratio
EWT — Entering Water Temperature (F)
HC — Heating Capacity (MBtuh)
HE — Heat of Extraction (MBtuh)
HR — Heat of Rejection (MBtuh)
kW — Total Power (Kilowatts)
MBtuh — Btuh in Thousands
LAT — Leaving Air Temperature (F)
PD — Pressure Drop
SC — Sensible Cooling Capacity (MBtuh)
TC — Total Cooling Capacity (MBtuh)
wb — Wet Bulb

NOTES:
1. Interpolation is permissible, extrapolation is not.
2. All entering air conditions are 80 F db and 67 F wb in cooling and 70 F db in heating.
3. All performance data is based upon the lower voltage of dual voltage rated units.
4. See performance correction tables for operating conditions other than those listed above.
5. Performance capacities shown in thousands of Btuh.
6. 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 so that the LWT is maintained above 42 F when the JW3 jumper is not clipped. Because the refrigerant temperature can potentially reach as low as 32 F with 40 F LWT, a nuisance cutout could occur due to the activation of the low temperature protection. The JW3 jumper should never be clipped for standard range equipment or systems without antifreeze. As an example:
   50RTP03 unit, EWT = 50 F, GPM = 6.8
   HE = (EWT – LWT) x GPM x 500
   (EWT – LWT) = HE / GPM x 500
   (EWT – LWT) = 27,900 / 6.8 x 500
   (EWT – LWT) = 8.2
   LWT = EWT – 8.2
   LWT = 50 – 8.2
   LWT = 41.8 F
   In this example, a higher flow rate will be required for EWTs at or below 50 F without antifreeze. At 9.0 gpm/ton, the calculation above results in a temperature difference of 6.2. LWT = 50 - 6.2 = 43.8 F, which is above 42 F EWT, and is acceptable for this application.

Performance data (cont)

50RTP10 UNIT
4000 CFM NOMINAL (Rated) AIRFLOW

WATER/BRINE				COOLING — EAT 80/67 F					HEATING — EAT 70 F				
EWT (F)	GPM	PD psig	PD ft wg	TC	SC	kW	HR	EER	HC	kW	HE	LAT	COP
20	30.0	3.8	8.7	Operation Not Recommended					87.7	9.23	56.2	88.3	2.8
	15.0	0.7	1.7	145.1	92.6	6.59	167.6	22.0	94.9	9.37	62.9	89.9	3.0
30	22.5	1.6	3.7	144.7	90.3	6.33	166.3	22.9	98.4	9.44	66.2	90.7	3.1
	30.0	3.4	7.8	143.9	88.5	6.23	165.2	23.1	100.4	9.48	68.1	91.2	3.1
	15.0	0.6	1.4	143.3	93.5	7.05	167.3	20.3	107.2	9.62	74.4	92.8	3.3
40	22.5	1.2	2.8	144.9	93.0	6.69	167.7	21.7	111.8	9.72	78.6	93.8	3.4
	30.0	2.7	6.2	145.1	92.2	6.53	167.4	22.2	114.3	9.77	81.0	94.4	3.4
	15.0	0.5	1.2	139.5	92.7	7.61	165.4	18.3	120.4	9.90	86.6	95.8	3.6
50	22.5	0.8	1.8	142.5	93.4	7.16	167.0	19.9	126.0	10.02	91.8	97.1	3.7
	30.0	2.0	4.7	143.7	93.5	6.97	167.5	20.6	129.1	10.09	94.7	97.8	3.7
	15.0	0.3	0.7	134.3	90.6	8.28	162.5	16.2	134.1	10.20	99.3	99.0	3.9
60	22.5	0.5	1.2	138.3	92.3	7.76	164.8	17.8	140.8	10.35	105.5	100.5	4.0
	30.0	1.7	4.0	140.1	92.9	7.52	165.8	18.6	144.5	10.44	108.9	101.4	4.1
	15.0	0.3	0.6	128.0	87.8	9.05	158.9	14.1	148.3	10.52	112.4	102.3	4.1
70	22.5	0.5	1.1	132.7	90.0	8.47	161.6	15.7	156.1	10.70	119.5	104.0	4.3
	30.0	1.6	3.8	135.0	90.9	8.19	162.9	16.5	160.3	10.81	123.4	105.0	4.3
	15.0	0.2	0.5	121.2	84.8	9.93	155.1	12.2	162.8	10.86	125.7	105.6	4.4
80	22.5	0.4	1.0	126.2	87.0	9.28	157.9	13.6	171.5	11.08	133.7	107.6	4.5
	30.0	1.5	3.6	128.7	88.1	8.97	159.3	14.3	176.2	11.20	138.0	108.7	4.6
	15.0	0.2	0.5	117.6	83.2	10.43	153.2	11.3	170.0	11.04	132.3	107.3	4.5
85	22.5	0.4	0.9	122.6	85.4	9.75	155.9	12.6	179.2	11.27	140.7	109.4	4.7
	30.0	1.5	3.5	125.2	86.6	9.41	157.3	13.3	184.1	11.40	145.2	110.5	4.7
	15.0	0.1	0.3	114.0	81.7	10.92	151.3	10.4	177.3	11.22	139.0	108.9	4.6
90	22.5	0.4	0.9	119.1	83.9	10.21	153.9	11.7	186.8	11.47	147.7	111.1	4.8
	30.0	1.5	3.4	121.7	85.0	9.87	155.3	12.3	192.0	11.60	152.5	112.4	4.9
	15.0	0.1	0.2	107.0	79.1	12.02	148.0	8.9					
100	22.5	0.3	0.8	111.8	80.9	11.25	150.2	9.9					
	30.0	1.4	3.3	114.4	81.9	10.87	151.5	10.5					
	15.0	0.1	0.2	100.5	77.2	13.24	145.6	7.6					
110	22.5	0.3	0.7	104.8	78.4	12.40	147.1	8.5	Operation Not Recommended				
	30.0	1.4	3.2	107.2	79.1	12.00	148.1	8.9					
	15.0	0.1	0.1	94.8	76.6	14.59	144.6	6.5					
120	22.5	0.3	0.7	98.5	76.9	13.67	145.1	7.2					
	30.0	1.3	3.0	100.5	77.2	13.23	145.6	7.6					

LEGEND

COP — Coefficient of Performance
Cv — Coefficient of Velocity
db — Dry Bulb
EAT — Entering Air Temperature (F)
EER — Energy Efficiency Ratio
EWT — Entering Water Temperature (F)
HC — Heating Capacity (MBtuh)
HE — Heat of Extraction (MBtuh)
HR — Heat of Rejection (MBtuh)
kW — Total Power (Kilowatts)
MBtuh — Btuh in Thousands
LAT — Leaving Air Temperature (F)
PD — Pressure Drop
SC — Sensible Cooling Capacity (MBtuh)
TC — Total Cooling Capacity (MBtuh)
wb — Wet Bulb

NOTES:
1. Interpolation is permissible, extrapolation is not.
2. All entering air conditions are 80 F db and 67 F wb in cooling and 70 F db in heating.
3. All performance data is based upon the lower voltage of dual voltage rated units.
4. See performance correction tables for operating conditions other than those listed above.
5. Performance capacities shown in thousands of Btuh.
6. 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 so that the LWT is maintained above 42 F when the JW3 jumper is not clipped. Because the refrigerant temperature can potentially reach as low as 32 F with 40 F LWT, a nuisance cutout could occur due to the activation of the low temperature protection. The JW3 jumper should never be clipped for standard range equipment or systems without antifreeze. As an example:
   50RTP03 unit, EWT = 50 F, GPM = 6.8
   HE = (EWT – LWT) x GPM x 500
   (EWT – LWT) = HE / GPM x 500
   (EWT – LWT) = 27,900 / 6.8 x 500
   (EWT – LWT) = 8.2
   LWT = EWT – 8.2
   LWT = 50 – 8.2
   LWT = 41.8 F
   In this example, a higher flow rate will be required for EWTs at or below 50 F without antifreeze. At 9.0 gpm/ton, the calculation above results in a temperature difference of 6.2. LWT = 50 - 6.2 = 43.8 F, which is above 42 F EWT, and is acceptable for this application.

50RTP12 UNIT
4800 CFM NOMINAL (Rated) AIRFLOW

WATER/BRINE				COOLING — EAT 80/67 F					HEATING — EAT 70 F				
EWT (F)	GPM	PD psig	PD ft wg	TC	SC	kW	HR	EER	HC	kW	HE	LAT	COP
20	36.0	8.0	18.6	Operation Not Recommended					94.0	10.13	59.4	86.1	2.7
30	18.0	2.0	4.7	159.7	105.5	6.70	182.6	23.8	102.5	10.29	67.4	87.7	2.9
	27.0	4.4	10.2	158.1	105.4	6.45	180.1	24.5	106.0	10.35	70.7	88.4	3.0
	36.0	7.3	16.9	156.6	105.1	6.35	178.2	24.6	108.0	10.39	72.5	88.8	3.0
40	18.0	1.7	3.9	159.0	105.0	7.17	183.5	22.2	116.6	10.53	80.6	90.4	3.2
	27.0	3.8	8.8	159.9	105.4	6.85	183.3	23.3	121.3	10.61	85.1	91.3	3.4
	36.0	6.4	14.7	159.8	105.5	6.71	182.7	23.8	123.9	10.65	87.5	91.8	3.4
50	18.0	1.3	3.1	154.9	103.7	7.75	181.3	20.0	131.9	10.78	95.1	93.4	3.6
	27.0	3.2	7.3	157.9	104.6	7.36	183.0	21.4	137.8	10.88	100.7	94.5	3.7
	36.0	5.4	12.5	158.9	104.9	7.19	183.5	22.1	141.1	10.93	103.8	95.2	3.8
60	18.0	1.1	2.5	148.0	101.8	8.41	176.7	17.6	148.0	11.05	110.3	96.5	3.9
	27.0	2.7	6.3	152.7	103.1	7.98	179.9	19.1	155.1	11.17	117.0	97.8	4.1
	36.0	4.9	11.2	154.7	103.6	7.77	181.2	19.9	159.0	11.23	120.6	98.6	4.1
70	18.0	1.0	2.3	138.9	99.2	9.15	170.2	15.2	164.4	11.33	125.8	99.6	4.3
	27.0	2.6	6.0	144.8	100.9	8.68	174.4	16.7	172.6	11.48	133.4	101.2	4.4
	36.0	4.7	10.8	147.5	101.7	8.45	176.3	17.5	177.0	11.56	137.5	102.1	4.5
80	18.0	1.0	2.2	128.1	95.9	9.97	162.1	12.8	180.8	11.63	141.1	102.8	4.6
	27.0	2.5	5.8	134.7	98.0	9.47	167.0	14.2	189.8	11.82	149.4	104.5	4.7
	36.0	4.5	10.4	137.9	99.0	9.23	169.4	15.0	194.5	11.92	153.9	105.4	4.8
85	18.0	0.9	2.1	121.9	93.7	10.41	157.4	11.8	188.8	11.80	148.5	104.3	4.7
	27.0	2.4	5.5	128.8	96.0	9.91	162.6	13.0	198.0	12.00	157.0	106.1	4.8
	36.0	4.4	10.2	132.4	97.3	9.65	165.3	13.7	202.8	12.12	161.4	107.0	4.9
90	18.0	0.9	2.1	115.8	91.5	10.86	152.8	10.7	196.8	11.97	156.0	105.9	4.8
	27.0	2.4	5.5	122.8	94.1	10.35	158.1	11.9	206.2	12.19	164.6	107.7	5.0
	36.0	4.4	10.1	126.4	95.3	10.09	160.8	12.5	211.0	12.32	169.0	108.6	5.0
100	18.0	0.9	2.0	102.4	85.9	11.82	142.7	8.7	Operation Not Recommended				
	27.0	2.3	5.3	109.6	89.0	11.30	148.1	9.7					
	36.0	4.2	9.7	113.3	90.5	11.04	150.9	10.3					
110	18.0	0.8	1.9	88.1	78.9	12.84	132.0	6.9					
	27.0	2.2	5.2	95.2	82.5	12.33	137.3	7.7					
	36.0	4.1	9.5	98.9	84.3	12.07	140.1	8.2					
120	18.0	0.8	1.8	73.4	70.3	13.94	120.9	5.3					
	27.0	2.2	5.0	80.1	74.4	13.43	125.9	6.0					
	36.0	4.0	9.3	83.6	76.4	13.17	128.6	6.4					

LEGEND

COP — Coefficient of Performance
Cv — Coefficient of Velocity
db — Dry Bulb
EAT — Entering Air Temperature (F)
EER — Energy Efficiency Ratio
EWT — Entering Water Temperature (F)
HC — Heating Capacity (MBtuh)
HE — Heat of Extraction (MBtuh)
HR — Heat of Rejection (MBtuh)
kW — Total Power (Kilowatts)
MBtuh — Btuh in Thousands
LAT — Leaving Air Temperature (F)
PD — Pressure Drop
SC — Sensible Cooling Capacity (MBtuh)
TC — Total Cooling Capacity (MBtuh)
wb — Wet Bulb

NOTES:
1. Interpolation is permissible, extrapolation is not.
2. All entering air conditions are 80 F db and 67 F wb in cooling and 70 F db in heating.
3. All performance data is based upon the lower voltage of dual voltage rated units.
4. See performance correction tables for operating conditions other than those listed above.
5. Performance capacities shown in thousands of Btuh.
6. 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 so that the LWT is maintained above 42 F when the JW3 jumper is not clipped. Because the refrigerant temperature can potentially reach as low as 32 F with 40 F LWT, a nuisance cutout could occur due to the activation of the low temperature protection. The JW3 jumper should never be clipped for standard range equipment or systems without antifreeze. As an example:
   50RTP03 unit, EWT = 50 F, GPM = 6.8
   HE = (EWT – LWT) x GPM x 500
   (EWT – LWT) = HE / GPM x 500
   (EWT – LWT) = 27,900 / 6.8 x 500
   (EWT – LWT) = 8.2
   LWT = EWT – 8.2
   LWT = 50 – 8.2
   LWT = 41.8 F
   In this example, a higher flow rate will be required for EWTs at or below 50 F without antifreeze. At 9.0 gpm/ton, the calculation above results in a temperature difference of 6.2. LWT = 50 - 6.2 = 43.8 F, which is above 42 F EWT, and is acceptable for this application.

Performance data (cont)

50RTP14 UNIT
5600 CFM NOMINAL (Rated) AIRFLOW

WATER/BRINE				COOLING — EAT 80/67 F					HEATING — EAT 70 F				
EWT (F)	GPM	PD psig	PD ft wg	TC	SC	kW	HR	EER	HC	kW	HE	LAT	COP
20	42.0	11.5	26.5	Operation Not Recommended					112.0	10.20	77.2	86.5	3.2
	21.0	2.8	6.6	180.4	129.3	7.99	207.6	22.6	121.9	10.41	86.4	88.1	3.4
30	31.5	6.2	14.3	171.8	128.1	7.73	198.2	22.2	126.9	10.52	91.0	88.9	3.5
	42.0	10.3	23.9	166.8	127.3	7.63	192.8	21.9	129.7	10.58	93.6	89.4	3.6
	21.0	2.3	5.3	188.0	130.3	8.56	217.2	22.0	139.9	10.80	103.1	91.1	3.8
40	31.5	5.2	12.1	183.6	129.7	8.16	211.4	22.5	146.6	10.94	109.3	92.2	3.9
	42.0	8.9	20.5	180.5	129.3	8.00	207.8	22.6	150.3	11.02	112.7	92.8	4.0
	21.0	1.8	4.1	190.2	130.9	9.28	221.8	20.5	159.5	11.23	121.2	94.3	4.2
50	31.5	4.3	9.9	189.2	130.5	8.76	219.1	21.6	167.7	11.41	128.8	95.7	4.3
	42.0	7.4	17.2	187.9	130.3	8.54	217.0	22.0	172.2	11.51	132.9	96.4	4.4
	21.0	1.3	3.1	188.1	131.2	10.16	222.8	18.5	179.4	11.68	139.6	97.6	4.5
60	31.5	3.7	8.5	189.9	131.0	9.53	222.4	19.9	188.6	11.90	148.0	99.1	4.6
	42.0	6.7	15.4	190.2	130.9	9.24	221.7	20.6	193.4	12.01	152.4	99.9	4.7
	21.0	1.2	2.9	183.0	130.9	11.18	221.1	16.4	198.5	12.14	157.0	100.7	4.8
70	31.5	3.5	8.0	186.9	131.2	10.44	222.5	17.9	207.6	12.38	165.4	102.3	4.9
	42.0	6.4	14.7	188.4	131.2	10.10	222.8	18.6	212.3	12.51	169.6	103.0	5.0
	21.0	1.2	2.7	175.5	129.6	12.34	217.6	14.2	215.2	12.60	172.2	103.5	5.0
80	31.5	3.3	7.7	180.9	130.6	11.51	220.2	15.7	223.2	12.85	179.3	104.8	5.1
	42.0	6.2	14.2	183.3	130.9	11.12	221.3	16.5	226.7	12.98	182.4	105.4	5.1
	21.0	1.1	2.5	170.9	128.4	12.99	215.3	13.2	221.7	12.80	177.9	104.6	5.1
85	31.5	3.3	7.6	176.9	129.8	12.12	218.2	14.6	228.0	13.10	183.5	105.6	5.1
	42.0	6.0	14.0	179.8	130.5	11.69	219.7	15.4	230.5	13.20	185.5	106.0	5.1
	21.0	1.1	2.5	166.4	127.2	13.64	212.9	12.2	228.1	13.04	183.6	105.6	5.1
90	31.5	3.2	7.4	172.8	129.0	12.73	216.2	13.6	232.9	13.27	187.6	106.4	5.1
	42.0	6.0	13.8	175.8	129.7	12.29	217.8	14.3	234.3	13.38	188.6	106.6	5.1
	21.0	1.0	2.4	156.2	123.3	15.09	207.7	10.3					
100	31.5	3.1	7.2	163.1	126.0	14.10	211.2	11.6					
	42.0	5.8	13.4	166.5	127.2	13.62	213.0	12.2					
	21.0	1.0	2.4	145.4	118.0	16.70	202.4	8.7					
110	31.5	3.0	7.0	152.5	121.6	15.63	205.8	9.8	Operation Not Recommended				
	42.0	5.7	13.1	156.0	123.2	15.11	207.6	10.3					
	Operation Not Allowed												
120	31.5	2.9	6.8	141.5	115.7	17.33	200.6	8.2					
	42.0	5.6	12.8	145.0	117.7	16.77	202.2	8.6					

LEGEND

COP — Coefficient of Performance
Cv — Coefficient of Velocity
db — Dry Bulb
EAT — Entering Air Temperature (F)
EER — Energy Efficiency Ratio
EWT — Entering Water Temperature (F)
HC — Heating Capacity (MBtuh)
HE — Heat of Extraction (MBtuh)
HR — Heat of Rejection (MBtuh)
kW — Total Power (Kilowatts)
MBtuh — Btuh in Thousands
LAT — Leaving Air Temperature (F)
PD — Pressure Drop
SC — Sensible Cooling Capacity (MBtuh)
TC — Total Cooling Capacity (MBtuh)
wb — Wet Bulb

NOTES:
1. Interpolation is permissible, extrapolation is not.
2. All entering air conditions are 80 F db and 67 F wb in cooling and 70 F db in heating.
3. All performance data is based upon the lower voltage of dual voltage rated units.
4. See performance correction tables for operating conditions other than those listed above.
5. Performance capacities shown in thousands of Btuh.
6. 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 so that the LWT is maintained above 42 F when the JW3 jumper is not clipped. Because the refrigerant temperature can potentially reach as low as 32 F with 40 F LWT, a nuisance cutout could occur due to the activation of the low temperature protection. The JW3 jumper should never be clipped for standard range equipment or systems without antifreeze. As an example:
   50RTP03 unit, EWT = 50 F, GPM = 6.8
   HE = (EWT – LWT) x GPM x 500
   (EWT – LWT) = HE / GPM x 500
   (EWT – LWT) = 27,900 / 6.8 x 500
   (EWT – LWT) = 8.2
   LWT = EWT – 8.2
   LWT = 50 – 8.2
   LWT = 41.8 F
   In this example, a higher flow rate will be required for EWTs at or below 50 F without antifreeze. At 9.0 gpm/ton, the calculation above results in a temperature difference of 6.2. LWT = 50 - 6.2 = 43.8 F, which is above 42 F EWT, and is acceptable for this application.

50RTP20 UNIT
8000 CFM NOMINAL (Rated) AIRFLOW

WATER/BRINE				COOLING — EAT 80/67 F					HEATING — EAT 70 F				
EWT (F)	GPM	PD psig	PD ft wg	TC	SC	kW	HR	EER	HC	kW	HE	LAT	COP
20	60.0	10.2	23.5	Operation Not Recommended					158.1	16.10	103.2	86.3	2.9
	30.0	2.7	6.3	254.7	182.7	12.65	297.9	20.1	170.9	16.42	114.8	87.7	3.0
30	45.0	5.6	13.0	243.6	172.9	11.70	283.5	20.8	176.6	16.56	120.1	88.4	3.1
	60.0	9.2	21.4	236.6	166.9	11.24	274.9	21.1	179.7	16.63	123.0	88.8	3.2
	30.0	2.3	5.3	263.0	190.6	13.99	310.8	18.8	193.5	16.94	135.7	90.3	3.3
40	45.0	4.8	11.2	258.5	186.2	13.11	303.2	19.7	201.3	17.10	143.0	91.3	3.5
	60.0	8.0	18.4	254.8	182.8	12.66	298.0	20.1	205.7	17.20	147.0	91.8	3.5
	30.0	1.8	4.3	263.2	191.9	15.25	315.2	17.3	219.0	17.48	159.3	93.3	3.7
50	45.0	4.0	9.3	263.8	191.6	14.38	312.9	18.3	229.0	17.69	168.6	94.4	3.8
	60.0	6.7	15.5	262.9	190.5	13.95	310.5	18.8	234.5	17.81	173.8	95.1	3.9
	30.0	1.5	3.5	257.6	188.8	16.50	313.9	15.6	246.1	18.05	184.5	96.4	4.0
60	45.0	3.5	8.2	262.0	191.3	15.62	315.3	16.8	258.3	18.31	195.8	97.8	4.1
	60.0	6.2	14.2	263.3	191.9	15.19	315.1	17.3	264.9	18.46	202.0	98.6	4.2
	30.0	1.5	3.3	248.0	183.1	17.82	308.8	13.9	274.1	18.66	210.4	99.7	4.3
70	45.0	3.4	7.9	255.0	187.3	16.89	312.7	15.1	288.1	18.98	223.3	101.3	4.4
	60.0	5.9	13.7	257.9	189.0	16.44	314.0	15.7	295.6	19.15	230.3	102.1	4.5
	30.0	1.4	3.2	235.9	176.1	19.27	301.6	12.2	302.1	19.31	236.2	102.9	4.6
80	45.0	3.3	7.6	244.4	181.0	18.26	306.7	13.4	317.3	19.68	250.1	104.6	4.7
	60.0	5.7	13.2	248.4	183.3	17.78	309.0	14.0	325.4	19.89	257.5	105.6	4.8
	30.0	1.4	3.2	229.1	172.5	20.08	297.6	11.4	315.6	19.65	248.6	104.4	4.7
85	45.0	3.3	7.6	237.9	177.3	19.03	302.8	12.5	331.0	20.05	262.6	106.2	4.8
	60.0	5.6	13.0	242.4	179.9	18.50	305.5	13.1	339.1	20.28	269.9	107.2	4.9
	30.0	1.4	3.1	222.2	168.9	20.90	293.6	10.6	329.1	19.99	260.9	106.0	4.8
90	45.0	3.2	7.3	231.4	173.7	19.79	298.9	11.7	344.8	20.42	275.1	107.8	4.9
	60.0	5.6	12.9	235.9	176.2	19.26	301.6	12.3	352.9	20.67	282.4	108.7	5.0
	30.0	1.3	3.0	208.2	162.2	22.79	286.0	9.1					
100	45.0	3.1	7.2	217.3	166.4	21.54	290.8	10.1					
	60.0	5.5	12.6	221.9	168.7	20.94	293.4	10.6					
	30.0	1.3	2.9	194.9	157.2	25.00	280.2	7.8					
110	45.0	3.0	7.0	203.1	160.2	23.56	283.5	8.6	Operation Not Recommended				
	60.0	5.4	12.4	207.6	162.0	22.89	285.6	9.1					
	Operation Not Allowed												
120	45.0	3.0	6.9	190.2	156.0	25.95	278.7	7.3					
	60.0	5.3	12.2	194.0	157.0	25.16	279.9	7.7					

LEGEND

COP — Coefficient of Performance
Cv — Coefficient of Velocity
db — Dry Bulb
EAT — Entering Air Temperature (F)
EER — Energy Efficiency Ratio
EWT — Entering Water Temperature (F)
HC — Heating Capacity (MBtuh)
HE — Heat of Extraction (MBtuh)
HR — Heat of Rejection (MBtuh)
kW — Total Power (Kilowatts)
MBtuh — Btuh in Thousands
LAT — Leaving Air Temperature (F)
PD — Pressure Drop
SC — Sensible Cooling Capacity (MBtuh)
TC — Total Cooling Capacity (MBtuh)
wb — Wet Bulb

NOTES:
1. Interpolation is permissible, extrapolation is not.
2. All entering air conditions are 80 F db and 67 F wb in cooling and 70 F db in heating.
3. All performance data is based upon the lower voltage of dual voltage rated units.
4. See performance correction tables for operating conditions other than those listed above.
5. Performance capacities shown in thousands of Btuh.
6. 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 so that the LWT is maintained above 42 F when the JW3 jumper is not clipped. Because the refrigerant temperature can potentially reach as low as 32 F with 40 F LWT, a nuisance cutout could occur due to the activation of the low temperature protection. The JW3 jumper should never be clipped for standard range equipment or systems without antifreeze. As an example:
   50RTP03 unit, EWT = 50 F, GPM = 6.8
   HE = (EWT – LWT) x GPM x 500
   (EWT – LWT) = HE / GPM x 500
   (EWT – LWT) = 27,900 / 6.8 x 500
   (EWT – LWT) = 8.2
   LWT = EWT – 8.2
   LWT = 50 – 8.2
   LWT = 41.8 F
   In this example, a higher flow rate will be required for EWTs at or below 50 F without antifreeze. At 9.0 gpm/ton, the calculation above results in a temperature difference of 6.2. LWT = 50 - 6.2 = 43.8 F, which is above 42 F EWT, and is acceptable for this application.

Performance data (cont)

50RTP03 BLOWER PERFORMANCE DATA

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)															
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
900	bhp	0.10	0.13	0.16	0.17	0.19	0.22	0.24	0.26	0.28	0.30	0.33	0.35	0.37	0.40	0.44	0.47
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C
	rpm	552	615	665	715	765	820	875	925	965	1010	1055	1100	1140	1180	1220	1260
	Turns Open	4.5	3.5	3.0	4.5	4.0	3.5	2.5	2.0	1.5	1.0	3.0	2.5	2.0	2.0	1.5	1.0
1000	bhp	0.16	0.17	0.19	0.21	0.23	0.25	0.28	0.30	0.33	0.36	0.40	0.43	0.46	0.49	0.52	0.55
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	rpm	615	655	695	740	790	845	900	940	985	1030	1070	1115	1150	1190	1230	1265
	Turns Open	3.5	3.0	5.0	4.0	3.5	3.0	2.0	1.5	1.0	0.5	3.0	2.5	2.0	1.5	1.5	1.0
1100	bhp	0.22	0.23	0.25	0.29	0.32	0.34	0.35	0.36	0.38	0.41	0.44	0.48	0.50	0.53	0.56	0.59
	Sheave/Motor	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	rpm	685	725	765	810	855	895	940	985	1025	1065	1105	1145	1180	1215	1250	1285
	Turns Open	2.5	5.0	4.0	3.5	2.5	2.5	1.5	1.0	0.5	3.0	2.5	2.0	1.5	1.5	1.0	0.5
1200	bhp	0.26	0.27	0.30	0.33	0.36	0.39	0.42	0.44	0.48	0.51	0.54	0.57	0.60	0.62	0.65	0.69
	Sheave/Motor	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	rpm	710	740	785	830	880	920	965	1005	1045	1085	1125	1160	1195	1230	1265	1300
	Turns Open	5.0	4.5	3.5	3.0	2.5	2.0	1.0	0.5	3.5	3.0	2.5	2.0	1.5	1.0	1.0	0.5
1300	bhp	0.30	0.33	0.36	0.40	0.42	0.44	0.46	0.50	0.55	0.61	0.65	0.68	0.71	0.74	0.76	0.79
	Sheave/Motor	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	rpm	750	790	830	870	910	950	990	1030	1065	1105	1140	1175	1210	1245	1280	1315
	Turns Open	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.5	3.0	2.5	2.0	1.5	1.5	1.0	0.5	0.0
1400	bhp	0.40	0.42	0.44	0.47	0.50	0.53	0.56	0.60	0.64	0.67	0.70	0.72	0.75	0.79	0.84	0.88
	Sheave/Motor	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C
	rpm	820	850	875	915	950	990	1025	1065	1100	1135	1170	1205	1235	1270	1305	1335
	Turns Open	3.0	2.5	2.5	2.0	1.5	1.0	0.5	3.0	2.5	2.0	2.0	1.5	1.0	0.5	0.5	0.0
1500	bhp	0.45	0.47	0.50	0.52	0.55	0.59	0.64	0.69	0.74	0.77	0.80	0.83	0.86	0.90	0.93	—
	Sheave/Motor	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	—
	rpm	860	885	920	955	985	1020	1055	1090	1125	1160	1190	1225	1255	1290	1320	—
	Turns Open	2.5	2.0	2.0	1.5	1.0	0.5	3.0	2.5	2.0	2.0	1.5	1.0	1.0	0.5	0.0	—

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

50RTP04 BLOWER PERFORMANCE DATA

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)															
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
1200	bhp	0.27	0.31	0.34	0.37	0.40	0.42	0.45	0.48	0.52	0.55	0.58	0.60	0.63	0.66	0.70	0.73
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C
	rpm	750	800	845	890	935	975	1015	1055	1095	1135	1170	1205	1240	1275	1310	1345
	Turns Open	5.0	4.0	5.0	4.0	3.5	3.0	2.5	1.5	1.0	0.5	0.0	3.0	2.5	2.0	1.5	1.5
1300	bhp	0.35	0.38	0.41	0.43	0.45	0.47	0.53	0.59	0.64	0.67	0.70	0.72	0.75	0.78	0.80	0.83
	Sheave/Motor	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	rpm	810	850	890	930	970	1010	1050	1090	1125	1160	1195	1230	1265	1300	1330	1365
	Turns Open	4.0	4.5	4.0	3.5	3.0	2.5	2.0	1.0	0.5	0.0	3.0	3.0	2.5	2.0	1.5	1.0
1400	bhp	0.43	0.46	0.49	0.52	0.55	0.58	0.62	0.66	0.68	0.71	0.74	0.77	0.82	0.86	0.91	0.96
	Sheave/Motor	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	rpm	865	900	935	970	1010	1045	1085	1120	1155	1190	1220	1255	1290	1320	1355	1390
	Turns Open	4.5	4.0	3.5	3.0	2.5	2.0	1.5	0.5	0.0	3.5	3.0	2.5	2.0	1.5	1.0	1.0
1500	bhp	0.49	0.52	0.54	0.57	0.62	0.68	0.73	0.76	0.79	0.82	0.85	0.89	0.92	0.96	1.00	1.05
	Sheave/Motor	A	A	A	A	A	A	A	A	C	C	C	C	C	C	E	E
	rpm	910	945	975	1010	1045	1080	1115	1150	1180	1215	1250	1280	1310	1345	1375	1405
	Turns Open	3.5	3.5	3.0	2.5	2.0	1.5	1.0	0.0	3.5	3.0	2.5	2.0	2.0	1.5	1.0	0.5
1600	bhp	0.62	0.65	0.67	0.70	0.72	0.75	0.78	0.82	0.86	0.89	0.94	1.00	1.04	1.08	1.13	1.18
	Sheave/Motor	A	A	A	A	A	A	A	C	C	C	C	E	E	E	E	E
	rpm	960	985	1015	1050	1080	1115	1145	1175	1210	1240	1275	1305	1335	1365	1395	1425
	Turns Open	3.0	2.5	2.5	2.0	2.0	1.5	0.5	3.5	3.0	2.5	2.5	2.0	1.5	1.0	0.5	0.5
1700	bhp	0.74	0.77	0.80	0.83	0.85	0.88	0.90	0.93	0.95	1.00	1.06	1.11	1.17	1.22	1.27	1.31
	Sheave/Motor	A	A	A	A	A	A	C	C	C	E	E	E	E	E	E	E
	rpm	1000	1030	1060	1090	1115	1150	1180	1210	1240	1270	1300	1330	1360	1390	1420	1445
	Turns Open	2.5	2.0	1.5	1.5	1.0	1.0	3.5	3.0	3.0	2.5	2.0	1.5	1.0	1.0	0.5	0.0
1800	bhp	0.83	0.87	0.90	0.94	0.98	1.02	1.06	1.09	1.14	1.18	1.23	1.28	1.32	1.36	—	—
	Sheave/Motor	A	A	A	A	A	E	E	E	E	E	E	E	E	E	—	—
	rpm	1050	1075	1100	1125	1155	1185	1215	1245	1275	1300	1330	1360	1385	1415	—	—
	Turns Open	2.0	1.5	1.0	0.5	0.5	3.5	3.0	2.5	2.5	2.0	1.5	1.0	1.0	0.5	—	—
1900	bhp	0.97	1.00	1.03	1.08	1.12	1.16	1.20	1.25	1.29	1.34	1.38	1.42	—	—	—	—
	Sheave/Motor	A	D	D	E	E	E	E	E	E	E	E	E	—	—	—	—
	rpm	1100	1120	1145	1175	1200	1225	1250	1280	1305	1335	1360	1385	—	—	—	—
	Turns Open	1.0	1.0	0.5	3.5	3.0	3.0	2.5	2.0	2.0	1.5	1.0	1.0	—	—	—	—
2000	bhp	1.13	1.17	1.20	1.24	1.28	1.32	1.36	1.40	1.44	—	—	—	—	—	—	—
	Sheave/Motor	D	D	E	E	E	E	E	E	E	—	—	—	—	—	—	—
	rpm	1145	1170	1190	1215	1235	1260	1290	1315	1340	—	—	—	—	—	—	—
	Turns Open	0.5	0.5	3.0	3.0	2.5	2.5	2.0	1.5	1.5	—	—	—	—	—	—	—

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor, D = Standard rpm/Large Motor, E = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

Performance data (cont)

50RTP05 BLOWER PERFORMANCE DATA

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)															
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
1500	bhp	0.17	0.22	0.26	0.29	0.31	0.34	0.37	0.40	0.44	0.47	0.5	0.53	0.56	0.60	0.63	0.65
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C
	rpm	516	573	625	670	710	755	785	820	850	880	900	925	945	970	990	1010
	Turns Open	5.0	4.5	3.5	2.5	4.5	4.0	3.5	3.0	2.0	1.5	1.5	1.0	0.5	3.0	2.5	2.5
1600	bhp	0.20	0.24	0.28	0.32	0.35	0.38	0.41	0.45	0.48	0.52	0.55	0.58	0.62	0.65	0.68	0.70
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C
	rpm	526	583	635	680	725	765	795	830	860	890	915	940	965	990	1010	1030
	Turns Open	5.0	4.5	3.5	5.0	4.5	3.5	3.0	2.5	2.0	1.5	1.0	0.5	3.0	2.5	2.5	2.0
1700	bhp	0.23	0.26	0.30	0.34	0.38	0.42	0.45	0.49	0.53	0.56	0.60	0.64	0.67	0.71	0.73	0.75
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C
	rpm	536	589	640	685	730	770	805	840	875	900	930	955	980	1005	1025	1045
	Turns Open	4.5	4.0	3.0	5.0	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.5	3.0	2.5	2.0	2.0
1800	bhp	0.25	0.29	0.33	0.37	0.41	0.46	0.50	0.54	0.58	0.62	0.65	0.68	0.72	0.76	0.78	0.81
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C
	rpm	547	599	650	695	740	780	815	855	885	915	940	965	995	1020	1040	1060
	Turns Open	4.5	4.0	3.0	4.5	4.0	3.5	2.5	2.0	1.5	1.0	0.5	3.0	2.5	2.0	2.0	1.5
1900	bhp	0.29	0.32	0.37	0.41	0.46	0.50	0.55	0.59	0.62	0.66	0.70	0.73	0.77	0.81	0.85	0.88
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C
	rpm	568	620	665	710	755	790	830	865	895	925	955	985	1015	1035	1060	1080
	Turns Open	4.5	3.5	3.0	4.5	3.5	3.0	2.5	2.0	1.5	1.0	0.5	2.5	2.0	2.0	1.5	1.0
2000	bhp	0.33	0.36	0.42	0.47	0.52	0.57	0.61	0.66	0.69	0.73	0.77	0.81	0.85	0.89	0.92	0.96
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	rpm	589	635	680	725	765	805	845	880	910	940	975	1005	1030	1055	1075	1100
	Turns Open	4.0	3.5	5.0	4.0	3.5	3.0	2.0	1.5	1.0	0.5	3.0	2.5	2.0	1.5	1.5	1.0
2100	bhp	0.41	0.45	0.49	0.52	0.57	0.63	0.68	0.72	0.76	0.80	0.84	0.88	0.92	0.96	1.00	1.04
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	C	C	C	C	E	E
	rpm	615	660	700	740	780	820	860	895	925	960	990	1020	1045	1070	1095	1120
	Turns Open	3.5	3.0	4.5	4.0	3.0	2.5	2.0	1.5	1.0	0.5	2.5	2.0	2.0	1.5	1.0	0.5
2200	bhp	0.44	0.49	0.54	0.58	0.64	0.69	0.74	0.78	0.83	0.87	0.91	0.96	1.00	1.04	1.08	1.12
	Sheave/Motor	B	A	A	A	A	A	A	A	A	C	C	C	E	E	E	E
	rpm	640	680	720	760	800	840	880	910	945	975	1005	1035	1060	1085	1115	1135
	Turns Open	3.0	5.0	4.5	3.5	3.0	2.5	1.5	1.0	0.5	3.0	2.5	2.0	1.5	1.5	1.0	0.5
2300	bhp	0.52	0.56	0.60	0.65	0.70	0.75	0.80	0.85	0.89	0.94	1.00	1.05	1.11	1.16	1.22	1.25
	Sheave/Motor	B	A	A	A	A	A	A	A	C	C	E	E	E	E	E	E
	rpm	665	705	745	785	825	860	895	930	960	995	1025	1050	1080	1105	1135	1155
	Turns Open	3.0	4.5	4.0	3.5	2.5	2.0	1.5	0.5	3.0	2.5	2.0	2.0	1.5	1.0	0.5	0.5
2400	bhp	0.57	0.62	0.67	0.73	0.79	0.84	0.89	1.00	1.00	1.03	1.08	1.14	1.20	1.26	1.30	1.35
	Sheave/Motor	A	A	A	A	A	A	A	D	D	E	E	E	E	E	E	E
	rpm	695	735	775	810	850	885	920	950	980	1015	1040	1070	1100	1130	1150	1175
	Turns Open	5.0	4.0	3.5	3.0	2.0	1.5	1.0	0.5	0.0	2.0	2.0	1.5	1.0	0.5	0.5	0.0
2500	bhp	0.64	0.69	0.75	0.81	0.87	0.92	1.00	1.01	1.05	1.11	1.17	1.23	1.29	1.34	1.39	1.43
	Sheave/Motor	A	A	A	A	A	A	D	D	E	E	E	E	E	E	E	E
	rpm	725	765	800	835	870	905	940	970	1000	1030	1060	1090	1120	1145	1170	1190
	Turns Open	4.5	3.5	3.0	2.5	2.0	1.5	0.5	0.0	2.5	2.0	1.5	1.0	0.5	0.5	0.0	0.0

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor, D = Standard rpm/Large Motor, E = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

50RTP06 BLOWER PERFORMANCE DATA

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)															
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
1800	bhp	0.27	0.31	0.35	0.39	0.43	0.47	0.51	0.55	0.59	0.62	0.66	0.70	0.74	0.76	0.79	0.83
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C
	rpm	568	620	665	710	755	790	830	865	895	920	950	975	1005	1025	1045	1070
	Turns Open	5.0	3.5	2.5	1.5	5.0	4.0	3.5	3.0	2.5	2.0	1.0	0.5	0.0	4.0	4.0	3.5
1900	bhp	0.29	0.33	0.37	0.42	0.46	0.50	0.55	0.59	0.63	0.67	0.70	0.74	0.77	0.81	0.85	0.89
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C
	rpm	573	625	670	715	755	795	830	870	900	930	960	990	1015	1040	1060	1085
	Turns Open	4.5	3.5	2.5	1.5	5.0	4.0	3.5	3.0	2.0	1.5	1.0	0.5	4.5	4.0	3.5	3.5
2000	bhp	0.32	0.36	0.41	0.46	0.51	0.56	0.60	0.65	0.69	0.72	0.76	0.80	0.84	0.88	0.92	0.96
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C
	rpm	583	630	675	720	760	800	835	875	905	935	970	1000	1025	1050	1075	1100
	Turns Open	4.5	3.0	2.0	1.0	4.5	3.5	3.0	2.5	2.0	1.5	0.5	0.0	4.0	3.5	3.5	3.0
2100	bhp	0.39	0.44	0.47	0.51	0.56	0.61	0.66	0.71	0.75	0.79	0.83	0.87	0.91	0.95	0.99	1.03
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C
	rpm	599	645	685	725	770	805	845	885	915	950	980	1010	1035	1060	1085	1110
	Turns Open	4.0	3.0	2.0	1.0	4.5	3.5	3.0	2.5	1.5	1.0	0.5	4.5	4.0	3.5	3.0	3.0
2200	bhp	0.42	0.47	0.52	0.56	0.62	0.67	0.72	0.77	0.81	0.85	0.89	0.93	0.98	1.02	1.06	1.11
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C
	rpm	620	665	705	745	785	825	865	900	930	960	995	1020	1050	1075	1100	1130
	Turns Open	3.5	2.5	1.5	5.0	4.0	3.5	2.5	2.0	1.5	1.0	0.0	4.0	3.5	3.5	3.0	2.5
2300	bhp	0.49	0.54	0.58	0.62	0.67	0.72	0.78	0.82	0.87	0.91	0.97	1.02	1.08	1.13	1.19	1.23
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C
	rpm	640	685	725	765	800	840	880	910	945	975	1010	1035	1065	1090	1120	1145
	Turns Open	3.0	2.0	1.0	4.5	4.0	3.0	2.5	2.0	1.0	0.5	4.5	4.0	3.5	3.0	2.5	2.5
2400	bhp	0.54	0.58	0.62	0.68	0.74	0.79	0.85	0.90	0.94	0.99	1.04	1.10	1.15	1.21	1.27	1.31
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	rpm	660	700	740	780	820	855	890	925	955	990	1020	1050	1075	1105	1135	1155
	Turns Open	2.5	1.5	5.0	4.5	3.5	3.0	2.0	1.5	1.0	0.5	4.0	3.5	3.5	3.0	2.5	2.0
2500	bhp	0.59	0.64	0.69	0.75	0.81	0.87	0.92	0.96	1.01	1.05	1.11	1.17	1.23	1.29	1.34	1.39
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	rpm	680	725	765	800	835	870	905	935	970	1000	1030	1060	1090	1120	1145	1170
	Turns Open	2.0	1.0	4.5	4.0	3.5	3.0	2.0	1.5	0.5	0.0	4.0	3.5	3.0	C	2.0	2.0
2600	bhp	0.64	0.69	0.75	0.80	0.86	0.92	0.97	1.02	1.08	1.13	1.19	1.25	1.30	1.36	1.41	1.50
	Sheave/Motor	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	E
	rpm	700	740	780	815	850	885	920	950	985	1015	1045	1075	1100	1130	1155	1180
	Turns Open	1.5	5.0	4.5	3.5	3.0	2.5	2.0	1.0	0.5	4.5	3.5	3.0	3.0	2.5	2.0	1.5
2700	bhp	0.70	0.75	0.80	0.86	0.91	0.97	1.02	1.08	1.14	1.20	1.26	1.32	1.38	1.50	1.52	1.56
	Sheave/Motor	B	A	A	A	A	A	A	A	C	C	C	C	C	E	E	E
	rpm	725	760	795	830	865	900	930	960	995	1025	1055	1085	1115	1140	1165	1190
	Turns Open	1.0	4.5	4.0	3.5	3.0	2.0	1.5	1.0	4.5	4.0	3.5	3.0	2.5	2.0	2.0	1.5
2800	bhp	0.76	0.82	0.88	0.93	0.98	1.05	1.10	1.16	1.22	1.30	1.37	1.44	1.50	1.56	1.63	1.69
	Sheave/Motor	A	A	A	A	A	A	A	A	C	C	C	C	E	E	E	E
	rpm	745	780	815	850	880	915	945	980	1010	1040	1070	1100	1125	1150	1180	1205
	Turns Open	5.0	4.0	3.5	3.0	2.5	1.5	1.0	0.5	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.5
2900	bhp	0.82	0.88	0.93	0.98	1.05	1.11	1.17	1.23	1.30	1.37	1.44	1.51	1.59	1.65	1.71	1.77
	Sheave/Motor	A	A	A	A	A	A	A	C	C	C	C	E	E	E	E	E
	rpm	765	800	830	865	900	930	960	990	1020	1050	1080	1110	1140	1165	1190	1215
	Turns Open	4.5	4.0	3.5	2.5	2.0	1.5	0.5	4.5	4.0	3.5	3.0	2.5	2.5	2.0	1.5	1.0
3000	bhp	0.91	0.96	1.02	1.07	1.13	1.20	1.26	1.32	1.38	1.46	1.53	1.60	1.66	1.72	1.78	1.84
	Sheave/Motor	A	A	A	A	A	A	A	C	C	C	E	E	E	E	E	E
	rpm	785	820	855	885	915	950	980	1010	1035	1065	1095	1125	1150	1175	1200	1225
	Turns Open	4.0	3.5	3.0	2.5	2.0	1.0	0.5	4.0	4.0	3.5	3.0	2.5	2.0	1.5	1.5	1.0

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor, E = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

Performance data (cont)

50RTP08 BLOWER PERFORMANCE DATA

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)																				
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
2400	bhp	0.36	0.39	0.42	0.46	0.52	0.6	0.67	0.7	0.74	0.77	0.82	0.88	0.95	1.01	1.07	1.13	1.18	1.22	1.27	1.32	1.37
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	rpm	500	525	563	596	632	668	704	728	756	780	808	832	856	880	904	928	948	968	988	1008	1028
	Turns Open	6.0	5.0	4.0	3.0	6.0	5.0	4.5	4.0	3.5	2.5	2.0	1.5	1.0	6.0	5.5	5.0	4.5	4.5	4.0	4.0	3.5
2500	bhp	0.40	0.45	0.50	0.56	0.62	0.67	0.72	0.76	0.80	0.85	0.90	0.97	1.05	1.12	1.18	1.22	1.26	1.31	1.36	1.40	1.46
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	rpm	504	538	575	612	648	680	712	740	764	792	816	840	868	892	916	936	956	976	1000	1016	1036
	Turns Open	5.5	4.5	3.5	3.0	5.5	5.0	4.5	3.5	3.0	2.5	2.0	1.5	1.0	5.5	5.0	5.0	4.5	4.0	4.0	3.5	3.5
2600	bhp	0.47	0.51	0.55	0.60	0.67	0.73	0.78	0.84	0.89	0.94	1.00	1.05	1.11	1.16	1.23	1.28	1.35	1.41	1.46	1.51	1.56
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C
	rpm	521	554	592	624	660	692	720	748	776	800	828	852	876	900	924	944	968	988	1008	1028	1048
	Turns Open	5.5	4.5	3.5	6.0	5.5	4.5	4.0	3.5	2.5	2.0	1.5	1.0	6.0	5.5	5.0	4.5	4.0	4.0	3.5	3.5	3.0
2700	bhp	0.51	0.56	0.61	0.66	0.72	0.77	0.82	0.88	0.94	0.99	1.06	1.14	1.21	1.27	1.32	1.39	1.44	1.50	1.55	1.59	1.65
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C
	rpm	538	571	608	640	672	704	732	760	788	812	836	864	888	912	932	956	976	1000	1020	1036	1056
	Turns Open	5.0	4.0	3.0	5.5	5.0	4.0	3.5	3.0	2.5	2.0	1.5	1.0	5.5	5.0	4.5	4.5	4.0	3.5	3.5	3.0	3.0
2800	bhp	0.57	0.62	0.67	0.72	0.77	0.83	0.90	0.96	1.03	1.08	1.15	1.20	1.25	1.33	1.40	1.48	1.56	1.62	1.67	1.71	1.75
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C
	rpm	550	583	616	648	684	712	740	768	796	820	848	872	896	920	940	964	988	1008	1028	1044	1064
	Turns Open	4.5	3.5	2.5	5.5	5.0	4.0	3.5	3.0	2.5	2.0	1.5	6.0	5.5	5.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5
2900	bhp	0.62	0.66	0.72	0.78	0.83	0.89	0.95	1.02	1.08	1.15	1.22	1.30	1.37	1.44	1.51	1.58	1.66	1.70	1.75	1.79	1.84
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C
	rpm	567	600	632	664	696	724	752	780	808	832	856	884	908	932	952	976	1000	1016	1036	1056	1076
	Turns Open	4.0	3.0	5.5	5.0	4.5	3.5	3.0	2.5	2.0	1.5	1.0	5.5	5.0	4.5	4.5	4.0	3.5	3.5	3.0	3.0	2.5
3000	bhp	0.68	0.73	0.78	0.83	0.89	0.97	1.05	1.13	1.18	1.24	1.30	1.35	1.42	1.51	1.60	1.68	1.76	1.80	1.85	1.88	1.92
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C
	rpm	583	616	648	680	712	740	768	796	820	844	872	896	916	940	964	984	1008	1028	1048	1064	1084
	Turns Open	3.5	2.5	5.5	5.0	4.0	3.5	3.0	2.5	1.5	1.5	6.0	5.5	5.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.5
3100	bhp	0.75	0.81	0.88	0.93	1.00	1.05	1.12	1.18	1.25	1.32	1.38	1.45	1.53	1.61	1.67	1.75	1.80	1.86	1.92	2.00	2.03
	Sheave/Motor	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	E	E
	rpm	604	636	668	696	728	752	780	808	832	856	880	904	928	952	972	996	1016	1036	1056	1076	1096
	Turns Open	3.0	6.0	5.0	4.5	4.0	3.0	2.5	2.0	1.5	1.0	5.5	5.0	5.0	4.5	4.0	3.5	3.5	3.0	2.5	2.5	2.0
3200	bhp	0.80	0.86	0.93	0.99	1.07	1.15	1.23	1.28	1.34	1.39	1.44	1.52	1.61	1.69	1.78	1.86	1.91	1.96	2.01	2.06	2.12
	Sheave/Motor	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	E	E	E
	rpm	620	652	684	712	740	768	796	820	844	868	892	916	940	960	984	1008	1028	1048	1064	1084	1104
	Turns Open	2.5	5.5	5.0	4.0	3.5	3.0	2.5	2.0	1.0	6.0	5.5	5.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.5	2.0
3300	bhp	0.89	0.96	1.03	1.09	1.15	1.22	1.27	1.35	1.42	1.48	1.55	1.63	1.71	1.80	1.87	1.95	2.01	2.07	2.13	2.19	2.25
	Sheave/Motor	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	E	E	E	E	E
	rpm	636	668	696	724	752	780	804	832	856	880	904	924	948	972	992	1016	1036	1056	1076	1096	1112
	Turns Open	6.0	5.0	4.5	4.0	3.5	2.5	2.0	1.5	1.0	5.5	5.0	5.0	4.5	4.0	3.5	3.5	3.0	2.5	2.5	2.0	2.0
3400	bhp	0.95	1.02	1.09	1.17	1.24	1.32	1.38	1.43	1.48	1.53	1.61	1.70	1.80	1.88	2.00	2.04	2.11	2.18	2.25	2.32	2.38
	Sheave/Motor	A	A	A	A	A	A	A	A	C	C	C	C	C	C	E	E	E	E	E	E	E
	rpm	652	684	712	740	764	792	816	840	864	888	912	936	960	980	1004	1024	1044	1064	1084	1104	1120
	Turns Open	5.5	4.5	4.0	3.5	3.0	2.5	2.0	1.5	6.0	5.5	5.0	4.5	4.5	4.0	3.5	3.0	3.0	2.5	2.5	2.0	1.5
3500	bhp	1.05	1.13	1.19	1.25	1.31	1.37	1.44	1.51	1.57	1.64	1.74	1.82	1.91	2.01	2.08	2.14	2.21	2.27	2.33	2.41	2.48
	Sheave/Motor	A	A	A	A	A	A	A	A	C	C	C	C	C	E	E	E	E	E	E	E	E
	rpm	668	696	724	752	776	804	828	852	876	900	924	944	968	992	1012	1032	1052	1072	1092	1112	1128
	Turns Open	5.0	4.5	4.0	3.5	3.0	2.0	1.5	1.0	5.5	5.0	5.0	4.5	4.0	3.5	3.5	3.0	3.0	2.5	2.0	2.0	1.5
3600	bhp	1.12	1.18	1.26	1.34	1.41	1.48	1.54	1.61	1.67	1.73	1.82	1.90	1.97	2.06	2.14	2.21	2.29	2.36	2.44	2.53	2.61
	Sheave/Motor	A	A	A	A	A	A	A	C	C	C	C	C	C	E	E	E	E	E	E	E	E
	rpm	680	708	736	764	788	816	840	864	888	908	932	956	976	1000	1020	1040	1060	1080	1100	1120	1136
	Turns Open	5.0	4.0	3.5	3.0	2.5	2.0	1.5	6.0	5.5	5.0	4.5	4.5	4.0	3.5	3.5	3.0	2.5	2.5	2.0	1.5	1.5
3700	bhp	1.23	1.29	1.35	1.41	1.47	1.56	1.64	1.70	1.79	1.87	2.00	2.02	2.10	2.17	2.24	2.31	2.38	2.46	2.54	2.64	2.72
	Sheave/Motor	A	A	A	A	A	A	A	C	C	C	E	E	E	E	E	E	E	E	E	E	E
	rpm	696	724	752	776	804	828	852	872	896	920	944	964	988	1008	1028	1048	1068	1088	1108	1128	1144
	Turns Open	4.5	4.0	3.5	3.0	2.0	1.5	1.0	5.5	5.0	5.0	4.5	4.5	4.0	3.5	3.0	3.0	2.5	2.5	2.0	1.5	1.5

50RTP08 BLOWER PERFORMANCE DATA (cont)

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)																				
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
3800	bhp	1.29	1.37	1.44	1.52	1.59	1.67	1.74	1.82	1.89	2.00	2.04	2.12	2.20	2.28	2.36	2.44	2.52	2.60	2.67	2.77	2.84
	Sheave/Motor	A	A	A	A	A	A	C	C	C	E	E	E	E	E	E	E	E	E	E	E	E
	rpm	712	740	764	792	816	840	864	888	908	932	952	976	1000	1020	1040	1060	1080	1100	1116	1136	1152
	Turns Open	4.0	3.5	3.0	2.5	2.0	1.5	6.0	5.5	5.0	4.5	4.5	4.0	3.5	3.0	3.0	2.5	2.5	2.0	2.0	1.5	1.0
3900	bhp	1.41	1.48	1.54	1.61	1.70	1.78	1.84	1.93	2.01	2.08	2.17	2.26	2.33	2.41	2.49	2.57	2.65	2.74	2.81	2.89	—
	Sheave/Motor	A	A	A	A	A	A	C	C	E	E	E	E	E	E	E	E	E	E	E	E	—
	rpm	728	752	776	804	828	852	872	896	920	940	964	988	1008	1028	1048	1068	1088	1108	1124	1144	—
	Turns Open	4.0	3.0	2.5	2.0	1.5	1.0	5.5	5.5	5.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.0	2.0	1.5	1.0	—
4000	bhp	1.48	1.56	1.64	1.71	1.80	1.88	2.00	2.03	2.12	2.19	2.27	2.35	2.43	2.52	2.61	2.69	2.78	2.86	2.93	—	—
	Sheave/Motor	A	A	A	A	A	C	E	E	E	E	E	E	E	E	E	D	E	E	E	—	—
	rpm	740	768	792	816	840	864	888	908	932	952	976	996	1016	1036	1056	1076	1096	1116	1132	—	—
	Turns Open	3.5	3.0	2.5	2.0	1.5	6.0	5.5	5.0	4.5	4.5	4.0	3.5	3.5	3.0	2.5	2.5	2.0	2.0	1.5	—	—

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

Performance data (cont)

Carrier®

50RTP10 BLOWER PERFORMANCE DATA

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)																				
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
3000	bhp	0.66	0.71	0.76	0.81	0.86	0.94	1.02	1.1	1.17	1.22	1.27	1.32	1.39	1.48	1.56	1.65	1.74	1.78	1.83	1.86	1.91
	Sheave/Motor	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	rpm	571	604	636	668	700	728	756	784	812	836	860	884	908	932	952	976	1000	1020	1040	1056	1076
	Turns Open	5.5	5.0	4.0	3.0	2.0	6.0	5.5	5.0	4.0	3.5	3.0	2.5	2.0	1.5	1.0	4.5	4.0	4.0	3.5	3.0	3.0
3100	bhp	0.73	0.79	0.85	0.91	0.98	1.04	1.10	1.16	1.23	1.29	1.36	1.43	1.50	1.58	1.64	1.72	1.78	1.84	1.89	1.95	2.01
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	rpm	592	624	656	684	716	744	772	800	824	848	872	896	920	944	964	988	1008	1028	1048	1068	1088
	Turns Open	5.0	4.5	3.5	2.5	6.0	5.5	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	5.0	4.5	4.0	3.5	3.5	3.0	2.5
3200	bhp	0.78	0.84	0.90	0.97	1.04	1.12	1.20	1.27	1.32	1.37	1.42	1.49	1.58	1.66	1.75	1.84	1.89	1.94	2.00	2.05	2.10
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	rpm	608	640	672	704	728	756	784	812	836	860	884	908	932	952	976	1000	1020	1040	1060	1080	1100
	Turns Open	4.5	4.0	3.0	2.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5
3300	bhp	0.87	0.93	1.01	1.08	1.14	1.20	1.26	1.33	1.39	1.46	1.53	1.61	1.68	1.77	1.86	1.92	1.98	2.04	2.10	2.16	2.23
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	rpm	628	656	688	716	744	772	800	824	848	872	896	920	940	964	988	1008	1028	1048	1068	1088	1108
	Turns Open	4.0	3.5	2.5	1.5	5.5	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	5.0	4.5	4.0	3.5	3.5	3.0	2.5	2.5
3400	bhp	0.94	1.01	1.07	1.15	1.23	1.30	1.37	1.42	1.47	1.52	1.59	1.69	1.77	1.86	1.96	2.03	2.10	2.16	2.23	2.30	2.36
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	rpm	644	676	704	732	760	784	812	836	860	884	908	932	952	976	1000	1020	1040	1060	1080	1100	1116
	Turns Open	3.5	3.0	2.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.0
3500	bhp	1.03	1.12	1.18	1.24	1.30	1.36	1.43	1.49	1.56	1.63	1.72	1.80	1.90	1.99	2.07	2.13	2.19	2.26	2.32	2.40	2.47
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C
	rpm	660	692	720	744	772	800	824	848	872	896	920	940	964	988	1008	1028	1048	1068	1088	1108	1124
	Turns Open	3.5	2.5	6.0	5.5	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	5.0	4.5	4.0	3.5	3.5	3.0	2.5	2.5	2.0
3600	bhp	1.11	1.17	1.25	1.33	1.40	1.47	1.53	1.60	1.66	1.73	1.80	1.89	1.97	2.05	2.12	2.20	2.27	2.35	2.42	2.51	2.59
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C
	rpm	676	704	732	760	784	812	836	860	884	908	928	952	976	996	1016	1036	1056	1076	1096	1116	1132
	Turns Open	3.0	2.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.0	2.0
3700	bhp	1.22	1.28	1.35	1.40	1.46	1.54	1.62	1.70	1.77	1.85	1.94	2.00	2.09	2.17	2.24	2.31	2.38	2.46	2.52	2.62	2.72
	Sheave/Motor	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C
	rpm	692	720	748	772	800	824	848	872	892	916	940	960	984	1008	1028	1048	1068	1088	1104	1124	1144
	Turns Open	2.5	6.0	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	5.0	4.5	4.0	3.5	3.5	3.0	2.5	2.5	2.0	1.5
3800	bhp	1.28	1.35	1.43	1.51	1.58	1.66	1.73	1.81	1.87	1.96	2.04	2.10	2.19	2.26	2.34	2.42	2.50	2.58	2.66	2.75	2.84
	Sheave/Motor	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C
	rpm	708	732	760	788	812	836	860	884	904	928	952	972	996	1016	1036	1056	1076	1096	1112	1132	1152
	Turns Open	2.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.0	2.0	1.5
3900	bhp	1.39	1.46	1.53	1.60	1.68	1.76	1.83	1.91	2.00	2.08	2.16	2.24	2.32	2.40	2.48	2.56	2.64	2.72	2.81	2.88	3.00
	Sheave/Motor	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	E
	rpm	720	748	772	800	824	848	868	892	916	940	960	984	1004	1024	1044	1064	1084	1104	1124	1140	1160
	Turns Open	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	5.0	4.5	4.0	3.5	3.5	3.0	2.5	2.5	2.0	2.0	1.5
4000	bhp	1.47	1.54	1.62	1.70	1.78	1.86	1.95	2.01	2.10	2.17	2.26	2.33	2.41	2.50	2.59	2.68	2.76	2.85	2.93	3.00	3.07
	Sheave/Motor	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	E	E
	rpm	736	760	788	812	836	860	884	904	928	948	972	992	1012	1032	1052	1072	1092	1112	1132	1148	1168
	Turns Open	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	4.5	4.5	4.0	3.5	3.5	3.0	2.5	2.0	2.0	1.5	1.5
4100	bhp	1.56	1.66	1.74	1.82	1.89	1.97	2.03	2.12	2.20	2.29	2.36	2.46	2.53	2.62	2.72	2.81	2.90	3.00	3.06	3.12	3.20
	Sheave/Motor	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	E	E	E	E
	rpm	748	776	800	824	848	872	892	916	936	960	980	1004	1020	1040	1060	1080	1100	1120	1140	1156	1176
	Turns Open	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	5.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.0	2.0	1.5	1.0
4200	bhp	1.64	1.72	1.81	1.90	1.97	2.06	2.15	2.23	2.31	2.38	2.46	2.56	2.66	2.76	2.86	3.00	3.03	3.11	3.18	3.26	3.34
	Sheave/Motor	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	E	E	E	E	E	E
	rpm	764	788	812	836	856	880	904	924	948	968	988	1012	1032	1052	1072	1088	1108	1128	1144	1164	1184
	Turns Open	0.66	0.71	0.76	0.81	0.86	0.94	1.02	1.1	1.17	1.22	1.27	1.32	1.39	1.48	1.56	1.65	1.74	1.78	1.83	1.86	1.91

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor, E = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

50RTP10 BLOWER PERFORMANCE DATA (cont)

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)																				
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
4300	bhp	1.76	1.84	1.93	2.00	2.08	2.17	2.25	2.34	2.42	2.50	2.60	2.70	2.80	2.90	3.00	3.10	3.16	3.24	3.31	3.39	3.45
	Sheave/Motor	A	A	A	A	A	A	A	A	C	C	C	C	C	C	E	E	E	E	E	E	E
	rpm	776	800	824	844	868	892	912	936	956	976	1000	1020	1040	1060	1080	1100	1116	1136	1152	1172	1188
	Turns Open	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	5.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.0	2.0	1.5	1.0	1.0
4400	bhp	1.86	1.95	2.04	2.12	2.22	2.32	2.4	2.48	2.57	2.65	2.74	2.84	3.00	3.04	3.14	3.23	3.30	3.38	3.44	3.52	3.58
	Sheave/Motor	A	A	A	A	A	A	A	A	C	C	C	C	E	E	E	E	E	E	E	E	E
	rpm	788	812	836	856	880	904	924	944	968	988	1008	1028	1048	1068	1088	1108	1124	1144	1160	1180	1196
	Turns Open	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	4.5	4.5	4.0	3.5	3.5	3.0	2.5	2.5	2.0	1.5	1.5	1.0	1.0
4500	bhp	1.96	2.06	2.15	2.23	2.33	2.43	2.52	2.61	2.69	2.78	2.88	3.00	3.08	3.18	3.28	3.35	3.44	3.53	3.61	3.70	—
	Sheave/Motor	A	A	A	A	A	A	A	C	C	C	C	E	E	E	E	E	E	E	E	E	—
	rpm	800	824	848	868	892	916	936	956	976	996	1016	1036	1056	1076	1096	1112	1132	1152	1168	1188	—
	Turns Open	4.0	3.5	3.0	2.5	2.0	1.5	1.0	5.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.0	2.0	1.5	1.5	1.0	—
4600	bhp	2.12	2.20	2.30	2.38	2.47	2.56	2.64	2.73	2.83	2.92	3.00	3.10	3.20	3.30	3.40	3.49	3.60	3.68	3.79	3.88	—
	Sheave/Motor	A	A	A	A	A	A	A	C	C	C	E	E	E	E	E	E	E	E	E	E	—
	rpm	820	840	864	884	908	928	948	968	992	1012	1028	1048	1068	1088	1108	1124	1144	1160	1180	1196	—
	Turns Open	3.5	3.0	3.0	2.5	2.0	1.5	1.0	4.5	4.5	4.0	3.5	3.5	3.0	2.5	2.5	2.0	1.5	1.5	1.0	1.0	—
4700	bhp	2.23	2.31	2.40	2.50	2.59	2.68	2.76	2.85	3.00	3.04	3.14	3.24	3.34	3.42	3.53	3.62	3.73	3.84	3.93	—	—
	Sheave/Motor	A	A	A	A	A	A	C	C	E	E	E	E	E	E	E	E	E	E	E	—	—
	rpm	832	852	876	900	920	940	960	980	1000	1020	1040	1060	1080	1096	1116	1132	1152	1172	1188	—	—
	Turns Open	3.5	3.0	2.5	2.0	1.5	1.0	5.0	4.5	4.0	4.0	3.5	3.0	3.0	2.5	2.0	2.0	1.5	1.0	1.0	—	—
4800	bhp	2.35	2.46	2.55	2.65	2.73	2.81	2.89	3.00	3.06	3.16	3.26	3.34	3.44	3.55	3.64	3.76	3.86	3.98	4.08	—	—
	Sheave/Motor	A	A	A	A	A	C	C	E	E	E	E	E	E	E	E	E	E	E	E	—	—
	rpm	844	868	888	912	932	952	972	992	1012	1032	1052	1068	1088	1108	1124	1144	1160	1180	1196	—	—
	Turns Open	3.0	2.5	2.0	1.5	1.5	5.0	4.5	4.5	4.0	3.5	3.5	3.0	2.5	2.5	2.0	1.5	1.5	1.0	1.0	—	—
4900	bhp	2.49	2.58	2.68	2.77	2.85	3.00	3.03	3.12	3.22	3.30	3.40	3.50	3.60	3.70	3.82	3.91	4.03	4.13	—	—	—
	Sheave/Motor	A	A	A	A	A	E	E	E	E	E	E	E	E	E	E	E	E	E	—	—	—
	rpm	860	880	904	924	944	964	984	1004	1024	1040	1060	1080	1100	1116	1136	1152	1172	1188	—	—	—
	Turns Open	3.0	2.5	2.0	1.5	1.0	5.0	4.5	4.0	3.5	3.5	3.0	3.0	2.5	2.0	2.0	1.5	1.0	1.0	—	—	—
5000	bhp	2.63	2.72	2.81	2.91	3.00	3.09	3.18	3.28	3.36	3.46	3.56	3.66	3.75	3.87	3.96	4.08	4.18	4.28	—	—	—
	Sheave/Motor	A	A	A	A	E	E	E	E	E	E	E	E	E	E	E	E	E	E	—	—	—
	rpm	876	896	916	936	956	976	996	1016	1032	1052	1072	1092	1108	1128	1144	1164	1180	1196	—	—	—
	Turns Open	2.5	2.0	1.5	1.0	5.0	4.5	4.0	4.0	3.5	3.5	3.0	2.5	2.5	2.0	1.5	1.5	1.0	1.0	—	—	—

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor, E = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

Performance data (cont)

Carrier®

50RTP12 BLOWER PERFORMANCE DATA

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)																				
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
3600	bhp	0.86	0.93	1.01	1.10	1.18	1.26	1.36	1.46	1.57	1.68	1.77	1.86	1.94	2.03	2.14	2.27	2.38	2.52	2.70	2.86	3.04
	Sheave/Motor	B	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	E
	rpm	640	672	704	732	760	788	816	840	868	896	924	952	980	1008	1036	1068	1096	1124	1160	1192	1228
	Turns Open	5.5	5.0	4.0	3.0	2.0	6.0	5.0	4.5	3.5	3.0	2.0	1.5	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0
3800	bhp	1.06	1.15	1.24	1.33	1.41	1.51	1.59	1.69	1.77	1.87	1.95	2.03	2.13	2.23	2.36	2.49	2.60	2.74	2.88	3.04	3.18
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	E	E
	rpm	672	704	732	760	788	816	840	868	892	920	944	968	996	1020	1048	1076	1100	1128	1156	1188	1216
	Turns Open	5.0	4.0	3.0	2.0	6.0	5.0	4.5	3.5	3.0	2.0	1.5	1.0	6.0	5.5	5.0	4.0	3.5	3.0	2.5	2.0	2.0
4000	bhp	1.23	1.31	1.41	1.51	1.61	1.69	1.77	1.87	1.96	2.04	2.13	2.22	2.32	2.44	2.56	2.70	2.81	2.92	3.04	3.16	3.30
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	E	E	E
	rpm	708	732	760	788	816	840	864	892	916	940	964	988	1012	1036	1060	1088	1112	1136	1164	1192	1216
	Turns Open	4.0	3.0	2.0	6.0	5.0	4.5	4.0	3.0	2.5	1.5	1.0	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5
4200	bhp	1.25	1.4	1.59	1.71	1.79	1.87	1.97	2.06	2.14	2.24	2.34	2.44	2.55	2.66	2.75	2.86	3.00	3.12	3.25	3.38	3.52
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	E	E	E	E	E
	rpm	696	736	784	816	840	864	892	916	936	960	984	1008	1032	1056	1076	1100	1124	1148	1172	1196	1220
	Turns Open	3.5	3.0	6.0	5.0	4.5	4.0	3.0	2.5	2.0	1.0	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.5
4400	bhp	1.56	1.69	1.79	1.88	1.96	2.04	2.14	2.24	2.35	2.45	2.54	2.65	2.74	2.85	2.96	3.07	3.20	3.34	3.45	3.59	3.74
	Sheave/Motor	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C	E	E	E	E	E	E
	rpm	752	784	812	836	860	884	908	932	956	980	1000	1024	1044	1068	1092	1112	1136	1160	1180	1204	1228
	Turns Open	2.5	6.0	5.0	4.5	4.0	3.0	2.5	2.0	1.0	6.0	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0
4600	bhp	1.77	1.88	1.96	2.05	2.13	2.22	2.33	2.42	2.53	2.62	2.75	2.85	3.00	3.11	3.22	3.32	3.44	3.54	3.64	3.78	3.92
	Sheave/Motor	B	A	A	A	A	A	A	A	A	C	C	C	E	E	E	E	E	E	E	E	E
	rpm	780	808	832	856	880	904	928	948	972	992	1016	1036	1060	1084	1104	1124	1148	1168	1188	1212	1232
	Turns Open	1.5	5.5	4.5	4.0	3.5	2.5	2.0	1.5	1.0	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	2.0	1.5	1.0
4800	bhp	1.98	2.08	2.17	2.27	2.37	2.48	2.57	2.67	2.76	2.89	3.00	3.11	3.22	3.33	3.44	3.55	3.68	3.79	3.9	4.04	4.18
	Sheave/Motor	A	A	A	A	A	A	A	A	C	C	E	E	E	E	E	E	E	E	E	E	E
	rpm	808	832	856	880	904	928	948	972	992	1016	1036	1056	1076	1096	1116	1136	1160	1180	1200	1220	1240
	Turns Open	5.5	4.5	4.0	3.5	2.5	2.0	1.5	1.0	6.0	5.5	5.0	4.5	4.0	3.5	3.5	3.0	2.5	2.0	1.5	1.0	1.0
5000	bhp	2.18	2.30	2.41	2.52	2.61	2.71	2.80	2.89	3.01	3.12	3.23	3.34	3.46	3.57	3.69	3.81	3.93	4.05	4.18	4.32	—
	Sheave/Motor	A	A	A	A	A	A	A	C	E	E	E	E	E	E	E	E	E	E	E	E	—
	rpm	828	856	880	904	924	948	968	988	1012	1032	1052	1072	1092	1112	1132	1152	1172	1192	1212	1232	—
	Turns Open	4.5	4.0	3.5	2.5	2.0	1.5	1.0	6.0	5.5	5.0	4.5	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.5	1.0	—
5200	bhp	2.41	2.50	2.60	2.72	2.82	2.94	3.04	3.17	3.29	3.44	3.58	3.70	3.82	3.92	4.01	4.13	4.23	4.33	4.47	—	—
	Sheave/Motor	A	A	A	A	A	A	E	E	E	E	E	E	E	E	E	E	E	E	E	—	—
	rpm	852	876	900	924	944	968	988	1012	1032	1056	1080	1100	1120	1136	1152	1172	1188	1204	1224	—	—
	Turns Open	4.0	3.5	2.5	2.0	1.0	1.0	6.0	5.5	5.0	4.5	4.0	4.0	3.0	3.0	2.5	2.0	2.0	1.5	1.0	—	—
5400	bhp	2.64	2.75	2.87	3.00	3.10	3.20	3.30	3.41	3.52	3.63	3.74	3.86	4.00	4.11	4.25	4.39	4.53	4.64	4.78	—	—
	Sheave/Motor	A	A	A	D	D	E	E	E	E	E	E	E	E	E	E	E	E	E	E	—	—
	rpm	876	900	924	944	968	988	1008	1028	1048	1068	1088	1108	1128	1144	1164	1184	1204	1220	1240	—	—
	Turns Open	3.5	3.0	2.0	1.5	1.0	6.0	5.5	5.0	5.0	4.5	4.0	3.5	3.0	2.5	2.5	2.0	1.5	1.0	1.0	—	—
5600	bhp	2.88	2.98	3.10	3.20	3.32	3.42	3.54	3.66	3.78	3.90	4.03	4.14	4.28	4.42	4.53	4.67	4.78	4.92	—	—	—
	Sheave/Motor	A	D	D	D	E	E	E	E	E	E	E	E	E	E	E	E	E	E	—	—	—
	rpm	896	916	940	960	984	1004	1024	1044	1064	1084	1104	1120	1140	1160	1176	1196	1212	1232	—	—	—
	Turns Open	3.0	2.5	1.5	1.0	6.0	5.5	5.5	5.0	4.5	4.0	3.5	3.0	3.0	2.5	2.0	1.5	1.5	1.0	—	—	—
5800	bhp	3.12	3.25	3.36	3.47	3.60	3.72	3.84	3.96	4.08	4.18	4.31	4.45	4.56	4.70	4.84	4.96	—	—	—	—	—
	Sheave/Motor	D	D	D	E	E	E	E	E	E	E	E	E	E	E	E	E	—	—	—	—	—
	rpm	912	936	956	976	1000	1020	1040	1060	1080	1096	1116	1136	1152	1172	1192	1208	—	—	—	—	—
	Turns Open	2.5	2.0	1.0	6.0	6.0	5.5	5.0	4.5	4.0	4.0	3.5	3.0	2.5	2.0	1.5	1.5	—	—	—	—	—
6000	bhp	3.36	3.49	3.63	3.74	3.86	3.99	4.12	4.25	4.37	4.48	4.62	4.76	4.88	—	—	—	—	—	—	—	—
	Sheave/Motor	D	D	D	E	E	E	E	E	E	E	E	E	E	—	—	—	—	—	—	—	—
	rpm	928	952	976	996	1016	1036	1056	1076	1096	1112	1132	1152	1168	—	—	—	—	—	—	—	—
	Turns Open	2.0	1.5	1.0	6.0	5.5	5.0	4.5	4.0	3.5	3.5	3.0	2.5	2.0	—	—	—	—	—	—	—	—

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor, D = Standard rpm/Large Motor, E = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

50RTP14 BLOWER PERFORMANCE DATA

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)																				
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
4200	bhp	—	—	—	—	0.83	0.91	0.99	1.06	1.15	1.25	1.35	1.45	1.54	1.64	1.72	1.82	1.91	1.99	2.06	2.14	2.22
	Sheave/Motor	—	—	—	—	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	rpm	—	—	—	—	575	612	644	676	708	736	764	792	816	840	860	884	908	928	944	964	984
	Turns Open	—	—	—	—	5.5	4.0	3.0	6.0	5.0	4.5	3.5	2.5	2.0	1.5	1.0	5.5	5.0	4.5	4.0	3.5	3.0
4400	bhp	—	—	—	—	0.89	0.98	1.08	1.17	1.25	1.34	1.43	1.52	1.63	1.74	1.85	1.94	2.04	2.12	2.20	2.28	2.36
	Sheave/Motor	—	—	—	—	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	rpm	—	—	—	—	587	620	656	688	716	744	772	800	824	848	872	892	916	936	956	976	996
	Turns Open	—	—	—	—	5.0	4.0	2.5	5.5	4.5	4.0	3.0	2.5	2.0	1.0	5.5	5.0	4.5	4.0	4.0	3.5	3.0
4600	bhp	—	—	—	0.86	0.95	1.06	1.16	1.28	1.36	1.43	1.50	1.60	1.73	1.85	1.98	2.10	2.18	2.26	2.34	2.42	2.50
	Sheave/Motor	—	—	—	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	rpm	—	—	—	558	596	632	664	700	728	752	780	808	832	856	880	904	924	944	964	984	1004
	Turns Open	—	—	—	6.0	4.5	3.5	2.5	5.0	4.5	4.0	3.0	2.0	1.5	1.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5
4800	bhp	—	—	—	0.93	1.01	1.13	1.24	1.34	1.42	1.49	1.57	1.68	1.81	1.93	2.06	2.18	2.27	2.37	2.47	2.56	2.66
	Sheave/Motor	—	—	—	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	rpm	—	—	—	571	604	640	676	708	736	760	788	816	840	864	888	912	932	952	972	992	1012
	Turns Open	—	—	—	5.5	4.5	3.0	6.0	5.0	4.0	3.5	3.0	2.0	1.5	6.0	5.0	4.5	4.5	4.0	3.5	3.0	2.5
5000	bhp	—	—	—	1.03	1.13	1.25	1.36	1.45	1.54	1.62	1.71	1.83	1.99	2.12	2.26	2.35	2.46	2.54	2.63	2.72	2.83
	Sheave/Motor	—	—	—	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C
	rpm	—	—	—	583	616	652	688	716	744	768	796	820	848	872	896	916	940	960	980	1000	1020
	Turns Open	—	—	—	5.0	4.0	2.5	5.5	4.5	4.0	3.5	2.5	2.0	1.0	5.5	5.0	4.5	4.0	3.5	3.0	3.0	2.5
5200	bhp	—	—	1.02	1.11	1.22	1.34	1.47	1.58	1.69	1.78	1.90	2.00	2.13	2.23	2.34	2.45	2.59	2.70	2.84	3.00	3.03
	Sheave/Motor	—	—	B	B	B	B	A	A	A	A	A	A	A	C	C	C	C	C	C	E	E
	rpm	—	—	558	596	628	660	696	724	752	776	804	828	856	880	904	924	948	968	992	1012	1028
	Turns Open	—	—	6.0	4.5	3.5	2.5	5.5	4.5	4.0	3.0	2.5	1.5	1.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0
5400	bhp	—	—	1.12	1.21	1.33	1.43	1.54	1.65	1.76	1.86	1.99	2.12	2.26	2.41	2.54	2.65	2.77	2.88	3.00	3.10	3.19
	Sheave/Motor	—	—	B	B	B	A	A	A	A	A	A	A	A	C	C	C	C	C	E	E	E
	rpm	—	—	571	604	640	672	704	732	760	784	812	836	860	888	912	932	956	976	1000	1020	1036
	Turns Open	—	—	5.5	4.5	3.0	6.0	5.0	4.5	3.5	3.0	2.0	1.5	1.0	5.0	4.5	4.5	4.0	3.5	3.0	2.5	2.0
5600	bhp	—	—	1.23	1.33	1.43	1.54	1.66	1.79	1.91	2.04	2.17	2.27	2.38	2.50	2.63	2.79	3.00	3.09	3.24	3.32	3.41
	Sheave/Motor	—	—	B	B	B	A	A	A	A	A	A	A	C	C	C	C	E	E	E	E	E
	rpm	—	—	583	616	648	680	712	740	764	792	820	844	868	896	916	940	964	984	1008	1024	1044
	Turns Open	—	—	5.0	4.0	3.0	5.5	5.0	4.0	3.5	2.5	2.0	1.5	6.0	5.0	4.5	4.0	3.5	3.0	2.5	2.5	2.0
5800	bhp	—	1.22	1.31	1.42	1.54	1.65	1.77	1.89	2.01	2.12	2.28	2.41	2.55	2.71	2.83	3.00	3.14	3.27	3.40	3.47	3.57
	Sheave/Motor	—	B	B	B	B	A	A	A	A	A	A	A	C	C	C	E	E	E	E	E	E
	rpm	—	563	596	628	660	692	720	748	776	800	828	852	876	904	924	948	972	992	1016	1032	1052
	Turns Open	—	5.5	4.5	3.5	2.5	5.5	4.5	4.0	3.0	2.5	1.5	1.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5
6000	bhp	—	1.33	1.43	1.53	1.63	1.74	1.90	2.06	2.21	2.33	2.46	2.56	2.67	2.81	3.00	3.15	3.33	3.48	3.57	3.66	3.74
	Sheave/Motor	—	B	B	B	A	A	A	A	A	A	A	A	C	E	E	E	E	E	E	E	E
	rpm	—	575	608	640	672	704	732	760	788	812	840	864	888	912	932	956	980	1000	1020	1040	1060
	Turns Open	—	5.5	4.0	3.0	6.0	5.0	4.5	3.5	3.0	2.0	1.5	1.0	5.0	4.5	4.5	4.0	3.5	3.0	2.5	2.0	1.5
6200	bhp	1.35	1.44	1.56	1.69	1.82	1.95	2.07	2.18	2.30	2.45	2.59	2.72	2.86	3.05	3.14	3.29	3.44	3.56	3.68	3.79	3.90
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	C	C	E	E	E	E	E	E	E	E
	rpm	558	587	620	652	684	716	744	768	796	824	848	872	896	920	940	964	988	1008	1028	1048	1068
	Turns Open	6.0	5.0	4.0	2.5	5.5	4.5	4.0	3.5	2.5	2.0	1.5	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	2.0	1.5

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor, D = Standard rpm/Large Motor, E = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

Performance data (cont)

50RTP14 BLOWER PERFORMANCE DATA (cont)

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)																				
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
6400	bhp	1.43	1.54	1.66	1.78	1.90	2.05	2.21	2.37	2.52	2.62	2.73	2.83	2.95	3.13	3.28	3.47	3.65	3.76	3.87	3.97	4.08
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	C	C	E	E	E	E	E	E	E	E
	rpm	571	604	636	664	696	724	752	780	808	832	856	880	904	928	948	972	996	1016	1036	1056	1076
	Turns Open	5.5	4.5	3.5	2.5	5.5	4.5	4.0	3.0	2.5	1.5	1.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0
6600	bhp	1.55	1.68	1.83	1.96	2.12	2.24	2.36	2.47	2.61	2.74	3.00	3.01	3.17	3.34	3.48	3.66	3.82	3.94	4.06	4.16	4.28
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	D	E	E	E	E	E	E	E	E	E	E
	rpm	583	616	648	676	708	736	764	788	816	840	864	888	912	936	956	980	1004	1024	1044	1060	1080
	Turns Open	5.0	4.0	3.0	6.0	5.0	4.0	3.5	3.0	2.0	1.5	1.0	5.0	4.5	4.0	3.5	3.0	2.5	2.5	2.0	1.5	1.0
6800	bhp	1.68	1.80	1.94	2.08	2.23	2.37	2.52	2.68	2.79	3.00	3.07	3.10	3.28	3.47	3.63	3.82	3.97	4.11	4.25	4.38	4.52
	Sheave/Motor	B	B	B	A	A	A	A	A	A	D	D	E	E	E	E	E	E	E	E	E	E
	rpm	600	628	660	692	720	744	772	800	824	848	872	896	920	944	964	988	1008	1028	1048	1068	1088
	Turns Open	4.5	3.5	2.5	5.5	4.5	4.0	3.0	2.5	2.0	1.0	1.0	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.5	1.0
7000	bhp	1.79	1.97	2.12	2.3	2.4	2.53	2.65	2.76	2.9	3.10	3.17	3.31	3.50	3.66	3.86	4.05	4.18	4.31	4.44	4.57	4.69
	Sheave/Motor	B	B	A	A	A	A	A	A	A	D	E	E	E	E	E	E	E	E	E	E	E
	rpm	612	644	672	704	728	756	784	808	832	856	880	904	928	948	972	996	1016	1036	1056	1076	1096
	Turns Open	4.0	3.0	6.0	5.0	4.5	3.5	3.0	2.5	1.5	1.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	1.0

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor, D = Standard rpm/Large Motor, E = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

50RTP20 BLOWER PERFORMANCE DATA

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)																				
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
6,000	bhp	—	1.50	1.60	1.71	1.85	2.01	2.17	2.32	2.42	2.53	2.63	2.75	2.93	3.12	3.27	3.45	3.55	3.64	3.73	3.81	3.88
	Sheave/Motor	—	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C
	rpm	—	632	664	696	724	752	780	808	832	856	880	904	928	952	972	996	1016	1036	1056	1076	1092
	Turns Open	—	6.0	5.5	4.5	3.5	2.5	6.0	5.5	4.5	4.0	3.5	2.5	2.0	1.5	1.0	0.0	5.5	5.0	4.5	4.0	4.0
6,200	bhp	—	1.67	1.80	1.93	2.06	2.18	2.30	2.43	2.57	2.70	2.84	2.98	3.14	3.26	3.42	3.56	3.68	3.77	3.88	3.99	4.11
	Sheave/Motor	—	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C
	rpm	—	648	680	712	740	768	796	820	844	868	892	916	940	960	984	1008	1028	1044	1064	1084	1104
	Turns Open	—	5.5	5.0	3.5	3.0	2.0	5.5	5.0	4.5	3.5	3.0	2.5	1.5	1.0	0.5	6.0	5.0	5.0	4.5	4.0	3.5
6,400	bhp	1.66	1.79	1.90	2.05	2.21	2.37	2.52	2.62	2.73	2.83	2.95	3.13	3.32	3.47	3.65	3.76	3.87	3.97	4.08	4.18	4.33
	Sheave/Motor	B	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C
	rpm	636	668	696	724	752	780	808	832	856	880	904	928	952	972	996	1016	1036	1056	1076	1096	1116
	Turns Open	6.0	5.0	4.5	3.5	2.5	6.0	5.5	4.5	4.0	3.5	2.5	2.0	1.5	1.0	0.0	5.5	5.0	4.5	4.0	3.5	3.5
6,600	bhp	1.85	2	2.13	2.26	2.38	2.50	2.63	2.77	2.90	3.04	3.20	3.37	3.51	3.68	3.85	3.97	4.09	4.18	4.30	4.43	4.59
	Sheave/Motor	B	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	rpm	652	684	712	740	768	796	820	844	868	892	916	940	960	984	1008	1028	1048	1064	1084	1104	1124
	Turns Open	5.5	4.5	3.5	3.0	2.0	5.5	5.0	4.5	3.5	3.0	2.5	1.5	1.0	0.5	6.0	5.0	4.5	4.5	4.0	3.5	3.0
6,800	bhp	2.00	2.14	2.28	2.43	2.57	2.72	2.82	2.93	3.03	3.15	3.34	3.54	3.70	3.89	4.03	4.16	4.30	4.44	4.57	4.73	4.86
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C
	rpm	672	704	728	756	780	808	832	856	880	904	928	952	972	996	1016	1036	1056	1076	1096	1116	1132
	Turns Open	5.0	4.0	3.0	2.5	6.0	5.5	4.5	4.0	3.5	2.5	2.0	1.5	1.0	0.0	5.5	5.0	4.5	4.0	3.5	3.5	3.0
7,000	bhp	2.21	2.35	2.47	2.58	2.70	2.83	2.97	3.10	3.24	3.41	3.60	3.76	3.95	4.13	4.26	4.36	4.49	4.62	4.76	5.00	5.07
	Sheave/Motor	B	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	E	E
	rpm	688	716	744	768	796	820	844	868	892	916	940	960	984	1008	1028	1044	1064	1084	1104	1124	1140
	Turns Open	4.5	3.5	2.5	2.0	5.5	5.0	4.5	3.5	3.0	2.5	1.5	1.0	0.5	6.0	5.0	5.0	4.5	4.0	3.5	3.0	3.0
7,200	bhp	2.34	2.5	2.66	2.79	2.94	3.07	3.17	3.30	3.43	3.60	3.77	3.92	4.09	4.24	4.39	4.55	4.70	4.85	5.03	5.17	5.36
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	E	E	E
	rpm	704	732	760	784	812	836	856	880	904	928	952	972	996	1016	1036	1056	1076	1096	1116	1132	1152
	Turns Open	4.0	3.0	2.0	6.0	5.0	4.5	4.0	3.5	2.5	2.0	1.5	1.0	0.0	5.5	5.0	4.5	4.0	4.0	3.5	3.0	2.5
7,400	bhp	2.57	2.69	2.80	2.92	3.08	3.25	3.41	3.57	3.71	3.87	4.04	4.17	4.34	4.48	4.63	4.77	4.91	5.08	5.24	5.44	5.60
	Sheave/Motor	B	B	B	A	A	A	A	A	A	A	A	A	C	C	C	C	C	E	E	E	E
	rpm	720	748	772	800	824	848	872	896	916	940	964	984	1008	1028	1048	1068	1088	1108	1124	1144	1160
	Turns Open	3.5	2.5	1.5	5.5	5.0	4.0	3.5	3.0	2.5	1.5	1.0	0.5	6.0	5.0	5.0	4.5	4.0	3.5	3.0	2.5	2.5
7,600	bhp	2.72	2.88	3.01	3.18	3.31	3.46	3.62	3.77	3.94	4.07	4.24	4.37	4.53	4.69	4.85	5.01	5.17	5.35	5.53	5.68	5.86
	Sheave/Motor	B	B	A	A	A	A	A	A	A	A	A	A	C	C	C	E	E	E	E	E	E
	rpm	736	764	788	816	836	860	884	908	932	952	976	996	1016	1036	1056	1076	1096	1116	1136	1152	1172
	Turns Open	3.0	2.0	6.0	5.0	4.5	4.0	3.0	2.5	2.0	1.5	0.5	0.0	5.5	5.0	4.5	4.5	4.0	3.5	3.0	2.5	2.0
7,800	bhp	2.95	3.10	3.23	3.39	3.55	3.72	3.88	4.02	4.20	4.34	4.51	4.66	4.82	4.98	5.14	5.30	5.47	5.61	5.79	5.96	6.10
	Sheave/Motor	B	A	A	A	A	A	A	A	A	A	A	C	C	C	E	E	E	E	E	E	E
	rpm	752	780	804	828	852	876	900	920	944	964	988	1008	1028	1048	1068	1088	1108	1124	1144	1164	1180
	Turns Open	2.5	6.0	5.5	4.5	4.0	3.5	3.0	2.0	1.5	1.0	0.5	6.0	5.0	5.0	4.5	4.0	3.5	3.0	2.5	2.5	2.0
8,000	bhp	3.13	3.30	3.46	3.59	3.76	3.92	4.09	4.23	4.40	4.55	4.72	4.90	5.07	5.25	5.42	5.60	5.73	5.89	6.05	6.18	6.34
	Sheave/Motor	B	A	A	A	A	A	A	A	A	A	A	C	E	E	E	E	E	E	E	E	E
	rpm	768	796	820	840	864	888	912	932	956	976	1000	1020	1040	1060	1080	1100	1116	1136	1156	1172	1192
	Turns Open	2.0	5.5	5.0	4.5	4.0	3.0	2.5	2.0	1.0	0.5	0.0	5.5	5.0	4.5	4.0	3.5	3.5	3.0	2.5	2.0	1.5
8,200	bhp	3.37	3.53	3.68	3.84	3.99	4.15	4.30	4.48	4.64	4.79	5.00	5.17	5.36	5.54	5.73	5.86	6.02	6.18	6.31	6.47	6.60
	Sheave/Motor	A	A	A	A	A	A	A	A	A	A	E	E	E	E	E	E	E	E	E	E	E
	rpm	784	808	832	856	880	904	924	948	968	988	1012	1032	1052	1072	1092	1108	1128	1148	1164	1184	1200
	Turns Open	6.0	5.5	4.5	4.0	3.5	2.5	2.0	1.5	1.0	0.5	5.5	5.0	4.5	4.5	4.0	3.5	3.0	2.5	2.5	2.0	1.5
8,400	bhp	3.52	3.70	3.88	4.07	4.22	4.40	4.54	4.71	4.86	5.00	5.20	5.40	5.60	5.80	6.00	6.16	6.32	6.45	6.61	6.74	—
	Sheave/Motor	A	A	A	A	A	A	A	A	A	D	E	E	E	E	E	E	E	E	E	E	—
	rpm	800	824	848	872	892	916	936	960	980	1000	1020	1040	1060	1080	1100	1120	1140	1156	1176	1192	—
	Turns Open	5.5	5.0	4.0	3.5	3.0	2.5	2.0	1.0	0.5	0.0	5.5	5.0	4.5	4.0	3.5	3.0	3.0	2.5	2.0	1.5	—

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor, D = Standard rpm/Large Motor, E = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

Performance data (cont)

50RTP20 BLOWER PERFORMANCE DATA (cont)

AIRFLOW (cfm)	ESP	AIRFLOW (cfm) AT EXTERNAL STATIC PRESSURE (in. wg)																				
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
8,600	bhp	3.80	3.97	4.11	4.28	4.46	4.62	4.78	5.00	5.14	5.32	5.52	5.72	5.92	6.12	6.30	6.46	6.58	6.74	6.87	—	—
	Sheave/Motor	A	A	A	A	A	A	A	D	D	E	E	E	E	E	E	E	E	E	E	—	—
	rpm	816	840	860	884	908	928	948	972	992	1012	1032	1052	1072	1092	1112	1132	1148	1168	1184	—	—
	Turns Open	5.0	4.5	4.0	3.0	2.5	2.0	1.5	1.0	0.0	5.5	5.0	4.5	4.5	4.0	3.5	3.0	2.5	2.0	2.0	—	—
8,800	bhp	4.06	4.25	4.41	4.60	4.76	5.00	5.11	5.27	5.44	5.64	5.84	6.04	6.24	6.43	6.56	6.72	6.88	7.01	7.17	—	—
	Sheave/Motor	A	A	A	A	A	D	D	D	D	E	E	E	E	E	E	E	E	E	E	—	—
	rpm	832	856	876	900	920	944	964	984	1004	1024	1044	1064	1084	1104	1120	1140	1160	1176	1196	—	—
	Turns Open	4.5	4.0	3.5	3.0	2.0	1.5	1.0	0.5	0.0	5.5	5.0	4.5	4.0	3.5	3.0	3.0	2.5	2.0	1.5	—	—
9,000	bhp	4.30	4.50	4.66	4.86	5.04	5.21	5.39	5.56	5.76	5.96	6.16	6.36	6.56	6.71	6.89	7.07	7.21	7.39	—	—	—
	Sheave/Motor	A	A	A	A	D	D	D	D	E	E	E	E	E	E	E	E	E	E	—	—	—
	rpm	848	872	892	916	936	956	976	996	1016	1036	1056	1076	1096	1112	1132	1152	1168	1188	—	—	—
	Turns Open	4.0	3.5	3.0	2.5	2.0	1.0	0.5	0.0	5.5	5.0	4.5	4.0	4.0	3.5	3.0	2.5	2.0	2.0	—	—	—
9,200	bhp	4.62	4.78	5.00	5.15	5.32	5.48	5.65	5.84	6.04	6.24	6.44	6.64	6.81	7.02	7.20	7.41	—	—	—	—	—
	Sheave/Motor	A	A	D	D	D	D	D	E	E	E	E	E	E	E	E	E	—	—	—	—	—
	rpm	868	888	912	932	952	972	992	1012	1032	1052	1072	1092	1108	1128	1144	1164	—	—	—	—	—
	Turns Open	3.5	3.0	2.5	2.0	1.5	1.0	0.0	5.5	5.0	4.5	4.5	4.0	3.5	3.0	2.5	2.5	—	—	—	—	—
9,400	bhp	4.87	5.07	5.25	5.42	5.60	5.77	5.96	6.16	6.36	6.56	6.72	6.92	7.15	7.33	—	—	—	—	—	—	—
	Sheave/Motor	A	D	D	D	D	D	D	E	E	E	E	E	E	E	—	—	—	—	—	—	—
	rpm	884	908	928	948	968	988	1008	1028	1048	1068	1084	1104	1124	1140	—	—	—	—	—	—	—
	Turns Open	3.0	2.5	2.0	1.5	1.0	0.5	0.0	5.0	5.0	4.5	4.0	3.5	3.0	3.0	—	—	—	—	—	—	—
9,600	bhp	5.23	5.39	5.55	5.71	5.87	6.04	6.24	6.44	6.64	6.80	7.00	7.24	7.43	—	—	—	—	—	—	—	—
	Sheave/Motor	D	D	D	D	D	D	E	E	E	E	E	E	E	—	—	—	—	—	—	—	—
	rpm	904	924	944	964	984	1004	1024	1044	1064	1080	1100	1120	1136	—	—	—	—	—	—	—	—
	Turns Open	2.5	2.0	1.5	1.0	0.5	0.0	5.5	5.0	4.5	4.0	3.5	3.0	3.0	—	—	—	—	—	—	—	—
9,800	bhp	5.50	5.67	5.85	6.02	6.20	6.40	6.60	6.80	6.96	7.16	7.39	—	—	—	—	—	—	—	—	—	—
	Sheave/Motor	D	D	D	D	D	E	E	E	E	E	E	—	—	—	—	—	—	—	—	—	—
	rpm	920	940	960	980	1000	1020	1040	1060	1076	1096	1116	—	—	—	—	—	—	—	—	—	—
	Turns Open	2.0	1.5	1.0	0.5	0.0	5.5	5.0	4.5	4.0	4.0	3.5	—	—	—	—	—	—	—	—	—	—
10,000	bhp	5.85	6.00	6.18	6.36	6.56	6.76	6.96	7.16	7.32	—	—	—	—	—	—	—	—	—	—	—	—
	Sheave/Motor	D	D	D	D	E	E	E	E	E	—	—	—	—	—	—	—	—	—	—	—	—
	rpm	940	956	976	996	1016	1036	1056	1076	1092	—	—	—	—	—	—	—	—	—	—	—	—
	Turns Open	1.5	1.0	0.5	0.0	5.5	5.0	4.5	4.0	4.0	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

bhp — Brake Horsepower
ESP — External Static Pressure

NOTES:
1. A = Standard rpm/Standard Motor, B = Low rpm/Standard Motor, C = High rpm/Standard Motor, D = Standard rpm/Large Motor, E = High rpm/Large Motor
2. Unit shipped with standard drive package with drive sheave 2.5 turns open unless otherwise requested. Field adjustment may be required for specified CFM.
3. ISO/AHRI rating point with standard drive package and drive sheave open 3.0 turns at .30 ESP.
4. Performance data does not include drive losses and is based on sea level conditions.
5. All airflow is rated at lowest voltage if unit is dual rated, i.e., rated at 208 volts for 208-230 volt units.

Electrical data

50RTP UNIT SIZE	VOLTAGE CODE	VOLTAGE (V-Ph-Hz)	MIN/MAX VOLTAGE	BLOWER OPTION	COMPRESSOR			MOTOR			TOTAL UNIT FLA	MCA	MAX FUSE/ HACR
					Qty	RLA	LRA	Qty	FLA	Hp			
03	5	208-3-60	197/254	A,B,C	1	10.4	73.0	1	4.0	1.0	14.4	17.0	25
	6	460-3-60	414/506	A,B,C	1	5.8	38.0	1	2.0	1.0	7.8	9.3	15
	1	575-3-60	518/633	A,B,C	1	3.8	36.5	1	1.4	1.0	5.2	6.2	15
04	5	208-3-60	197/254	A,B,C	1	13.7	83.1	1	4.0	1.0	17.7	21.1	35
				D,E	1	13.7	83.1	1	5.0	1.5	18.7	22.1	35
	6	460-3-60	414/506	A,B,C	1	6.2	41.0	1	2.0	1.0	8.2	9.8	15
				D,E	1	6.2	41.0	1	2.4	1.5	8.6	10.1	15
	1	575-3-60	518/633	A,B,C	1	4.8	33.0	1	1.4	1.0	6.2	7.4	15
				D,E	1	4.8	33.0	1	1.9	1.5	6.7	7.9	15
05	5	208-3-60	197/254	A,B,C	1	15.6	110.0	1	4.0	1.0	19.6	23.5	40
				D,E	1	15.6	110.0	1	5.0	1.5	20.6	24.5	40
	6	460-3-60	414/506	A,B,C	1	7.8	52.0	1	2.0	1.0	9.8	11.8	15
				D,E	1	7.8	52.0	1	2.4	1.5	10.2	12.2	15
	1	575-3-60	518/633	A,B,C	1	5.8	38.9	1	1.4	1.0	7.2	8.7	15
				D,E	1	5.8	38.9	1	1.9	1.5	7.7	9.2	15
06	5	208-3-60	197/254	A,B,C	1	20.5	155.0	1	5.0	1.5	25.5	30.6	50
				D,E	1	20.5	155.0	1	6.2	2.0	26.7	31.8	50
	6	460-3-60	414/506	A,B,C	1	9.6	75.0	1	2.4	1.5	12.0	14.4	20
				D,E	1	9.6	75.0	1	3.1	2.0	12.7	15.1	20
	1	575-3-60	518/633	A,B,C	1	7.6	54.0	1	1.9	1.5	9.5	11.4	15
				D,E	1	7.6	54.0	1	2.3	2.0	9.9	11.8	15
08	5	208-3-60	197/254	A,B,C	2	13.7	83.1	1	6.2	2.0	33.6	37.0	50
				D,E	2	13.7	83.1	1	9.2	3.0	36.6	40.0	50
	6	460-3-60	414/506	A,B,C	2	6.2	41.0	1	3.1	2.0	15.5	17.0	20
				D,E	2	6.2	41.0	1	4.3	3.0	16.7	18.3	20
	1	575-3-60	518/633	A,B,C	2	4.8	33.0	1	2.3	2.0	11.9	13.1	15
				D,E	2	4.8	33.0	1	3.4	3.0	13.0	14.2	15
10	5	208-3-60	197/254	A,B,C	2	15.6	110.0	1	9.2	3.0	40.4	44.3	60
				D,E	2	15.6	110.0	1	14.1	5.0	45.3	49.2	60
	6	460-3-60	414/506	A,B,C	2	7.8	52.0	1	4.3	3.0	19.9	21.9	25
				D,E	2	7.8	52.0	1	7.0	5.0	22.6	24.6	30
	1	575-3-60	518/633	A,B,C	2	5.8	38.9	1	3.4	3.0	15.0	16.5	20
				D,E	2	5.8	38.9	1	5.2	5.0	16.8	18.3	20
12	5	208-3-60	197/254	A,B,C	2	20.5	155.0	1	9.2	3.0	50.2	55.3	80
				D,E	2	20.5	155.0	1	14.1	5.0	55.1	60.2	80
	6	460-3-60	414/506	A,B,C	2	9.6	75.0	1	4.3	3.0	23.5	25.9	35
				D,E	2	9.6	75.0	1	7.0	5.0	26.2	28.6	35
	1	575-3-60	518/633	A,B,C	2	7.6	54.0	1	3.4	3.0	18.6	20.5	25
				D,E	2	7.6	54.0	1	5.2	5.0	20.4	22.3	25
14	5	208-3-60	197/254	A,B,C	2	23.2	164.0	1	9.2	3.0	55.6	61.4	80
				D,E	2	23.2	164.0	1	14.1	5.0	60.5	66.3	80
	6	460-3-60	414/506	A,B,C	2	11.2	75.0	1	4.3	3.0	26.7	29.5	40
				D,E	2	11.2	75.0	1	7.0	5.0	29.4	32.2	40
	1	575-3-60	518/633	A,B,C	2	7.9	54.0	1	3.4	3.0	19.2	21.2	30
				D,E	2	7.9	54.0	1	5.2	5.0	21.0	23.0	30
20	5	208-3-60	197/254	A,B,C	2	30.1	225.0	1	14.1	5.0	74.3	81.8	110
				D,E	2	30.1	225.0	1	21.7	7.5	81.9	89.4	110
	6	460-3-60	414/506	A,B,C	2	16.7	114.0	1	7.0	5.0	40.4	44.6	60
				D,E	2	16.7	114.0	1	10.0	7.5	43.4	47.6	60
	1	575-3-60	518/633	A,B,C	2	12.2	80.0	1	5.2	5.0	29.6	32.6	45
				D,E	2	12.2	80.0	1	7.7	7.5	32.1	35.1	45

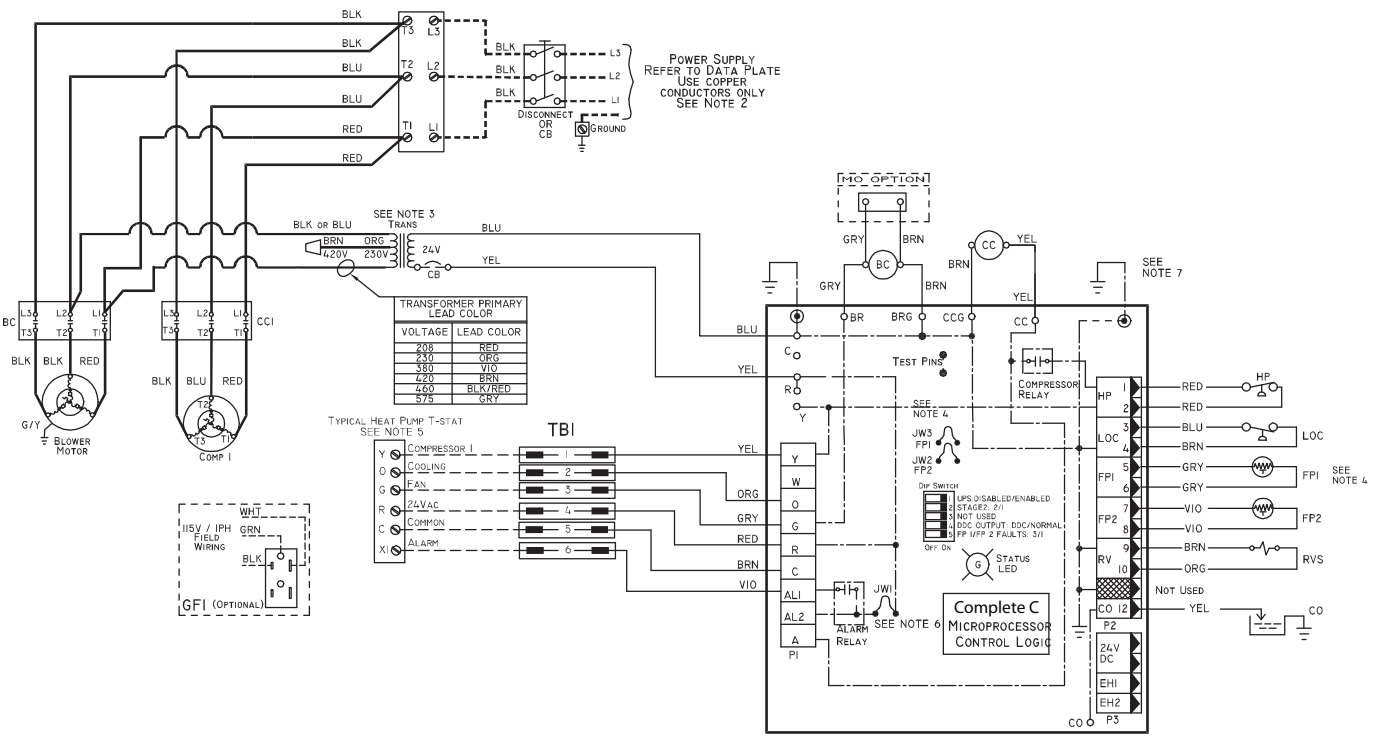
LEGEND

FLA — Full Load Amps
HACR — Heating, Air Conditioning, and Refrigeration
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
RLA — Rated Load Amps

NOTES:
1. HACR circuit breaker in U.S.A. only.
2. All fuses Class RK-5.
3. The 460-v units using an internal secondary pump will require a neutral wire from the supply side in order to feed the accessory with 265-v.

Typical wiring schematics

50RTP03-06 UNITS — TYPICAL CONTROL WIRING WITH COMPLETE C CONTROL



LEGEND

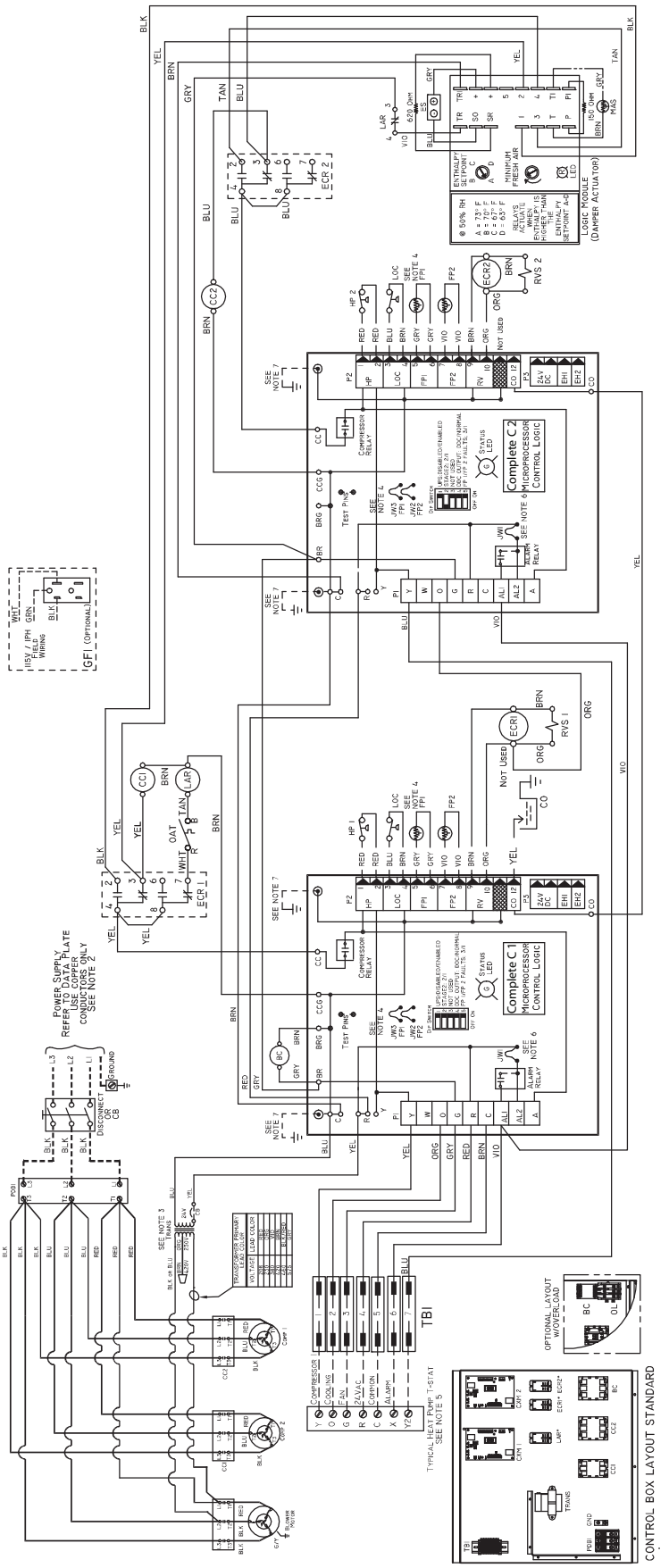
BC — Blower Contactor
CB — Circuit Breaker
CC — Compressor Contactor
CO — Sensor, Condensate Overflow
ECR — Enthalpy Control Relay
FP1 — Sensor, Water Coil Freeze Protection
FP2 — Sensor, Air Coil Freeze Protection
GFI — Ground Fault Interrupter
HP — High-Pressure Switch
JW3 — Clippable Field Selection Jumper
LAR — Low Ambient Relay
LOC — Loss of Charge Pressure Switch
MAS — Mixed Air Sensor
OAT — Outdoor Air Thermostat
PDB — Power Distribution Block
RVS — Reversing Valve Solenoid
TB — Terminal Block
TRANS — Transformer
Factory Line Voltage Wiring
Factory Low Voltage Wiring

Field Line Voltage Wiring
Field Low Voltage Wiring
Printed Circuit Trace
Optional Wiring
Relay/Contactor Coil
Thermistor
Condensate Pan
Circuit Breaker

Ground
Solenoid Coil
Relay Contacts - N.O.
Relay Contacts - N.C.
Temperature Switch
Switch - Low Pressure
Switch - High Pressure
Wire Nut

NOTES:
1. Compressor and blower motor thermally protected internally.
2. All wiring to the unit must comply with NEC (National Electrical Code) and local codes.
3. 208/230-v transformers will be connected for 208-v operation. For 230-v operation, disconnect RED lead at L1, and attach ORG lead to L1. Close open end of RED lead.
4. FPI thermistor provides freeze protection for WATER. When using ANTIFREEZE solutions, cut JW3 jumper.
5. Typical heat pump thermostat wiring shown. Refer to thermostat installation instructions for wiring to the unit. Thermostat wiring must be “Class 1” and voltage rating equal to or greater than unit supply voltage.
6. Factory cut JW1 jumper and dry contact will be available between AL1 and AL2.
7. Transformer secondary ground via Complete C board standoffs and screws to control box. (Ground available from top two standoffs as shown.)

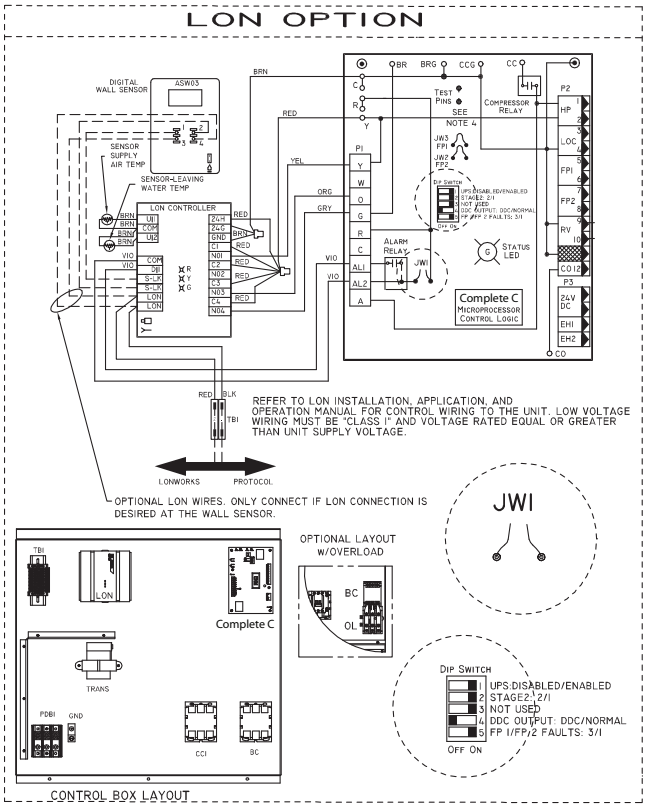
50RTP08-20 UNITS — TYPICAL CONTROL WIRING WITH COMPLETE C CONTROLS AND OPTIONAL ECONOMIZER



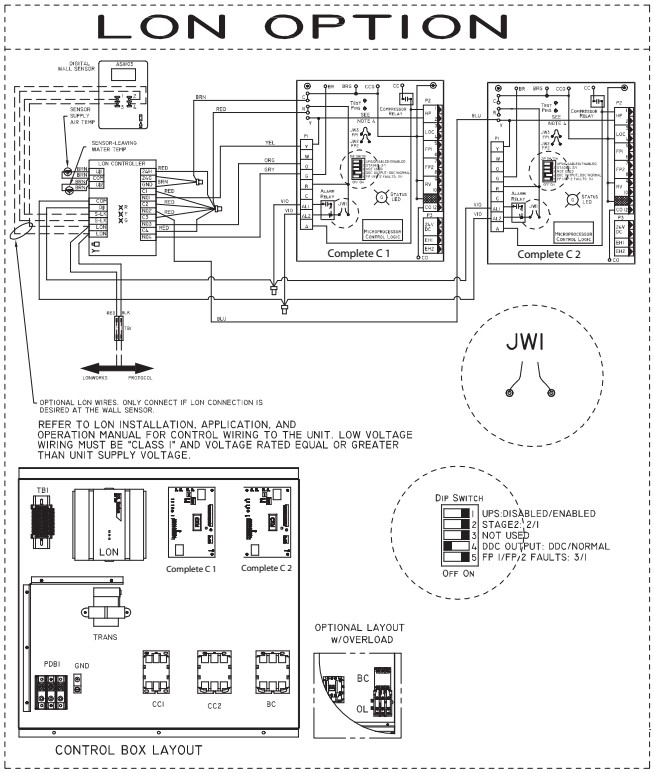
See legend and notes on page 40.

Typical wiring schematics (cont)

TYPICAL CONTROL WIRING WITH COMPLETE C AND LON CONTROLLER

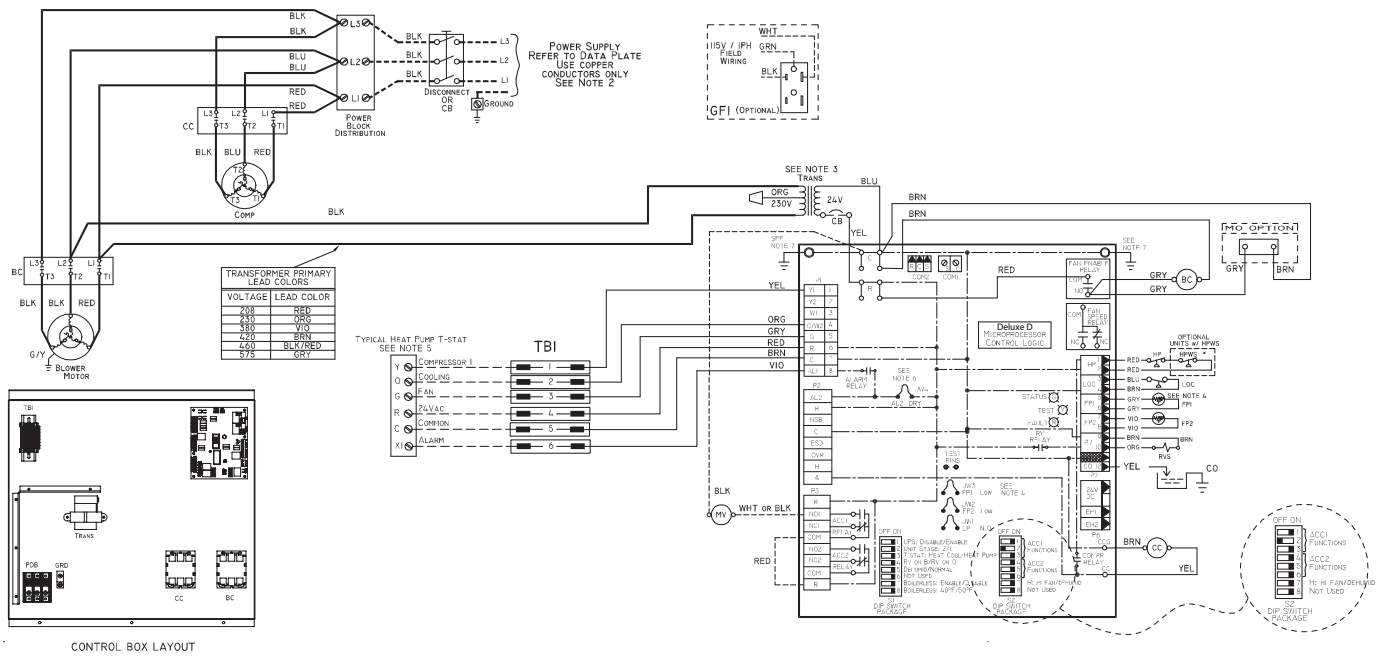


50RTP03-06 UNITS



50RTP08-20 UNITS

50RTP03-06 UNITS — TYPICAL CONTROL WIRING WITH DELUXE D CONTROLS

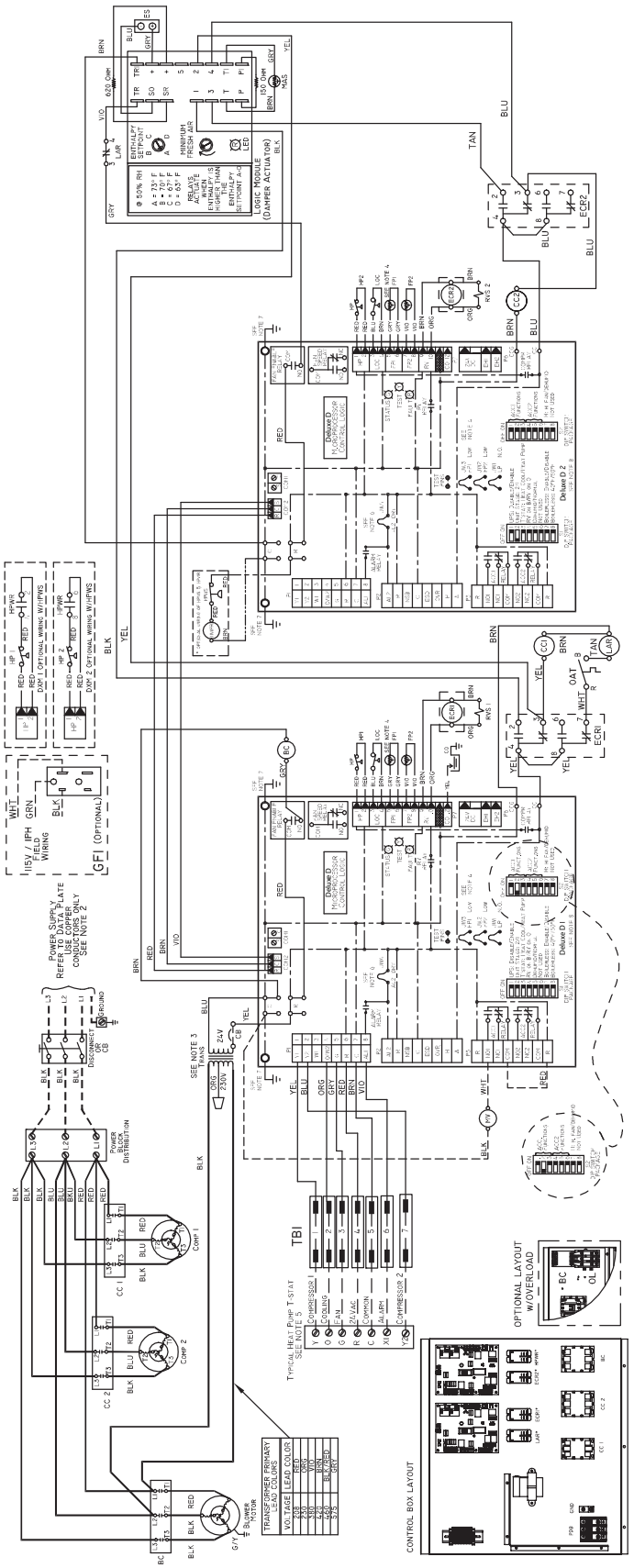


LEGEND

BC — Blower Contactor
CB — Circuit Breaker
CC — Compressor Contactor
CO — Sensor, Condensate Overflow
ECR — Enthalpy Control Relay
FP1 — Sensor, Water Coil Freeze Protection
FP2 — Sensor, Air Coil Freeze Protection
GFI — Ground Fault Interrupter
HP — High-Pressure Switch
HPWR — High Pressure Water Relay
HPWS — High Pressure Water Switch
JW3 — Clippable Field Selection Jumper
LAR — Low Ambient Relay
LOC — Loss of Charge Pressure Switch
MAR — Mixed Air Relay
MO — Motorized Outside Air Damper
MV — Motorized Valve
OAT — Outdoor Air Thermostat
PDB — Power Distribution Block
RVS — Reversing Valve Solenoid
TRANS — Transformer
Factory Line Voltage Wiring
Factory Low Voltage Wiring
Field Line Voltage Wiring
Field Low Voltage Wiring
Printed Circuit Trace
Optional Wiring
Relay/Contactor Coil
Thermistor
Condensate Pan
Circuit Breaker
Ground
Solenoid Coil
Relay Contacts - N.O.
Relay Contacts - N.C.
Temperature Switch
Switch - Low Pressure
Switch - High Pressure
Wire Nut

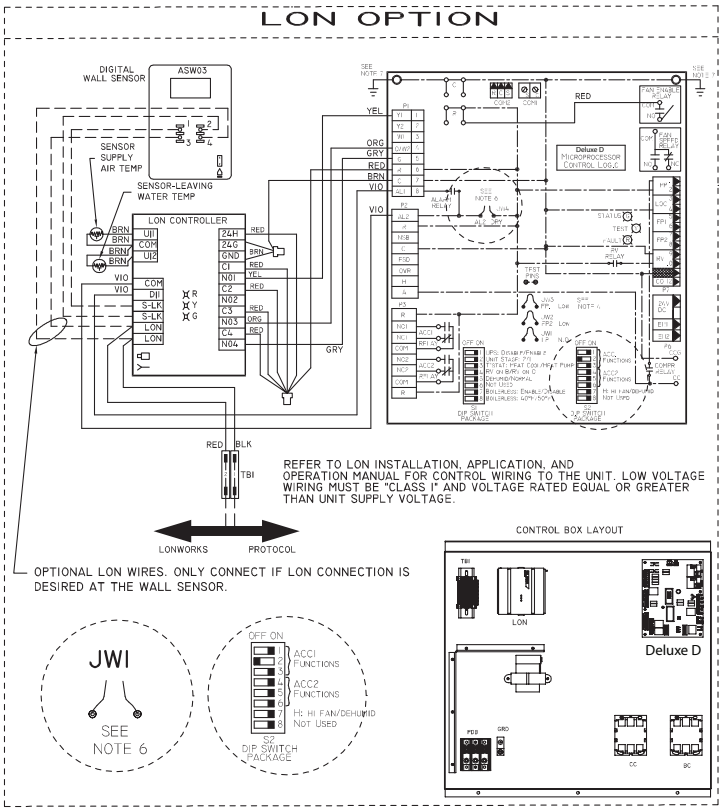
NOTES:
1. Compressor and blower motor thermally protected internally.
2. All wiring to the unit must comply with NEC (National Electrical Code) and local codes.
3. 208/230-v transformers will be connected for 208-v operation. For 230-v operation, disconnect RED lead at L1, and attach ORG lead to L1. Close open end of RED lead.
4. FPI thermistor provides freeze protection for WATER. When using ANTIFREEZE solutions, cut JW3 jumper.
5. Typical heat pump thermostat wiring shown. Refer to thermostat installation instructions for wiring to the unit. Thermostat wiring must be “Class 1” and voltage rating equal to or greater than unit supply voltage.
6. Factory cut JW1 jumper and dry contact will be available between AL1 and AL2.
7. Transformer secondary ground via Complete C board standoffs and screws to control box. (Ground available from top two stand-offs as shown.)
8. Suffix 1 designates association with lead compressor. Suffix 2 designates association with lag compressor.
9. For water valve option, DIP switch 2.1 ON, 2.2 OFF, 2.3 ON.

50RTP08-20 UNITS — TYPICAL CONTROL WIRING WITH DELUXE D CONTROLS AND OPTIONAL ECONOMIZER

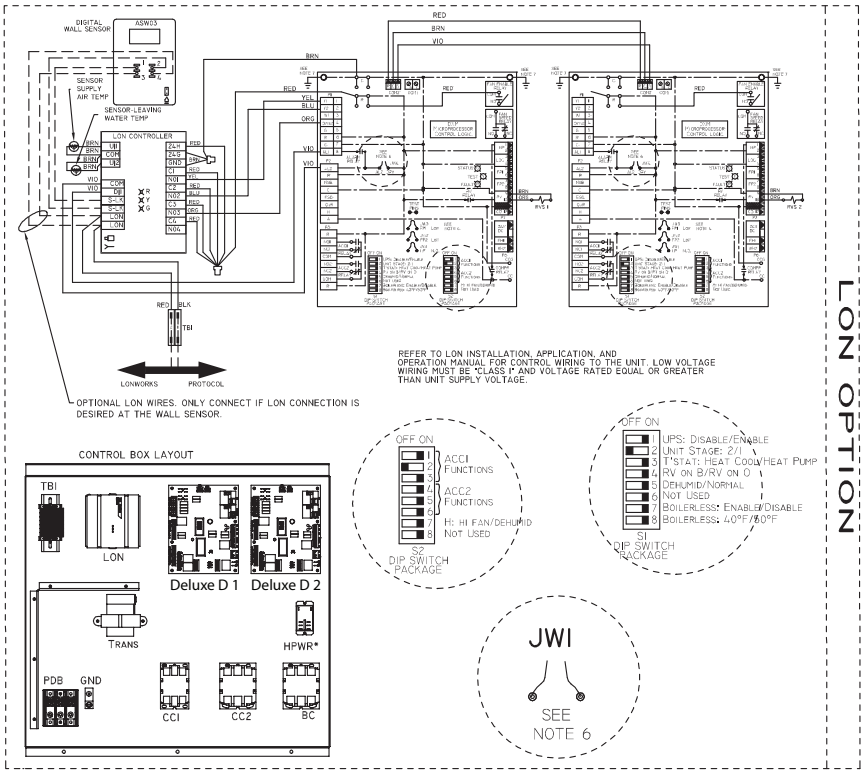


See legend and notes on page 43.

TYPICAL CONTROL WIRING WITH DELUXE D AND LON CONTROLLER



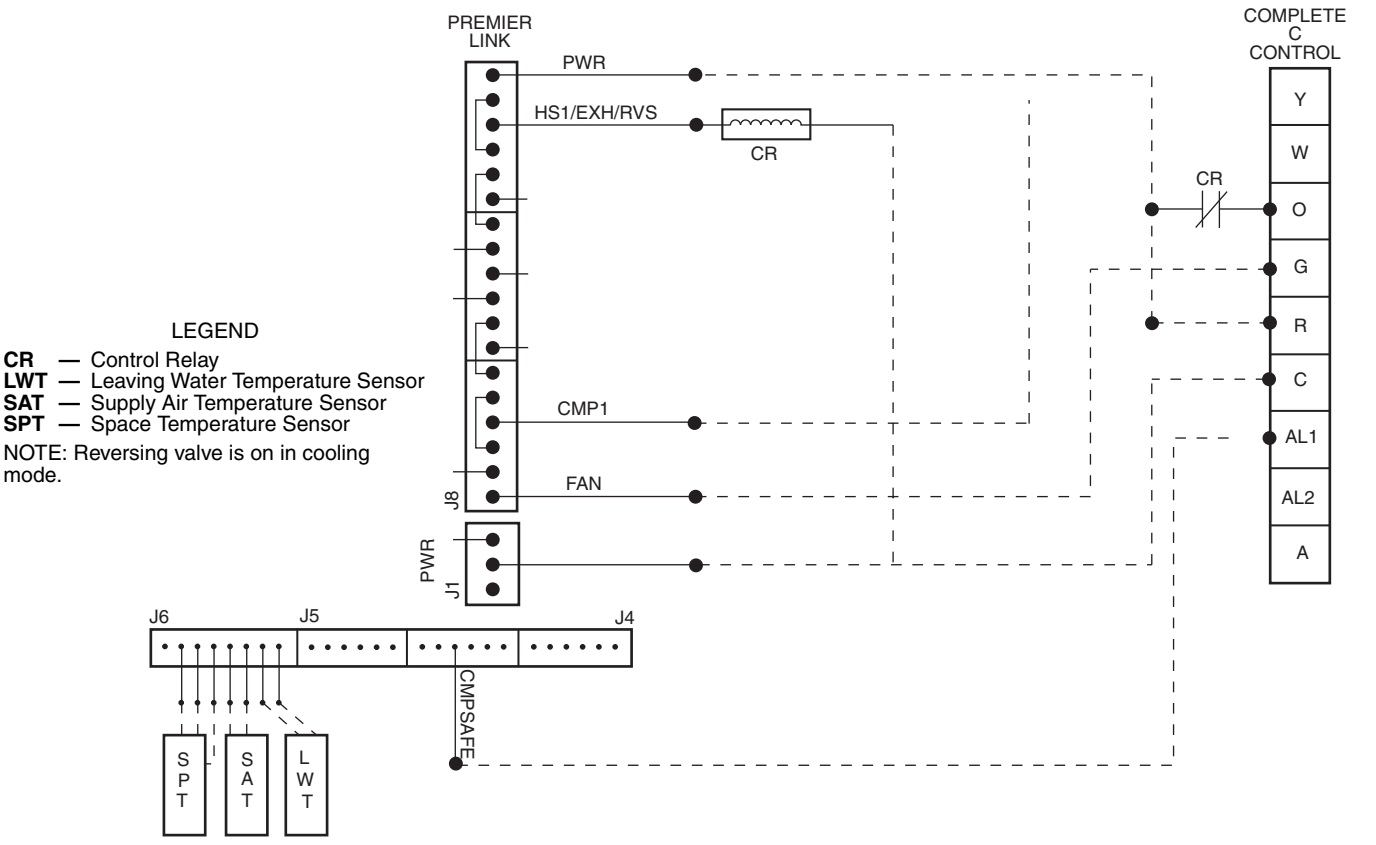
SIZES 03-06



SIZES 08-20

Typical wiring schematics (cont)

PREMIERLINK™ CONTROLLER APPLICATIONS WITH COMPLETE C CONTROL

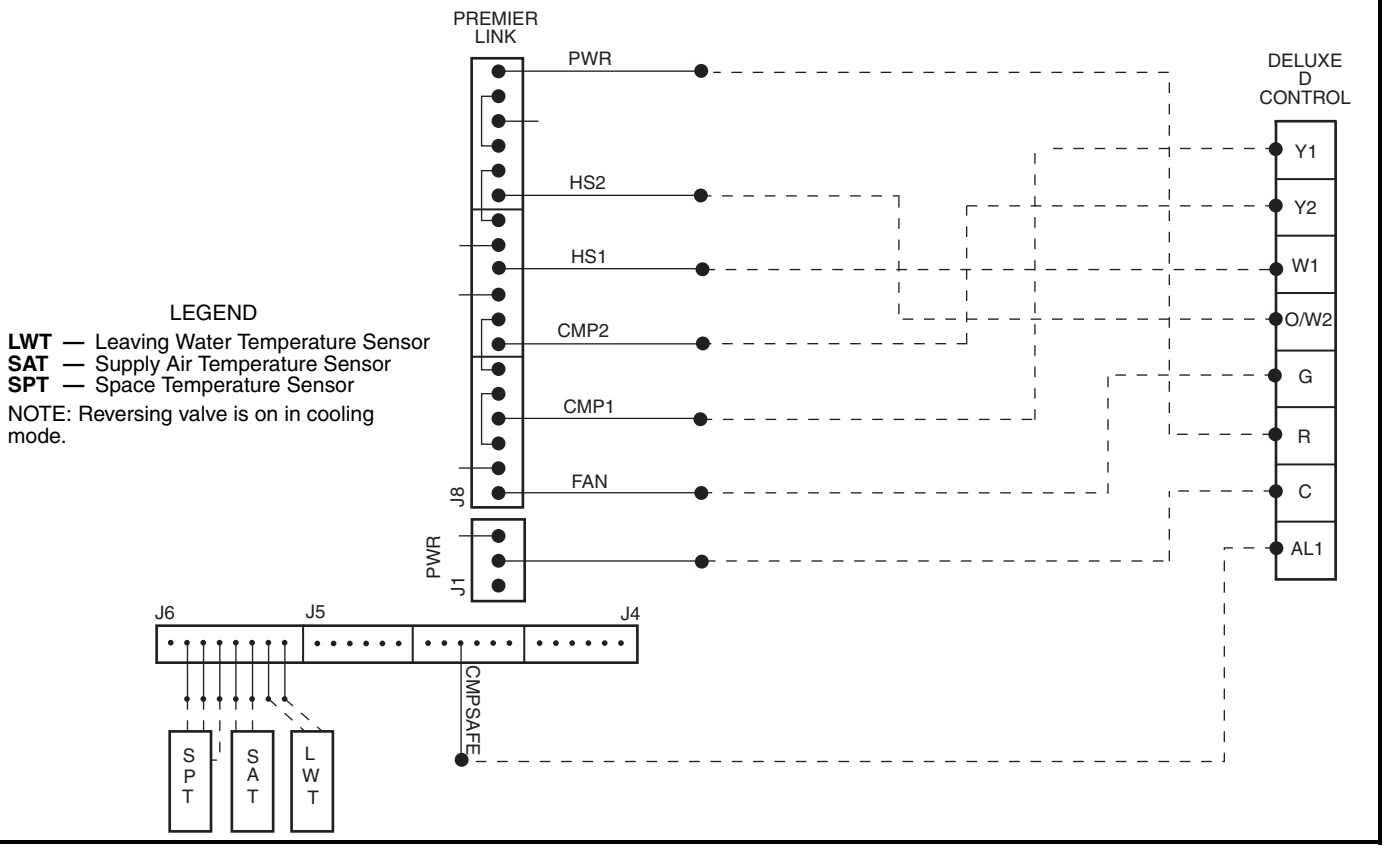


LEGEND

CR — Control Relay
LWT — Leaving Water Temperature Sensor
SAT — Supply Air Temperature Sensor
SPT — Space Temperature Sensor

NOTE: Reversing valve is on in cooling mode.

PREMIERLINK CONTROLLER APPLICATIONS WITH DELUXE D CONTROL

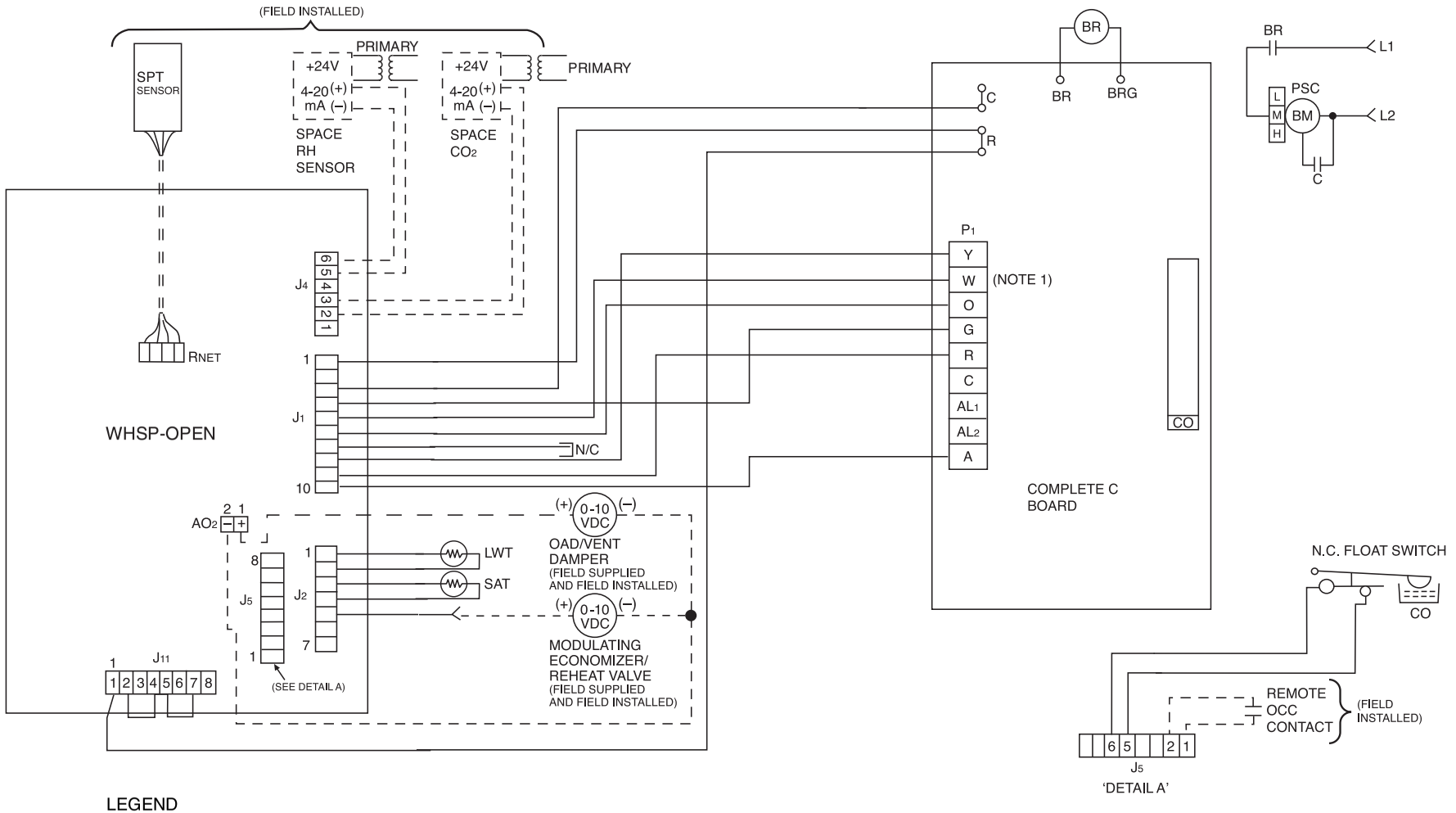


LEGEND

LWT — Leaving Water Temperature Sensor
SAT — Supply Air Temperature Sensor
SPT — Space Temperature Sensor

NOTE: Reversing valve is on in cooling mode.

UNITS WITH COMPLETE C AND WSHP OPEN MULTIPLE PROTOCOL CONTROLS

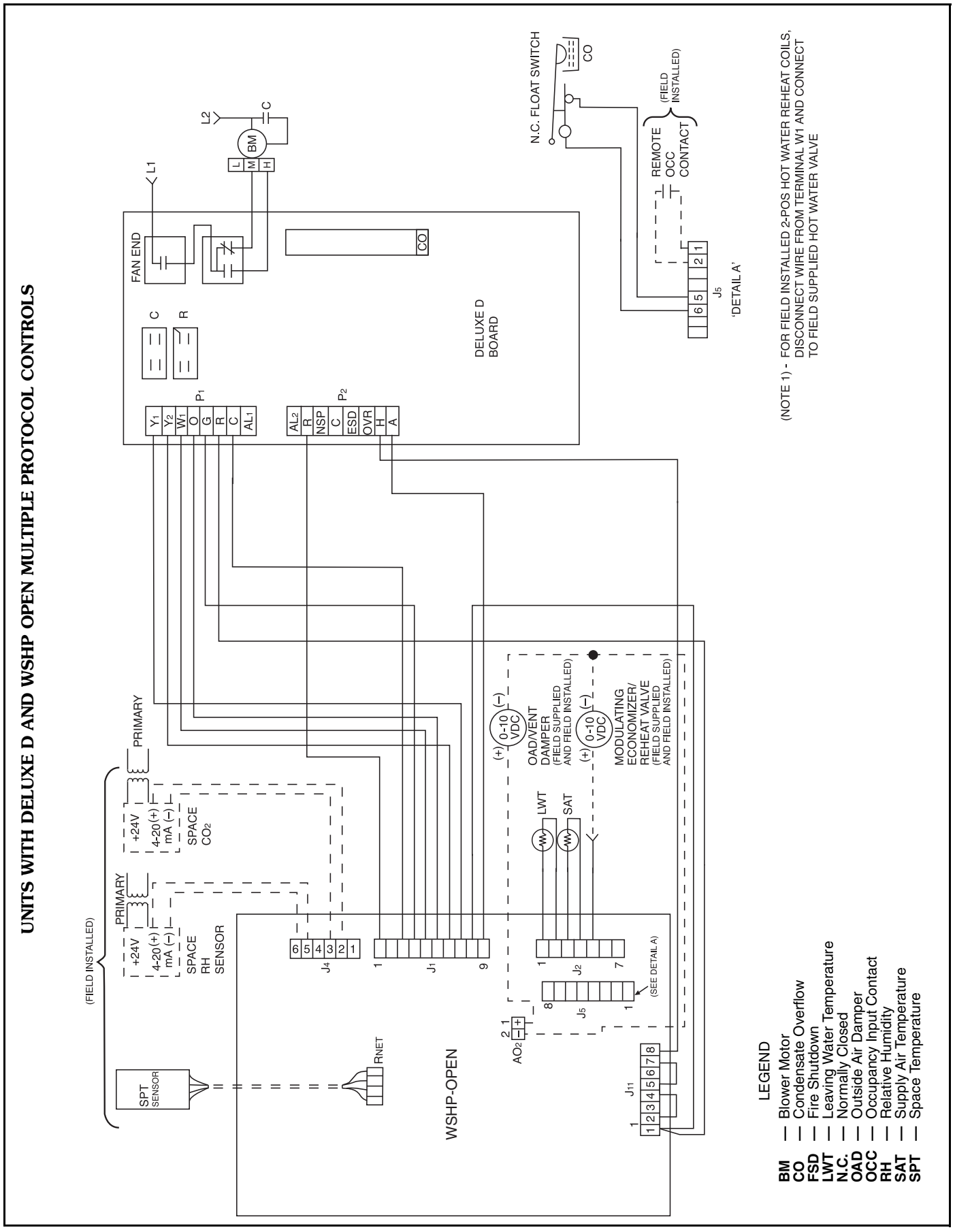


LEGEND

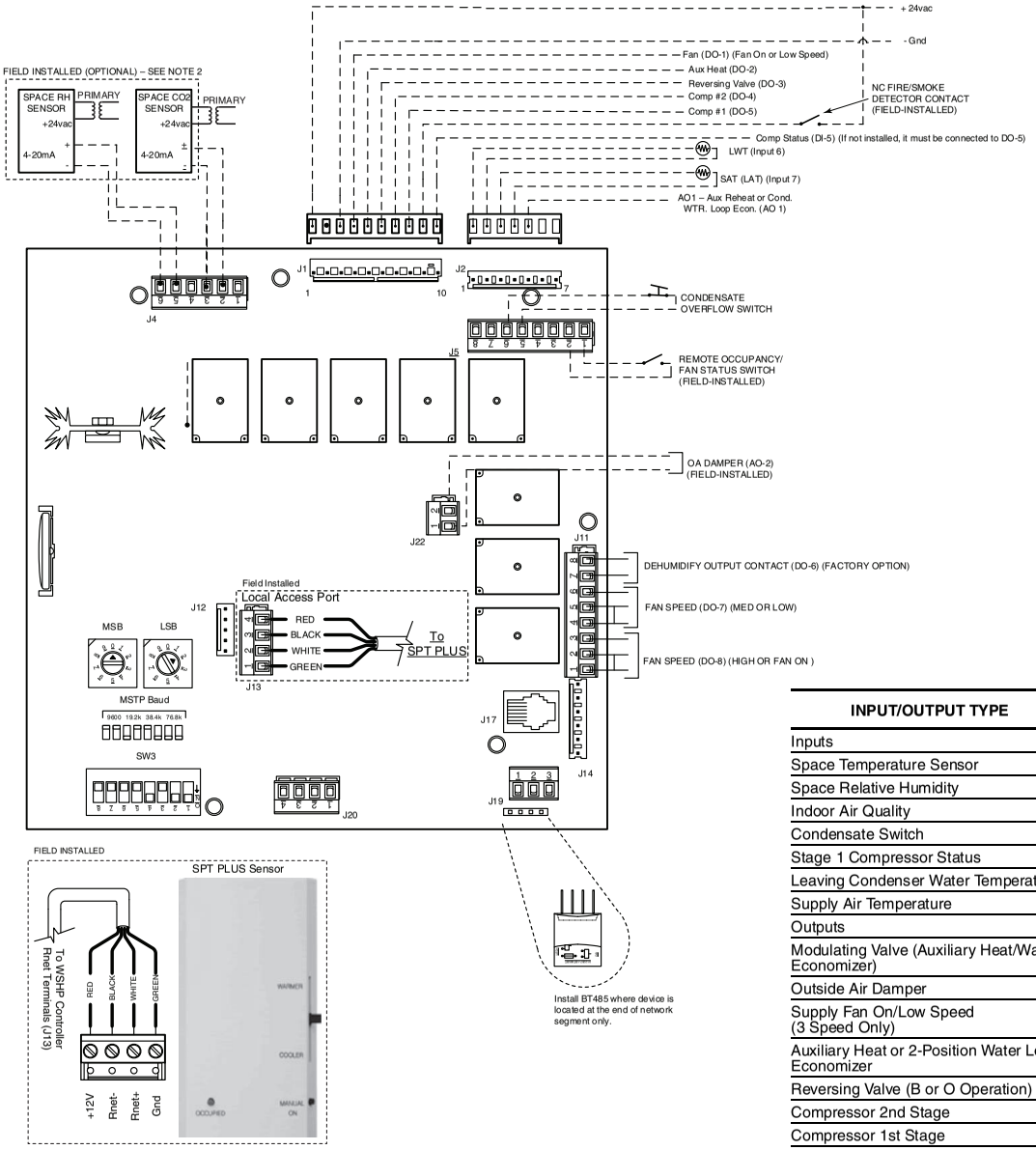
BM — Blower Motor
BR — Blower Relay
CO — Condensate Overflow
FSD — Fire Shutdown
LWT — Leaving Water Temperature
N.C. — Normally Closed
OAD — Outside Air Damper
OCC — Occupancy Input Contact
RH — Relative Humidity
SAT — Supply Air Temperature
SPT — Space Temperature

(NOTE 1) - FOR FIELD INSTALLED 2-POS HOT WATER REHEAT COILS, DISCONNECT WIRE FROM TERMINAL W AND CONNECT TO FIELD SUPPLIED HOT WATER VALVE

Typical wiring schematics (cont)



WSHP OPEN MULTIPLE PROTOCOL CONTROLLER



LEGEND

AI	—	Analog Input
AO	—	Analog Output
BI	—	Binary Input
BO	—	Binary Output
SPT	—	Space Temperature
		Factory Wiring
		Field Wiring

NOTES:

1. Mount the water source heat pump controller in the equipment controls enclosure with at least two no. 6 x 1 in. self-tapping screws. Allow adequate clearance for wiring.
2. Verify sensor power and wiring requirements prior to making any terminations. Sensors requiring a separate isolated 24 vac power source will not utilize WSHP terminals J4-1, or 4.

WSHP Open Inputs and Outputs Table

INPUT/OUTPUT TYPE	PART NUMBERS	TYPE OF I/O	CONNECTION PIN NUMBERS	CHANNEL DESIGNATION
Inputs				
Space Temperature Sensor	SPS, SPPL, SPP	Communicating	J13, 1 - 4	Local Access Port
Space Relative Humidity	33ZCSENSRH-01	AI (4 - 20mA)	J4, 5 and 6	Analog Input 1
Indoor Air Quality	33ZCSENCO2	AI (4 -20mA)	J4, 2 and 3	Analog Input 2
Condensate Switch	N/A	BI (Dry Contacts)	J1, 2	Binary Input 3
Stage 1 Compressor Status	N/A	BI (Dry Contacts)	J1, 10	Binary Input 5
Leaving Condenser Water Temperature	10K Type II	AI (10K Thermistor)	J2, 1 and 2	Analog Input 6
Supply Air Temperature	33ZCSENSAT	AI (10K Thermistor)	J2, 3 and 4	Analog Input 7
Outputs				
Modulating Valve (Auxiliary Heat/Water Economizer)	N/A	AO (0-10Vdc/2 - 10Vdc)	J2 4 and 5*	Analog Output 1
Outside Air Damper	N/A	AO (0-10Vdc/2 - 10Vdc)	J22 1 and 2*	Analog Output 2
Supply Fan On/Low Speed (3 Speed Only)	N/A	BO Relay (24VAC, 1A)	J1, 4*	Binary Output 1 (G)
Auxiliary Heat or 2-Position Water Loop Economizer	N/A	BO Relay (24VAC, 1A)	J1, 5*	Binary Output 2
Reversing Valve (B or O Operation)	N/A	BO Relay (24VAC, 1A)	J1, 6*	Binary Output 3 (RV)
Compressor 2nd Stage	N/A	BO Relay (24VAC, 1A)	J1, 7	Binary Output 4 (Y2)
Compressor 1st Stage	N/A	BO Relay (24VAC, 1A)	J1, 8	Binary Output 5 (Y1)
Dehumidification Relay	N/A	BO Relay (24VAC, 1A)	J11, 7 and 8 (NO)	Binary Output 6
Fan Speed Medium/Low (3 Speed Only)	N/A	BO Relay (24VAC, 1A)	J11, 5 and 6 (NO)*	Binary Output 7
Fan Speed High/Low (3 Speed Only)	N/A	BO Relay (24VAC, 1A)	J11, 2 and 3 (NO)*	Binary Output 8

*These inputs are configurable.

Application data

Aquazone™ WSHP products are available in a flexible, efficient array of models, which can be used in all types of water loop, ground water, and ground loop type systems. Use Aquazone products to provide optimal energy efficient solutions and adapt to the most challenging design requirements.

AQUAZONE PRODUCT GUIDE

50 SERIES	TYPE SIZE (tons)	APPLICATION
50HQP,VQP	Large Capacity 6-10 (HQP) 6 1/2-25 (VQP)	Environmentally sound unit with Puron® refrigerant (R-410A) designed to handle large zoned areas for all geothermal and boiler/tower applications.
50PC	Compact 1 1/4-5	Compact WSHP with Puron refrigerant (R-410A) for boiler/tower, ground water, or ground loop systems.
50PS	Premium Efficiency 1/2-6	Premium, ultra efficient unit with Puron refrigerant (R-410A) for new boiler/tower, ground water, or ground loop systems
50PEC	High Efficiency Console 3/4-1 1/2	Efficient console unit with Puron refrigerant (R-410A) and attractive design for finished interior, under-window installations.
50PT	Premium Efficiency 2-6	Premium, ultra efficient 2-stage unit with Puron refrigerant (R-410A) for new boiler/tower, ground water, or ground loop systems
50PSW	Water-to-Water 3-28	Efficient unit with Puron refrigerant (R-410A) serves as an alternative to preheat or cool air. Unit can be used as a stand-alone or supplemental boiler/chiller in most hydronic heating applications. Also conditions process fluids, lubricants, and refrigerants.
50RTP	Rooftop 3-20	Economical solution for indoor air quality (IAQ) problems and tempering ventilation air.
50VS	Premium Efficiency Vertical Stack Heat Pump 3/4 to 3 Tons	Ultra efficient unit with environmentally sound Puron refrigerant (R-410A) for boiler/tower and geothermal applications (condominiums, hotels, etc.). Stacked design allows for common piping and simplistic design.

Water loop system

Water loop (or boiler/tower) system applications typically include a number of units plumbed to a common piping system. For optimal performance, this system should be designed between 2.25 and 3 gpm per ton of cooling capacity. The system is comprised of highly efficient packaged reverse cycle heat pump units interconnected by a water loop. The water circuit serves as both a sink and source for heat absorption and rejection and is designed for entering water temperatures between 60 and 90 F. Within this temperature range, units can heat or cool as required from the same water source. Transferring heat from warm to cold spaces in the building, whenever they coexist, conserves energy rather than creating new heat.

Refer to the **Carrier Water Source Heat Pump System Design Guide** for assistance with the design of water loop systems. The guide includes a practical approach for the most current design recommendations including:

- Product application including horizontal, vertical, console, rooftop and water-to-water applications.
- Ventilation methods and system design including energy recovery.
- Acoustical considerations for different product types.
- Indoor air quality issues such as condensate removal, humidity control.
- Air distribution design including diffuser selection/layout and ductwork design.
- Hydronic system design including pipe sizing/layout and boiler/tower sizing.
- Control configurations such as stand alone, DDC, DCV, and VVT® control systems.
- Water source heat pump Efficiency/Operational Cost Comparison chart.
- System variations such as a system without a boiler, variable pumping, and VAV for interior use.

Ground water systems

Using Aquazone units in ground water applications requires extended range units. This will provide factory-installed insulation on the coaxial coil to prevent condensate from dripping when entering water temperatures are below 60 F. In addition, the copper coaxial coil installed on the Aquazone units may not be suitable for all water conditions. Refer to the Water Conditioning section for proper coaxial coil material selection.

Surface water system — This system is typically located near a lake or pond. In this application, the loop can be submerged in a series of coils beneath the water surface. The number of coils required depends on system load and design. This application requires minimum piping and excavation.

Open loop system — This system is used where ground water is plentiful. In this application, ground water is pumped through supply piping from the well to the building. The water is then pumped back into the ground through a discharge well as it leaves the building. An additional heat exchanger is usually installed between the building water piping system and the ground water piping system. This design limits the amount of piping and excavation required.

Aquazone units are provided with a standard TXV and are rated to extremely low temperatures to self-adjust the refrigeration circuit; therefore, water regulating valves are not required on open loop systems. To conserve water on this type of system, a slow opening/closing solenoid valve is recommended.

Ground loop systems

There are many commonly specified designs for ground loop applications. Typical designs include vertical loops and horizontal loops. In some applications, water is piped from the ground or lake directly to the WSHP. This system only requires piping to get the water from the source to the unit.

NOTE: When using Aquazone WSHPs in ground loop systems, refer to design considerations in the ground water system section.

Horizontal ground loop — This system is used when adequate space is available and trenching can be easily accomplished. A series of parallel pipes are laid out in trenches 3 to 6 ft below the ground surface, and then backfilled. Often, multiple pipes are used to maximize the heat transfer capability of each trench. Ground conditions, heating and cooling requirements and system design determine piping requirements and ground loop field size.

Vertical ground loop — This system is used in vertical borehole applications. This design is well suited for retrofit applications when space is limited or where landscaping is already complete and minimum site disruption is desired. The vertical ground loop system contains a single loop of pipe inserted into a hole. The hole is back-filled and grouted after the pipe is inserted. The completed loop is concealed below ground. The number of loops required depends on ground conditions, heating and cooling requirements, and the depth of each hole.

Hybrid systems — In some applications, it may be beneficial to incorporate a cooling tower into the ground loop system to reduce the overall cost. A hybrid system discards excess heat into the air and increases the cooling performance of the ground loop.

Condensate drainage

Venting — Condensate lines should be properly vented to prevent fan pressure from causing water to hang up in the piping. Condensate lines should be pitched to assure full drainage of condensate under all load conditions. Provide chemical treatment to remove algae in the condensate pans and drains in geographical areas that are conducive to algae growth.

Trapping — Condensate trapping is an essential necessity on every water source heat pump unit. A trap is provided to prevent the backflow of moisture from the condensate pan and into the fan intake or downstream into the mechanical system. The water seal or the length of the trap depends on the positive or negative pressure on the drain pan. As a rule of thumb, the water seal should be sized for 1 in. for every 1 in. of negative pressure on the unit. The water seal is the distance from the bottom of the unit condensate piping connection to the bottom of the condensate drain line run-out piping. Therefore, the trap size should be double the water seal dimension.

Water conditioning

In some applications, maintaining proper water quality may require higher corrosion protection for the water-to-refrigerant heat exchanger. Water quality varies from location to location and is unique for each job. Water characteristics such as pH value, alkalinity, hardness, and specific conductance are important when considering any WSHP application. Water typically includes impurities and hardness that must be removed. The required treatment will depend on the water quality as well as system type. Water problems fall into three main categories:

1. Scale formation caused by hard water reduces the heat transfer rate and increases the water pressure drop through the heat exchanger. As water is heated, minerals and salts are precipitated from a solution and deposited on the inside surface of the pipe or tube.
2. Corrosion is caused by gas absorption from the air coupled with water on exposed metal. Corrosion is also common in salt-water areas.
3. Organic growths such as algae can reduce the heat transfer rate by forming an insulating coating on the inside tube surface. Algae can also promote corrosion by pitting.

NOTE: In most commercial water loop applications, Aquazone™ WSHP units use copper water-to-refrigerant heat exchanger. Units can also be equipped with a cupronickel heat exchanger for applications where water is outside the standard contaminant limits for a copper heat exchanger.

WATER QUALITY GUIDELINES

CONDITION	ACCEPTABLE LEVEL		
pH	7 to 9 range for copper. Cupronickel may be used in the 5 to 9 range.		
Total Hardness	Calcium and magnesium carbonate should not exceed 20 grains per gallon (350 ppm).		
Iron Oxides	Less than 1 ppm.		
Iron Bacteria	No level allowable.		
Corrosion*		Max Allowable Level	Coaxial Metal
	Ammonia, Ammonium Hydroxide	0.5 ppm	Cu
	Ammonium Chloride, Ammonium Nitrate	0.5 ppm	Cu
	Ammonium Sulfate	0.5 ppm	Cu
	Chlorine/Chlorides	0.5 ppm	CuNi
	Hydrogen Sulfide†	None Allowable	—
Brackish	Use cupronickel heat exchanger when concentrations of calcium or sodium chloride are greater than 125 ppm are present. (Seawater is approximately 25,000 ppm.)		

*If the concentration of these corrosives exceeds the maximum allowable level, then the potential for serious corrosion problems exists.

†Sulfides in the water quickly oxidize when exposed to air, requiring that no agitation occur as the sample is taken. Unless tested immediately at the site, the sample will require stabilization with a few drops of one Molar zinc acetate solution, allowing accurate sulfide determination up to 24 hours after sampling. A low pH and high alkalinity cause system problems, even when both values are within ranges shown. The term pH refers to the acidity, basicity, or neutrality of the water supply. Below 7.0, the water is considered to be acidic. Above 7.0, water is considered to be basic. Neutral water contains a pH of 7.0.

NOTE: To convert ppm to grains per gallon, divide by 17. Hardness in mg/l is equivalent to ppm.

Acoustical design

Sound power levels represent the sound that the source, the WSHP unit, produces with no regard to attenuation between the source and the space. Acoustical design goals are necessary to provide criteria for occupied spaces. These goals ensure that people can be comfortable and communicate effectively over the background noise of the air-conditioning system and other background noise sources.

Acoustical design goals are desirable sound pressure levels within a given conditioned space and are represented by noise criteria (NC) curves. The NC curve levels represent a peak over a full spectrum of frequencies. A high value in a low frequency band has the same effect on NC level as a lower value in a high frequency band. It is important that sound levels be balanced over the entire spectrum relative to the NC curve. The lower the NC criteria curve, the more stringent the room acoustical design must be to meet the design goals.

It is important to know how to convert the unit ratings from sound power (Lw) to sound pressure (Lp). This conversion depends on the specifics of the installation's acoustical environment.

Application data (cont)

Assessing an area's acoustical design requires that you compare the sound pressure (Lp) with the NC curve for the selected area.

Some of the factors that affect conversion of sound power to sound pressure and consequent NC level include:

- Type of acoustical ceiling
- Use of metal or flex duct
- Absorption in the occupied space
- Location in the occupied space
- Open or closed layout plan
- Use of open or ducted returns
- Orientation of unit to occupant
- Use of lined or unlined duct

OCTAVE BAND SOUND PRESSURE LEVEL (Lp) ASSOCIATED WITH NC CURVES

NOISE CRITERIA CURVES	OCTAVE BAND SOUND PRESSURE LEVEL (Lp) Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
NC-15	49	36	26	17	17	14	12	11
NC-20	52	41	33	27	22	19	17	16
NC-25	54	45	38	31	27	24	22	21
NC-30	58	49	41	36	31	29	28	27
NC-35	61	53	45	40	36	34	33	32
NC-40	64	57	50	45	41	39	38	37
NC-45	67	61	54	49	46	44	43	42
NC-50	71	64	58	54	51	49	48	47
NC-55	74	68	63	58	56	54	53	52
NC-60	77	71	67	63	61	59	58	57
NC-65	80	75	71	68	66	64	63	62

WSHP sound control

Analyzing the projected sound level in the conditioned space caused by a WSHP unit located in a ceiling plenum is quite involved. The key is to have good sound power ratings (Lw) in dB on the equipment to determine the sound attenuation effect of the ductwork, ceiling and room. Aquazone™ equipment includes standard attenuating features, and offers an advanced mute package. In addition, Carrier provides suggestions for unit sound design around the WSHP units.

Rooftop units

Carrier makes many suggestions for the horizontal and vertical WSHP units, which also apply to rooftop models. For these guidelines, refer to the product data for the units listed.

Due to the unique installation of rooftop units, additional suggestions include:

- Avoid mounting the units in the middle of large roof expanses between vertical roof supports. This minimizes "roof-bounce" vibration.
- Install the units close to vertical roof supports.
- Locate units at least 25 ft away from critical areas.
- Install units over non-critical areas such as restrooms, storage rooms, etc.
- Use vibration isolators with the unit roof curb.
- Seal all roof penetrations to prevent line-of-sight noise transmission.
- Use flexible connectors between the unit and the supply and return ducts.
- Provide a smooth and gradual transition from the WSHP discharge to the supply duct.
- Line the supply and return ducts internally with sound absorbent type linings.
- If a ceiling plenum return is present, provide a return elbow or tee to eliminate line-of-sight noise to the space. Face the entrance of the return duct away from other adjacent units.
- When necessary, provide a sound-absorbing pad above the ceiling underneath the WSHP unit.

Solenoid valves

In applications using variable flow pumping, solenoid valves can be field installed and operated from the control board in the Aquazone WSHP unit.

Freeze protection

Applications where systems are exposed to outdoor temperatures below freezing (32 F) must be protected. The most common method of protecting water systems from freezing is adding glycol concentrations into the water. Use design care when selecting both the type and concentrations of glycol due to the following:

- Equipment and performance may suffer with high concentrations of glycol and other antifreeze solutions
- Loss of piping pressure may increase greatly, resulting in higher pumping costs
- Higher mixture viscosity may cause excess corrosion and wear on the entire system
- Water acidity may be greatly increased, promoting corrosion
- Glycol promotes galvanic corrosion in systems of dissimilar metals. The result is corrosion of one metal by the other, causing leaks.

Guide specifications

Rooftop Water Source Heat Pumps

Size Range: **3 to 20 Tons Capacity**

Carrier Model Number: **50RTP**

Part 1 — General

1.01 SYSTEM DESCRIPTION

A. Heat pump units designed to operate with 20 to 110 F water temperature. Units shall consist of fully hermetic type or high-efficiency scroll compressor(s) and shall have single or dual independent refrigeration circuits. The air discharge is horizontal with right/left discharge as specified on drawings.

B. Units shall be individually packaged with wooden skid covered with protective corner posts and plastic stretch wrapping for maximum protection.

1.02 QUALITY ASSURANCE

A. Basic unit shall be rated and certified in accordance with AHRI/ISO/ASHRAE Standards.

B. Units shall have insulation and adhesive, which meet NFPA 90A requirements for flame spread and smoke generation, and assembled units shall be UL and CSA certified.

C. Units shall be factory tested under normal operating conditions at nominal water flow rates to assure proper operation of all components and safety devices.

Part 2 — Product

2.01 EQUIPMENT

A. Heat Pump Assembly:

Factory-tested and assembled single-piece water source heat pump units shall be factory wired, charged with non-CFC R-410A refrigerant, contain refrigerant-to-water heat exchanger, refrigerant-to-air heat exchanger, 4-way reversing valve, fan motor assembly, compressor, metering device, and all internal controls and safety devices.

B. Unit Cabinet:

1. All panels shall be constructed of galvanized steel. All exterior panels shall be finished with powder paint coating on both sides.
2. All openings in the galvanized basepan shall be formed with at least a 1-in. upturned lip.
3. The compressor and electrical control compartment shall be isolated from the system airstream.
4. Access to the filters, indoor blower, electrical controls and compressor compartments shall be provided by double wall doors that have hinges and lift and turn compression latches that will withstand a 1000-hour salt spray test. All access doors and panels in the unit shall have a compression seal around the cabinet opening and an overhanging lip above them that is formed in the top panel.
5. The cabinet shall be insulated with 1-in. (25 mm) thick dual density fiberglass insulation with edges protected from erosion.
6. The drain pan shall be constructed of stainless steel. This corrosion protection system shall meet the 1000-hour salt spray test per ASTM B117. If plastic type material is used, it must be HDPE (High Density Polyethylene) to avoid thermal cycling shock stress failure over the lifetime of the unit. Drain pan shall be fully insulated. Drain outlet shall be located at pan as to allow complete and unobstructed drainage of condensate. Drain pan outlet shall be side field selectable/convertible. Drain outlet shall be connected from pan directly to IPT 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.
7. The unit shall be furnished with 2-in. (50 mm) filter racks and a set of 2-in. (50 mm) throwaway filters. Filter rack shall be field convertible without the need for additional parts to accept optional 4-in. filters.

C. Fan and Motor Assembly:

1. The assembly shall include a fan, housing and solid steel fan shaft encased in ball bearings. Unit shall have a belt drive fan assembly, fan pulley and adjustable motor sheave with V-belt drive. The unit shall be supplied with a forward curved, low speed, centrifugal type, supply air fan that has been statically and dynamically balanced and tested in accordance with current A.M.C.A. standards bulletin 210. The fan bearings shall be permanently lubricated, self-aligning ball bearings.
2. The motor shall be a three-phase, high-efficiency, ball bearing, open type with internal thermal overload protection.
3. The motor shall be mounted on an adjustable base for proper belt tension.
4. The fan and motor assembly must be capable of overcoming the external static pressures up to and including as shown in the unit literature. Airflow / static pressure rating of the unit shall be based on a wet coil and a clean filter in place.
5. Fan and motor assembly will be mounted on an easily removable slide-out assembly with safety stop for easy access and maintenance; motor shall be factory wired with wire of sufficient length to allow fan/motor assembly to be removed from unit and be placed on roof of unit for servicing.
6. Motor options include a standard motor with standard, low, or high rpm drive or an oversized motor with a high rpm drive.

D. Compressors:
   1. The unit shall be supplied with 3600-rpm fully hermetic scroll compressor(s) designed and rated for heat pump applications.
   2. The scroll compressor(s) will be mounted on external neoprene grommets specifically selected for maximized vibration attenuation. Compressor shall be mounted on a double isolation compressor deck, which is not supported or attached to the unit floor, so as to further reduce vibration transmission to unit base.
   3. Compressor shall have thermal overload protection, and be located in an insulated compartment away from air stream to minimize sound transmission.

E. Heat Exchangers:
   1. Refrigerant-to-air heat exchangers shall utilize enhanced corrugated lanced aluminum fins and rifled copper tube construction rated to withstand 650 psig refrigerant working pressure.
   2. Refrigerant to water heat exchangers shall be of copper inner water tube that is deeply fluted, and steel refrigerant outer tube co-axial design, rated to withstand 650 psig working refrigerant pressure and 650 psig working water pressure.
   3. 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 to 1.5 mils range) on all surfaces. The black colored coating shall provide a minimum of 1000 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.-lb (184 kg-cm) direct (ASTM D2794-93).
   4. Optional steel/cupronickel refrigerant-to-water heat exchanger shall be used for open loop applications, or where water quality cannot be maintained as specified by manufacturer.

F. Refrigerant Components:
   1. Refrigeration circuit components shall include liquid line service valve, suction line service valve, reversing valve, a full charge of compressor oil, and a holding charge of refrigerant.
   2. 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 110 F. 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.
   3. The air coil(s) shall be computer selected to provide optimum capacity and matched to the selected refrigeration compressor. The copper tubes shall be ASTM B447 or ASTM B75. The fins shall be plate aluminum with self-spacing die formed collars. End plates shall be galvanized steel. The fin-tube bond shall be permanent, tight, and metal, achieved by mechanical or hydrostatic expansion of the tube into the fin collar. The coil brazing shall be with inert gas inside tubes for bright, clean surfaces. The inside of the coil shall be free from flux, scale and foreign matter.
   4. The refrigerant-to-water heat exchanger shall be a coaxial design. The heat exchanger shall be manufactured with a carbon steel jacket finished to withstand salt spray tests conforming to ASTM B117 and an enhanced particulated deeply fluted copper or optional cupronickel inner tube. Each heat exchanger shall be individually tested for integrity; leak resistance and fluid flow before installation in the unit. The heat exchangers will be approved and labeled to meet UL standards for use with refrigerants to a maximum working pressure of 650 psig.

G. Controls and Safeties:
   1. Safety devices on all units shall include low-pressure sensor or loss-of-charge switch, high-pressure switch, low water temperature sensor, and condensate overflow switch.
   2. The standard Complete C electronic control system shall interface with a heat pump (Y,O) wall thermostat (mechanical or electronic). The control system shall have the following features:
      a. 50 va transformer.
      b. Anti-short cycle time delay on compressor operation; time delay shall be 5 minutes minimum.
      c. Random start on power-up.
      d. Low voltage protection.
      e. High voltage protection.
      f. Condensate overflow shutdown.
      g. Unit shutdown on low refrigerant pressures.
      h. Unit shutdown on high or low water temperature (selectable for antifreeze solutions).
      i. Option to reset unit at thermostat or disconnect. Fault type shall be retained in memory if reset at thermostat.
      j. Automatic intelligent reset. Unit shall automatically restart 5 minutes after shutdown if the fault has cleared. Should a fault occur 3 times sequentially, then lockout will occur.
      k. Ability to defeat time delays for servicing.
      l. Light-emitting diode (LED) to indicate high pressure, low pressure, improper voltage,

water coil freeze protection, air coil freeze protection, condensate overflow, and control status.

m. Unit performance monitor to indicate inefficient operating conditions prior to unit lockout.

n. Remote fault type indication at thermostat.

o. Single harness connection for all safety devices.

p. Selectable 24-v or pilot duty dry contact alarm output.

q. A 24-v output to cycle a motorized water valve with compressor contactor.

3. The optional Deluxe D electronic control shall have all the features of the Complete C control, with the following additional features:

a. A 75-va transformer.

b. A removable thermostat connector.

c. Random start on return from night setback.

d. Minimized reversing value operation for extended life and quiet operation.

e. Night setback control from low temperature thermostat, with 2-hour override initiated by a momentary signal from the thermostat.

f. Dry contact night setback output for digital night setback thermostats.

g. Ability to work with heat/cool (Y, W) thermostats.

h. Ability to work with heat pump thermostats using O or B reversing valve control.

i. Single grounded wire to initiate night setback or emergency shutdown.

j. Boilerless system control can switch automatically to electric heat at low loop water temperature.

k. Control board shall allow up to 3 units to be operated from one thermostat without any auxiliary controls.

l. A relay to operate an external damper. The control to be such that the damper will not open until 30 minutes after the unit comes back from unoccupied mode.

m. Fan speed selection at thermostat.

n. A relay to restart a central pump or control a 24-v motorized water valve.

o. Intelligent fan speed selection based upon thermostat demand and/or dehumidistat signal.

4. PremierLink™ Controller:

This control will function with CCN and ComfortVIEW™ software. It shall also be compatible with *Comfort*Link™ controllers. It shall be ASHRAE 62-99 compliant and Internet ready. It shall accept a CO_2 sensor in the conditioned space and be demand controlled ventilation (DCV) ready. The communication rate must be 38.4 kilobaud or faster.

5. LONWORKS Interface System:

Units shall have all features listed above (either Complete C or Deluxe D) and the control board shall be supplied with a LONWORKS interface board, which is LONMark certified. This will permit all units to be daisy chained via 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 set point

e. cooling status

f. heating status

g. low temperature sensor alarm

h. low pressure sensor alarm

i. high pressure switch alarm

j. condensate sensor alarm

k. high/low voltage alarm

l. fan "ON/AUTO" position of space thermostat

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.

H. Electrical:

1. A control box shall be located within the unit compressor compartment and shall contain a 75VA transformer with load side circuit breaker protection, 24 volt activated, 2 or 3 pole compressor contactor, terminal block for thermostat wiring and solid-state controller for complete unit operation.

2. Reversing valve and fan motor wiring shall be routed through the electronic controller.

3. Units shall be name-plated for use with time delay fuses or HACR circuit breakers.

4. Unit controls shall be 24 V and provide heating or cooling as required by the remote thermostat/sensor.

5. Two-compressor units shall have a solid-state time-delay relay and random start to prevent both compressors from starting simultaneously.

6. Optional factory-mounted disconnect shall be provided alone or with a GFI (ground fault interrupt) outlet.

I. Outside Air Options:

Provide a manual damper, a motorized damper or a modulating enthalpy economizer.

J. Special Features:

1. Aquazone™ Thermostat Controls:
   a. Programmable multi-stage thermostat offers 7-day clock, holiday scheduling, large backlit display and remote sensor capability.
   b. Programmable 7-day light-activated thermostat offers occupied comfort settings with lights on, and unoccupied energy savings with lights off.
   c. Programmable 7-day flush-mount thermostat offers locking coverplate with tamperproof screws, flush to wall mount, dual point with adjustable deadband, O or B terminal, and optional remote sensor.
   d. Programmable 5-day thermostat offers 2-stage heat, 2-stage cool, auto changeover, 5-minute built-in compressor protection, and included locking cover.
   e. Non-programmable thermostat offers 2 heat stages, 2 cool stages, auto changeover, 5-minute built-in compressor protection, and included locking cover.
2. A loop controller with six stages (2 stages for heating and 4 stages for heat rejection) is available.
3. Fire-rated hose kits with a fixed MPT on one end and a swivel with an adapter on the other end are available. Hose kits can be either stainless steel or galvanized.
4. Ball valves (brass body) for shutoff and balancing water flow are available with memory, memory stop, and pressure temperature ports.
5. Y strainers (bronze body) are "Y" type configuration with a brass cap and stainless steel strainer screen are available. Maximum operating pressure rating of the strainers is 450 psi.
6. Solenoid valves (brass body) provide slow operation for quiet system application.
7. Hose kit assemblies include a ported ball valve with pressure temperature (P/T) plug ports, flexible stainless steel hose with swivel and nipple. Return hose includes a ball valve, preset measure flow (gpm) with two P/T ports, flexible stainless steel hose with a swivel and nipple.
8. Remote sensors for Aquazone flush-mount thermostats are available.
9. PremierLink accessories for providing a fully integrated DDC system are available. Accessories include supply air temperature sensors, communicating room sensors, CO_2 sensors, and linkage thermostats.
10. An Aquazone system control panel as specified in 50RLP Product Data (525-00040) is available.
11. A roof curb assembly is available for field-installed mounting of 50RTP units.
12. A two-way motorized control valve can be provided with a copper or cupronickel heat exchanger for open type system or variable speed pumping applications.
13. Multiple-protocol WSHP Open controller remote sensors for Aquazone flush-mount thermostats and DDC control options. Only Carrier sensors can be used with the WSHP Open controller. Sensors are available as follows:
   a. SPT Standard offers space temperature sensor with communication port.
   b. SPT Plus offers space temperature sensor with set point adjust, local override with indicating light and communication port.
   c. SPT Pro offers space temperature sensor with LCD display, set point adjust, local override, alarm icon, outside air, and unit status with heating and cooling set points.
   d. SPT Pro+ offers space temperature sensor with LCD display, set point adjust, local override, alarm icon, outside air, unit status with heating and cooling set points, and fan speed control.