



# HIGH PERFORMANCE CASED VERTICAL FAN COILS

400 - 2,200 CFM



ADVANCED  
HYDRONICS

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## **ETL LISTED**

Williams High Performance Cased Vertical Fan Coils are listed by Intertek (ETL). The ETL listing ensures that Williams High Performance Cased Vertical Fan Coils have been examined by ETL and comply with the organization's applicable standards. ETL's re-examination service includes periodic visits by ETL inspectors to Williams' factory to ensure continued compliance for all listed products. Materials and equipment acceptance for use by the New York Department of Buildings: AH 008-120 / MEA 414-05-E



## **AHRI CERTIFIED**

Williams High Performance Cased Vertical Fan Coils are labeled and approved by the Air Conditioning, Heating & Refrigeration Institute (AHRI). This designation signifies that High Performance Cased Vertical Fan Coils units have been rated as follows in accordance with the latest edition of ANSI/AHRI 440 with Addendum 1 Performance Rating of Room Fan Coils and subject to rating accuracy by AHRI sponsored, independent, third-party testing.



## **ALS-TRUESDAIL CERTIFICATION MARK FOR DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS**

Certified Product and/or packaging, and/or documentation certified to both NSF/ANSI 61 and NSF/ANSI 372 by Truesdail shall bear this Certification mark to identify the compliance.

# MORE THAN JUST FAN COILS

For over 100 years, Williams has been a market leader in providing high quality HVAC products for residential and commercial buildings. Today, Williams continues the proud tradition by offering to the commercial/industrial market more configurations and size options of quality fan coils and blower coils/air handlers than any other HVAC company in North America.

Williams is based in Colton California, serving all US and overseas markets with complete application engineering, sales, marketing and administrative services.

Our pledge is to provide complete, high quality and timely support for the successful completion of your construction projects involving engineered products offered by Williams. We believe in a partnering attitude that creates superior projects and high levels of satisfaction.

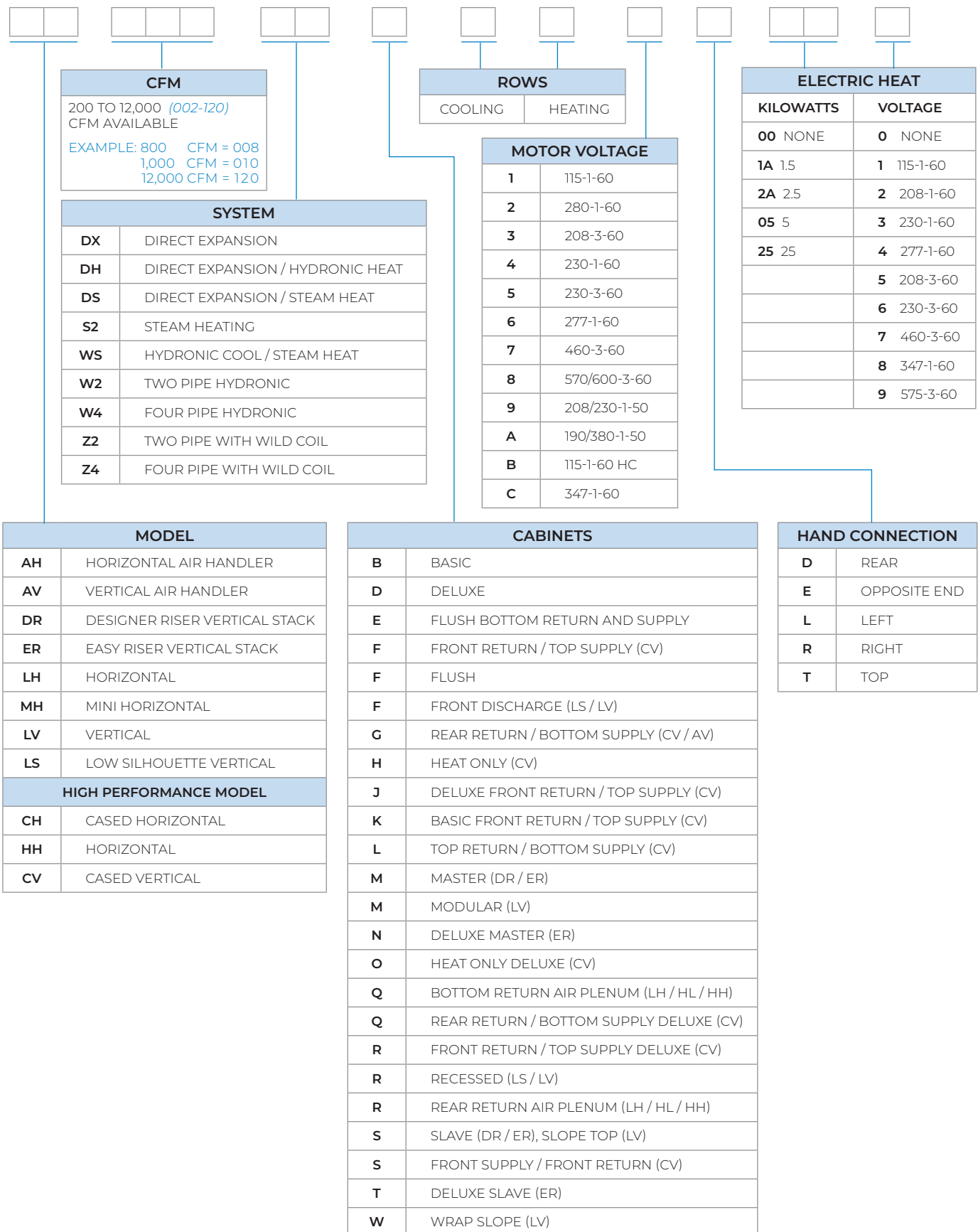


COLTON, CALIFORNIA

FAN COIL ASSEMBLY

AIR HANDLER ASSEMBLY

# WILLIAMS FAN COIL AND AIR HANDLERS MODEL IDENTIFICATION SYSTEM



# HIGH PERFORMANCE CASED VERTICAL MODELS - CV SERIES

400 - 2,200 CFM

## HIGH PERFORMANCE CASED / CLOSET BASIC BOTTOM RETURN / CV-B

The Cased Vertical Basic (CV-B) is a high performance, high static (up to .50 ESP), ducted vertical fan coil with a bottom return. Primarily used in floor mounted or hideaway applications, the CV-B is furred into partition walls, hidden closets, or utility rooms with a ducted discharge. A removable front access panel facilitates easy servicing. The CV-B comes with a coil, easy slide out blower/motor assembly with quick connect plug and a galvanized steel, powder coated epoxy drain pan covered with  $\frac{1}{8}$ " thick insulation. The galvanized steel cabinet is insulated with  $\frac{1}{2}$ " thick, over three pound density, neoprene coated fiberglass. A one inch duct flange is standard on the top panel.

*Front Return Basic (CV-K) and Front Return Deluxe (CV-J) also available. Customized drawings available upon request.*



## HIGH PERFORMANCE CASED / CLOSET BOTTOM RETURN DELUXE PAINTED CABINET / CV-D

The Cased Vertical Deluxe (CV-D) is a high performance, high-static (up to .50 ESP), ducted vertical fan coil with a bottom return. Primarily use in floor mounted exposed applications the cabinet is finished in a soft white powder coated epoxy. A removable front access panel facilitates easy servicing. The CV-D comes with comes with a coil, easy slide out blower/motor assembly with quick connect plug and a galvanized steel, powder coated epoxy drain pan covered with  $\frac{1}{8}$ " thick insulation. The cabinet is insulated with  $\frac{1}{2}$ " thick, over three pound density, neoprene coated fiberglass. A one inch duct flange is standard on the top panel.

*Front Return Basic (CV-K) and Front Return Deluxe (CV-J) also available. Customized drawings available upon request.*



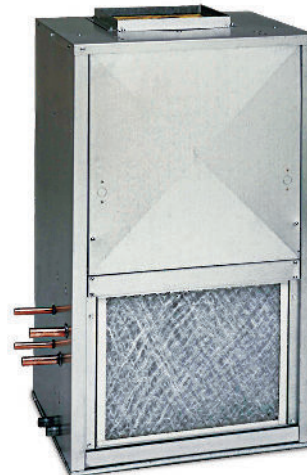
# HIGH PERFORMANCE CASED VERTICAL MODELS - CV SERIES

400 - 2,200 CFM

## HIGH PERFORMANCE CASED / CLOSET FRONT RETURN / CV-F

The Cased Vertical Front Return (CV-F) is a high performance, high static (up to .50ESP), ducted vertical fan coil for installation in a closet type enclosure. A removable front access panel facilitates easy servicing. The CV-F comes with a coil, easy slide out blower/motor assembly with quick-connect plug and a galvanized steel, powder coated epoxy drain pan covered with 1/8" thick insulation. The galvanized steel cabinet is insulated with 1/2" thick, over three pound density, neoprene coated fiberglass. A one inch duct flange is standard on the top panel.

*Rear Return/Bottom Supply (CV-G) and Rear Return/Bottom Supply Deluxe (CV-Q) also available. Customized drawings available upon request.*



## HIGH PERFORMANCE CASED CLOSET FRONT RETURN PAINTED CABINET / CV-R

The Cased Vertical Front Return (CV-R) is a high performance, high static (up to .50ESP), ducted vertical fan coil for installation in a closet type enclosure. A removable front access panel facilitates easy servicing. The CV-R comes with a coil, easy slide-out blower/motor assembly with quick connect plug and a galvanized steel, powder coated epoxy drain pan covered with 1/8" thick insulation. The galvanized steel cabinet has a front access panel finished in a soft white powder-coat epoxy and insulated with 1/2" thick, over three pound density, neoprene coated fiberglass. A one-inch duct flange is standard on the top panel.



## HIGH-PERFORMANCE CASED / CLOSET REAR-RETURN / CV-G

The Cased/Closet Vertical Bottom Supply with Rear Return (CV-G) is a high performance, high static (up to .50 ESP), ducted vertical fan coil. Primarily used in floor-mounted or hideaway applications, the CV-G is furred into partition walls, hidden closets, or utility rooms with a ducted discharge. A removable access panel facilitate easy servicing. The CV-G comes with a coil, easy slide out blower/motor assembly with quick-connect plug and a galvanized steel, powder coated epoxy drain pan



covered with 1/8" thick insulation. The galvanized steel cabinet is insulated with 1/2" thick, over three pound density, neoprene coated fiberglass. A one inch duct flange on return and supply air openings is standard.

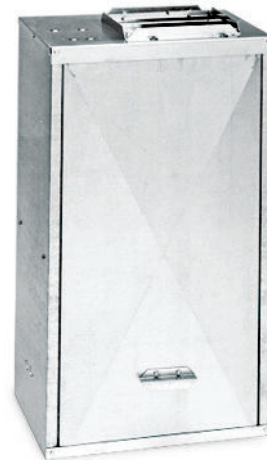
### **HIGH-PERFORMANCE CASED / CLOSET REAR RETURN / CV-Q**

The Cased Vertical Bottom Supply with Rear Return (CV-Q) is a high performance, high static (up to .50 ESP), ducted vertical fan coil. Primarily used in floor mounted or hideaway applications, the CV-Q is furred into partition walls, hidden closets, or utility rooms with a ducted discharge. A removable access panel facilitate easy servicing. The CV-Q comes with a coil, easy slide out blower/motor assembly with quick connect plug and a galvanized steel, powder coated epoxy drain pan covered with 1/8" thick insulation. The galvanized steel cabinet is insulated with 1/2" thick, over three pound density, neoprene coated fiberglass. A one inch duct flange on return and supply air openings is standard. *(This is a custom designed fan coil, certified dimensional drawings provided upon request.)*



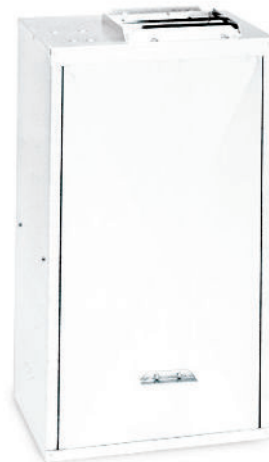
### **HIGH PERFORMANCE CASED / CLOSET HEAT ONLY / CV-H**

The Cased Vertical (CV-H) is a Heat Only model. It is a high performance, high static (up to .50 ESP), ducted vertical fan coil for installation virtually anywhere. The front panel is removable for easy filter removal and service access to the slide out blower, equipped with a quick connect plug. The top discharge opening has a one inch duct collar. This heat only version does not need a drain pan and may be installed horizontally



### **HIGH PERFORMANCE CASED / CLOSET HEAT ONLY PAINTED CABINET / CV-O**

The Cased Vertical (CV-O) is a Heat Only model. It is a high performance, high-static (up to .50 ESP) ducted vertical fan coil for installation virtually anywhere. The front panel is removable for easy filter removal and service access to the slide out blower, equipped with a quick connect plug. The top discharge opening has a one inch duct collar. This heat only version does not need a drain pan and may be installed horizontally. The CV-O is finished in a soft white powder coated epoxy.



# HIGH PERFORMANCE CASED VERTICAL MODELS - CV SERIES

400 - 2,200 CFM

- **FRONT RETURN BASIC / CV-K**
- **FRONT RETURN DELUXE / CV-J**
- **VERTICAL FRONT SUPPLY AND RETURN / CV-S**

Heavy gauge galvanized steel cabinet with ½" thick over three pound density, neoprene coated fiberglass. CV-J is constructed of heavy gauge cold rolled steel finished in a soft-white powder coated epoxy. Coils ½" OD copper tube with aluminum fins (12FPI) equipped with manual air vent. DX and steam coils do not include manual air vent. DX and steam coils do not include manual air vent. Coils are 100% underwater pressure tested at 350 PSI with a 300 PSI working pressure. Galvanized drain pan is powder coated epoxy with a ¼" thick closed cell insulation and has primary and secondary drain connections. Three speed 115/1/60 PSC motor with quick connect plug. Easy slide out draw through blower and motor assembly. Controls and motors are factory wired and terminated in a junction box for single point power supply. 1" fiberglass, throwaway filter. Protective cardboard covers openings during shipment and construction. Individually tagged and crated as scheduled for installation. ETL certified, AHRI certified and 100% factory tested.





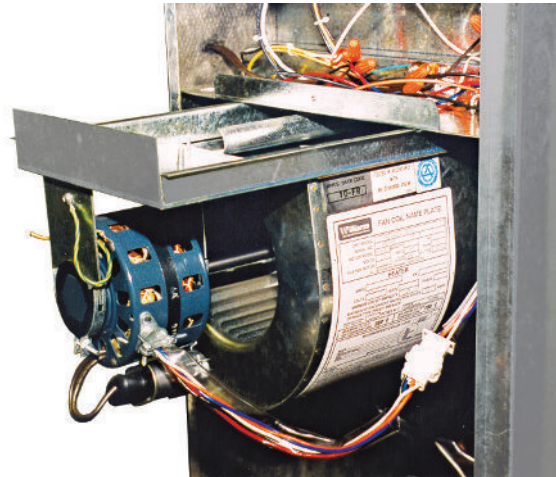
# STANDARD FEATURES

- Heavy gauge galvanized steel cabinet with neoprene coated 1/2" thick fiberglass insulation with 3.35 PCF density.
- Coils are made of 1/2" OD copper tube with aluminum fins (12 FPI) equipped with manual air vent. DX and steam coils do not include manual air vent. Coils are 100% underwater pressure tested at 350 PSI with a 300 PSI working pressure.
- Galvanized drain pan is powder coated epoxy and subjected to a 650 hour salt spray test in accordance with ASTM-B117. Also comes with 1/8" thick closed cell insulation and primary and secondary drain connections.
- Three-speed, 115/1/60 PSC motor with quick connect plug.
- Easy slideout draw-through blower and motor assembly
- Controls and motors are factory wired and terminated in a junction box for single point power supply.
- One inch, reinforced duct collar on supply air openings.
- One inch fiberglass, throwaway filter.
- Protective cardboard covers openings during shipment and construction.
- Individually tagged, crated and shipped as scheduled for installation.
- ETL approved, AHRI certified.
- 100% factory tested.



# OPTIONS

- Soft white, powder coated epoxy cabinet that's subjected to a 1500 hour salt spray test in accordance with ASTM-B117.
- Drain Pans - stainless steel.
- Insulation fiberglass, foil face, elastomeric and double wall separate foam insulation.
- Coils - custom tubes, phenolic coated, stainless steel end plates. All options are available on one to six rows. Copper coils, copper fins.
- Three speed, 208-230/1/50-60 or 277/1/60 PSC motor with quick-connect plug.
- Systems - two or four pipe, hydronic cooling/heating, steam, direct expansion (DX) and/or electric heat. Steam heat. DX coating.
- Cabinet - Deluxe
- ECM™ motors; programmed 3 speed, or variable volume, 120-240/1/60 or 277/1/60.
- Controls - wide selection of factory mounted valves and controls.
- Filters - two inch thick throwaway, washable, metallic and pleated.
- Flow control circulator for water heating custom applications.
- Grilles eliminate the need for closet doors, available in custom colors.
- Electric Strip Heat from 1 to 9 kW.
- Flow-Control pump for water heating applications.
- Ultraviolet lights.



# AHRI CERTIFIED COOLING CAPACITY



Williams High Performance Cased Vertical Fan Coils are labeled and approved by the Air Conditioning, Heating & Refrigeration Institute (AHRI). This designation signifies that Williams High Performance Cased Vertical Fan Coil units have been rated as follows in accordance with the latest edition of ANSI/AHRI 440 with Addendum 1 Performance Rating of Room Fan Coils and subject to rating accuracy by AHRI sponsored, independent, third-party testing.

AHRI APPROVED STANDARD RATINGS						COOLING CAPACITY		POWER INPUT (WATTS)
SIZE	SERIES / MOTOR TYPE / #	STYLE	RATED CFM	GPM	WPD (FT/H <sub>2</sub> O)	TOTAL COOLING (BTUH)	SENSIBLE COOLING (BTUH)	
004	CV Series Standard (1)	B, D	530	3.2	2.1	15,930	11,690	175
		F, R	550	2.9	4.3	14,260	11,040	228
		G, Q	660	3.5	1.6	17,330	13,630	227
006	CV Series Standard (1)	B, D	600	3.5	2.4	17,540	13,130	181
		F, R	750	3.5	6.4	17,460	14,410	260
		G, Q	800	4.0	2.0	20,030	16,200	256
008	CV Series Standard (1)	B, D	760	4.2	3.1	20,820	17,190	316
		F, R	960	4.8	3.5	24,080	19,570	360
		G, Q	890	4.3	2.2	21,550	17,730	360
010	CV Series Standard (1)	B, D	900	4.9	4.6	24,650	20,290	356
		F, R	1,060	5.7	5.3	28,480	23,560	383
		G, Q	1,080	6.2	4.4	31,080	24,950	398
012	CV Series Standard (1)	B, D	970	5.2	5.0	25,990	21,580	413
		F, R	1,310	7.8	8.8	39,100	30,780	540
		G, Q	1,280	6.9	5.1	34,680	26,470	536
015	CV Series Standard (2)	B, D	1,616	10.0	5.1	49,865	40,095	529
		F, R	1,550	9.7	7.9	48,624	37,500	553
		G, Q	1,602	9.9	5.6	49,500	39,796	529
018	CV Series Standard (2)	B, D	1,898	12.4	7.0	62,141	48,454	736
		F, R	1,898	13.0	10.9	65,009	49,559	736
		G, Q	1,864	12.3	6.9	61,440	47,756	736
022	CV Series Standard (2)	B, D	2,075	14.4	8.8	71,879	54,529	1035
		F, R	2,075	14.4	8.8	71,879	54,529	1035
		G, Q	2,088	13.4	5.6	66,915	52,774	1035

**Notes:** 1) Based on 80°F DB and 67°F WB EAT, 45°F EWT, 10°F temperature rise, high fan speed. Motor voltage 115/1/60 power source. Air flow under dry coil conditions. Water pressure drops shown in feet of water. All units are listed under UL Category Control No. LZFE.

2) Ratings are based on actual CFM. Standard coils for 004 is 3 rows and 006-022 is 4 rows.

3) Legend - B = Basic; D = Deluxe; F = Front return; R = Front return deluxe; G = Rear return and bottom supply; Q = Rear return and bottom supply deluxe.

# HEATING PERFORMANCE

HEATING PERFORMANCE						
SIZE	SERIES / MOTOR TYPE	COIL ROWS/ (FPI)	RATED CFM	MBH	GPM	WPD (FT./H2O)
004	CV series (basic / deluxe)	1 Row (12)	525	26.7	1.3	1.8
		2 Row (12)	525	40.1	2.0	1.3
006	CV series (basic / deluxe)	1 Row (12)	610	33.6	1.7	2.9
		2 Row (12)	610	49.9	2.5	2.1
	CV series (front return)	1 Row (12)	750	37.8	1.9	3.3
		2 Row (12)	750	57.3	2.8	2.4
008	CV series (basic / deluxe)	1 Row (12)	780	35.3	1.8	2.7
		2 Row (12)	780	55.3	2.7	2.0
	CV series (front return)	1 Row (12)	975	38.7	1.9	3.1
		2 Row (12)	975	62.3	3.1	2.3
010	CV series (basic / deluxe)	1 Row (12)	930	36.4	1.8	3.3
		2 Row (12)	930	59.1	2.9	2.5
	CV series (front return)	1 Row (12)	1,100	39.0	1.9	3.7
		2 Row (12)	1,100	64.4	3.2	2.8
012	CV series (basic / deluxe)	1 Row (12)	1,135	43.2	2.2	4.9
		2 Row (12)	1,135	70.7	3.5	3.7
	CV series (front return)	1 Row (12)	1,350	38.5	1.9	0.7
		2 Row (12)	1,350	69.3	3.4	1.2
015	CV series (basic / deluxe)	1 Row (12)	1,625	62.8	3.1	4.0
		2 Row (12)	1,625	100.9	5.0	3.4
	CV series (front return)	1 Row (12)	1,625	62.8	3.1	5.2
		2 Row (12)	1,625	103.7	5.2	5.4
018	CV series (basic / deluxe)	1 Row (12)	1,910	75.5	3.8	5.4
		2 Row (12)	1,910	121.5	6.0	4.5
	CV series (front return)	1 Row (12)	1,910	54.2	2.6	0.9
		2 Row (12)	1,910	124.2	6.2	7.0
022	CV series (basic / deluxe)	1 Row (12)	2,090	86.8	4.3	6.8
		2 Row (12)	2,090	138.8	6.9	5.7
	CV series (front return)	1 Row (12)	2,090	63.9	3.2	1.2
		2 Row (12)	2,090	138.8	6.9	5.7

**Notes:** Based on 70°F DB EAT, 180°F EWT, 40°F temperature drop, high fan speed. Motor voltage 115/1/60 power source. Air flow under dry coil conditions. Water pressure drops shown in feet of water.

# COIL DATA

Coils are made from ½" O.D. copper tubing with .016" wall thickness, and tubes are staggered for maximum heat transfer. A manual air vent is standard on all hydronic coils. DX and steam coils do not include manual air vent. All coils are 100% underwater pressure tested to 350 PSIG with a 300 PSIG working pressure. Steam coils are rated for up to 15 PSIG or 250°F.

Coils are available in one to eight row configurations for CV Series units. All units available with any combination of chilled or hot water, steam or direct expansion. Custom circuiting is available.

## VERTICAL (CV SERIES)

COIL ROW	003	004	006	008	010	012	015	018	022
Single-Row Coil									
Two-Row Coil					OPTIONAL				
Three-Row Coil									
Four-Row Coil									
Five-Row Coil									
Six-Row Coil					STANDARD				
Seven-Row Coil									
*Eight-Row Coil									

\* Seven-row coil maximum when selecting a DX coil with a hot water coil.

### COIL OPTIONS:

- DX – Includes distributor and nozzle, TXV must be field furnished and installed
- Steam – 1-15 PSIG
- Preheat Coil Position – Standard coil is reheat position
- Phenolic Anti-Corrosion Coating (PAC) custom.
- 10-15 Fins Per Inch (Standard is 12 FPI)

Coil connections on the chilled water side for CV004-006 is ½" and ¾" on CV008-022. The hot water connection is ½" on the CV004-022.

# ELECTRIC HEAT

## VERTICAL (CV SERIES)

MODEL / SIZE	kW	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
	VOLTAGE	AMPS																
004	115	8.7	13.0	17.4	21.7	26.1												
	208	4.8	7.2	9.6	12.0	14.4	16.8	19.2										
	230	4.4	6.5	8.7	10.9	13.0	15.2	17.4										
	277	3.6	5.4	7.2	9.0	10.8	12.6	14.4										
006	115	8.7	13.0	17.4	21.7	26.1												
	208	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24.0								
	230	4.4	6.5	8.7	10.9	13.0	15.2	17.4	19.6	21.7								
	277	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.3	18.1								
008	115	8.7	13.0	17.4	21.7	26.1												
	208	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24.0								
	230	4.4	6.5	8.7	10.9	13.0	15.2	17.4	19.6	21.7								
	277	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.3	18.1								
010	115	8.7	13.0	17.4	21.7	26.1												
	208	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24.0	26.4	28.9	31.3	33.7	36.1	38.5		
	230	4.4	6.5	8.7	10.9	13.0	15.2	17.4	19.6	21.7	23.9	26.1	28.3	30.4	32.6	34.8		
	277	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.3	18.1	19.9	21.7	23.5	25.3	27.1	28.9		
012	115	8.7	13.0	17.4	21.7	26.1												
	208	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24.0	26.4	28.9	31.3	33.7	36.1	38.5	40.9	43.3
	230	4.4	6.5	8.7	10.9	13.0	15.2	17.4	19.6	21.7	23.9	26.1	28.3	30.4	32.6	34.8	37.0	39.1
	277	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.3	18.1	19.9	21.7	23.5	25.3	27.1	28.9	30.7	32.5
015	115	8.7	13.0	17.4	21.7	26.1												
	208	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24.0	26.4	28.9	31.3	33.7	36.1	38.5	40.9	43.3
	230	4.4	6.5	8.7	10.9	13.0	15.2	17.4	19.6	21.7	23.9	26.1	28.3	30.4	32.6	34.8	37.0	39.1
	277	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.3	18.1	19.9	21.7	23.5	25.3	27.1	28.9	30.7	32.5
018	115	8.7	13.0	17.4	21.7	26.1												
	208	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24.0	26.4	28.9	31.3	33.7	36.1	38.5	40.9	43.3
	230	4.4	6.5	8.7	10.9	13.0	15.2	17.4	19.6	21.7	23.9	26.1	28.3	30.4	32.6	34.8	37.0	39.1
	277	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.3	18.1	19.9	21.7	23.5	25.3	27.1	28.9	30.7	32.5
022	115	8.7	13.0	17.4	21.7	26.1												
	208	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24.0	26.4	28.9	31.3	33.7	36.1	38.5	40.9	43.3
	230	4.4	6.5	8.7	10.9	13.0	15.2	17.4	19.6	21.7	23.9	26.1	28.3	30.4	32.6	34.8	37.0	39.1
	277	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.3	18.1	19.9	21.7	23.5	25.3	27.1	28.9	30.7	32.5

# AIR FLOW DATA

## VERTICAL (CV SERIES)

AIR FLOW DATA		EXTERNAL STATIC PRESSURE																	
SIZE	COIL ROWS	0.00			0.05			0.10			0.15			0.20			0.25		
		HI	MED	LOW	HI	MED	LOW	HI	MED	LOW	HI	MED	LOW	HI	MED	LOW	HI	MED	LOW
004 BASIC / DELUXE	3 ROW	545	440	355	525	425	350	510	415	340	500	405	325	490	395	310	480	380	295
	4 ROW	535	430	345	515	415	340	500	405	330	490	395	315	480	385	300	470	370	285
006 BASIC/DELUXE	3 ROW	624	490	380	600	470	360	585	555	340	570	440	335	560	425	310	545	410	295
	4 ROW	614	480	370	590	460	350	575	545	330	560	430	315	550	415	300	535	400	285
006 FRONT RETURN	3 ROW	765	650	560	735	635	550	715	620	540	695	605	525	675	586	510	655	565	495
	4 ROW	755	640	550	725	625	540	705	610	530	685	595	515	665	575	500	645	555	485
008 BASIC / DELUXE	3 ROW	790	620	515	775	610	505	765	600	500	745	590	490	725	575	485	705	560	465
	4 ROW	775	605	500	765	595	490	750	585	485	730	575	480	710	560	470	690	545	450
008 FRONT RETURN	3 ROW	985	875	685	970	845	675	950	825	660	925	805	645	900	785	630	875	765	615
	4 ROW	970	860	670	960	830	660	935	810	645	910	790	630	885	770	615	860	750	600
010 BASIC / DELUXE	3 ROW	935	715	555	920	705	550	905	695	545	890	685	535	865	675	525	835	655	510
	4 ROW	920	700	540	905	690	535	890	680	530	875	670	520	850	660	510	820	640	495
010 FRONT RETURN	3 ROW	1110	980	800	1075	950	785	1045	920	765	1010	895	745	975	865	725	940	835	700
	4 ROW	1095	965	785	1060	935	770	1030	910	750	1000	880	730	960	850	710	925	820	685
012 BASIC / DELUXE	3 ROW	1145	935	715	1125	920	705	1095	905	695	1065	885	685	1030	865	675	1005	835	655
	4 ROW	1130	920	700	1110	905	690	1080	890	680	1050	870	670	1020	850	660	990	820	640
012 FRONT RETURN	3 ROW	1370	1125	645	1330	1115	635	1295	1100	630	1255	1085	625	1215	1065	620	1185	1050	610
	4 ROW	1358	1110	630	1315	1100	625	1280	1085	615	1240	1070	610	1200	1055	605	1170	1040	595
015 FRONT RETURN	3 ROW	1640	1345	1160	1600	1325	1140	1560	1305	1120	1520	1280	1100	1480	1250	1080	1435	1215	1040
	4 ROW	1620	1325	1140	1580	1305	1120	1540	1285	1100	1500	1260	1080	1460	1230	1060	1415	1200	1020
018 FRONT RETURN	3 ROW	1920	1770	1535	1870	1730	1500	1815	1670	1450	1760	1610	1410	1690	1560	1360	1630	1510	1300
	4 ROW	1900	1750	1515	1850	1710	1480	1795	1650	1430	1740	1590	1390	1670	1540	1340	1610	1490	1285
022 FRONT RETURN	3 ROW	2120	2000	1410	2035	1940	1390	1950	1870	1370	1890	1790	1335	1815	1725	1290	1750	1660	1240
	4 ROW	2100	1980	1390	2015	1920	1370	1930	1850	1350	1870	1770	1315	1795	1705	1270	1730	1640	1220

**Notes:** Ratings and capacity tables based on nominal CFM.

# MOTOR DATA

Motors are wired to a junction box ready for single-point field connection.

## OUTSTANDING MOTOR FEATURES:

- Quick connect plug
- Permanent split capacitor
- Thermal overload protection
- 1050 RPM for lower operating costs
- Oversized bearings and permanently lubricated and sealed
- 122°F maximum operating temperature
- Custom motor mounts designed to reduce noise and eliminate vibration
- Stators are epoxy dipped for more efficient motor cooling

## OPTIONAL MOTORS:

- 208V-1Ø-60 motors
- 277V-1Ø-60 motors
- 230/220V-1Ø-60 motors
- 50-Hz motors in specified voltages

60 HERTZ SINGLE-PHASE MOTORS (1100 RPM)				3.6 VOLTAGE / WATTS							
				115V		208V		230V		277V	
SIZE	MODEL / MOTOR TYPE	HP (QTY)	BLOWERS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
004	CV basic/deluxe (std)	1/10 (1)	1	1.5	175	0.80	175	0.7	175	0.5	175
	CV front return (std)	1/10 (1)	1	1.4	228	0.70	228	0.6	228	0.5	228
006	CV basic/deluxe (std)	1/10 (1)	1	1.6	181	0.90	181	0.8	181	0.8	181
	CV front return (std)	1/6 (1)	1	2.3	260	1.20	260	1.1	260	0.8	260
008	CV basic/deluxe (std)	1/6 (1)	1	2.2	316	1.10	316	1.0	316	1.3	316
	CV front return (std)	1/4 (1)	1	3.2	360	1.60	360	1.5	360	1.2	360
010	CV basic/deluxe (std)	1/6 (1)	1	2.4	356	1.20	356	1.1	356	1.5	356
	CV front return (std)	1/4 (1)	1	3.3	383	1.80	383	1.6	383	1.3	383
012	CV basic/deluxe (std)	1/4 (1)	1	3.2	413	1.70	413	1.5	412	1.7	413
	CV front return (std)	1/3 (1)	1	4.5	540	2.60	540	2.4	540	1.8	540
015*	CV basic/deluxe (std)	1/6 (2)	2	4.6	547	2.30	547	3.1	547	1.6	547
	CV front return (std)	1/6 (2)	2	4.6	553	2.40	553	2.2	553	1.6	553
018*	CV basic/deluxe (std)	1/4 (2)	2	6.4	644	3.30	644	3.0	644	2.4	644
	CV front return (std)	1/4 (2)	2	6.4	654	3.30	654	3.0	654	2.5	654
022*	CV basic/deluxe (std)	1/3 (2)	2	9.0	793	5.30	793	4.8	793	3.6	793
	CV front return (std)	1/3 (2)	2	9.0	798	5.30	798	4.8	798	3.6	798

\* Data reflects combined performance of (2) motors for both Horizontal and Vertical units. Notes: Motor full load amps listed refer to NEC amps. Actual motor nameplate amps may vary.



# SOUND DATA

## VERTICAL (CV SERIES)

SIZE	MODEL	FAN SPEED	OCTAVE BAND						
			2	3	4	5	6	7	8
			CENTER FREQUENCY (CPS)						
			125	250	500	1000	2000	4000	8000
004	CV series basic / deluxe	high	58.1	51.8	48.6	44.5	36.3	32.5	30.8
		medium	54.5	39.5	38.1	33.6	27.3	24.3	26.3
		low	49.6	38.5	37.2	32.1	26.1	22.7	24.6
006	CV series basic / deluxe	high	59.5	50.1	49.1	43.2	38.1	34.7	35.1
		medium	56.3	47.3	44.6	38.8	33.4	32.0	33.4
		low	50.9	45.5	41.2	35.6	30.7	27.3	26.1
	CV series front return	high	59.2	52.1	51.6	46.4	41.4	36.0	33.6
		medium	53.6	49.3	47.7	41.5	35.5	33.8	26.0
		low	51.8	47.1	44.3	36.4	34.2	31.5	24.4
008	CV series basic / deluxe	high	62.1	56.6	53.3	48.3	44.2	40.8	36.5
		medium	56.6	48.2	45.7	41.6	38.2	32.9	29.7
		low	51.8	44.6	39.6	36.2	33.8	27.8	34.4
	CV series front return	high	60.1	57.0	55.7	52.0	49.7	45.0	37.0
		medium	56.7	52.3	47.0	45.4	41.2	34.2	27.8
		low	53.4	46.5	43.7	42.2	39.6	32.7	25.4
010	CV series basic / deluxe	high	63.2	56.9	57.3	53.1	47.3	41.8	39.8
		medium	58.1	51.7	53.8	48.3	42.4	37.2	31.7
		low	55.5	46.9	46.1	41.4	35.8	32.3	29.1
	CV series front return	high	61.5	59.8	57.2	56.0	52.1	47.1	39.1
		medium	57.2	54.1	52.2	49.3	42.1	38.9	27.3
		low	54.1	48.6	45.8	44.5	39.7	36.7	26.1
012	CV series basic / deluxe	high	65.3	61.4	60.1	56.5	49.9	45.1	42.1
		medium	60.4	55.9	54.2	52.1	44.7	41.1	35.4
		low	56.3	51.7	46.8	44.3	36.9	35.6	30.1
	CV series front return	high	62.5	61.3	59.8	57.8	54.7	47.6	40.8
		medium	58.8	57.2	54.1	50.3	44.1	38.6	28.7
		low	54.3	53.7	48.6	46.5	41.4	34.2	27.7
015	CV series front return	high	58.5	55.5	53.0	49.0	47.0	45.0	40.8
		medium	54.3	51.4	48.1	44.3	42.1	38.9	29.0
		low	51.0	48.4	45.4	41.2	38.7	35.4	26.8
018	CV series front return	high	61.0	57.5	55.5	51.5	50.0	47.0	42.4
		medium	56.2	53.3	52.1	49.1	46.4	42.0	32.1
		low	52.4	50.5	40.4	48.4	41.4	38.5	30.8
022	CV series front return	high	62.5	60.0	58.6	53.2	51.7	48.4	45.6
		medium	58.0	56.4	55.3	51.4	49.5	44.1	32.7
		low	53.1	51.5	50.4	47.4	45.4	41.8	31.9

- Notes:** 1) Power levels are in dB RE 10-12 watts.  
 2) Sound data tested in accordance with ASHRAE standard 68 and AHRI standard 260 and 350.  
 3) Air flow under dry coil conditions.

# WEIGHTS AND MEASUREMENTS

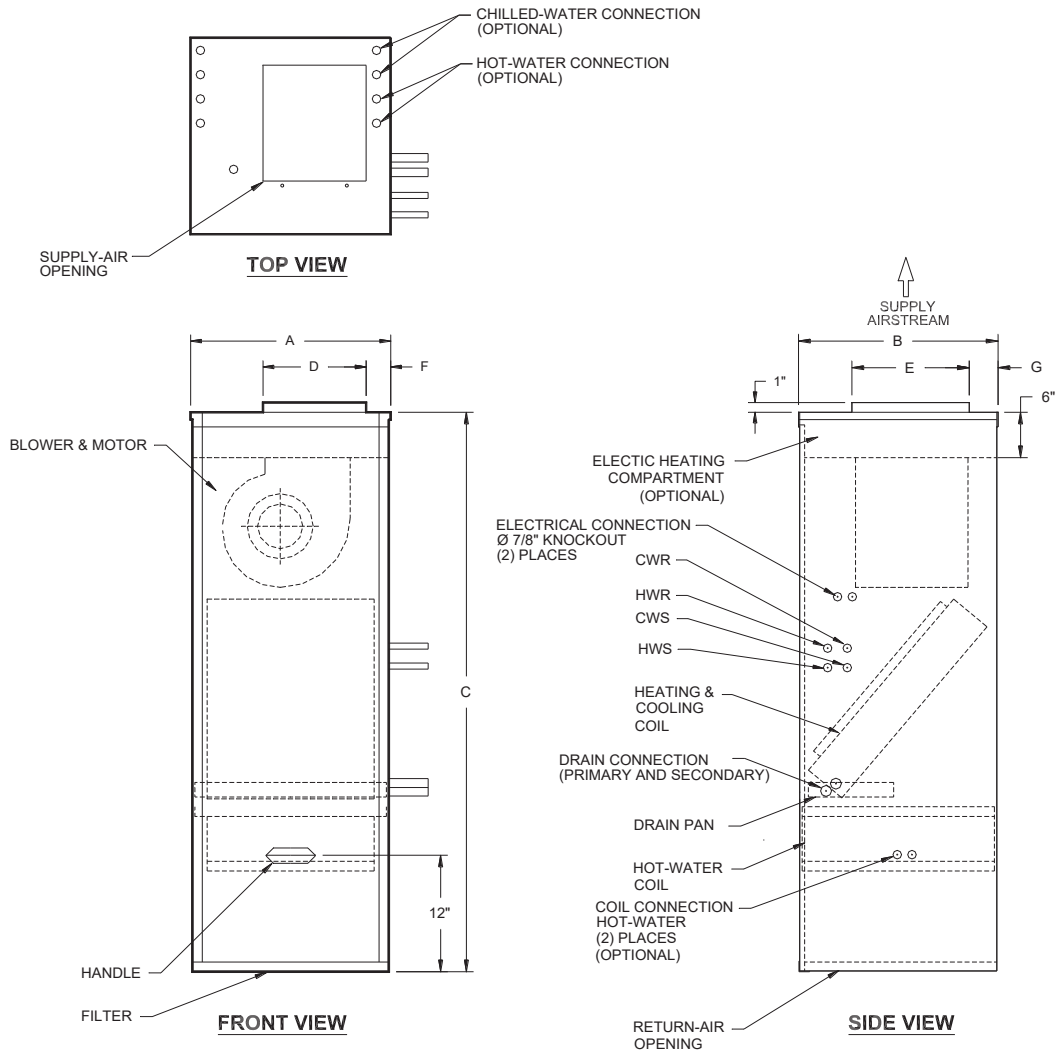
The following CV Series weights and measures are based on fan coil units only. Add approximately 20% for packaging and crating.

UNIT	MODEL	ROWS	DIMENSIONS / INCHES			WEIGHT / LBS.		DIMENSIONS / MILLIMETERS			WEIGHT / KG	
			HEIGHT	WIDTH	DEPTH	DRY	WET	HEIGHT	WIDTH	DEPTH	DRY	WET
CV SERIES BASIC / DELUXE	004	3	59	21	15	104	109	1,499	533	381	47	50
	004	4	59	21	15	109	116	1,499	533	381	49	53
	006	3	59	21	15	110	115	1,499	533	381	50	52
	006	4	59	21	15	116	122	1,499	533	381	52	55
	008	3	59	21	15	142	147	1,499	533	381	64	67
	008	4	59	21	15	147	154	1,499	533	381	67	70
	010	3	59	21	21	151	156	1,499	533	533	58	71
	010	4	59	21	21	156	163	1,499	533	533	71	74
	012	3	59	21	21	167	172	1,499	533	533	76	78
	012	4	59	21	21	172	179	1,499	533	533	78	81
	015	3	59	22	30	224	234	1,499	559	762	102	106
	015	4	59	22	30	230	243	1,499	559	762	104	110
	018	3	59	22	30	234	244	1,499	559	762	106	111
	018	4	59	22	30	240	253	1,499	559	762	109	115
	022	3	59	22	30	234	244	1,499	559	762	106	111
	022	4	59	22	30	240	253	1,499	559	762	109	115
CV SERIES FRONT RETURN	004	3	43	21	15	116	121	1,092	533	508	53	55
	004	4	43	21	15	121	128	1,092	533	508	55	58
	006	3	43	21	15	116	121	1,092	533	508	53	55
	006	4	43	21	15	121	128	1,092	533	508	55	58
	008	3	43	25	15	131	136	1,092	635	508	59	62
	008	4	43	25	15	136	142	1,092	635	508	62	65
	010	3	46	25	21	141	146	1,092	635	508	64	66
	010	4	46	25	21	146	153	1,168	635	508	66	70
	012	3	46	30	21	152	157	1,168	762	508	69	71
	012	4	46	30	21	157	164	1,168	762	508	71	75
	015	3	49	37	30	202	212	1,168	940	508	92	96
	015	4	49	37	30	208	221	1,245	940	508	94	100
	018	3	49	37	30	213	223	1,245	940	508	97	101
	018	4	49	37	30	219	232	1,245	940	508	99	105
	022	3	49	41	30	230	240	1,245	1041	508	104	109
	022	4	49	41	30	236	249	1,245	1041	508	107	113

# HIGH PERFORMANCE CASED VERTICAL

## CV-B/D CASED CLOSET BASIC BOTTOM RETURN

### 400 - 800 CFM



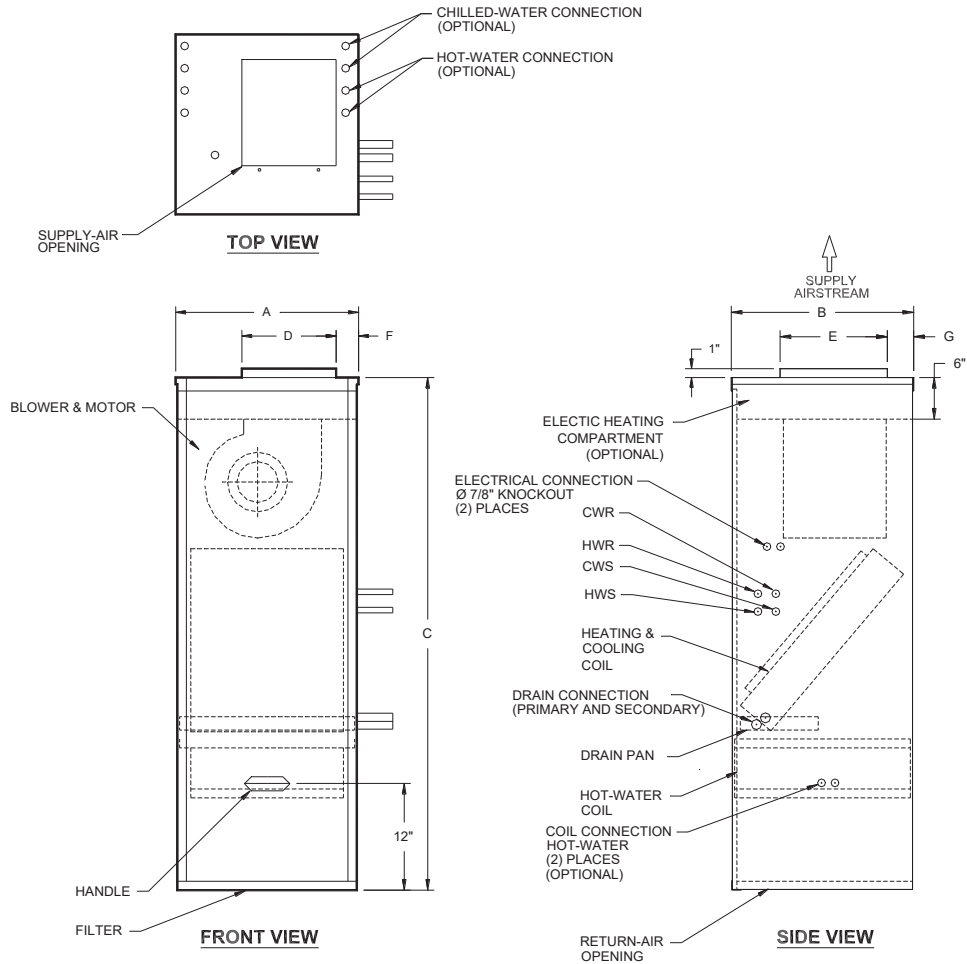
MODEL CV-B/D	A	B	C	D	E	F	G	FILTER SIZE
400	20-5/32	14-5/32	57-5/8	10-15/32	7-3/32	2-7/32	3-1/32	16 X 16 X 1
600	20-5/32	14-5/32	57-5/8	10-15/32	8-15/32	2-7/32	3-1/32	16 X 20 X 1
800	20-5/32	14-5/32	57-5/8	10-15/32	9-13/32	2-7/32	3-1/32	20 X 20 X 1

- Right hand unit shown, left hand unit opposite.
- Coil connections determined by facing the front access panel.
- Electrical junction box is located on the same side as the coil connections.
- Unit must be installed level and condensate drain lines should be trapped.
- Drain pan is powder coated epoxy with a 1/8" thick closed-cell insulation and has 3/4" NPT, primary and secondary drain connections.
- Entire cabinet, scroll and blower wheel are heavy gauge, galvanized steel.
- Coil connections: 1/2" CW and HW on CV004-008.

# HIGH PERFORMANCE CASED VERTICAL

## CV-B/D CASED CLOSET BASIC BOTTOM RETURN

1,000 - 2,200 CFM



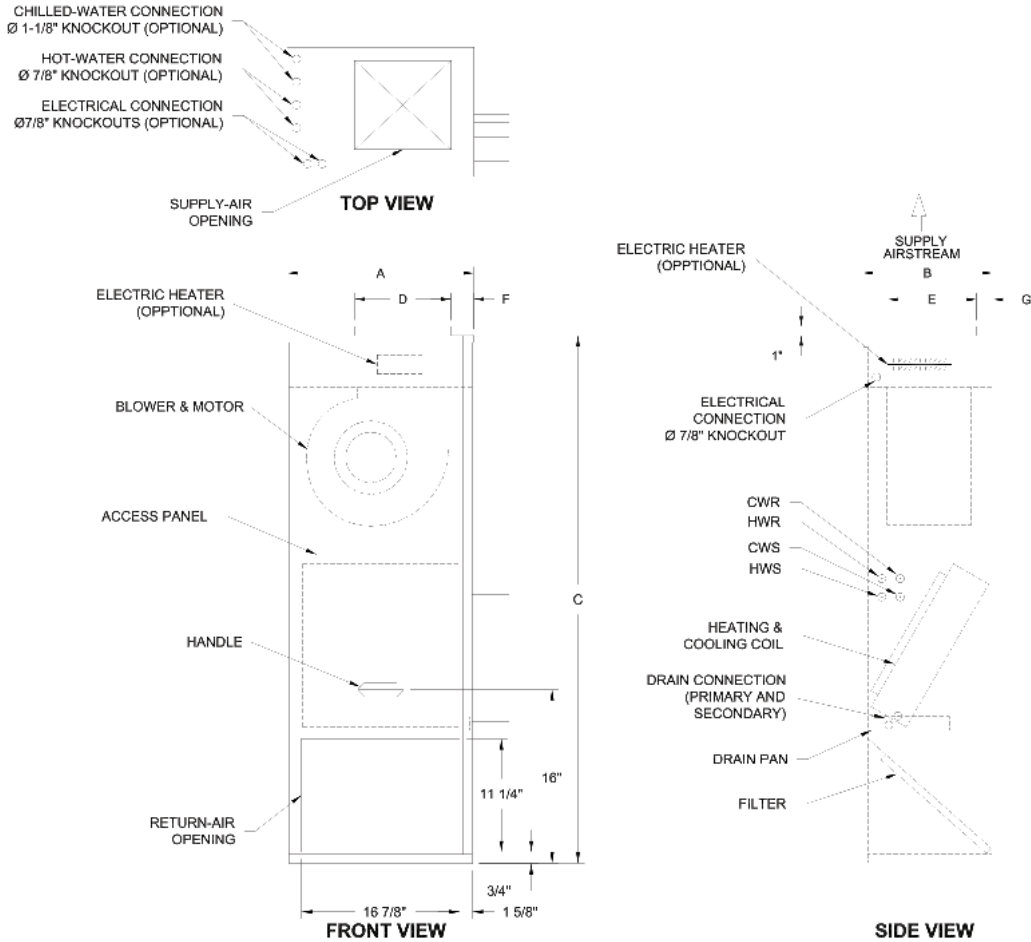
MODEL CV-B/D	A	B	C	D	E	F	G	FILTER SIZE
1000	20-3/8	20-3/8	57-3/8	10-3/8	12	2-3/8	3-1/16	20 x 20 x 1
1200	20-3/8	20-3/8	57-3/8	10-3/8	12	2-3/8	3-1/16	20 x 20 x 1
1500	36	24-5/8	62-3/4	10-1/2	24	3	3	30 x 24 x 1
1800	36	24-5/8	62-3/4	10-1/2	24	3	3	30 x 24 x 1
2200	36	24-5/8	62-3/4	10-1/2	24	3	3	30 x 24 x 1

- Right hand unit shown, left hand unit opposite.
- Coil connections determined by facing the front access panel.
- Electrical junction box is located on the same side as the coil connections.
- Unit must be installed level and condensate drain lines should be trapped.
- Drain pan is powder coated epoxy with a 1/8" thick closed-cell insulation and has 3/4" NPT, primary and secondary drain connections.
- Entire cabinet, scroll and blower wheel are heavy gauge, galvanized steel.
- Coil connections: 1/2" CW on CV010, 3/4" on CV012-022 and 1/2" HW on CV010-022.

# HIGH PERFORMANCE CASED VERTICAL

## CV-K/J FRONT RETURN

400 - 1,200 CFM



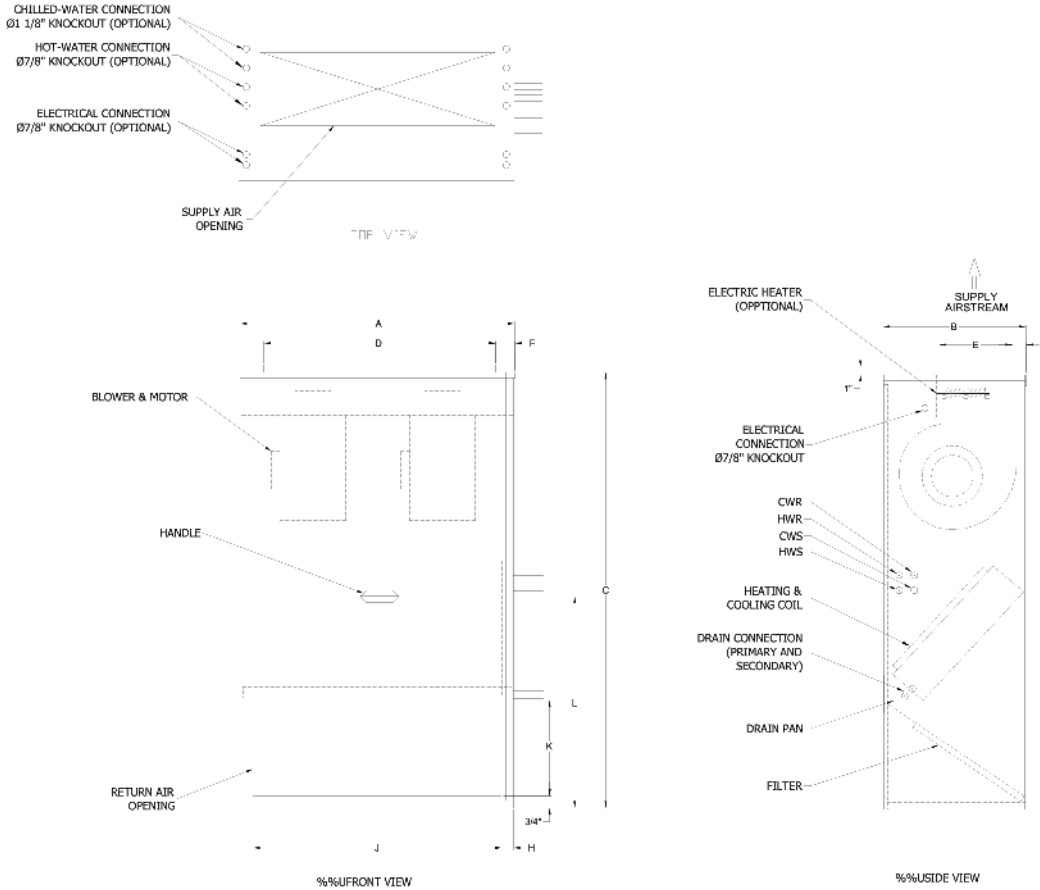
MODEL BASIC / DELUXE	A	B	C	D	E	F	G	FILTER SIZE
400	20-5/32	14-5/3	57-5/8	10-15/32	7-3/32	2-7/32	3-1/32	16 X 160 X 1
600	20-5/32	14-5/3	57-5/8	10-15/32	8-15/32	2-7/32	3-1/32	16 X 20 X 1
800	20-5/32	14-5/3	57-5/8	10-15/32	9-13/32	2-7/32	3-1/32	20 X 20 X 1
1000	20-11/32	20-5/16	57-5/8	10-3/8	11-15/16	2-1/8	3-1/16	20 X 20 X 1
1200	20-11/32	20-5/16	57-5/8	10-3/8	11-15/16	2-1/8	3-1/16	20 X 20 X 1

- All sizes shown in inches.
- Right hand unit shown, left hand unit opposite.
- Coil connections determined by facing the supply air opening.
- Electrical junction box is located on the same side as the coil connections.
- Unit must be installed level and condensate drain lines should be trapped.
- Drain pan is powder coated epoxy with a 1/8" thick closed cell insulation and has 3/4" NPT primary and secondary drain connections.
- Entire cabinet, scroll and blower wheel are heavy gauge, galvanized steel.
- Coil connections: 1/2" CW and HW on CV004-008.

# HIGH PERFORMANCE CASED VERTICAL

## CV-K/J FRONT RETURN

1,500 - 2,200 CFM



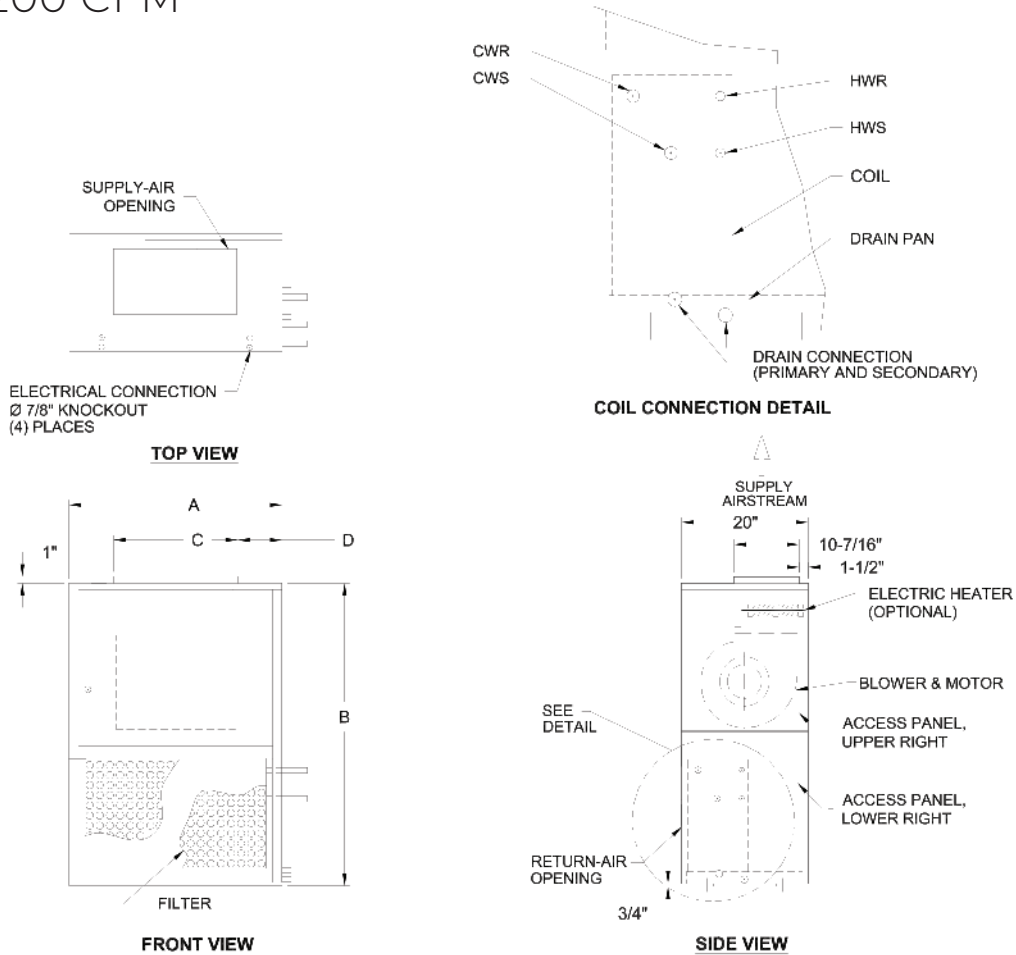
MODEL BASIC / DELUXE	A	B	C	D	E	F	G	FILTER SIZE
1500	36	24-5/8	62-3/4	24	10-1/2	3	3	30 X 24 X 1
1800	36	24-5/8	62-3/4	24	10-1/2	3	3	30 X 24 X 1
2200	36	24-5/8	62-3/4	24	10-1/2	3	3	30 X 24 X 1

- All sizes shown in inches.
- Right hand unit shown, left hand unit opposite.
- Coil connections determined by facing the supply air opening.
- Electrical junction box is located on the same side as the coil connections.
- Unit must be installed level and condensate drain lines should be trapped.
- Drain pan is powder coated epoxy with a 1/8" thick closed cell insulation and has 3/4" NPT primary and secondary drain connections.
- Entire cabinet, scroll and blower wheel are heavy gauge, galvanized steel.
- Coil connections: 1/2" CW on CV010, 3/4" on CV012-022 and 1/2" HW on CV010-022.

# HIGH PERFORMANCE CASED VERTICAL

## CV-R FRONT RETURN / TOP SUPPLY

600 - 1,200 CFM



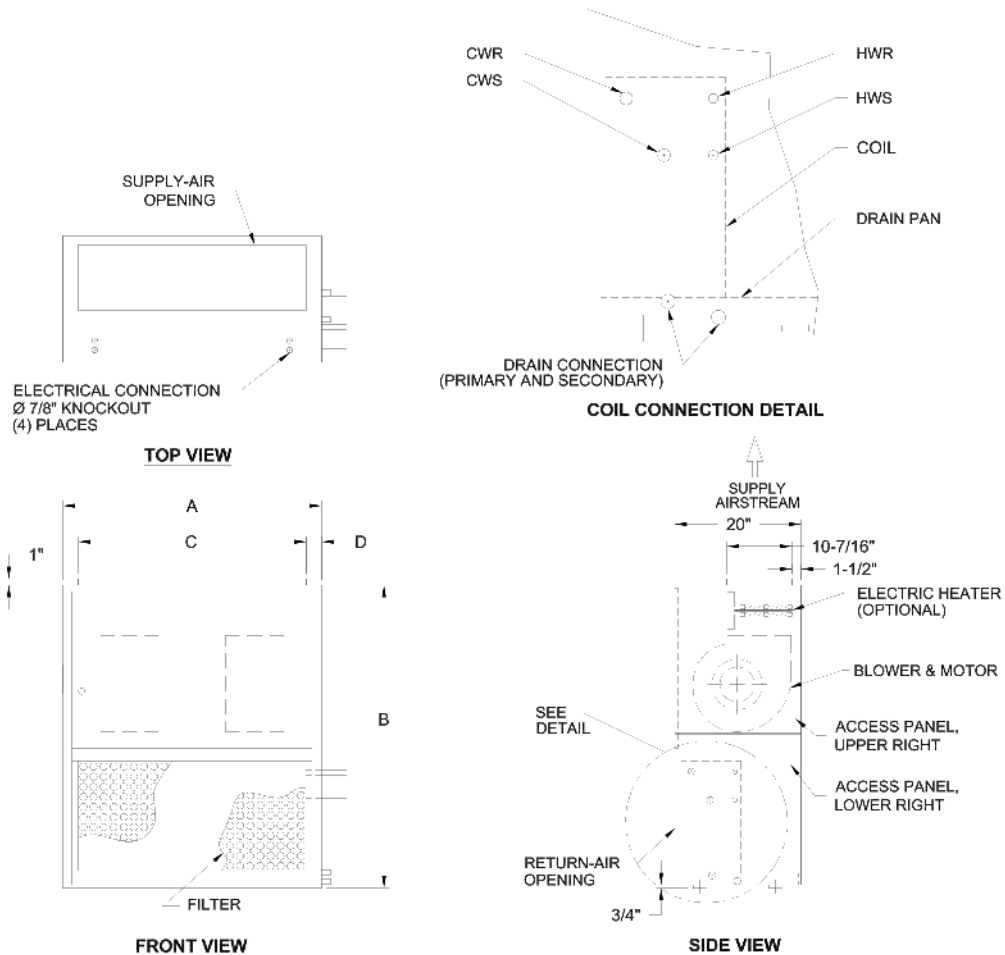
MODEL FRONT RETURN / TOP SUPPLY	A	B	C	D	E
600	21	42	12-1/4	4-3/8	16 x 16 x 1
800	25	42	12-1/4	6-3/8	16 x 20 x 1
1000	25	45	12-1/4	6-3/8	20 x 20 x 1
1200	30	45	12-1/4	8-7/8	20 x 256 x 1

- All sizes shown in inches.
- Right hand unit shown, left hand unit opposite.
- Coil connections determined by facing the supply air opening.
- Electrical junction box is located on the same side as the coil connections.
- Unit must be installed level and condensate drain lines should be trapped.
- Drain pan is powder-coated epoxy with a 1/8" thick closed cell insulation and has 3/4" NPT primary and secondary drain connections.
- Entire cabinet, scroll and blower wheel are heavy gauge, galvanized steel.
- Coil connections: 1/2" CW for CV006, 3/4" on CV008-012 chilled water, 1/2" HW on CV006-012 hot water.

# HIGH PERFORMANCE CASED VERTICAL

## CV-R FRONT RETURN / TOP SUPPLY

### 1,500 - 2,200 CFM



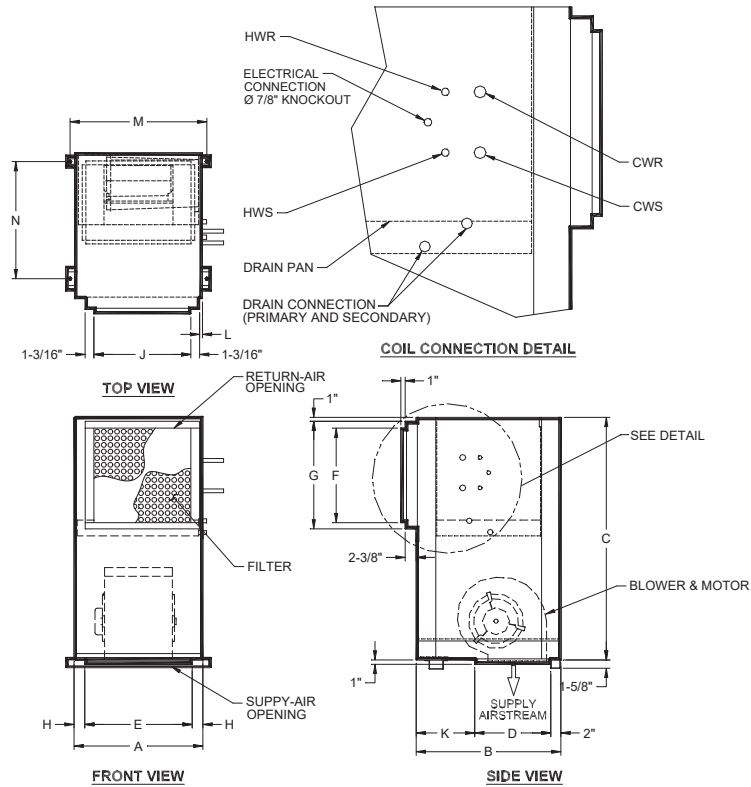
MODEL FRONT RETURN / TOP SUPPLY	A	B	C	D	FILTER SIZE
1500	37	48	25-1/4	5-7/8	25 X 25 X 1
1800	37	48	32-1/4	2-3/8	(2) 25 X 16 X 1
2200	41	48	36-1/4	2-3/8	(2) 25 X 20 X 1

- All sizes shown in inches.
- Right hand unit shown, left hand unit opposite.
- Coil connections determined by facing the supply air opening.
- Electrical junction box is located on the same side as the coil connections.
- Unit must be installed level and condensate drain lines should be trapped.
- Drain pan is powder coated epoxy with a 1/8" thick closed cell insulation and has 3/4" NPT primary and secondary drain connections.
- Entire cabinet, scroll and blower wheel are heavy gauge, galvanized steel.
- Coil connections: 1/2" CW on CV006, 3/4" on CV015-022 chilled water. 1/2" HW on CV015-022 hot water.



# HIGH PERFORMANCE CASED VERTICAL

## CV-G / CV-Q REAR RETURN / BOTTOM SUPPLY 400 - 3,000 CFM



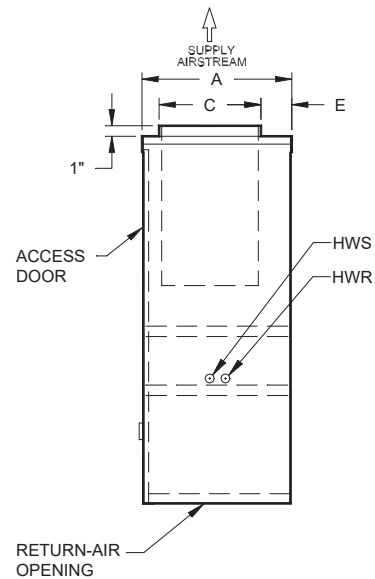
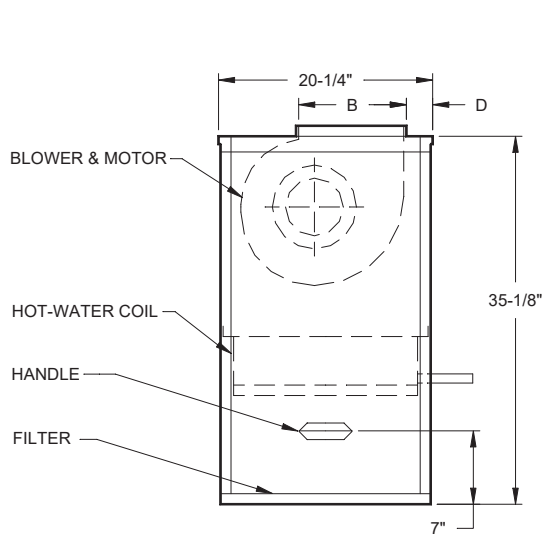
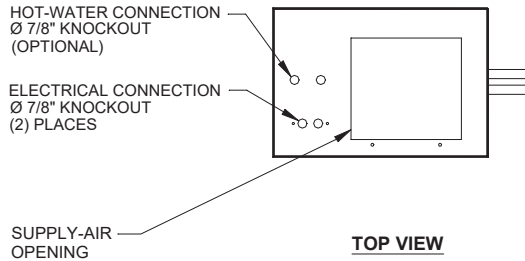
MODEL CV-G CV-Q	A	B	C	D	E	F	G	H	J	K	L	M	R	FILTER SIZE
400	24 1/16	27 1/8	46	14	20	17 1/2	20	2 1/32	18	11 1/8	1	26	20 1/4	16 X 16 X 1
600	24 1/16	27 1/8	46	14	20	17 1/2	20	2 1/32	18	11 1/8	1	26	20 1/4	16 X 16 X 1
800	24 1/16	27 1/8	46	14	20	17 1/2	20	2 1/32	18	11 1/8	1	26	20 1/4	16 X 20 X 1
1000	30 1/16	27 1/8	46	14	20	17 1/2	20	5 1/32	23	11 1/8	1	32	20 1/4	20 X 20 X 1
1200	30 1/16	27 1/8	46	14	20	17 1/2	20	5 1/32	23	11 1/8	1	32	20 1/4	20 X 25 X 1
1500	38 1/16	27 1/8	46	16	22	17 1/2	20	8 1/32	29 11/16	9 3/8	1 3/8	40	20 1/4	25 X 25 X 1
1800	38 1/16	27 1/8	54	18	24	17 1/2	20	7 1/16	29 11/16	7 3/8	1 3/8	40	20 1/4	25 X 16 X 1
2200	46 1/8	27 1/8	60	20	30	22 9/16	25	8 3/8	37 11/16	5 1/4	1 3/8	48	20 1/2	25 X 20 X 1
3000	46 1/8	27 1/8	60	20	30	22 9/16	25	8 3/8	37 11/16	5 1/4	1 3/8	48	20 1/2	25 X 20 X 1

- Right hand unit shown, left hand unit opposite.
- Coil connections determined by facing the return air.
- Unit must be installed level and condensate drain lines should be trapped.
- Drain pan is powder coated epoxy with a 1/4" thick closed cell insulation and has 3/4" NPT CVG/Q04-18, 1 5/16" NPT (CVG/Q22/30) primary and secondary drain connections.
- Entire cabinet, scroll and blower wheel are heavy gauge, galvanized steel.
- Coil connections: 1/2" CW on CV004-006 3/4" on CV008-030; 1/2" HW on CV004-030.

# HIGH PERFORMANCE CASED VERTICAL

## CV-H / CV-O VERTICAL HEAT ONLY

400 - 1,200 CFM



MODEL CV-H/O	A	B	C	D	E	FILTER SIZE
400	14 5/32	10 15/32	7 3/32	2 17/32	3 1/32	20 x 14
600	14 5/32	10 15/32	8 15/32	2 17/32	3 1/32	20 x 14
800	14 5/32	10 15/32	9 13/32	2 17/32	3 1/32	20 x 14
1000	20 5/16	10 3/8	11 15/16	2 3/8	3 1/16	20 x 20
1200	20 5/16	10 3/8	11 15/16	2 3/8	3 1/16	20 x 20

- Right hand unit shown, left hand unit opposite.
- Coil connections determined by facing front access panel.
- Electrical junction box is located on the same side as the coil connections.
- Unit must be installed level and condensate drain lines should be trapped.
- Drain pan is powder coated epoxy with a 1/4" thick closed cell insulation and has 3/4" NPT CVH/O04-012, primary and secondary drain connections.
- Entire cabinet, scroll and blower wheel are heavy gauge, galvanized steel.
- Coil connections: 1/2" CW on CV004 -006; 3/4" on CV008-012; 1/2" HW on CV004-012.

# GENERAL INFORMATION

Furnish and install Williams CV Series Vertical Direct Drive fan coil units as indicated on the plans and in the specifications. All units shall be completely factory assembled, tested and shipped as one working unit. All units shall be capable of meeting or exceeding the scheduled capacities for cooling, heating and air delivery. Dimensions for each model and size shall be considered maximums. Units shall be UL listed and also in compliance with UL/ANSI Standard 1995, and be certified as complying with the latest edition of AHRI 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, 3.35 pound per cubic foot, dual density fiberglass insulation rated for a maximum air velocity of 3600 f.p.m. Insulation shall conform to UL 181 for erosion and NFPA 90A and 90B for flame spread (25) and smoke developed (50) rating per ASTM E-84 and UL 723 and CAN./ULC, S102-M88.

**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 C665 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 zero, no observed growth, per ASTM G21. Polyethylene insulation is not acceptable.

**OPTION:** For exposed units, provide double deflection discharge grille.

## PAINTED FINISH

All exposed cabinet exterior panels shall be provided with soft white powder coated epoxy finish and

subjected to a 1500 hour salt spray test in accordance with ASTM B117.

## SOUND

Units shall have published sound power level data tested in accordance with AHRI Standard 350-2000 (non-ducted equipment) and AHRI Standard 260-2001 (ducted equipment).

## FAN ASSEMBLY

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

The fan assembly shall be easily removable for servicing the motor and blower at or away from the unit.

**OPTION:** Devices used to energize and deenergize (switch) fan speeds must be totally silent. Mercury and/or quiet relays and/or contractors 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 hydrostatically tested at 350 PSIG air pressure under water, and rated for a maximum of 300 PSIG working pressure at 200°F maximum water temperature. Direct expansion cooling coils shall include a fixed orifice distributor and nozzle.

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

# GENERAL INFORMATION

**OPTION:** Coil casing shall be fabricated from 304 stainless steel. All 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.

Cooling and heating coils shall be in the common coil casing, heating coils shall be furnished in the re-heat or pre-heat position on the unit with chilled water coils, and DX heating coil shall be in pre-heat position only.

## DRAIN PANS

Condensate drain pans shall be single wall, heavy gauge, powder-coated epoxy subjected to a 650 hour salt spray test in accordance with ASTM B117, and shall extend under the entire cooling coil. Drain pans shall be of one piece construction and be positively sloped for condensate removal. Drain pans shall have primary and secondary drain connections.

The drain pan shall be externally insulated with a 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 fungi resistant per ASTM G21/C1338, bacteria resistant per ASTM G22 and mold growth per UL 181.

**OPTION:** Provide a single wall primary drain pan constructed entirely of heavy gauge type 304 stainless steel for superior corrosion resistance. Stainless steel drain pans shall be externally insulated and meet or exceed the requirements stated above.

Provide a secondary drain connection on the primary drain pan for condensate overflow.

**OPTION:** Provide a condensate overflow switch in the primary drain pan for condensate overflow.

## FILTERS

All plenum and exposed units shall be furnished with a minimum 1" nominal glass fiber throwaway filter. Filters shall be tight fitting to prevent air by-pass. Plenum and exposed unit filters shall be easily removable from the bottom or rear of the unit without the need for tools.

**OPTION:** Provide unit with 2" pleated filters rated at 25-30% efficiency and MERV 6 based on ASHRAE

## 52.2 - 1999 Electrical (Option)

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

**OPTION:** 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 designed and rated for installation on the fan coil unit without the use of duct extensions or transitions, and be located in the unit as to not 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 UL listed with the unit as an assembly in compliance with UL/ANSI Standard 1995.

All heating elements shall be open coil type Nichrome wire mounted in ceramic insulators and located in an insulated heavy gauge galvanized steel housing. All elements shall terminate in a machine staked stainless steel terminal secured with stainless steel hardware for corrosion resistance. The element support brackets shall be spaced no greater than 3-1/2" on center. 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.

An incoming line power distribution block shall be provided and 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. Mercury and/or quiet relays and/or contractors are not acceptable.

## PIPING PACKAGES (OPTION)

Provide a 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 are piped normally closed to the coil. Maximum entering water temperature on the control valve is 180°F, and maximum close-off pressure is 75 PSIG (1/2") or 50 PSIG (3/4"). Maximum operating pressure shall be 300 PSIG.

**OPTION:** Provide 3 wire floating point modulating control valve in lieu of standard 2 position control valve with factory assembled valve piping package.

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

**OPTION:** Provide pressure temperature ports for each piping package.

Piping packages are shipped installed on all units and can be shipped separately by request only.

# NOTES

# NOTES



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