

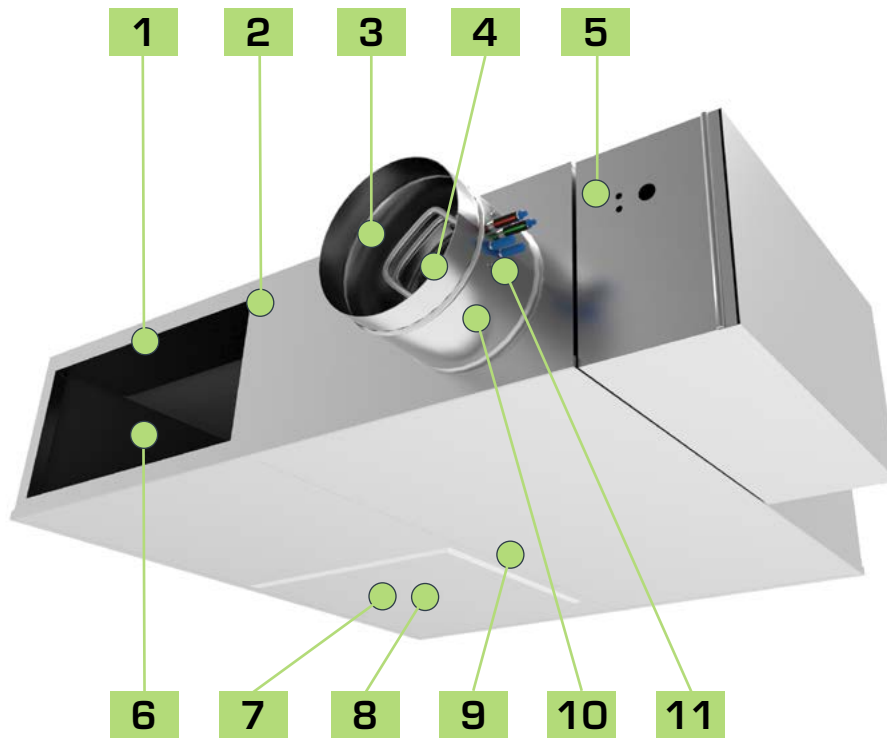
## FVL-600 LOW PROFILE VARIABLE VOLUME FAN TERMINAL UNIT

METALAIRE's model FVL-600 parallel fan-powered terminal unit is designed to provide superior comfort to zones by intermittent parallel fan operation. Conditioned primary air is varied during cooling while the fan cycles on during heating. Parallel fan-powered terminal units allow for recovery of waste heat from the return plenum and a potential reduction in central fan energy, thereby lowering operating costs. In the heating mode with the fan energized, parallel fan-powered terminal units improve air circulation through better diffuser performance. The primary air does not pass through the fan.

The primary function of the METALAIRE model FVL-600 parallel fan-powered terminal unit is to deliver variable volume, constant temperature primary air to the space in the cooling mode. The volume of supply air is varied in response to a control signal. In the heating mode, with the fan energized, the terminal unit mixes conditioned air and plenum air in response to a control signal to supply constant volume, variable temperature supply air into the space. Supplemental heating is available in both electric heat and hot water coils if plenum heat is insufficient. METALAIRE model FVL-600 parallel fan-powered terminal units are available with a wide range of control options to suit any application. These include pneumatic, analog electronic, electric, factory provided commissioned direct digital control (DDC) or factory mounted field supplied (DDC) controls. With the demands of today's building designs to reduce energy in smaller mechanical spaces, the METALAIRE model FVL-600 parallel fan-powered terminal unit is the perfect choice.

### STANDARD FEATURES

- Available in 3 casing sizes to handle 200 – 2500 CFM.
- 22 ga. galvanized steel casing, mechanically sealed, low leakage construction.
- Mechanically fastened damper assembly is double layer, 18 gauge equivalent, galvanized steel with integral blade seal. (<1% at 3" static pressure).
- Factory calibrated controls per each job requirement.
- METALAIRE multi-quadrant averaging flow sensor provides highly accurate +/- 5% flow readings after certified balancer has balanced terminal.
- Easy access, steel balancing taps on inlet flow sensor.
- Energy efficient six pole single speed PSC motors with adjustable SCR solid state fan speed controllers are standard.
- Available fan motor voltages of 120, 277, and 208-240 (50 / 60 HZ).
- External control cabinet with offset mounting plate as standard.
- Single point electrical connections.
- 3-beaded primary inlet connection tube for added rigidity and secure flex duct connections.
- Round inlets available in sizes 4" through 8" round, 12" and 14" flat oval and 14 x 8" rectangular.
- 1/2" thick, dual density (1.5lb / ft<sup>3</sup> min.) fiberglass insulation with edges coated. Meets NFPA 90A and UL 181.
- Rectangular flanged discharge with optional slip and drive cleat duct connection.
- Large Bottom access panel provides access to fan motor / blower assembly.
- Independently tested and certified laboratory performance data.
- Full range of options and accessories available (heating coils, disconnects, attenuators, etc.).
- Full range of liners / insulation available.
- Auto and manual thermal resets on every electric heater.



## FVL-600 LOW PROFILE VARIABLE VOLUME FAN TERMINAL UNIT

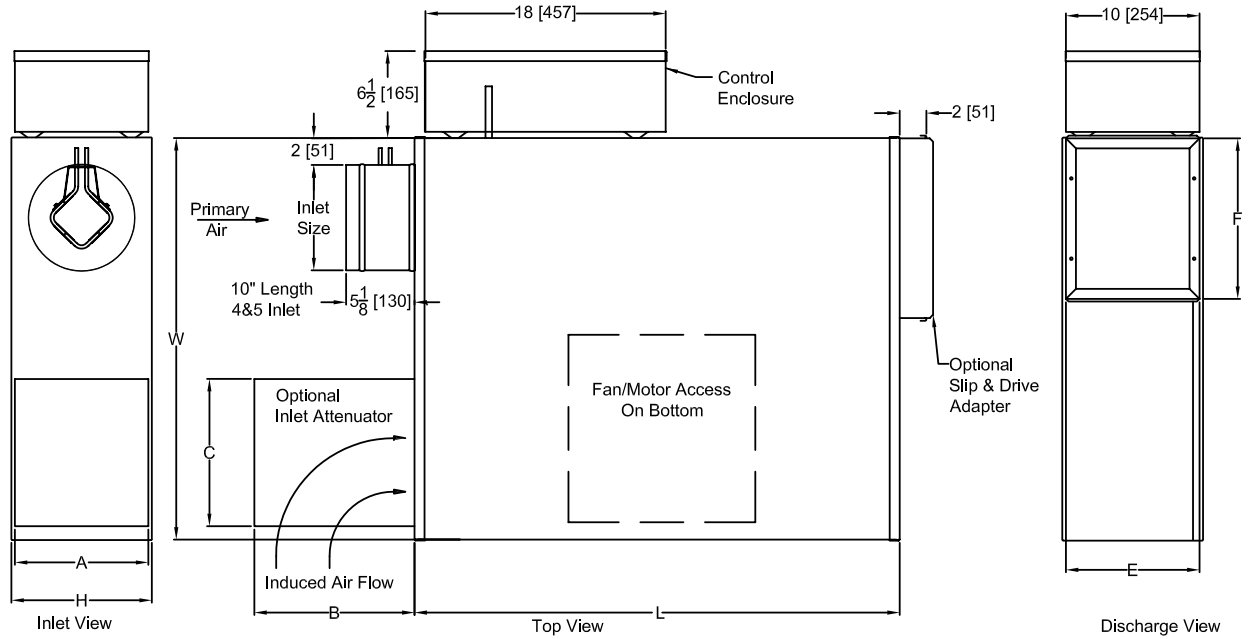
### FEATURES AND BENEFITS

- 1** Galvanized steel casing, mechanically sealed for low leakage construction.
- 2** NEMA TYPE 1 rated hinged control enclosure with standoff to prevent penetration of casing.
- 3** Continuous welded primary inlet duct to minimize leakage with 3 stiffening beads for added rigidity.
- 4** Damper construction of double layer 18 gauge equivalent with integral blade seal.
- 5** Single speed high efficiency PSC motor with SCR motor speed control.
- 6** Hand adjustable restrictor plates top and bottom for balancing.
- 7** Motor / blower assembly assembled to 18 gauge bulkhead to mitigate vibration.
- 8** Bottom access panel provided for easy motor / blower servicing.
- 9** Gasketed back draft damper door to minimize leakage in cooling mode.
- 10** Damper assembly rotates in long life, low friction, self lubricating thermoplastic bearing.
- 11** All metal constructed inlet flow sensor with extra balancing taps.

## FVL-600 LOW PROFILE PARALLEL FAN POWERED AIR TERMINAL UNIT COOLING ONLY

PARALLEL FAN POWERED

FVL-600 LOW PROFILE VARIABLE VOLUME

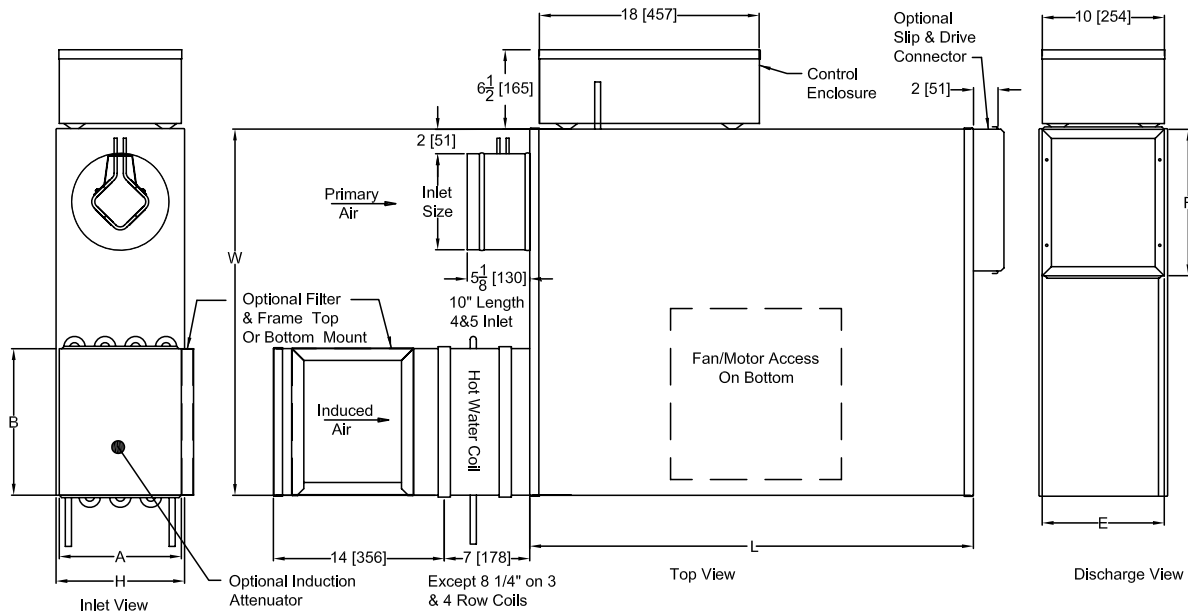


The standard location for control enclosure is Left Hand on Model FVL.  
Looking in the direction of airflow, the control enclosure is on the left.

Case size	Inlet Size		Horsepower	Rated Motor Amps		Unit Dimensions			Induction Attenuator			Discharge	
	Standard	Optional		120 V	277 V	Height H	Width W	Length L	Height A	Width B	Length C	Height E	Width F
2	6 (152)	4,5	1/8	2.6	1.1	10 1/2 (267)	30 (718)	32 (813)	10 (254)	12 (305)	11 (279)	10 (254)	12 (305)
4	8 (203)	14 x 8	1/4	3.1	1.3	10 1/2 (267)	36 (914)	36 (914)	10 (254)	18 (457)	18 (457)	10 (254)	16 1/2 (419)
6	10 (254)	12,14 Flat Oval	1/3	8.8	2.9	12 1/2 (318)	38 (965)	36 (914)	12 (305)	18 (457)	18 (457)	12 1/2 (318)	18 (457)

All dimensions are in inches; parentheses ( ) indicate millimeters.

## FVL-600 LOW PROFILE PARALLEL FAN POWERED AIR TERMINAL UNIT WITH INDUCTION MOUNTED HOT WATER COIL



The standard location for control enclosure is Left Hand on Model FVL.  
Looking in the direction of airflow, the control enclosure is on the left.

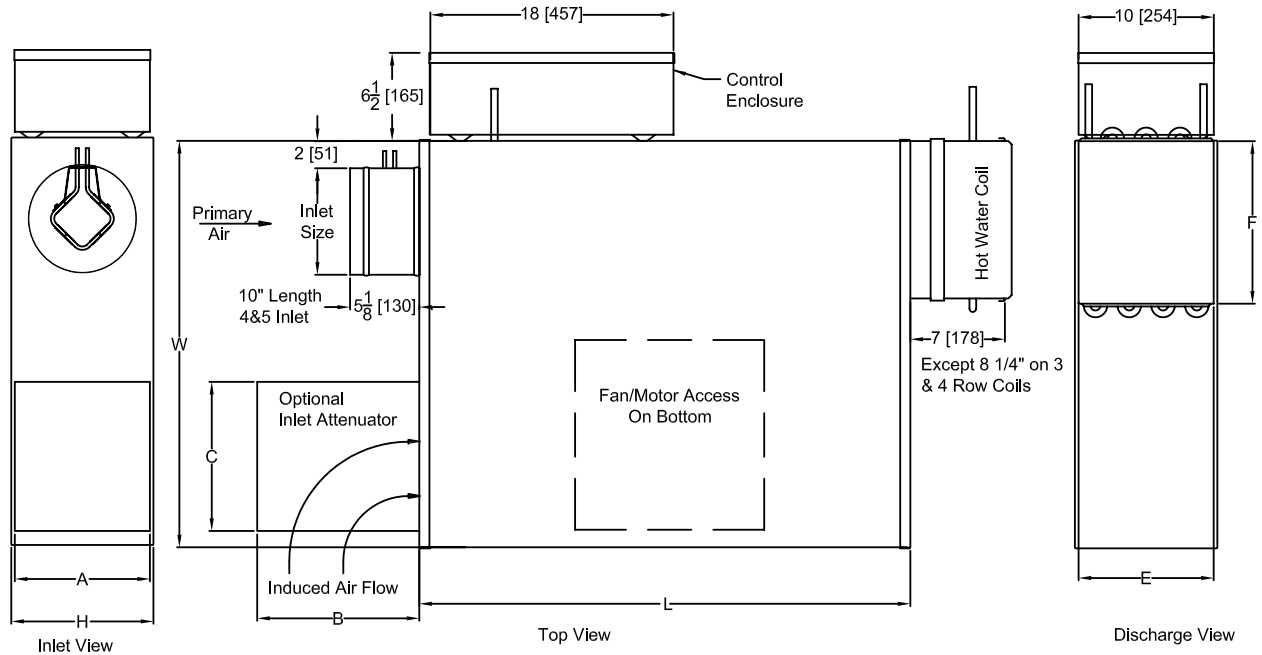
Case size	Inlet Size		Horsepower	Rated Motor Amps		Unit Dimensions			Induction Attenuator			Discharge	
	Standard	Optional		120 V	277 V	Height H	Width W	Length L	Height A	Width B	Length C	Height E	Width F
2	6 (152)	4,5	1/8	2.6	1.1	10 1/2 (267)	30 (718)	32 (813)	10 (254)	12 (305)	11 (279)	10 (254)	12 (305)
4	8 (203)	—	1/4	3.1	1.3	10 1/2 (267)	36 (914)	36 (914)	10 (254)	22 (419)	18 (457)	10 (254)	16 1/2 (419)
6	10 (254)	12,14 Flat Oval	1/3	8.8	2.9	12 1/2 (318)	38 (965)	36 (914)	12 1/2 (318)	18 (457)	18 (457)	12 1/2 (318)	18 (457)

All dimensions are in inches; parentheses ( ) indicate millimeters.

## FVL-600 LOW PROFILE PARALLEL FAN POWERED AIR TERMINAL UNIT WITH DISCHARGE MOUNTED HOT WATER COIL

PARALLEL FAN POWERED

FVL-600 LOW PROFILE VARIABLE VOLUME

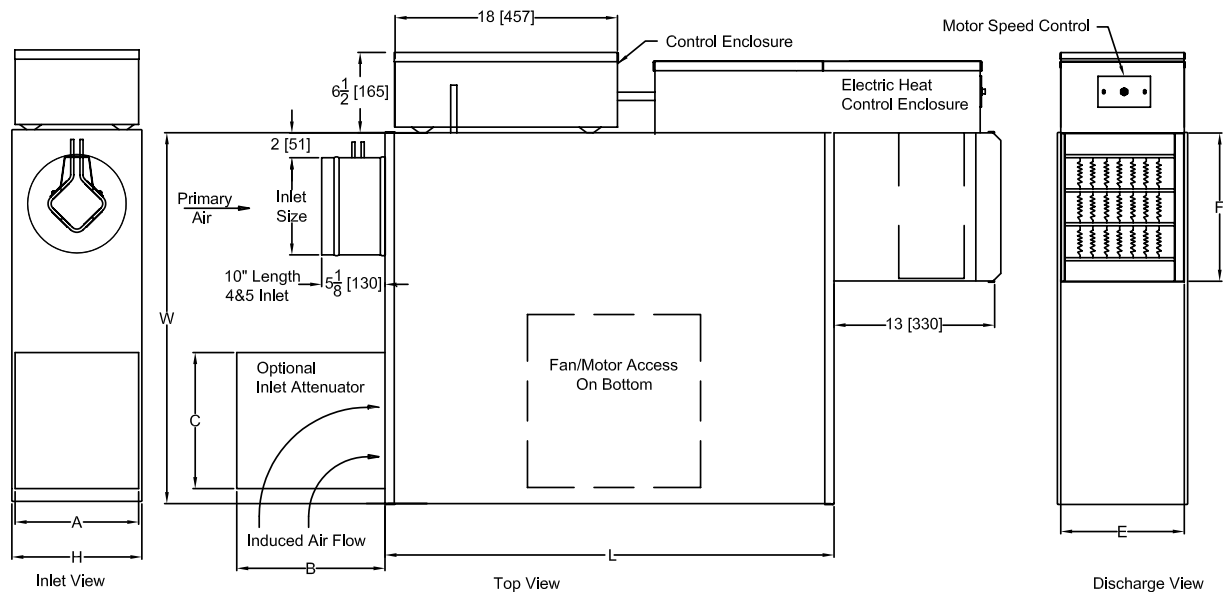


The standard location for control enclosure is Left Hand on Model FVL.  
Looking in the direction of airflow, the control enclosure is on the left.

Case size	Inlet Size		Horsepower	Rated Motor Amps		Unit Dimensions			Induction Attenuator			Discharge	
	Standard	Optional		120 V	277 V	Height H	Width W	Length L	Height A	Width B	Length C	Height E	Width F
2	6 (152)	4,5	1/8	2.6	1.1	10 1/2 (267)	30 (718)	32 (813)	10 (254)	12 (305)	11 (279)	10 (254)	12 (305)
4	8 (203)	14 x 8	1/4	3.1	1.3	10 1/2 (267)	36 (914)	36 (914)	10 (254)	18 (457)	18 (457)	10 (254)	16 1/2 (419)
6	10 (254)	12,14 Flat Oval	1/3	8.8	2.9	12 1/2 (318)	38 (965)	36 (914)	12 (305)	18 (457)	18 (457)	12 1/2 (318)	18 (457)

All dimensions are in inches; parentheses ( ) indicate millimeters.

## FVL-600 LOW PROFILE PARALLEL FAN POWERED AIR TERMINAL UNIT WITH ELECTRIC HEAT



The standard location for control enclosure is Left Hand on Model FVL.  
Looking in the direction of airflow, the control enclosure is on the left.

Case size	Inlet Size		Horsepower	Rated Motor Amps		Unit Dimensions			Induction Attenuator			Discharge	
	Standard	Optional		120 V	277 V	Height H	Width W	Length L	Height A	Width B	Length C	Height E	Width F
2	6 (152)	4,5	1/8	2.6	1.1	10 1/2 (267)	30 (718)	32 (813)	10 (254)	12 (305)	11 (279)	8 (203)	12 (305)
4	8 (203)	14 x 8	1/4	3.1	1.3	10 1/2 (267)	36 (914)	36 (914)	10 (254)	18 (457)	18 (457)	10 (254)	18 (457)
6	10 (254)	12,14 Flat Oval	1/3	8.8	2.9	12 1/2 (318)	38 (965)	36 (914)	12 1/2 (318)	18 (457)	18 (457)	12 1/2 (318)	18 (457)

All dimensions are in inches; parentheses ( ) indicate millimeters.

## FVI-500 APPROXIMATE SHIPPING WEIGHTS

Case Size	FVL
2	130 lbs.
4	170 lbs.
6	190 lbs.

## FVI-500 FILTER SIZES PER CASE SIZE

Case Size	Filter Dimensions	
	With HW Coil	No HW Coil
2	12" x 10"	18" x 10"
4	12" x 10"	18" x 10"
6	18" x 12"	18" x 12"

*Filters are mounted on the fan induction and are available in 1" or 2" thickness.*



## CERTIFICATIONS AND STANDARDS

- Units tested per ASHRAE Standard 130-2016.
- All model sizes certified in accordance with AHRI 880-2017 certification program.
- ETL listed to meet requirements of UL 1995 and CSA 236.
- Dual-density fiberglass insulation meets UL 181 and NFPA 90A/90B.
- Insulation meets ASHRAE 62.1 requirements for resistance to mold growth and erosion.
- Hot water coils are manufactured in accordance to AHRI Standard 410.

## FVL-600 AHRI CERTIFIED RATING POINTS



### RADIATED AND DISCHARGE SOUND - PSC MOTOR - FAN ONLY HEATING

OCTAVE BAND SOUND POWER, Lw, dB														
Case-Inlet Size	CFM	Discharge Ps	RADIATED SOUND FAN ONLY						DISCHARGE SOUND FAN ONLY					
			2	3	4	5	6	7	2	3	4	5	6	7
2-06	500	0.25	68	58	60	55	44	36	58	54	50	50	42	39
4-08	700	0.25	66	61	64	59	50	44	62	61	58	60	51	50
6-10	1200	0.25	74	70	67	62	54	46	70	63	64	64	55	57

### RADIATED AND DISCHARGE SOUND - PSC MOTOR - PRIMARY AIR ONLY COOLING

OCTAVE BAND SOUND POWER, Lw, dB														
Case-Inlet Size	CFM	Min ΔPs	ΔPs = 1.5 in. wg.											
			RADIATED SOUND						DISCHARGE SOUND					
			2	3	4	5	6	7	2	3	4	5	6	7
2-06	400	0.10	62	56	51	48	46	44	63	59	57	51	45	41
4-08	700	0.09	65	54	50	45	42	42	64	60	55	50	48	44
6-10	1100	0.05	62	57	53	49	46	46	69	63	62	56	56	51

#### PERFORMANCE NOTES

- 1) Radiated sound is the noise transmitted through the unit casing
- 2) Discharge sound is noise emitted from unit discharge into downstream ductwork
- 3) Sound power levels expressed in decibels, (dB) re 10<sup>-12</sup> Watts
- 4) Min ΔPs is the min. operating pressure requirement of the unit with the damper full open and is the static pressure drop from the unit inlet to the unit discharge
- 5) Performance data based on laboratory tests conducted in accordance with ASHRAE 130-2016 and AHRI 880-2017
- 6) Discharge sound power levels include duct end reflection corrections per AHRI Standard 880-2017
- 7) Sound performance based on units lined with standard dual density fiberglass insulation
- 8) Discharge (external) static pressure is 0.25" w.g. for all cases



## FVL RADIATED AND DISCHARGE SOUND - PSC MOTOR - FAN ONLY HEATING

PARALLEL FAN POWERED

FVL-600 LOW PROFILE VARIABLE VOLUME

OCTAVE BAND SOUND POWER, Lw, dB																
Case-Inlet Size	CFM	Discharge Ps	RADIATED SOUND FAN ONLY							DISCHARGE SOUND FAN ONLY						
			2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
2-06	400	0.25	67	56	58	53	42	34	33	54	51	48	48	38	35	<15
	450		68	57	59	54	43	35	34	56	52	49	49	40	37	<15
	500		68	58	60	55	44	36	35	58	54	50	50	42	39	15
	550		69	59	60	56	45	38	35	61	55	52	51	43	41	15
	600		70	60	61	58	46	40	36	62	56	54	52	44	42	16
4-08	600	0.25	64	59	62	57	47	41	37	61	59	57	58	49	48	16
	650		65	60	63	58	49	43	38	62	60	58	59	50	49	18
	700		66	61	64	59	50	44	39	62	61	58	60	51	50	18
	750		68	62	64	60	52	46	39	62	62	59	60	52	51	19
	800		69	63	65	61	54	48	40	63	63	60	61	53	52	20
6-10	1000	0.25	73	70	66	61	54	48	41	68	60	61	60	52	52	24
	1100		74	70	66	62	54	47	41	69	62	62	62	54	54	25
	1200		74	70	67	62	54	46	42	70	63	64	64	55	57	26
	1300		74	70	67	62	54	46	42	71	63	64	64	55	57	27
	1400		74	70	67	62	54	46	42	72	63	64	64	55	57	28

- 1) AHRI certified data is highlighted while all other data are application ratings
- 2) Radiated sound is the noise transmitted through the unit casing
- 3) Sound power levels expressed in decibels, (dB) re 10<sup>-12</sup> Watts
- 4) Min ΔPs is the minimum operating pressure requirement of the unit with the damper full open and is the static pressure drop from the unit inlet to the unit discharge
- 5) Performance data based on laboratory tests conducted in accordance with ASHRAE 130-2016 and AHRI 880-2017

- 6) NC values are calculated using attenuation credits outlined in AHRI 885-2008 Appendix E
- 7) Blank spaces indicate Minimum Ps if unit exceeds the ΔPs across the unit
- 8) Sound performance based on units lined with standard dual density fiberglass insulation
- 9) Discharge (external) static pressure is 0.25" w.g. for all cases
- 10) Discharge sound power levels include duct end reflection corrections per AHRI Standard 880-2017

## FVL RADIATED SOUND - PSC MOTOR - PRIMARY AIR ONLY COOLING

OCTAVE BAND SOUND POWER, Lw, dB																							
Case-Inlet Size	CFM	Min ΔPs	ΔPs = 0.50 in. wg.							ΔPs = 1.0 in. wg.							ΔPs = 1.5 in. wg.						
			2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
2-06	300	0.05	50	44	42	34	30	31	32	56	52	47	44	41	40	32	60	54	50	48	46	44	32
	350	0.08	52	46	43	36	32	32	32	58	53	48	44	42	40	32	61	55	50	48	46	44	32
	400	0.10	54	48	44	38	33	33	33	60	54	49	45	42	40	33	62	56	51	48	46	44	33
	450	0.13	56	50	45	39	34	34	34	62	55	50	46	42	41	34	64	57	52	48	46	45	34
	500	0.15	58	51	46	40	36	36	35	64	56	50	46	42	42	35	66	58	52	49	46	46	35
4-08	500	0.04	53	42	38	34	30	30	35	58	48	44	40	38	37	35	60	51	48	44	42	42	35
	600	0.06	56	44	40	35	31	30	37	60	50	45	41	38	37	37	62	52	49	44	42	42	37
	700	0.09	58	56	41	36	32	30	39	62	51	46	42	38	37	39	65	54	50	45	42	42	39
	800	0.11	60	48	42	38	34	32	40	64	52	48	43	39	38	40	67	56	51	46	43	43	40
	900	0.13	62	50	44	41	36	34	40	66	54	49	44	40	39	40	69	58	52	48	44	44	40
6-10	700	0.02	47	43	42	40	35	31	40	49	47	45	44	41	40	40	53	51	48	46	45	45	40
	900	0.03	50	46	44	41	36	32	41	54	51	48	45	42	40	41	58	54	51	47	46	46	41
	1100	0.05	53	48	45	42	36	32	41	58	54	50	46	42	40	41	62	57	53	49	46	46	41
	1300	0.08	54	49	46	43	37	32	42	61	55	51	47	43	40	42	66	60	54	50	47	45	42
	1500	0.11	56	50	47	44	38	32	42	64	57	52	48	44	40	42	70	62	56	52	47	45	42

- 1) AHRI certified data is highlighted while all other data are application ratings
- 2) Radiated sound is the noise transmitted through the unit casing
- 3) Sound power levels expressed in decibels, (dB) re 10<sup>-12</sup> Watts
- 4) Min ΔPs is the minimum operating pressure requirement of the unit with the damper full open and is the static pressure drop from the unit inlet to the unit discharge
- 5) Performance data based on laboratory tests conducted in accordance with ASHRAE 130-2016 and AHRI 880-2017

- 6) NC values are calculated using attenuation credits outlined in AHRI 885-2008 Appendix E
- 7) Blank spaces indicate Minimum Ps if unit exceeds the ΔPs across the unit
- 8) Sound performance based on units lined with standard dual density fiberglass insulation
- 9) Discharge (external) static pressure is 0.25" w.g. for all cases

## FVL DISCHARGE SOUND - PSC MOTOR - PRIMARY AIR ONLY COOLING

OCTAVE BAND SOUND POWER, Lw, dB																							
Case-Inlet Size	CFM	Min ΔPs	ΔPs = 0.50 in. wg.							ΔPs = 1.0 in. wg.							ΔPs = 1.5 in. wg.						
			2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
2-06	300	0.05	56	52	49	46	40	36	<15	58	54	51	48	42	38	<15	60	56	53	50	44	40	<15
	350	0.08	58	54	51	46	40	36	<15	60	56	53	48	42	38	<15	62	58	55	50	44	40	15
	400	0.10	59	55	53	47	41	37	<15	61	57	55	49	43	39	<15	63	59	57	51	45	41	16
	450	0.13	60	56	54	48	42	38	<15	62	58	56	50	44	40	15	64	60	58	52	46	42	18
500	0.15	61	57	54	49	43	39	<15	63	59	56	51	45	41	16	65	61	58	53	47	43	19	
4-08	500	0.04	57	50	46	42	40	36	15	59	53	48	44	42	38	15	60	56	52	47	44	42	15
	600	0.06	58	52	48	44	42	37	16	61	56	50	46	44	40	16	62	58	54	48	46	43	16
	700	0.09	60	54	50	46	44	38	18	63	58	52	48	46	42	18	64	60	55	50	48	44	18
	800	0.11	62	58	54	50	48	42	20	65	62	56	52	51	46	20	66	64	58	54	53	48	21
900	0.13	64	62	57	54	52	46	20	67	66	59	56	56	50	24	68	68	61	58	58	52	26	
6-10	700	0.02	56	50	47	44	42	36	<15	59	54	53	48	47	41	<15	62	57	57	51	51	48	<15
	900	0.03	59	51	48	45	44	37	19	62	57	55	51	50	44	19	65	60	60	54	54	48	19
	1100	0.05	61	53	50	47	46	39	19	65	59	57	53	52	47	19	69	63	62	56	56	51	20
	1300	0.08	62	55	51	48	47	40	21	68	60	58	54	54	48	21	72	64	63	58	58	54	24
1500	0.11	64	57	53	50	48	42	21	71	62	59	56	56	50	22	76	66	64	60	60	56	29	

- 1) AHRI certified data is highlighted while all other data are application ratings
- 2) Radiated sound is the noise transmitted through the unit casing
- 3) Sound power levels expressed in decibels, (dB) re 10<sup>-12</sup> Watts
- 4) Min ΔPs is the minimum operating pressure requirement of the unit with the damper full open and is the static pressure drop from the unit inlet to the unit discharge
- 5) Performance data based on laboratory tests conducted in accordance with ASHRAE 130-2016 and AHRI 880-2017

- 6) NC values are calculated using attenuation credits outlined in AHRI 885-2008 Appendix E
- 7) Blank spaces indicate Minimum Ps if unit exceeds the ΔPs across the unit
- 8) Sound performance based on units lined with standard dual density fiberglass insulation
- 9) Discharge (external) static pressure is 0.25" w.g. for all cases
- 10) Discharge sound power levels include duct end reflection corrections per AHRI Standard 880-2017

## FVL-600 HOT WATER COILS MBH SELECTION DATA

Case Size	Rows	Connection OD	GPM	Head Loss (ft-H <sub>2</sub> O)	CFM							
					200	250	300	350	400	450	500	550
2	One	0.625	1	0.63	8.2	9.1	9.9	10.5	11.1	11.6	12.1	12.5
			2	2.40	8.9	10.0	10.9	11.7	12.4	13.1	13.7	14.2
			3	5.25	9.3	10.3	11.3	12.2	12.9	13.7	14.3	14.9
			4	9.15	9.5	10.5	11.5	12.4	13.2	14.0	14.7	15.3
			Airside Ps (in. wg)		0.02	0.03	0.04	0.06	0.07	0.09	0.11	0.13
2	Two	0.875	1	0.17	12.3	13.8	15.1	16.1	17.1	17.9	18.6	19.2
			2	0.63	13.8	15.7	17.4	18.9	20.2	21.4	22.5	23.4
			4	2.39	14.7	17.0	18.9	20.7	22.3	23.8	24.2	26.4
			6	5.22	15.1	17.4	19.5	21.4	23.2	24.7	25.1	27.6
			Airside Ps (in. wg)		0.05	0.07	0.10	0.13	0.16	0.19	0.23	0.27

Case Size	Rows	Connection OD	GPM	Head Loss (ft-H <sub>2</sub> O)	CFM							
					500	600	700	800	1000	1200	1400	1600
4	One	0.500	0.5	0.24	12.5	12.9	13.3	13.7	14.3	14.8	15.2	15.6
			1	0.93	15.4	16.1	16.7	17.3	18.3	19.2	19.9	20.6
			2	3.52	17.4	18.3	19.1	19.9	21.3	22.5	23.5	24.5
			3	7.71	18.3	19.2	20.1	21.0	22.5	23.8	25.1	26.2
			Airside Ps (in. wg)		0.03	0.04	0.04	0.05	0.07	0.09	0.10	0.12
4	Two	0.875	1	0.24	22.4	23.4	24.4	25.2	26.7	27.9	29.0	29.9
			2	0.91	26.8	28.4	29.8	31.1	33.4	35.5	37.3	38.9
			4	3.45	29.7	31.7	33.5	35.1	38.2	40.9	43.5	45.7
			6	7.53	30.9	33.0	34.9	36.8	40.2	43.2	46.0	48.6
			Airside Ps (in. wg)		0.07	0.08	0.10	0.11	0.15	0.19	0.23	0.27

Case Size	Rows	Connection OD	GPM	Head Loss (ft-H <sub>2</sub> O)	CFM							
					500	600	700	800	1000	1200	1400	1600
6	One	0.500	0.5	0.27	13.1	13.8	14.4	14.9	15.7	16.3	16.9	17.3
			1	1.03	16.3	17.5	18.5	19.4	20.8	22.0	23.0	23.8
			2	3.91	18.5	20.1	21.5	22.7	24.8	26.5	28.0	29.3
			3	8.54	19.4	21.2	22.7	24.1	26.5	28.5	30.2	31.7
			Airside Ps (in. wg)		0.04	0.05	0.07	0.08	0.12	0.16	0.21	0.27
6	Two	0.875	1	0.27	23.6	25.4	26.9	28.1	30.1	—	—	—
			2	1.01	28.6	31.3	33.7	35.8	39.2	—	—	—
			4	3.83	31.9	35.4	38.5	41.3	46.1	—	—	—
			6	8.37	33.2	37.1	40.5	43.6	49.0	—	—	—
			Airside Ps (in. wg)		0.08	0.11	0.14	0.18	0.26	—	—	—

Heating capacity data in tables assume an entering water temperature (EWT) of 180°F, and an entering air temperature (EAT) of 65°F, which corresponds to a temperature difference of 115°F. Smaller temperature differences will result in a decrease of heating capacity. To obtain the heating capacity at another temperature difference, refer to the hot water coil notes located in the Reference Section.

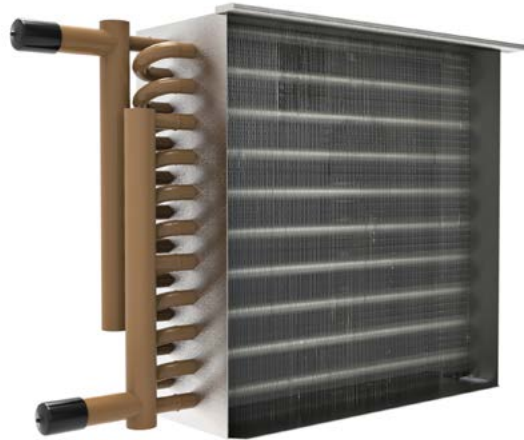
## FVL-600 HOT WATER COILS

When ordered with the air terminal, the hot water coil is shipped attached to the discharge of the terminal casing. The discharge end of the casing has slip and drive connections for easy connection to downstream ductwork. The hot water coil is constructed of aluminum fin and copper serpentine-type tubes with male sweat connections tested at 300 psig.

Coil selection may be made using METALAIRE Terminal Selection Software. Contact your METALAIRE representative for a copy. In the interest of energy conservation and due to the possibility of condensation, all hot water coils are marked, "Coil must be externally insulated after installation in the field." Hot water coils are tested in accordance to AHRI. Options, at an additional charge on hot water coils, include access doors for inspection and cleaning, and inlet/outlet on opposite sides of coils.

### HOT WATER COIL CONSTRUCTION DETAILS

- Hot Water Coils are factory mounted to the discharge of the terminal and are available with an optional factory mounted discharge plenum section with access door.
- Hot water coils are enclosed in a 20 gauge coated steel casing allowing for attachment to metal ductwork with a slip and drive connection.
- Fins are rippled and sine wave type constructed from heavy gauge aluminum and are mechanically bonded to the tubes.
- Tubes are copper with a minimum wall thickness of 0.016" with male sweat header connections.
- Coils are leak tested to 300 psi with minimum burst of 2000 psi at ambient temperature. Coil performance data is based on tests run in accordance with AHRI standard 410. Coils are AHRI certified and include an AHRI label.



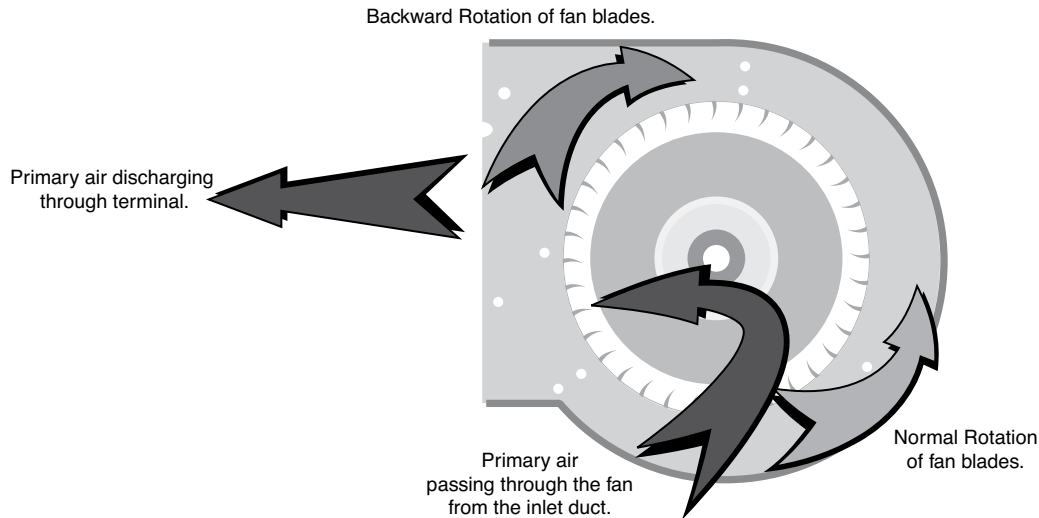
Outside Diameter (OD) connection size, Inches		
Case Size	Standard HW Coil Inches	
	1 Row	2 Row
2	5/8 (16)	7/8 (22)
4	5/8 (16)	7/8 (22)
6	5/8 (16)	5/8 (16)

*All coils have 10 fins per inch*

**All accessories that can be attached to the Parallel Fan Boxes are not a part of the AHRI certification program but ratings can be affected by their use.**

## FVL-600 AIR TERMINALS ACCESSORIES AND COMPONENTS OPTIONAL ELECTRONIC ANTI-REVERSE ROTATION DEVICE

The fan wheel in a constant fan box may rotate backward whenever the fan motor is not running and primary air from the inlet duct is passing through the fan. In some cases the torque developed by the fan wheel when rotating backward cannot be overcome by the starting torque of the fan motor. In this condition the fan motor will run in reverse rotation, resulting in insufficient airflow delivery.



Systems with constant fan boxes must have a means to coordinate energizing the fan motor with start up of the Primary Fan System to prevent the reverse rotation of the terminal unit family. This is accomplished by proper operation and staging by the building control system. Another option is to create enough motor torque to reverse the rotation of the fan wheel.

Other manufacturers choose to deal with this issue by running their motors with larger capacitors than recommended by the motor manufacturer. The oversized capacitor will cause the motor to run less efficiently, run hotter than normal and draw more current than with a proper capacitor. All of this will result in reduced motor life and increased energy costs.

METALAIRE'S Model FVL-600 is available with an optional Electronic Anti-Reverse Rotation Device which will positively correct the reverse rotation of any fan. This option does not draw additional current while the motor is running and will not cause the motor to run at higher temperatures. This is a significant advantage.

The results are greater efficiency, quieter motors, longer motor life and happier building owners.



## FVL-600 PSC FAN MOTOR AMPERAGE RATINGS

Case Size	Motor HP	Standard PSC Motor Amperage Ratings		
		120v-1 Phase 60 Hz Rated Amps	208-240v-1 Phase 60 Hz Rated Amps	277V-1 Phase 60 Hz Rated Amps
2	1/8	2.6	0.8	1.1
4	1/4	4.8	1.9	1.9
6	1/3	8.8	3.0	3.6

Motors also available: 208-240 V, 50 / 60 Hz.

Contact your METALAIRE Representative for details.

## FVL-600 DAMPER LEAKAGE

Standard Construction			
Inlet Diameter	Static Pressure " w.g.	Maximum Airflow	Max Damper Leakage
4	3	300	5
5	3	375	5
6	3	540	5
7	3	760	7
8	3	990	9
9	3	1250	12
10	3	1640	16
12	3	2350	22
14	3	3250	32
16	3	4100	41
20	3	6430	64
24	3	7270	72

### PERFORMANCE NOTES

- 1) Leakage testing conducted in accordance with ASHRAE 130-2016
- 2) Per ASHRAE Standard 130-2016 "terminal damper leakage: the amount of air in ft<sup>3</sup>/min (L/s) leaking through a fully closed damper/valve of a supply/exhaust terminal unit at a given inlet pressure"opened"

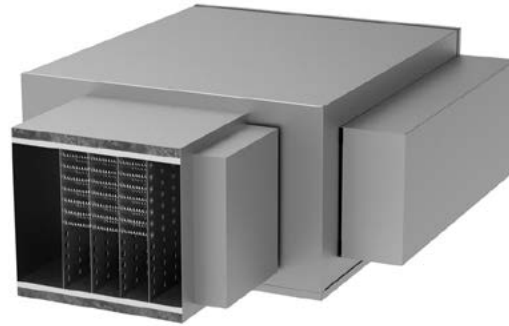
- 3) Damper leakage shall not exceed 1% of the maximum rated airflow at 3" w.g.
- 4) 4" and 5" inlets are built with 6" casings

## FVL-600 ELECTRIC HEAT

The discharge end has slip and drive connections for easy connection to downstream ductwork. ETL® listed heaters are provided with a fan interlock relay. Heaters that will be controlled electronically must include a 24 VAC control circuit to operate with the low voltage controls on the air terminal. Heater plenums are internally insulated. When an air terminal is ordered with clean room lining and electric heat, the heater plenum is either internally lined with optional foil backed insulation or closed cell foam or may require external insulation in field.

### INCLUDED WITH EACH HEATER ASSEMBLY:

- Heater and cabinet mounted on the discharge of the FVL-600
- Electric Heater is interlocked into fan control relay
- De-energizing magnetic contactors per step
- Primary automatic reset high temperature limit (disc type)
- Backup manual reset high temperature limit (disc type)
- Non-fused transformer with voltage to match Heater voltage
- Single point power wiring connection
- Heater is shipped factory mounted and wired



### ELECTRIC HEATER ASSEMBLY CONSTRUCTION DETAILS

- Electric Reheat Coils are factory mounted on the discharge of the Air Terminal. The heaters are ETL® listed for zero clearance, are tested in accordance with UL® Standard 1995, CSA-C22.2 No. 236 and the National Electric Code (NEC). Heater casings are constructed of galvanized steel. Element wire is high grade nichrome alloy derated to 45 watts per square inch density. Element wire is supported by moisture-resistant steatite ceramics.
- Ceramics are enclosed in reinforcement brackets spaced across the heater element rack at 2" to 4" intervals. Controls are contained in a NEMA 1 control cabinet with a hinged, latching door. A permanent wiring diagram is affixed to the inside of the control cabinet door for field reference.
- The 208 and 480 volt units require a neutral connection for both single and three phase service. Our standard motors are 120 and 277 volt single phase. The 208-240 volt single phase motor is optional. 480 volt motors are not available for our units. See table for reference.

Heater Voltage	Fan Motor Voltage	Separate Neutral Required
120 V 1PH	120 V 1PH	NO
208 V 1PH	120 V 1PH	YES
277 V 1PH	277 V 1PH	NO
480 V 1PH	277 V 1PH	YES
208 V 1PH	208 V 1PH	NO
208 V 3PH	120 V 1PH	YES
480 V 3PH	277 V 1PH	YES
208 V 3PH	208 V 1PH	NO

**All accessories that can be attached to the Parallel Fan Boxes are not a part of the AHRI certification program but ratings can be affected by their use.**



## FVL-600 ELECTRIC HEATER CAPACITIES

Single Phase FVL kW Limits				
Case Size	Heater Voltage	Min. kW Per Step	Max. kW	Max. Steps
2	120	1	5.5	2
2	208	0.5	7.5	2
2	240	0.5	7.5	2
2	277	0.5	7.5	2
2	480	1.5	7.5	2
4	120	1	5.5	3
4	208	0.5	9.5	3
4	240	0.5	11	3
4	277	0.5	12	3
4	480	1	12	3
6	120	0.5	5.5	3
6	208	0.5	9.5	3
6	240	0.5	11	3
6	277	1	13	3
6	480	1	20	3

Three Phase FVL kW Limits				
Case Size	Heater Voltage	Min. kW Per Step	Max. kW	Max. Steps
2	208	0.5	7.5	2
2	480	1.5	7.5	2
4	208	1.5	12	3
4	480	1.5	12	3
6	208	1.5	17	3
6	480	1.5	20	3

### NOTES:

1. Heaters less than 10 kW are specifiable to nearest 0.5 kW. Heaters greater than 10.0 kW are specifiable to nearest 1.0 kW.
2. Minimum flow rate for electric heat is 70 CFM / kW.  
Lower CFM's can cause nuisance tripping, excessive discharge temperatures, rapid cycling, and rapid element failure.  
Electric Heat units running below 70 CFM / kW will void all warranties.
3. For optimum thermal comfort, the suggested discharge temperature should not exceed 20°F above room set point.
4. We do not recommend discharge temperatures in excess of 115°F to protect heater coils.
5. Maximum number of steps at Min kW per step is one step.
6. If more than 1 heater is wired into a building's circuit breaker (multi-outlet branch circuit) each heater will require the addition of power side fusing.

### ELECTRIC HEAT SELECTION:

- A. Specify electric duct heaters using voltage, phase, kW, and number of steps.
- B. Use above chart to select voltage. Calculate required kW using following equations:

$$kW = \frac{BTU / HR}{3413} \quad kW = \frac{CFM \times \Delta \times 1.085}{3413} \quad \Delta = \frac{kW \times 3413}{CFM \times 1.085}$$

$$CFM = \frac{kW \times 3413}{\Delta \times 1.085} \quad CFM = \frac{kW \times 3413}{\Delta \times 1.085}$$

\* air density at sea level—reduce by 0.036 for each 1000 feet of altitude above sea level

Where: BTU / Hr = Required heating capacity

CFM = volume of air during heating. Typically 100% of maximum cooling air volume

Δ = desired air temperature rise across the electric heater

Inlet air temperature = primary air temperature, usually 55°F

## FVL-600 CONTROL SEQUENCE OFFERINGS



### PPD-PNEUMATIC PRESSURE DEPENDENT

- 810 Direct Acting / Normally Closed (DA / NC)
- 812 Reverse Acting / Normally Open (RA / NO)



### PPI-PNEUMATIC PRESSURE INDEPENDENT

- 814 Direct Acting / Normally Closed (DA / NC)
- 815 Direct Acting / Normally Open (DA / NO)
- 816 Reverse Acting / Normally Closed (RA / NC)
- 817 Reverse Acting / Normally Open (RA / NO)



### EPD-ELECTRIC PRESSURE DEPENDENT

- 860 Cooling Only
- 861 Cooling with Heat
- 864 Night Shutdown / Morning Warm-up
- 865 Heating / Cooling Changeover



### API-ANALOG PRESSURE INDEPENDENT

- Consult Factory

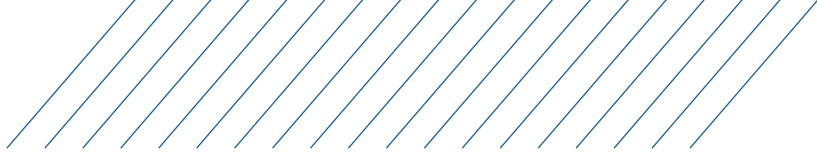


### DDC-DIRECT DIGITAL CONTROL

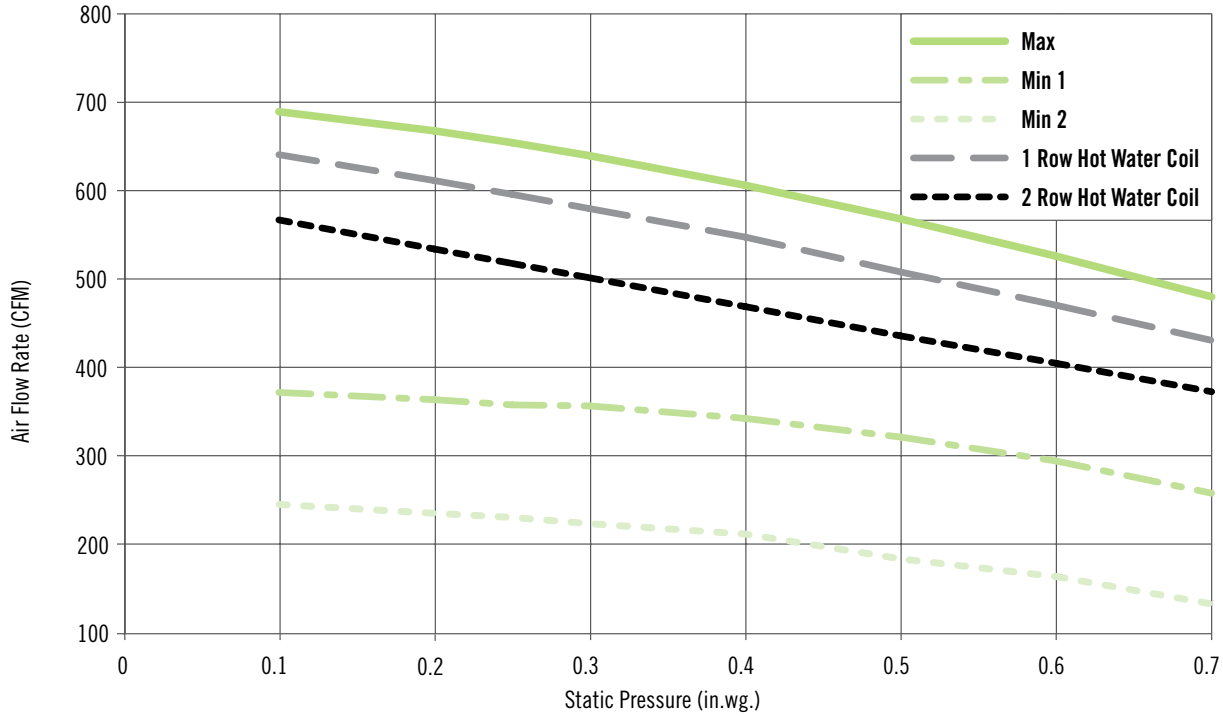
#### BACnet

- 890 Constant Fan–No Auxiliary Heating
- 892 Constant Fan–Modulating Floating Control–Hot Water Heat
- 893-E Electric Heat

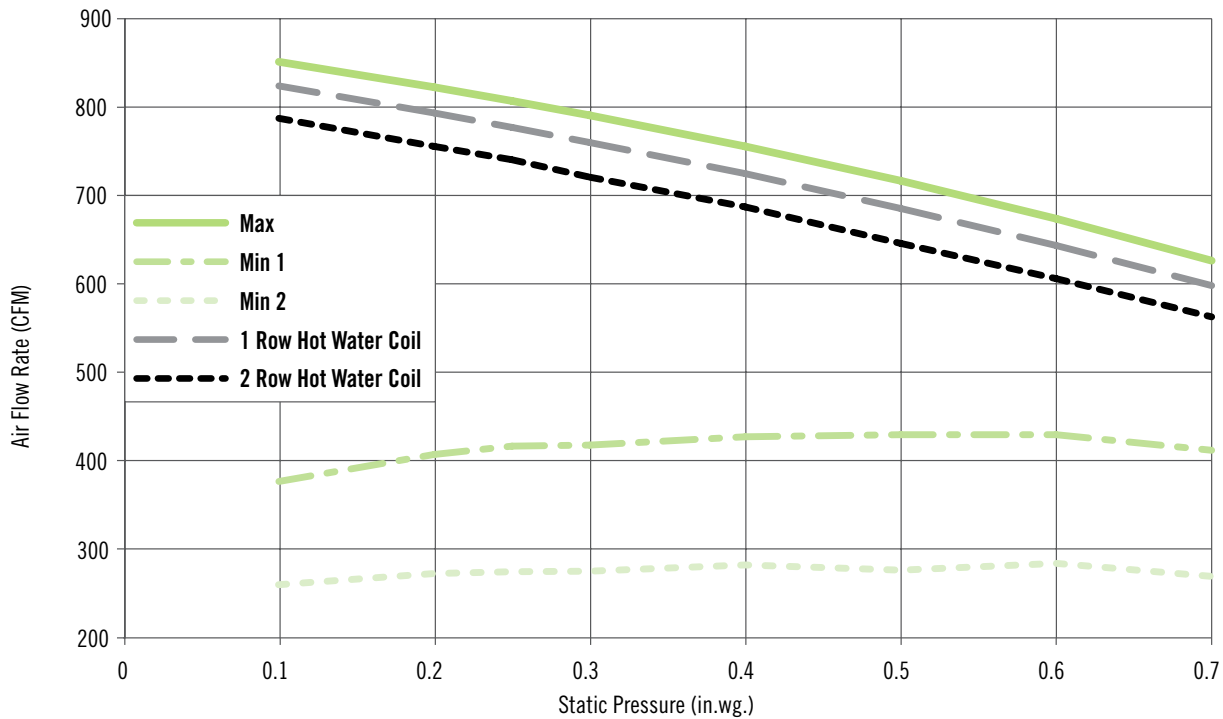
Refer to ACC 24 for complete description.



## FVL-600 FAN PERFORMANCE CURVES CASE SIZE 2 - STANDARD HW COIL



## FVL-600 FAN PERFORMANCE CURVES CASE SIZE 4 - STANDARD HW COIL



## FVL-600 FAN PERFORMANCE CURVES CASE SIZE 6 - STANDARD HW COIL

