

VERTICAL AHU ENGINEERING SPECIFICATIONS

BULLETIN 20-019

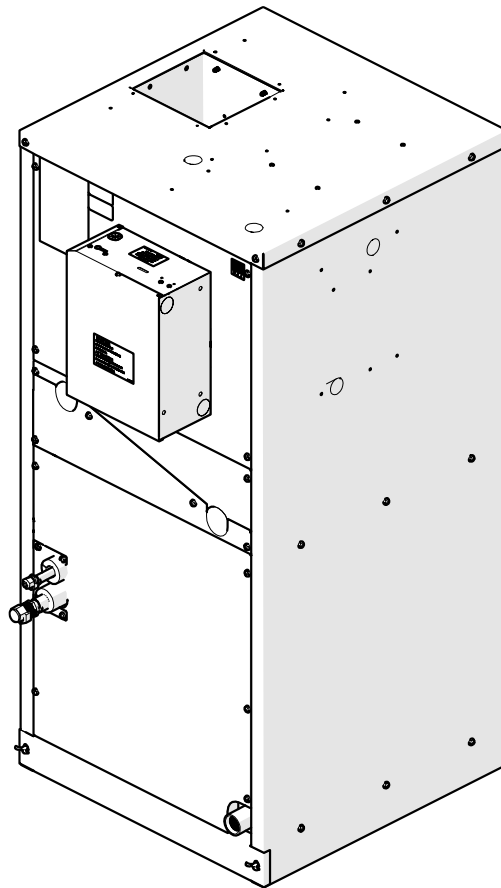


TABLE OF CONTENTS

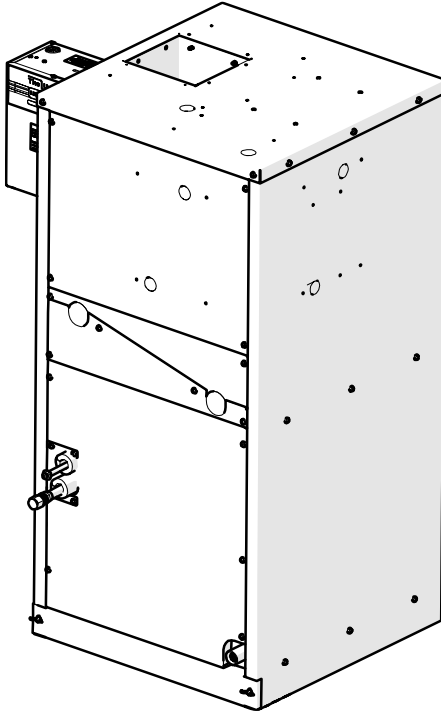
APPLICATIONS.....	3
CABINET CONSTRUCTION.....	3
FEATURES AND CONTROLS	3
DIMENSIONAL DATA	5
SPECIFICATIONS	6
HOT WATER COIL PERFORMANCE.....	8
CHILLED WATER COIL PERFORMANCE (COOLING MODE).....	10
CHILLED WATER COIL PERFORMANCE (HEATING MODE).....	11
BLOWER PERFORMANCE.....	14
ACOUSTICAL DATA.....	17

Certified to UL 60335-2-40
 UL 60335-1
 Conforms to CSA C22.2 #60335-2-40
 CSA C22.2 #60335-1



Unico products comply with the European regulations that guarantee product safety.

DESIGN & SPECIFICATIONS



Model Number Key

V2430B-1EC2BXC1

Refrigerant Type	1=A2L
Coil Coating	0=no coating C=E-coated
Heating Coil	X=non included H=hot water coil included
Cooling Coil	B=ac/heat pump coil, 3-row E=ac/heat pump coil, 4-row C=chilled water coil
Motor Type, Power Supply	EC2=Variable Speed, 1 ph, 50/60 Hz, 120/208-230 V
Revision	1, 2, 3, etc.
Configuration	B=Both left and right hand (universal)
Nominal Cooling Capacity Range	2430=24000 to 30000 Btu/hr (7.0 to 8.8 kW) 3036=30000 to 36000 Btu/hr (8.8 to 10.5 kW) 3642=36000 to 42000 Btu/hr (10.5 to 12.3 kW)
Model Series	V=Single piece vertical fan-coil unit

APPLICATIONS

The Unico System is a complete indoor comfort system that includes an indoor fan coil unit and small duct system. The fan coil unit and duct system were designed to operate together to provide the proper airflow in every installation. The conditioned air is supplied through a series of small diameter ducts as a stream of air that entrains and mixes with the room air. This process of aspiration produces a more even temperature distribution in the room than a conventional system.

The Unico vertical air handler Unit is a compact one-piece fan coil unit in a vertical up-flow configuration.

For cooling, the unit is designed for R-454B or R-32 refrigerant (both A/C and Heat Pump) or a chilled water coil. For heating, the unit offers an optional hot water coil or a separately mounted electric heater (Refer to Bulletin 30-34 for proper heater selection).

CABINET CONSTRUCTION

The cabinet is fully insulated with 1in (25mm) closed cell foam rubber insulation. The cabinet is constructed of 22 gauge (0.7-mm) galvanized steel with removable access panels on the front for ease of service. See dimensional drawing.

Fan coil ships with a 1 inch (50 mm) MERV 7 pleated filter. It can be upgraded with a higher MERV filter either 1 or 2 inch (50 or 100 mm).

FEATURES AND CONTROLS

The fan coil unit includes an efficient variable-speed electronically commutated motor (ECM), control box with the S-M-A-R-T¹ control board (SCB) and a Wi-Fi enabled communications board.

Balanced wheels – All blower wheels are individually balanced.

Direct drive motor – The wheel is mounted directly to the motor shaft to improve drive efficiency and lower costs.

Shaft key – The wheel is attached to the motor shaft using a square keyway instead of a set screw.

Quick motor replacement (QMR) – The QMR feature is a quick twist-and-lock motor mount for easy maintenance. The motor is mounted to the inlet ring which is attached to the blower housing with six screws through twist-lock keyholes. When the motor or wheel require service, the entire assembly may be removed as a whole.

¹ Software Managed Airflow Rate and Temperatures

Separate control box – The control box is separate from the cabinet (ships inside the cabinet) for easy accessibility. It may be mounted to the top or front of the cabinet or even on a wall, whichever is more convenient. Knockout and starter holes for the screws are provided to assist in mounting.

Control voltage transformer – a 48VA 24-volt transformer provides control voltage power to the thermostat, electric heaters, and other optional equipment.

Heat pump AFS bypass – removes the anti-frost switch (AFS) from the circuit during heat pump heating mode which eliminates nuisance shutdowns during defrost mode.

Modes of operation – The SCB control board has 6 independent modes of operation, each with its own programmable airflow and RPM limit settings (Fan-Only, Low-Cool, High-Cool, Low-Heat, High-Heat, and Emergency-Heat).

Soft-start and soft-stop – For quieter operation, the unit will slowly ramp the motor from stop to full speed, and vice versa.

Constant airflow – The EC control will deliver the airflow requested without any user adjustments to the duct system or requiring the user to measure the amperage.

Optimized for efficiency and sound – The EC control will use the lowest motor speed to achieve the required airflow, which minimizes sound and maximizes electrical efficiency.

Pre-set airflow rate – The SCB is pre-programmed with two different air flow rates for the High-Cool Mode. These rates are based on the nominal tonnage of the unit (See the *Applications* section) and can be selected with a board mounted switch. The airflow for each of the six different airflow control modes are a fixed percentage of the selected High Cool airflow.

Wirelessly configurable (EC2) – The airflow for each mode of operation is adjustable to any value between the blower minimum and maximum by connecting to the SCB's Wi-Fi board with a personal device, such as a smart phone

Point-to-point wiring – The control boards have separate terminals for the thermostat, electric heater, outdoor condenser and other options for easy wiring and troubleshooting.

Screw terminal connections – terminal blocks with large screws and wire washers to securely connect the control wires.

Electric heater interlocks – The ECM control board includes three electric heater safety lockouts. The lockout prevents the heaters from operating when there is no signal for fan or if the airflow is too low. This prevents the heating elements from overheating, which can severely reduce their useful life.

The other lockout prevents the electric heater third stage from operating if the heat pump is on. This prevents nuisance shutdowns from overheating the electric heater. This feature can be added to the ST control box by using an outside thermostat.

Boiler relay – The SCB includes a separate dry-contact relay (HotW) that can be used to turn on the boiler, boiler pump, or hot water coil valve when the system is running in heating mode

Chilled water relay – The control box includes a separate dry-contact relay (ColdW) to turn on a chiller or zone pump when the system is running in Cooling mode.

Fan cycling – The control board includes a separate switch to provide periodic cycling of the fan. This will minimize or prevent condensation in the ducts located in unconditioned spaces during winter, or to provide fresh air if the system is connected to a fresh air source.

EAC, ERV, or HRV relay – For the optimum in indoor air quality, the control board includes a dry-contact relay to turn on an electronic air cleaner, energy recovery ventilator, or heat recovery ventilator any time the fan is on, or to control a fresh air damper for ventilation per ASHRAE 62.2-2010.

Potable water circulation – For improved health and safety, the control board provides a switch-selectable feature to turn on the boiler pump periodically (if installed as part of a domestic hot water system) to prevent the formation of stagnant water.

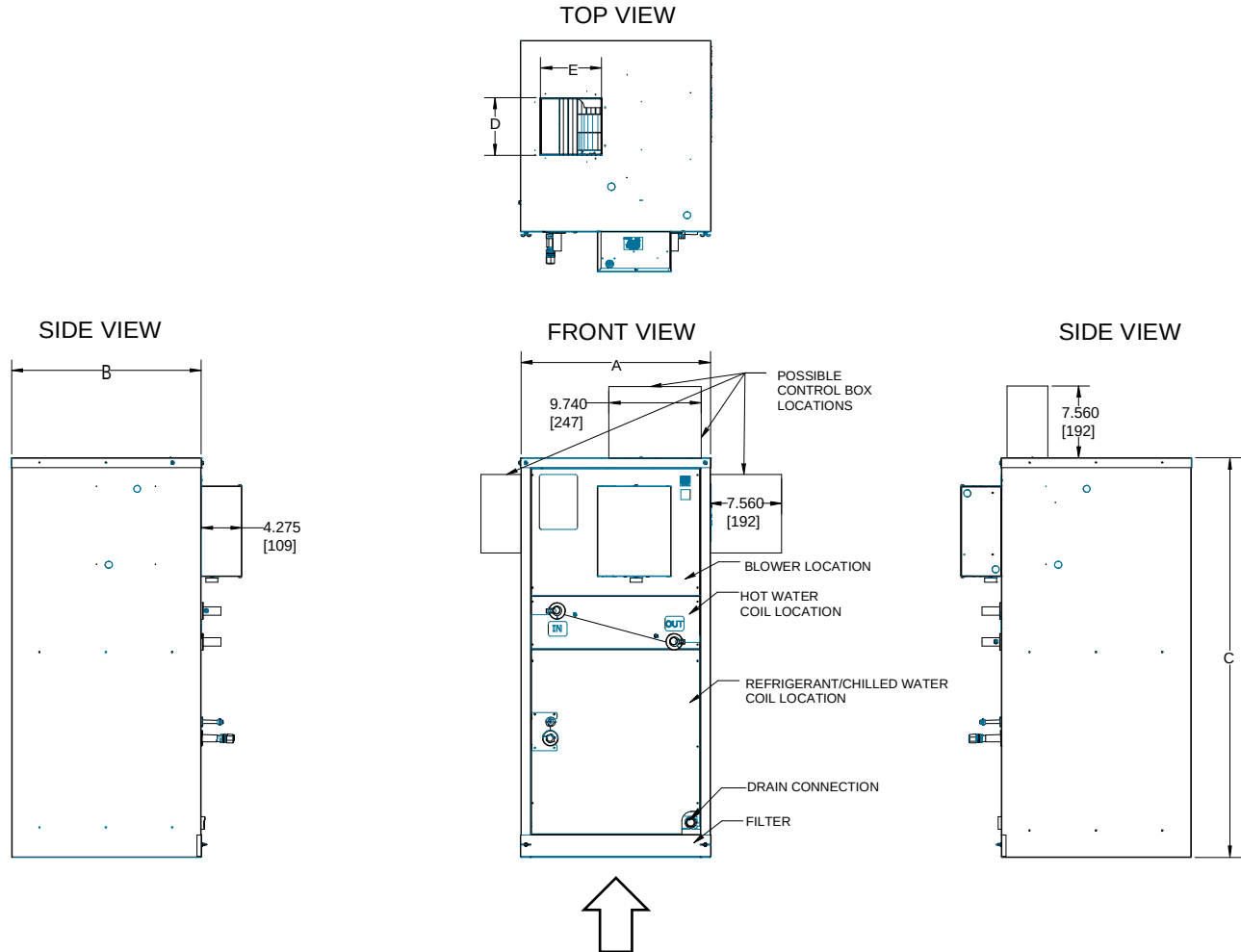
Humidifier integration – The control board includes a humidistat input with a humidifier output. If the humidistat calls for humidity, the humidifier output will turn on. It will also turn on the blower at High or Low Heat airflow (User-selectable) if the fan is not already running.

Air-to-water heat pump (heat pump chiller) compatibility – For systems with multiple air handlers connected to one AHP. This feature allows one air handler (Leader) to control the mode of operation (heating or cooling) of other connected indoor units (Followers) to avoid runaway cooling or heating.

Low airflow indicator – The S.M.A.R.T. control board (SCB) includes an indicator light that signals the user if the desired airflow is not being met. This is usually caused by a restrictive duct system or too few outlets.

Optimized for zoning – The ECMconfig software includes programmable motor speed limits to prevent the motor from over-speeding as zone dampers are closed without the need for a bypass damper. Refer to the Unico Tech Bulletin on zoning for more information.

Laptop troubleshooting – The ECMconfig software will also provide the user with feedback indicating the actual airflow, motor speed, communication status between the boards and the motor, and the state of various inputs and outputs.

DIMENSIONAL DATA

Note: The control box, expansion valve and condensate trap ships inside the spare parts box.

Model	A	B	C	D	E
V2430	20.0 (508)	20.0 (508)	42.0 (1067)	6.0 (152)	6.4 (162)
V3036	20.0 (508)	24.0 (610)	42.0 (1067)	7.1 (179)	6.3 (160)
V3642	23.75 (603)	25.0 (635)	44.0 (1118)	7.16 (182)	6.4 (162)

Model	Filter Size, inch (mm)
V2430	18 x 18 x 1 (457 x 457 x 50)
V3036	18 x 22 x 1 (457 x 559 x 50)
V3642	21 x 22 x 1 (533 x 559 x 50)

Weights & Shipping Measurements

Model No.		V2430B-1EC2BX	V2430B-1EC2EX	V3036B-1EC2BX	V3036B-1EC2EX	V3642B-1EC2BX	V3642B-1EC2EX
Weight., lbs. (kg)	Net	117 (53)	109 (50)	138 (63)	129 (59)	151 (68)	163 (74)
	Ship	177 (80)	169 (77)	200 (91)	191 (87)	215 (98)	227 (103)
Shipping Dimensions Inch (mm)	W	27.2 (692)	27.2 (692)	27.2 (692)	27.2 (692)	31.2 (793)	31.2 (793)
	D	21.6 (549)	21.6 (549)	24.6 (625)	24.6 (625)	25.6 (651)	25.6 (651)
	H	44.3 (1125)	44.3 (1125)	44.3 (1125)	44.3 (1125)	46.3 (1176)	46.3 (1176)

SPECIFICATIONS

Blower and Motor Specifications

Model No.		V2430B-1EC2	V3036B-1EC2	V3642B-1EC2
Electrical Power		Phase, Hz, Volts	1, 50/60, 120/208-230	
Nominal Motor Size		hp (kW)	1/2 (0.37)1 (0.75)	
Motor Type		EC (variable speed)		
Minimum Circuit Ampacity		amps	7.0/4.012.8/7.7	
Max. Over Current Protection		amps	1520/15	
Motor Full Load Current		amps	5.6/3.210.5/6.1	
Motor Speed		RPM	0 – 1800	
Blower Wheel Nom. Diameter		in. (mm)	9.5 (241)	
Blower Wheel Width		in. (mm)	3.75 (95)5.0 (127)5.0 (127)	
Nominal Air Flow Rate		CFM (L/s)	600 (283)750 (354)900 (425)	
Nominal Plenum Static Pressure		in. w.c. (kPa)	1.5 (0.373)	
Minimum Plenum Size, ID		in. (mm)	7 (178)9 (229)	
Sound Pressure Level*		dB(A)	53	5357
		NC	48	4852

* Sound Pressure Level measured for V2430, V3036, and V3642 at 740 CFM, 900 CFM, and 1200 CFM respectively.

Refrigerant Coil Specifications

System Type*		AC and Heat Pump			AC and Heat Pump		
Model No.		V2430B-1EC2B	V3036B-1EC2B	V3642B-1EC2B	V2430B-1EC2E	V3036B-1EC2E	V3642B-1EC2E
Coil Part No.		A01948-G01	A01951-G01	A01958-G01	A10914-G01	A01950-G01	A01957-G01
Compatible Condenser Size, ton (kW)		2.0-2.5 (7.0–8.8)	2.5-3.0 (8.8–10.5)	3.0-3.5 (10.5–12.3)	2.0-2.5 (7.0–8.8)	2.5-3.0 (8.8–10.5)	3.0-3.5 (10.5–12.3)
Net Face Area, ft ² (m ²)		2.72 (0.25)	3.55 (0.33)	4.75 (0.44)	3.1 1 (0.29)	4.00 (0.37)	4.75 (0.44)
Tube diameter, in. (mm)		3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
Fin Density, fins/in. (fins/m)		15 (590)	15 (590)	15 (590)	14 (551)	14 (551)	14 (551)
Number of rows		3	3	3	4	4	4
Number of circuits		4	6	6	6	6	8
Design Pressure, psig (MPa)		500 (3.5)	500 (3.5)	500 (3.5)	500 (3.5)	500 (3.5)	500 (3.5)
Refrigerant Type**		R-454B / R-32 / R-410A					
Expansion Device		TXV with internal Check Valve**					
TX Valve Part No.	R-454B	TXV-2T-454	TXV-3T-454	TXV-4T-454	TXV-2T-454	TXV-3T-454	TXV-4T-454
	R-32	TXV-2T-32	TXV-3T-32	TXV-4T-32	TXV-2T-32	TXV-3T-32	TXV-4T-32
Suction line†	O.D., inch (mm)	5/8 (15.88)	3/4 (19.05)	3/4 (19.05)	5/8 (15.88)	3/4 (19.05)	3/4 (19.05)
	Connection, in.	1/2 Male Flare	5/8 Male Flare	3/4 Male Flare	1/2 Male Flare	5/8 Male Flare	3/4 Male Flare
Liquid Line	Part No.	A01910-001	A01952-001	A01959-001	A01910-001	A01952-001	A01959-001
	O.D. inch (mm)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
	Connection, in.	1/4 Male Flare	3/8 Male Flare	3/8 Male Flare	1/4 Male Flare	3/8 Male Flare	3/8 Male Flare
Condensate	Connection, in.	3/4 FPT	3/4 FPT	3/4 FPT	3/4 FPT	3/4 FPT	3/4 FPT

* Heat pump coil selection depends on outdoor unit model. Refer to AHRI directory for a proper match.

** TXV is not included with unit, order TXV separately.

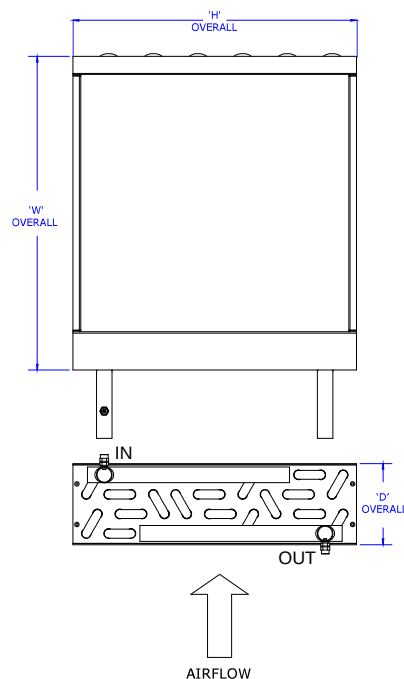
† Suction line stubs with flare nuts are long enough to be cut off and brazed to directly.

Chilled Water Coil Specifications

Model No.		V2430-1EC2C	V3036-1EC2C	V3642-1EC2C
CWC model		A02389-G01	A02395-G01	A02396-G01
No. of Rows		4		
Tube diameter	inch (mm)	3/8 (9.5)		
Tube material		Copper		
Fin density	fins/inch (fins/mm)	14 (0.55)		
Fin material		Al		
Design Pressure	Psig (kPa)	320 (2206)	320 (2206)	320 (2206)
Net Face Area, ft ² (m ²)		3.11 (0.29)	4.00 (0.37)	4.75 (0.44)
No. of Circuits		6	8	10
Water Connection Size, ODF Sweat	inch [mm]	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)

Hot Water Coil Specifications

Model No.			V2430-1EC2*H	V3036-1EC2*H	V364-1EC2*H
HWC model			HW-V2430	HW-V3036	HW-V3642
No. of Rows			4		
Tube diameter	inch (mm)	1/2 (12.7)			
Tube material		Cu			
Fin density	fins/in (fins/mm)	10 (0.40)			
Fin material		Al			
Face Area	inch ² (m ²)	199 (0.128)	259 (0.167)	342 (0.221)	
No. of Circuits		3			
Connections, ODF		7/8 (22.2)			
Weight	Net	Lbs. (kg)	8 (3.6)	11 (5.0)	16 (7.3)
	Ship	Lbs. (kg)	12 (5.4)	15 (6.8)	24 (10.9)
Coil Dimensions	W	inch (mm)	17.38 (442)	21.38 (543)	22.38 (569)
	D	inch (mm)	4.50 (114)	4.50 (114)	4.50 (114)
	H	inch (mm)	15.86 (403)	15.86 (403)	19.61 (498)



HOT WATER COIL PERFORMANCE

V2430			Airflow, SCFM (m³/h)						Water Pressure Drop		
Entering Water Temp	Water Flow Rate		400	(680)	500	(850)	600	(1020)			
			Total Capacity								
°F	(°C)	GPM	(L/s)	MBH	(kW)	MBH	(kW)	MBH	(kW)	ft. w.c.	(kPa)
100	(38)	2	(0.13)	8.50	(2.48)	9.70	(2.84)	10.7	(3.13)	0.47	(1.40)
		4	(0.25)	9.40	(2.74)	10.9	(3.21)	12.4	(3.62)	1.60	(4.78)
		6	(0.38)	9.70	(2.83)	11.4	(3.34)	13.0	(3.81)	3.29	(9.83)
120	(49)	2	(0.13)	14.3	(4.18)	16.3	(4.78)	18.0	(5.28)	0.47	(1.40)
		4	(0.25)	15.7	(4.59)	18.4	(5.38)	20.7	(6.08)	1.60	(4.78)
		6	(0.38)	16.2	(4.74)	19.1	(5.60)	21.8	(6.38)	3.29	(9.83)
140	(60)	2	(0.13)	20.1	(5.89)	23.0	(6.74)	25.4	(7.46)	0.47	(1.40)
		4	(0.25)	22.0	(6.46)	25.8	(7.57)	29.2	(8.56)	1.60	(4.78)
		6	(0.38)	22.7	(6.65)	26.9	(7.87)	30.6	(8.97)	3.29	(9.83)
160	(71)	2	(0.13)	26.0	(7.62)	29.8	(8.73)	33.0	(9.66)	0.47	(1.40)
		4	(0.25)	28.4	(8.33)	33.4	(9.78)	37.8	(11.1)	1.60	(4.78)
		6	(0.38)	29.3	(8.58)	34.7	(10.2)	39.5	(11.6)	3.29	(9.83)
Recommended No. of Outlets			12		15		18				

V3036			Airflow, SCFM (m³/h)								Water Pressure Drop		
Entering Water Temp	Water Flow Rate		450	(760)	625	(1060)	750	(1270)	875	(1490)			
			Total Capacity										
°F	(°C)	GPM	(L/s)	MBH	(kW)	MBH	(kW)	MBH	(kW)	MBH	(kW)	ft. w.c.	(kPa)
100	(38)	2	(0.13)	9.80	(2.86)	11.8	(3.46)	12.9	(3.77)	13.9	(3.79)	0.56	(1.7)
		4	(0.25)	10.8	(4.07)	13.6	(3.16)	15.3	(3.98)	16.8	(4.45)	1.90	(5.7)
		6	(0.38)	11.1	(4.48)	14.3	(4.92)	16.2	(3.26)	17.9	(4.18)	3.89	(11.6)
		8	(0.50)	11.3	(4.70)	14.6	(4.75)	16.7	(5.26)	18.6	(3.32)	6.48	(19.4)
120	(49)	2	(0.13)	16.4	(4.80)	19.9	(5.82)	21.8	(6.35)	23.4	(6.39)	0.56	(1.7)
		4	(0.25)	18.1	(6.86)	22.8	(5.29)	25.7	(6.68)	28.2	(7.46)	1.90	(5.7)
		6	(0.38)	18.6	(7.52)	23.9	(8.27)	27.1	(5.46)	30.1	(6.99)	3.89	(11.6)
		8	(0.50)	18.9	(7.88)	24.4	(7.95)	27.9	(8.82)	31.1	(5.54)	6.48	(19.4)
140	(60)	2	(0.13)	23.1	(6.76)	28.0	(8.21)	30.8	(8.98)	33.1	(9.02)	0.56	(1.7)
		4	(0.25)	25.4	(9.69)	32.1	(7.43)	36.2	(9.40)	39.8	(10.5)	1.90	(5.7)
		6	(0.38)	26.1	(10.6)	33.5	(11.6)	38.2	(7.66)	42.3	(9.83)	3.89	(11.6)
		8	(0.50)	26.5	(11.1)	34.3	(11.2)	39.2	(12.4)	43.7	(7.77)	6.48	(19.4)
160	(71)	2	(0.13)	29.8	(8.74)	36.3	(10.6)	39.8	(11.6)	42.8	(11.7)	0.56	(1.7)
		4	(0.25)	32.7	(12.6)	41.4	(9.59)	46.7	(12.1)	51.4	(13.6)	1.90	(5.7)
		6	(0.38)	33.7	(13.7)	43.3	(15.1)	49.2	(9.87)	54.6	(12.7)	3.89	(11.6)
		8	(0.50)	34.2	(14.3)	44.2	(14.4)	50.5	(16.0)	56.3	(10.0)	6.48	(19.4)
Recommended No. of Outlets			14		19		23		27				

WARNING!

To prevent injury or damage from high temperatures, do not install floor outlets when operating with discharge temperature above 160°F (71°C).

Caution

To prevent damage to the EC motor from overheating, do not operate in the shaded region where discharge temperature is more 150 °F (65 °C).

V3642			Airflow, SCFM (m³/h)								Water Pressure Drop		
Entering Water Temp	Water Flow Rate		500	(850)	750	(1270)	875	(1490)	1000	(1700)			
			Total Capacity										
°F	(°C)	GPM	(L/s)	MBH	(kW)	MBH	(kW)	MBH	(kW)	MBH	(kW)	ft. w.c.	(kPa)
100	(38)	2	(0.13)	11.1	3.26	14.0	4.10	15.1	4.42	16.0	4.68	0.72	(2.2)
		4	(0.25)	12.3	3.61	16.4	4.81	18.1	5.31	19.7	5.76	2.47	(7.4)
		6	(0.38)	12.7	3.72	17.3	5.07	19.3	5.65	21.1	6.18	5.08	(15.2)
		8	(0.50)	12.9	3.78	17.7	5.20	19.9	5.82	21.8	6.40	8.45	(25.3)
		10	(0.63)	13.0	3.82	18.0	5.28	20.2	5.93	22.3	6.53	12.55	(37.5)
120	(49)	2	(0.13)	18.7	5.47	23.5	6.89	25.3	7.43	26.9	7.88	0.72	(2.2)
		4	(0.25)	20.6	6.04	27.5	8.06	30.4	8.91	33.0	9.66	2.47	(7.4)
		6	(0.38)	21.2	6.22	28.9	8.48	32.3	9.46	35.3	10.35	5.08	(15.2)
		8	(0.50)	21.6	6.31	29.7	8.69	33.2	9.74	36.5	10.70	8.45	(25.3)
		10	(0.63)	21.7	6.37	30.1	8.82	33.8	9.91	37.3	10.92	12.55	(37.5)
140	(60)	2	(0.13)	26.2	7.69	33.2	9.71	35.7	10.47	37.9	11.10	0.72	(2.2)
		4	(0.25)	28.9	8.48	38.7	11.34	42.8	12.53	46.4	13.6	2.47	(7.4)
		6	(0.38)	29.8	8.73	40.7	11.91	45.4	13.29	49.6	14.55	5.08	(15.2)
		8	(0.50)	30.2	8.86	41.6	12.20	46.7	13.68	51.3	15.04	8.45	(25.3)
		10	(0.63)	30.5	8.93	42.2	12.38	47.5	13.91	52.3	15.34	12.55	(37.5)
160	(71)	2	(0.13)	33.9	9.93	42.8	12.55	46.2	13.53	49.0	14.36	0.72	(2.2)
		4	(0.25)	37.3	10.92	49.9	14.63	55.2	16.18	59.9	17.56	2.47	(7.4)
		6	(0.38)	38.4	11.25	52.4	15.36	58.5	17.14	64.0	18.77	5.08	(15.2)
		8	(0.50)	38.9	11.40	53.7	15.72	60.2	17.63	66.2	19.39	8.45	(25.3)
		10	(0.63)	39.2	11.50	54.4	15.94	61.2	17.92	67.5	19.77	12.55	(37.5)
Recommended No. of Outlets			15		23		27		30				

Capacities are based on 70°F (21°C) return air temperature (T_{in})

Conversion Factors: MBH = 1000 Btu/hr, 1 kW = 3413 Btu/hr

Recommended number of outlets is based on 33 CFM (60 m³/h) per outlet for a quiet system.

WARNING!

To prevent injury or damage from high temperatures, do not install floor outlets when operating with discharge temperature above 160°F (71°C).

Caution

To prevent damage to the EC motor from overheating, do not operate in the shaded region where discharge temperature is more 150 °F (65 °C).

Hot Water Coil Air Pressure Drop, in. w.c., (Pa)

Air Flow Rate		Hot Water Coil Model			
CFM	(m ³ /h)	HW-V2430		HW-V3036	
				HW-V3642	
400 (680)		0.11 (26)		0.08 (20)	-
500 (850)		0.16 (39)		0.10 (25)	0.06 (15)
625 (1060)		0.23 (58)		0.15 (36)	0.09 (22)
750 (1270)		0.32 (80)		0.20 (50)	0.12 (31)
875 (1490)		-		0.27 (66)	0.16 (40)
1000 (1700)		-		0.34 (83)	0.21 (51)
1100 (1870)		-		-	0.24 (60)
1250 (2120)		-		-	-

Note: Evaluated at 70°F db (21°C)

CHILLED WATER COIL PERFORMANCE (COOLING MODE)

The performance tables below are based on 80°F db/67°F wb (27°C db/19°C wb) entering air and pure water. See capacity multiplier tables for correction factors for different temperatures and glycol concentrations.

V2430				Airflow													Water Pressure Drop	
Entering Water Temp		Water Flow Rate		300CFM (142 L/s)			400CFM (189 L/s)			500CFM (236L/s)			625CFM (295 L/s)					
				Total Capacity		SHR	Total Capacity		SHR	Total Capacity		SHR	Total Capacity		SHR	ft. w.g.		
°F	°C	GPM	L/s	MBH	kW		MBH	MBH	kW	MBH	kW	kW	MBH	kW				
40	4.4	2	0.13	16.1	4.7	0.62	18.8	5.5	0.63	20.6	6.0	0.66	22	6.6	0.70	1.19	3.56	
		4	0.25	18.3	5.4	0.60	22.8	6.7	0.60	26.6	7.8	0.62	30	8.9	0.63	4.06	12.14	
		6	0.38	18.8	5.5	0.60	24.2	7.1	0.60	28.8	8.4	0.61	34	9.8	0.62	8.34	24.93	
45	7.7	2	0.13	13.1	3.8	0.66	15.2	4.5	0.69	16.8	4.9	0.73	18	5.4	0.77	1.19	3.56	
		4	0.25	15.0	4.4	0.63	18.6	5.5	0.64	21.6	6.3	0.66	24	7.2	0.68	4.06	12.14	
		6	0.38	15.4	4.5	0.62	19.8	5.8	0.63	23.4	6.9	0.64	27	8.0	0.65	8.34	24.93	
50	10.0	2	0.13	11.0	3.2	0.70	12.9	3.8	0.74	14.3	4.2	0.78	16	4.6	0.84	1.19	3.56	
		4	0.25	12.6	3.7	0.66	15.7	4.6	0.68	18.1	5.3	0.70	21	6.0	0.72	4.06	12.14	
		6	0.38	13.0	3.8	0.65	16.6	4.9	0.66	19.6	5.7	0.68	23	6.7	0.69	8.34	24.93	
55	12.8	2	0.13	8.2	2.4	0.80	9.8	2.9	0.86	11.2	3.3	0.90	12	3.6	1.00	1.19	3.56	
		4	0.25	9.4	2.8	0.74	11.7	3.4	0.77	13.5	4.0	0.81	16	4.5	0.84	4.06	12.14	
		6	0.38	9.7	2.8	0.74	12.4	3.6	0.75	14.7	4.3	0.77	17	5.0	0.80	8.34	24.93	
Recommended No. of Outlets				12			15			18			21					

V3036				Airflow														Water Pressure Drop	
Entering Water Temp		Water Flow Rate		500CFM (236 L/s)			600CFM (283L/s)			700CFM (330 L/s)			800CFM (378L/s)						
				Total Capacity		SHR	Total Capacity		SHR	Total Capacity		SHR	Total Capacity		SHR	ft. w.g.	kPa		
°F	°C	GPM	L/s	MBH	kW		MBH	kW		MBH	kW		MBH	kW					
40	4.4	2	0.13	21.2	6.2	0.662	22.6	6.6	0.687	23.8	7.0	0.718	24.8	7.3	0.751	0.62	1.85		
		4	0.25	27.2	8.0	0.614	30.4	8.9	0.623	37.0	10.8	0.640	39.5	11.6	0.639	2.11	6.31		
		6	0.38	29.4	8.6	0.608	33.6	9.8	0.611	42.0	12.3	0.622	45.5	13.3	0.626	4.32	12.91		
		8	0.50	30.4	8.9	0.600	35.2	10.3	0.605	44.5	13.0	0.614	48.5	14.2	0.620	7.19	21.49		
45	7.2	2	0.13	17.9	5.2	0.697	19.3	5.7	0.741	23.0	6.7	0.780	24.0	7.0	0.808	0.62	1.85		
		4	0.25	23.2	6.8	0.638	25.8	7.6	0.652	31.2	9.1	0.675	33.4	9.8	0.691	2.11	6.31		
		6	0.38	25.0	7.3	0.625	28.4	8.3	0.633	35.2	10.3	0.645	38.5	11.3	0.657	4.32	12.91		
		8	0.50	25.8	7.6	0.625	29.8	8.7	0.628	37.6	11.0	0.637	41.0	12.0	0.647	7.19	21.49		
50	10.0	2	0.13	14.7	4.3	0.771	16.0	4.7	0.810	19.1	5.6	0.853	20.0	5.9	0.903	0.62	1.85		
		4	0.25	18.7	5.5	0.686	20.8	6.1	0.717	25.4	7.4	0.742	27.0	7.9	0.764	2.11	6.31		
		6	0.38	20.2	5.9	0.671	23.0	6.7	0.685	28.6	8.4	0.699	30.8	9.0	0.714	4.32	12.91		
		8	0.50	20.8	6.1	0.665	24.0	7.0	0.668	30.2	8.9	0.683	33.2	9.7	0.695	7.19	21.49		
55	12.8	2	0.13	11.5	3.4	0.892	12.7	3.7	0.930	15.1	4.4	1.000	16.2	4.7	1.000	0.62	1.85		
		4	0.25	13.9	4.1	0.796	15.6	4.6	0.828	19.2	5.6	0.861	20.8	6.1	0.885	2.11	6.31		
		6	0.38	15.0	4.4	0.766	17.2	5.0	0.784	21.2	6.2	0.810	23.2	6.8	0.824	4.32	12.91		
		8	0.50	15.5	4.5	0.749	17.9	5.2	0.759	22.6	6.6	0.784	24.6	7.2	0.795	7.19	21.49		
Recommended No. of Outlets				15			18			21			24						

V3642				Airflow													Water Pressure Drop	
Entering Water Temp		Water Flow Rate		600CFM (283L/s)			800CFM (378L/s)			1000CFM (472L/s)			1100CFM (519L/s)					
				Total Capacity		SHR	Total Capacity		SHR	Total Capacity		SHR	Total Capacity		SHR			
°F	°C	GPM	L/s	MBH	kW		MBH	kW		MBH	kW		MBH	kW		MBH	kW	ft. w.g.
40	4.4	4	0.13	30.0	8.8	0.625	34.6	10.1	0.653	37.8	11.1	0.684	39.0	11.4	0.701	1.17	3.50	
		6	0.25	33.4	9.8	0.611	40.0	11.7	0.626	44.5	13.0	0.644	46.5	13.6	0.655	2.39	7.14	
		8	0.38	35.0	10.3	0.608	43.0	12.6	0.617	49.0	14.4	0.630	51.5	15.1	0.633	3.98	11.90	
		10	0.50	36.0	10.6	0.613	45.0	13.2	0.612	52.0	15.2	0.619	55.0	16.1	0.624	5.91	17.66	
45	7.2	4	0.13	25.4	7.4	0.656	29.2	8.6	0.692	32.0	9.4	0.732	33.2	9.7	0.757	1.17	3.50	
		6	0.25	28.2	8.3	0.639	33.6	9.8	0.657	37.8	11.1	0.682	39.5	11.6	0.703	2.39	7.14	
		8	0.38	29.8	8.7	0.624	36.2	10.6	0.644	41.5	12.2	0.660	43.5	12.7	0.675	3.98	11.90	
		10	0.50	30.4	8.9	0.622	37.8	11.1	0.634	43.5	12.7	0.652	46.0	13.5	0.663	5.91	17.66	
50	10.0	4	0.13	20.6	6.0	0.714	23.8	7.0	0.763	26.4	7.7	0.816	27.4	8.0	0.838	1.17	3.50	
		6	0.25	22.8	6.7	0.690	27.2	8.0	0.717	30.6	9.0	0.758	32.0	9.4	0.776	2.39	7.14	
		8	0.38	24.0	7.0	0.668	29.2	8.6	0.700	33.4	9.8	0.719	35.0	10.3	0.736	3.98	11.90	
		10	0.50	24.8	7.3	0.664	30.6	9.0	0.686	35.2	10.3	0.708	37.2	10.9	0.717	5.91	17.66	
55	12.8	4	0.13	15.5	4.5	0.823	18.3	5.4	0.895	20.0	5.9	1.000	21.2	6.2	1.000	1.17	3.50	
		6	0.25	17.0	5.0	0.790	20.4	6.0	0.832	23.2	6.8	0.874	24.6	7.2	0.900	2.39	7.14	
		8	0.38	17.9	5.2	0.759	21.8	6.4	0.799	25.0	7.3	0.836	26.6	7.8	0.853	3.98	11.90	
		10	0.50	18.4	5.4	0.750	22.6	6.6	0.779	26.4	7.7	0.817	28.0	8.2	0.833	5.91	17.66	
Recommended No. of Outlets				21			24			27			30					

CHILLED WATER COIL PERFORMANCE (HEATING MODE)

The performance tables below are based on 70°F db (21°C db) entering air. See capacity multiplier tables for correction factors for different temperatures and glycol concentrations.

V2430				Airflow								Water Pressure Drop	
Entering Water Temp		Water Flow Rate		300CFM (142 L/s)		400CFM (189 L/s)		500CFM (236L/s)		625CFM (295 L/s)			
				Total Capacity		Total Capacity		Total Capacity		Total Capacity			
°F	°C	GPM	L/s	MBH	kW	MBH	kW	MBH	kW	MBH	kW	ft. w.g.	kPa
95	35	2	0.13	7.2	2.1	9.3	2.7	11.1	3.3	12.9	3.8	1.19	3.56
		4	0.25	7.3	2.1	9.7	2.8	11.9	3.5	14.4	4.2	4.06	12.14
		6	0.38	7.4	2.2	9.7	2.8	12.1	3.5	14.8	4.3	8.34	24.93
110	43.3	2	0.13	11.6	3.4	15.0	4.4	17.8	5.2	20.8	6.1	0.86	2.57
		4	0.25	11.7	3.4	15.5	4.5	19.1	5.6	23.2	6.8	2.95	8.82
		6	0.38	11.8	3.5	15.6	4.6	19.3	5.7	23.6	6.9	6.06	18.11
120	48.9	2	0.13	14.5	4.2	18.7	5.5	22.4	6.6	26.0	7.6	0.86	2.57
		4	0.25	14.7	4.3	19.4	5.7	23.8	7.0	29.0	8.5	2.95	8.82
		6	0.38	14.7	4.3	19.5	5.7	24.2	7.1	29.6	8.7	6.06	18.11
140	60.0	2	0.13	20.4	6.0	26.2	7.7	31.4	9.2	36.6	10.7	0.86	2.57
		4	0.25	20.6	6.0	27.2	8.0	33.4	9.8	40.5	11.9	2.95	8.82
		6	0.38	20.6	6.0	27.4	8.0	33.8	9.9	41.5	12.2	6.06	18.11
160	71.1	2	0.13	26.2	7.7	33.8	9.9	40.5	11.9	47.0	13.8	0.86	2.57
		4	0.25	26.4	7.7	35.0	10.3	43.0	12.6	52.5	15.4	2.95	8.82
		6	0.38	26.6	7.8	35.2	10.3	43.5	12.7	53.5	15.7	6.06	18.11
Recommended No. of Outlets				12		15		18		21			

WARNING!

To prevent injury or damage from high temperatures, do not install floor outlets when operating with discharge temperature above 160°F (71°C).

Caution

To prevent damage to the EC motor from overheating, do not operate in the shaded region where discharge temperature is more 150 °F (65 °C).

V3036				Airflow								Water Pressure Drop	
Entering Water Temp		Water Flow Rate		500CFM (236 L/s)		600CFM (283L/s)		700CFM (330 L/s)		800CFM (378L/s)			
				Total Capacity		Total Capacity		Total Capacity		Total Capacity			
°F	°C	GPM	L/s	MBH	kW	MBH	kW	MBH	kW	MBH	kW	ft. w.g.	kPa
95	35	2	0.13	11.3	3.3	12.9	3.8	14.1	4.1	15.1	4.4	0.62	1.85
		4	0.25	12.0	3.5	14.2	4.2	16.1	4.7	17.9	5.2	2.11	6.31
		6	0.38	12.2	3.6	14.4	4.2	16.6	4.9	18.7	5.5	4.32	12.91
		8	0.50	12.2	3.6	14.5	4.2	16.8	4.9	19.0	5.6	7.19	21.49
110	43.3	2	0.13	18.2	5.3	20.6	6.0	22.8	6.7	24.4	7.2	0.45	1.35
		4	0.25	19.3	5.7	22.8	6.7	26.0	7.6	28.8	8.4	1.53	4.57
		6	0.38	19.5	5.7	23.2	6.8	26.6	7.8	30.0	8.8	3.14	9.39
		8	0.50	19.5	5.7	23.2	6.8	26.8	7.9	30.4	8.9	5.22	15.60
120	48.9	2	0.13	22.8	6.7	26.0	7.6	28.6	8.4	30.6	9.0	0.45	1.35
		4	0.25	24.2	7.1	28.4	8.3	32.4	9.5	36.2	10.6	1.53	4.57
		6	0.38	24.4	7.2	29.0	8.5	33.4	9.8	37.4	11.0	3.14	9.39
		8	0.50	24.4	7.2	29.0	8.5	33.6	9.8	38.0	11.1	5.22	15.60
140	60.0	2	0.13	32.0	9.4	36.4	10.7	40.0	11.7	43.0	12.6	0.45	1.35
		4	0.25	33.8	9.9	40.0	11.7	45.5	13.3	50.5	14.8	1.53	4.57
		6	0.38	34.0	10.0	40.5	11.9	46.5	13.6	52.5	15.4	3.14	9.39
		8	0.50	34.2	10.0	41.0	12.0	47.0	13.8	53.5	15.7	5.22	15.60
160	71.1	2	0.13	41.5	12.2	47.0	13.8	52.0	15.2	55.5	16.3	0.45	1.35
		4	0.25	43.5	12.7	51.5	15.1	58.5	17.1	65.5	19.2	1.53	4.57
		6	0.38	44.0	12.9	52.0	15.2	60.0	17.6	67.5	19.8	3.14	9.39
		8	0.50	44.0	12.9	52.5	15.4	60.5	17.7	68.5	20.1	5.22	15.60
Recommended No. of Outlets				15		18		21		24			

WARNING!

To prevent injury or damage from high temperatures, do not install floor outlets when operating with discharge temperature above 160°F (71°C).

Caution

To prevent damage to the EC motor from overheating, do not operate in the shaded region where discharge temperature is more 150 °F (65 °C).

V3642				Airflow								Water Pressure Drop	
Entering Water Temp		Water Flow Rate		600CFM (283L/s)		800CFM (378L/s)		1000CFM (472L/s)		1100CFM (519L/s)			
				Total Capacity		Total Capacity		Total Capacity		Total Capacity			
°F	°C	GPM	L/s	MBH	kW	MBH	kW	MBH	kW	MBH	kW	ft. w.g.	kPa
95	35	4	0.13	14.1	4.1	17.9	5.2	21.0	6.2	22.2	6.5	1.17	3.50
		6	0.25	14.4	4.2	18.6	5.5	22.4	6.6	24.0	7.0	2.39	7.14
		8	0.38	14.5	4.2	19.0	5.6	23.0	6.7	24.8	7.3	3.98	11.90
		10	0.50	14.6	4.3	19.1	5.6	23.4	6.9	25.2	7.4	5.91	17.66
110	43.3	4	0.13	22.6	6.6	28.8	8.4	33.8	9.9	35.8	10.5	0.85	2.54
		6	0.25	23.2	6.8	30.0	8.8	36.0	10.6	38.5	11.3	1.74	5.20
		8	0.38	23.2	6.8	30.4	8.9	36.8	10.8	40.0	11.7	2.89	8.64
		10	0.50	23.4	6.9	30.6	9.0	37.4	11.0	40.5	11.9	4.3	12.85
120	48.9	4	0.13	28.4	8.3	36.0	10.6	42.5	12.5	45.0	13.2	0.85	2.54
		6	0.25	29.0	8.5	37.4	11.0	45.0	13.2	48.5	14.2	1.74	5.20
		8	0.38	29.2	8.6	38.0	11.1	46.0	13.5	50.0	14.7	2.89	8.64
		10	0.50	29.2	8.6	38.5	11.3	47.0	13.8	51.0	14.9	4.3	12.85
140	60.0	4	0.13	40.0	11.7	50.5	14.8	59.5	17.4	63.5	18.6	0.85	2.54
		6	0.25	40.5	11.9	52.5	15.4	63.5	18.6	68.0	19.9	1.74	5.20
		8	0.38	41.0	12.0	53.5	15.7	65.0	19.0	70.0	20.5	2.89	8.64
		10	0.50	41.0	12.0	53.5	15.7	65.5	19.2	71.0	20.8	4.3	12.85
160	71.1	4	0.13	51.5	15.1	65.5	19.2	77.0	22.6	82.0	24.0	0.85	2.54
		6	0.25	52.0	15.2	67.5	19.8	81.5	23.9	88.0	25.8	1.74	5.20
		8	0.38	52.5	15.4	68.5	20.1	83.5	24.5	90.5	26.5	2.89	8.64
		10	0.50	52.5	15.4	69.0	20.2	84.5	24.8	92.0	27.0	4.3	12.85
Recommended No. of Outlets				21		24		27		30			

WARNING!

To prevent injury or damage from high temperatures, do not install floor outlets when operating with discharge temperature above 160°F (71°C).

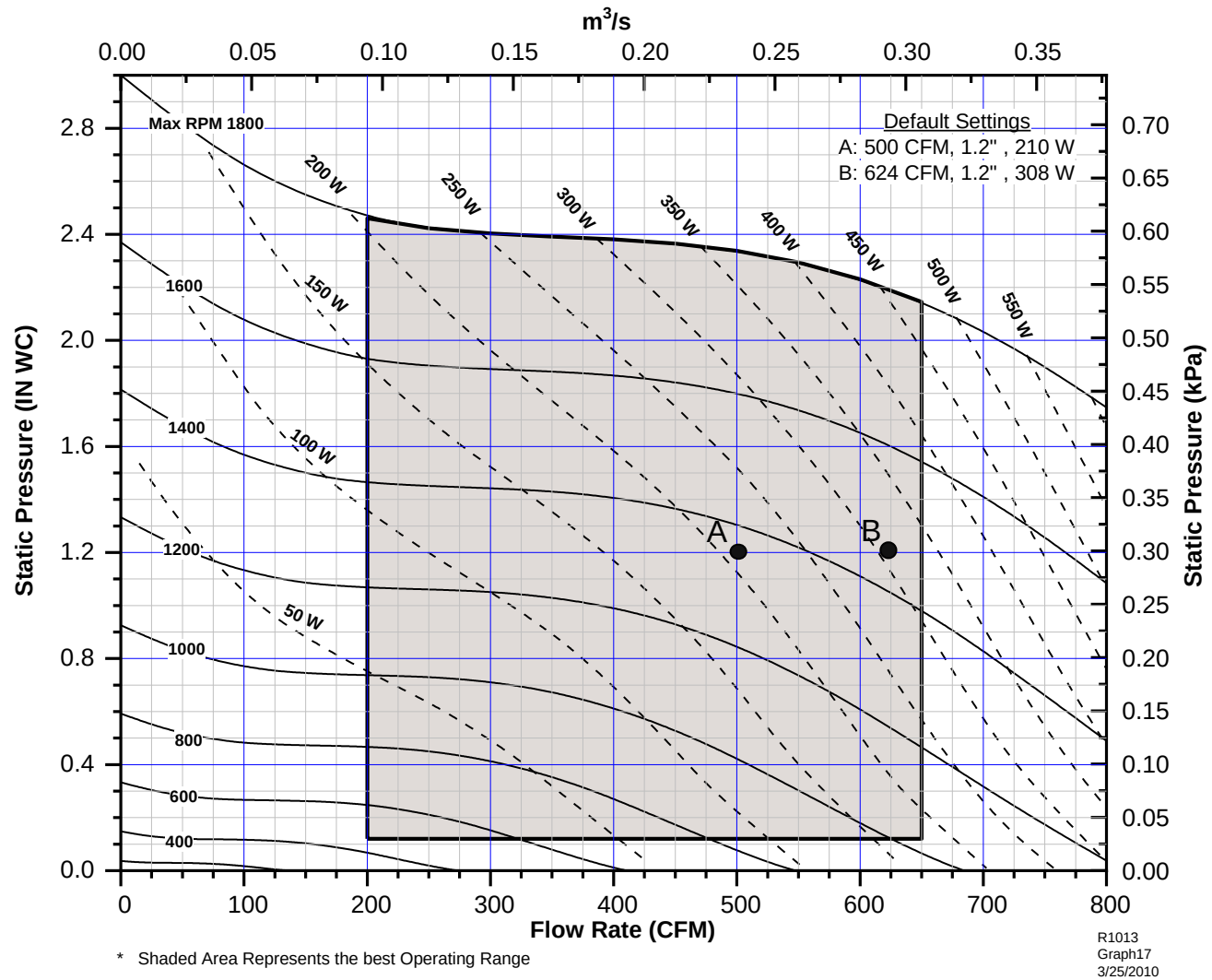
Caution

To prevent damage to the EC motor from overheating, do not operate in the shaded region where discharge temperature is more 150 °F (65 °C).

BLOWER PERFORMANCE

V2430B-1EC2

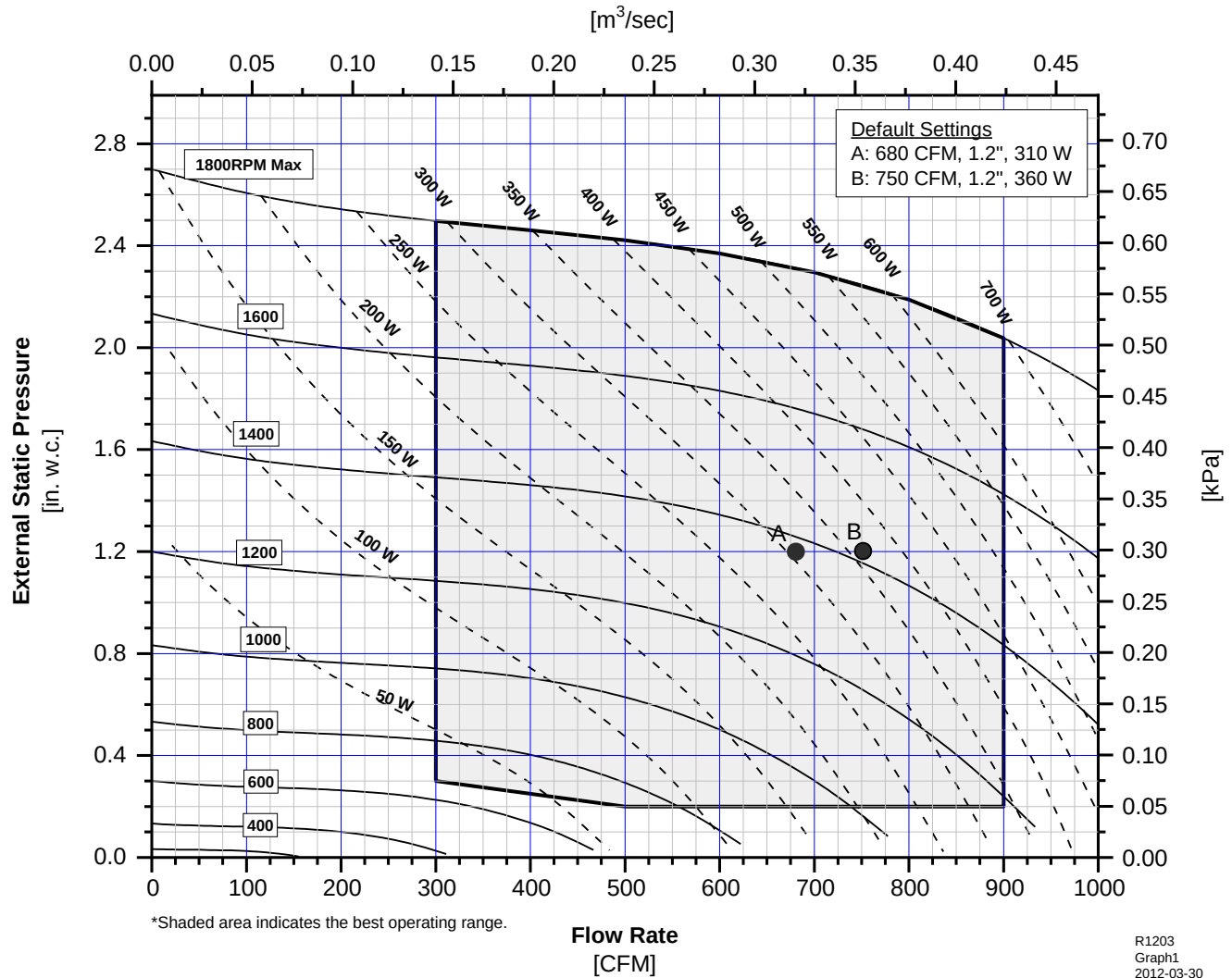
50/60 Hz



SP, in. wc (Pa)	0.25 (62)		0.5 (124)		0.75 186		1 (248)		1.2 (298)		1.5 (373)		1.75 (435)	
CFM (m³/hr)	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
100 (0.05)	580	10	810	20	990	30	1140	45	1240	55	1380	75	1480	90
200 (0.09)	600	15	830	30	1010	50	1160	70	1270	85	1420	110	1530	130
300 (0.14)	680	35	860	50	1020	75	1170	95	1280	115	1430	150	1540	175
400 (0.19)	790	60	940	85	1070	110	1200	135	1300	160	1440	195	1550	225
500 (0.24)	910	105	1040	130	1160	160	1270	190	1360	215	1480	255	1580	290
600 (0.28)	1040	165	1150	195	1260	230	1360	265	1430	290	1540	335	1630	375
700 (0.33)	1170	245	1280	285	1370	325	1460	360	1530	395	1630	440	1710	485
800 (0.38)	1310	355	1400	400	1490	445	1570	485	1640	520	1730	575	1800	620

V3036B-1EC2

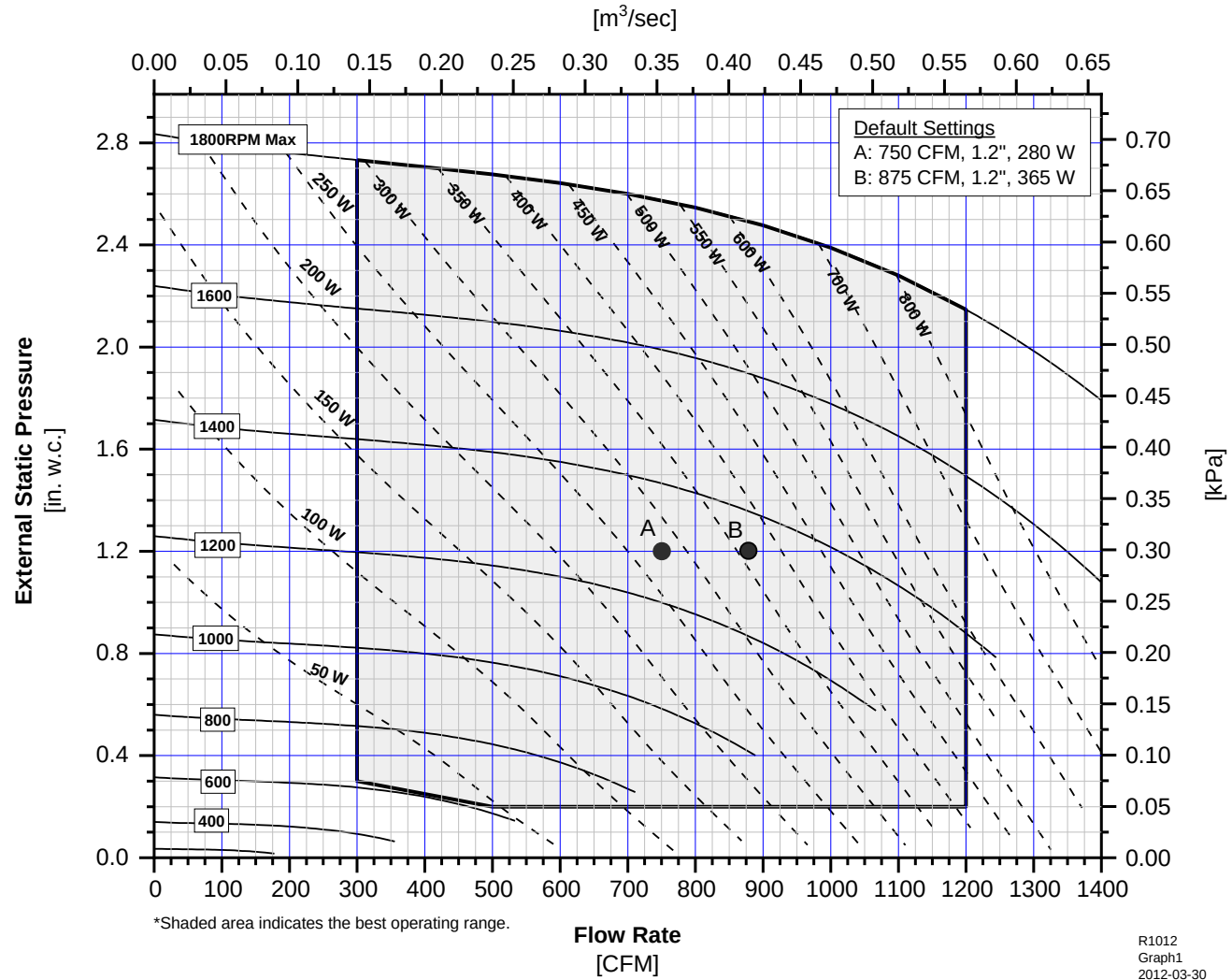
50/60 Hz



SP, in. wc (Pa)	0.25 (62)	0.5 (124)	0.75 (186)	1 (248)	1.2 (298)	1.5 (373)	1.75 (435)
CFM (m³/hr)	RPM W	RPM W	RPM W	RPM W	RPM W	RPM W	RPM W
100 (0.05)	570 10	800 20	980 40	1120 55	1230 70	1370 100	1480 120
200 (0.09)	590 15	810 35	990 50	1140 75	1250 90	1390 120	1500 145
300 (0.14)	620 30	830 50	1010 70	1150 95	1260 120	1400 150	1510 180
400 (0.19)	690 50	870 70	1030 100	1170 130	1280 155	1420 190	1530 225
500 (0.24)	770 80	920 105	1070 135	1200 170	1300 200	1440 240	1540 280
600 (0.28)	870 120	1000 150	1120 185	1240 225	1340 255	1470 305	1570 345
700 (0.33)	980 180	1090 215	1200 255	1300 295	1390 330	1510 380	1600 430
800 (0.38)	1090 255	1180 295	1280 335	1370 380	1450 420	1560 475	1650 525
900 (0.42)	1200 355	1290 395	1370 440	1460 490	1520 530	1630 590	1710 645
1000 (0.47)	1320 475	1390 520	1470 570	1550 620	1610 665	1700 730	1780 790

V3642B-1EC2

50/60 Hz



SP, in. wc (Pa)	0.25 (62)	0.5 (124)	0.75 186	1 (248)	1.2 (298)	1.5 (373)	1.75 (435)
CFM (m ³ /hr)	RPM W	RPM W	RPM W	RPM W	RPM W	RPM W	RPM W
100 (0.05)	550 10	770 20	940 35	1080 50	1180 65	1320 90	1430 115
200 (0.09)	560 15	780 30	950 45	1090 65	1190 85	1330 110	1440 135
300 (0.14)	580 25	790 40	960 65	1100 85	1200 105	1340 135	1450 165
400 (0.19)	610 35	810 60	970 85	1110 110	1210 135	1350 170	1450 200
500 (0.24)	660 55	840 80	990 110	1130 145	1230 170	1360 210	1470 245
600 (0.28)	720 75	880 110	1020 145	1150 180	1250 210	1380 255	1480 295
700 (0.33)	790 110	930 145	1060 185	1180 230	1270 260	1400 310	1500 355
800 (0.38)	860 150	990 195	1110 235	1220 285	1310 320	1430 375	1520 425
900 (0.42)	940 200	1050 250	1160 300	1270 350	1350 390	1460 450	1550 505
1000 (0.47)	1020 265	1120 315	1220 370	1320 425	1390 470	1500 540	1590 595
1100 (0.52)	1100 340	1200 400	1290 455	1380 515	1450 565	1550 640	1630 700
1200 (0.57)	1190 435	1270 495	1360 555	1440 620	1510 670	1600 750	1680 820
1101 (0.52)	1270 540	1350 605	1430 670	1510 740	1570 795	1660 880	1730 950
1400 (0.66)	1360 660	1430 730	1510 805	1580 875	1630 935	1720 1025	1790 1100

ACOUSTICAL DATA

Sound is always present and is important to comfort. Understanding how sound is defined is essential to understanding how to design a proper Unico System. Sound is defined as a physical disturbance in pressure that is detectable by the human ear. Sound is usually presented as Sound Pressure Level (SPL) in decibels (dB) but can also be presented as Sound Power Level (SWL). Sound pressure is what you hear so it is the only value that is important to the occupant. However, determining the value is difficult because it is dependent on the surroundings and distance from the sound source. For instance, a carpeted room is much quieter than a room with wood floors.

For the Unico System, it is also important to consider sound transmission losses through ceilings and walls. The blower is never placed in the occupied room, so the sound is always less than the published value. This reduction in sound level depends on the construction of the ceiling or wall. For instance, a ceiling structure made of gypsum board with insulation above it will have a much greater sound transmission loss (TL) than a dropped ceiling without insulation.

The data shown in this catalog was measured in a large room with hard surfaces for the walls and floor. It is considered to be the worst case (i.e. loudest). The sound level in the occupied space will always be considerably less than this, depending on where the unit is located. To determine the actual sound level, subtract the TL for the barrier from the sound data of the unit. The table below shows typical TL values for common construction configurations. Subtract these values from the Unico air handler data.

Transmission Loss for Common Construction, dB

Construction Type	Frequency, Hz						
	125	250	500	1k	2k	4k	R
Sheet Metal, 24 GA	13	17	20	27	34	39	18
Ceiling Tile, mineral fiber	13	21	27	31	35	40	20
Gypsum Frame wall	12	23	31	38	42	37	20
Gypsum Frame wall, insul.	15	30	32	43	46	38	23
Wood Floor, uninsulated	22	28	37	43	46	43	25
Wood Floor, insulated	29	40	51	57	60	58	26
Concrete Block, 190-mm	38	41	43	50	55	61	26
Concrete, 100-mm (4 in.)	41	41	45	52	56	64	26

Ref: *Handbook of Acoustical Measurements and Noise Control*, 1998

R = Overall Loss for typical Blower Module (based on MB4260H-50HZ)

