CATALOG

VF Fan-Coil Units
Floor-Mounted, Vertical

ENVIRO-TEC®
BY JOHNSON CONTROLS

TABLE OF CONTENTS

Features and Benefits 3
Construction Features 4
Standard and Optional Features 6
Coils, Physical Data 7
Physical Data 8
Electric Heat 9
Fan Performance Curves 10
Motor, Fan and Sound Data 12
Dimensional Data 13
Guide Specifications 19

NOTES:

- ENVIRO-TEC® offers Web-Select®, the industry's first web-based rating and selection program for complete unit, coil and sound selection. See your representative for more information.
- 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 J99014414-001.
- City of New York Material and Equipment Acceptance (MEA) File Number 106-02-E.

FEATURES AND BENEFITS

DESIGN FLEXIBILITY

The ENVIRO-TEC® VF Series 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 VF Series fan coil units are where you find the versatility to fit any HVAC system designer's needs.

Options include: single wall stainless steel drain pan, foil faced or elastomeric closed cell foam insulation, double deflection or linear bar discharge grilles, outside air dampers, 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 ARI Standard 440 for testing and rating fan coil units, are certified, and display the ARI 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. One or two row hot water or steam heating coils may be placed in the reheat position only.

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

CONVENIENT INSTALLATION

All VF Series 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 VF Series fan coil is available on Quick Ship with 5, 10 or 15 day lead times.

OPTIMUM BUILDING PERFORMANCE

Concealed Model VF Series fan coil chassis are built from galvanized steel. This metal surpasses the ASTM 125 hour salt spray test for corrosion and rust. Exposed cabinet models VFE and VFS are powder coated galvannealed steel. Standard insulation is 1/2 inch thick fiberglass, complying with UL 181 and NFPA 90A. Optional foil faced or elastomeric closed cell foam insulation may be specified.

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.

VF Series 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.

CONSTRUCTION FEATURES

MODEL VFE

VF Series fan coils have many standard and optional features which are unique to the industry (see page 6 for a complete listing).

1/2" thick fiberglass insulation (standard), or foil faced or elastomeric closed cell foam insulation (optional)

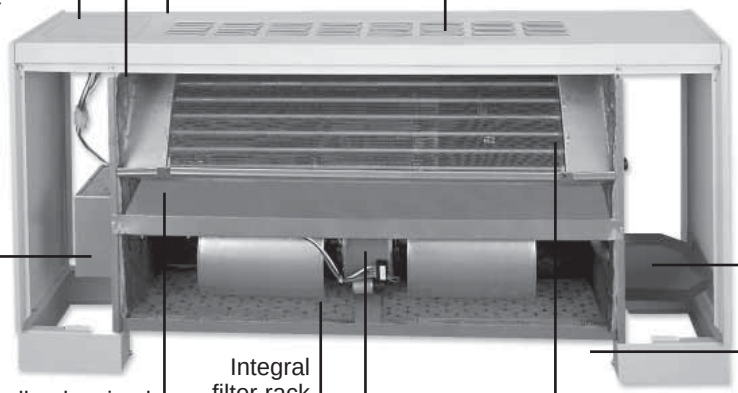
Control access door provided with unit mounted t-stat

Baked anodic acrylic powder paint (Models VFE and VFS exposed cabinet)

All units are cETL and ARI 440 listed and labeled

Stamped louver, double deflection, or linear bar discharge grilles

Optional finned tubular electric resistance heat (not shown) to prevent electrical shock. ETL listed as an assembly for safety compliance.



Entire electric heat assembly can be removed for servicing

Double wall plastic auxiliary drain pan, standard or extended length

Single point power connection on all units with and without electric heat

Open toe space or decorative return air grille

Single wall galvanized insulated drain pans are positively sloped to drain connections

Integral filter rack with 1" throwaway filter on all units

Permanently lubricated, three tap, PSC fan motors designed for quiet and efficient operation

Chilled water or DX cooling coils up to 4 rows

Hot water and steam heating coils up to 2 rows are located in the reheat position

Fan/drain pan assembly can be easily removed for cleaning and servicing

Maximum 5 total rows of coil combined

MODEL VFS

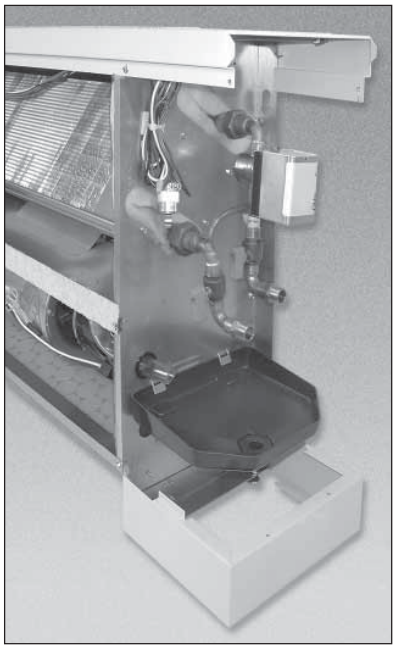
Vertical Sloped Top

MODEL VFC

Vertical Concealed

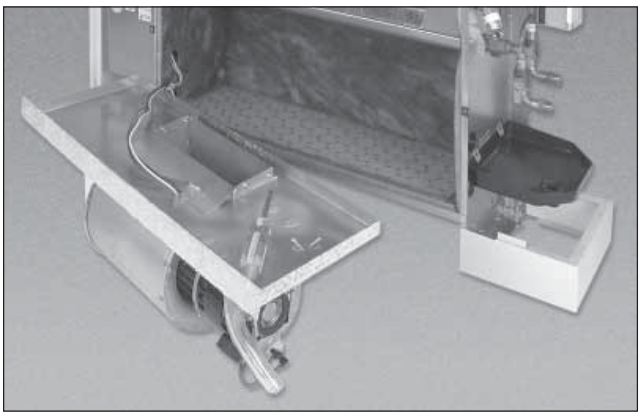
CONSTRUCTION FEATURES

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.

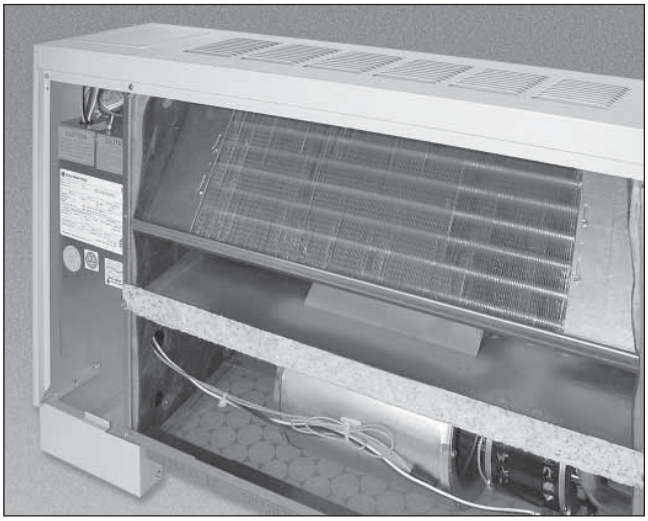


FAN DECK

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

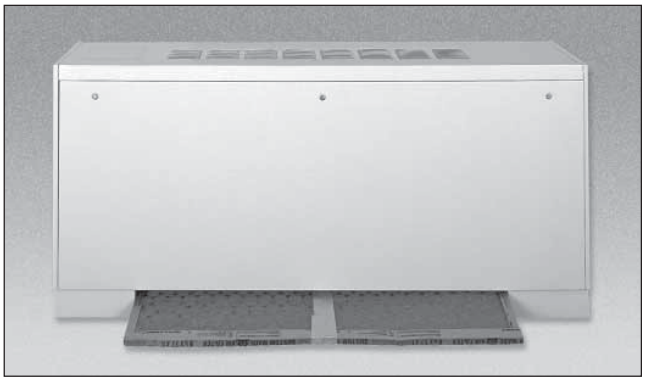
DRAIN PAN

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.

POWDER COATED TOUGH®

STANDARD AND OPTIONAL FEATURES

STANDARD FEATURES

Construction
All Units
- ARI 440 certified and labeled
- Galvanized steel construction
- 1/2" thick fiberglass insulation
- Integral filter rack with 1" throwaway filter
- Four point mounting locations

Concealed Units
- 1" top supply with duct collar

Exposed Units
- Top stamped louver supply grille
- Durable powder coat paint
- 8" end pockets with removable side panels
- 18 gauge exterior panel construction
- Flat and sloped tops

Coils
- Cooling - 3 or 4 row chilled water or DX, heat pump compatible
- Heating - 1 or 2 row hot water or steam – reheat position
- 5 total rows of cooling and heating coils maximum
- 1/2" O.D. seamless copper tubes
- 0.016" tube wall thickness
- High efficiency aluminum fin surface for optimizing heat transfer, pressure drop and carryover
- Left or right hand, same or opposite end connections
- Removable for service
- Manual air vents

Drain Pans
- Single wall, galvanized steel, externally insulated – fire retardant and antimicrobial
- Positively sloped to drain connection
- Removable for cleaning
- 5/8" O.D. primary drain pan outlet
- 3/4" M.P.T. auxiliary drain pan connection
- Double wall plastic auxiliary drip pan

Fan Assemblies
- Forward curved, DWDI centrifugal type
- 115 volt, single phase, three speed PSC motors
- Quick disconnect motor connections
- Removable with primary drain pan 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 elements 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
- Elastomeric closed cell foam insulation
- Manual and motorized outside air dampers
- Spare 1" throwaway filters
- 1" pleated filters (MERV 6)
- Wall boxes

Concealed Units
- Wall recessing panels

Exposed Units
- Double deflection discharge grille, powder coated
- Linear bar discharge grille, powder coated
- 16 gauge front panel
- 2" - 8" falsebacks
- Extended end pockets
- Leveling legs
- Return air louver grille
- 2" - 6" subbases
- Tamper proof fasteners

Coils
- Automatic air vents
- Stainless steel coil casings
- 0.025" tube wall (standard on steam)

Drain Pans
- Stainless steel construction with external insulation
- Double wall plastic auxiliary drain pan -- extended length
- Stainless steel auxiliary drain pan -- extended length

Fan Assemblies
- 208-230 & 277 volt, 60 Hz and 220 volt, 50 Hz motors

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

Electric Heat
- Door interlocking disconnect switches
- Main fusing
- Silent relay/contactors

Piping Packages
- Factory assembled – shipped loose for field installation
- 1/2" and 3/4", 2-way and 3-way normally closed, two position electric motorized valves
- Isolation ball valves with memory stop
- 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
- Analog, digital display, or programmable
- Unit and remote mounted, with integral three speed fan switch
- 2 and 4-pipe control sequences
- Automatic and manual changeover

COILS, PHYSICAL DATA

COILS

ENVIRO-TEC® offers hot water, chilled water, direct expansion (DX), and standard single tube steam coils for specific application with all VF Series 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
- Heating - 1 or 2 row hot water or steam
- 5 total rows of cooling and heating coils maximum
- 1/2" O.D. seamless copper tubes
- 0.016" tube wall thickness
- High efficiency aluminum fin surface for optimizing heat transfer, pressure drop and carryover
- Left or right hand, same or opposite side connections
- Manual air vents

OPTIONAL FEATURES

- Automatic air vents
- Stainless steel coil casings
- 0.025" tube wall thickness (standard on steam coils)
- DX coils are heat pump compatible

ENVIRO-TEC® offers Web-Select™, the industry's first web-based fan coil rating and selection program for complete unit, coil and sound selection. See your representative for more information.

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	3 ROW		4 ROW	
							Liquid	Suction	Liquid	Suction
20 - 60	5/8 [16]	5/8 [16]	7/8 [22]	7/8 [22]	5/8 [16]	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].

FACE AREA, FREE AREA AND FILTER SIZES

UNIT SIZE	COIL FACE AREA	DISCHARGE GRILLE FREE AREA	FILTER FACE AREA	NOMINAL FILTER SIZES
20	1.04 [.10]	0.48 [.04]	1.56 [.14]	26.5 x 8.5 x 1 [673 x 216 x 25]
25	1.35 [.13]	0.56 [.05]	1.92 [.18]	32.5 x 8.5 x 1 [826 x 216 x 25]
30	1.56 [.14]	0.64 [.07]	2.15 [.20]	36.5 x 8.5 x 1 [927 x 216 x 25]
40	2.08 [.19]	0.87 [.08]	2.74 [.25]	20 x 8.5 x 1 [508 x 216 x 25] 26.5 x 8.5 x 1 [673 x 216 x 25]
50	2.60 [.24]	1.03 [.09]	3.33 [.31]	20 x 8.5 x 1 [508 x 216 x 25] 36.5 x 8.5 x 1 [927 x 216 x 25]
60	3.13 [.29]	1.26 [.12]	3.92 [.36]	30 x 8.5 x 1 [762 x 216 x 25] 36.5 x 8.5 x 1 [927 x 216 x 25]

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

HEATING CAPACITY

UNIT TYPE	UNIT SIZE	NOM. CFM	1 ROW			2 ROW			3 ROW			4 ROW		
			QS (MBH)	GPM	WPD	QS (MBH)	GPM	WPD	QS (MBH)	GPM	WPD	QS (MBH)	GPM	WPD
VFC VFE VFS	20	250	8.5	0.4	0.3	15.5	0.8	1.5	19.5	1.0	0.5	22.6	1.2	0.8
	25	375	12.5	0.6	0.5	22.6	1.1	2.9	29.0	1.5	1.0	33.7	1.7	1.7
	30	500	13.6	0.7	0.9	24.8	1.3	5.1	32.4	1.7	1.8	37.8	1.9	3.1
	40	750	19.5	1.0	2.1	33.3	1.7	1.9	45.4	2.3	1.4	53.4	2.7	2.4
	50	1000	23.9	1.2	0.7	44.8	2.3	3.5	61.5	3.1	2.6	72.2	3.7	4.5
	60	1250	31.9	1.6	6.2	55.0	2.8	5.6	75.9	3.9	4.3	88.9	4.5	7.4

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

PHYSICAL DATA

ARI 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	
VFC 20	3	10	270	6800	5000	1.6	1.2	75
VFC 25	3	10	400	10700	7700	2.4	2.8	125
VFC 30	3	10	440	11100	8400	2.5	4.3	155
VFC 40	3	10	680	15200	11600	3.4	3.1	245
VFC 50	3	10	1010	23100	18400	5.1	7.1	425
VFC 60	3	10	1180	28200	21400	6.2	10.5	455
VFC 20	4	10	260	8500	5900	1.9	2.3	65
VFC 25	4	10	380	13100	8900	2.9	5.4	120
VFC 30	4	10	410	12700	9500	2.9	7.6	145
VFC 40	4	10	650	18700	13900	4.1	5.8	225
VFC 50	4	10	980	28200	21800	6.2	12.1	415
VFC 60	4	10	1110	33200	24500	7.3	18.2	450
VFE/VFS 20	3	10	250	6500	4800	1.5	1.1	75
VFE/VFS 25	3	10	360	10100	7200	2.2	2.5	120
VFE/VFS 30	3	10	400	10600	8200	2.4	3.9	135
VFE/VFS 40	3	10	620	14400	11000	3.2	2.8	200
VFE/VFS 50	3	10	970	22600	17900	5.0	6.8	395
VFE/VFS 60	3	10	1080	26900	20400	5.9	9.5	425
VFE/VFS 20	4	10	230	8100	5700	1.8	2.1	65
VFE/VFS 25	4	10	340	12000	8200	2.7	4.6	115
VFE/VFS 30	4	10	380	12600	9400	2.8	6.9	125
VFE/VFS 40	4	10	600	17500	12800	3.9	5.1	185
VFE/VFS 50	4	10	940	27600	21200	6.0	11.4	365
VFE/VFS 60	4	10	1020	31500	23200	6.9	16.4	415

NOTE: Based on 80°F DB and 67°F WB EAT, 45°F EWT, 10°F temperature rise, high fan speed. Motor type is PSC and motor voltage is 115/1/60. Airflow under dry coil conditions. Models VFE and VFS tested at 0.0" external static pressure. Model VFC tested at 0.05" external static pressure.

UNIT WEIGHT DATA

COMPONENT		UNIT SIZE					
		20	25	30	40	50	60
VFC BASE UNIT		62 [21]	71 [32]	79 [36]	91 [41]	118 [54]	135 [61]
VFE BASE UNIT		86 [39]	95 [43]	104 [47]	117 [53]	144 [65]	162 [74]
VFS BASE UNIT		88 [40]	98 [44]	107 49]	121 [55]	149 [68]	168 [76]
TOTAL COIL ROWS	**1 ROW - DRY**	8 [4]	10 [5]	11 [5]	13 [6]	15 [7]	18 [8]
	1 ROW - WET	10 [5]	12 [5]	13 [6]	15 [7]	18 [8]	21 [10]
	2 ROW - DRY	11 [5]	13 [6]	15 [7]	18 [8]	22 [10]	26 [12]
	2 ROW - WET	14 [6]	16 [7]	18 [8]	22 [10]	27 [12]	32 [15]
	3 ROW - DRY	14 [6]	17 [8]	19 [9]	24 [11]	29 [13]	34 [15]
	3 ROW - WET	17 [8]	21 [10]	24 [11]	30 [14]	36 [16]	42 [19]
	4 ROW - DRY	17 [8]	20 [9]	23 [10]	29 [13]	36 [16]	42 [19]
	4 ROW - WET	21 [10]	25 [11]	29 [13]	36 [16]	45 [20]	53 [24]
	5 ROW - DRY	20 [9]	24 [11]	27 [12]	34 [15]	42 [19]	49 [22]
	5 ROW - WET	25 [11]	30 [14]	34 [15]	42 [19]	53 [24]	63 [29]

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

ELECTRIC HEAT

ENVIRO-TEC® offers electric heating coils for specific application with all VF 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
- 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.

OPTIONAL FEATURES

- Silent solid state relays on heaters up to 18 amps
- Door interlocking disconnect switch
- Main fusing

USEFUL FORMULAS

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

$$1\text{Ø AMPs} = \frac{kW \times 1000}{Volts}$$

* 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 x 0.034 = 0.17
1.085 - 0.17 = 0.915

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.

ELECTRIC HEAT SELECTION CHART (AMPS)

UNIT SIZE	MBH	3.4	5.1	6.8	10.2	13.7	17.1	20.5	23.9	27.3
	KW	1.0	1.5	2.0	3.0	4.0	5.0	6.0	7.0	7.0
	VOLTS	AMPS								
20	115	8.7	13.1	17.4						
	208	4.8	7.2	9.6						
	230	4.4	6.5	8.7						
	277	3.6	5.4	7.2						
25	115	8.7	13.1	17.4						
	208	4.8	7.2	9.6						
	230	4.4	6.5	8.7						
	277	3.6	5.4	7.2						
30	115	8.7	13.1	17.4	26.1	34.8				
	208	4.8	7.2	9.6	14.4	19.2				
	230	4.4	6.5	8.7	13.1	17.4				
	277	3.6	5.4	7.2	10.8	14.4				
40	115	8.7	13.1	17.4	26.1	34.8				
	208	4.8	7.2	9.6	14.4	19.2	24.1			
	230	4.4	6.5	8.7	13.1	17.4	21.8			
	277	3.6	5.4	7.2	10.8	14.4	18.1			
50	115				26.1	34.8				
	208				14.4	19.2	24.1	28.9	33.7	
	230				13.1	17.4	21.8	26.1	30.5	
	277				10.8	14.4	18.1	21.7	25.3	
60	115				26.1	34.8				
	208				14.4	19.2	24.1	28.9	33.7	38.5
	230				13.1	17.4	21.8	26.1	30.5	34.8
	277				10.8	14.4	18.1	21.7	25.3	28.9

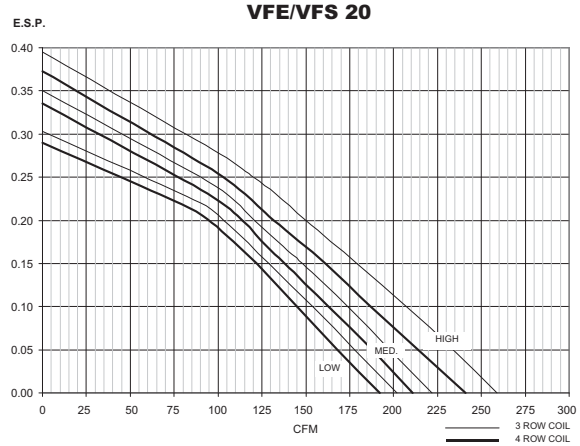
NOTES:

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.

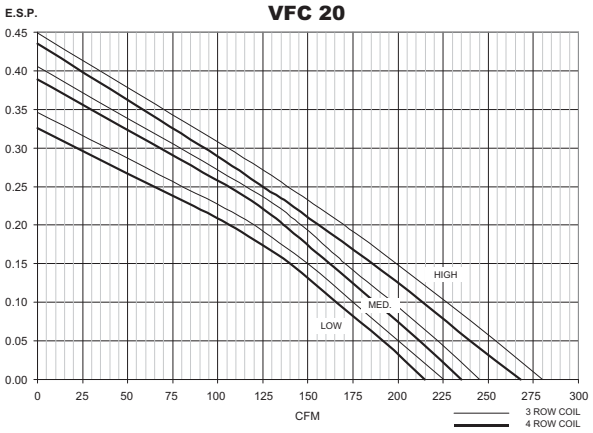
FAN PERFORMANCE CURVES

1. Fan curves on the following pages depict actual performance of each motor tap without any additional fan balance adjustment. Actual capacities which fall below each curve can be obtained by adding an adjustment device.
2. ENVIRO-TEC® Fan Coil Units are equipped with permanent split-capacitor (PSC) motors with three separate taps (High, Medium and Low) which provides variable horsepower outputs. Most often, size selections are conservative and actual CFM requirements and/or external static pressure requirements are lower than those specified. In this case, the unit fan motor can be run at low or medium tap, substantially reducing the operating cost of the unit.
3. All fan curves are for 115/1/60 motors and include losses for cabinet, electric heater, 3 or 4 row coil and clean 1" throw-away filter. For other coil configurations, adjust performance curves based on pressure losses for the coils using Web-Select®.
4. See page 12 for fan motor electrical data.
5. For additional high static pressure applications and rating points, contact factory.

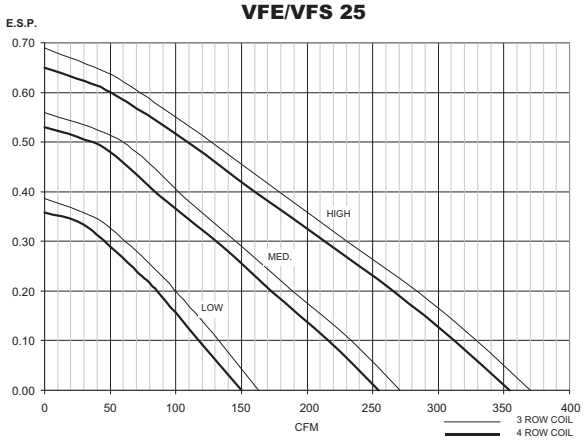
VFE/VFS 20



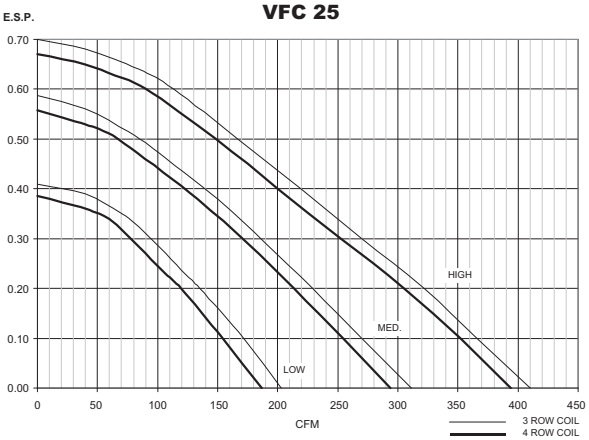
VFC 20



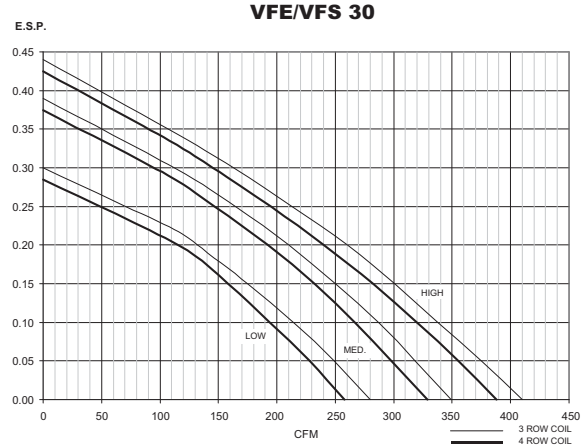
VFE/VFS 25



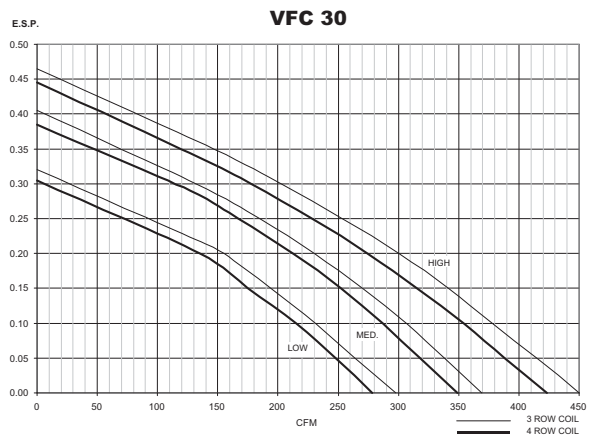
VFC 25



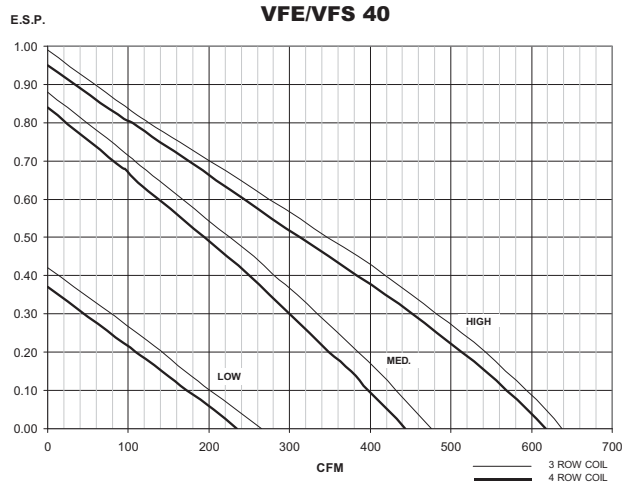
VFE/VFS 30

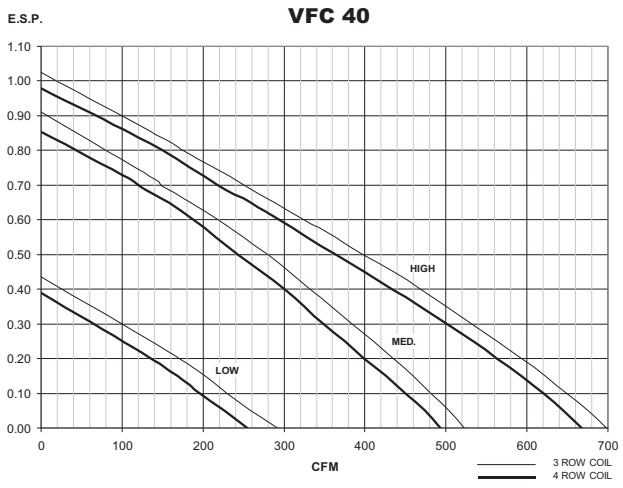


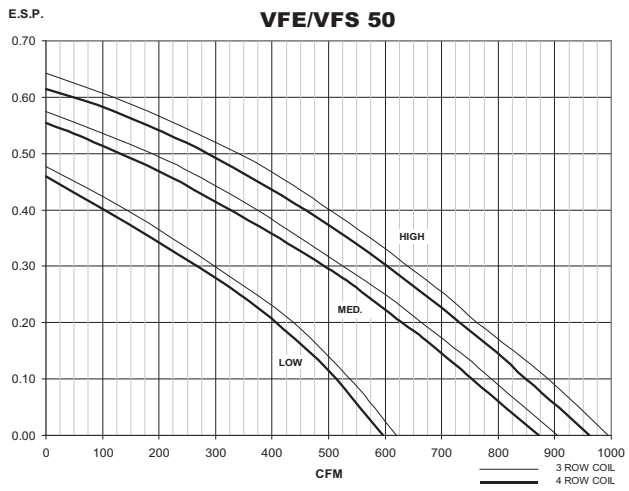
VFC 30

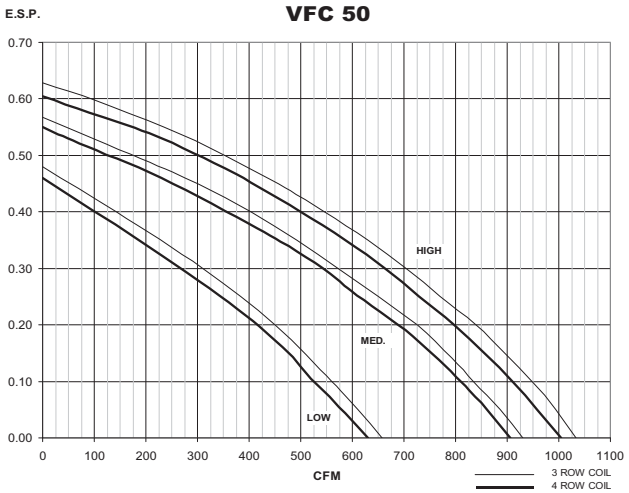


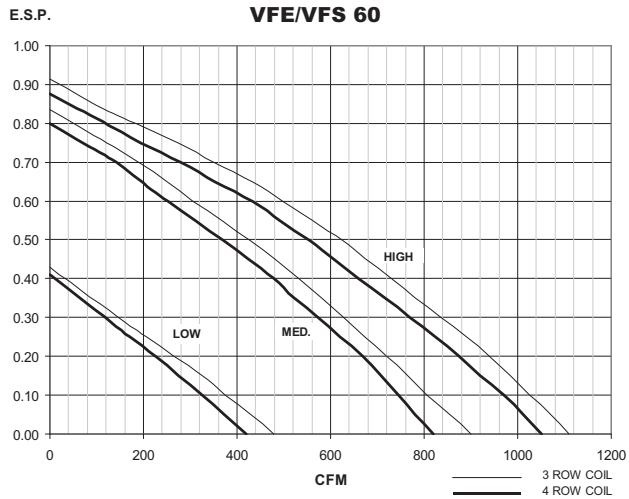
FAN PERFORMANCE CURVES

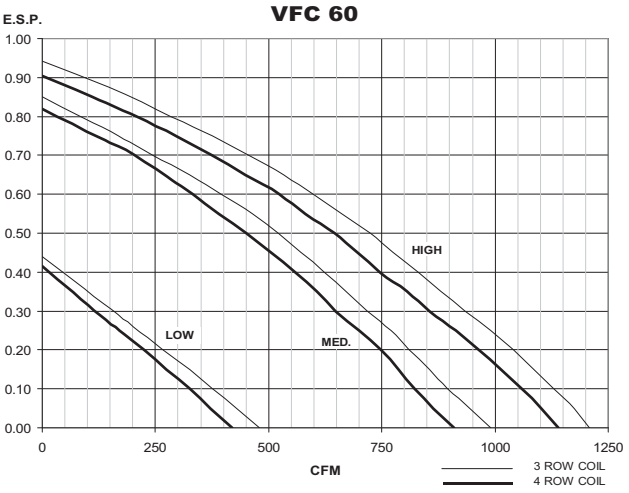












MOTOR, FAN AND SOUND DATA

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
20	High	(1) 1/30	1	0.8	57	0.6	77	0.3	71
	Medium	(1) 1/50		0.4	39	0.3	49	0.3	48
	Low	(1) 1/60		0.3	33	0.3	43	0.3	41
25	High	(1) 1/15	1	1.1	125	0.5	120	0.5	120
	Medium	(1) 1/30		0.9	90	0.3	80	0.3	80
	Low	(1) 1/60		0.5	60	0.2	60	0.2	60
30	High	(1) 1/10	2	1.9	165	0.8	158	0.8	162
	Meduim	(1) 1/30		0.8	76	0.3	75	0.5	65
	Low	(1) 1/60		0.5	47	0.2	54	0.4	41
40	High	(1) 1/6	2	2.5	261	1.4	284	1.0	254
	Medium	(1) 1/12		1.5	162	0.5	171	0.5	152
	Low	(1) 1/40		0.6	75	0.4	79	0.3	74
50	High	(1) 1/8	3	1.7	215	0.9	216	0.8	214
		(1) 1/6		2.5	257	1.4	233	1.0	255
	Medium	(1) 1/15		1.3	145	0.6	109	0.5	132
		(1) 1/12		1.5	156	0.5	106	0.5	151
	Low	(1) 1/40		0.8	69	0.3	63	0.3	86
		(1) 1/40		0.6	75	0.3	62	0.3	84
60	High	(2) 1/6	4	5.0	522	2.8	568	2.0	508
	Medium	(2)1/12		3.0	324	1.0	342	1.0	304
	Low	(2) 1/40		1.2	150	0.6	158	0.6	148

NOTES:
1. Motor electrical data is nameplated data. Actual data will vary with application.
2. 230 volt motor is nameplated for 208-230/1/60. Use 230 volt motor data for 208 volt applications.
3. Unit size 30, 208-230 and 277 volt motors are 1/12 HP at high tap.

SOUND DATA

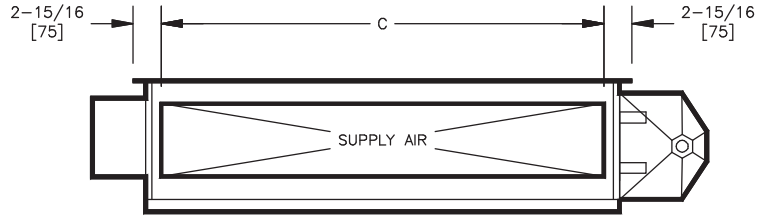
UNIT SIZE	FAN SPEED	SCFM	TOTAL SOUND POWER LEVEL OCTAVE BAND / CENTER FREQUENCY (HZ)						
			2/125	3/250	4/500	5/1000	6/2000	7/4000	8/8000
20	High	250	55	54	46	44	38	33	26
	Medium	211	50	52	45	42	36	31	25
	Low	192	49	51	44	41	35	30	25
25	High	350	55	58	53	52	46	42	33
	Medium	250	53	50	46	43	40	33	28
	Low	150	47	43	37	37	36	27	27
30	High	413	56	56	48	44	38	32	26
	Medium	349	52	54	44	40	34	27	25
	Low	258	47	47	38	34	27	23	24
40	High	618	62	62	56	52	47	42	37
	Medium	443	58	57	50	46	42	36	34
	Low	235	47	41	35	30	23	21	24
50	High	865	69	65	58	59	50	46	40
	Medium	688	67	62	55	52	46	42	36
	Low	442	55	51	46	38	32	26	25
60	High	1050	64	66	59	64	51	46	40
	Medium	820	63	62	54	52	47	41	35
	Low	416	48	46	40	35	27	22	24

NOTES:
1. Sound data tested in accordance with ARI 350-2000.
2. Sound levels are expressed in decibels, dB RE: 1 x 10-12 watts.
3. Total sound power level data based on Model VFE with fan CFM at corresponding motor tap with 115/1/60 volt motor, 3 or 4 row coil, 1" throwaway filter, 0.0" external static pressure and standard rated internal pressure losses.

DIMENSIONAL DATA

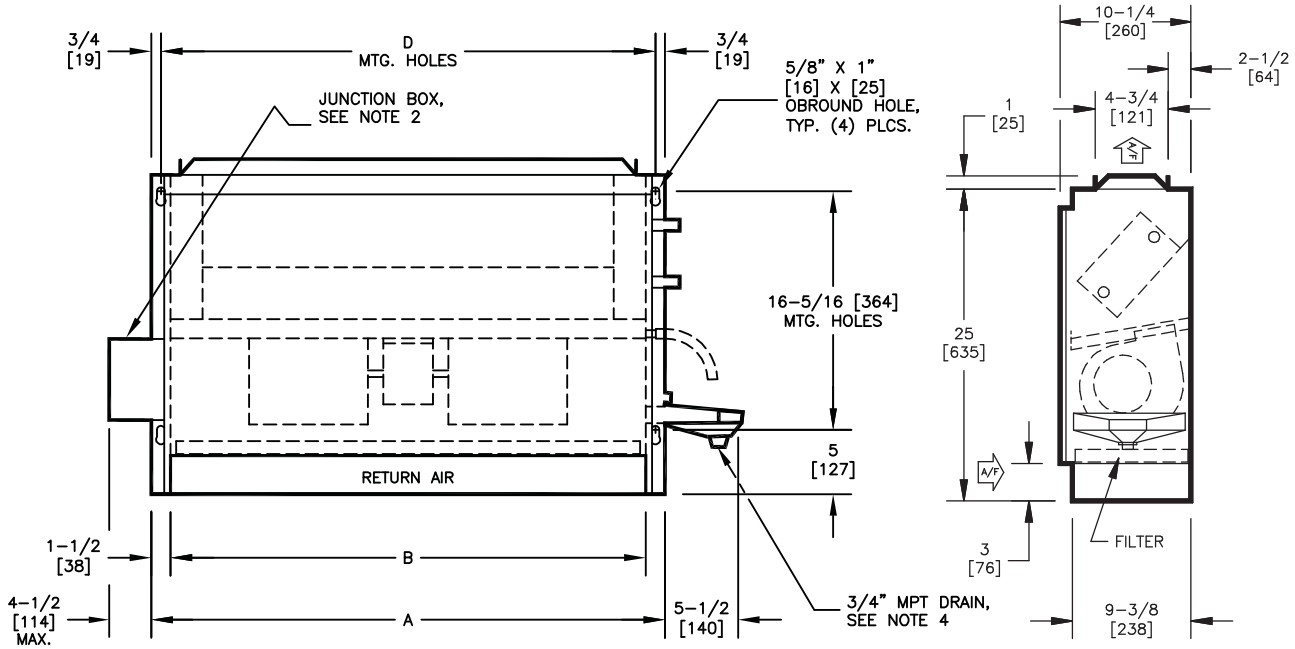
MODEL VFC CONCEALED UNIT

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



TOP VIEW

NOTES:
1. All dimensions are Inches [millimeters]. All dimensions 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. Right hand unit shown, left hand unit similar, but opposite.
4. Auxiliary drain pan ships loose for field installation.



FRONT VIEW SIDE VIEW

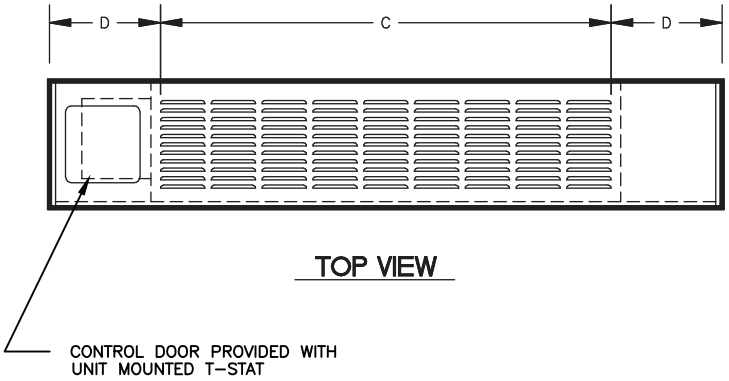
DIMENSIONS – In [mm]

UNIT SIZE	A	B	C	D
20	30 [762]	27 [686]	24–1/8 [613]	28–1/2 [724]
25	36 [914]	33 [838]	30–1/8 [765]	34–1/2 [876]
30	40 [1016]	37 [940]	34–1/8 [867]	38–1/2 [978]
40	50 [1270]	47 [1194]	44–1/8 [1121]	48–1/2 [1232]
50	60 [1524]	57 [1448]	54–1/8 [1375]	58–1/2 [1486]
60	70 [1778]	67 [1702]	64–1/8 [1629]	68–1/2 [1740]

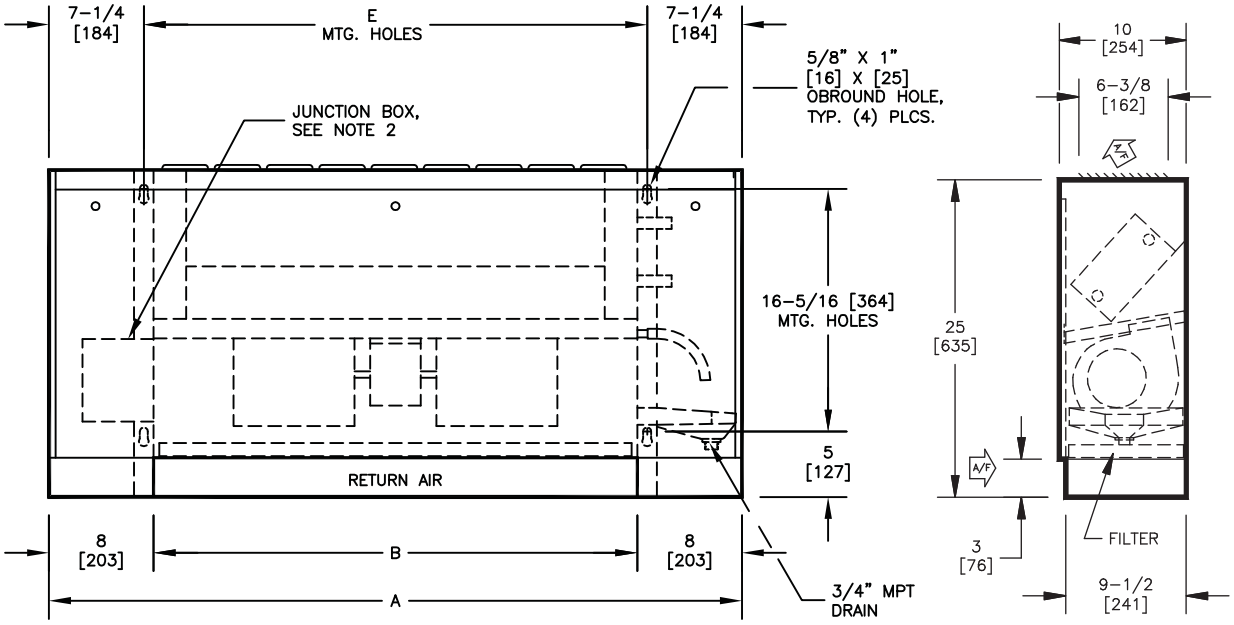
DIMENSIONAL DATA

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 ±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.



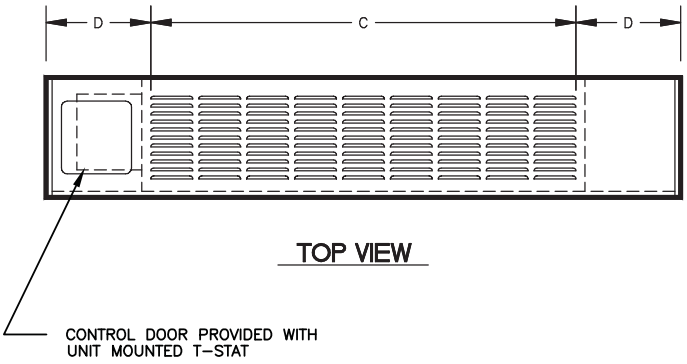
DIMENSIONS - In [mm]

UNIT SIZE	A	B	C	D	E
20	43 [1092]	27 [686]	23-1/2 [597]	9-3/4 [248]	28-1/2 [724]
25	49 [1245]	33 [838]	27-1/2 [699]	10-3/4 [273]	34-1/2 [876]
30	53 [1346]	37 [940]	31-1/2 [800]	10-3/4 [273]	38-1/2 [978]
40	63 [1600]	47 [1194]	43-1/2 [1105]	9-3/4 [248]	48-1/2 [1232]
50	73 [1854]	57 [1448]	51-1/2 [1308]	10-3/4 [273]	58-1/2 [1486]
60	83 [2108]	67 [1702]	63-1/2 [1613]	9-3/4 [248]	68-1/2 [1740]

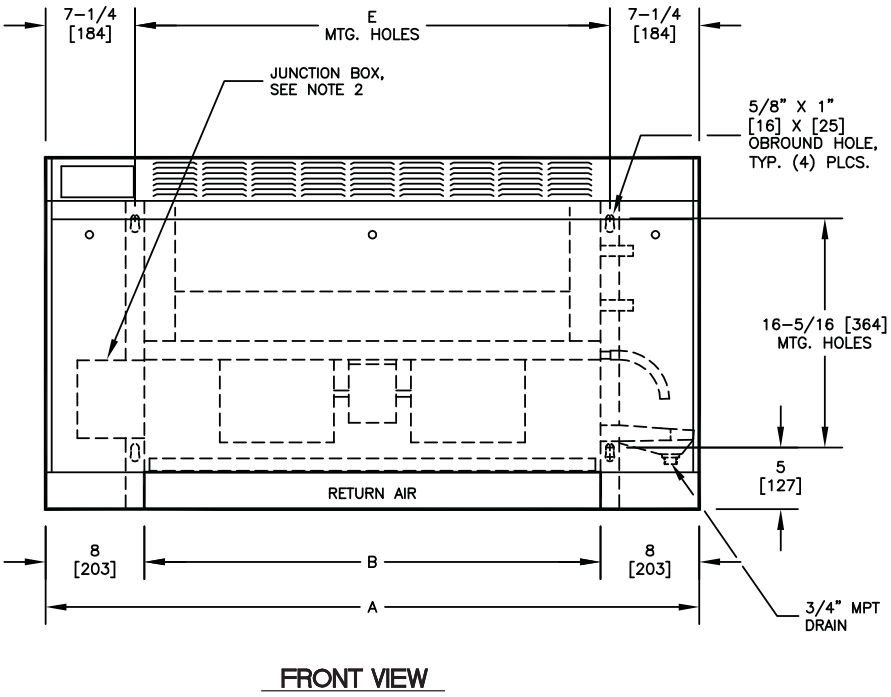
DIMENSIONAL DATA

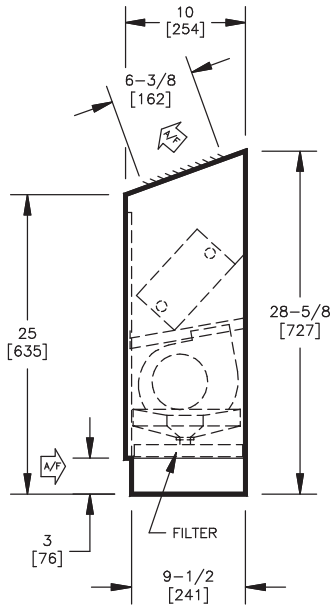
MODEL VFS SLOPE TOP UNIT

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



NOTES:
1. All dimensions are Inches [millimeters]. All dimensions are ±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.



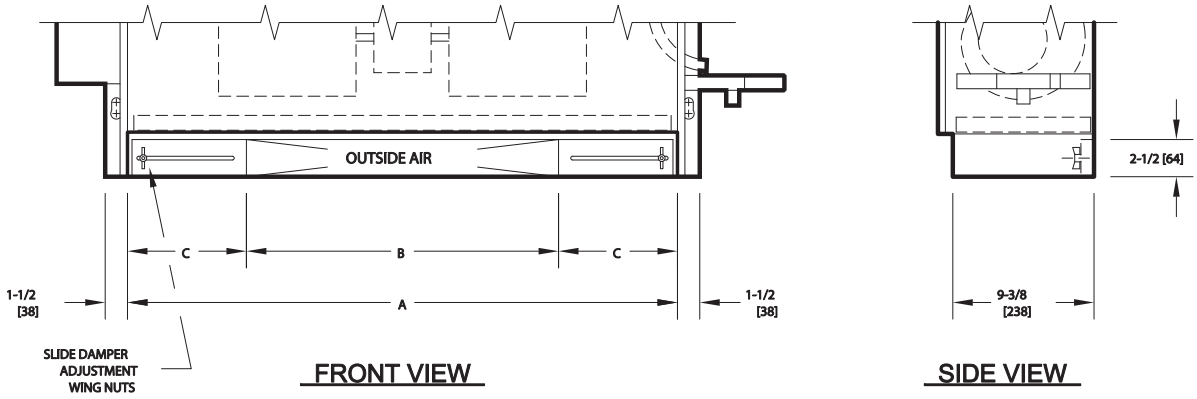


DIMENSIONS – In [mm]

UNIT SIZE	A	B	C	D	E
20	43 [1092]	27 [686]	23–1/2 [597]	9–3/4 [248]	28–1/2 [724]
25	49 [1245]	33 [838]	27–1/2 [699]	10–3/4 [273]	34–1/2 [876]
30	53 [1346]	37 [940]	31–1/2 [800]	10–3/4 [273]	38–1/2 [978]
40	63 [1600]	47 [1194]	43–1/2 [1105]	9–3/4 [248]	48–1/2 [1232]
50	73 [1854]	57 [1448]	51–1/2 [1308]	10–3/4 [273]	58–1/2 [1486]
60	83 [2108]	67 [1702]	63–1/2 [1613]	9–3/4 [248]	68–1/2 [1740]

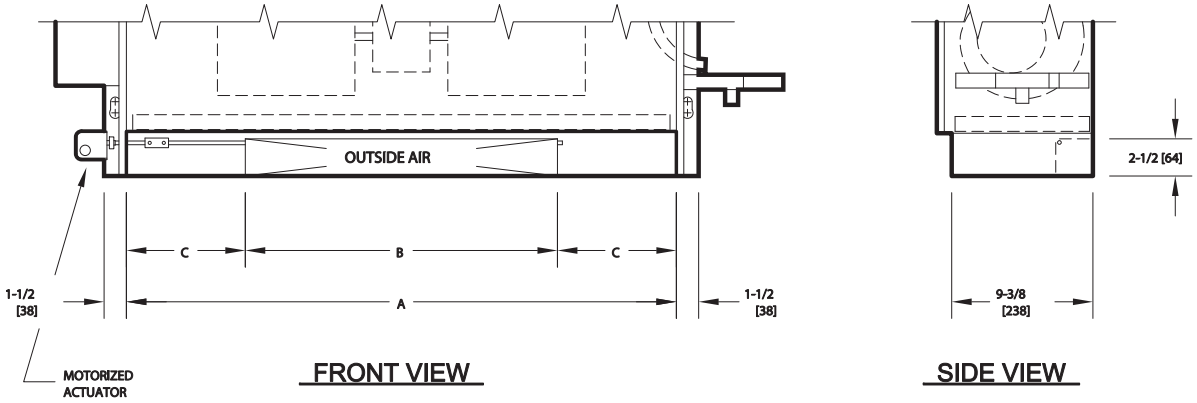
DIMENSIONAL DATA

OUTSIDE AIR INLET LOCATION, MANUAL DAMPER OPTION



FRONT VIEW SIDE VIEW

OUTSIDE AIR INLET LOCATION, MOTORIZED DAMPER OPTION



FRONT VIEW SIDE VIEW

DIMENSIONS - In [mm]

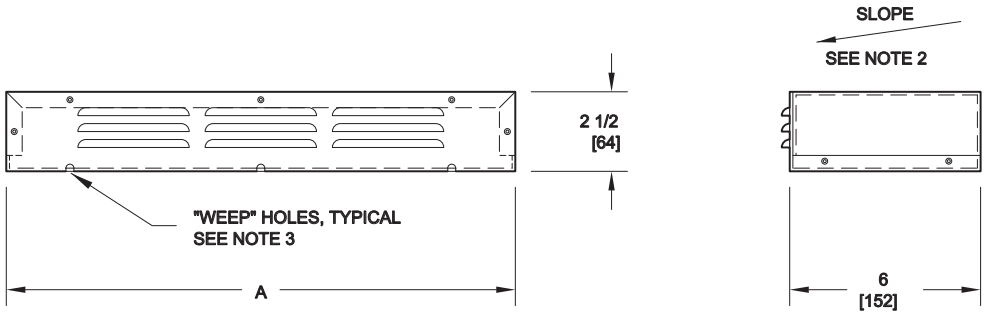
UNIT SIZE	A	B	C
20	27 [686]	16 [406]	5-1/2 [140]
25	33 [838]	19 [483]	7 [178]
30	37 [940]	21 [533]	8 [203]
40	47 [1194]	27 [686]	10 [254]
50	57 [1448]	33 [838]	12 [305]
60	67 [1702]	39 [991]	14 [356]

NOTES:
1. All dimensions are Inches [millimeters]. All dimensions are ±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.

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

DIMENSIONAL DATA

OUTSIDE AIR WALL BOX ASSEMBLY

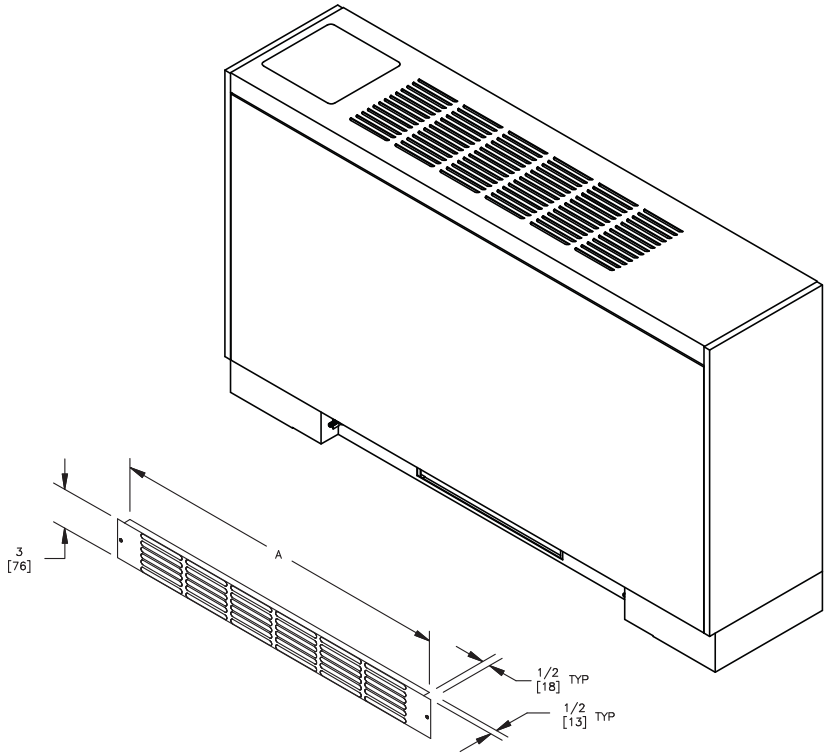


DIMENSIONS - In [mm]

UNIT SIZE	A
20	16 [406]
25	19 [483]
30	21 [533]
40	27 [686]
50	33 [838]
60	39 [991]

NOTES:
1. Material is .050" thick 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 wall.

STAMPED LOUVER RETURN AIR GRILLE



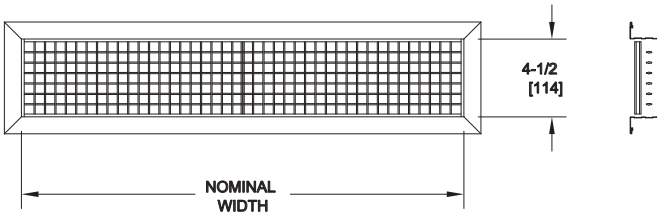
UNIT SIZE	A	# BANKS
20	26-11/16 [678]	5
25	32-11/16 [830]	6
30	36-11/16 [932]	7
40	46-11/16 [1186]	9
50	56-11/16 [1440]	11
60	66-11/16 [1694]	13

NOTES:
1. All dimensions are Inches [millimeters]. All dimensions are ±1/4" [6mm]. Metric values are soft conversion.
2. Standard cabinet finish is "Pearl White Satin".
3. Model VFE unit shown, typical for model VFS.
4. Return grille is held in place with sheet metal screws.

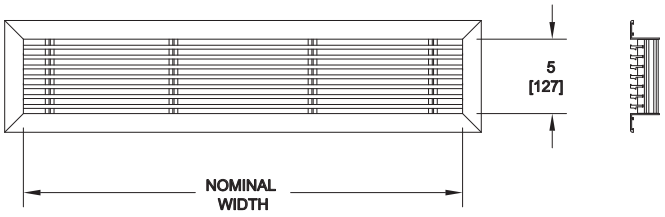
Drawings are not to scale and not for submittal or installation purposes.

DIMENSIONAL DATA

OPTIONAL DISCHARGE GRILLES



DOUBLE DEFLECTION GRILLE



LINEAR BAR GRILLE

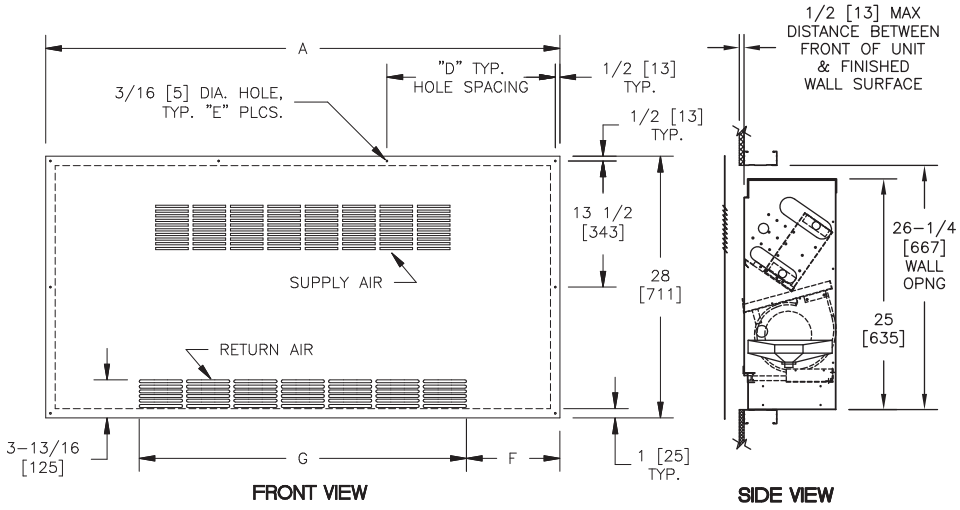
CONSTRUCTION
Frame: - Rollformed Aluminum
Blades: - Rollformed Aluminum, Airfoil Shape
- Individually Adjustable Deflection
- 3/4" [19mm] Spacing on Centers
Finish: - Powder Coat Baked Enamel
- Color to Match Specified Unit Finish

UNIT SIZE	NOMINAL WIDTH
20	25 [635]
25	31 [787]
30	35 [889]
40	45 [1143]
50	55 [1397]
60	65 [1651]

CONSTRUCTION
Frame: - Extruded Aluminum
Blades: - Extruded Aluminum
- 15° Fixed Deflection
- 1/2" [13mm] Spacing on Centers
Finish: - Powder Coat Baked Enamel
- Color to Match Specified Unit Finish

NOTES:
1. All dimensions are Inches [millimeters]. Metric values are soft conversion.
2. All grille dimensions are nominal.
3. All grilles are shipped installed on unit.

STANDARD DECORATOR WALL PANEL



NOTES:
1. All dimensions are inches [millimeters]. All dimensions are ± 1/4" [6mm]. Metric values are soft conversion.
2. Wall panel provides air seal at front of unit. Installed location is critical to proper unit operation.
3. Unit may require raised support to achieve proper vertical alignment with wall panel.
4. Right hand unit shown; left hand unit opposite.
5. Mounting hardware furnished by others.
6. Refer to submittal drawing for additional detail.

DIMENSIONS – In [mm]

UNIT SIZE	A	D	E	F	G
20	45 [1143]	22 [559]	8	10-1/16 [256]	24-7/8 [632]
25	51 [1295]	16-5/8 [422]	10	10-1/2 [267]	30 [762]
30	55 [1397]	18 [457]	10	10 [254]	35 [889]
40	65 [1651]	16 [406]	12	9-15/16 [252]	45-1/8 [1146]
50	75 [1905]	18 1/2 [470]	12	9-7/8 [251]	55-1/4 [1403]
60	85 [2159]	14 [356]	16	9-13/16 [249]	63-3/8 [1610]

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

GUIDE SPECIFICATIONS

GENERAL

Furnish and install ENVIRO-TEC® VF Series Vertical Floor Direct Drive Fan Coil Units where indicated on the plans and in the specifications. Units shall be completely factory assembled, tested and shipped as one piece. All units shall be capable of meeting or exceeding the scheduled capacities for cooling, heating and air delivery. All unit dimensions for each model and size shall be considered maximums. Units shall be ETL listed in compliance with UL/ANSI Standard 1995, and be certified as complying with the latest edition of ARI Standard 440.

CONSTRUCTION

All unit chassis shall be fabricated of heavy gauge galvanized steel panels able to meet 125 hour salt spray test per ASTM B-117. All exterior panels shall be insulated with 1/2" thick insulation with a maximum k value of .24 (BTU • in) / (hr • ft^2 • °F) and rated for a maximum air velocity of 5000 f.p.m. Insulation must meet all requirements of ASTM C1071 (including C665), UL 181 for erosion, and carry a 25/50 rating for flame spread/smoke developed per ASTM E-84, UL 723 and NFPA 90A.

All exposed units shall have exterior panels fabricated of not less than 18 gauge galvannealed steel. The front panel shall be attached with quarter turn quick open fasteners to allow for easy removal and access for service. Side panels shall be removable for access to controls and piping within the end pockets.

Option: Provide a 16 gauge front panel on exposed units.

All exposed units shall include a recessed stamped louver discharge grille.

Option: Provide an architectural grade double deflection discharge grille with a powder coated paint finish to match cabinet color.

Option: Provide an architectural grade linear bar discharge grille with a powder coated paint finish to match cabinet color.

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

Option: Provide foil faced insulation in lieu of standard. Foil insulation shall meet or exceed the requirements stated above, and in addition meet ASTM Standards C-665 and C-1136 for biological growth in insulation. Insulation shall be lined with aluminum foil, fiberglass scrim reinforcement, and 30 pound kraft paper laminated together with a flame resistant adhesive. All exposed edges shall be sealed to prevent any fibers from reaching the air stream.

Option: Provide Elastomeric Closed Cell Foam Insulation in lieu of standard. 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 insulation is not acceptable.

Unit mounting shall be to the wall through 5/8" slots in four locations along the back of the unit.

PAINTED FINISH

All painted cabinet exterior panels shall be finished with a heat cured anodic acrylic powder paint of the standard factory color.

SOUND

Units shall have published sound power level data tested in accordance with ARI Standard 350-2000.

FAN/DRAIN PAN ASSEMBLY

Unit fan shall be dynamically balanced, forward curved, DWDI centrifugal type constructed of 18 gauge 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. Single speed motors are not acceptable.

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 positively sloped for condensate removal.

The primary drain pan shall be externally insulated with a fire retardant, 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 plastic auxiliary drain pan is used for condensate from primary drain pan and optional valve packages.

The fan/drain pan assembly shall be removed and serviced through the front panel. The entire assembly shall be able to come out of the unit easily by removing two screws and unplugging the motor(s).

GUIDE SPECIFICATIONS

Option: Provide a primary drain pan constructed entirely of heavy gauge stainless steel for superior corrosion resistance. Stainless steel drain pans shall be externally insulated and meet or exceed the requirements stated above.

Option: Provide an electronic fan speed controller (SCR) for aid in balancing the fan capacity. The speed controller shall have a turn down stop to prevent the possibility of harming the motor bearings, and incorporate electrical noise suppression to minimize noise on the incoming power lines.

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

COILS

All cooling and heating coils shall optimize rows and fins per inch 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 surface optimized for heat transfer, air pressure drop and carryover.

All coils shall be tested at 450 PSIG air pressure under water, and rated for a maximum 300 PSIG working pressure at 200°F.

Heating coils shall be furnished in the reheat position as standard.

Direct expansion cooling coils shall include a fixed orifice metering device. All evaporator coils shall be factory sealed and charged with a minimum 5 PSIG nitrogen or refrigerated dry air.

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

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

Option: Provide automatic air vents in lieu of manual air vents.

FILTERS

All units shall be furnished with a minimum 1" nominal glass fiber throwaway 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 or removal of the front panel.

Option: Provide unit with 1" pleated filter (MERV 6).

Option: Provide a decorative stamped louver grille in the return air opening.

ELECTRICAL

Units shall be furnished with single point power connection. Provide an electrical junction box with terminal strip for motor and other electrical terminations. The factory mounted terminal wiring strip consists of a multiple position screw terminal block to facilitate wiring terminations for the electric control valves and thermostats.

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 located in the reheat position. 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 overtemperature protection consisting of an automatic reset primary thermal limit and back-up secondary thermal limit. All heaters shall be single stage.

All units shall be provided with an incoming line power distribution block, designated to accept single point power wiring capable of carrying 125% of the calculated load current.

Option: Devices used to energize and de-energize (switch) electric heat must be totally silent. Magnetic,

GUIDE SPECIFICATIONS

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. Maximum entering water temperature on the control valve shall be 200°F, and maximum operating pressure shall be 300 PSIG.

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") or 25 PSIG (3/4)".

Piping packages shall be completely factory assembled, including interconnecting pipe, and shipped separate for field installation on the coil so as to minimize the risk of freight damage.

OUTSIDE AIR DAMPER

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

Option: Provide an aluminum outside air wall box with integral insect screen and weep holes for field installation.

NOTES

NOTES

Printed on recycled paper

Catalog: ET115.26-EG6 (908) Supersedes: Nothing
© 2008 Johnson Controls, Inc. P.O. Box 423, Milwaukee, WI 53201 Printed in USA
www.johnsoncontrols.com

Johnson Controls