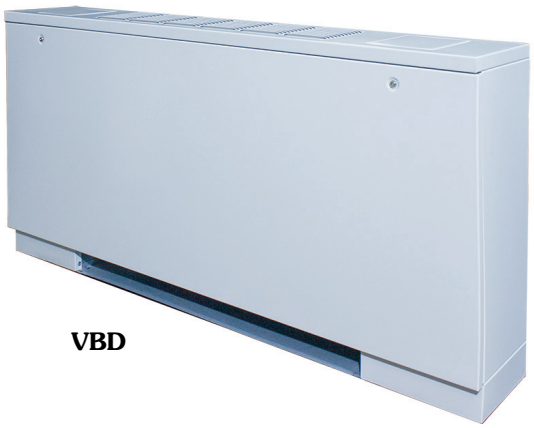
Product Data

Fan Coil Air Conditioners

200 to 1200 cfm

VEA



VBD

42V Series
Vertical Fan Coil Air Conditioners
VBD Vertical Floor and VEA Vertical Lowboy Cabinets shown.

Features/Benefits

The 42V fan coil units design flexibility provides ease of use for several cabinet types, which allow for a multitude of room layouts.

Carrier's 42V Series fan coil units offer:

- Design flexibility, occupying minimum space
- Easy, low-cost installation
- Permanent split capacitor or electronically commutated motors deliver peak operating efficiency
- Greater zone comfort control

Versatility

The units are ideal for installation in motels, apartments, and other multi-room buildings. Many optional control packages are available to facilitate the following modes of operation: 2-pipe cooling only, 2-pipe heating only, 2-pipe[1] heating and cooling, 2-pipe heating and cooling with auxiliary electric heat, 2-pipe cooling with total electric heat, and 4-pipe heating and cooling. The control package offering includes 24-v or line voltage thermostats and BACnet[2] communicating controls.

Condensate drain pans standard construction utilizes galvanized steel, with option to be stainless steel, along with optional condensate overflow switches complying to the latest building codes.

A variety of insulation types are available for energy savings, sound absorption and indoor air quality (IAQ) preservation.

Casings and frame are fabricated from heavy gauge galvanized steel. Custom decorative colors are available upon request to allow the unit to blend with any interior design.

Ease of installation

Each unit is designed to occupy a minimum space with a flexible controls offering to meet building requirements. Optional unit mounted controls, service switches, and fusing minimize the electrical work required on site. Piping, drain, and wiring connections are readily accessible and mounting holes and slots are pre-drilled to save installation time and field labor expense. Factory assembled valve packages (shipped loose for field mounting) minimize piping work at the job site.

Quality and safety

Every unit is tested and inspected at the factory for trouble free start-up. Carrier's 42V fan coils are ETL (Engineered Testing Laboratory and CETL (Canadian Engineered Testing Laboratory) listed. Performance ratings are AHRI (Air-Conditioning, Heating, and Refrigeration Institute) certified. All coils are factory leak tested at 350, 400, or 450 psig. For testing, coils are submerged in water and the appropriate test air pressure is applied.

Blower wheels are centrifugal-type, forward curved, double width, and double inlet sized for maximum efficiency.

Comfort control

Economical fans deliver just the right amount of conditioned air for your comfort needs at any load, and each unit can be shut off when not in use. Optional electronically commutated motors deliver peak operating efficiency. By choosing Carrier units, you can match your application with a wide range of custom-designed options and accessories. Carrier room fan-coil units provide year-round comfort.

1. 2-pipe heating and cooling coil is also known as a changeover coil.
2. Third-party trademarks and logos are the property of their respective owners.

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Features/Benefits (cont)

42VAD Vertical Hideaway

This fan coil unit is designed for concealed applications. The slender design makes this unit ideal for perimeter heating and cooling applications in public buildings, offices, hospitals and hotels. The coil section is lined with insulation to provide positive protection against sweating and maximum dampening of air noise. Standard units are constructed with 18 gauge galvanized steel and are provided with a galvanized finish.

(200-1200 cfm)

42VBD Vertical Cabinet

The slender design of this fan coil unit makes it ideal for perimeter heating and cooling applications in public buildings, offices, hospitals and hotels. The cabinet is fabricated of heavy gauge steel. The top panel provides structural rigidity essential for an exposed unit. Units have a removable, one-piece front panel for easy access to all internal components. Standard units are constructed with 18 gauge galvanized steel and are provided with a durable powder-coated paint finish.
(200-1200 cfm)

42VFD Vertical Sloped Top Cabinet

This fan coil unit is designed for applications in public buildings, offices and hospitals where it is necessary to prevent books and other items from being placed over the discharge grilles on the top panel. The cabinet is fabricated of heavy gauge steel. The 25-degree, sloped, top panel provides structural rigidity essential for an exposed unit. Units have a removable, one-piece front panel for easy access to all internal components. Standard units are constructed with 18 gauge galvanized steel and are provided with a durable powder-coated paint finish.
(200-1200 cfm)

Features/Benefits (cont)

42VCA Vertical Lowboy Hideaway

This fan coil unit is designed for concealed, under-window applications in public buildings, offices, hospitals and hotels. The low silhouette design does not interfere with vision through the window, obstruct light or detract from the motif in the room. Standard units are constructed with 18 gauge galvanized steel and are provided with a galvanized finish.
(200-600 cfm)

42VEA Vertical Lowboy Cabinet

This fan coil unit is designed for exposed, under-window applications in public buildings, offices, hospitals and hotels. The low silhouette design does not interfere with vision through the window, obstruct light or detract from the décor in the room. Standard units have two flush die-formed doors for access to 3-speed fan control and optional thermostats. Standard units are constructed with 18 gauge galvanized steel and are provided with an attractive powder-coat paint finish.
(200-600 cfm)

42VGA Vertical Recessed Cabinet

This fan coil unit is designed for recessed wall applications where space is at a premium. It is designed specifically for installation between the studs, ideally in foyers, bathrooms and other small areas. Standard units are constructed with 18 gauge galvanized steel and are provided with a galvanized finish. The wall panel has an attractive powder-coat paint finish.
(130 and 275 cfm)

Model number nomenclature

42 VA C 03 A L C Y 5 Y Y Y Y

42 – Series Fan-Coil Unit

Product Type
VAD – Vertical Hideaway
VBD – Vertical Exposed
VFD – Vertical Exposed with Slope Top
VCA – Vertical Lowboy Hideaway
VEA – Vertical Lowboy Cabinet
VGA – Vertical Recessed Cabinet

Design Series (A or D[a])

Unit Size – Airflow (cfm)
01 – 150 (42VG Only)
02 – 200
03 – 300
04 – 400
06 – 600
08 – 800
10 – 1000
12 – 1200

Coil Options
A – 3 Row (Standard)
2 Row (VC, VE, VG Standard)
B – 4 Row High Capacity
3 Row High Capacity (VC, VE Only)
C – 3/1 Opposite End Connection
D – 3/1 Same End Connection
2/1 Same End Connection (VC, VE Only)
E – 3/2 Opposite End Connection
F – 3/2 Same End Connection
G – 4/1 Opposite End Connection
H – 4/1 Same End Connection

Hand
R – Right
L – Left

a. Model 42VAD, VBD, and VFD.
b. Contact Application Engineering for data on the 50 Hz motor.

Thermostat Packages

Unit Control Options for 24V Controls

Valve Packages

Filter

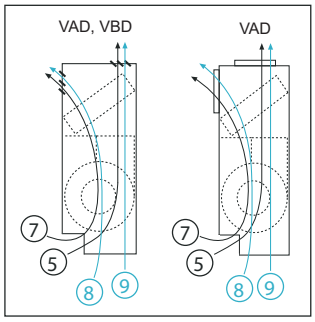
Airflow Configuration (See models and note below.)
5 – Front Return/Top Supply
7 – Front Return/Front Supply
8 – Bottom Return/Front Supply
9 – Bottom Return/Top Supply

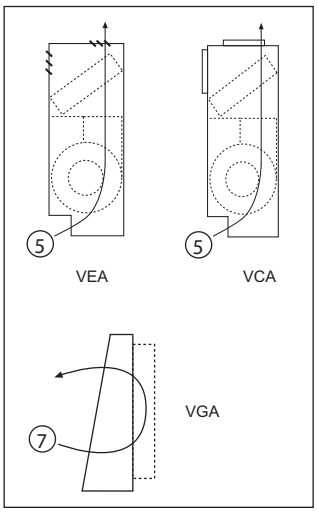
Electric Heaters
Y – None
A-Z, 1 – 42V

Motor Options

A – 115-v Electronically Commutated Motor (ECM) with Control Option 1
B – 115-v ECM with Control Option 2
C – 115-v Permanent Split Capacitor (PSC) (Standard)
D – 208/1/60 PSC
E – 230/1/60 PSC
F – 277/1/60 PSC
G – 115-v ECM with Control Option 3
H – 208-v ECM with Control Option 1
J – 208-v ECM with Control Option 2
K – 208-v ECM with Control Option 3
L – 230-v ECM with Control Option 1
M – 230-v ECM with Control Option 2
N – 230-v ECM with Control Option 3
P – 277-v ECM with Control Option 1
Q – 277-v ECM with Control Option 3
R – 277-v ECM with Control Option 2
V – 220/1/50 PSC[b]

Control Option 1 – 3-Discrete Potentiometer Field Speed Adjustment
Control Option 2 – Variable Flow 0-10 VDC or 4-20 mA
Control Option 3 – 4-Discrete Potentiometer Field Speed Adjustment





NOTES:
1. Image is for Airflow Configuration and to differentiate the airflow direction for various air arrangement options. Green=5 (Bottom Return/Front Supply), Blue=8 (Bottom Return/Bottom Supply), Black=6 (Rear Return/Front Supply).
2. Consult factory for 50 Hz applications.
3. kWs range from 1.0 to 6.0 depending on voltage and unit size.
4. Standing in front of the unit, hand is determined by looking into the air supply and assigning the hand to match the location of the cooling coil connections.
5. Nominal cfm for VGA size 03 units is 275.

AHRI capacity ratings

The 42V Series fan coil units are certified in compliance with the Air-Conditioning, Heating and Refrigeration Institute (AHRI) Industry Standard 440 for room fan coil units. Approved standard ratings are tabulated below:

AHRI CERTIFIED™
www.ahridirectory.org
Room Fan-Coils
AHRI Standard 440

42V*D Standard Ratings – PSC Motors[a,b]

MODEL	SIZE	COIL ROWS	AIR FLOW RATING (scfm)	WATER PRESSURE DROP (FT. WATER)	TOTAL CAP. (BTUH)	SENSIBLE CAP. (BTUH)	POWER INPUT (WATTS)
VAD	02	3	200	2.5	4,800	3,500	80
		4	200	1.4	6,600	4,100	80
	03	3	290	6.0	7,200	5,300	80
		4	290	8.6	8,600	5,700	80
	04	3	400	13.1	11,200	7,900	130
		4	400	20.0	13,100	8,600	130
	06	3	600	7.0	13,900	10,400	180
		4	600	15.0	18,600	13,600	200
	08	3	700	8.4	18,500	13,500	210
		4	680	12.0	20,600	14,100	195
	10	3	820	4.2	22,000	16,800	250
		4	820	10.0	29,500	19,600	240
	12	3	1,060	6.4	26,300	20,000	370
		4	1,060	16.0	35,300	26,300	370
VBD/VFD	02	3	200	5.0	4,800	3,500	80
		4	200	1.4	6,600	4,100	80
	03	3	290	3.8	7,200	5,300	80
		4	290	8.6	8,600	5,700	80
	04	3	400	13.1	11,200	7,900	130
		4	400	20.0	13,100	8,600	130
	06	3	600	3.8	13,900	10,400	180
		4	600	8.6	18,600	13,600	170
	08	3	650	10.0	18,500	13,500	210
		4	680	12.0	20,600	14,100	195
	10	3	820	4.2	22,000	16,800	250
		4	820	10.0	29,500	19,600	240
	12	3	1,060	6.4	26,300	20,000	370
		4	1,060	16.0	35,300	26,300	370

NOTE(S):

a. Ratings are based on 80°F DB and 67°F WB EAT, 45°F EWT, 10°F water temperature rise, high fan speed, motor voltage 115/160, and airflow under dry coil conditions.
b. For additional information, please consult AHRI's website at www.ahrinet.org.

AHRI capacity ratings (cont)

42V*A Standard Ratings – PSC Motors[a,b] (cont)

MODEL	SIZE	COIL ROWS	AIR FLOW RATING (SCFM)	WATER PRESSURE DROP (FT. WATER)	TOTAL CAP. (BTUH)	SENSIBLE CAP. (BTUH)	POWER INPUT (WATTS)
VCA	02	3	220	13.0	5,500	3,800	90
		2	250	2.4	5,100	3,600	90
	03	3	340	25.0	10,900	7,100	130
		2	370	6.9	8,600	6,700	135
	04	3	430	9.0	13,400	8,800	145
		2	480	12.8	12,300	8,300	150
	06	3	670	11.3	21,100	14,600	250
		2	750	6.3	18,300	13,200	260
VEA	02	3	230	8.0	5,500	3,800	90
		2	250	2.4	5,100	3,600	90
	03	3	340	13.6	10,900	7,100	130
		2	370	6.9	8,600	6,700	135
	04	3	430	5.3	13,400	8,800	145
		2	480	12.8	12,300	8,300	150
	06	3	670	11.3	21,100	14,600	250
		2	750	10.0	18,300	13,200	260

NOTE(S):

a. Ratings are based on 80°F DB and 67°F WB EAT, 45°F EWT, 10°F water temperature rise, high fan speed, motor voltage 115/160, and airflow under dry coil conditions
b. For additional information, please consult AHRI's website at www.ahrinet.org.

42V*D Standard Ratings – EC Motors[a,b]

MODEL	SIZE	COIL ROWS	AIR FLOW RATING (SCFM)	WATER PRESSURE DROP (FT. WATER)	TOTAL CAP. (BTUH)	SENSIBLE CAP. (BTUH)	POWER INPUT (WATTS)
VAD	02	3	200	2.5	4,800	3,500	80
		4	200	1.4	6,600	4,100	80
	03	3	290	6.0	7,200	5,300	70
		4	290	8.6	8,600	5,700	80
	04	3	400	13.1	11,200	7,900	85
		4	400	20.0	13,100	8,600	130
	06	3	600	7.0	13,900	10,400	135
		4	600	8.6	18,600	13,600	170
	08	3	700	8.4	18,500	13,500	210
		4	680	12.0	20,600	14,100	195
	10	3	820	4.2	22,000	16,800	250
		4	820	10.0	29,500	19,600	240
	12	3	1,060	6.4	26,300	20,000	370
		4	1,060	16.0	35,300	26,300	370
VBD/VFD	02	3	200	5.0	4,800	3,500	55
		4	200	1.4	6,600	4,100	80
	03	3	290	3.8	7,200	5,300	80
		4	290	8.6	8,600	5,700	80
	04	3	400	13.1	11,200	7,900	130
		4	400	20.0	13,100	8,600	130
	06	3	600	3.8	13,900	10,400	180
		4	600	8.6	18,600	13,600	170
	08	3	700	10.0	18,500	13,500	175
		4	680	12.0	20,600	14,100	195
	10	3	820	4.2	22,000	16,800	250
		4	820	10.0	29,500	19,600	240
	12	3	1,060	6.4	26,300	20,000	370
		4	1,060	16.0	35,300	26,300	370

NOTE(S):

a. Ratings are based on 80°F DB and 67°F WB EAT, 45°F EWT, 10°F water temperature rise, high fan speed, motor voltage 115/160, and airflow under dry coil conditions.
b. For additional information, please consult AHRI's website at www.ahrinet.org.

AHRI capacity ratings (cont)

42V*A Standard Ratings – EC Motors[a,b] (cont)

MODEL	SIZE	COIL ROWS	AIR FLOW RATING (SCFM)	WATER PRESSURE DROP (FT. WATER)	TOTAL CAP. (BTUH)	SENSIBLE CAP. (BTUH)	POWER INPUT (WATTS)
VCA	02	3	230	3.8	5,500	3,800	68
		2	250	2.4	5,100	3,600	68
	03	3	340	18.0	10,900	7,100	60
		2	370	6.9	8,600	6,700	135
	04	3	430	5.3	13,400	8,800	145
		2	480	12.8	12,300	8,300	150
	06	3	670	11.3	21,100	14,600	250
		2	750	6.3	18,300	13,200	260
VEA	02	3	230	9.0	5,500	3,800	68
		2	250	2.4	5,100	3,600	68
	03	3	340	13.6	10,900	7,100	130
		2	370	6.9	8,600	6,700	135
	04	3	430	5.3	13,400	8,800	145
		2	480	15.0	12,300	8,300	95
	06	3	670	11.3	21,100	14,600	250
		2	750	10.0	18,300	13,200	150

NOTE(S):

a. Ratings are based on 80°F DB and 67°F WB EAT, 45°F EWT, 10°F water temperature rise, high fan speed, motor voltage 115/160, and airflow under dry coil conditions.
b. For additional information, please consult AHRI's website at www.ahrinet.org.

42VGA Shaded Pole Motor Standard Ratings[a,b]

MODEL	SIZE	COIL ROWS	AIR FLOW RATING (SCFM)	WATER PRESSURE DROP (FT. WATER)	TOTAL CAP. (BTUH)	SENSIBLE CAP. (BTUH)	POWER INPUT (WATTS)
VGA	01	2	130	0.65	1,800	1,200	135
	03	2	275	5	6,100	4,700	270

NOTE(S):

a. Ratings are based on 80°F DB and 67°F WB EAT, 45°F EWT, 10°F water temperature rise, high fan speed, motor voltage 115/1/60, and airflow under dry coil conditions.
b. For additional information, please consult the Directory of Certified Air Conditioning, Heating, and Refrigeration Products or AHRI's website at www.ahrinet.org.

Physical data

UNIT SIZE 42V	01	02	03	04	06	08	10	12
NOMINAL AIRFLOW (cfm)	150	200	300	400	600	800	1000	1200
SHIPPING WEIGHT (lb)[a]								
42VAD	—	42	47	57	77	79	108	127
42VBD	—	63	68	82	99	101	133	154
42VFD	—	64	69	83	100	102	135	156
42VCA	—	72	100	108	154	—	—	—
42VEA	—	50	60	72	110	—	—	—
42VGA	40	—	74	—	—	—	—	—
COILS								
FPI (42VAD, VBD, VFD)	12 fins/inch							
FPI (42VCA, VEA, VGA)	10 fins/inch							
MOTOR (qty)								
42VCD, VBD, VFD	—	1	1	1	1	1	2	2
42VCA, VEA	—	1	1	1	2	—	—	—
42VGA	1	—	2	—	—	—	—	—
BLOWER (qty)								
42VCD, VBD, VFD	—	1	1	2	2	2	4	4
42VCA, VEA	—	2	2	2	4	—	—	—
42VGA	1	—	2	—	—	—	—	—
FILTERS								
Nominal Size (in.) (1 in. thick)								
42VCD, VBD, VFD	—	7-3/4 x 21-3/4	7-3/4 x 21-3/4	7-3/4 x 31-3/4	7-3/4 x 41-3/4	7-3/4 x 43-3/4	7-3/4 x 57-3/4	7-3/4 x 65-3/4
42VCA, VEA	—	7 x 21-3/4	7 x 26-3/4	7 x 34-3/4	7 x 48-3/4	—	—	—
42VGA	10 x 14-1/2	—	10 x 28	—	—	—	—	—
Qty	1	1	1	1	1	1	1	1
SUPPLY DUCT COLLAR	1 in.							
PIPING CONNECTIONS (Sweat) (in.)								
Coil Outlet and Inlet	5/8 OD							
Drain Connection	3/4 MPT							

NOTE(S):

a. Calculate operating weight of unit: shipping weight + coil water weight x number of coil rows.

Options

Available Options

OPTIONS OR STANDARD FEATURES[a,b]	UNIT SERIES — 42V Vertical Floor					
	VAD	VBD	VFD	VCA	VEA	VGA
AIR VENTS/DRAINS						
Automatic Air Vent Only	X	X	X	X	X	X
Manual Air Vent Only	Std	Std	Std	Std	Std	Std
Automatic Air Vents and Drains	X	X	X	X	X	X
Manual Air Vents and Drains	X	X	X	X	X	X
CABINET CHANGES						
Stamped Toe Space Return Grille	—	X	X	—	—	—
Extended Cabinet Height	—	—	—	X	X	—
Valve Compartment Extension,10in.	—	—	—	—	—	X
CABINET CONSTRUCTION						
14/16 Gauge Cabinet	—	X	X	—	—	—
COILS						
2-pipe Changeover, Cooling Only, or Heating						
2-row	X	X	X	Std	Std	Std
3-row	Std	Std	Std	X	X	—
4-row	X	X	X	—	—	—
4-Pipe Cooling and Heating						
2-row CW, 1-row HW	—	—	—	X	X	—
3-row CW, 1-row HW	X	X	X	—	—	—
3-row CW, 2-row HW	X	X	X	—	—	—
4-row CW, 1-row HW	X	X	X	—	—	—
CONDENSATE OVERFLOW SWITCH	X	X	X	X	X	—
PAINT OPTIONS						
Arctic White	—	X	X	—	X	X
Polar White	—	X	X	—	—	—
Flat Black	—	X	X	—	—	—
Ermine Grey	—	X	X	—	—	—
Champagne Beige	—	X	X	—	—	—
Toffee Brown	—	X	X	—	—	—
DISCHARGE OPTIONS						
Stamped Discharge Grille	—	Std	Std	—	Std	Std
Double Deflection Grille (Painted) Cabinet Color	—	X	X	—	—	—
Double Deflection Grille (Aluminum)	—	X	X	—	X	—
Double Deflection Grille (Steel)	—	—	—	—	X	—
DRAIN PANS						
Galvanized Drain Pan	Std	Std	Std	Std	Std	Std
Stainless Steel Drain Pan	X	X	X	X	X	X
HEATING OPTIONS						
Electric Heater (Single Power Source)						
6.25 Amp Fuse and J-Box (Factory Furnished)	X	X	X	X	X	X
HYDRONIC COIL TEST						
350, 400, 450 PSI Coil Pressure Test	X	X	X	X	X	X
FILTERS						
1 in. Permanent	X	X	X	X	X	—
1 in. Throwaway (S)	Std	Std	Std	Std	Std	Std
1 in. MERV 8	X	X	X	X	X	X
LEVELING LEGS						
1 in. Set	X	X	X	X	X	—
3 in. Set	X	X	X	—	—	—
COPPER COIL FINS	X	X	X	—	—	—
COIL CONNECTION						
Left or Right (Same/Opposite End)	X	X	X	X	X	X
COIL TUBE WALL						
0.016 in. Wall Thickness	Std	Std	Std	—	—	—
0.025 in. Wall Thickness	X	X	X	—	—	—

Available Options (cont)

OPTIONS OR STANDARD FEATURES[a,b]	UNIT SERIES — 42V Vertical Floor					
	VAD	VBD	VFD	VCA	VEA	VGA
CABINET HEIGHT EXTENSION						
1 in. Reduction/1-6 in. Extension	—	X	X	—	—	—
Right/Left Hand Cabinet Width Extension (1-12 in. Extension)	—	X	X	—	—	—
CONTROL ACCESS						
2 Control Access Doors	Std	Std	Std	Std	Std	Std
No Controls Access Doors	—	X	X	—	—	—
Torx Tamper Proof Fasteners on Both Control	—	X	X	—	—	—
Hex Fasteners on Both Cabinet Doors	—	X	X	—	X	—
INSULATION						
Standard Fiberglass	Std	Std	Std	Std	Std	Std
Closed Cell	X	X	X	X	X	X
Foil Faced	X	X	X	X	X	X
MOTORS						
PSC	X	X	X	X	X	X
ECM 3-Speed Discrete	X	X	X	X	X	—
ECM 4-Speed Discrete	X	X	X	X	X	—
ECM Variable Speed	X	X	X	X	X	—
VOLTAGE						
115-1-60	X	X	X	X	X	X
208-1-60	X	X	X	X	X	—
230-1-60	X	X	X	X	X	—
277-1-60	X	X	X	X	X	—
220-1-50	X	X	X	X	X	—
MOTOR QUICK-CONNECT PLUG	Std	Std	Std	Std	Std	Std
INTEGRAL THERMAL OVERLOAD PROTECTION	Std	Std	Std	Std	Std	Std
OA WALL BOX (FIELD INSTALLED)	X	X	X	—	—	—
OA DAMPERS						
25% Manual	X	X	X	X	X	—
25% Motorized	X	X	X	—	—	—
WALL PANEL with STAMPED SUPPLY AND RETURN AIR GRILLES	X	—	—	—	—	—
STAINLESS STEEL COIL WRAPPER	X	X	X	X	X	—
SWITCHES						
Service Switch with Inline Fusing	X	X	X	X	X	X
Non-Fused Service Switch	X	X	X	X	X	X
VALVE PACKAGES	X	X	X	X	X	X
WIRING PACKAGES	X	X	X	X	X	X

NOTE(S):

a. All options are factory-installed unless noted as shipped loose.
b. Units shipped on treated wood pallet.

LEGEND

CW — Chilled Water
EC — Electronically Commutated
HW — Hot Water
PSC — Permanent Split Capacitor
Std — Standard
X — Available as Options

Options (cont)

Common ETO (Engineered To Order)[a]

OPTIONS	UNIT AVAILABILTY
Custom Paint	VBD,VFD,VEA
E-Coated Coils	All Units
False Back	VBD,VFD
Finished Back Panel	VBD,VFD
Heating Coil In Preheat Position (4-Pipe CW/HW)	All Units
Install Custom Control Valves	All Units
Install 3rd Party Controller	All Units
Primary - Secondary Thermostat Control	VBD
Motorized OA Damper w/ OPN-FC Controller	All Units
DX Coils	All Units
Remote Control Box with 6 in. Whip	VAD
Special Circuited Coil	All Units
Steam Coil Only	All Units
Sub Base	VBD, VFD
Fully Insulated Front Panel	VAD, VBD, VFD
Rear Cabinet Extension	VBD, VFD

NOTE(S):

a. Contact the application team for ETO availability.

Factory options

Coils

Choice of a 2-pipe or 4-pipe system. For chilled/hot water coil configurations see Available Options on page 10.

Condensate overflow switch

This switch shuts down the unit when the water level in the drain pan reaches an unsafe level. Building code changes in many locales now require this type of device.

Decorative colors

Standard color is Arctic White. Custom colors may be provided when matched with a provided paint chip. An ETO is required for custom colors.

Decorative colors may be applied to:

- Cabinet of 42VBD, VFD, and VEA

Electric heaters

Coils are of high grade single-phase, nichrome resistance wire, insulated by ceramic insulators in plated steel brackets. Heater sizes available are shown in the application data section for the respective units. Not available on 42VGA units.

Filters

Each unit includes a non-woven synthetic throwaway filter sized for low velocity and maximum efficiency. For optional filters, please refer to available option table on pages 10.

Fusing

Incoming power fusing, as well as blower motor and control sub-fusing for units that use electric heat. The blower motor and control sub-fusing (single power source wiring) is required when single source power with electric heat is specified.

Manual air vents

Each standard coil includes a manual air vent to allow venting at the coil if necessary for quick, complete air elimination.

Automatic air vents

Automatic air vents have fiber washers which allow air in the pipes to pass through, automatically bleeding the system, and eliminating the need to manually remove air from the system. When wet, washers swell and seal the system.

Motors

PSC and ECM (electronically commutated) motors are available on all units except 42VGA units, which do not have ECM capabilities. ECM motors offer programmable features, low sound, and increased energy efficiency. Refer to the application data section for more information on ECM control methods.

Outside-air opening/damper

Outside air connections are available to meet ventilation requirements and reduce field labor. Manual/motorized damper available on 42VAD, VBD, and VFD units. VCA and VEA units are manual units only.

Service switches

Concealed service switches are available for use by maintenance and service personnel to shut off the power while working on the unit.

Single power source connection

Factory-installed junction box allows use of single power source for motor and heater when they are of the same voltage.

Stamped toe space return-air grille

The return-air grille is available as a factory-installed option for 42VBD and VFD units.

Tamperproof fasteners (Allen head)

Tamperproof fasteners are installed on the access panels and are available for all cabinet model units.

Thermostat control packages

We offer a variety of control devices to meet the most basic to the most demanding operating logic. All of our control schemes utilize 3-speed fan control to modulate cooling output, maximize the percentage of latent heat removal, and to further reduce the sound level when maximum cooling and heating performance is not required. Unit-mounted and wall mounted line voltage and 24-v thermostats are available on the 42V Series units. For thermostat control package options refer to the Controls section.

Return-air grilles

Stamped-type return-air grilles are standard on VEA and VGA units, and optional on VBD and VFD units.

Options (cont)

Discharge grilles

Two types of double deflection discharge grilles are available for 42VBD, VFD, VEA units; an integral steel grille painted to match the unit or a separate unpainted anodized aluminum grille. The aluminum discharge grilles are suitable for air dry field painting. The discharge grille frame and blades are 6063 extruded aluminum alloy with 200-R1 satin anodized finish. The frame has a typical wall thickness of 0.050 in. and is separated from the blades with injection-molded nylon bushings. This method of assembly minimizes corrosion and vibration. The frame mounting holes are dimpled, allowing for a counter-sunk fastener head appearance. All blades are airfoil in design, individually adjustable and spaced 3/4 in. on center. At the outer edge of the frame is a specifically engineered channel which retains an extruded flexible vinyl bulb gasket that produces a positive air seal at the mounting surface, minimizing smudging. An optional opposed blade damper is screwdriver operated through the face of the unit and has the same extruded aluminum construction and injection-molded nylon bushings. The unit achieves an effective area of 80% with the blades set at a 0 degree pattern, thus eliminating high velocity and pressure drop at the grille face. Wider deflection with reduced throw may be achieved at the 22 and 45 degree blade settings with slightly increased sound levels.

Electric heat

Electric heaters are available for installation on Carrier fan coil units in the following applications.

Total electric heat

Total electric heat eliminates the requirement for a boiler. Heating and/or cooling may be available on an individual basis throughout the year. Two-pipe chilled water is used for cooling, and the electrical heater is used for heating. Individual room controls can be supplied for either manual or automatic changeover.

Auxiliary electric heat

This system is used for heating between seasons or during the cooling season when chilled water is being circulated. Individual room controls are supplied to provide electric heat only when chilled water is being circulated through the system. Water flow through the unit is shut off when the heater is turned on.

During the winter heating season, heating is provided by hot water circulated through the system. A changeover device locks out the electric heat when the hot water is circulated.

Heater construction

Strip heaters

Strip heaters are used with Model 42V (except 42VCA and VEA).

These heaters consist of coils of high grade resistance wire, insulated by ceramic insulators on plated steel brackets. High limit thermal cutouts protect the unit in the event of airflow loss.

All heaters are positioned on the incoming (preheat) side of the unit coil.

Sheath heaters

Sheath heaters are used with Model 42VCA and 42VEA vertical units. There heaters consist of high grade resistance wire, centered in a 1/2 in. diameter copper plated steel sheath. The wire is insulated from the sheath by magnesium oxide powder packed around it. To increase the heater surface exposed to air, a 1-1/4 in. OD (outside dimensions) fin of copper plated steel is wound around the sheath in a spiral that makes 5 turns per linear inch. Sheath and fin are permanently bound together by copper brazing. The heaters are positioned on the leaving (reheat) side of the unit coil.

Heater electrical data

1. Load voltage may be 120, 208, 240 or 277 volts. For unit size and kW limitations, refer to Heater Electrical Data Table.
2. All heaters are single stage and single phase.
3. With the single power-source option, only one line circuit need be brought into the unit. Fuse protection is added to the motor/control circuit to protect these components. This is separate from the field-furnished total unit overcurrent protection.

Options (cont)

Electrical Heater Data — 42V*D[a,b,c,d]

VOLTAGE	kW	UNIT SIZE						
		02	03	04	06	08	10	12
120V	1.0	•	•	•	•	—	—	—
	1.5	—	•	•	•	—	—	—
	2.0	—	—	•	•	•	—	—
	3.0	—	—	—	•	•	•	•
208V 240V 220/240V 50Hz	1.0	•	•	•	•	—	—	—
	1.5	—	•	•	•	—	—	—
	2.0	—	—	•	•	•	—	—
	3.0	—	—	—	•	•	•	•
	4.0	—	—	—	—	•	•	•
277V	1.0	•	•	•	•	—	—	—
	1.5	—	•	•	•	—	—	—
	2.0	—	—	•	•	•	—	—
	3.0	—	—	—	•	•	•	•
	4.0	—	—	—	-	•	•	•
	5.0	—	—	—	—	—	•	•
	6.0	—	—	—	—	—	—	•

NOTE(S):

a. All heaters are single stage and single phase.
b. Electric heaters are available with top air discharge.
c. Electric Heating Capacities (BTUH) = Heater kW x 3413.
d. Electric Heater Amperage = (Heater kW x 1000)/Applied Voltage.

Electrical Heater Data — 42V*A[a,b,c,d,e]

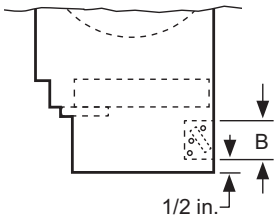
VOLTAGE	kW	UNIT SIZE			
		02	03	04	06
120V	1.0	L	L	L	L
	1.5	—	L	L	L
	2.0	—	—	L	L
	3.0	—	—	—	L
208V	1.0	L	L	L	L
	1.5	—	L	L	L
	2.0	—	—	L	L
	3.0	—	—	—	L
240V 277V	1.0	L	L	L	L
	1.5	—	L	L	L
	2.0	—	—	L	L
	3.0	—	—	—	L

NOTE(S):

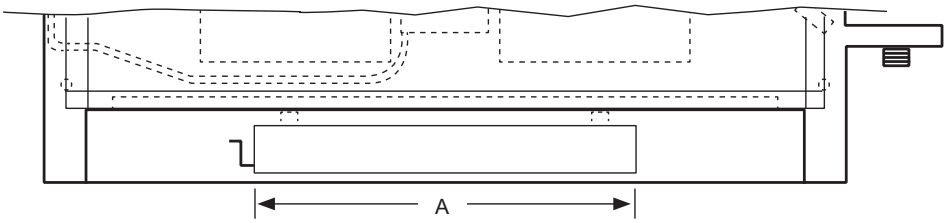
a. L=Lowboy Cabinet Units (VCA and VEA units only).
b. All heaters are single stage and single phase.
c. Electric heaters are available with top air discharge only.
d. Electric Heating Capacities (BTUH) = Heater kW x 3413
e. Electric Heater Amperage = (Heater kW x 1000)/Applied Voltage.

Options (cont)

Outside Air Dampers



Side View



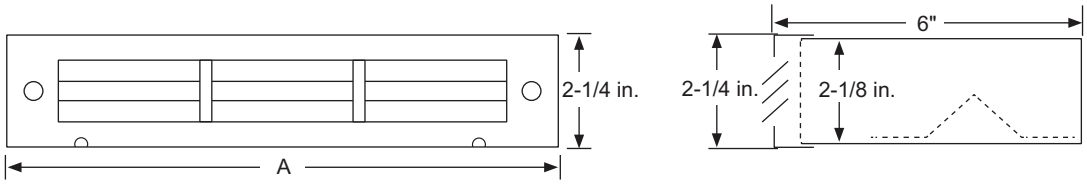
Front View

Outside Air Dampers

42V UNIT SIZE	NOMINAL cfm	OUTSIDE AIR OPENING DIMENSIONS – in. [mm] VAD, VBD, VFD	
		FRONT VIEW (A)	SIDE VIEW (B)
02	200	8 [203]	2 [51]
03	300	10 [254]	2 [51]
04	400	12 [305]	2 [51]
06	600	14 [356]	2 [51]
08	800	18 [457]	2 [51]
10	1000	27 [686]	2 [51]
12	1200	27 [686]	2 [51]

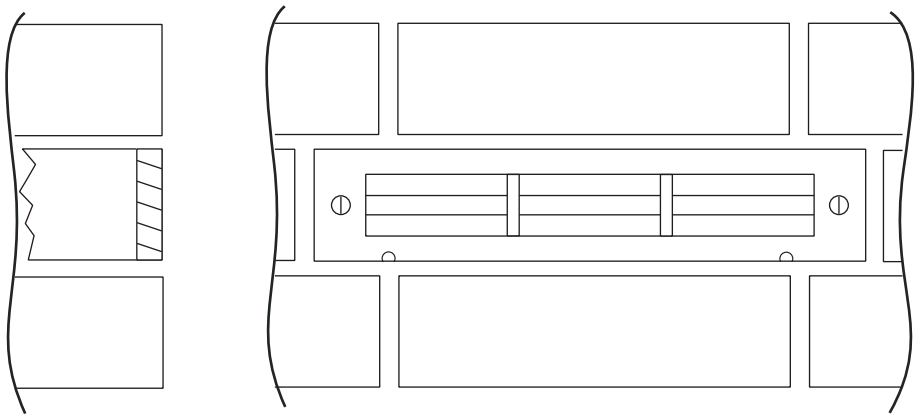
Options (cont)

Outside Air Wall Boxes (Optional) — 42 V*D Series



Front View

Side View

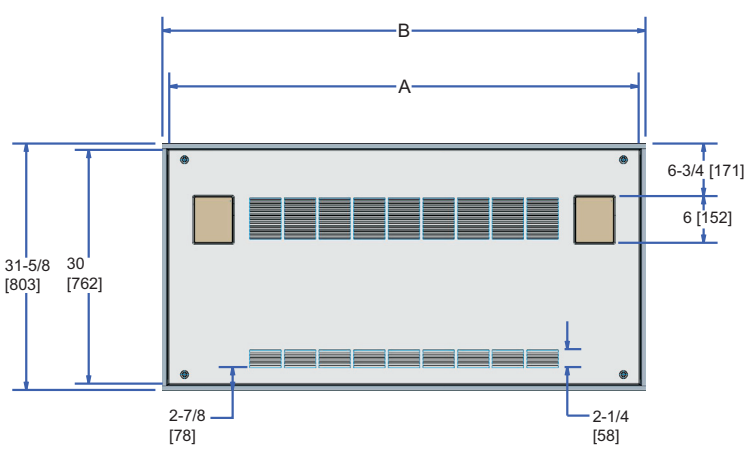


Typical Wall Installation

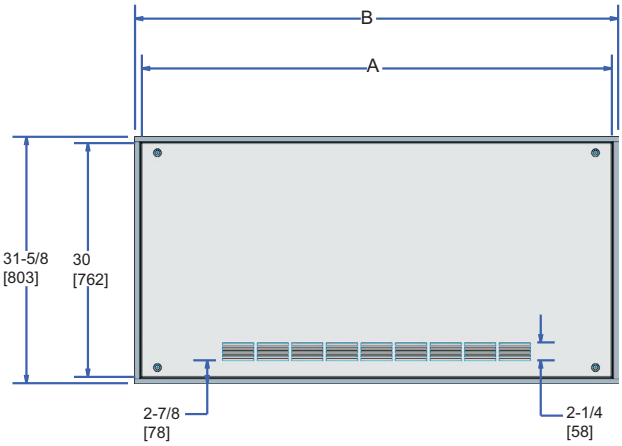
UNIT SIZE	NOMINAL cfm	OUTSIDE AIR OPENING DIMENSIONS – in. [mm]	
		VAD, VBD,VFD	
		FRONT VIEW (A)	SIDE VIEW (B)
02	200	8-1/4 [203]	2-1/8 [54]
03	300	8-1/4 [203]	2-1/8 [54]
04	400	12-1/4 [311]	2-1/8 [54]
06	600	14-1/4 [362]	2-1/8 [54]
08	800	18-1/4 [464]	2-1/8 [54]
10	1000	27-1/4 [692]	2-1/8 [54]
12	1200	27-1/4 [692]	2-1/8 [54]

Options (cont)

42VAD Decorative Wall Panel Dimensions



Style W

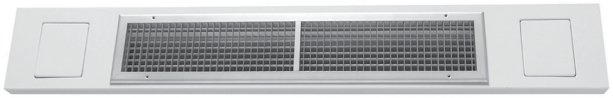


Style Z

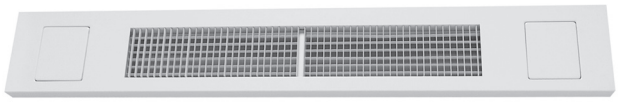
NOMINAL cfm	PANEL WIDTH (A) in. [mm]	FRAME WIDTH (B) in. [mm]	WALL OPENING in. [mm]	
			WIDTH	HEIGHT
200	40 [1016]	41-3/4 [1061]	40-3/8 [1026]	30-1/4 [768]
300	40 [1016]	41-3/4 [1061]	40-3/8 [1026]	
400	50 [1270]	51-3/4 [1315]	50-3/8 [1280]	
500	50 [1270]	51-3/4 [1315]	50-3/8 [1280]	
600	60 [1524]	61-3/4 [1569]	60-3/8 [1534]	
800	62 [1575]	63-3/4 [1619]	62-3/8 [1585]	
1000	76 [1930]	77-3/4 [1975]	76-3/8 [1940]	
1200	84 [2134]	85-3/4 [2178]	84-3/8 [2143]	

Options (cont)

Supply Air Grilles — 42V*D and V*A Series



Optional Double-Deflection, Aluminum-finish Supply Grille



Optional Double-Deflection, Integral Supply Grille (Painted to match color of unit. 42VEA Units Only.)

Supply Air Grilles (Optional)[a,b,c,d]

UNIT SIZE	NOMINAL cfm	RECOMMENDED GRILLE SIZES in. [mm]	
		VEA	VCA
02	200	16 x 6 [406 x 152]	16 x 5 [406 x 127]
03	300	22 x 6 [559 x 152]	22 x 5 [559 x 127]
04	400	30 x 6 [762 x 152]	30 x 5 [762 x 127]
06	600	44 x 6 [1118 x 152]	44 x 5 [1118 x 127]

NOTE(S):

a. Refer to Submittal Data pages for actual unit supply air opening dimensions.
b. VEA models supply air grilles are factory installed.
c. Consult factory for application restrictions using double-deflection grilles with electric heat and maximum coil rows.
d. VCA models supply air grilles are shipped loose.

Supply Air Grilles (Optional)[a,b,c,d]

UNIT SIZE	NOMINAL cfm	RECOMMENDED GRILLE SIZES – in.[mm]	
		VBD, VFD	VAD
02	200	16 x 6 [406 x 152]	16 x 5 [406 x 127]
03	300	16 x 6 [406 x 152]	18 x 5 [457 x 127]
04	400	26 x 6 [660 x 152]	26 x 5 [660 x 127]
06	600	36 x 6 [914 x 152]	36 x 5 [914 x 127]
08	800	38 x 6 [965 x 152]	38 x 5 [965 x 127]
10	1000	52 x 6 [1321 x 152]	52 x 5 [1321 x 127]
12	1200	60 x 6 [1524 x 152]	60 x 5 [1524 x 127]

NOTE(S):

a. Refer to Base Unit Dimensions for actual unit supply air opening dimensions.
b. VBD and VFD models supply air grilles are factory installed.
c. Consult factory for application restrictions using double-deflection grilles with electric heat and maximum coil rows.
d. 42VA models supply air grilles are shipped loose.

Options (cont)

Component static resistance

Filter Static Resistance (in. wg)[a]

UNIT DATA					FILTER PRESSURE DROP		
MODEL	UNIT SIZE	NOMINAL cfm	HEIGHT in. (mm)	WIDTH in. (mm)	1 in. THROWAWAY	1 in. PERMANENT	1 in. MERV 8
42V*D	**02**	200	7-3/4 (197)	21-3/4 (552)	0.041	0.064	0.120
	03	300	7-3/4(197)	21-3/4 (552)	0.051	0.090	0.140
	04	400	7-3/4(197)	31-3/4 (806)	0.055	0.102	0.148
	06	600	7-3/4(197)	41-3/4 (1060)	0.061	0.125	0.163
	08	800	7-3/4(197)	43-3/4 (1111)	0.074	0.184	0.204
	10	1000	7-3/4(197)	57-3/4 (1467)	0.071	0.168	0.192
	12	1200	7-3/4(197)	65-3/4 (1670)	0.074	0.183	0.204

NOTE(S):

a. Sizes shown are nominal ordering sizes.

Filter Static Resistance (in. wg)[a]

UNIT DATA					FILTER PRESSURE DROP		
MODEL	UNIT SIZE	NOMINAL cfm	HEIGHT in. (mm)	WIDTH in. (mm)	1 in. THROWAWAY	1 in. PERMANENT	1 in. MERV 8
VCA/VEA	02	200	7 (178)	21-3/4 (502)	0.045	0.074	0.13
	03	300	7 (178)	26-3/4 (679)	0.054	0.100	0.15
	04	400	7 (178)	34-3/4 (883)	0.055	0.104	0.15
	06	600	7 (178)	48-3/4 (1238)	0.058	0.115	0.16
VGA	01	—	10 (254)	14-1/2 (368)	—	—	—
	03	—	10 (254)	28 (711)	—	—	—

NOTE(S):

a. Sizes shown are nominal ordering sizes.

Options (cont)

Coil Surface Area — 42V*D

SIZE	HEIGHT (in.)	LENGTH (in.)
02	7.5	16
03	7.5	20
04	7.5	26
06	7.5	36
08	8.75	38
10	8.75	52
12	8.75	60

Coil Weight (lb) (Aluminum Fins) — 42V*D[a]

SIZE	2-ROW	3-ROW	4-ROW	5-ROW
02	4.3	5.9	7.5	9.1
03	5	7	9	10.9
04	6.2	8.7	11.2	13.7
06	8	11.4	14.9	18.3
08	9.8	14	18.2	22.4
10	12.8	18.5	24.2	29.9
12	14.5	21.1	27.7	34.2

NOTE(S):

a. Weights do not include headers or extras.

Coil Weight (lb) (Copper Fins) — 42V*D[a]

SIZE	2-ROW	3-ROW	4-ROW	5-ROW
02	7.5	10.7	13.9	17.1
03	9	13	17	20.9
04	11.4	16.5	21.6	26.7
06	15.2	22.2	29.3	36.3
08	18.6	27.3	35.9	44.6
10	24.9	36.7	48.5	60.3
12	28.5	42.1	55.7	69.3

NOTE(S):

a. Weights do not include headers or extras.

Coil Surface Area — 42VCA/VEA

SIZE	HEIGHT (in.)	LENGTH (in.)
02	10	17
03	10	22
04	10	30
06	10	44

Coil Weight (lb) (Aluminum Fins) — 42VCA/VEA[a]

SIZE	2-ROW	3-ROW	4-ROW
02	6	8.5	10.9
03	7.4	10.5	13.6
04	9.5	13.7	17.9
06	13.3	19.3	25.4

NOTE(S):

a. Weights do not include headers or extras.

Coil Weight (lb) (Copper Fins) — 42VCA/VEA[a]

SIZE	2-ROW	3-ROW	4-ROW
02	11.5	16.6	21.8
03	14.4	21	27.7
04	19.1	28.1	37.1
06	27.4	40.5	53.6

NOTE(S):

a. Weights do not include headers or extras.

Coil Surface Area — 42VGA

SIZE	HEIGHT (in.)	LENGTH (in.)
02	7.5	10
03	7.5	24

Coil Weight (lb) (Aluminum Fins) — 42VGA[a]

SIZE	2-ROW
01	3.8
03	6.6

NOTE(S):

a. Weights do not include headers or extras.

Coil Weight (lb) (Copper Fins) — 42VGA[a]

SIZE	2-ROW
01	6.2
03	12.3

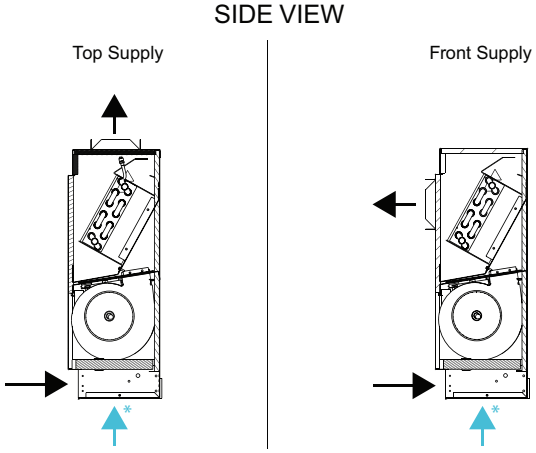
NOTE(S):

a. Weights do not include headers or extras.

Options (cont)

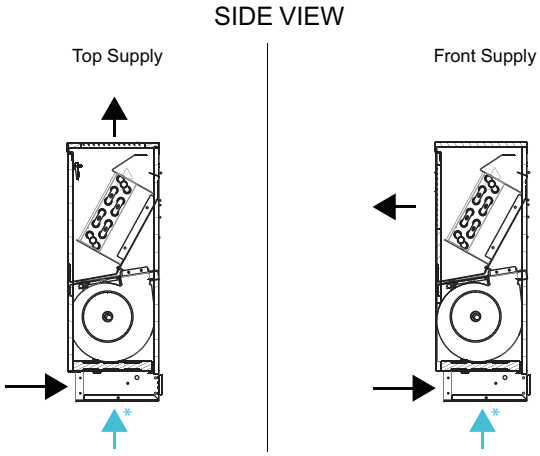
Airflow Arrangements

VAD – Vertical Hideaway Cabinet Heater



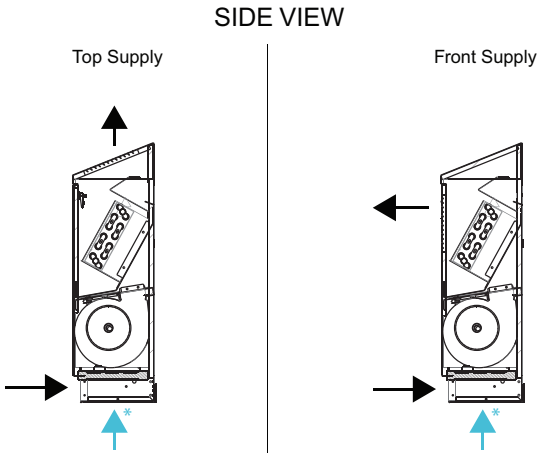
* Optional bottom return for wall mount application

VBD – Vertical Cabinet Heater



* Optional bottom return for wall mount application

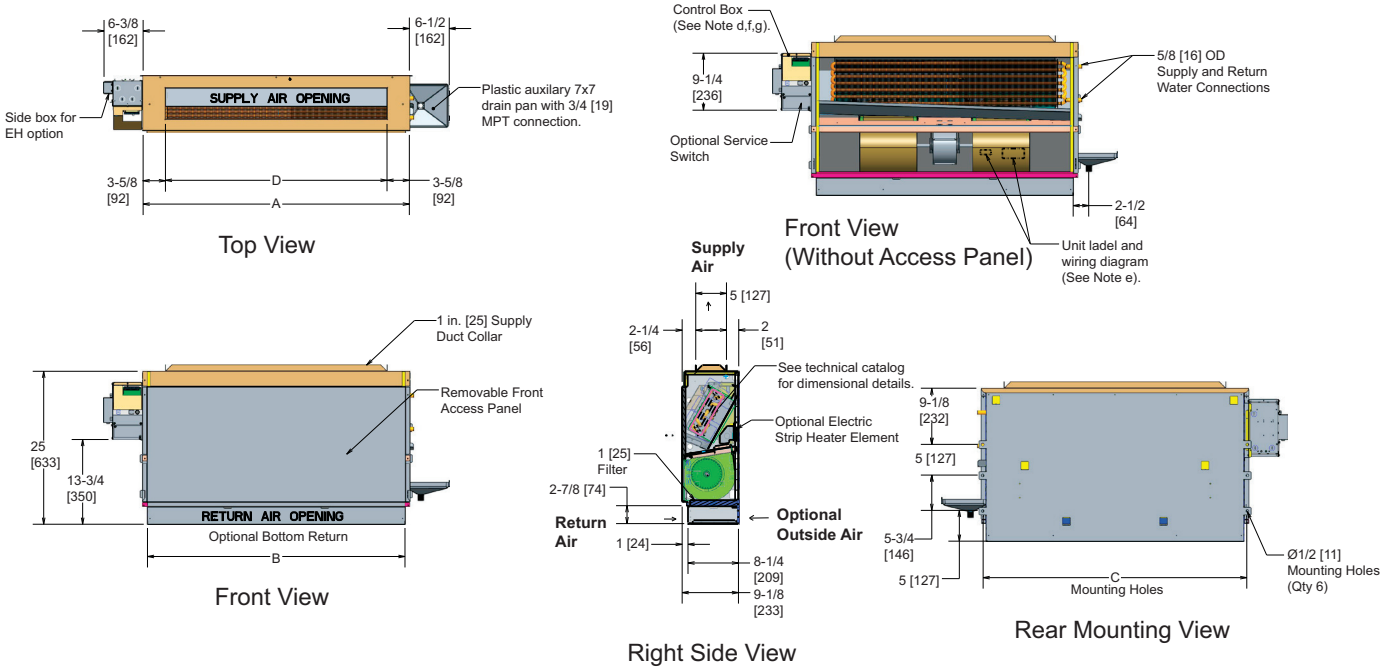
VFD – Vertical Sloped Top Cabinet Heater



* Optional bottom return for wall mount application

Dimensions

42VAD Vertical Floor Top Supply with Optional Electric Heat



UNIT SIZE 42VAD	DIMENSIONS – in. [mm][a,b,c,d,e,f,g]				QUANTITY/UNIT	
	A	B	C	D	Blower	Motor
02	23-1/2 [597]	22 [559]	23 [584]	16 [406]	1	1
03	27-1/2 [699]	26 [660]	27 [686]	20 [508]	1	1
04	33-1/2 [851]	32 [813]	33 [838]	26 [660]	2	1
06	43-1/2 [1105]	42 [1067]	43 [1092]	36 [914]	2	1
08	45-1/2 [1156]	44 [1118]	45 [1143]	38 [965]	2	1
10	59-1/2 [1511]	58 [1473]	59 [1499]	52 [1321]	4	2
12	67-1/2 [1715]	66 [1676]	67 [1702]	60 [1524]	4	2

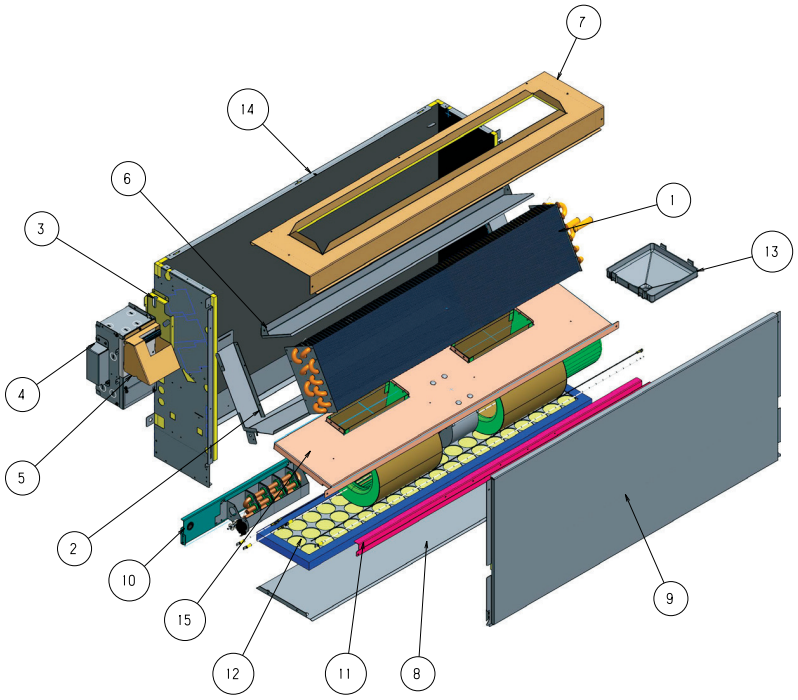
NOTE(S):

a. Right-hand units shown, left-hand opposite.
b. All dimensions are ± .25 [6]. Drawing not to scale.
c. Product specifications are subject to change without notice.
d. Control box size and position may vary. Consult factory.
e. Position may vary.
f. Service access is located on the front of the service box.
g. Knockouts on the bottom and side of the control box for incoming connections.

Dimensions (cont)

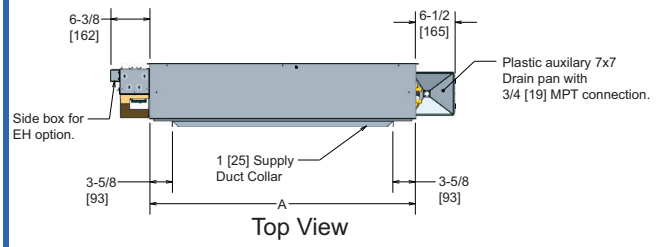
42VAD Vertical Floor Top Supply with Optional Electric Heat (Exploded View)

ITEM	DESCRIPTION
1	Coil Assembly
2	Drain Trough Assembly
3	Control Box Bracket
4	Guard
5	Control Package
6	Top Coil Baffle Assembly
7	Top Panel Assembly Ducted
8	Base Plate
9	Front Panel Assembly
10	Heater Assembly
11	Filter Channel
12	Filter
13	Auxiliary Drain Pan
14	Chassis Assembly
15	Motor Blower Deck Assembly

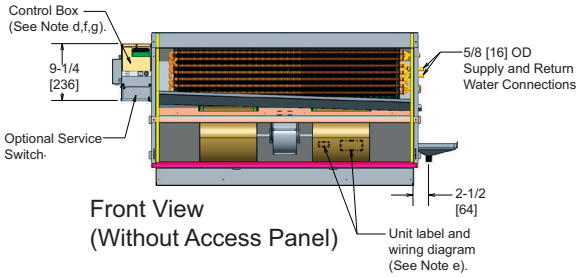


Dimensions (cont)

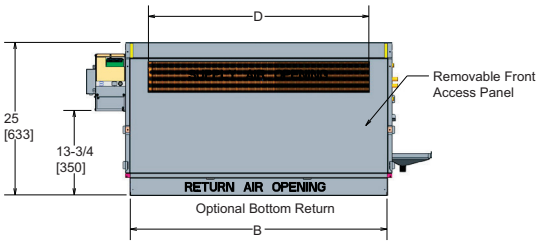
42VAD Vertical Hideaway Front Supply with Optional Electric Heat



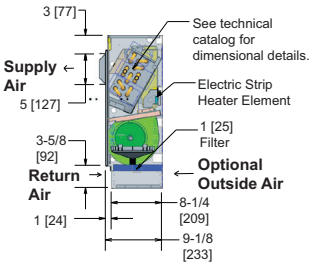
Top View



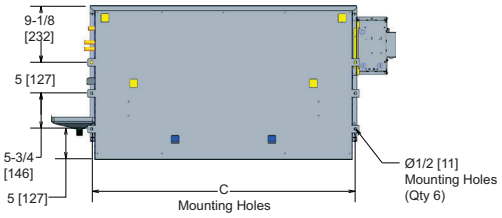
Front View
(Without Access Panel)



Front View



Right Side View



Rear Mounting View

UNIT SIZE 42VAD	DIMENSIONS – in. [mm][a,b,c,d,e,f,g]				QUANTITY/UNIT	
	A	B	C	D	Blower	Motor
02	23-1/2 [597]	22 [559]	23 [584]	16 [406]	1	1
03	27-1/2 [699]	26 [660]	27 [686]	20 [508]	1	1
04	33-1/2 [851]	32 [813]	33 [838]	26 [660]	2	1
06	43-1/2 [1105]	42 [1067]	43 [1092]	36 [914]	2	1
08	45-1/2 [1156]	44 [1118]	45 [1143]	38 [965]	2	1
10	59-1/2 [1511]	58 [1473]	59 [1499]	52 [1321]	4	2
12	67-1/2 [1715]	66 [1676]	67 [1702]	60 [1524]	4	2

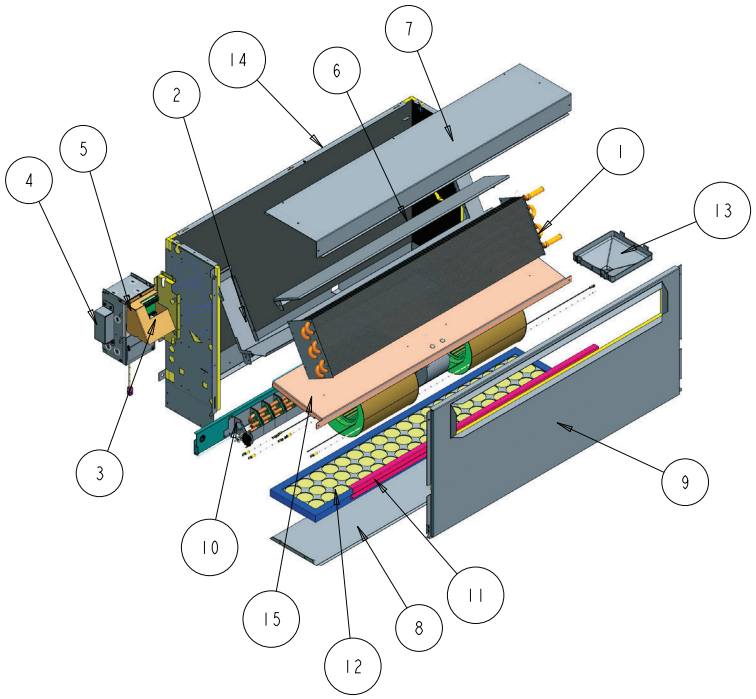
NOTE(S):

a. Right-hand units shown, left-hand opposite.
b. All dimensions are ± .25 [6]. Drawing not to scale.
c. Product specifications are subject to change without notice.
d. Control box size and position may vary. Consult factory.
e. Position may vary.
f. Service access is located on the front of the service box.
g. Knockouts on the bottom and side of the control box for incoming connections.

Dimensions (cont)

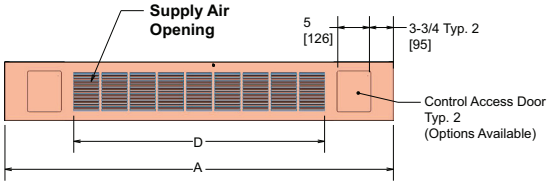
42VAD Vertical Hideaway Front Supply with Optional Electric Heat (Exploded View)

ITEM	DESCRIPTION
1	Coil Assembly
2	Drain Trough Assembly
3	Control Box Bracket
4	Guard
5	Control Package
6	Top Coil Baffle Assembly
7	Top Panel Assembly Ducted
8	Base Plate
9	Front Panel Assembly
10	Heater Assembly
11	Filter Channel
12	Filter
13	Auxiliary Drain Pan
14	Chassis Assembly
15	Motor Blower Deck Assembly

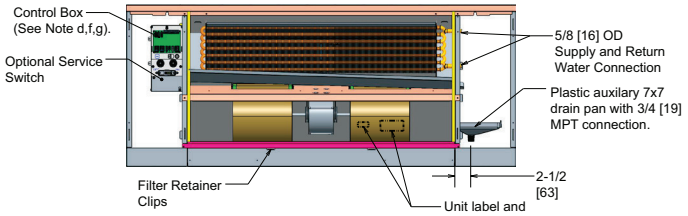


Dimensions (cont)

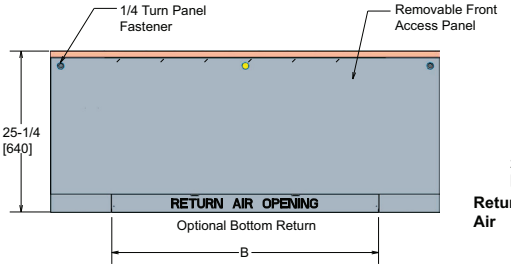
42VBD Vertical Cabinet Top Supply with Optional Electric Heat



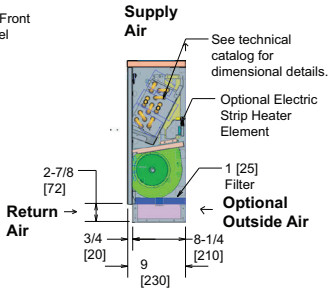
Top View



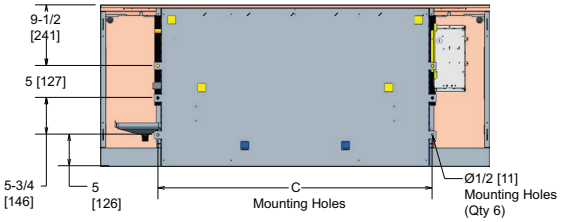
Front View
(Without Access Panel)



Front View



Right Side View



Rear Mounting View

UNIT SIZE 42VBD	DIMENSIONS – in.[mm][a,b,c,d,e,f,g]				QUANTITY/UNIT	
	A	B	C	D	Blower	Motor
02	41 [1041]	22 [559]	23 [584]	17-1/4 [438]	1	1
03	45 [1043]	26 [660]	27 [686]	21-1/2 [546]	1	1
04	51 [1295]	32 [813]	33 [838]	26 [660]	2	1
06	61 [1549]	42 [1067]	43 [1092]	39-1/4 [997]	2	1
08	63 [1600]	44 [1118]	45 [1143]	39-1/4 [997]	2	1
10	77 [1956]	58 [1473]	59 [1499]	52-1/2 [1334]	4	2
12	85 [2159]	66 [1676]	67 [1702]	61-1/4 [1556]	4	2

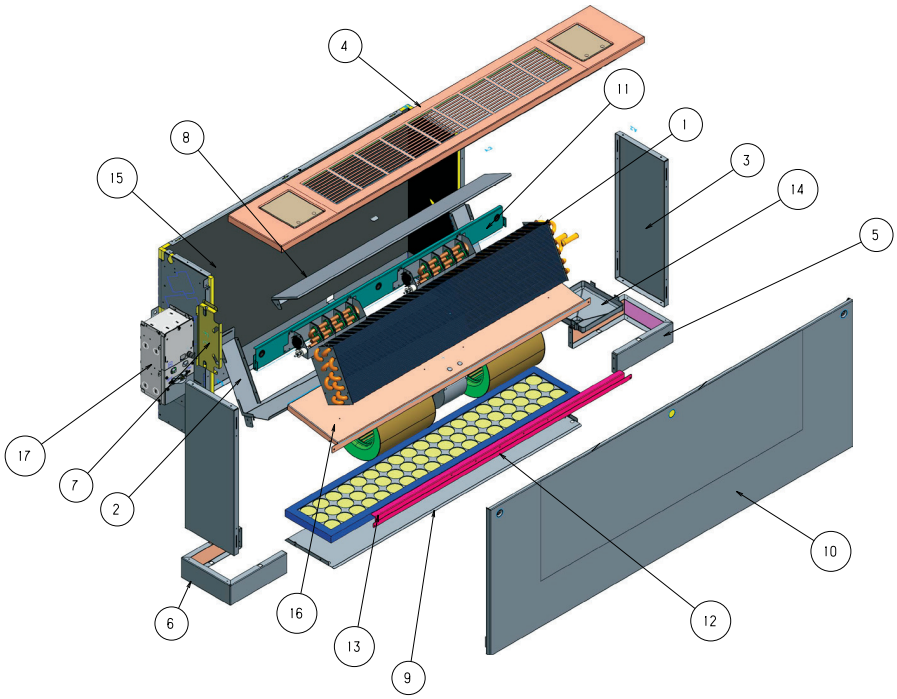
NOTE(S):

a. Right-hand units shown, left-hand opposite.
b. All dimensions are ± .25 [6]. Drawing not to scale.
c. Product specifications are subject to change without notice.
d. Control box size and position may vary. Consult factory.
e. Position may vary.
f. Service access is located on the front of the service box.
g. Knockouts on the bottom and side of the control box for incoming connections.

Dimensions (cont)

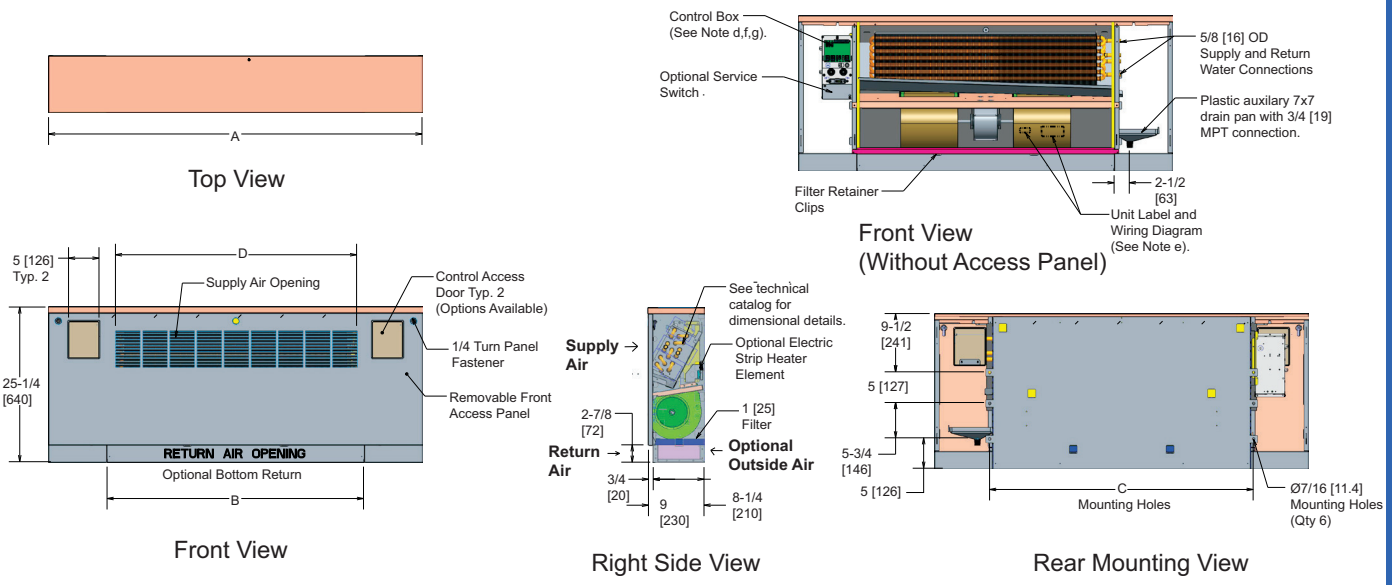
42VBD Vertical Cabinet Top Supply with Optional Electric Heat (Exploded View)

ITEM	DESCRIPTION
1	Coil Assembly
2	Drain Trough Assembly
3	Outer Case Leg
4	Top Panel Assembly
5	Subbase Right Hand
6	Subbase Left Hand
7	Control Box Bracket
8	Top Coil Baffle Assembly
9	Base Plate
10	Front Panel Assembly Solid
11	Heater Assembly
12	Filter Channel
13	Filter
14	Auxiliary Drain Pan
15	Chassis Assembly
16	Motor Blower Deck Assembly
17	Control Package



Dimensions (cont)

42VBD — Vertical Cabinet Front Supply with Optional Electric Heat



UNIT SIZE 42VBD	DIMENSIONS – in. [mm][a,b,c,d,e,f,g]				QUANTITY/UNIT	
	A	B	C	D	Blower	Motor
02	41 [1041]	22 [559]	23 [584]	17-1/4 [438]	1	1
03	45 [1043]	26 [660]	27 [686]	21-1/2 [546]	1	1
04	51 [1295]	32 [813]	33 [838]	26 [660]	2	1
06	61 [1549]	42 [1067]	43 [1092]	39-1/4 [997]	2	1
08	63 [1600]	44 [1118]	45 [1143]	39-1/4 [997]	2	1
10	77 [1956]	58 [1473]	59 [1499]	52-1/2 [1334]	4	2
12	85 [2159]	66 [1676]	67 [1702]	61-1/4 [1556]	4	2

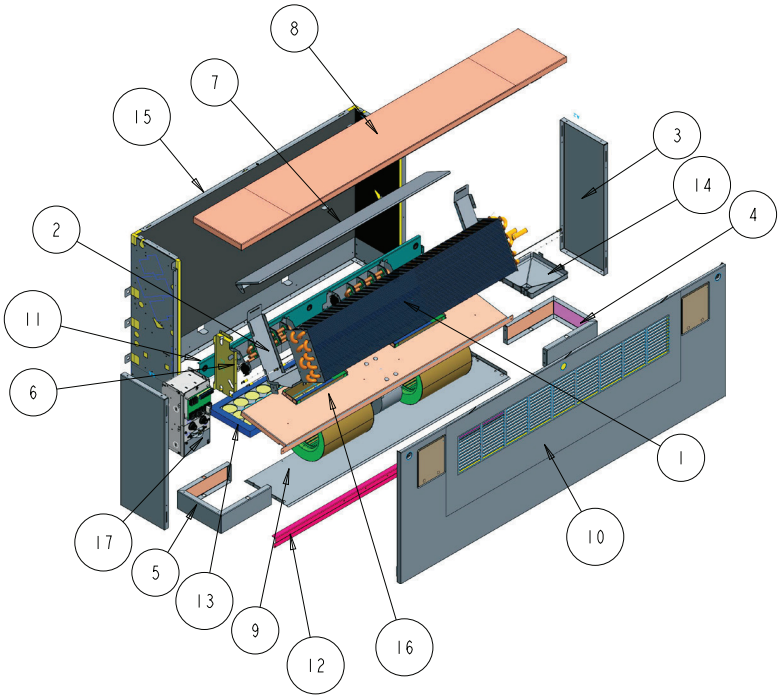
NOTE(S):

a. Right-hand units shown, left-hand opposite.
b. All dimensions are ± .25 [6]. Drawing not to scale.
c. Product specifications are subject to change without notice.
d. Control box size and position may vary. Consult factory.
e. Position may vary.
f. Service access is located on the front of the service box.
g. Knockouts on the bottom and side of the control box for incoming connections.

Dimensions (cont)

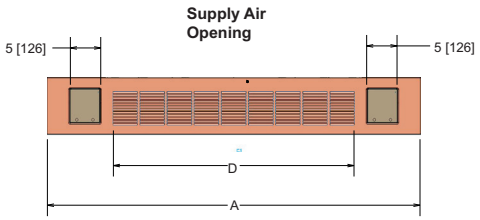
42VBD — Vertical Cabinet Front Supply with Optional Electric Heat (Exploded View)

ITEM	DESCRIPTION
1	Coil Assembly
2	Drain Trough Assembly
3	Outer Case Leg
4	Top Panel Assembly
5	Subbase Right Hand
6	Subbase Left Hand
7	Control Box Bracket
8	Top Coil Baffle Assembly
9	Base Plate
10	Front Panel Assembly Solid
11	Heater Assembly
12	Filter Channel
13	Filter
14	Auxiliary Drain Pan
15	Chassis Assembly
16	Motor Blower Deck Assembly
17	Control Package

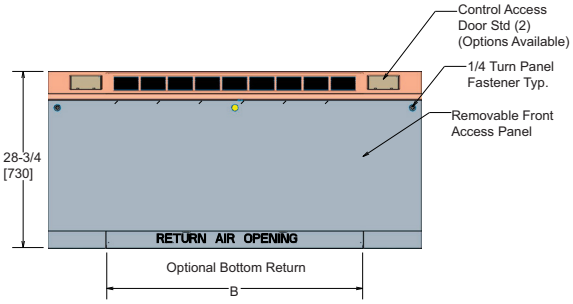


Dimensions (cont)

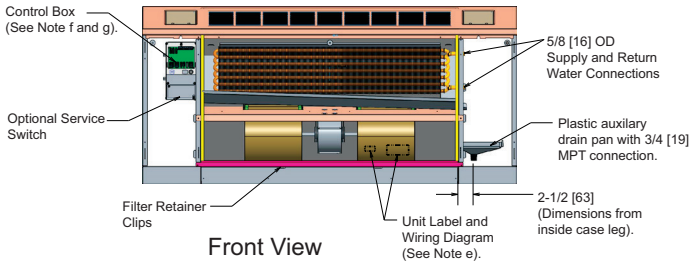
42VFD — Vertical Sloped Cabinet Top Supply and Optional Electric Heat



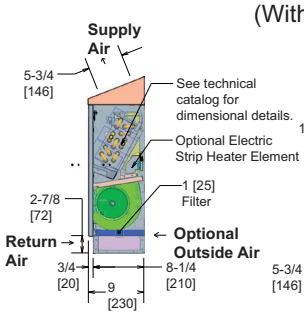
Top View



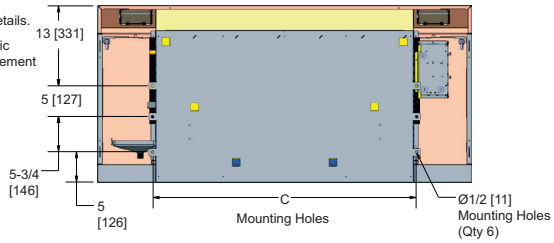
Front View



Front View
(Without Access Panel)



Right Side View



Rear Mounting View

UNIT SIZE 42VFD	DIMENSIONS–in. [mm][a,b,c,d,e,f,g]				QUANTITY/UNIT	
	A	B	C	D	Blower	Motor
02	41 [1041]	22 [559]	23 [584]	17-1/4 [438]	1	1
03	45 [1043]	26 [660]	27 [686]	21-1/2 [546]	1	1
04	51 [1295]	32 [813]	33 [838]	26 [660]	2	1
06	61 [1549]	42 [1067]	43 [1092]	39-1/4 [997]	2	1
08	63 [1600]	44 [1118]	45 [1143]	39-1/4 [997]	2	1
10	77 [1956]	58 [1473]	59 [1499]	52-1/2 [1334]	4	2
12	85 [2159]	66 [1676]	67 [1702]	61-1/4 [1556]	4	2

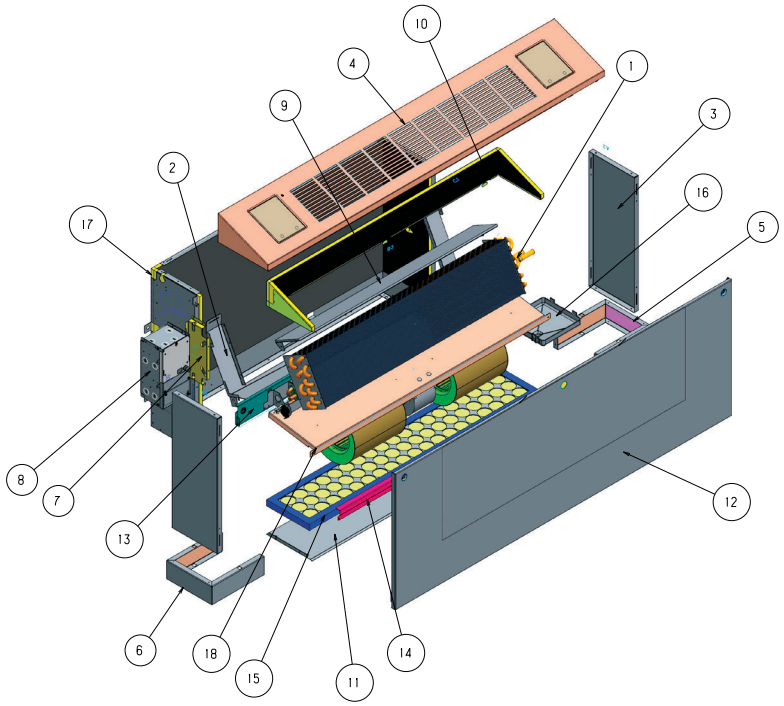
NOTE(S):

a. Right-hand units shown, left-hand opposite.
b. All dimensions are ± .25 [6]. Drawing not to scale.
c. Product specifications are subject to change without notice.
d. Control box size and position may vary. Consult factory.
e. Position may vary.
f. Service access is located on the front of the service box.
g. Knockouts on the bottom and side of the control box for incoming connections.

Dimensions (cont)

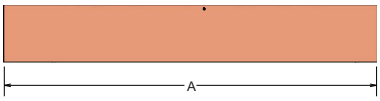
42VFD — Vertical Sloped Cabinet Top Supply and Optional Electric Heat (Exploded View)

ITEM	DESCRIPTION
1	Coil Assembly
2	Drain Trough Assembly
3	Outer Case Leg
4	Top Panel Assembly
5	Subbase Right Hand
6	Subbase Left Hand
7	Control Package Bracket
8	Control Package
9	Top Coil Baffle Assembly
10	Wrapper Extension Assembly
11	Base Plate
12	Front Panel Assembly
13	Heater Assembly
14	Filter Channel
15	Filter
16	Auxiliary Drain Pan
17	Chassis Assembly
18	Motor Blower Deck Assembly

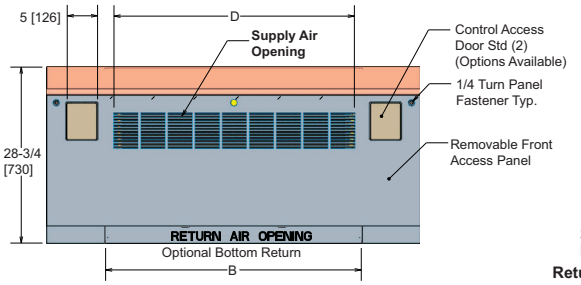


Dimensions (cont)

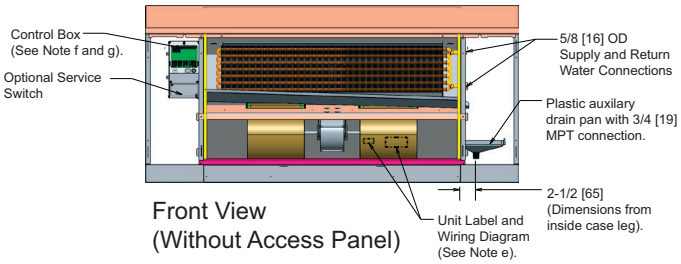
42VFD — Vertical Sloped Cabinet Front Supply with Optional Electric Heat



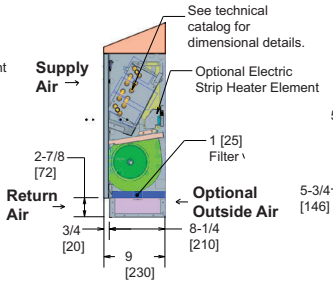
Top View



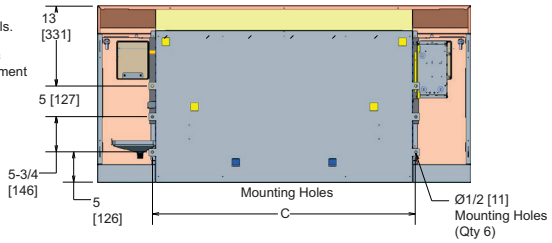
Front View



Front View (Without Access Panel)



Right Side View



Rear Mounting View

UNIT SIZE 42VFD	DIMENSIONS – in.[mm][a,b,c,d,e,f,g]				QUANTITY/UNIT	
	A	B	C	D	Blower	Motor
02	41 [1041]	22 [559]	23 [584]	17-1/4 [438]	1	1
03	45 [1043]	26 [660]	27 [686]	21-1/2 [546]	1	1
04	51 [1295]	32 [813]	33 [838]	26 [660]	2	1
06	61 [1549]	42 [1067]	43 [1092]	39-1/4 [997]	2	1
08	63 [1600]	44 [1118]	45 [1143]	39-1/4 [997]	2	1
10	77 [1956]	58 [1473]	59 [1499]	52-1/2 [1334]	4	2
12	85 [2159]	66 [1676]	67 [1702]	61-1/4 [1556]	4	2

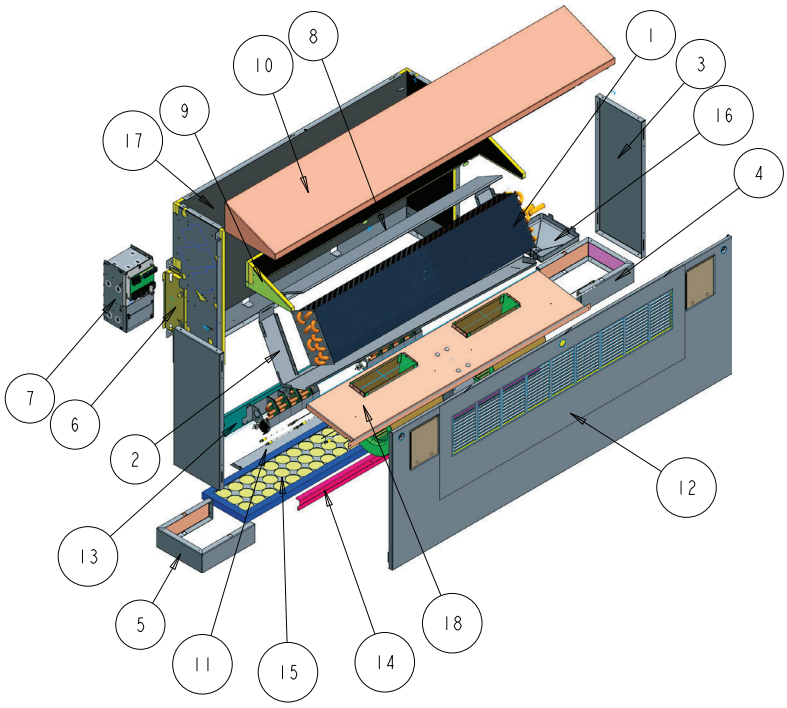
NOTE(S):

a. Right-hand units shown, left-hand opposite.
b. All dimensions are ± .25 [6]. Drawing not to scale.
c. Product specifications are subject to change without notice.
d. Control box size and position may vary. Consult factory.
e. Position may vary.
f. Service access is located on the front of the service box.
g. Knockouts on the bottom and side of the control box for incoming connections.

Dimensions (cont)

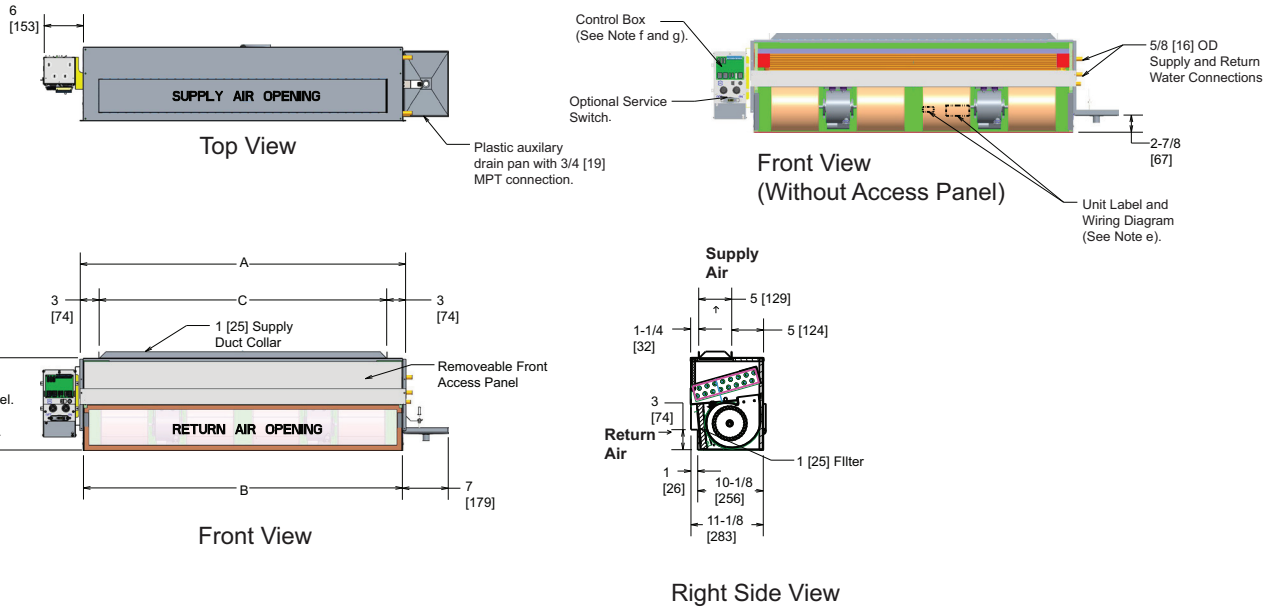
42VFD — Vertical Sloped Cabinet Front Supply with Optional Electric Heat (Exploded View)

ITEM	DESCRIPTION
1	Coil Assembly
2	Drain Trough Assembly
3	Outer Case Leg
4	Top Panel Assembly
5	Subbase Right Hand
6	Subbase Left Hand
7	Control Package Bracket
8	Control Package
9	Top Coil Baffle Assembly
10	Wrapper Extension Assembly
11	Base Plate
12	Front Panel Assembly
13	Heater Assembly
14	Filter Channel
15	Filter
16	Auxiliary Drain Pan
17	Chassis Assembly
18	Motor Blower Deck Assembly



Dimensions (cont)

42VCA — Vertical Lowboy Hideaway



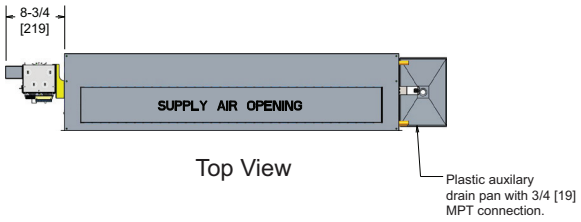
UNIT SIZE 42VCA	DIMENSIONS – in. [mm][a,b,c,d,e,f,g]			QUANTITY/UNIT	
	A	B	C	Blower	Motor
02	23 [584]	22 [559]	17 [432]	2	1
03	28 [711]	27 [686]	22 [559]	2	1
04	36 [914]	365 [889]	30 [762]	2	1
06	50 [1270]	49 [1245]	44 [1118]	4	2

NOTE(S):

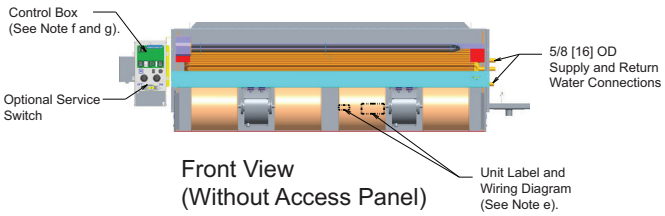
a. Right-hand units shown, left-hand opposite.
b. All dimensions are ± .25 [6]. Drawing not to scale.
c. Product specifications are subject to change without notice.
d. Control box size and position may vary. Consult factory.
e. Position may vary.
f. Service access is located on the front of the service box.
g. Knockouts on the bottom and side of the control box for incoming connections.

Dimensions (cont)

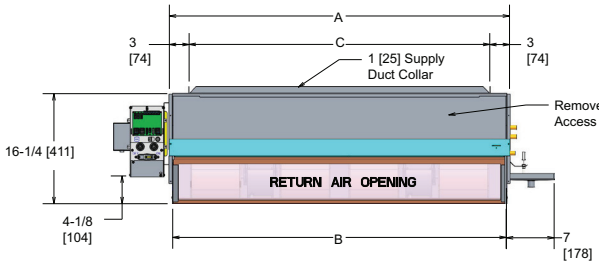
42VCA — Vertical Lowboy Hideaway with Electric Heat



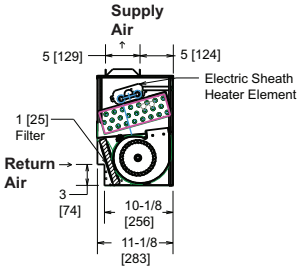
Top View



Front View
(Without Access Panel)



Front View



Right Side View

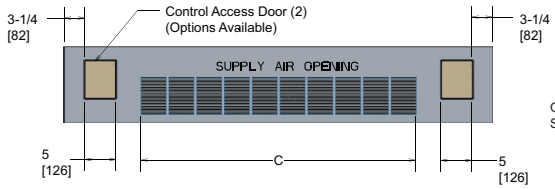
UNIT SIZE 42VCA	DIMENSIONS – in. [mm][a,b,c,d,e,f,g]			QUANTITY/UNIT	
	A	B	C	Blower	Motor
02	23 [584]	22 [559]	17 [432]	2	1
03	28 [711]	27 [686]	22 [559]	2	1
04	36 [914]	365 [889]	30 [762]	2	1
06	50 [1270]	49 [1245]	44 [1118]	4	2

NOTE(S):

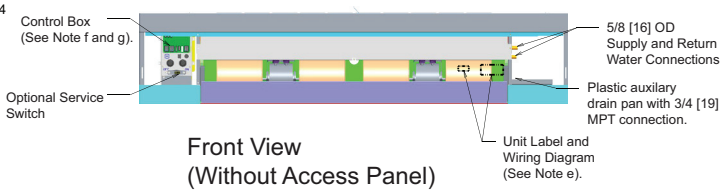
a. Right-hand units shown, left-hand opposite.
b. All dimensions are ± .25 [6]. Drawing not to scale.
c. Product specifications are subject to change without notice.
d. Control box size and position may vary. Consult factory.
e. Position may vary.
f. Service access is located on the front of the service box.
g. Knockouts on the bottom and side of the control box for incoming connections.

Dimensions (cont)

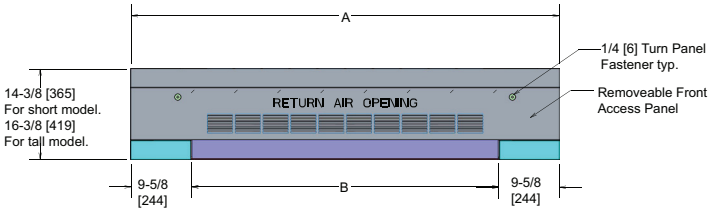
42VEA — Vertical Lowboy and Vertical Lowboy Tall Cabinet



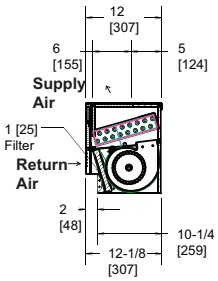
Top View



Front View
(Without Access Panel)



Front View



Right Side View

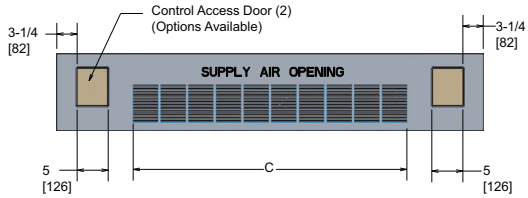
UNIT SIZE 42VEA	DIMENSIONS – in. [mm][a,b,c,d,e,f,g]			QUANTITY/UNIT	
	A	B	C	Blower	Motor
02	41 [1041]	22 [559]	17 [432]	2	1
03	46 [1168]	27 [686]	21-1/2 [546]	2	1
04	54 [1372]	35 [889]	30-1/4 [768]	2	1
06	68 [1727]	49 [1245]	43-3/8 [1102]	4	2

NOTE(S):

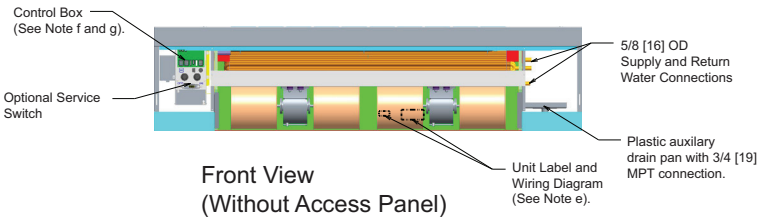
a. Right-hand units shown, left-hand opposite.
b. All dimensions are ± .25 [6]. Drawing not to scale.
c. Product specifications are subject to change without notice.
d. Control box size and position may vary. Consult factory.
e. Position may vary.
f. Service access is located on the front of the service box.
g. Knockouts on the bottom and side of the control box for incoming connections.

Dimensions (cont)

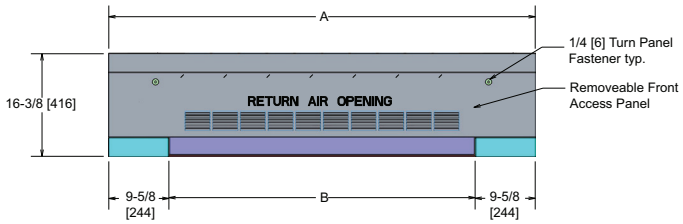
42VEA — Vertical Lowboy Tall Cabinet with Electric Heat



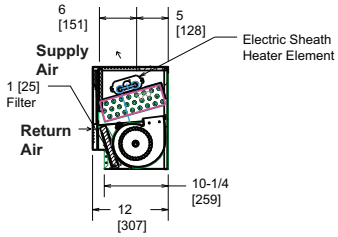
Top View



Front View
(Without Access Panel)



Front View



Right Side View

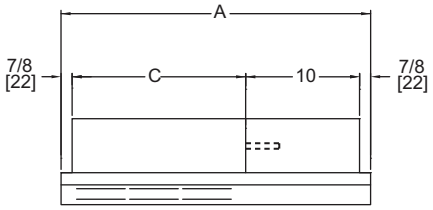
UNIT SIZE 42VEA	DIMENSIONS – in. [mm][a,b,c,d,e,f,g]			QUANTITY/UNIT	
	A	B	C	Blower	Motor
02	41 [1041]	22 [559]	17 [432]	2	1
03	46 [1168]	27 [686]	21-1/2 [546]	2	1
04	54 [1372]	35 [889]	30-1/4 [768]	2	1
06	68 [1727]	49 [1245]	43-3/8 [1102]	4	2

NOTE(S):

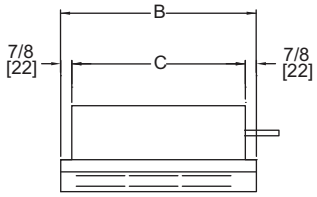
a. Right-hand units shown, left-hand opposite.
b. All dimensions are ± .25 [6]. Drawing not to scale.
c. Product specifications are subject to change without notice.
d. Control box size and position may vary. Consult factory.
e. Position may vary.
f. Service access is located on the front of the service box.
g. Knockouts on the bottom and side of the control box for incoming connections.

Dimensions (cont)

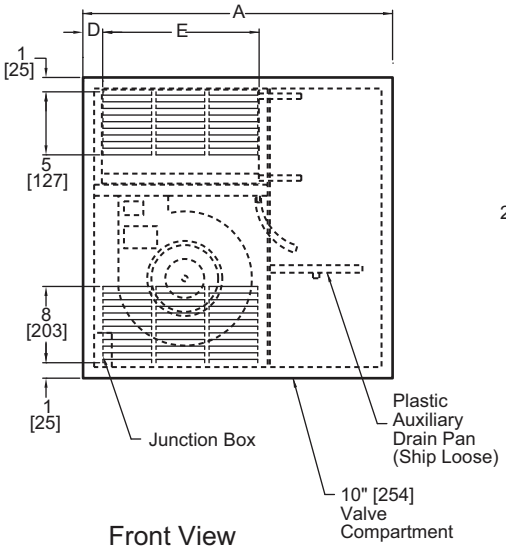
42VGA — Vertical Recessed Cabinet



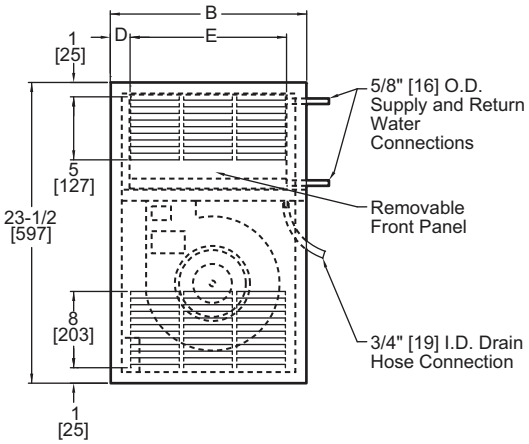
Top View
(Extended Model)



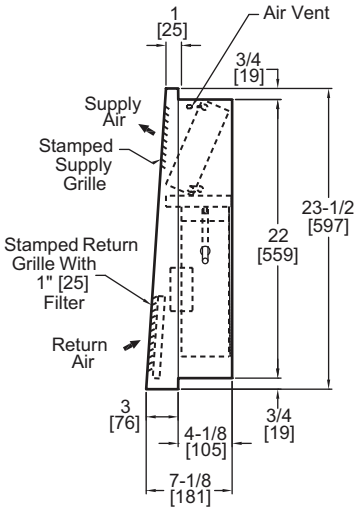
Top View
(Standard Model)



Front View



Front View



Right Side View

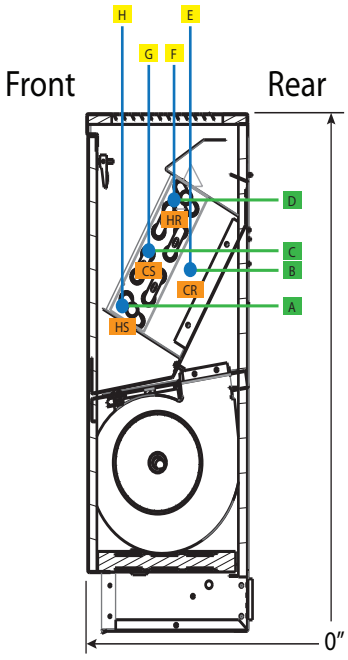
UNIT MODEL 42VGA	DIMENSIONS – in. [mm][a,b,c,d,e,f,g,h]					QUANTITY/UNIT	
	A	B	C	D	E	BLOWER	MOTOR
01	25-3/4 [654]	15-3/4 [400]	14 [356]	1-1 /2 [38]	12-3/4 [324]	1	1
03	39-3/4 [1010]	29-3/4 [756]	28 [711]	1-15/16 [49]	25-7/8 [657]	2	2

NOTE(S):

a. All dimensions are ± 1/4 in. [6mm].
b. Right hand unit shown, left hand unit is opposite.
c. Dimensions shown in inches [mm].
d. Product specifications are subject to change without notice.
e. Control box size and position may vary (consult factory).
f. Positions may vary.
g. Service access is located on the front of the service box.
h. Knockouts on the bottom and side if the control box for incoming connections.

Dimensions (cont)

42V*D Piping Connection Location - Hydronic Cooling and Heating Coils (Right Hand Unit with Re-heat Coil Shown)



LEGEND

HR — Hot Water Return
HS — Hot Water Supply
CR — Cold Water Return
CS — Cold Water Supply
RH — Right Hand
LH — Left Hand

42V*D Hydronic Cooling and Heating Coil Dimensions (in.)[a,b,c]

UNIT SIZE	COIL ROW		CIRCUITS		A	B	C	D	E	F	G	H	NOTES[d]
	COOL	HEAT	COOL	HEAT									
02	2	—	1	—	—	21-6/7	15-1/3	—	4-1/2	—	6-7/8	—	
	3	—	1	—	—	17-1/2	18-4/7	—	4-3/7	—	6-1/3	—	
	3	—	2	—	—	18	19-1/8	—	4-1/9	—	6	—	
	4	—	1	—	—	17-5/9	18-4/7	—	3-1/6	—	6-1/3	—	
	3	1	1	1	16-2/5	17-5/9	18-3/5	21-6/7	3-1/6	4-1/2	5	7-1/2	
	3	1	1	1	12-1/6	17-5/9	18-3/5	12	3-1/6	5	5	7	OE
	3	2	1	1	15-4/7	16-3/4	17-4/5	22-1/8	3	5	4-8/9	7-1/3	
	3	2	1	1	11-1/3	16-3/4	17-4/5	12-1/4	3	5-1/2	4-8/9	7	OE
	4	1	1	1	16-2/3	16-3/4	18-6/7	22-1/8	3	5	5-1/2	8	
	4	1	1	1	12-3/7	16-3/4	18-6/7	12-1/4	3	5-1/2	5-1/2	7-1/2	OE
03	2	—	1	—	—	21-6/7	15-1/3	—	4-1/2	—	6-7/8	—	
	3	—	1	—	—	17-1/2	18-4/7	—	4-3/7	—	6-1/3	—	
	4	—	1	—	—	17-5/9	18-4/7	—	3-1/6	—	6-1/3	—	
	3	1	1	1	16-2/5	17-5/9	18-3/5	21-6/7	3-1/6	4-1/2	5	7-1/2	
	3	1	1	1	12-1/6	17-5/9	18-3/5	12	3-1/6	5	5	7	OE
	3	2	1	1	15	16-7/9	17-5/9	21-5/6	3	5-3/5	5	7	
	3	2	1	1	11	16-7/9	17-5/9	12	3	4-3/4	5	6	OE
	4	1	1	1	16	16-7/9	18-1/2	21-5/6	3	5-3/5	5-5/7	7-6/7	
	4	1	1	1	11-7/8	16-7/9	18-1/2	12	3	4-3/4	5-5/7	6-5/6	OE
04	2	—	1	—	—	21-6/7	15-1/3	—	4-1/2	—	6-7/8	—	
	3	—	1	—	—	17-1/2	18-4/7	—	4-3/7	—	6-1/3	—	
	4	—	2	—	—	17-5/9	18-4/7	—	3-1/6	—	6-1/3	—	
	3	—	1	—	—	17-5/9	18-3/5	—	3-1/6	—	5	—	
	3	1	1	1	16-2/5	17-5/9	18-3/5	21-6/7	3-1/6	4-1/2	5	7-1/2	
	3	1	1	1	12-1/6	17-5/9	18-3/5	12	3-1/6	5	5	7	OE
	3	2	1	1	15	16-7/9	17-5/9	21-5/6	3	5-3/5	5	7	
	3	2	1	1	11	16-7/9	17-5/9	12	3	4-3/4	5	6	OE
	4	1	1	1	16	16-7/9	18-1/2	21-5/6	3	5-3/5	5-5/7	7-6/7	
	4	1	1	1	11-7/8	16-7/9	18-1/2	12	3	4-3/4	5-5/7	6-5/6	OE

NOTE(S):

a. Piping connection dimensions are consistent for either right hand or left hand connections.
b. Horizontal dimensions measured from rear panel. Vertical dimensions measured from bottom panel.
c. Measurements do not apply to same side piping and controls. Special Feature Requests (SFRs) may change piping stubout locations. Contact Application Engineering.
d. OE designates opposite end connection.

Dimensions (cont)

42V*D Hydronic Cooling and Heating Coil Dimensions (cont)[a,b,c]

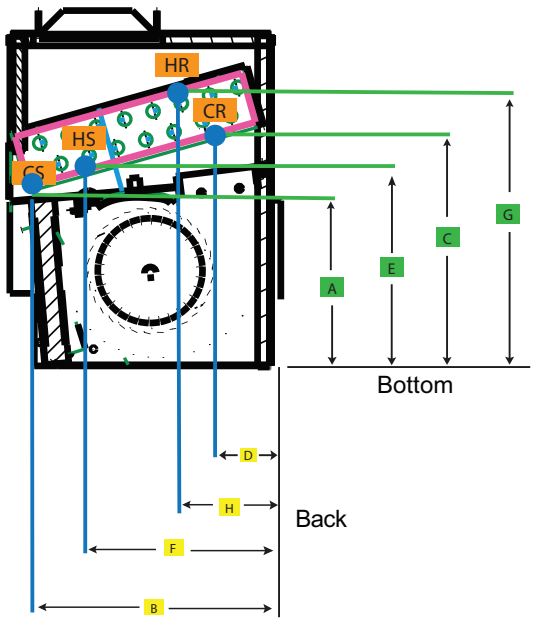
UNIT SIZE	COIL ROW		CIRCUITS		A	B	C	D	E	F	G	H	NOTES[d]
	COOL	HEAT	COOL	HEAT									
06	2	—	2	—	—	21-1/3	15-6/7	—	4-1/6	—	7-1/5	—	
	3	—	2	—	—	18	19-1/8	—	4-1/9	—	6	—	
	4	—	2	—	—	17	19-1/8	—	3-1/2	—	6	—	
	3	1	2	1	16-2/5	17	18	21-6/7	3-1/2	4-1/2	5-3/8	7-1/2	
	3	1	2	1	12-1/6	17	18	12	3-1/2	5	5-3/8	7	OE
	3	2	2	1	15-1/2	17-3/8	18-1/7	21-1/3	2-2/3	5-2/9	4-5/7	7-1/2	
	3	2	2	1	11-2/5	17-3/8	18-1/7	11	2-2/3	4-1/3	4-5/7	6-3/7	OE
	4	1	2	1	16	17-3/8	18	21-5/6	2-2/3	5-3/5	6	7-6/7	
	4	1	2	1	11-7/8	17-3/8	18	12	2-2/3	4-3/4	6	6-5/6	OE
08	2	—	2	—	—	22-2/5	15-6/7	—	—	—	—	—	
	3	—	2	—	—	19-1/6	19-1/8	—	—	—	—	—	
	4	—	2	—	—	17	19-1/8	—	—	—	—	—	
	3	1	2	1	16-2/5	18-1/9	18	21-6/7	2-6/7	4-1/2	5-1/3	7-1/2	
	3	1	2	1	12-1/6	18-1/9	18	12	2-6/7	5	5-1/3	7	OE
	3	2	2	2	15-1/2	18-1/2	18-1/7	12	2-1/4	5-2/5	4-5/7	7-1/2	
	3	2	2	2	11-2/5	18-1/2	18-1/7	12	2-1/4	4-1/2	4-5/7	6-3/7	OE
	4	1	2	1	16	17-1/3	18	21-5/6	2-2/3	5-3/5	6	7-6/7	
	4	1	2	1	11-7/8	17-1/3	18	12	2-2/3	4-3/4	6	6-5/6	OE
10	2	—	2	—	—	22-2/5	15-6/7	—	4-1/5	—	7-1/5	—	
	3	—	4	—	—	19-1/6	19-1/8	—	3-1/2	—	6	—	
	4	—	4	—	—	18-1/9	19-1/8	—	2-6/7	—	6	—	
	3	1	4	1	16-2/5	18-1/9	18-1/9	21-6/7	2-6/7	4-1/2	5-1/3	7-1/2	
	3	1	4	1	12-1/6	18-1/9	18	12	2-6/7	5	5-1/3	7	OE
	3	2	4	2	15-1/2	18-1/2	18-1/7	22-3/7	2-1/4	5-2/5	4-5/7	7-1/2	
	3	2	4	2	11-2/5	18-1/2	18-1/7	12	2-1/4	4-1/2	4-5/7	6-3/7	OE
	4	1	4	1	16	17-3/8	19-1/9	21-5/6	2-2/3	5-3/5	5-1/2	7-6/7	
	4	1	4	1	11-7/8	17-3/8	19-1/9	12	2-2/3	4-3/4	5-1/2	6-5/6	OE
12	2	—	2	—	—	22-2/5	15-6/7	—	4-1/5	—	7-1/5	—	
	3	—	4	—	—	19-1/6	19-1/8	—	3-1/2	—	6	—	
	4	—	4	—	—	18-1/9	19-1/8	—	2-6/7	—	6	—	
	3	1	4	1	16-2/5	18-1/9	18	21-6/7	2-6/7	4-1/2	5-1/3	7-1/2	
	3	1	4	1	12-1/6	18-1/9	18	12	2-6/7	5	5-1/3	7	OE
	3	2	4	2	15-1/2	18-1/2	18-1/7	22-3/7	2-1/4	5-2/5	4-5/7	7-1/2	
	3	2	4	2	11-2/5	18-1/2	18-1/7	12	2-1/4	4-1/2	4-5/7	6-3/7	OE
	4	1	4	1	16	17-3/8	19-1/9	21-5/6	2-2/3	5-3/5	5-1/2	7-6/7	
	4	1	4	1	11-7/8	17-3/8	19-1/9	12	2-2/3	4-3/4	5-1/2	6-5/6	OE

NOTE(S):

a. Piping connection dimensions are consistent for either right hand or left hand connections.
b. Horizontal dimensions measured from rear panel. Vertical dimensions measured from bottom panel.
c. Measurements do not apply to same side piping and controls. Special Feature Requests (SFRs) may change piping stubout locations. Contact Application Engineering.
d. OE designates opposite end connection.

Dimensions (cont)

42V*A Piping Connection Location - Hydronic Cooling and Heating Coils
(Right Hand Unit with Re-heat Coil Shown)



LEGEND

HR — Hot Water Return
HS — Hot Water Supply
CR — Cold Water Return
CS — Cold Water Supply
RH — Right Hand
LH — Left Hand

42VCA/VEA Hydronic Cooling and Heating Coil Dimensions[a,b,c]

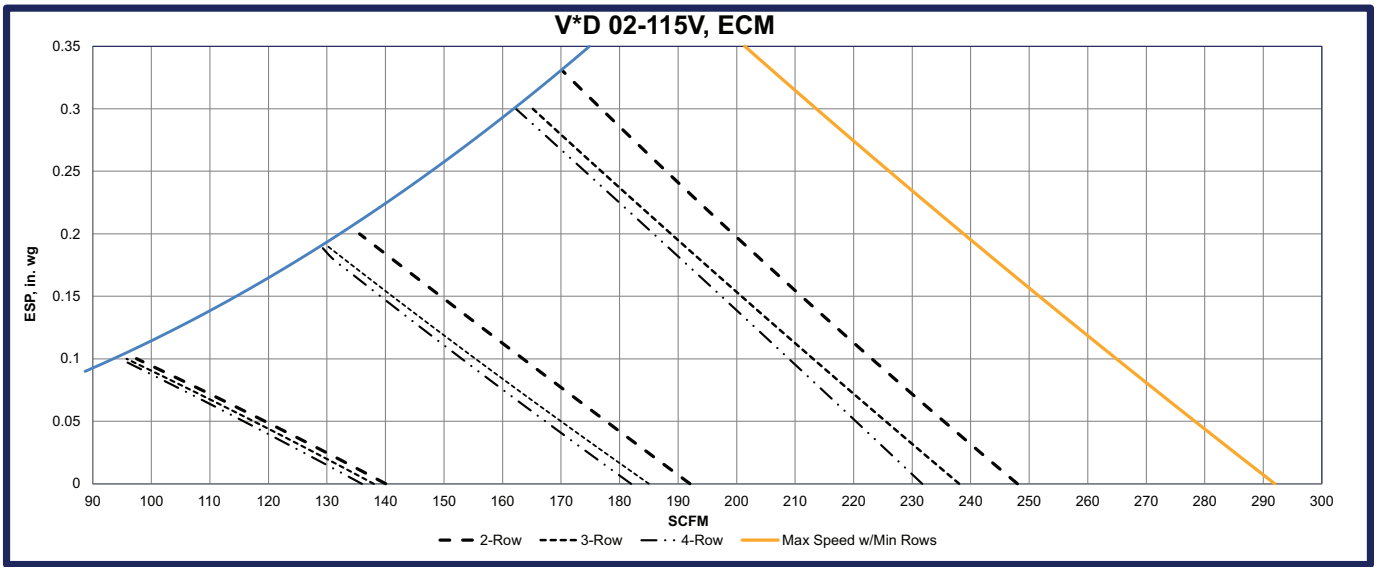
UNIT SIZE	COIL ROWS		CIRCUITS		VCA, VEA (1-3 ROWS)								NOTES[d]
					CS		CR		HS		HR		
	COOL	HEAT	COOL	HEAT	A	B	C	D	E	F	G	H	
VEA02	2	—	1	—	9-1/2	9-6/7	10-2/3	1-3/4	—	—	—	—	—
	3	—	1	—	10-3/5	9-4/5	10-8/9	4/5	—	—	—	—	—
	2	1	1	1	9-2/5	10-1/8	10-8/9	4/5	10-3/5	9-4/5	13	1-2/5	
	2	1	1	1	9-2/5	10-1/8	10-8/9	4/5	10-8/9	4/5	13	1-2/5	OE
VEA03	2	—	1	—	9-1/2	9-7/9	10-2/3	1-2/3	—	—	—	—	—
	3	—	1	—	10-3/5	9-4/5	10-8/9	4/5	—	—	—	—	—
	2	1	1	1	9-2/5	10-1/8	10-8/9	4/5	10-3/5	9-4/5	13	1-2/5	
	2	1	1	1	9-2/5	10-1/8	10-8/9	4/5	10-8/9	4/5	13	1-2/5	OE
VEA04	2	—	1	—	9-1/2	9-7/9	10-2/3	1-2/3	—	—	—	—	—
	3	—	2	—	10	10	11-1/3	1-1/4	—	—	—	—	—
	2	1	1	1	9-2/5	10-1/8	10-8/9	4/5	10-3/5	9-4/5	13	1-2/5	
	2	1	1	1	9-2/5	10-1/8	10-8/9	4/5	10-8/9	4/5	13	1-2/5	OE
VEA06	2	—	2	—	8-8/9	9-8/9	11-2/7	1-1/2	—	—	—	—	—
	3	—	2	—	10	10	11-1/3	1-1/4	—	—	—	—	—
	2	1	2	1	9	9-2/3	11-1/3	1-1/4	10-3/5	9-4/5	13	1-2/5	
	2	1	2	1	9	9-2/3	11-1/3	1-1/4	10-8/9	4/5	13	1-2/5	OE
VCA02	3	1	1	1	11	10-2/7	10-1/2	1-2/7	12-1/7	9-8/9	13 -5/6	1-2/7	—
VCA03	3	1	1	1	11	10-2/7	10-1/2	1-2/7	12-1/7	9-8/9	13- 5/6	1-2/7	—
	2	2	1	1	8-5/6	9-8/9	11-5/7	8/9	11	10-2/7	13 -5/6	1-2/7	—
VCA04	3	1	2	1	10-1/2	9-8/9	11	1	12-1/7	9-8/9	13 -5/6	1-2/7	—
	2	2	1	1	10	9-1/2	10-1/2	1-2/7	12-1/7	9-8/9	12- 5/8	1-5/7	—
VCA06	3	1	2	1	10-1/2	9-8/9	11	1	12-1/7	9-8/9	13 -5/6	1-2/7	—
	2	2	2	2	9-3/7	9-2/3	11	1	11-5/9	10	13 -2/9	1-1/2	—

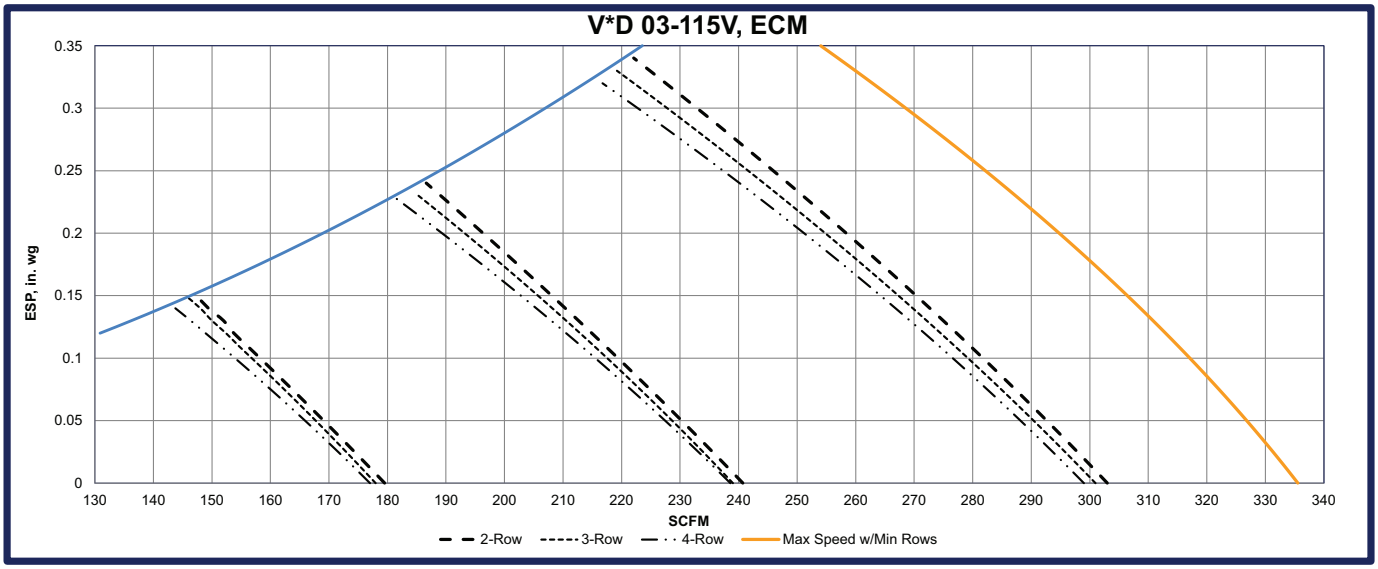
NOTE(S):

a. Piping connection dimensions are consistent for either right hand or left hand connections.
b. Horizontal dimensions measured from rear panel. Vertical dimensions measured from bottom panel.
c. Measurements do not apply to same side piping and controls. Special Feature Requests (SFRs) may change piping stubout locations. Contact Application Engineering.
d. OE designates opposite end connection.

Performance data

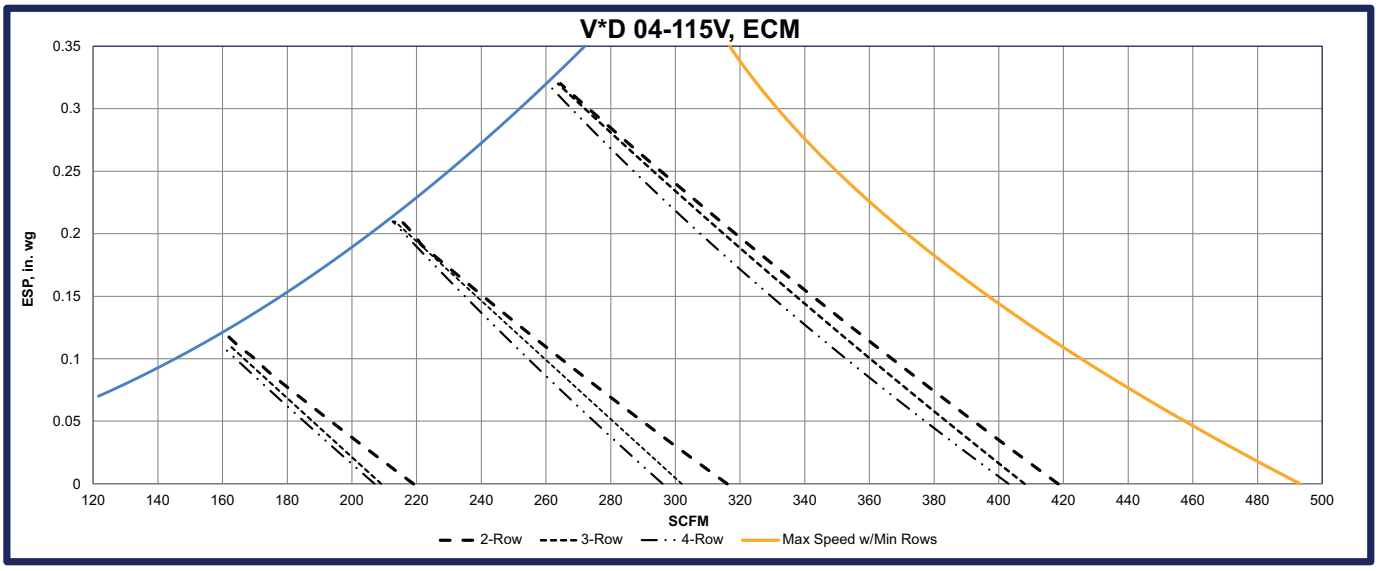
ECM Fan Curves — 42V*D Series

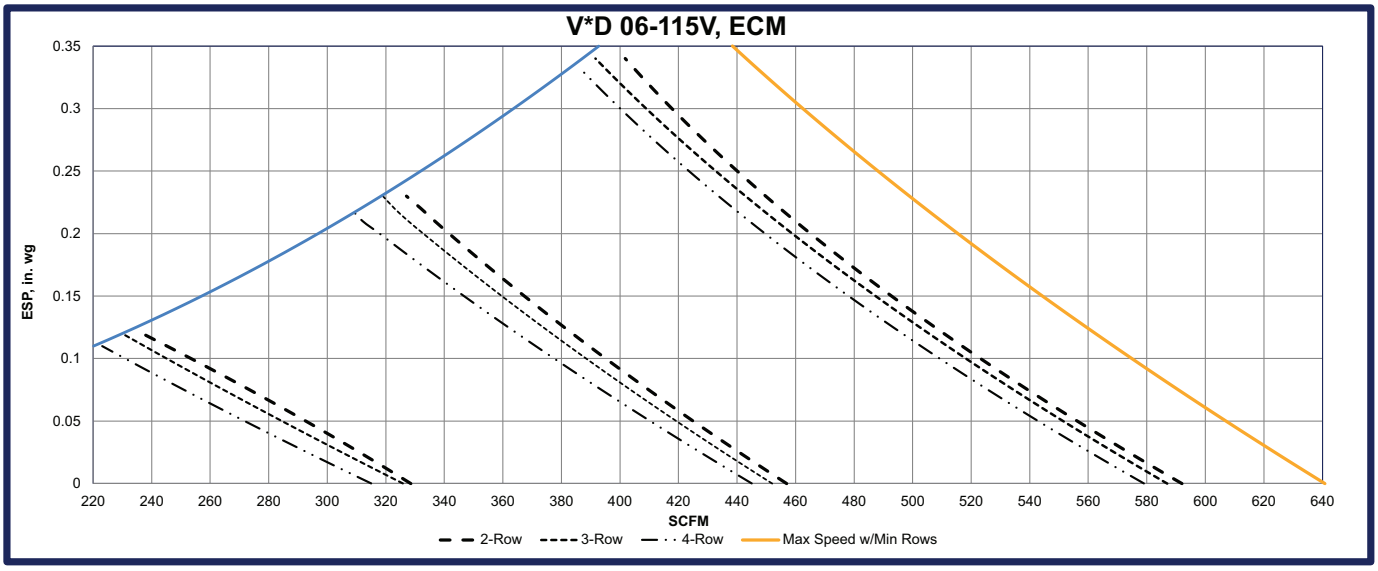




Performance data (cont)

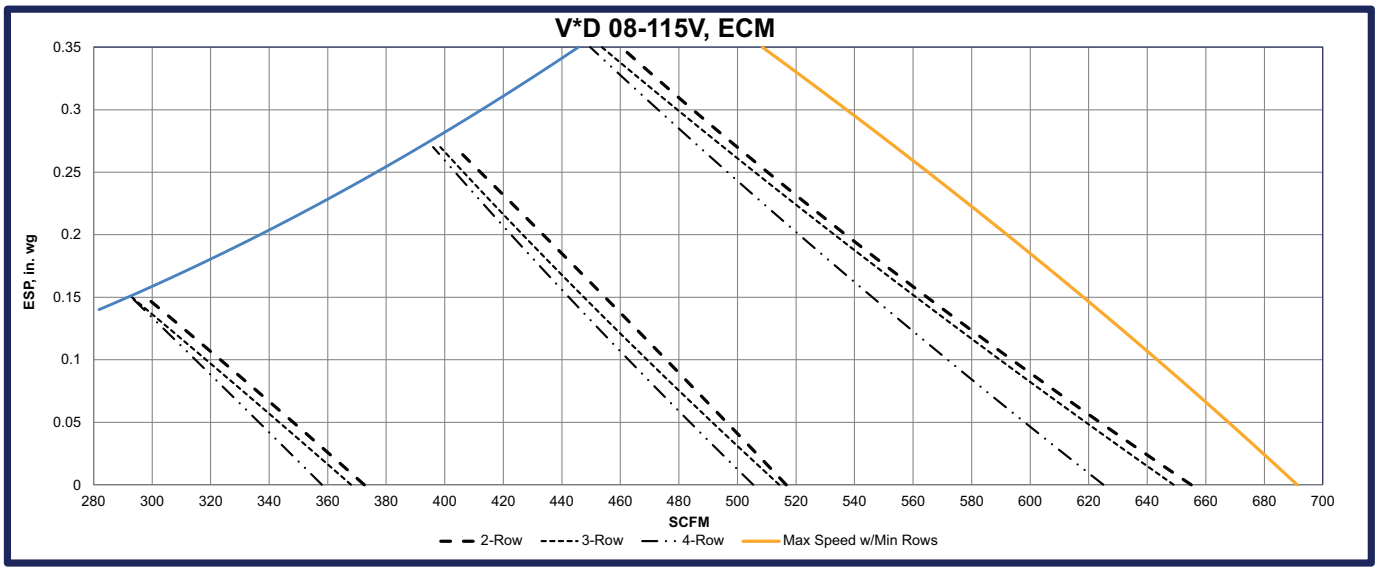
ECM Fan Curves — 42V*D Series (cont)

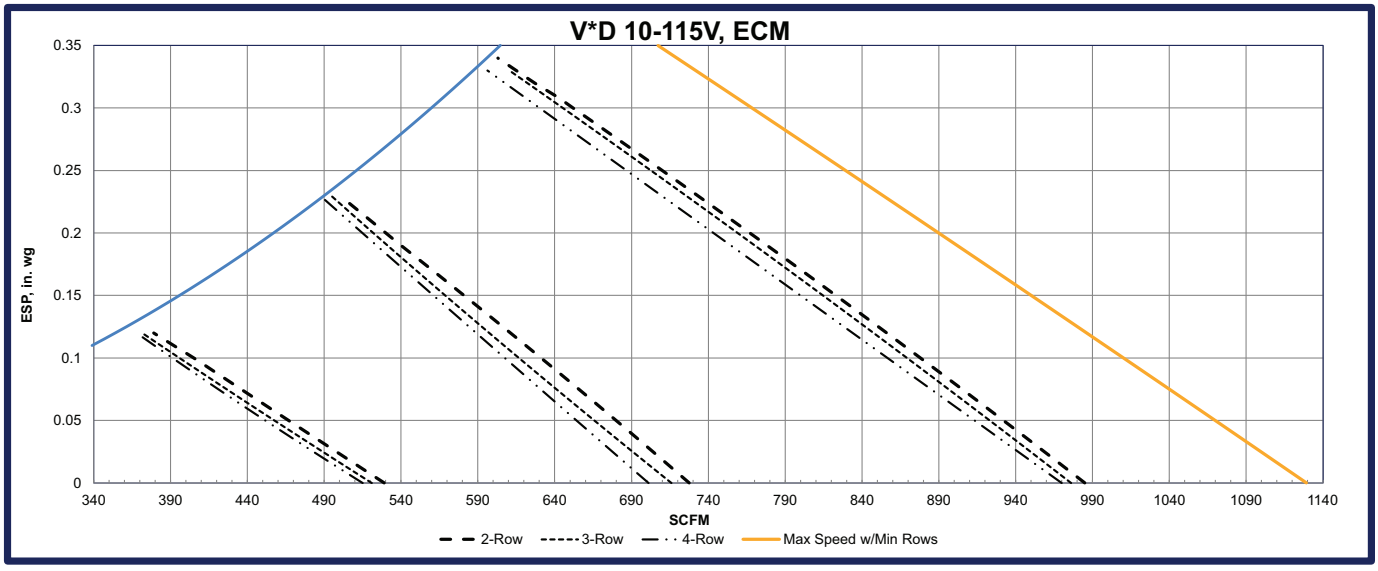




Performance data (cont)

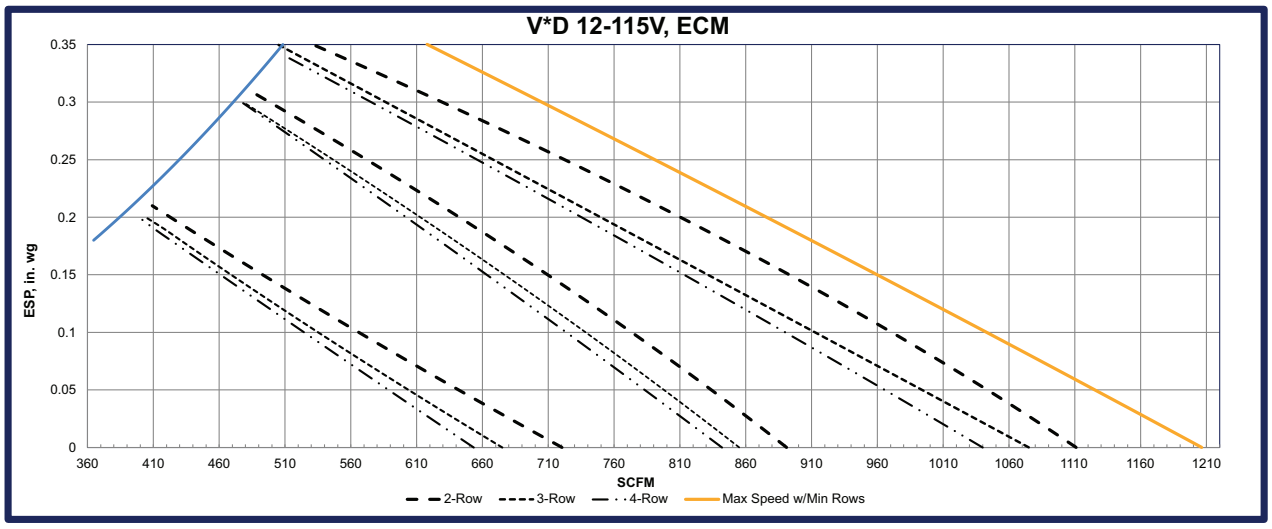
ECM Fan Curves — 42V*D Series (cont)





Performance data (cont)

ECM Fan Curves — 42V*D Series (cont)



Performance data (cont)

Air Delivery (60 Hz)[a,b,c]

MODEL	COIL	UNIT SIZE	cfm at 0.0 ESP FOR FAN SPEED			HIGH SPEED cfm at ESP INDICATED			
			Low	Med	High	0.05	0.10	0.15	0.20
VCA/VEA	2-Row	02	125	170	250	225	190	150	120
		03	195	285	370	345	305	275	235
		04	240	350	480	440	400	360	320
		06	395	575	750	700	660	660	560
	3-Row	02	115	155	220	210	180	145	115
		03	185	265	345	315	285	255	230
		04	230	335	460	420	385	345	310
		06	355	510	670	625	580	540	495

NOTE(S):

a. Tabled values are standard cfm at sea level, 70°F with dry coil.
b. Factory-installed throwaway air filter and supply air grille (where applicable) static pressure losses are included in all fan performances for all sizes.
c. Consult factory for 50 Hz applications.

42VAD/VBD/VFD Sound Power Data[a,b,c]

UNIT SIZE	FAN SPEED	SOUND POWER LEVEL							A-wgt (dBA)
		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
02	H	43.0	43.1	36.1	31.0	31.9	25.1	29.7	44.7
	M	43.7	36.6	25.4	22.6	27.0	24.5	29.8	40.0
	L	42.7	29.3	22.2	20.8	23.2	24.1	29.9	39.7
03	H	47.4	46.3	42.8	38.0	32.9	27.0	31.8	49.1
	M	40.9	36.9	32.3	25.6	27.0	25.3	31.7	42.2
	L	40.2	30.1	23.9	23	21.3	25.1	31.7	40.3
04	H	48.1	45.3	42.2	37.6	30.4	26.8	31.5	48.4
	M	42.5	38.4	32.4	28.2	23.6	26.6	32.0	42.6
	L	41.1	31.0	21.7	21.3	20.3	26.2	32.1	39.6
06	H	49.8	51.1	48.0	43.3	37.4	30.7	32.7	54.1
	M	43.9	43.6	38.9	34.3	30.3	26.0	32.4	46.9
	L	40.7	34.7	28.3	23.1	24.6	25.9	32.4	41.2
08	H	57.4	57.5	52.6	49.4	42.3	37.0	33.5	59.5
	M	48.0	47.4	46.1	39.2	32.7	27.0	31.9	50.2
	L	43.8	41.4	33.9	29.8	26.7	25.9	31.9	44.2
10	H	50.4	49.9	48.2	44.9	38.8	34.1	32.4	53.9
	M	44.4	42.2	40.2	35.7	31.1	32.2	32.3	47.1
	L	41.5	35.0	29.5	26.5	24.4	28.0	32.2	41.2
12	H	58.0	56.9	53.2	51.1	44.3	37.3	33.1	59.9
	M	49.4	49.7	45.9	42.3	37.0	28.4	31.9	52.1
	L	45.7	42.7	37.0	32.1	31.1	26.4	31.7	45.3

NOTE(S):

a. Unit Test Configuration: Bottom Return/Stamped Louver Top Supply, 3-Row 3/8 in. 12 FPI Coil, 115 VAC PSC Motor, 1/2 in. dual density fiberglass insulation.
b. Casing Radiated Testing per AHRI 350-2008: 4.2.2.3 Casing radiated with free inlet, Sound Rating of Ducted Air Moving and Conditioning Equipment.
c. Sound power data is expressed in decibels, dB RE: 1 x 10^{-12} w (picowatts).

42VCA/VEA Sound Power Data[a,b,c]

UNIT SIZE	RATING	FAN SPEED	cfm	SOUND POWER LEVEL, Lw (dB reference one picowatt)							A-wgt (dBA)
				125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
02	Casing Radiated	H	260	58	61	58	53	48	42	36	59
		M	165	51	52	49	42	37	28	31	50
		L	120	47	45	38	32	25	24	30	40
03	Casing Radiated	H	350	61	65	59	57	54	49	43	63
		M	260	54	57	53	50	46	39	33	55
		L	160	46	46	43	37	31	25	30	44
04	Casing Radiated	H	445	63	68	61	59	56	51	48	65
		M	310	55	56	53	49	45	39	35	55
		L	200	51	47	42	38	31	25	30	44
06	Casing Radiated	H	665	67	70	65	63	59	54	50	68
		M	555	64	65	61	58	54	49	43	63
		L	445	61	59	55	51	48	40	35	57

NOTE(S):

a. Unit Test Configuration: Bottom Return/Stamped Louver Top Supply, 3-Row 3/8 in. 12 FPI Coil, 115 VAC PSC Motor, 1/2 in. dual density fiberglass insulation.
b. Casing Radiated Testing per AHRI 350-2008: 4.2.2.3 Casing radiated with free inlet, Sound Rating of Ducted Air Moving and Conditioning Equipment.
c. Sound power data is expressed in decibels, dB RE: 1 x 10^{-12} w (picowatts).

Performance data (cont)

42VGA Sound Power Data[a,b,c]

UNIT SIZE	RATING	FAN SPEED	cfm	SOUND POWER LEVEL, Lw (dB reference one picowatt)							A-wgt (dBA)
				125 Hz	250 Hz	500 Hz	1K Hz	2K Hz	4K Hz	8K Hz	
01	Casing Radiated	H	125	62	64	59	57	55	53	50	63
		M	105	58	60	56	54	51	49	44	59
		L	70	55	55	54	50	47	44	39	56
03	Casing Radiated	H	265	72	67	62	60	59	57	54	67
		M	230	64	60	57	55	53	51	46	61
		L	195	56	53	51	47	45	42	36	53

NOTE(S):

a. Unit Test Configuration: Stamped Louver Front Return/Front Supply, 2-Row, 10 FPI Coil, 115 VAC SP Motor.
b. Casing Radiated Testing per AHRI 350-2008: 4.2.2.3 Casing radiated with free inlet, Sound Rating of Ducted Air Moving and Conditioning Equipment.
c. Sound power data is expressed in decibels, dB RE: 1 x 10^{-12} w (picowatts).

Electrical data

42VAD/VBD/VFD — PSC Electrical Motor Data[a,b]

VOLTAGE	FAN SPEED	UNIT SIZE	02	03	04	06	08	10	12
		NOMINAL HP	1/30	1/30	1/12	1/6	1/6	(2) 1/12	(2) 1/6
115V 60 Hz 1-Phase	High	Amps	0.53	0.83	1.40	2.50	2.50	2.80	5.00
		Watts	85	81	139	178	183	265	364
	Medium	Amps	0.31	0.48	0.70	1.30	1.30	1.30	2.50
		Watts	59	59	78	134	141	175	282
	Low	Amps	0.27	0.33	0.47	0.57	0.61	0.40	1.25
		Watts	45	46	52	77	72	131	174
208V 60 Hz 1-Phase	High	Amps	0.48	0.48	0.69	1.00	1.30	1.38	2.60
		Watts	89	89	111	141	145	240	287
	Medium	Amps	0.29	0.29	0.40	0.59	0.69	0.80	1.15
		Watts	67	67	83	92	95	182	201
	Low	Amps	0.14	0.14	0.22	0.47	0.47	0.45	0.84
		Watts	43	44	47	52	51	115	127
230V 60 Hz 1-Phase	High	Amps	0.48	0.48	0.69	1.00	1.30	1.38	2.60
		Watts	102	104	127	149	159	269	316
	Medium	Amps	0.31	0.31	0.43	0.71	0.71	0.85	1.40
		Watts	77	78	96	102	108	212	226
	Low	Amps	0.15	0.15	0.24	0.50	0.50	0.50	1.00
		Watts	50	50	56	62	64	137	150
277V 60 Hz 1-Phase	High	Amps	0.35	0.35	0.69	0.91	0.91	1.38	1.82
		Watts	91	90	126	170	176	286	374
	Medium	Amps	0.26	0.26	0.44	0.57	0.58	0.82	1.10
		Watts	71	88	115	121	213	273	374
	Low	Amps	0.16	0.17	0.25	0.34	0.35	0.45	0.65
		Watts	41	42	58	96	100	153	232

NOTE(S):

a. Total unit motor Amps and Watts are shown.
b. Consult factory for 50 Hz applications.

42VAD/VBD/VFD — ECM Motor Data (Standard Performance)

VOLTAGE	UNIT SIZE	V**02	V**03	V**04	V**06	V**08	V**10	V**12
	NOMINAL HP	1/7	1/7	1/6	1/6	1/6	(2) 1/6	(2) 1/6
120V	Rated Motor FLA	2.3	2.3	2.4	2.4	2.4	2.4, 2.4	2.4, 2.4
	Max Program Current	1.2	1.4	1.5	2.2	2.4	2.0, 2.0	2.4, 2.4
208-240V	Rated Motor FLA	1.4	1.4	1.6	1.6	1.6	1.6, 1.6	1.6, 1.6
	Max Program Current	0.7	0.9	1.0	1.4	1.6	1.3, 1.3	1.6, 1.6
277V	Rated Motor FLA	1.2	1.2	1.3	1.3	1.3	1.3, 1.3	1.3, 1.3
	Max Program Current	0.6	0.7	0.8	1.2	1.3	1.1, 1.1	1.3, 1.3

Electrical data (cont)

PSC Motor Electrical Data — VCA/VEA[a]

VOLTAGE	FAN SPEED	UNIT SIZE	02	03	04	06
		NOMINAL HP	1/20	1/12	1/12	(2) 1/12
115V 60 Hz 1-Phase	High	Amps	0.60	1.60	1.60	3.20
		Watts	72	135	150	260
	Medium	Amps	0.30	0.60	0.60	1.20
		Watts	45	65	65	125
	Low	Amps	0.20	0.30	0.30	0.80
		Watts	25	40	40	85
208V 60 Hz 1-Phase	High	Amps	0.50	0.66	0.66	1.32
		Watts	56	109	116	232
	Low	Amps	0.20	0.30	0.30	0.50
		Watts	35	55	58	103
230V 60 Hz 1-Phase	High	Amps	0.50	0.66	0.66	1.32
		Watts	64	128	138	245
	Low	Amps	0.22	0.28	0.30	0.52
		Watts	42	65	67	120
277V 60 Hz 1-Phase	High	Amps	0.30	0.50	0.50	1.00
		Watts	85	135	140	260
	Medium	Amps	0.12	0.33	0.34	0.65
		Watts	45	85	88	155
	Low	Amps	0.07	0.22	0.22	0.40
		Watts	35	55	57	100
220V 50 Hz 1-Phase	High	Amps	0.37	0.39	0.39	0.78
		Watts	64	128	138	245
	Medium	Amps	0.12	0.33	0.34	0.65
		Watts	45	85	88	155
	Low	Amps	0.07	0.22	0.22	0.40
		Watts	35	55	57	100

NOTE(S):

a. Total unit motor Amps and Watts are shown.

PSC Motor Electrical Data — VGA[a]

VOLTAGE	FAN SPEED	UNIT SIZE	01	03
		NOMINAL HP	1/20	(2) 1/20
115V 60 Hz 1-Phase Shaded Pole	High	Amps	1.60	3.20
		Watts	135	270
	Medium	Amps	1.00	1.91
		Watts	83	167
	Low	Amps	0.80	1.54
		Watts	69	138

NOTE(S):

a. Total unit motor Amps and Watts are shown.

EC Motor Performance Data — V*A Standard Performance

VOLTAGE	UNIT SIZE	L**02	L**03	L**04	L**06
	NOMINAL HP	1/7			(2)1/7
120V	Rated Motor FLA	2.3			2.3, 2.3
	Max Program Current	1.0			1.3, 1.3
208-240V	Rated Motor FLA	1.4			1.4, 1.4
	Max Program Current	0.6			0.8, 0.8
277V	Rated Motor FLA	1.2			1.2, 1.2
	Max Program Current	0.5			0.7, 0.7

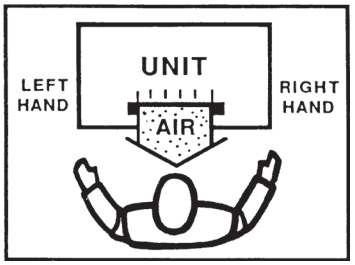
Application data

Basic definitions

Unit hand

When facing the supply air outlet from the front of the unit (air blowing in your face), your right hand will be the right hand side of the unit and your left hand the left hand side of the unit.

Unit Hand

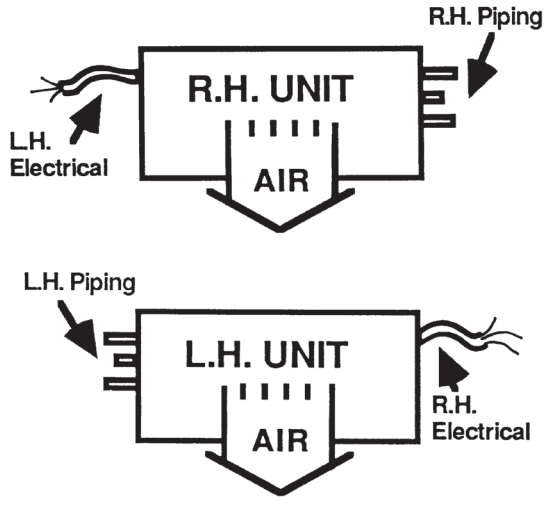


Same end connection (2-pipe or 4-pipe)

All piping connections (water and condensate drain) are on the same end (side) of the unit. Controls and electrical connection will be on the end (side) opposite the piping connection. The controls and electrical connections can be located on the same end as the cooling coil connections via ETO request.

Standard 2-pipe units will be the same end connection.

Same End Connection



NOTE: Piping determines the hand of the unit.

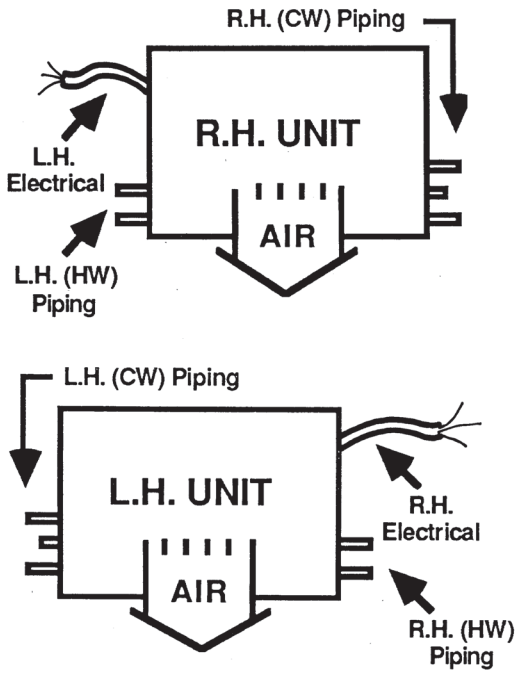
Opposite end connection (4-pipe option)

Chilled water (CW) piping determines the hand of the unit connections and electrical will be on the end (side) opposite the chilled water (CW) and drain connections.

4-pipe coil arrangement

For 4-pipe coil combination chilled water/hot water coils, the hot water coil is in the reheat position. The 42 series fan coil units are not recommended for dehumidification applications.

Opposite End Connection

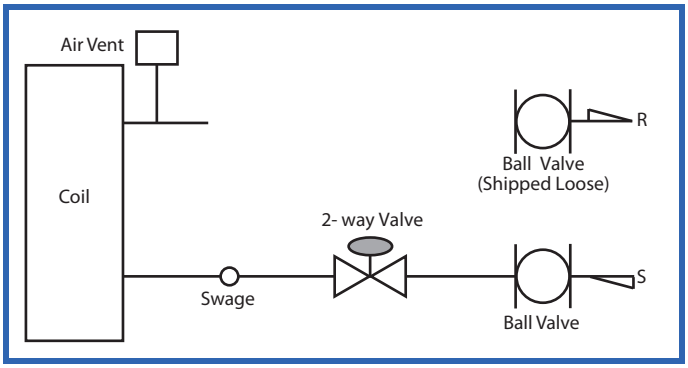


NOTE: Chilled water piping determines the hand of the unit.

Application data (cont)

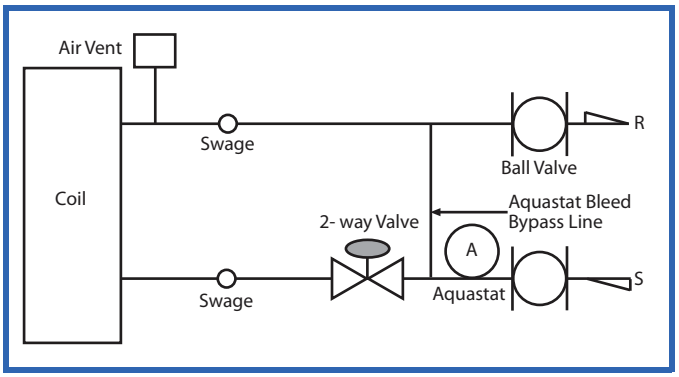
2-way motorized control valve

In a 2-way motorized, normally closed control valve package, the motor drives the valve open, and a spring returns the valve to a normally closed position. No water flows with the unit off. Normally open control valves are also available. The standard supply connection from the coil will accept a swaged copper fitting for field soldering. As an option, this connection may be factory furnished with a union. When a swage is necessary, it becomes part of the valve package. The isolation ball valve in the return piping is shipped loose for field installation.



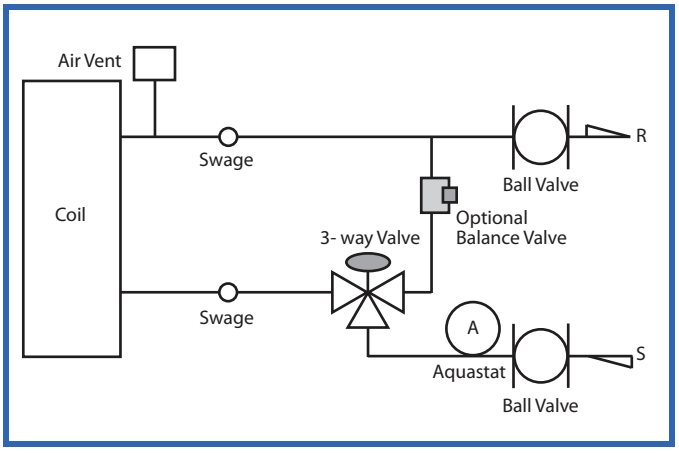
2-way motorized control valve with aquastat bypass line

In a 2-way motorized, normally closed control valve package, the motor drives the valve open, and a spring returns the valve to a normally closed position. No water flows through the coil with the unit off. The aquastat bypass line allows a small amount of water to flow from the supply to the return piping when the control valve is closed. The strap-on aquastat senses whether the flowing water is being chilled or heated and switches a contact closed to provide automatic summer/winter changeover (ACO) for the system. When a 2-pipe cooling/heating system with optional auxiliary electric heat is desired, additional components are required.



3-way motorized control valve

In a 3-way motorized control valve package, a diverting valve controls water flow to the coil. When the unit is off, water bypasses the coil and flows directly to the system return. A balancing valve may be specified in the bypass line to permit equal flow balancing. Alternately, the control valve can be piped normally open to the coil as an option.

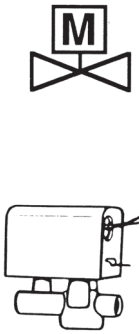
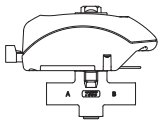
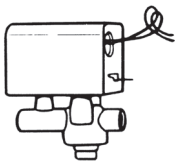


NOTES:

1. Please note that project specifications for system pressure, pressure drop limitations and flow rate should be checked prior to selecting specific components or the valve package size.
2. The supply and return piping connections of the factory-provided valve package are either swaged for field brazing (standard) or union fitted (optional) for field connection to the coil.
3. Factory-provided valve packages are assembled, brazed, wired electrically and dry-fit to the coil connections before shipping. Field brazing to the coil completes the installation. Some applications dictate shipping isolation valves loose.

Application data (cont)

Piping Components

SYMBOL/SKETCH	DESCRIPTION	C_V FACTOR		RATING[a]		STEAM USE
		1/2	3/4	PSI	F	
	**2-WAY MOTORIZED VALVE (25 PSI close off differential pressure):** Electric 2-position flow control valve (open/closed). Normally closed body with manual override lever. Installed in supply line to unit. Application — All standard control and valve packages are based upon normally closed valves (valve electrically powered open and closed by spring return when electric power removed). Manual override lever allows valve to be placed in the open position for secondary (unit) flushing, constant water flow prior to start-up, etc. Manual override is automatically disengaged when valve is electrically activated. **Consult factory for normally open valve applications.**	3.5	3.5	300	200	YES 15 PSI MAX.
 	**2-WAY MOTORIZED VALVE (150 PSI close off differential pressure):** Electric 2-position flow control valve (open/closed). Normally closed or normally open body with manual override lever. Installed in supply line to unit. Application — N.C. Valve: Electrically powered open and closed by spring return when electric power removed. Manual override knob allows valve to be placed in the open position for emergency operation, constant water flow prior to start-up, etc. Manual override is automatically disengaged when valve is electrically activated. N.O. Valve: Electrically powered closed and opened by spring return when electric power removed. Commonly applied to hot water valves only where hot water is required to run continuously through the coil to avoid freezing. Manual override knob allows valve to be placed in the closed position for emergency operation. Manual override is automatically disengaged when valve is electrically activated.	4.9	10.3	300	220	NO
 	**3-WAY MOTORIZED VALVE (25 PSI close off differential pressure):** Electric 2-position flow control valve (closed to coil/open to bypass or open to coil/closed to bypass). Normally closed with manual override lever. Installed in supply line to unit. Application — Same comments as 2-way motorized valve except with manual override lever engaged the valve is open to both ports and water flow will take the path of least resistance through the valve package (not necessarily 100% through the coil).	4.0	4.0	300	200	N/A
 	**3-WAY MOTORIZED VALVE (150 PSI close off differential pressure):** Electric 2-position flow control valve (closed to coil/open to bypass for normally closed operation or open to coil/closed to bypass for normally closed operation.) Normally closed or normally open with manual override lever. Installed in supply line to unit. Application — Same comments as 2-way motorized valve except with manual override lever engaged the valve is open to both ports and water flow will take the path of least resistance through the valve package (not necessarily 100% through the coil).	4.9	3.3	300	220	N/A

NOTE(S):

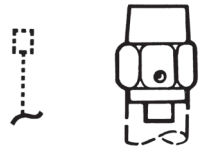
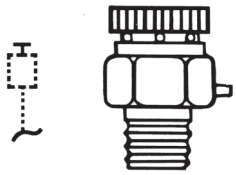
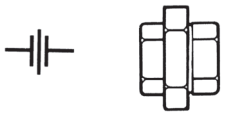
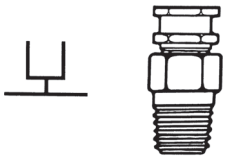
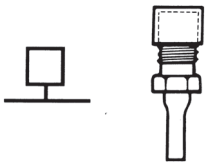
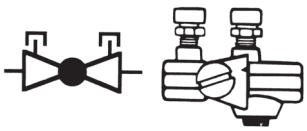
a. Check all system component pressure ratings (coils, values, pumps, etc.) with manufacturer and any applicable local or national piping codes prior to specifying system pressure rating.

LEGEND

Cv — Coefficient of Velocity
ETO — Engineering to Order
NC — Normally Closed
NO — Normally Open

Application data (cont)

Piping Components (cont)

SYMBOL/SKETCH	DESCRIPTION	C_V FACTOR		RATING[a]		STEAM USE
		1/2	3/4	PSI	F	
	**MANUAL AIR VENT:** Threaded brass needle valve with screwdriver slot for adjustment. Application — Body brazed into high point of heating and cooling coils for bleeding air from coil. Standard item on all hydronic coils (not used on steam or DX coils). Should not be used in lieu of main system air vents.	N/A	N/A	400	100	NO
	**AUTOMATIC AIR VENT:** Nickel plated brass valve, fiber-disc type, with positive shut-off ballcheck and quick vent feature via knurled vent screw. Application — Optional replacement for manual air vent. Automatically passes minute quantities of air through the fiber discs which expand upon contact with water, completely sealing the valve. As air accumulates, the fiber discs dry and shrink, repeating the cycle. Not recommended for removing large quantities of air encountered during initial start-up or subsequent draining and refilling. Should not be used in lieu of main system air vents.	N/A	N/A	125	240	NO
	**SWAGE:** Copper tube end expanded to accept a copper tube of the same size for factory or field brazing. Application — Used where possible for all tubing joints for best joint integrity.	N/A	N/A	300	200	YES
	**UNION:** Combination wrought copper/cast brass union assembly, solder by solder. Application — Used for quick connect (and disconnect) of valve package components to minimize field labor and facilitate servicing of unit.	N/A	N/A	300	200	YES
	**INSERTION TEST PORT:** Brass body valve for acceptance of test probe (up to 1/8 in. diameter). Application — Installed on one (or both) sides of the coil to allow for temperature or pressure sensing. Used for close tolerance water balancing and service analysis.	N/A	N/A	250	250	NO
	**PRESSURE TEST PORT:** Brass body 1/4 service access fitting with removable depressor type core. Application — Installed on both sides of the coil to allow for pressure sensing. Attach pressure gauges to facilitate close tolerance water balancing.	N/A	N/A	400	210	NO
	**CIRCUIT SETTER:** Variable water flow balancing valve with manual adjustment knob, pointer, percent-open scale, memory stop and integral pressure readout ports. Application — Used for close tolerance water flow balancing. Positive shut-off ball valve feature allows usage as combination balancing and shut-off valve.	2.12	3.9	300	250	NO

NOTE(S):

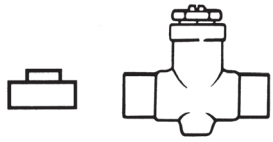
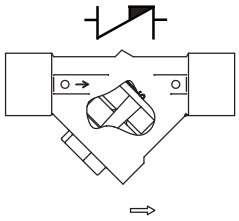
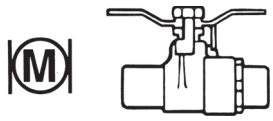
a. Check all system component pressure ratings (coils, values, pumps, etc.) with manufacturer and any applicable local or national piping codes prior to specifying system pressure rating.

LEGEND

Cv — Coefficient of Velocity
DX — Direct Expansion
ETO — Engineering to Order

Application data (cont)

Piping Components (cont)

SYMBOL/SKETCH	DESCRIPTION	C_V FACTOR		RATING[a]		STEAM USE
		1/2	3/4	PSI	F	
	**BALANCE VALVE:** Variable water flow manual balancing valve with screwdriver slot adjustment screw. Application — Often used in conjunction with test port fittings for water flow balancing. Balance by temperature differential or coil pressure drop (check specifications for service fittings required if balancing by pressure drop). May be used in 3-way valve bypass line to permit equal flow balancing.	3	8.9	150	200	NO
	**FIXED FLOW VALVE:** Flexible orifice type (non-adjustable). Application — Used for water flow balancing. Valve automatically adjusts the flow to within 10% of set point.	Valve orifice size determines C_V factor. The orifice of these fixed flow valves changes as flow is regulated. As the water pressure increases, the orifice size decreases, thereby automatically limiting the flow rate to the specified gpm (±10%).		600	220	NO
	**STRAINER:** Y-type body with 20 mesh stainless steel screen. Application — Used for removal of small particles from system water during normal system operation. Should not be used in lieu of main system strainers. Strainer screen may have to be removed during initial high pressure system flushing during start-up. Screen should be removed and cleaned per normal maintenance schedule (provisions for strainer blow-down not provided).	5.5 Clean	9.0 Clean	600	325	N/A
	**BALL VALVE WITH MEMORY STOP:** Manual balance and shut-off valve. Application — Used for unit isolation and water flow balancing. The adjustable memory stop feature allows return to the balance point after shut-off. Check specifications for service fittings required when used for water balancing.	Full Port	Full Port	600	325	N/A

NOTE(S):

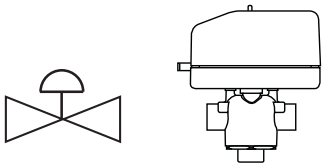
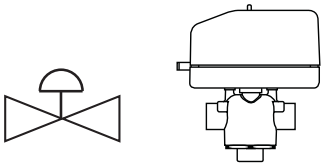
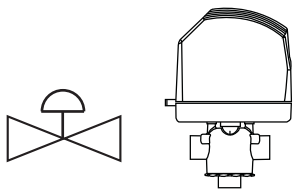
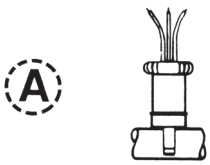
a. Check all system component pressure ratings (coils, values, pumps, etc.) with manufacturer and any applicable local or national piping codes prior to specifying system pressure rating.

LEGEND

CV — Coefficient of Velocity
DX — Direct Expansion
ETO — Engineering to Order

Application data (cont)

Piping Components (cont)

SYMBOL/SKETCH	DESCRIPTION	C_V FACTOR		RATING[a]		STEAM USE
		1/2	3/4	PSI	F	
	**MODULATING VALVE (Optional) (Non-Spring Return, Floating Point Actuator):** Modulating valves are designed to control the flow in the circuit by making incremental adjustments to the flow path within the valve. Application — To control fluid flow in fan coil units.	4.0		300	200	N/A
	**MODULATING VALVE (Optional) (Non-Spring Return, Proportional Type Actuator):** Modulating valves are designed to control the flow in the circuit by making incremental adjustments to the flow path within the valve. Application — To control fluid flow in fan coil units.	4.0		300	200	N/A
	**MODULATING VALVE (Requires ETO) (Spring Return):** Modulating valves are designed to control the flow in the circuit by making incremental adjustments to the flow path within the valve. Application — Same comments as non-spring return except when powered, the actuator moves to the desired position, at the same time tensing the spring return system. When power is removed for more than two minutes the spring returns the actuator to the normal position.	4.0		300	200	N/A
	**AQUASTAT:** Water temperature sensing electrical switch. (Line Voltage Controls) Application — Clips directly on nominal size 1/2 in. or 3/4 in. copper tubing for water temperature sensing. Must be correctly located for proper control operation.	N/A				
	**CHANGEOVER SENSOR:** Water temperature sensor thermistor. Application — Sensor shall clamp on the outside diameter of the pipe. Sensor plate shall bend to allow its radius to be adjusted to fit the pipe. Sensor shall be secured to the pipe with mounting clamp. Insulate the mounting location of sensor on the pipe.	N/A				

NOTE(S):

a. Check all system component pressure ratings (coils, values, pumps, etc.) with manufacturer and any applicable local or national piping codes prior to specifying system pressure rating.

LEGEND

Cv — Coefficient of Velocity
DX — Direct Expansion
ETO — Engineering to Order

Application data (cont)

Valve packages

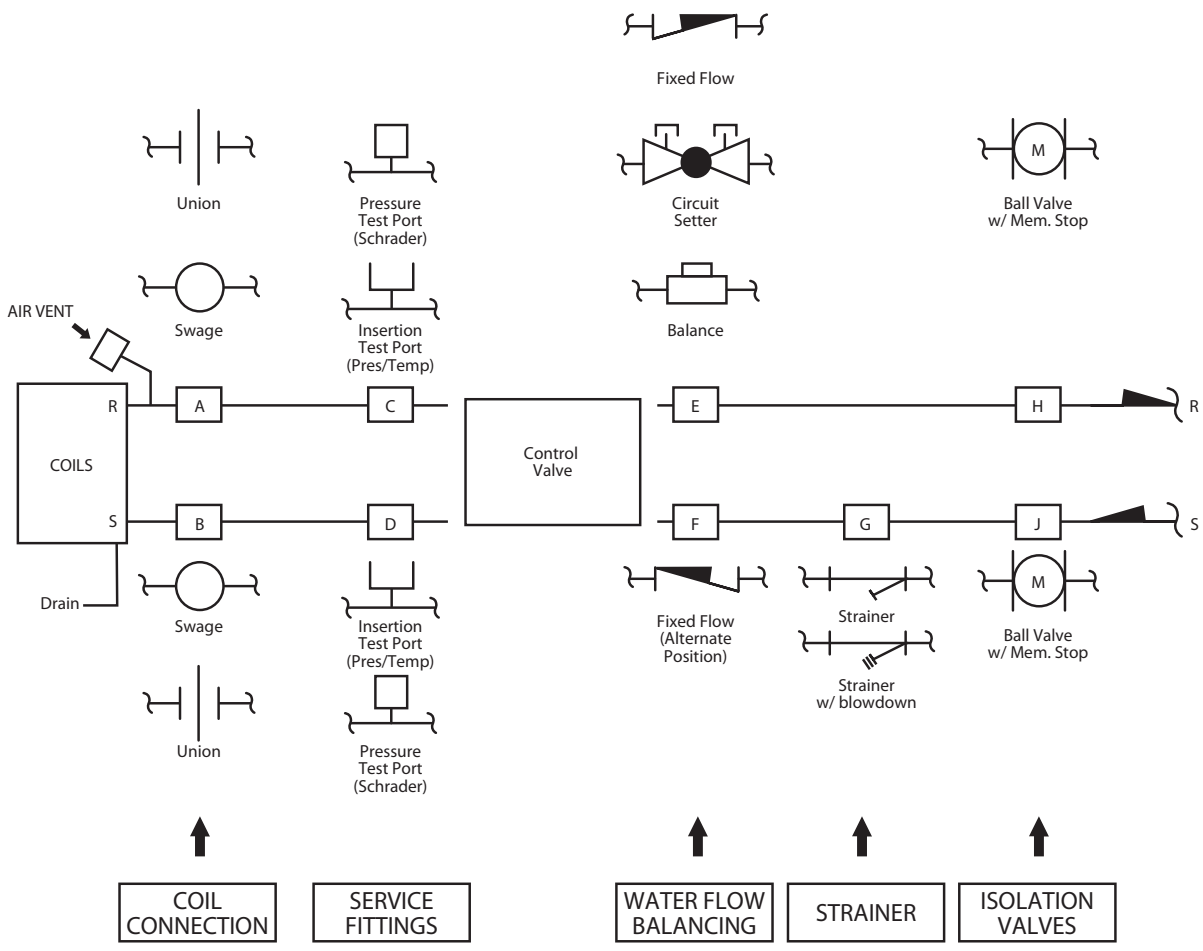
There are limitations on physical size of control valves, quantity and type of matching components, and required control interface. See Symbols and Placement of Valves diagram.

Consult factory before ordering any special valve package components that are not covered in this book.

Valve packages are shipped with the units or in unit cartons. Valve packages include belled ends for field soldering to coil connections.

All factory-furnished cooling valve packages are arranged to position as much of the package as possible over an auxiliary drain pan or drip lip. This helps minimize field piping insulation requirements.

Symbols and Placement of Valves



Coil Connections (Positions A & B) — Swage fitting for field braze is standard. Unions added by the factory for field connection is optional.

Service Fittings (Positions C & D) — Optional fittings for attaching pressure/temperature sensing devices to obtain pressure drop or temperature differential across coil. Used with ball valve or balance valve where extremely accurate water flow balancing is required.

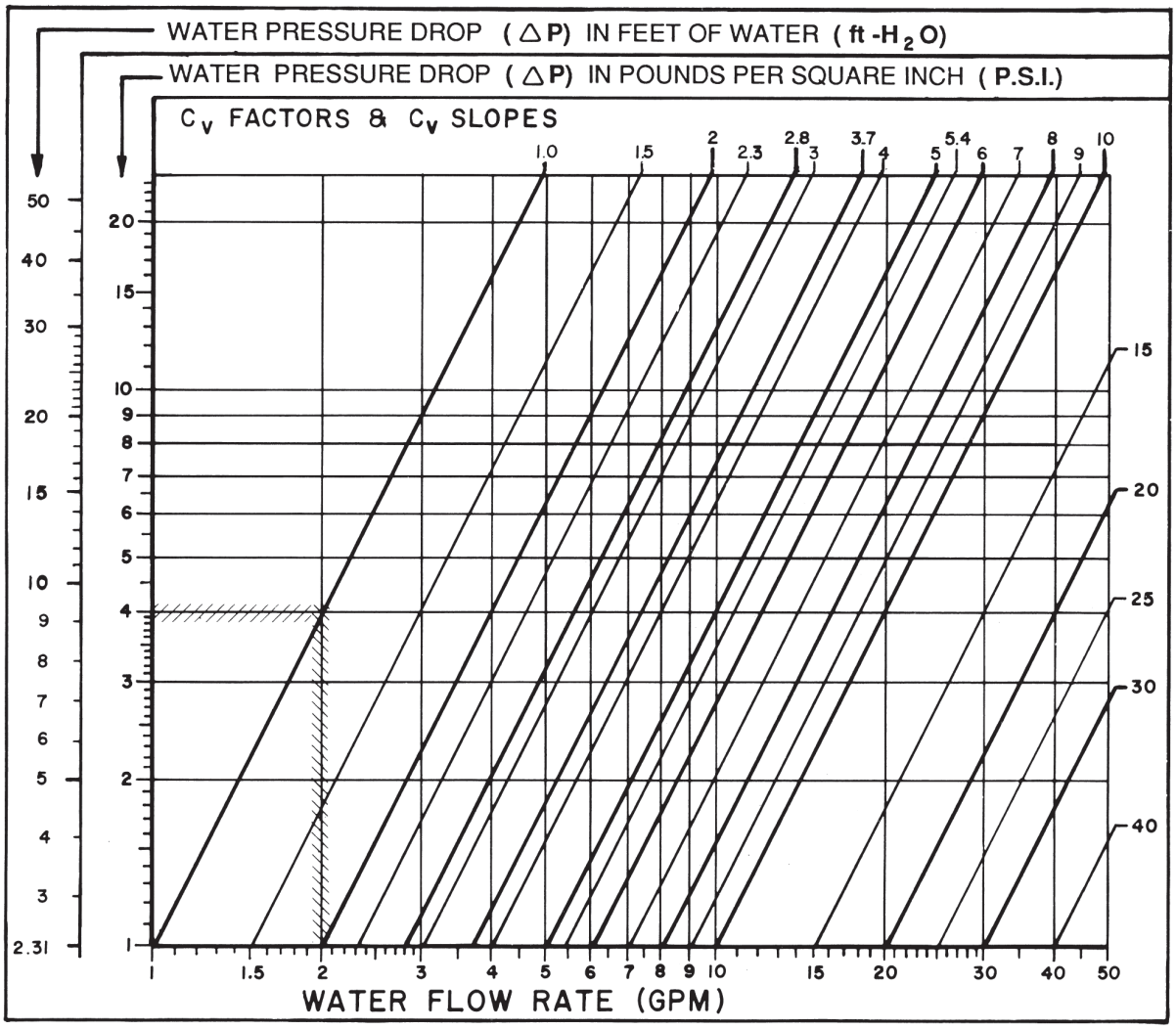
Water Flow Balancing (Positions E, F, & H) — Only one device per total valve package to be used for balancing water flow through the coil. When isolation valve (ball valve or ball valve with memory stop at position **H**) is used for water flow balancing, do not specify additional balancing device at position **E** or **F**. When balancing device is specified at position **E** or **F**, isolation valve does not require balancing feature at position **H** (with a 3-way motorized valve, a bypass balancing valve may be specified in the bypass line to permit equal flow balancing).

Strainer (Position G) — Does not include blow down fitting and should not be used in lieu of main piping strainers.

Isolation Valves (Positions H & J) — Normally requires one each on supply and return line (see exception under circuit setter). When position **H** is used for balancing (ball valve or ball valve with memory stop), check specifications for service valve requirements.

Application data (cont)

Cv Factor vs Water Pressure Drop



C_V FACTOR:

The flow rate in gallons per minute (gpm) through a piping component when the pressure drop (ΔP) in pounds per square inch (psi) across the component is 1.0 (psi).

Pressure drop (ft-H_2O) = 2.31 x psi (pressure drop)

GRAPH EXAMPLE:

ΔP for 2.0 gpm through a component with a C_V of 1.0 is 4.0 psi x 2.31 = 9.24 ft-H_2O

FORMULA EXAMPLE:

$$\Delta P \text{ (ft-}H_2O) = \frac{(gpm)^2}{(C_v)^2} \times 2.31 = \frac{(2.0)^2}{(1.0)^2} \times 2.31 = 9.24 \text{ ft-}H_2O$$

TOTAL PRESSURE DROP is the **Sum** of the pressure drop of all piping and components in the water flow path.

Application data (cont)

Use the Thermostat Control Package Application table and Thermostat Features table to make sure that all necessary components are provided for and that the components are compatible with the required control system.

NOTE: When thermostatic fan control is selected or when unit outside-air dampers are used, unit-mounted thermostats are not recommended as their use will result in poor room temperature sensing.

Thermostat Control Package Applications — V*D Series

UNIT TYPE	CONTROL OPTION	SYSTEM TYPE	CHANGEOVER TYPE	P	N	F	G
—	Manual Fan	Manual[a]	None	—	—	—	—
2-PIPE	Valve Cycle[b]	Heat Only	None	•	•	•	•
		Cool Only	None	•	•	•	•
		Heat/Cool	Manual	—	—	—	—
			Automatic	•	•	•	•
		Heat/Cool with Auxiliary Electric Heat	Manual	—	—	—	—
			Automatic	•	•	•	•
		Cool with Total Electric Heat	Manual	—	—	—	—
			Automatic	•	•	•	•
4-PIPE		Heat/Cool	Manual	—	—	—	—
			Automatic	•	•	•	•

NOTE(S):

a. Fan switch only; no thermostat.
b. See Legend for thermostat control valves programming.

Thermostat Features — V*D Series[a,b,c]

FEATURES	CONTROL TYPE[d]			
	P	N	F	G
24V, 115V, 208V, 240V, 277V	24V only	24V only	24V only	24V only
Programmable	•	—	•	—
Remote Wall Mounted	•	•	•	•
Manual Fan Switch Operation	•	•	•	•
Auto Fan Speed Control	•	•	•	•
Continuous 3-Speed Fan	•	•	•	•
Cycling Fan	•	•	•	•
O.A. Damper Signal	•	•	•	•
Remote Temperature Sensor	Opt	Opt	Opt	Opt
Digital Display and Buttons	•	•	•	•
Local Temperature Set-Back	•	•	•	•
Water Temperature Purge Cycle	•	•	•	•
Proportional Control Valves	—	—	•	•
Floating Control Valves	—	—	•	•
Pipe Sensor	•	•	•	•

NOTE(S):

a. All listed controls include fan switching.
b. All wall-mount control packages are shipped loose for field installation. (Boxes, tile rings, plaster rings, etc. are not provided.)
c. Aquastats are included in control packages, as required.
d. Control packages with valve cycle control are continuous fan operation only.

LEGEND

P — Basic 24 V Digital, 7-Day Programmable
N — Basic 24 V Digital, Non-Programmable
F — Premium 24V 7-Day Programmable/Proportional Fan/Valves Options
G — Premium 24 V Digital BACnet with Proportional Fan/Valves Option

Thermostat Control Package Applications — 42V*A Series

UNIT TYPE	CONTROL OPTION	SYSTEM TYPE	CHANGEOVER TYPE	P	N	F	G	A	B	C
—	Manual Fan	Manual1[a]	None	—	—	—	—	—	—	—
2-PIPE	Valve Cycle[b]	Heat Only	None	•	•	•	•	•	•	•
		Cool Only	None	•	•	•	•	•	•	•
		Heat/Cool	Manual	—	—	—	—	•	•	•
			Automatic	•	•	•	•	•	•	•
		Heat/Cool with Auxiliary Electric Heat	Manual	—	—	—	—	•	•	•
			Automatic	•	•	•	•	•	•	•
		Cool with Total Electric Heat	Manual	—	—	—	—	•	•	•
			Automatic	•	•	•	•	•	•	•
4-PIPE		Heat/Cool	Manual	—	—	—	—	•	•	•
			Automatic	•	•	•	•	•	•	•

NOTE(S):

a. Fan switch only; no thermostat.
b. See Legend for thermostat control valve programming.

Thermostat Features — 42V*A Series[a,b,c]

FEATURES	CONTROL TYPE[d]						
	P	N	F	G	A	B	C
24V, 115V, 208V, 240V, 277V	24V only	24V only	24V only	24V only	•	•	•
Programmable	•	—	•	—	—	—	—
Remote Wall Mounted	•	•	•	•	•	•	
Manual Fan Switch Operation	•	•	•	•	•	•	•
Auto Fan Speed Control	•	•	•	•	—	—	—
Continuous 3-Speed Fan	•	•	•	•	•	•	•
Cycling Fan	•	•	•	•	•	•	•
O.A Damper Signal	•	•	•	•	—	—	—
Remote Temperature Sensor	Opt	Opt	Opt	Opt	•	•	•
Digital Display and Buttons	•	•	•	•	—	—	—
Local Temperature Set-Back	•	•	•	•	—	—	—
Water Temperature Purge Cycle	•	•	•	•	—	—	—
Proportional Control Valves	—	—	•	•	—	—	—
Floating Control Valves	—	—	•	•	—	—	—
Pipe Sensor	•	•	•	•	—	—	—

NOTE(S):

a. All listed controls include fan switching.
b. All wall-mounted control packages are shipped loose for field installation. (Boxes, tile rings, plaster rings, etc. are not provided.)
c. Aquastats are included in control packages, as required.
d. Control packages with valve cycle are continuous fan operation only.

LEGEND

A — Basic Electronic Wall Series, 155, Vertical
B — Basic Electronic Wall Series, 155, Horizontal
C — Basic Series, 156, Unit Mounted
P — Basic 24V Digital, 7-Day Programmable
N — Basic 24V Digital, Non-Programmable
F — Premium 24V Digital, 7-Day Programmable with Proportional Fan/Valves Option
G — Premium 24V Digital BACnet with Proportional Fan/Valves Option

Controls (cont)

Use the Control Selection Guide table to make sure that all necessary components are provided for and that the components are compatible with the required control system.

NOTE: When thermostatic fan control is selected or when unit outside-air dampers are used, unit-mounted thermostats are not recommended as their use will result in poor room temperature sensing.

Control Selection Guide[a]

SYSTEM		DESCRIPTION	THERMOSTAT	CHANGEOVER ON SUPPLY PIPE	VALVE	FAN SWITCH	NOTES
2-PIPE HEATING-COOLING[b]	**Fan Control (2-pipe)**	Fan manually cycled	None	None	None	3-Speed switch	Not recommended for high humidity application
	2-Position Electric Valves (2-pipe)	Thermostat cycles valve open or closed.	Wall or unit mounted includes heat-cool switch.	None	Motorized (N.C.) 3-way or 2-way, no bypass required.	Thermostat has integral 3-speed switch	Valve packages with belled end(s) for field soldering to coil.
		Thermostat cycles valve open or closed. Mode automatically switched by changeover sensing water temp.	Wall or unit mounted. Heating/cooling Thermostat	Yes	Motorized (N.C.) 3-way or 2-way	Thermostat has integral 3-speed switch	
ELECTRIC HEAT	**2-Position Electric Valve with Auxiliary Electric Heat (2-pipe)**	Thermostat cycles valve open or closed. Thermostat activates electric heater. Heater cannot turn on if hot water is in coil.	Wall or unit mounted. Sequenced heating and cooling.	Yes. Two Required.	Motorized 3-way or 2-way	Thermostat has integral 3-speed switch	Valve packages with belled end(s) for field soldering to coil.
	2-Position Electric Valve with Total Electric Heat (2-pipe)	Thermostat cycles valve open or closed.Thermostat activates electric heater.	Wall or unit mounted. Sequenced heating and cooling.	None	Motorized (N.C.) 3-way or 2-way, no bypass required	Thermostat has integral 3-speed switch	Valve packages with belled end(s) for field soldering to coil.
4-PIPE	**2-Position Electric Valves (4-pipe)**	Thermostat cycles cooling valve open or closed. Thermostat cycles heating valve open or closed.	Wall or unit mounted. Sequenced heating and cooling.	None	Motorized (N.C.) 3-way or 2-way (requires 2 valves)	Thermostat has integral 3-speed switch	Valve packages with belled end(s) for field soldering to coil.

NOTE(S):

a. Unit-mounted thermostats are not recommended with either fan-cycle control or applications with outside-air dampers
b. If system is HEATING-ONLY or COOLING-ONLY, no changeover or bypass is required.

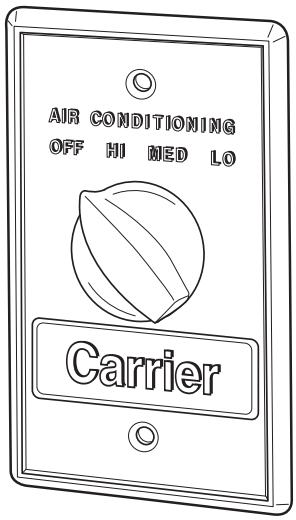
LEGEND

N.C. — Normally Closed

Controls (cont)

Thermostat controls — 42V*D Series

Wall-Mounted 3-Speed Switch



3-speed switch

This switch has 4 positions: OFF, HIGH, MEDIUM, and LOW. Switch has auxiliary contact that is energized when switch is in HIGH, MEDIUM, or LOW position. Available for wall or unit mounting.

24-v Debonair® Thermostat

24-v Debonair thermostat

Features large backlit display, power loss protected memory, dynamic fan speed control, 4-pipe, 2-pipe automatic changeover applications with adjustable dead band. Wall mounted, unit mounted, programmable and non-programmable models available. Available for wall or unit mounting.

24-v Proportional

24-v proportional thermostat

Features large LCD screen with backlight, 3-speed and analog fan speed control, 4-pipe, 2-pipe automatic changeover applications. Wall mounted and unit mounted Proportional and BACnet compatible models available. Available for wall or unit mounting.

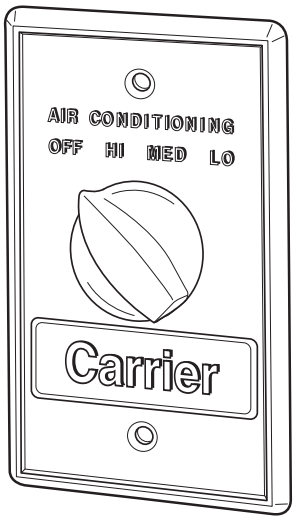
24-v controls by others

Unit supplied with factory-installed 24-v transformer, 3-speed relay board, and aquastat (as required) for use with field-installed low voltage controls.

Controls (cont)

Thermostat controls — 42V*A Series

3-Speed Switch



Line voltage controls by others

Unit supplied with wiring for valve cycle operation, including changeover sensors (as required) for use with field-installed line voltage thermostats.

3-speed switch

This switch has 4 positions: OFF, HIGH, MEDIUM, and LOW. Switch has auxiliary contact that is energized when switch is in HIGH, MEDIUM, or LOW position. Available for wall or unit mounting.

24-v controls by others

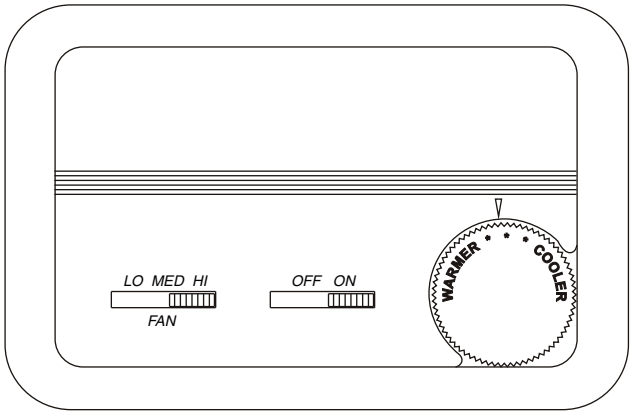
Unit supplied with factory-installed 24-v transformer, 3-speed relay board, and aquastat (as required) for use with field-installed low voltage controls.

24-v Debonair® Thermostat

24-v Debonair thermostat

Features large backlit display, power loss protected memory, dynamic fan speed control, 4-pipe, 2-pipe automatic changeover applications with adjustable dead band. Wall mounted, unit mounted, programmable and non-programmable models available. Basic 24V Digital 7-Day Programmable and Non-Programmable Series.

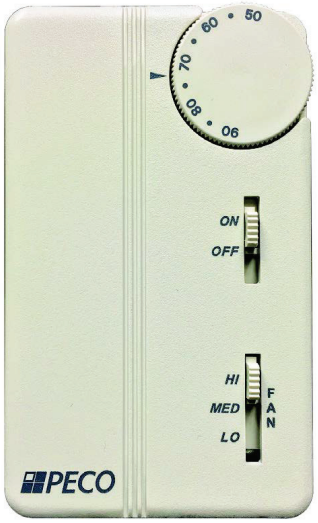
T156 Thermostat



Line voltage T156 thermostat

Includes thermostat for 2-pipe or 4-pipe system and manual 3-speed fan control. The special combination allows for the fan coil unit to have control for the valve cycle only. This thermostat is only available for unit-mounted line voltage applications.

Line Voltage T155 Thermostat



Line voltage T155 thermostat

Line voltage T155 thermostat features manual 3-speed fan control. Mount is a standard 2x4 in. box. It is compatible with 4-pipe, 2-pipe, and autochangeover applications.

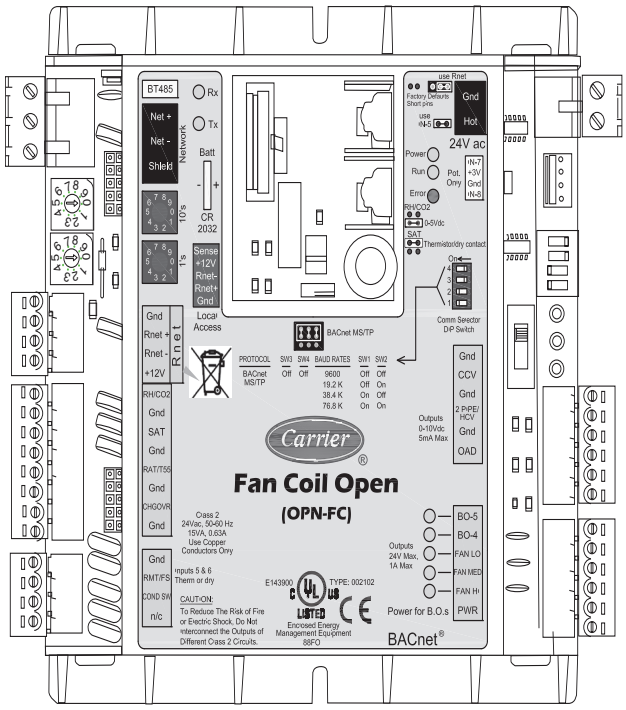
Controls (cont)

Integrated Direct Digital Controls (DDC)

Fan Coil Open controller

The factory-mounted controller continuously monitors and regulates the fan coil operation with reliability and precision. This advanced controller features a sophisticated, factory engineered control program that helps provide optimum performance and energy efficiency. The fan coil open controller also features plug-and-play connectively to Carrier's i-Vu® Open control system. For added flexibility, the fan coil controller is capable of stand alone operation, or can be integrated with any Building Automation System (BAS) utilizing BACnet protocol. Application features include built-in advance control routines for zone level humidity control, zone level demand ventilation (ASHRAE 62) and automatic fan speed control based on demand. System benefits include demand limiting for maximum energy saving, and compatibility with i-Vu control system tenant billing for tracking tenants after hours energy usage. Hardware features include onboard hardware clock, remote occupancy input, and support for space temperature thermistor sensor for stand alone operation.

Fan Coil Open Controller



Automatic changeover (Summer-Winter switch)

The automatic-changeover thermostat sensor is a 10,000-ohm thermistor (33ZCSENCHG) in a moisture-proof and dust-proof enclosure. Cable and temperature sensing element are hermetically sealed in a polypropylene enclosure with epoxy resin. Device clamps on coil supply pipe with end snap-on clip.

The set point temperatures are factory set. When water temperature rises above 80°F (approximately), the sensor switches to the winter cycle. When water temperature drops below approximately 70°F, the sensor switches to the summer cycle. Switch reset is automatic.

Controls (cont)

ECM motor control methods

There are three main control methods to control the speed of electronically commutated motor (ECM) for desirable airflow for a given application.

3-discrete speed input, potentiometer field speed adjustment

This method uses the ECM with potentiometer field adjustment. The relay board will have three main circuits for HI, MEDIUM, and LOW speed. Each of these speeds can be adjusted by potentiometer to any value in the motor's operating range. This will allow the customization of air flow on each speed of the fan coil unit to better suit any requirements.

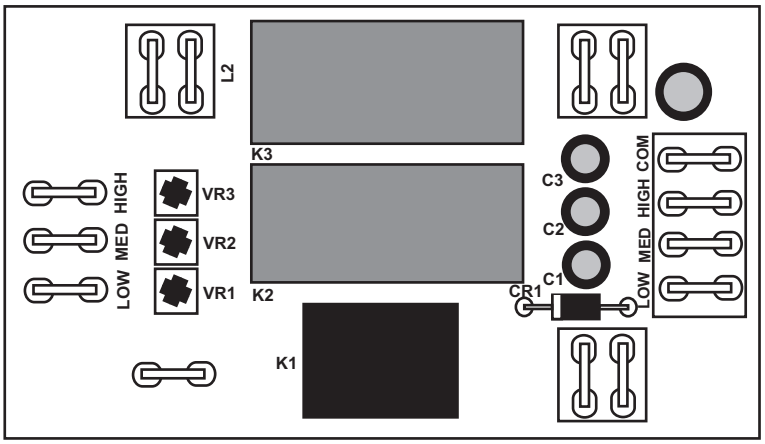
4-discrete speed input, potentiometer field speed adjustment, solid state (only with 24-v controls by other option)

This is the same as 3-discrete speed input but with additional fourth speed. All 4 speeds can be adjusted by potentiometer to any value in the motor's operating range.

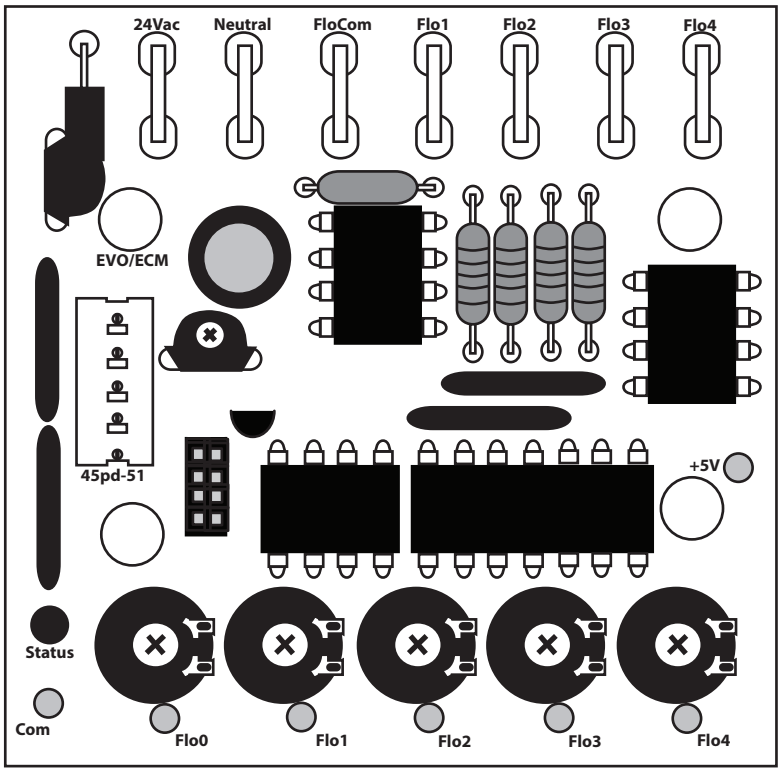
ECM variable speed (only with 24-v controls by other option)

This method requires 0 to 10-v signal for fan speed. It has no predetermined fan speeds and will ramp the motor fan speed according to the controller used on the fan coil unit. All ECM motor packages use a constant torque operating mode. An ETO request is required for pricing and availability of constant airflow operation.

3-Discrete Speed Input



4-DISCRETE SPEED INPUT



Fan Coil Unit — Vertical Classic Models

HVAC Guide Specifications — 42V*D

Size Range: **200 to 1200 Nominal cfm**

Carrier Model Numbers:

42VAD (Vertical Hideaway)

42VBD (Vertical Cabinet)

42VFD (Vertical Sloped Top Cabinet, 200 to 600 cfm)

Part 1 — General

1.01 SYSTEM DESCRIPTION

A. VAD Vertical Hideaway, VFD Vertical Sloped Top Cabinet, VBD Vertical Cabinet

B. 2-pipe cooling only, 2-pipe heating only, 2-pipe heat/cool, 2-pipe heat/cool auxiliary electric heat; 2-pipe cool total electric heat, 4-pipe heat/cool

C. Floor mount concealed, Floor mount exposed, Wall mounted concealed, wall mount exposed cabinet

1.02 QUALITY ASSURANCE

A. Fan coils shall be certified and listed in accordance with AHRI Standard 440-2019.

B. Each hydronic coil shall be factory tested for leakage at 350, 400, or 450 psig air pressure with coil submerged in water.

C. Base or "standard" units shall be ETL listed.

D. IEC certified as an ISO 9001:2015 quality management system and ISO14001:2015 environmental management system organization.

1.03 DELIVERY, STORAGE AND HANDLING

A. Unit shall be handled and stored in accordance with the manufacturer's instructions.

Part 2 — Products

2.01 CONFIGURATION:

A. General:

1. Factory assembled vertical fan coil units complete with coil, fan, motor, drain pan, and all required wiring, piping and controls.
2. Cabinet shall be made of heavy 18, 16, or 14 gauge galvanized steel.
3. The interior surfaces in the airstream shall be lined with 1/2 in. thick standard fiberglass, 1/2 in. thick Premium IAQ fiberglass, 1/2 in. foil faced, 1/2 in. closed cell insulation. Insulation and adhesive shall meet NFPA-90A requirements for flame spread and smoke generation.
4. Adhesive shall be certified according to the GREENGUARD Indoor Air Quality (IAQ) Certification for Low Emitting Products. Reference Standard: GGPS.001 GREENGUARD IAQ Standard for Building Materials, Finishes, and Furnishings. Reference Standard[1]: GGPS.002 GREENGUARD Children & Schools Standard.
5. Units shall have a decoupled interior drain pan and fan deck. The fan deck shall be constructed of 18-gauge galvanized steel extending the entire width of the coil.
6. Painted galvanized, interior drain pans shall be externally coated. Stainless steel pans shall be externally coated with 2-part closed cell foam insulation.
7. Units shall have non-woven synthetic throwaway, framed permanent washable non-metallic, pleated MERV 8 filter.
8. Units shall be supplied with no 1 in. or 2.5 in. leveling legs.

B. VAD Floor Hideaway Units:

1. Units shall be supplied with a 1 in. duct collar for supply duct connection.
2. Units shall be configured for top supply or front supply as indicated on the plans.
3. 18 ga wall panels, painted with specified color, shall be furnished for top discharge or front discharge recessed unit.
4. Wall panel shall be fastened with hex-style quarter-turn fasteners.

C. VBD Floor Exposed Units:

1. Top panel shall be supplied with a stamped, double deflection, aluminum finish; double deflection, steel construction, painted to match cabinet supply grille.
2. Front panel with supply grille shall be stamped and painted to match cabinet.
3. Cabinet shall be free standing with two access doors, one access door, or no access doors.
4. Cabinet shall be painted with an Arctic White, Polar White, Flat Black, Ermine Gray, Champagne Beige, or Toffee Brown. Color determined by Architect with powder-coat finish.
5. Front panel shall be fastened with hex-style, Torx[1] tamper proof, quarter-turn fasteners.
6. Top panel on the VBD unit shall be flat.
7. Floor mounted units shall be configured for top supply, front supply, and front return as indicated on the plans. Wall mounted units shall be configured for top supply, front supply, front return, or bottom return as indicated on the plans.
8. Cabinet shall have 1 in., 1.75 in., 2 in., 3 in., 4 in., 5 in., 6 in., 7 in., 8 in., 9 in., 10 in., 11 in., 12 in. 13 in., 14 in., 1/2 in. closed cell insulated rear cabinet extension.

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9. Cabinet shall have none, 1 in., 1.75 in., 2 in., 3 in., 4 in., 5 in., 6 in., 7 in., 8 in., 9 in., 10 in., 11 in., 12 in. left cabinet extension.
10. Cabinet shall have none, 1 in., 1.75 in., 2 in., 3 in., 4 in., 5 in., 6 in., 7 in., 8 in., 9 in., 10 in., 11 in., 12 in. right cabinet extension.
11. Cabinet shall have 1 in., 1.75 in., 2 in., 3 in., 4 in., 5 in., 6 in., cabinet height extension.

D. VFD Floor Exposed Units:

1. Top panel shall be supplied with a stamped double deflection, aluminum finish; double deflection, steel construction, painted to match cabinet, supply grille.
2. Front panel with supply grille shall be stamped, painted to match cabinet.
3. Cabinet shall be free standing with two access doors, one access door, or no access doors.
4. Cabinet shall be painted with an Arctic White, Polar White, Flat Black, Ermine Gray, Champagne Beige, or Toffee Brown. Color determined by Architect with powder-coat finish.
5. Front panel shall be fastened with quarter-turn fasteners.
6. Top panel on the VFD unit shall slope down from back to front at an angle of 25 degrees.
7. Floor mounted units shall be configured for top supply, front supply and front return as indicated on the plans. Wall mounted units shall be configured for top supply, front supply, front return, or bottom return as indicated on the plans.
8. Cabinet shall have 1 in., 1.75 in., 2 in., 3 in., 4 in., 5 in., 6 in., 7 in., 8 in., 9 in., 10 in., 11 in., 12 in. 13 in., 14 in., 1/2 in. closed cell insulated rear cabinet extension.
9. Cabinet shall have none, 1 in., 1.75 in., 2 in., 3 in., 4 in., 5 in., 6 in., 7 in., 8 in., 9 in., 10 in., 11 in., 12 in. left cabinet extension.
10. Cabinet shall have none, 1 in., 1.75 in., 2 in., 3 in., 4 in., 5 in., 6 in., 7 in., 8 in., 9 in., 1 in., 11 in., 12 in. right cabinet extension.
11. Cabinet shall have 1 in., 1.75 in., 2 in., 3 in., 4 in., 5 in., 6 in., cabinet height extension.

2.02 CERTIFICATION:

A. Safety Agency:

1. Units shall be listed by ETL indicating the units comply with the minimum requirements of the U.S. and Canadian national product safety standard, ANSI/UL Standard 1995, and with CAN/CSA C22.2 No. 236.

B. Capacities:

1. Fan coil capacities are tested and certified in accordance with AHRI Standard 440-2019.

2.03 MATERIALS

A. Fans:

1. Fans shall be direct-drive, double-width fan wheels with forward-curved blades.
2. Blower wheels shall be statically and dynamically balanced.
3. Scrolls and fan wheels shall be constructed of galvanized steel.
4. Shall be easily removable.

B. Coils:

1. All coils shall have 1/2 in. copper tubes, manual or automatic air vent(s), and aluminum fins, galvanized end sheets, aluminum fins, stainless steel end sheets, 12 fins per inch spacing. Coil fins shall be mechanically bonded to copper tubes.
2. Copper tubes must comply with ASTM B-75.
3. Fin thickness shall be 0.0045 in.
4. Tube thickness shall be 0.016 in. or 0.025 in.
5. Coil rows shall be as indicated on the drawings.

C. Controls and Safeties:

1. Controls Voltage:
   a. Unit shall be equipped with 24VAC control.
2. Control Package shall be equipped with specialty devices listed below:
   a. 24VAC condensate overflow switch.
   b. Thermostat
      1) 24VAC digital thermostat, Wi-Fi, 7-day programmable, BACnet[1] Thermostat control by others.
   c. 3-speed, 4-position fan switch on a wall plate for field installation.

D. Operating Characteristics:

1. A 2-pipe system shall be capable of providing heating or cooling as determined by the operating mode of the central water supply system. Pipe temperature sensor shall control the sequence of the thermostat, as indicated on the drawings. A 4-pipe system shall be capable of providing heating and cooling on demand.

E. Electrical Requirements:

1. Standard unit shall operate on 115, 208, 230, or 277 volts, single phase, 60/50 Hz electrical power.

F. Motor(s):

1. Motors shall be 3-speed, single phase, 60/50 Hz permanent split capacitor type for 115, 208, 230, 277, or 220 volts, permanently lubricated ball bearings.
2. Alternate: Motors shall be 3-speed, single phase, 60/50 Hz constant-torque ECM motors with means for [potentiometer field adjustment

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of each speed, 4 speed solid state potentiometer field adjustment, for 115, 208, 230, 277, or 220 volts, permanently lubricated ball bearings.

3. Motors shall be connected with quick connect electrical plugs.
4. Motors shall have internal thermal overload protection with automatic reset.

G. Valve(s):

1. For installation in a 2-pipe or 4-pipe system, unit shall be equipped with:
   a. Valve size shall be 1/2 in. or 3/4 in., as shown on the drawings. Heating valve size shall be 1/2 in.
   b. 2 or 4 manual ball valves for service.
   c. 1 or 2 motorized control valve, 300 psig service:
      1) Primary: 25 psid close-off paddle-type, 150 psid normally closed ball-type, 150 psid normally open ball-type, 35 psid floating, 35 psid proportional with quick-release actuator.
      2) Secondary: 25 psid close-off paddle-type, 150 psid normally closed ball-type, 150 psid normally open ball-type, 35 psid floating, 35 psid proportional with quick-release actuator.
2. Valve package shall be equipped with specialty devices as indicated on the drawings.
   a. Coil connections: unions at the coil, standard factory arrangement.
   b. Flow Controls:
      1) Primary: Return fixed flow control shall be specified on the equipment schedule. Circuit setter pressure ports, Circuit setter P-T ports, Not supplied.
      2) Secondary: Return fixed flow control shall be specified on the equipment schedule. Circuit setter pressure ports, Circuit setter P-T ports, Not supplied.
   c. Hoses: 24 in. braided stainless hoses manufactured of EPDM with integral internal Kevlar[1] fabric reinforcement. Hoses shall be rated to fire and smoke standard per ASTM E 84-00 and (NFPA 255, ANSI/UL 723 & UBC 8-1).Not supplied.
3. Service Fittings:
   a. Primary: Supply P-T port, Return P-T port, Supply and Return P-T port, Pressure port Not supplied.
   b. Secondary: Supply P-T port, Return P-T port, Supply and Return P-T port, Pressure port, Not supplied.
4. Strainer:
   a. Primary: Y-Strainer, Y-Strainer with blowdown. Not supplied.
   b. Secondary: Y-Strainer, Y-Strainer with blowdown. Not supplied.
5. Balance Valve:
   a. Primary: Return line only, 3-way bypass. Not supplied.
   b. Secondary: Return line only, 3-way bypass. Not supplied.

H. Options and Accessories:

1. Unit shall be equipped with nichrome wire strip electric heaters for total or auxiliary electric heat as specified on the equipment schedule.
   a. Heaters shall be protected by an automatic reset safety cutout switch and a fusible link.
   b. Heater capacity shall be as specified on the equipment schedule.
   c. Heaters shall be single phase 120, 208, 240, 277, 220 volts as specified on the equipment schedule.
   d. For total electric heat, unit controls shall include a sequenced heating and cooling thermostat in lieu of the heating/cooling thermostat and automatic changeover device. For auxiliary electric heat, unit controls shall include an aquastat to verify system mode.
   e. Factory-Installed Carrier Fan Coil Open Controller: BACnet based communicating controller with pre-programmed control algorithms; including factory-installed 24-v transformer, relay board, supply air sensor, return air sensor and changeover sensor (as required). Provides automatic fan speed control based on demand.
2. Service switch with lock-out and tag-out features shall be factory installed. Circuit shall be non-fused or fused. No Service Switch furnished.
3. Factory installed outside air damper shall be motorized, controlled manually. Outside air damper not supplied.
4. Outside air wall box shall be furnished for field installation. Outside air wall box not supplied.
5. Floor Wall Mount finishing trim kit. No Trim Kit supplied.
6. Finished back panel with hex-style Torx tamper proof, quarter-turn fasteners. No Finished back panel supplied.

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Fan Coil Unit — Vertical Lowboy Models

HVAC Guide Specifications — 42V*A

Size Range: **200 to 1200 Nominal cfm**

Carrier Model Numbers:

42VCA (Vertical Lowboy Hideaway, 200 to 600 cfm)

42VEA (Vertical Lowboy Cabinet)

42VGA (Furred-in, Wall, 150 and 300 cfm)

Part 1 — General

1.01 SYSTEM DESCRIPTION

A. Vertical Fan Coil Units

B. 2-pipe cooling only, 2-pipe heating only, 2-pipe heat/cool, 2-pipe heat/cool auxiliary electric heat, 2-pipe cool total electric heat, 4-pipe heat/cool.

C. Concealed Exposed cabinets that are floor mounted.

1.02 QUALITY ASSURANCE

A. Fan coils shall be Certified and Listed in accordance with AHRI Standard 440-2019.

B. Each hydronic coil shall be factory tested for leakage at 350, 400, or 450 psig air pressure with coil submerged in water.

C. Base or "standard" units shall be ETL listed.

D. IEC certified as an ISO 9001:2015 quality management system and ISO14001:2015 environmental management system organization.

1.03 DELIVERY, STORAGE AND HANDLING

A. Unit shall be handled and stored in accordance with the manufacturer's instructions.

Part 2 — Products

2.01 CONFIGURATION

A. General:

1. Factory assembled vertical fan coil units complete with coil, fan, motor, drain pan, and all required wiring, piping and controls.
2. Cabinet shall be made of heavy 18-gauge galvanized steel.
3. The interior surfaces shall be lined with 1/2 in. thick standard fiberglass, 1/2 in. foil faced, 1/4 in. closed cell insulation. Insulation and adhesive shall meet NFPA-90A requirements for flame spread and smoke generation.
4. Adhesive shall be certified according to the GREENGUARD Indoor Air Quality (IAQ) Certification for Low Emitting Products. Reference Standard: GGPS.001 GREENGUARD IAQ Standard for Building Materials, Finishes, and Furnishings. Reference Standard: GGPS.002 GREENGUARD Children & Schools[1] Standard.
5. Units shall have a combination condensate drain pan and fan deck constructed of 16-gauge galvanized, stainless steel extending the entire width of the coil.
6. Galvanized drain pans shall be internally coated with a baked-on powder coat rush inhibitor and externally insulated with a 2-part closed cell foam insulation. Stainless steel pans shall be externally coated with 2-part closed call foam insulation.
7. Units shall have non-woven synthetic throw-away, framed permanent washable non-metallic, pleated MERV 8 filter.
8. Units shall be supplied with no 1 in. or 2.5 in. leveling legs.

B. VCA Floor Hideaway Units:

1. Units shall be supplied with a duct collar for supply duct connection.

C. VEA Floor Exposed Units:

1. Top panel shall be supplied with a stamped, double deflection, aluminum finish; double deflection, steel construction, painted to match cabinet supply grille.
2. Front panel shall be fastened with tamper proof quarter-turn fasteners.
3. Cabinet shall be free standing with two access doors. No access doors.
4. Cabinet shall be painted with an Arctic White, Polar White, Flat Black, Ermine Gray, Champagne Beige, or Toffee Brown. Color determined by Architect, powder-coat finish.
5. Access door with tamper proof quarter turn fasteners.

2.02 CERTIFICATION

A. Safety:

1. Units shall be listed by ETL indicating the units comply with the minimum requirements of the U.S. and Canadian national product safety standard, ANSI/UL Standard 1995, and with CAN/CSA C22.2 No. 236.

B. Capacities:

1. Fan coil capacities are certified and listed in accordance with AHRI Standard 440-2019.

2.03 MATERIALS

A. Coils:

1. All coils shall have 1/2 in. copper tubes, manual or automatic air vent(s), and aluminum copper fins, 12 fins per inch spacing. Coil fins shall be mechanically bonded to copper tubes.
2. Copper tubes must comply with ASTM B-75.
3. Fin thickness shall be 0.0045 in.
4. Tube thickness shall be 0.016 in.
5. Coil rows shall be as indicated on the drawings.

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B. Valves:
   1. For installation in a 2-pipe or 4-pipe system, unit shall be equipped with:
      a. Valve size shall be 1/2 in. or 3/4 in., as shown on the drawings. Heating valve size shall be 1/2 in.
      b. 2 or 4 manual ball valves for service.
      c. 1 or 2 motorized control valve, 300 psig service (non-SureFlow[1] application):
         1) Primary: 25 psid close-off paddle-type, 150 psid normally closed ball-type, 150 psid normally open ball-type, 35 psid floating, 35 psid proportional with quick-release actuator.
         2) Secondary: 25 psid close-off paddle-type, 150 psid normally closed ball-type, 150 psid normally open ball-type, 35 psid floating, 35 psid proportional with quick-release actuator.
         3) 1 or 2 low watt SureFlow circulator:
            a) Circulator shall be rated at 200 psig with fluid temperatures between 40°F and 190°F.
            b) Circulator shall include spring-type check valve with minimum 10 in. wg resistance.
            c) Circulator shall be line voltage and factory wired.
            d) Shall include a support bracket for factory mounted circulators, condensate baffle and removable cartridge that includes all moving parts.
   2. Valve package shall be equipped with specialty devices as indicated on the drawings.
      a. Coil connections: unions at the coil, standard factory arrangement.
      b. Flow Controls (non-SureFlow only)
         1) Primary: Return fixed flow control shall be specified on the equipment schedule. Circuit setter pressure ports. Circuit setter P-T ports. Not supplied.
         2) Secondary: Return fixed flow control shall be specified on the equipment schedule. Circuit setter pressure ports. Circuit setter P-T ports. Not supplied.
      c. Hoses (non-SureFlow only): 24 in. braided stainless hoses manufactured of EPDM with integral internal Kevlar fabric reinforcement. Hoses shall be rated to fire and smoke standard per ASTM E 84-00 and (NFPA 255, ANSI/UL 723 & UBC 8-1). Not supplied.
      d. Service Fittings:
         1) Primary: Supply P-T port, Return P-T port, Supply and Return P-T port. Pressure port. Not supplied.
         2) Secondary: Supply P-T port, Return P-T port, Supply and Return P-T port, Pressure port. Not supplied.
      e. Strainer:
         1) Primary: Y- Strainer, Y-Strainer with blowdown. Not supplied.
         2) Secondary: Y- Strainer, Y-Strainer with blowdown. Not supplied.
      f. Balance Valve:
         1) Primary: Return line only, 3-way bypass. Not supplied.
         2) Secondary: Return line only, 3-way bypass. Not supplied.

C. Fans:
   1. Fans shall be direct-drive, double-width fan wheels with forward-curved blades.
   2. Blower wheels shall be statically and dynamically balanced.
   3. Scrolls and fan wheels shall be constructed of galvanized steel.
   4. Shall be easily removable.

D. Motors:
   1. Motors shall be 3-speed, single phase, 60 Hz permanent split capacitor type for 115, 208, 230, or 277 volts, permanently lubricated, with ball bearings.
   2. Alternate: Motors shall be 3-speed, single phase, 60 Hz constant-torque ECM motors with means for potentiometer field adjustment of each speed, variable 0-10V input, 4-speed solid state potentiometer field adjustment, for 115, 208, 230, or 277 volts, permanently lubricated, with ball bearings.
   3. Motors shall be connected with quick connect electrical plugs.
   4. Motors shall have internal thermal overload protection with automatic reset.

E. Controls:
   1. Control Voltage:
      a. Unit shall be equipped with 24VAC, line voltage control.
   2. Control Package shall be equipped with specialty devices listed below:
      a. 24VAC condensate overflow switch
      b. Thermostat
         1) 24VAC digital thermostat, Wi-Fi, 7-day programmable, BACnet Thermostat control by others.
         2) Line voltage thermostat

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c. 3-speed, 4-position fan switch on a wall plate for field installation.

F. Operating Characteristics:

1. A 2-pipe system shall be capable of providing heating or cooling as determined by the operating mode of the central water supply system. Pipe temperature sensor shall control the sequence of the thermostat, as indicated on the drawings. A 4-pipe system shall be capable of providing heating and cooling on demand.

G. Electrical Requirements:

1. Standard unit shall operate on 115, 208, 230, or 277 volts, single phase, 60 Hz electrical power, and all exposed wiring shall be in flexible conduit.

H. Options and Accessories:

1. Unit shall be equipped with sheath electric heaters for total or auxiliary electric heat as specified on the equipment schedule (VAC/VEA only).
   a. Heaters shall be protected by an automatic reset safety cutout switch and a fusible link.
   b. Heater capacity shall be as specified on the equipment schedule.
   c. Heaters shall be single phase 120, 208, 240, or 277 volts as specified on the equipment schedule
   d. For auxiliary electric heat, unit controls shall include an aquastat to verify system mode.
2. Service switch with lock-out and tag-out features shall be factory installed. Circuit shall be non-fused or fused. No Service Switch furnished.
3. Factory installed outside air damper shall be motorized, controlled manually. Outside air damper not supplied.

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