

CATALOG

VF and VL Fan-Coil Units Floor-Mounted, Vertical



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NOTES:

- A web-based Computer Selection Program, “Web-Select”, is available to facilitate the selection process. Contact your representative to obtain access to this powerful and time-saving program.
- Some drawings are not shown in this catalog.
- All data herein is subject to change without notice.
- Drawings not for installation purposes.
- ETL Report Number 3096645CRT-002.

FEATURES AND BENEFITS

DESIGN FLEXIBILITY

The ENVIRO-TEC vertical floor mounted fan coil units are designed to maximize flexibility of selection and installation.

The units are also designed to exceed the stringent quality standards of the institutional market, while remaining cost competitive in the light commercial segment of the market.

ENVIRO-TEC vertical fan coil units set the new standards for quality, flexibility, and competitive pricing.

DESIGN FLEXIBILITY

The extensive variety of standard options available on vertical floor fan coil units are where you find the versatility to fit any HVAC system designer's needs. Models VFE and VFS allow for additional height and width dimensions to meet architectural demand.

Options include: single wall stainless steel drain pan; MERV 7, MERV 8 and MERV 13 filters; and electric heat with single point power connection. All electric heat units are listed with ETL as an assembly and carry the cETL label.

All units comply with the latest edition of AHRI Standard 440 for testing and rating fan coil units, are certified, and display the AHRI symbol.

High efficiency motors, fan relays, disconnects and fusing mean easier coordination between mechanical and electrical trades.

Coil options allow for three or four row chilled water or DX cooling coils, and one or two row hot water or steam heating coils.

Silent solid state relays are available for fan and electric heat control in sound sensitive environments.

CONVENIENT INSTALLATION

All vertical floor fan coils are shipped completely assembled, reducing field installation time and labor. All units are thoroughly inspected and tested prior to shipment, eliminating potential problems at startup. Motor wiring is brought to a junction box on the inside of the unit end pocket, reducing electrical hook-up time.

Factory furnished valve packages assure proper fit, operation and performance.

For fast track jobs, the vertical floor fan coil is available on Quick Ship with 5, 10 or 15 day lead times.

OPTIMUM BUILDING PERFORMANCE

Concealed vertical floor fan coil chassis are built from galvanized steel. Exposed cabinet models are powder coated galvanized steel.

All units, with or without electric heat, are cETL listed and labeled. All wiring is in compliance with NEC, assuring safety and quality for the owner.

Floor mounted cabinet models feature finned tubular heating elements in the reheat position, protecting room occupants from electrical shock.

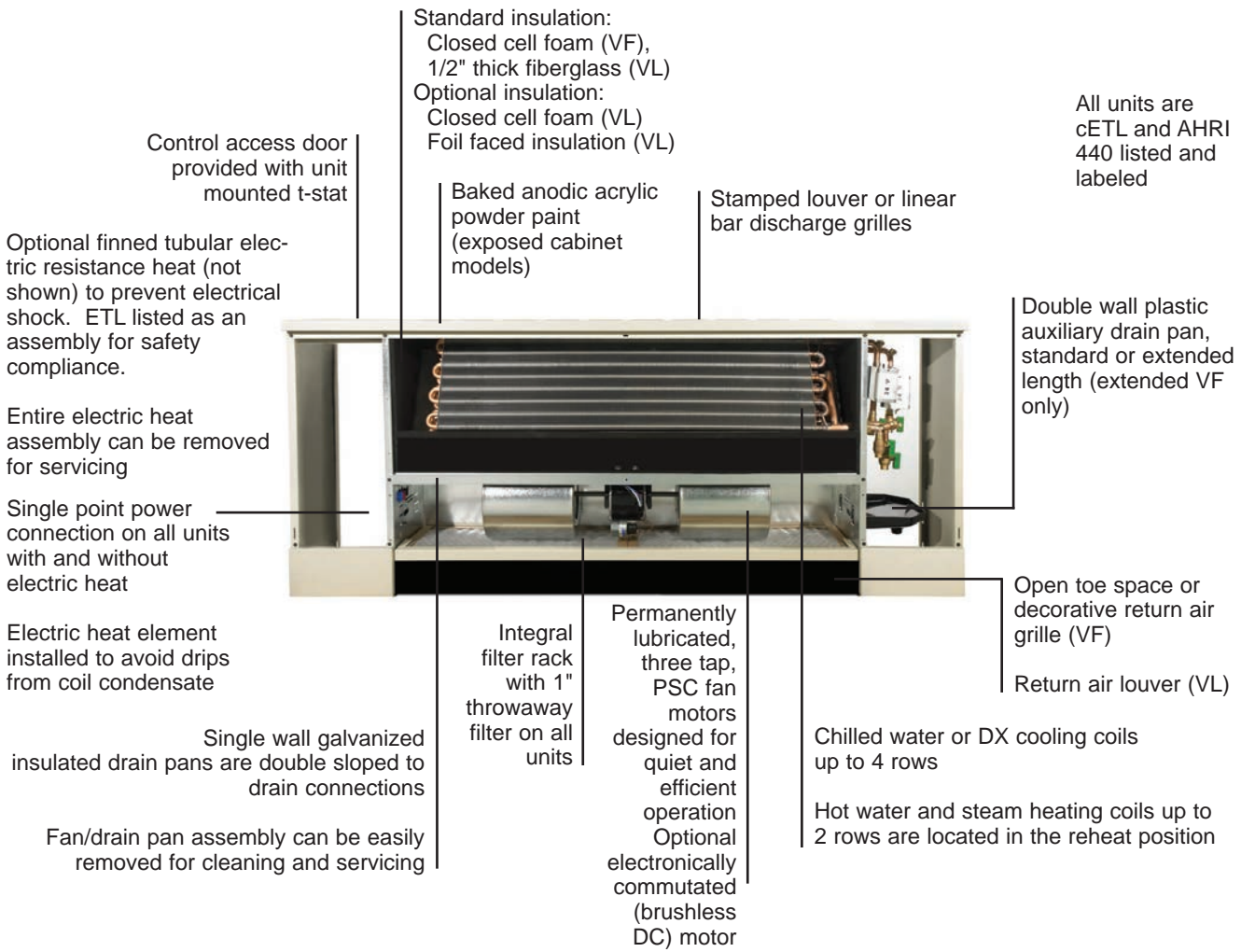
Vertical floor fan coil units have a removable fan/drain pan assembly. The entire fan assembly can be easily removed from the unit and serviced on a workbench.

Filters are easily replaceable from the return air toe space without the need for tools or removal of the front panel (VF only).

CONSTRUCTION FEATURES

MODEL VFE & VLE

(Photo as shown for VFE). VF and VL Series fan coils have many standard and optional features which are unique to the industry. See page 6 for a complete listing.



MODEL VFS

Vertical Sloped Top



MODEL VFC

Vertical Concealed



MODEL VLC

Low-Profile Concealed



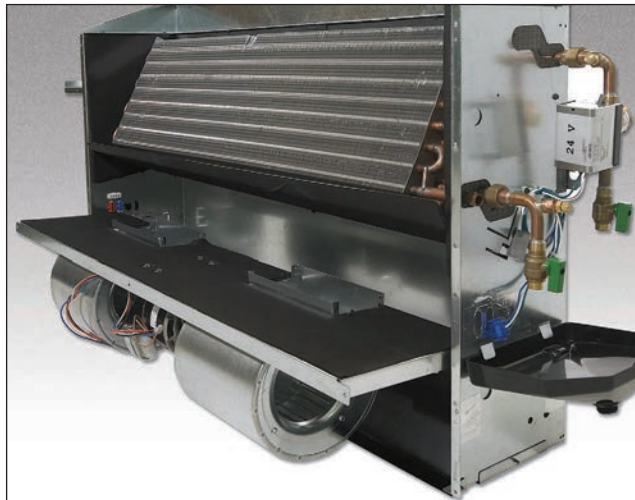
CONSTRUCTION FEATURES

MODELS VFE/VFS/VFC



END POCKETS

The 8" end pockets allow for accessibility and service of optional factory piping packages and controls. End panels are removable to allow for even greater access.



FAN DECK

The fan/drain pan assembly is easily removable for service access to motors and blowers at, or away from, the unit.

DRAIN PAN

The sloped insulated primary drain pan is available in stainless steel construction. Standard drain pan is externally insulated, single wall galvanized steel. The VF Series fan/drain pan assembly is easily removable for cleaning.



COILS

All fan coils are available in 2 or 4 pipe configurations. The heating coil is standard in the reheat position. Heating and cooling coils are available with the same or opposite end connections. Access for cleaning on the entering air side is available when the drain pan is removed. Coils are removable for service.



FILTER

The filter is easily replaceable through the return air toe space without requiring removal of the front panel.

POWDER COATED PAINTED SURFACE

Exposed cabinet Models VFE and VFS, as well as supply and return air grilles and the VFC wall recessing panel, feature a powder coat finish that resists scuffing, scratching, fading, and fingerprints.



CONSTRUCTION FEATURES

MODELS VFE/VFS/VFC



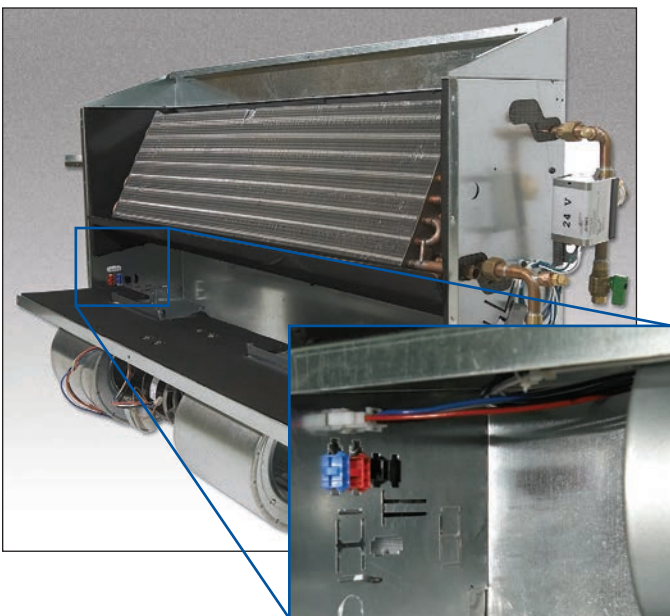
CONTROL ENCLOSURE

The VF control enclosure provides adequate space for the unit controller and fan coil relay. The fan coil relay is designed to limit diagnostic problems, while allowing for multi-voltage fan power input. The board is designed for factory installed, color coded, plug and play connections designed to ensure accurate wiring.



PIPING PACKAGES

Factory installed piping packages come equipped with components specific to the project. Actuators ship with color coded plug and play connections for quick, accurate installations.



FAN DECK REMOVAL

VF units allow for a single technician to service the fan/motor by keeping the fan deck to less than 44". Motors are supplied with quick connectors to allow electrical service without the need for tools.

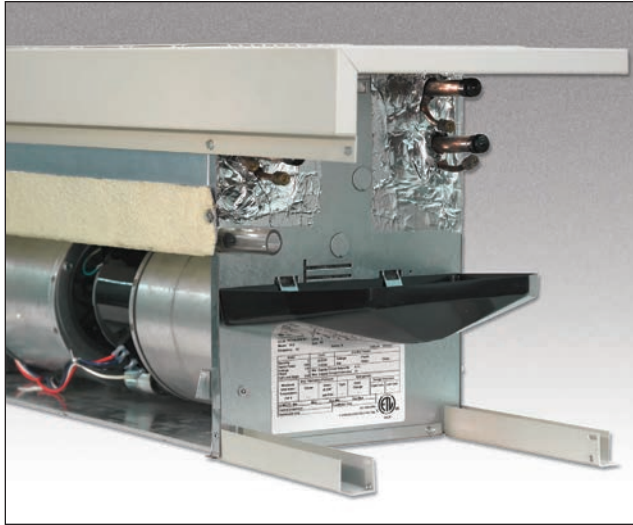


LID REMOVAL

Top panel is removable from fan coil without the need to disconnect piping or electrical wires.

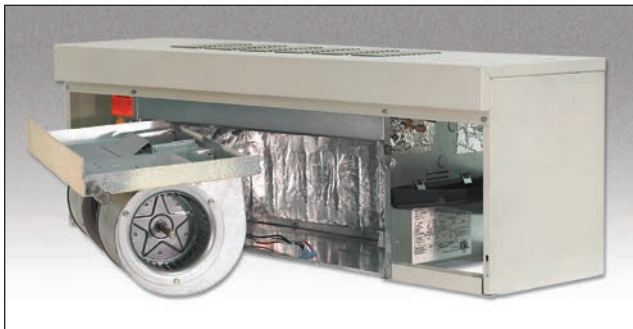
CONSTRUCTION FEATURES

MODELS VLE/VLC



END POCKETS

The 8" end pockets allow for accessibility and service of optional factory piping packages and controls. End panels are removable to allow for even greater access.

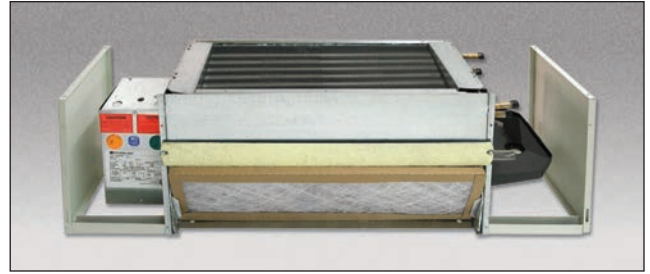


FAN DECK

The fan/drain pan assembly is easily removable for service access to motors and blowers at, or away from, the unit.

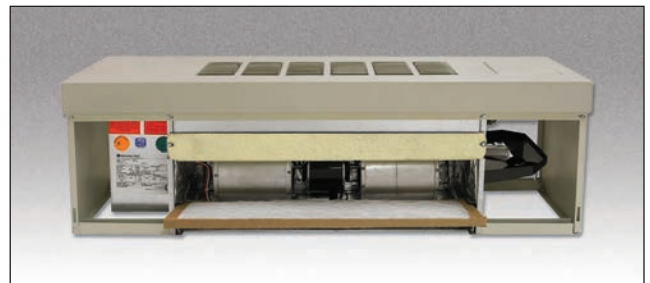
DRAIN PAN

The sloped insulated primary drain pan is available in stainless steel construction. The standard drain pan is externally insulated, single wall galvanized steel. A non-metallic auxiliary drip pan is provided as standard. The VL Series fan/drain pan assembly is easily removable for cleaning.



COILS

All units are available in 2 or 4 pipe configurations. The heating coil is standard in the reheat position. Heating and cooling coils are available with same end connections. Access for cleaning on the entering air side is available when the drain pan is removed. Coils are removable for service.



FILTER

The filter is easily replaceable through the return air toe space without requiring removal of the front panel.

POWDER COATED PAINTED SURFACE

Exposed cabinet Model VLE, as well as supply and return air grilles and the VLC wall recessing panel, feature a powder coat finish that resists scuffing, scratching, fading, and fingerprints.

CONSTRUCTION FEATURES

MODELS VLE/VLC



ELECTRICAL ENCLOSURE

The front access electrical enclosure provides access to all electric heat and control components. Terminal strips are furnished for simple power and control wiring connections. Multiple knockouts allow wiring entries from either the top or bottom of the compartment.



CONCEALED MODEL VLC

For built-in applications, Model VLC features a 1" top supply with duct collar.

ELECTRIC HEAT

A variety of kW and voltage configurations are available. Options include door interlock disconnects, low voltage controls, and silent solid state relays. All control and electric heat configurations include single point power connection and are cETL listed as an assembly.



STANDARD AND OPTIONAL FEATURES

STANDARD FEATURES

Construction

All Units

- AHRI 440 certified and labeled
- Galvanized steel construction
- Insulation, VF: elastomeric closed cell foam
- Insulation, VL: 1/2" thick fiberglass insulation
- Integral filter rack with 1" throwaway filter

Concealed Units

- Top supply with duct collar

Exposed Units

- Top stamped louver supply grille
- Durable powder coat paint
- End pockets with removable panels
- 20 gauge exterior panel construction
- Flat top
- Sloped top (VF only)

Coils

- Cooling - 3 or 4 row chilled water or DX, heat pump compatible
- Heating - 1 or 2 row hot water or steam – reheat position
- 3/8" O.D. seamless copper tubes (VF)
- 0.012" tube wall thickness (VF)
- 1/2" O.D. seamless copper tubes (VL)
- 0.016" tube wall thickness (VL)
- High efficiency aluminum fin surface for optimizing heat-transfer, pressure drop and carryover
- Left or right hand, same or (opposite - VF only) end connections
- Removable for service
- Manual air vents

Drain Pans

- Single wall, galvanized steel, externally insulated – fire retardant and antimicrobial
- Double sloped to drain connection
- 3/4" M.P.T. auxiliary drain pan connection
- Double wall plastic auxiliary drip pan

Fan Assemblies

- Forward curved, DWDI centrifugal type
- 115V, 277V, single phase, 3-speed PSC motors
- Easily removable for service

Electrical

- cETL listed for safety compliance
- Electrical junction box for field wiring terminations
- Terminal block for field connections

Electric Heat

- Finned tubular element on all floor mounted units protects against electrical shock
- ETL listed as an assembly for safety compliance
- Integral electric heat assembly with removable element

for easy service

- Automatic reset primary and back-up secondary thermal limits
- Single point power connection

OPTIONAL FEATURES

Construction

All Units

- Foil faced fiberglass insulation (VL)
- Elastomeric closed cell foam insulation (VL)
- Manual and motorized outside air dampers
- Spare 1" throwaway filters
- 1" pleated filters (MERV 7)
- Wall boxes (VF only)
- Leveling legs

Concealed Units

- Wall recessing panels (VF only)

Exposed Units

- Linear bar discharge grille, powder coated
- 16 gauge front panel (VF only)
- Return air louver grille
- 2" - 8" falsebacks (VF only)
- Extended end pockets (VF only)
- Tamper proof fasteners

Coils

- Automatic air vents
- Stainless steel coil casings
- 1/2" O.D. seamless copper tubes
- 0.016" tube wall thickness
- 0.025" tube wall (standard on steam)

Drain Pans

- Stainless steel construction with external insulation
- Double wall plastic auxiliary drain pan -- extended length (VF only)
- Stainless steel auxiliary drain pan -- extended length (VF only)

Fan Assemblies

- 115V, 208-230V, 277V, single phase, 3-speed fixed, 3-speed adjustable, or 2-10VDC proportional ECM motors (VF only)

Electrical

- SCR fan speed controller (high speed only)
- Fan relay packages
- Silent solid state fan relays (VF only)
- Toggle disconnect switch
- Condensate overflow switch (auxiliary drain pan)
- Main fusing
- Unit and remote mounted 3-speed fan switches

Electrical (continued)

- Unit and remote mounted 3-speed fan switches (unit mounted three speed switch is located under access door on exposed and slope top vertical floor mount units. Unit mounted 3-speed switch is located within control enclosure on vertical low profile units)

Electric Heat

- Door interlocking disconnect switches
- Main fusing
- Silent relay/contactors (VF only)

Piping Packages

- Factory assembled
- Shipped loose for field installation
- Factory mounted option available
- 1/2" and 3/4", 2-way and 3-way normally closed, two position electric motorized valves
- Isolation ball valves with memory stop
- 4 pipe with 3-way valve (VF only)
- Fixed and adjustable flow control devices
- Unions and P/T ports
- Modulating control valves
- High pressure close-off actuators (1/2" = 50 PSIG; 3/4" = 25 PSIG)

Thermostats

- Digital display - programmable or non-programmable
- Unit and remote mounted, with integral 3-speed fan switch
- 2-pipe and 4-pipe control sequences
- Automatic and manual changeover

COIL DATA: VF SERIES

COILS

ENVIRO-TEC offers hot water, chilled water, direct expansion (DX - VF only), and standard single tube steam coils for specific application with all Vertical Floor fan coil units. Strict on-site inspection before, during, and after installation guarantees the highest quality and performance available.

STANDARD FEATURES

- Cooling - 3 or 4 row chilled water or (DX - VF only)
- Heating - 1 or 2 row hot water or steam
- Total rows of cooling and heating coils:
VF: 4 maximum, VL: 5 maximum
- 3/8" O.D. seamless copper tubes
- 0.012" tube wall thickness
- High efficiency aluminum fin surface for optimizing heat transfer, pressure drop and carryover
- Left or right hand, same, or opposite side (VF only) connections
- Manual air vents

OPTIONAL FEATURES

- Automatic air vents
- Stainless steel coil casings
- 1/2" O.D. seamless copper tubes
- 0.016" tube wall thickness
- 0.025" tube wall thickness (standard on steam coils)
- DX coils (VF only) are heat pump compatible

A web-based Computer Selection Program, "Web-Select", is available to facilitate the selection process. Contact your representative to obtain access to this powerful and time-saving program.

VF NOMINAL COIL CONNECTION SIZES

UNIT SIZE	COIL TYPE											
	HOT WATER		CHILLED WATER		STEAM		REFRIGERANT (DX)					
	1 ROW	2 ROW	3 ROW	4 ROW	1 ROW	2 ROW	2 ROW		3 ROW		4 ROW	
							Liquid	Suction	Liquid	Suction	Liquid	Suction
02 - 12	5/8 [16]	5/8 [16]	5/8 [22]	5/8 [22]	5/8 [16]	5/8 [16]	3/8 [10]	5/8 [16]	3/8 [10]	5/8 [16]	3/8 [10]	5/8 [16]

NOTES:

1. Connection sizes are for standard circuit coils. Consult factory for special applications.
2. See submittal drawings for connection locations.
3. All dimensional data is outside diameter (O.D.), measured in inches [millimeters].

VF FACE AREA, FREE AREA AND FILTER SIZES

UNIT SIZE	COIL FACE AREA	DISCHARGE GRILLE FREE AREA	FILTER FACE AREA	NOMINAL FILTER SIZES
02	0.97 [.090]	0.47 [.044]	1.40 [.130]	9.25 X 21.75 X 1 [235 X 552 X 25.4]
03	1.25 [.116]	0.56 [.052]	1.65 [.154]	9.25 X 25.75 X 1 [235 X 654 X 25.4]
04	1.67 [.155]	0.66 [.061]	2.04 [.189]	9.25 X 31.75 X 1 [235 X 806 X 25.4]
06	2.36 [.219]	0.94 [.087]	2.68 [.249]	9.25 X 41.75 X 1 [235 X 1060 X 25.4]
08	2.50 [.023]	0.94 [.087]	2.79 [.260]	(2) 9.25 X 21.75 X 1 [235 X 552 X 25.4]
10	3.47 [.322]	1.31 [.122]	3.69 [.343]	(1) 9.25 X 25.75 X 1 [235 X 654 X 25.4] (1) 9.25 X 31.75 X 1 [235 X 806 X 25.4]
12	4.03 [.374]	1.50 [.139]	4.19 [.389]	(3) 9.25 X 21.75 X 1 [235 X 552 X 25.4]

NOTES:

1. Face and free areas are in square feet [square meters].
2. Filter sizes are in inches [millimeters].

VF HEATING CAPACITY

UNIT TYPE	UNIT SIZE	NOM. CFM	1 ROW			2 ROW		
			QS (MBH)	GPM	WPD	QS (MBH)	GPM	WPD
VF	02	230	7.86	0.4	0.2	14.27	0.7	1.0
VF	03	300	10.98	0.6	0.4	19.15	1.0	1.9
VF	04	430	15.95	0.8	0.8	27.48	1.4	4.2
VF	06	540	21.79	1.1	1.7	36.75	1.9	8.8
VF	08	600	23.85	1.2	2.1	40.07	2.1	10.7
VF	10	830	34.28	1.8	5.1	54.72	2.8	3.4
VF	12	920	38.81	2.0	7.0	62.21	3.2	4.7

NOTE: Based on 70°F DB EAT, 180°F EWT, 40°F temperature drop, high fan speed.

COIL DATA: VL SERIES

VL NOMINAL COIL CONNECTION SIZES

UNIT SIZE	COIL CONNECTION SIZE					
	HOT WATER			CHILLED WATER		
	1 ROW	2 ROW	3 ROW	2 ROW	3 ROW	4 ROW
02 & 03	5/8 [16]	5/8 [16]	5/8 [16]	5/8 [16]	5/8 [16]	5/8 [16]
04 & 06	5/8 [16]	5/8 [16]	5/8 [16]	5/8 [16]	5/8 [16]	7/8 [19]

NOTES:

1. Connection sizes are for standard circuit coils. Consult factory for special applications.
2. See submittal drawings for connection locations.
3. All dimensional data is outside diameter (O.D.), measured in inches [millimeters].

VL FACE AREA AND FILTER SIZES

UNIT SIZE	COIL FACE AREA	DISCHARGE GRILLE DIMENSIONS	FILTER FACE AREA	NOMINAL FILTER SIZES
02	1.18 [0.11]	17 x 5.25 [432 x 133]	1.12 [0.10]	21.5 x 7.5 [546 x 191]
03	1.53 [0.14]	22 x 5.25 [559 x 133]	1.38 [0.13]	26.5 x 7.5 [673 x 191]
04	2.08 [0.19]	30 x 5.25 [762 x 133]	1.80 [0.17]	34.5 x 7.5 [876 x 191]
06	3.06 [0.28]	44 x 5.25 [1118 x 133]	2.53 [0.23]	48.5 x 7.5 [1232 x 191]

NOTES:

1. Face and free areas are in square feet [square meters].
2. Filter sizes are in inches [millimeters].

VL HEATING CAPACITY

UNIT TYPE	UNIT SIZE	NOM. CFM	1 ROW			2 ROW			3 ROW		
			QS (MBH)	GPM	WPD	QS (MBH)	GPM	WPD	QS (MBH)	GPM	WPD
VLC	02	200	9.2	0.6	0.6	15.4	1.1	2.6	19.0	1.3	5.7
	03	300	13.4	0.9	1.2	22.4	1.5	5.6	27.2	1.9	2.0
VLE	04	400	18.5	1.3	2.4	30.4	2.1	11.1	37.0	2.5	3.9
	06	600	28.2	1.9	6.0	44.8	3.1	4.7	56.0	3.8	9.8

Note: Based on 70°F DB EAT, 180°F EWT, 30°F temperature drop, high fan speed.

PHYSICAL DATA: VF SERIES

VF AHRI STANDARD RATINGS

Vertical Concealed								
Size	Coil		Airflow CFM (Dry Flow)	Cooling Capacity		Water		Power Input (Watts)
	Rows	FPI		QT (BTUH)	QS (BTUH)	Flowrate (GPM)	WPD (ft-wg)	
02	3	12	231	5700	4400	1.3	2.6	38
03	3	12	311	8500	6300	1.9	5.85	46
04	3	12	425	10500	8100	2.4	3.04	51
06	3	12	602	14900	11400	3.3	2.88	77
08	3	12	796	19800	14900	4.5	5.62	181
10	3	12	983	27600	20100	6.3	7.42	170
12	3	12	1192	28100	21700	6.4	2.88	298
02	4	12	210	7800	5500	1.8	6.16	41
03	4	12	281	9100	6800	2.1	2.72	56
04	4	12	375	12200	9100	2.8	2.3	63
06	4	12	546	21400	14700	4.9	8.58	87
08	4	12	722	27400	19000	6.2	14.33	200
10	4	12	901	35300	24300	7.9	15.57	192
12	4	12	1098	35100	26200	7.9	2.16	330

Vertical Exposed/Sloped Top								
Size	Coil		Airflow CFM (Dry Flow)	Cooling Capacity		Water		Power Input (Watts)
	Rows	FPI		QT (BTUH)	QS (BTUH)	Flowrate (GPM)	WPD (ft-wg)	
02	3	12	221	5500	4300	1.3	2.44	45
03	3	12	301	8300	6200	1.9	5.63	44
04	3	12	423	10600	8100	2.4	3.05	49
06	3	12	599	14900	11400	3.3	2.88	77
08	3	12	823	20400	15400	4.7	6.04	197
10	3	12	981	27700	20100	6.3	7.42	180
12	3	12	1178	28200	21700	6.4	2.88	212
02	4	12	200	7500	5300	1.7	5.91	62
03	4	12	269	8700	6500	1.9	2.4	47
04	4	12	379	12300	9100	2.8	2.3	54
06	4	12	546	21300	14700	4.8	8.3	84
08	4	12	748	28200	19600	6.4	15.19	218
10	4	12	893	35300	24200	7.9	15.57	197
12	4	12	1077	35000	25900	7.9	2.17	225

VF UNIT WEIGHT DATA

COMPONENT	UNIT SIZE						
	02	03	04	06	08	10	12
VFC BASE UNIT	36 [16]	45 [20]	55 [25]	62 [28]	66 [30]	92 [42]	105 [48]
VFE BASE UNIT	66 [30]	74 [34]	87 [39]	96 [44]	102 [46]	131 [59]	149 [68]
VFS BASE UNIT	68 [31]	76 [34]	89 [40]	99 [45]	102 [46]	135 [61]	153 [69]
TOTAL COIL ROWS	1 ROW - DRY	9 [4]	10 [5]	12 [5]	14 [6]	15 [7]	21 [9]
	1 ROW - WET	12 [5]	13 [6]	17 [7]	19 [9]	20 [9]	29 [13]
	2 ROW - DRY	12 [5]	13 [6]	16 [7]	17 [8]	19 [9]	26 [12]
	2 ROW - WET	16 [7]	17 [8]	21 [9]	25 [11]	26 [12]	37 [17]
	3 ROW - DRY	15 [7]	17 [8]	19 [9]	23 [10]	24 [11]	34 [15]
	3 ROW - WET	19 [9]	21 [10]	26 [12]	31 [14]	33 [15]	48 [22]
	4 ROW - DRY	18 [8]	21 [10]	25 [11]	29 [13]	31 [14]	43 [19]
	4 ROW - WET	25 [11]	27 [12]	34 [15]	40 [18]	42 [19]	61 [28]

NOTE: Unit weight data is shipping weight in pounds [kilograms].

PHYSICAL DATA: VL SERIES

VL AHRI STANDARD RATINGS

Model / Size	Coil		Airflow CFM (Dry flow)	Cooling Capacity		Water		Power Input (Watts)
	Rows	FPI		QT (BTUH)	QS (BTUH)	Flow Rate (GPM)	WPD (ft-wg)	
VLC-02	3	10	200	6500	4300	1.6	11.7	75
VLC-03	3	10	300	9500	6500	2	3.4	75
VLC-04	3	10	400	14000	9500	2.9	7.4	75
VLC-06	3	10	600	20000	15000	5.2	9.9	140
VLE-02	3	10	200	6500	4300	1.6	11.7	75
VLE-03	3	10	300	9500	6500	2	3.4	75
VLE-04	3	10	400	14000	9500	2.9	7.4	75
VLE-06	3	10	600	20000	15000	5.2	9.9	140

VL UNIT WEIGHT DATA

COMPONENT		UNIT SIZE			
		02	03	04	06
VLC BASE UNIT, STD HEIGHT		51 [23]	58 [26]	65 [29]	77 [35]
VLC BASE UNIT, EXT HEIGHT		65 [29]	69 [31]	74 [34]	84 [38]
VLE BASE UNIT, STD HEIGHT		90 [41]	97 [44]	104 [47]	116 [53]
VLE BASE UNIT, EXT HEIGHT		104 [47]	108 [49]	113 [51]	123 [56]
TOTAL COIL ROWS	1 ROW - DRY	11 [5]	13 [6]	15 [7]	17 [8]
	1 ROW - WET	14 [6]	17 [8]	20 [9]	23 [10]
	2 ROW - DRY	14 [6]	17 [8]	20 [9]	22 [10]
	2 ROW - WET	20 [9]	25 [11]	30 [13]	34 [15]
	3 ROW - DRY	19 [8]	22 [10]	25 [11]	29 [13]
	3 ROW - WET	28 [13]	34 [15]	40 [18]	47 [21]
	4 ROW - DRY	24 [11]	29 [13]	33 [15]	37 [17]
	4 ROW - WET	36 [16]	45 [20]	53 [24]	61 [28]
	5 ROW - DRY	31 [14]	37 [17]	43 [19]	49 [22]
	5 ROW - WET	46 [21]	57 [26]	68 [31]	79 [36]

NOTE: Unit weight data is shipping weight in pounds [kilograms].

ELECTRIC HEAT

ENVIRO-TEC offers electric heating coils for specific application with all Vertical Floor Series Fan Coil units. This allows the flexibility to provide an unrivaled amount of electric heat options in one complete package.

STANDARD FEATURES

- ETL listed as an assembly for safety compliance
- Single point power connection
- Mounted in reheat position (VF)[Preheat for VL]
- Automatic reset primary and back-up secondary thermal limits
- Internal wiring rated at 105°C
- Integral electric heat assembly with removable element for easy service
- Stainless steel terminals and hardware
- Finned tubular heater virtually eliminates the risk of shock from accidental contact.



USEFUL FORMULAS

$$kW^* = \frac{CFM \times \Delta T \times 1.085^{**}}{3413}$$

$$1\emptyset \text{ AMPS} = \frac{kW \times 1000}{Volts}$$

* 1kW = 3413 BTU/H

** Capacity at sea level

Altitude Considerations:

Reduce by 0.034 for each 1000 ft. of altitude above sea level.

Example: 5000 ft./1000 ft. = 5

$$5 \times 0.034 = 0.17$$

$$1.085 - 0.17 = 0.915$$

OPTIONAL FEATURES

- Silent solid state relays (VF only) on heaters up to 18 amps
- Door interlocking disconnect switch
- Main fusing (Branch fusing for EH > 48 amps)

ELECTRICAL CALCULATIONS INFORMATION

1. Refer to MCA/MOP calculator at www.enviro-tec.com for MCA/MOP calculations.
2. Non-Fused Door Interlock Disconnect Switch shall be sized according to MCA.
3. Fused Door Interlock Disconnect Switch and Main Fusing shall be sized according to MOP.

VF ELECTRIC HEAT SELECTION CHART (AMPS)

UNIT SIZE	MBH	3.4	5.1	6.8	10.2	13.7	17.1	20.5
	KW	1.0	1.5	2.0	3.0	4.0	5.0	6.0
	VOLTS	AMPS						
02	115	8.3						
	208	4.8						
	240	4.2						
	277	3.6						
03	115	8.3	12.5					
	208	4.8	7.2					
	240	4.2	6.3					
	277	3.6	5.4					
04	115	8.3	12.5	16.7				
	208	4.8	7.2	9.6				
	240	4.2	6.3	8.3				
	277	3.6	5.4	7.2				
06	115	8.3	12.5	16.7	25.0			
	208	4.8	7.2	9.6	14.4			
	240	4.2	6.3	8.3	12.5			
	277	3.6	5.4	7.2	10.8			
08	115	8.3	12.5	16.7	25.0			
	208	4.8	7.2	9.6	14.4	19.2		
	240	4.2	6.3	8.3	12.5	16.7		
	277	3.6	5.4	7.2	10.8	14.4		
10	115	8.3	12.5	16.7	25.0			
	208	4.8	7.2	9.6	14.4	19.2	24.0	
	240	4.2	6.3	8.3	12.5	16.7	20.8	
	277	3.6	5.4	7.2	10.8	14.4	18.1	
12	115	8.3	12.5	16.7	25.0			
	208	4.8	7.2	9.6	14.4	19.2	24.0	28.9
	240	4.2	6.3	8.3	12.5	16.7	20.8	25.0
	277	3.6	5.4	7.2	10.8	14.4	18.1	21.7

NOTES:

1. Shaded areas of the electric heat selection chart indicate kW and voltage options not available.
2. Available voltages are single phase, 60 hertz.
3. Size heater for Leaving Air Temperature (LAT) less than 104°F.
4. Silent, solid state heater relay is available for heater currents less than 18 amps.
5. Ask your ENVIRO-TEC representative about continuously modulating electric heat using SSR and special control options.

VL ELECTRIC HEAT SELECTION CHART (AMPS)

UNIT SIZE	MBH	3.4	5.1	6.8	10.2
	KW	1.0	1.5	2.0	3.0
	VOLTS	AMPS			
02	115	8.7			
	208	4.8			
	230	4.4			
	277	3.6			
03	115	8.7	13.1		
	208	4.8	7.2		
	230	4.4	6.5		
	277	3.6	5.4		
04	115	8.7	13.1	17.4	26.1
	208	4.8	7.2	9.6	14.4
	230	4.4	6.5	8.7	13.1
	277	3.6	5.4	7.2	10.8
06	115	8.7	13.1	17.4	26.1
	208	4.8	7.2	9.6	14.4
	230	4.4	6.5	8.7	13.1
	277	3.6	5.4	7.2	10.8

NOTES:

1. See notes 1 through 3 above.

MOTOR AND FAN DATA

VF PSC MOTOR AND FAN DATA

UNIT SIZE	FAN SPEED	MOTOR H.P. (QTY.)	# OF FANS	115 VOLTS		208-230 VOLTS		277 VOLTS	
				AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
02	High	(1) 1/50	1	0.40	45	N/A	N/A	0.21	57
	Medium			0.31	35	N/A	N/A	0.19	44
	Low			0.27	28	N/A	N/A	0.18	40
03	High	(1) 1/30	1	0.55	60	N/A	N/A	0.31	73
	Medium			0.43	48	N/A	N/A	0.26	60
	Low			0.40	43	N/A	N/A	0.24	54
04	High	(1) 1/20	2	0.62	70	N/A	N/A	0.27	76
	Medium			0.56	61	N/A	N/A	0.21	65
	Low			0.54	58	N/A	N/A	0.20	58
06	High	(1) 1/20	2	0.71	80	N/A	N/A	0.30	87
	Medium			0.66	74	N/A	N/A	0.26	77
	Low			0.59	61	N/A	N/A	0.22	64
08	High	(1) 1/10	2	1.03	114	N/A	N/A	0.40	114
	Medium			0.77	81	N/A	N/A	0.28	80
	Low			0.70	71	N/A	N/A	0.25	70
10	High	(2) 1/20	4	1.18	132	N/A	N/A	0.53	144
	Medium			1.03	114	N/A	N/A	0.42	120
	Low			0.99	107	N/A	N/A	0.37	106
12	High	(2) 1/20	4	1.26	142	N/A	N/A	0.57	154
	Medium			1.14	126	N/A	N/A	0.45	131
	Low			1.08	114	N/A	N/A	0.40	114

Notes:

1. Exposed unit, 3-row coil, no EH, no toe kick, standard throw away panel filter
2. Data was taken without ductwork
3. Unit size 04, 06, 08, 10 and 12 data generated at 115v, 277v
4. Unit size 02 & 03 data generated with 115v, 240v to 120v transformer(230v line voltage) and 277v to 120v transformer (277v line voltage)
5. For FLA use unit voltage, and size at high speed

VF EC MOTOR AND FAN DATA

Vertical Concealed										
Unit Size	Fan Speed	Motor HP (Qty)	Fan Qty	Watts	115 Volts		208-230 Volts		277 Volts	
					FLA	3-Phase Neutral	FLA	3-Phase Neutral	FLA	3-Phase Neutral
02	High	(1) 1/4	1	58	1.0	1.7	0.6	1.0	0.5	0.9
03	High	(1) 1/4	1	75	1.3	2.3	0.8	1.4	0.7	1.2
04	High	(1) 1/4	2	78	1.3	2.3	0.8	1.4	0.7	1.2
06	High	(1) 1/4	2	144	2.3	4.0	1.4	2.4	1.2	2.1
08	High	(1) 1/4	2	221	3.4	5.9	2.1	3.6	1.7	2.9
10	High	(2) 1/4	4	224	3.6	6.2	2.2	3.8	1.8	3.1
12	High	(2) 1/4	4	283	4.4	7.6	2.6	4.5	2.2	3.8

Vertical Exposed/Sloped Top										
Unit Size	Fan Speed	Motor HP (Qty)	Fan Qty	Watts	115 Volts		208-230 Volts		277 Volts	
					FLA	3-Phase Neutral	FLA	3-Phase Neutral	FLA	3-Phase Neutral
02	High	(1) 1/4	1	60	1.0	1.7	0.6	1.0	0.5	0.9
03	High	(1) 1/4	1	79	1.3	2.3	0.8	1.4	0.7	1.2
04	High	(1) 1/4	2	81	1.3	2.3	0.8	1.4	0.7	1.2
06	High	(1) 1/4	2	142	2.3	4.0	1.4	2.4	1.2	2.1
08	High	(1) 1/4	2	249	3.4	5.9	2.1	3.6	1.7	2.9
10	High	(2) 1/4	4	252	3.6	6.2	2.2	3.8	1.8	3.1
12	High	(2) 1/4	4	357	4.4	7.6	2.6	4.5	2.2	3.8

NOTES:

1. Exposed, 3-row coil, no EH, no toe kick, standard throw away panel filter
2. Watts as shown are for .05" ESP, 3 row coil, 115/1/60, 12 FPI, and throwaway filters
3. Motor HP as noted is a nominal rating
4. Data as supplied is for reference only. For project specific operational points see selection tool report out.

MOTOR AND FAN DATA

VL PSC MOTOR AND FAN DATA

UNIT SIZE	FAN SPEED	MOTOR H.P. (QTY.)	# OF FANS	115 VOLTS		208-230 VOLTS		277 VOLTS	
				AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
02	High	1/25	1	0.6	65.0	N/A	N/A	0.3	81.0
	Medium	1/50		0.3	42.0	N/A	N/A	0.2	50.0
	Low	1/100		0.3	28.0	N/A	N/A	0.2	34.0
03	High	1/25	2	0.6	62.0	N/A	N/A	0.3	68.0
	Medium	1/50		0.3	30.0	N/A	N/A	0.2	42.0
	Low	1/100		0.3	25.0	N/A	N/A	0.2	29.0
04	High	1/25	2	0.6	62.0	N/A	N/A	0.3	68.0
	Medium	1/50		0.3	30.0	N/A	N/A	0.2	42.0
	Low	1/100		0.3	25.0	N/A	N/A	0.2	29.0
06	High	2 @ 1/25	3	1.2	127.0	N/A	N/A	0.6	149.0
	Medium	2 @ 1/50		0.6	72.0	N/A	N/A	0.4	92.0
	Low	2 @ 1/100		0.6	53.0	N/A	N/A	0.4	63.0

NOTES:

1. Exposed unit, 3-row coil, no EH, no toe kick, standard throw away panel filter. Fan watts shown at operating conditions supplied for 115V.
2. Data was taken without ductwork.

SOUND DATA

VF SOUND DATA

UNIT SIZE	FAN SPEED	SCFM	TOTAL SOUND POWER LEVEL						
			OCTAVE BAND / CENTER FREQUENCY (HZ)						
			125	250	500	1000	2000	4000	8000
02	High	224	59	64	55	52	47	41	37
	Medium	192	55	60	51	47	42	35	34
	Low	148	49	52	44	40	34	29	33
03 *	High	300	58	71	57	56	50	45	41
	Medium	255	57	63	54	52	46	40	37
	Low	197	54	53	47	44	38	33	34
04	High	429	55	59	53	51	47	39	36
	Medium	360	51	52	48	46	41	33	34
	Low	274	45	45	41	38	31	27	33
06	High	624	61	66	59	58	53	47	43
	Medium	529	57	61	55	53	48	42	38
	Low	404	51	52	47	45	39	31	34
08 *	High	795	67	75	67	67	62	58	56
	Medium	676	63	71	61	60	55	49	47
	Low	528	57	62	54	52	47	40	38
10	High	991	62	66	61	60	55	49	44
	Medium	842	58	62	57	55	50	43	38
	Low	628	51	53	50	47	41	32	34
12 *	High	1158	68	73	67	66	61	56	53
	Medium	984	64	69	63	62	57	51	46
	Low	747	57	60	56	54	48	40	37

NOTES:

1. Sound data tested in accordance with AHRI-350-2008.
2. Sound levels expressed in decibels, dB RE: 1 x 10⁻¹² watts.
3. Total sound power level data based on exposed cabinet model with fan CFM at corresponding motor setting with 115/1/60 volt motor, 3 row coil (or 4 row coil, where indicated by *), 1" throwaway filter, 0.0" external static pressure and standard rated internal pressure losses.

VL SOUND DATA

UNIT SIZE	FAN SPEED	SCFM	TOTAL SOUND POWER LEVEL						
			OCTAVE BAND / CENTER FREQUENCY (HZ)						
			2/125	3/250	4/500	5/1000	6/2000	7/4000	8/8000
02	High	250	57	64	59	57	52	52	42
	Medium	185	51	58	52	49	47	43	31
	Low	140	47	51	45	42	40	32	26
03	High	360	59	59	57	53	47	41	36
	Medium	300	52	56	53	48	43	36	34
	Low	250	51	49	46	40	33	27	25
04	High	485	54	60	56	52	48	43	37
	Medium	365	50	54	49	45	40	33	31
	Low	255	43	47	40	37	31	23	25
06	High	675	59	64	59	58	53	47	43
	Medium	500	53	57	54	49	44	37	32
	Low	375	47	52	46	40	34	25	24

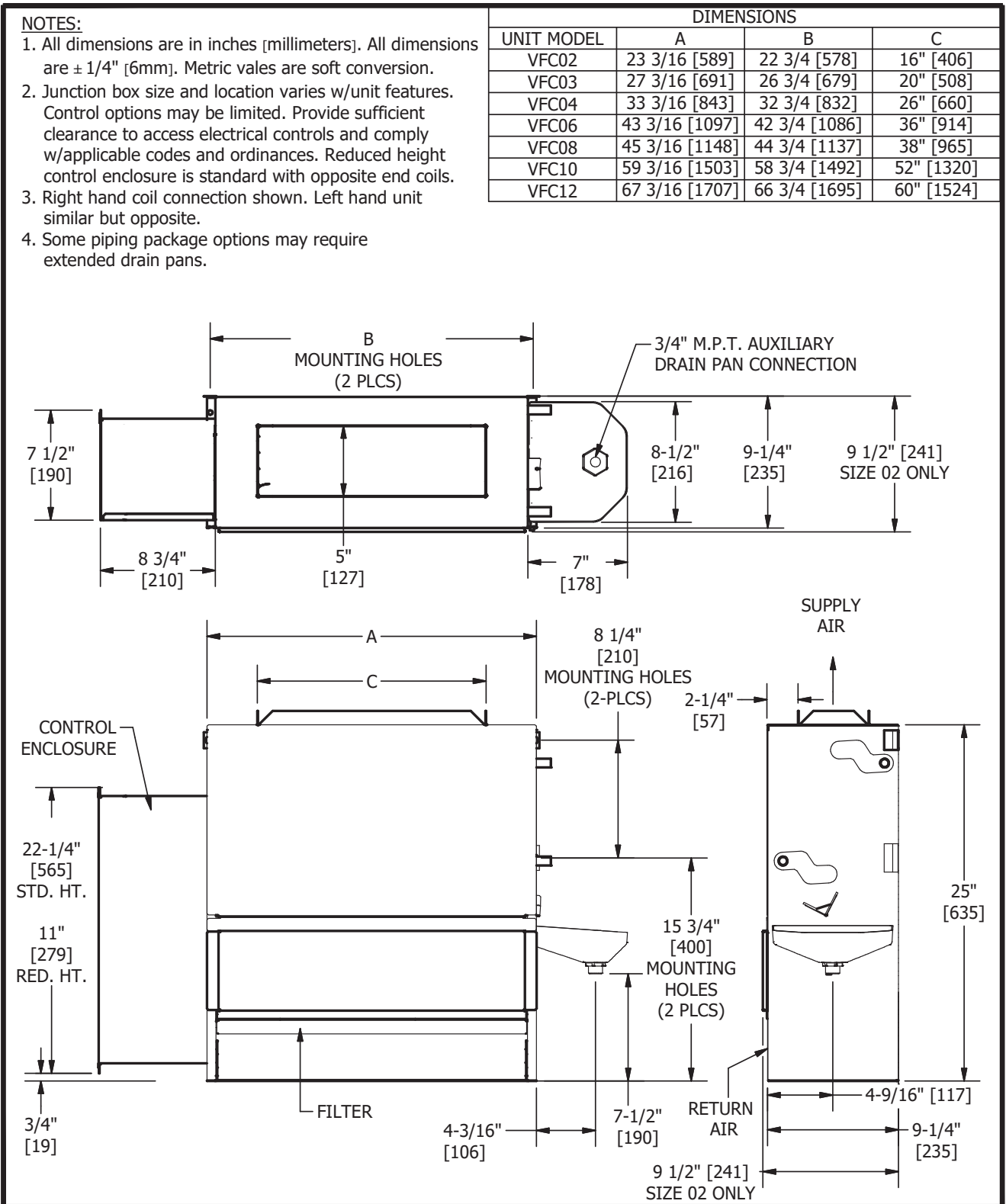
NOTES:

1. Sound data tested in accordance with AHRI 350-2000.
2. Sound levels are expressed in decibels, dB RE: 1 x 10⁻¹² Watts.
3. Total sound power level data based on both exposed cabinet and concealed models with fan CFM at corresponding motor tap with 115/1/60 Volt motor, 3 row coil, 1" throwaway filter, 0.0" external static pressure and standard rated internal pressure losses.

DIMENSIONAL DATA: VF SERIES

MODEL VFC CONCEALED UNIT

Drawings are not to scale and not for submittal or installation purposes.



DIMENSIONAL DATA: VF SERIES

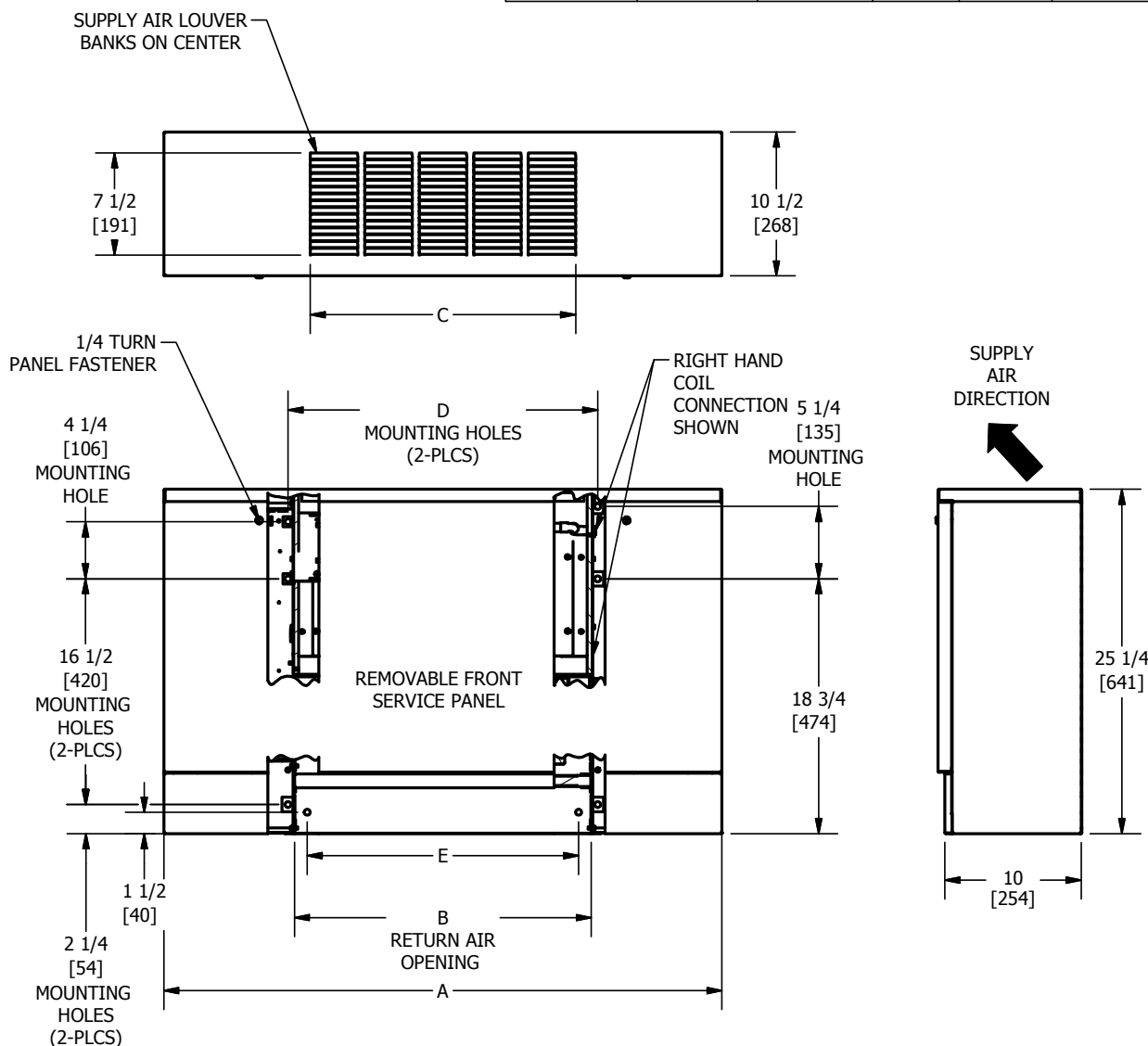
MODEL VFE EXPOSED UNIT

Drawings are not to scale and not for submittal or installation purposes.

NOTES:

1. All dimensions are Inches [millimeters]. All dimensions are $\pm 1/4"$ [6mm]. Metric values are soft conversion.
2. Junction box size and location varies with unit features. Control options may be limited. Provide sufficient clearance to access electrical controls and comply with applicable codes and ordinances.
3. Standard cabinet finish is "Pearl White Satin".
4. Parametric design available to increase Height or Width. (See parametric offerings drawing.)
5. Some control or piping package options may require extended end pockets and/or extended drain pans. (See extended end pocket drawing.)
6. False back extension available.

TABLE					
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
UNIT MODEL	DIM A	DIM B	DIM C	DIM D	DIM E
VFE02	41 [1041]	22 [559]	19 1/2 [495]	22 3/4 [578]	20 [508]
VFE03	45 [1143]	26 [660]	23 1/2 [597]	26 3/4 [679]	24 [607]
VFE04	51 [1295]	32 [813]	27 1/2 [699]	32 3/4 [832]	30 [762]
VFE06	61 [1549]	42 [1067]	39 1/2 [1003]	42 3/4 [1086]	40 [1016]
VFE08	63 [1600]	44 [1118]	39 1/2 [1003]	44 3/4 [1137]	42 [1067]
VFE10	77 [1956]	58 [1473]	55 1/2 [1410]	58 3/4 [1492]	53 [1347]
VFE12	85 [2159]	66 [1676]	63 1/2 [1613]	66 3/4 [1695]	64 [1626]



DIMENSIONAL DATA: VF SERIES

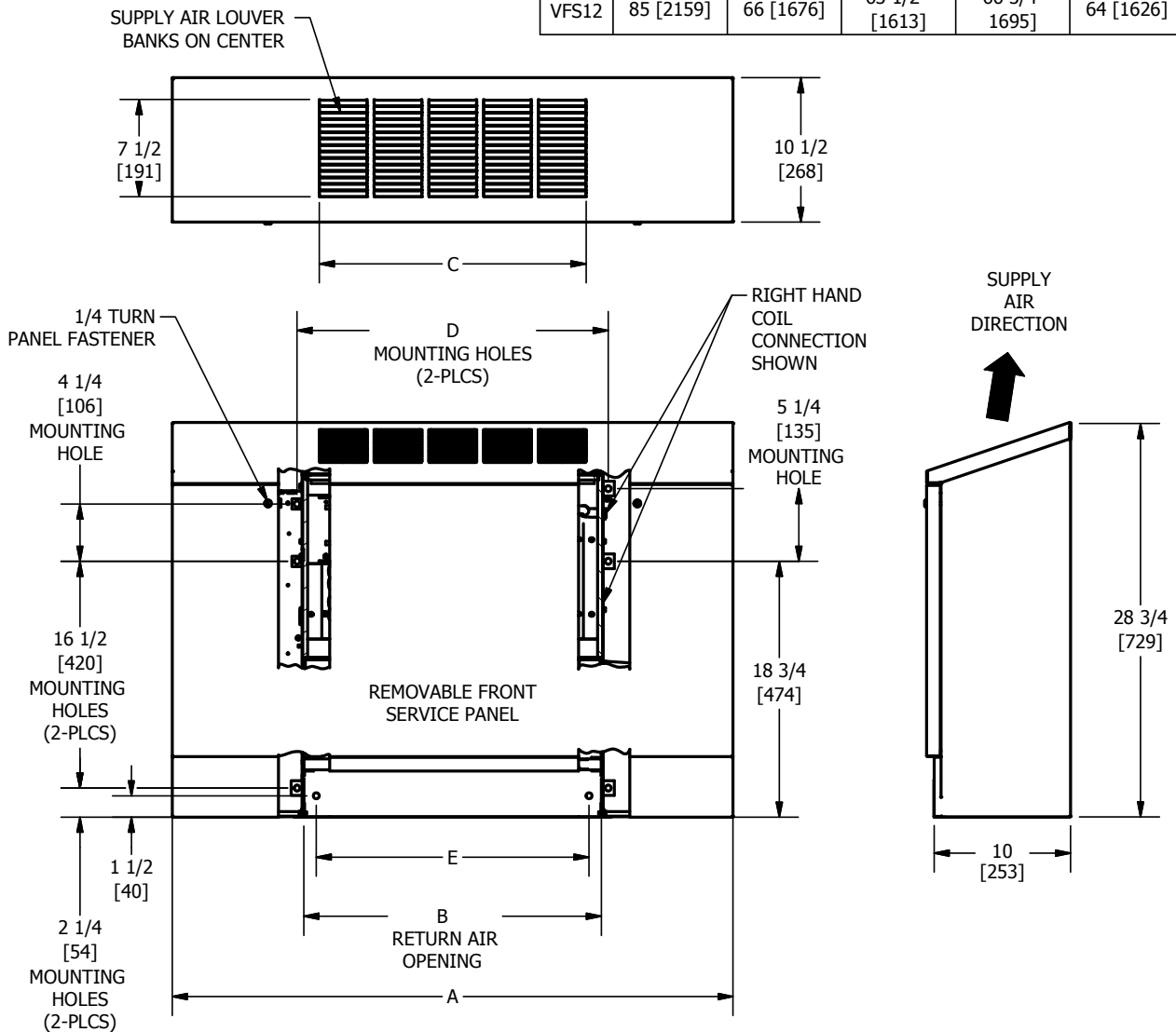
MODEL VFS SLOPE TOP UNIT

Drawings are not to scale and not for submittal or installation purposes.

NOTES:

1. All dimensions are Inches [millimeters]. All dimensions are $\pm 1/4"$ [6mm]. Metric values are soft conversion.
2. Junction box size and location varies with unit features. Control options may be limited. Provide sufficient clearance to access electrical controls and comply with applicable codes and ordinances.
3. Standard cabinet finish is "Pearl White Satin".
4. Right hand unit shown, left hand unit similar, but opposite.
5. Parametric design available to increase Height or Width. (See parametric offerings drawing.)
6. Some control or piping package options may require extended end pockets and/or extended drain pans. (See extended end pocket drawing.)
7. False back extension available.

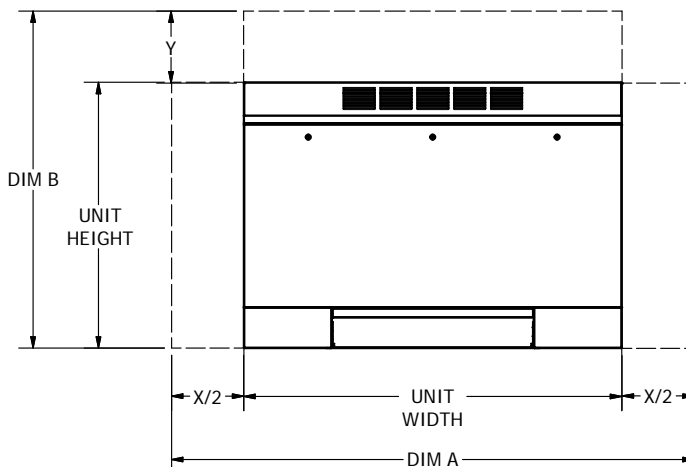
TABLE					
Column	Column 2	Column 3	Column 4	Column 5	Column 6
UNIT MODEL	DIM A	DIM B	DIM C	DIM D	DIM E
VFS02	41 [1041]	22 [559]	19 1/2 [495]	22 3/4 [578]	20 [508]
VFS03	45 [1143]	26 [660]	23 1/2 [597]	26 3/4 [679]	24 [607]
VFS04	51 [1295]	32 [813]	27 1/2 [699]	32 3/4 [832]	30 [762]
VFS06	61 [1549]	42 [1067]	39 1/2 [1003]	42 3/4 [1086]	40 [1016]
VFS08	63 [1600]	44 [1118]	39 1/2 [1003]	44 3/4 [1137]	42 [1067]
VFS10	77 [1956]	58 [1473]	55 1/2 [1410]	58 3/4 [1492]	53 [1347]
VFS12	85 [2159]	66 [1676]	63 1/2 [1613]	66 3/4 [1695]	64 [1626]



DIMENSIONAL DATA: VF SERIES

MODEL VFS PARAMETRIC INCREMENTS

Note: Internal chassis and air openings remain the same. External cabinet can increase in height and width in 1 inch increments up to 12 inches.



DIMENSION A (inches)													
SIZE	X=0	X=1	X=2	X=3	X=4	X=5	X=6	X=7	X=8	X=9	X=10	X=11	X=12
02	41	42	43	44	45	46	47	48	49	50	51	52	53
03	45	46	47	48	49	50	51	52	53	54	55	56	57
04	51	52	53	54	55	56	57	58	59	60	61	62	63
06	61	62	63	64	65	66	67	68	69	70	71	72	73
08	63	64	65	66	67	68	69	70	71	72	73	74	75
10	77	78	79	80	81	82	83	84	85	86	87	88	89
12	85	86	87	88	89	90	91	92	93	94	95	N/A	N/A
DIMENSION B (inches)													
ALL SIZES	Y=0	Y=1	Y=2	Y=3	Y=4	Y=5	Y=6	Y=7	Y=8	Y=9	Y=10	Y=11	Y=12
	28 3/4	29 3/4	30 3/4	31 3/4	32 3/4	33 3/4	34 3/4	35 3/4	36 3/4	37 3/4	38 3/4	39 3/4	40 3/4

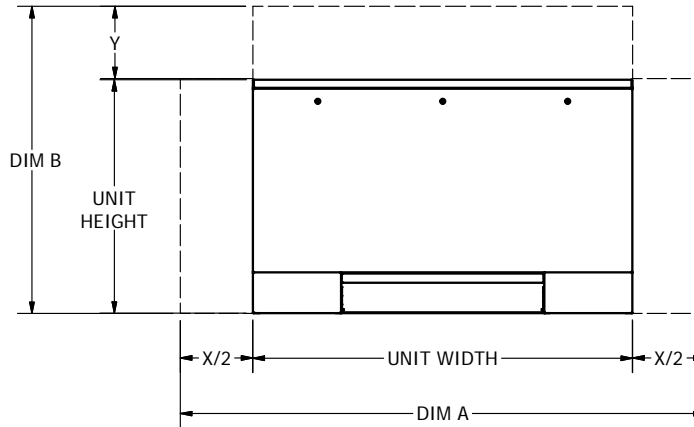
DIMENSION A (millimeters)													
SIZE	X=0	X=25	X=51	X=76	X=102	X=127	X=152	X=178	X=203	X=229	X=254	X=279	X=305
02	1041	1067	1092	1118	1143	1168	1194	1219	1245	1270	1295	1321	1346
03	1143	1168	1194	1219	1245	1270	1295	1321	1346	1372	1397	1422	1448
04	1295	1321	1346	1372	1397	1422	1448	1473	1499	1524	1549	1575	1600
06	1549	1575	1600	1626	1651	1676	1702	1727	1753	1778	1803	1829	1854
08	1600	1626	1651	1676	1702	1727	1753	1778	1803	1829	1854	1880	1905
10	1956	1981	2007	2032	2057	2083	2108	2134	2159	2184	2210	2235	2261
12	2159	2184	2210	2235	2261	2286	2311	2337	2362	2388	2413	N/A	N/A
DIMENSION B (millimeters)													
ALL SIZES	Y=0	Y=25	Y=51	Y=76	Y=102	Y=127	Y=152	Y=178	Y=203	Y=229	Y=254	Y=279	Y=305
	730	756	781	806	832	857	883	908	933	959	984	1010	1035

NOTE: Internal chassis and air openings remain the same. External cabinet can increase in height and width in 1" (25.4mm) increments up to 12" (305mm).

DIMENSIONAL DATA: VF SERIES

MODEL VFE PARAMETRIC INCREMENTS

Note: Internal chassis and air openings remain the same. External cabinet can increase in height and width in 1 inch increments up to 12 inches.



DIMENSION A (inches)													
SIZE	X=0	X=1	X=2	X=3	X=4	X=5	X=6	X=7	X=8	X=9	X=10	X=11	X=12
02	41	42	43	44	45	46	47	48	49	50	51	52	53
03	45	46	47	48	49	50	51	52	53	54	55	56	57
04	51	52	53	54	55	56	57	58	59	60	61	62	63
06	61	62	63	64	65	66	67	68	69	70	71	72	73
08	63	64	65	66	67	68	69	70	71	72	73	74	75
10	77	78	79	80	81	82	83	84	85	86	87	88	89
12	85	86	87	88	89	90	91	92	93	94	95	N/A	N/A
DIMENSION B (inches)													
ALL SIZES	Y=0	Y=1	Y=2	Y=3	Y=4	Y=5	Y=6	Y=7	Y=8	Y=9	Y=10	Y=11	Y=12
	25 1/4	26 1/4	27 1/4	28 1/4	29 1/4	30 1/4	31 1/4	32 1/4	33 1/4	34 1/4	35 1/4	36 1/4	37 1/4

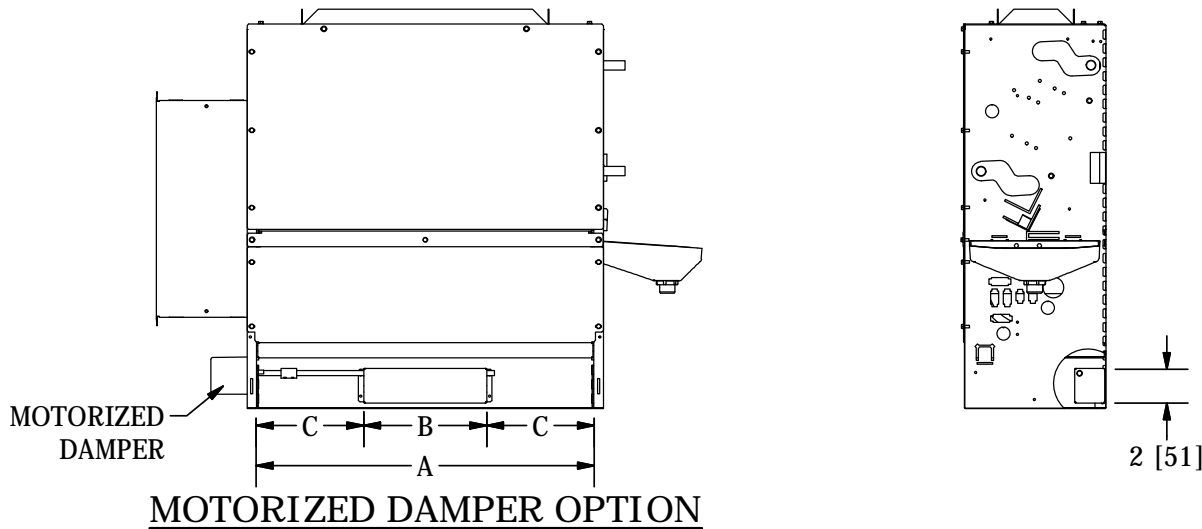
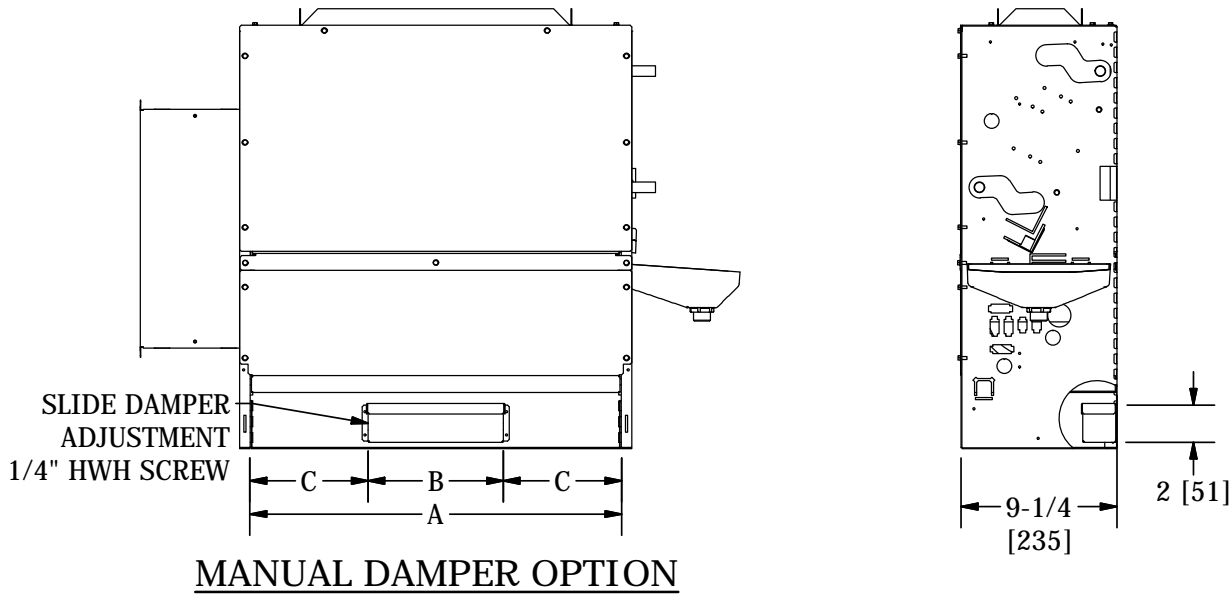
DIMENSION A (millimeters)													
SIZE	X=0	X=25	X=51	X=76	X=102	X=127	X=152	X=178	X=203	X=229	X=254	X=279	X=305
02	1041	1067	1092	1118	1143	1168	1194	1219	1245	1270	1295	1321	1346
03	1143	1168	1194	1219	1245	1270	1295	1321	1346	1372	1397	1422	1448
04	1295	1321	1346	1372	1397	1422	1448	1473	1499	1524	1549	1575	1600
06	1549	1575	1600	1626	1651	1676	1702	1727	1753	1778	1803	1829	1854
08	1600	1626	1651	1676	1702	1727	1753	1778	1803	1829	1854	1880	1905
10	1956	1981	2007	2032	2057	2083	2108	2134	2159	2184	2210	2235	2261
12	2159	2184	2210	2235	2261	2286	2311	2337	2362	2388	2413	N/A	N/A
DIMENSION B (millimeters)													
ALL SIZES	Y=0	Y=25	Y=51	Y=76	Y=102	Y=127	Y=152	Y=178	Y=203	Y=229	Y=254	Y=279	Y=305
	641	667	692	718	743	768	794	819	845	870	895	921	946

NOTE:

Internal chassis and air openings remain the same. External cabinet can increase in height and width in 1" (25.4mm) increments up to 12" (305mm).

DIMENSIONAL DATA: VF SERIES

OUTSIDE AIR DAMPER



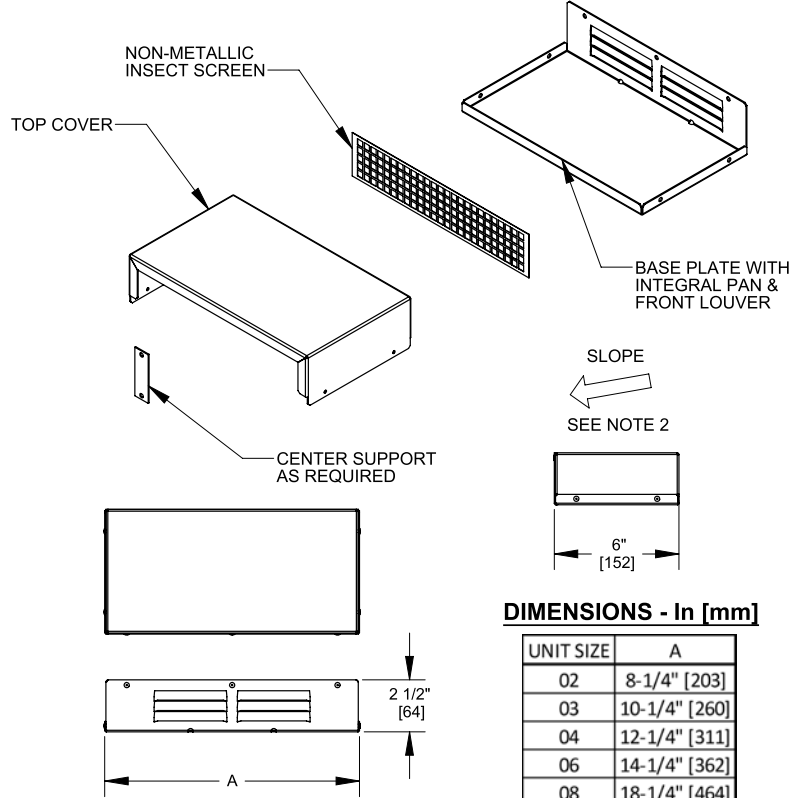
NOTES:

1. All dimensions are in inches [millimeters].
All dimensions are $\pm 1/4$ " [6mm]. Metric values are soft conversion.
2. Model VFC unit shown, typical for models "VFE" and "VFS".
3. The standard damper options may not provide freeze protection under all conditions and applications. Other forms of freeze protection may be required.
4. Right hand unit shown, left hand unit is similar but opposite.

DIMENSIONS - In [mm]			
UNIT SIZE	A	B	C
02	22 [559]	8 [203]	7 [178]
03	26 [660]	10 [254]	8 [203]
04	32 [813]	12 [305]	10 [254]
06	42 [1067]	14 [356]	14 [356]
08	44 [1118]	18 [457]	13 [330]
10	58 [1473]	27 [686]	15 1/2 [394]
12	66 [1676]	27 [686]	19 1/2 [495]

DIMENSIONAL DATA: VF SERIES

WALL BOX



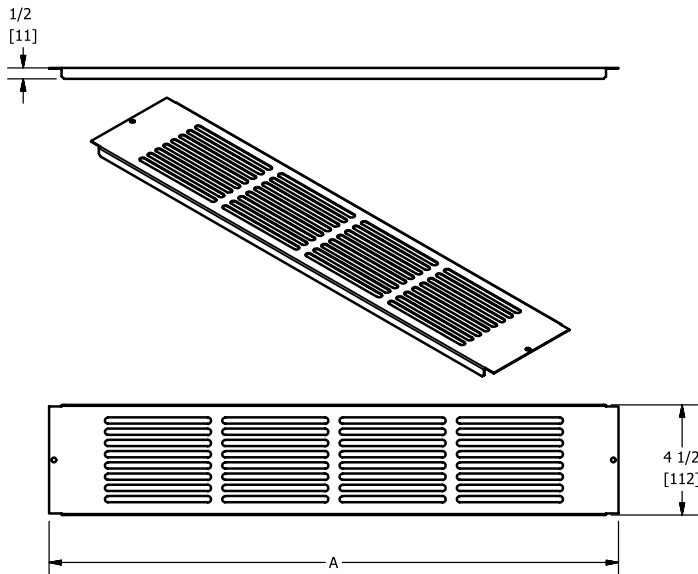
DIMENSIONS - In [mm]

UNIT SIZE	A
02	8-1/4" [203]
03	10-1/4" [260]
04	12-1/4" [311]
06	14-1/4" [362]
08	18-1/4" [464]
10	27-1/4" [692]
12	27-1/4" [692]

NOTES:

1. Material is .050" aluminum.
2. Wall box should be installed pitched slightly toward exterior surface of wall.
3. "Weep" holes should not be obstructed when sealing box to the wall.

RETURN AIR TOE KICK



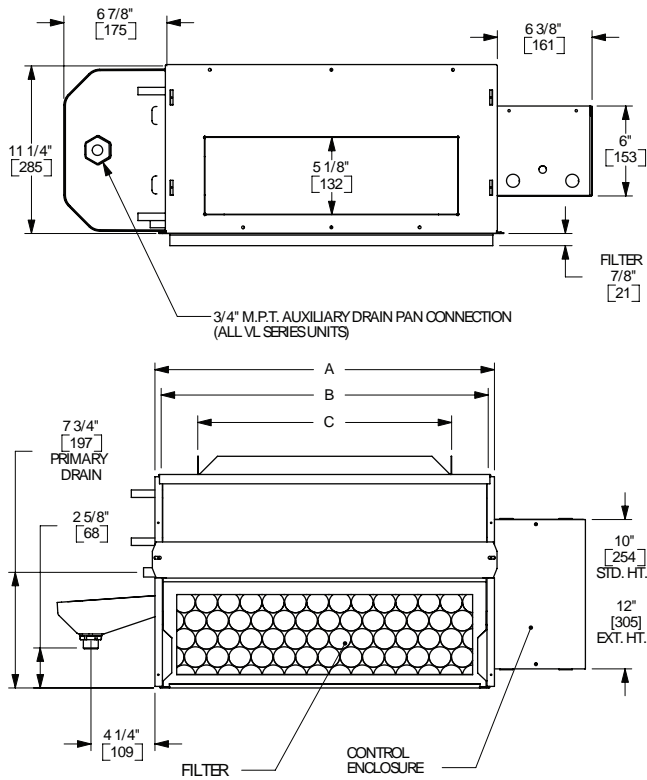
PART NUMBER	UNIT SIZE	DIM A
51-00437-01	02	22 3/4 [578]
51-00437-02	03	26 3/4 [679]
51-00437-03	04	32 3/4 [832]
51-00437-04	06	42 3/4 [1086]
51-00437-05	08	44 3/4 [1137]
51-00437-06	10	58 3/4 [1492]
51-00437-07	12	66 3/4 [1695]

NOTES:

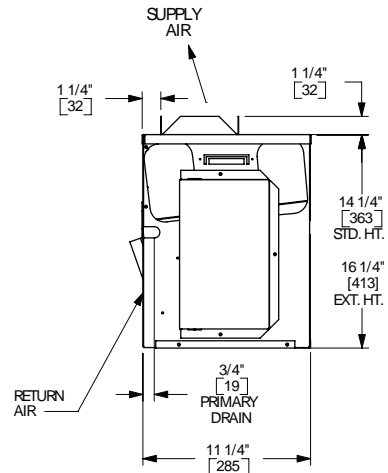
1. All dimensions are inches [millimeters]. All dimensions are ± 1/4" [6mm]. Metric values are soft conversion.
2. Typical for VFE or VFS models.
3. Return grille is held in place with sheet metal screws.

DIMENSIONAL DATA: VL SERIES

MODEL VLC CONCEALED



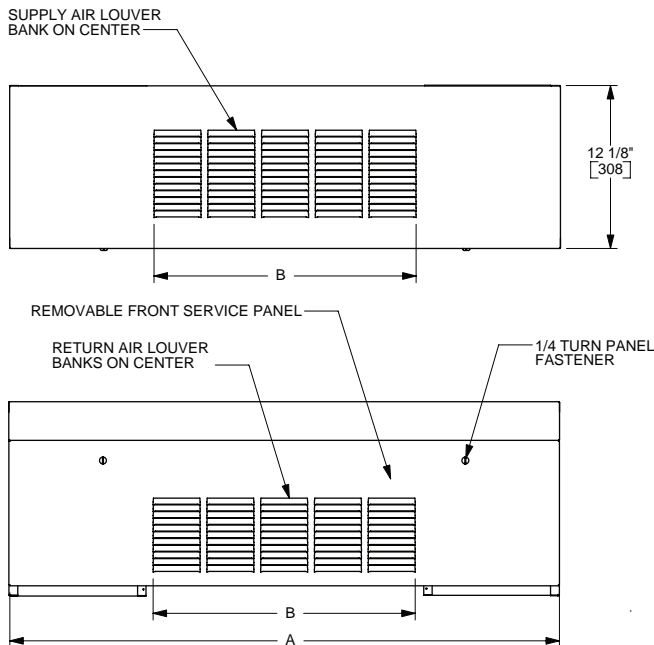
UNIT SIZE	DIMENSION		
	A	B	C
02	23" [584]	22" [559]	17" [432]
03	28" [711]	27" [686]	22" [559]
04	36" [914]	35" [889]	30" [762]
06	50" [1270]	49" [1245]	44" [1118]



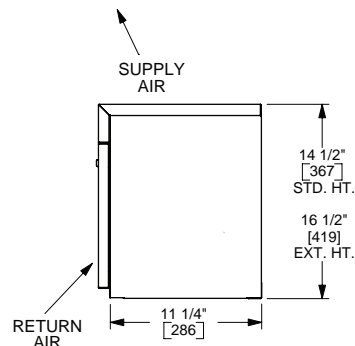
NOTES:

1. All dimensions are inches [mm] and are ± 1/4" [6mm]. Metric values are soft conversion.
2. Junction box size and location varies with unit features. Control options may be limited. Provide sufficient clearance to access electrical controls and comply with applicable codes and ordinances.
3. Left hand unit shown; right hand unit similar but opposite.
4. Auxiliary drain pan ships loose for field installation.

MODEL VLE EXPOSED CABINET



UNIT SIZE	DIMENSION	
	A	B
02	41" [1041]	19 1/2" [495]
03	46" [1168]	23 1/2" [597]
04	54" [1372]	31 1/2" [800]
06	68" [1727]	43 1/2" [1105]



NOTES:

1. See notes 1, 2 and 3 above.
2. Standard cabinet finish is Pearl White Satin.

GUIDE SPECIFICATIONS: VF AND VL SERIES

GENERAL

Furnish and install ENVIRO-TEC Vertical Floor Direct Drive Fan Coil Units where indicated on the plans and in the specifications. All units shall be capable of meeting or exceeding the scheduled capacities for cooling, heating and air delivery. Units shall be ETL listed in compliance with UL/ANSI Standard 1995, and be certified as complying with AHRI Standard 440-2008.

CONSTRUCTION

All unit chassis shall be fabricated of heavy gauge galvanized steel panels. All unit chassis panels shall be insulated with Elastomeric Closed Cell Foam Insulation. Insulation shall conform to UL 181 for erosion and NFPA 90A for fire, smoke and melting, and comply with a 25/50 Flame Spread and Smoke Developed Index per ASTM E-84 or UL 723. Additionally, insulation shall comply with Antimicrobial Performance Rating of 0, no observed growth, per ASTM G-21. Polyethylene or Fiberglass insulation is not acceptable.

All exposed units shall have exterior panels fabricated of not less than 20 gauge galvanized steel [Provide a 16 gauge front panel on exposed units]. The front panel shall be attached with quarter turn quick open fasteners to allow for easy removal and access for service. [The front panel shall be attached with tamper proof fasteners. Side panels shall be removable for access to controls and piping within the end pockets].

Top panel shall be removable from fan coil without the need to disconnect piping or electrical wiring (VFE/VFS). The top panel shall be removed through not more than 8 screws.

Provide a grille in the return air opening (VLE only). [Provide a grille in the return air opening. (VFE, VFS).] [Provide a decorative return air opening (VFC).]

All exposed units shall include a recessed stamped louver discharge grille. Louver discharge grille shall be reverse stamped (VFS only). [Provide an architectural grade linear bar discharge grille with a powder coated paint finish to match cabinet color. Liquid coat paint shall not be acceptable.]

All concealed units shall have a minimum 1" duct collar on the discharge.

PAINTED FINISH

All painted cabinet exterior panels shall be finished with a heat cured anodic acrylic powder paint of the standard factory color. Liquid coat paint shall not be acceptable.

SOUND

Units shall have published sound power level data tested in accordance with AHRI Standard 350.

POWER

Units shall not exceed scheduled power consumption.

FAN & MOTOR

Unit fan shall be dynamically balanced, forward curved, DWDI centrifugal type constructed of galvanized steel for corrosion resistance. Motors shall be high efficiency, permanently lubricated sleeve bearing, permanent split-capacitor type with UL and CSA listed automatic reset thermal overload protection and three separate horsepower taps. Shaded pole motors are not acceptable. Single speed motors are not acceptable.

The fan/motor assembly shall be removable and serviceable through the front panel. Each fan/motor assembly shall be fastened by no more than 2 screws. The fan/motor assembly shall be no longer than 44", and shall be easily removable by a single service technician. The motors shall have quick connectors to allow service and removal without the need for tools.

DRAIN PAN

Primary condensate drain pans shall be single wall, heavy gauge galvanized steel for corrosion resistance, and extend under the entire coil section. Drain pans shall be of one piece construction and be double sloped for condensate removal. Drain pan access that requires removal of coils is not acceptable.

The primary drain pan shall be externally insulated with a fire retardant, elastomeric closed cell foam insulation. The insulation shall carry no more than a 25/50 Flame Spread and Smoke Developed Rating per ASTM E-84 and UL 723 and an Antimicrobial Performance Rating of 0, no observed growth, per ASTM G-21. Double wall non-corrosive auxiliary drain pan is used for condensate from primary drain pan and optional valve packages.

Option: Provide a primary drain pan constructed entirely of heavy gauge stainless steel for superior corrosion resistance.

COILS

All cooling and heating coils shall optimize rows to meet the specified capacity. Coils shall have seamless copper tubes and shall be mechanically expanded to provide an efficient, permanent bond between the tube and fin.

Fins shall have high efficiency aluminum [copper] surface optimized for heat transfer, air pressure drop and carryover. Lanced fins shall not be acceptable.

GUIDE SPECIFICATIONS: VF AND VL SERIES

All coils shall be tested at 450 PSIG air pressure under water, and rated for a maximum 450 PSIG working pressure at 200°F.

All water coils shall be designed to connect with ½" nominal pipe connections.

Coil Casing shall be fabricated from galvanized steel [stainless steel].

Heating coils shall be furnished in the pre-heat (VF Only) or re-heat position.

Direct expansion cooling coils shall be factory sealed and charged with minimum 25 PSIG nitrogen or refrigerated dry air.

Steam coils shall be standard single tube steam type suitable for temperatures above 35°F and 15 PSIG steam pressure.

All water coils shall be provided with a manual air vent fitting to allow for coil venting.

FILTERS

All units shall be furnished with a minimum 1" nominal glass fiber throwaway (1" pleated MERV 7) (1" pleated MERV 8) (1" pleated MERV 13) filter. Filters shall be tight fitting to prevent air bypass. Filters shall be easily removable from the return air opening without the need for tools (VF Only).

ELECTRICAL

Units shall be furnished with single point power connection. Provide an electrical junction box for motor and other electrical terminations.

Option: Provide 24 VAC fan relay board with 25 VA transformer. Fan relay board designed to operate in conjunction with factory provided (field provided) 24 V thermostat. Fan relay board designed to accept 115, 208, 220, 230, or 277 V input power. Fan relay board to be factory installed.

Relay board shall operate with generic thermostat designed to control up to three independently energized fan speeds.

ELECTRIC HEAT

Furnish an electric resistance heating assembly as an integral part of the fan coil unit, with the heating capacity, voltage and kilowatts scheduled. The heater assembly shall be rated for installation on the fan coil unit and be located so as not to expose the fan assembly to excessive leaving air temperatures that could affect motor performance.

The heater and unit assembly shall be listed for zero clearance and meet all NEC requirements, and be ETL listed with the unit as an assembly in compliance with UL/ANSI Standard 1995.

All heating elements on floor mounted units shall be finned tubular type. Elements shall be constructed of nickel chromium resistance wire centered in tubes and embedded in refractory material. Terminals shall be sealed with silicone rubber to protect against moisture. Terminals and hardware shall be stainless steel for corrosion resistance. All internal wiring shall be rated for 105°C minimum.

All heaters shall include over temperature protection consisting of an automatic reset primary thermal limit and back-up secondary thermal limit. All heaters shall be single stage.

Option: Devices used to energize and de-energize (switch) electric heat must be totally silent. Magnetic, mercury, and/or quiet relays and/or contactors are not acceptable.

PIPING PACKAGES

Provide a standard factory assembled valve piping package to consist of a 2 or 3-way, on/off, motorized electric control valve and two ball isolation valves.

Control valves shall be piped normally closed to the coil. Control valves shall be wired to relay board through quick connects to allow service and replacement of valves. Quick connects shall prevent incorrect wiring through physical and color coded visual confirmation. Maximum entering water temperature on the control valve shall be 200°F, and maximum operating pressure shall be 450 PSIG.

Unions shall be provided to allow removal of piping package from unit without the need for brazing or cutting pipe.

Option: Provide 3-wire floating point modulating control valve (fail-in-place), in lieu of standard 2-position control valve with factory assembled valve piping package.

Option: Provide high pressure close-off actuator for 2-way on/off control valve. Maximum close-off pressure is 50 PSIG (1/2"), 25 PSIG (3/4"), or 20 PSIG (1").

Option: Provide either a fixed or adjustable flow control device for each piping package.

Option: Provide pressure-temperature ports (P/T) for each piping package to allow measurement across the coil.

GUIDE SPECIFICATIONS: VF AND VL SERIES

Piping packages shall be completely factory assembled, including interconnecting pipe and shipped loose for field installation.

Option: Piping package will be shipped factory installed.

OUTSIDE AIR DAMPER (VF Only)

Provide a manual or two position motorized outside air damper integral to the unit.

Option: Provide aluminum outside air wall box (VF Only) with integral insect screen and weep holes for field installation.

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Catalog: ET115.26-EG9 (0222) Supersedes ET115.26-EG9 (1121)
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