

▼ Model AVE

The **Carnes Model AVE** is available as a basic control unit with electric reheat and open end discharge, with an optional attenuator module.

This unit offers low pressure drop, low sound levels, and valve characteristics which create stable control conditions within the conditioned space.

Features Include:

- Air flow capacities from full shut-off to 7,300 CFM (0-3,000 FPM for each unit size).
- Open-end discharge units are provided with slip and drive connections for easy installation.
- Thermally and acoustically insulated casing meets **UL** and **NFPA** standards. (Electric coil is uninsulated).
- Low leakage damper design.
- Pneumatic, electric, electronic, or manual control options available.
- Tri-Averaging type air flow sensor at inlet of unit.
- Optional pressure independent and pressure dependent controls.
- Optional hanger brackets.
- Optional internal foil faced insulation.
- Optional fiber-free liner.
- Optional Sterigard.
- Optional dual wall.
- Optional external insulation.
- Optional controls enclosure.
- Optional access panel for component inspection.
- AHRI certified product.

Available Modules:

- Basic Control Unit with attached or unattached electric reheat coil — **Model AVE**
- Sound Attenuator — **Model AXA**



IAQ Insulation
Available



A Participating Member
in the AHRI 880
Certification Program

AVE

Discharge and Radiated (NC) Noise Criteria

Inlet Size (Inches)	CFM	Minimum Pressure Drop (Damper Full Open)	
		Min. Δ P _s	Min. Δ P _t
		Basic Unit	Basic Unit
5	75	.028	.048
	100	.051	.086
	200	.192	.334
	300	.431	.750
	350	.554	.989
6	110	.020	.039
	200	.071	.135
	300	.149	.293
	400	.272	.527
	500	.395	.795
7	140	.010	.027
	200	.023	.057
	400	.093	.229
	600	.208	.514
	700	.261	.676
8	185	.009	.025
	400	.039	.112
	600	.083	.247
	800	.138	.429
	1000	.212	.668
10	300	.008	.024
	500	.013	.057
	800	.024	.138
	1200	.047	.304
	1500	.069	.470
12	430	.001	.016
	800	.003	.056
	1200	.005	.125
	1800	.007	.276
	2300	.009	.448
14	600	.004	.021
	1000	.006	.052
	1600	.011	.128
	2400	.024	.289
	3100	.036	.478
16	780	.005	.021
	1600	.016	.082
	2400	.041	.189
	3600	.089	.422
	4200	.120	.573
18	1100	.001	.016
	2300	.006	.069
	3600	.024	.179
	4500	.038	.280
	5500	.056	.417
24	1480	.000	.005
	3200	.040	.038
	4800	.090	.086
	6000	.140	.138
	7300	.200	.209

Min. Δ P _s (Damper Full Open)			1.0" Δ P _s			1.5" Δ P _s			3.0" Δ P _s		
Δ Pt	Disch. NC	Rad. NC	Δ Pt	Disch. NC	Rad. NC	Δ Pt	Disch. NC	Rad. NC	Δ Pt	Disch. NC	Rad. NC
.048	—	—	1.020	—	—	1.520	—	13	3.020	13	20
.086	—	—	1.035	—	11	1.535	10	13	3.035	13	20
.334	—	—	1.142	19	19	1.642	22	22	3.142	25	24
.750	13	19	1.319	28	24	1.819	30	28	3.319	33	30
.989	14	22	1.435	28	27	1.935	30	28	3.435	34	32
.039	—	—	1.019	—	13	1.519	—	17	3.020	14	24
.135	—	—	1.064	16	19	1.564	18	19	3.064	21	25
.293	—	—	1.144	20	22	1.644	24	24	3.144	30	26
.527	—	13	1.256	22	22	1.756	24	26	3.256	34	31
.795	15	19	1.400	26	27	1.939	27	28	3.400	35	33
.027	—	—	1.016	—	10	1.517	—	13	3.017	15	20
.057	—	—	1.034	14	13	1.534	16	16	3.034	19	20
.229	—	—	1.135	18	20	1.636	23	23	3.136	34	31
.514	—	15	1.305	26	27	1.806	26	30	3.306	34	34
.676	—	18	1.415	22	30	1.916	26	31	3.416	33	35
.025	—	—	1.016	10	14	1.515	11	15	3.018	17	20
.112	—	—	1.073	17	19	1.573	21	24	3.073	27	31
.247	—	—	1.164	19	23	1.664	25	27	3.164	35	36
.429	—	13	1.292	22	25	1.791	27	30	3.291	36	37
.668	11	20	1.456	25	28	1.955	29	32	3.455	36	38
.024	—	—	1.016	15	20	1.516	16	22	3.016	21	25
.057	—	—	1.045	17	21	1.544	24	27	3.045	28	34
.138	—	—	1.114	17	23	1.614	23	27	3.114	34	38
.304	—	15	1.257	24	30	1.756	28	31	3.257	33	36
.470	10	22	1.401	28	31	1.901	31	35	3.401	36	39
.016	—	—	1.015	17	22	1.515	19	25	3.015	22	28
.056	—	—	1.053	15	23	1.553	23	28	3.053	34	36
.125	—	—	1.119	18	24	1.619	22	28	3.119	34	36
.276	—	23	1.269	22	27	1.769	27	32	3.269	34	37
.448	14	31	1.439	25	30	1.939	29	33	3.439	36	40
.021	—	—	1.017	17	20	1.516	23	24	3.017	28	31
.052	—	—	1.046	17	22	1.546	24	27	3.046	35	35
.128	—	10	1.118	19	22	1.618	24	27	3.118	35	38
.289	10	25	1.265	27	30	1.765	28	35	3.265	35	39
.478	21	32	1.442	31	35	1.942	34	35	3.442	38	43
.021	—	—	1.015	16	21	1.516	19	25	3.018	23	28
.082	—	—	1.065	17	21	1.566	22	27	3.066	35	37
.189	—	19	1.147	22	28	1.648	25	31	3.148	35	36
.422	24	30	1.332	31	30	1.833	31	35	3.333	37	40
.573	25	35	1.452	35	36	1.953	37	36	3.453	41	43
.016	—	—	1.015	16	22	1.514	19	24	3.014	25	32
.069	—	—	1.063	21	27	1.563	28	30	3.063	36	39
.179	16	35	1.155	25	31	1.654	30	35	3.155	38	41
.280	22	38	1.242	31	39	1.741	34	40	3.241	40	44
.417	31	42	1.361	36	41	1.861	38	43	3.361	42	48
.005	—	—	1.010	21	32	1.511	27	37	3.011	30	46
.038	—	22	1.050	22	31	1.550	27	36	3.050	37	48
.086	21	38	1.112	28	35	1.613	30	37	3.112	38	45
.138	28	40	1.175	33	39	1.676	35	41	3.175	40	48
.209	37	47	1.259	36	41	1.760	40	46	3.260	44	48

- NOTES:**
1. Δ P_s static pressure difference from inlet to discharge.
 2. Δ P_s is the minimum pressure required to deliver CFM shown with the primary damper in wide open position.
 3. Δ P_t is the total pressure difference from inlet to discharge.
 4. Dash (—) indicates NC level less than 10.

NC levels are derived from tests conducted in accordance with AHRI Standard 880-2008 and are calculated in accordance with AHRI Standard 885-2008 as application data based on the following:

- Discharge NC levels are based on —
- a) 5 foot rectangular duct lined with 1" fiberglass insulation.
 - b) 5 foot lined flex duct (8" diameter).
 - c) Flow division.
 - d) Space effect factor (2400 ft³) at 5 feet from outlet.
 - e) End reflection.
 - f) Environmental adjustment factor.

- Radiated NC levels are based on —
- a) Plenum / ceiling effect - 5/8" mineral fiber tile, 35 lb / ft³ - 3 foot plenum.
 - b) Environmental adjustment factor.

NC is not part of the AHRI 880 Certification Program.

Sound Data (Sound Power by Octave Band)

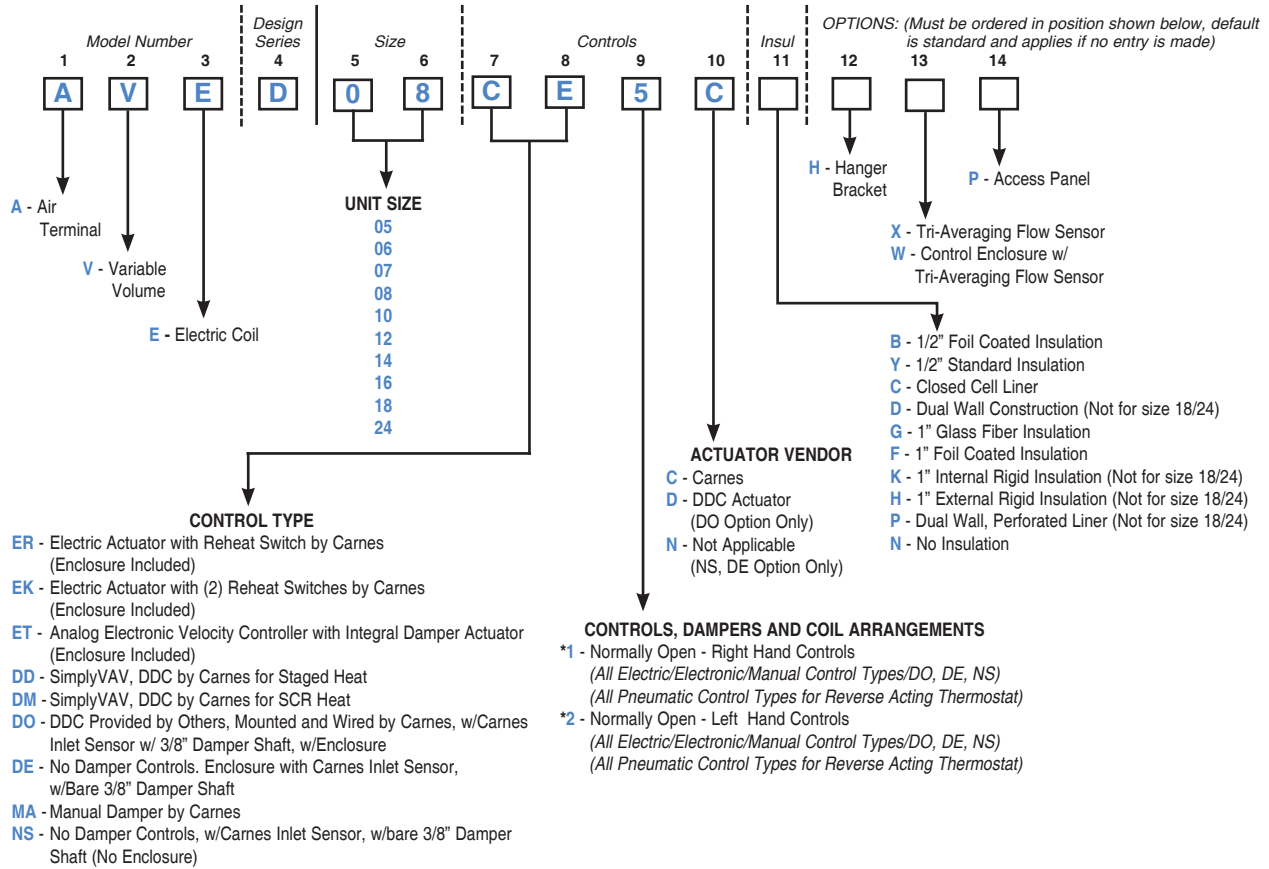
Discharge Sound Power

Inlet Size (Inches)	CFM	ΔP_s	Minimum ΔP_s							1.0" ΔP_s							1.5" ΔP_s							3.0" ΔP_s						
			Sound Power (db) by Octave Band							Sound Power (db) by Octave Band							Sound Power (db) by Octave Band							Sound Power (db) by Octave Band						
			(2)	(3)	(4)	(5)	(6)	(7)	(7)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(2)	(3)	(4)	(5)	(6)	(7)	(7)
5	75	.028	35	23	17	17	16	17	51	47	44	42	40	37	51	48	46	45	44	42	51	51	49	50	52	50				
	100	.051	35	27	19	17	16	17	54	50	46	43	41	38	56	53	50	47	45	43	55	55	52	52	53	50				
	200	.192	49	44	39	36	31	21	64	60	52	48	45	39	65	63	56	51	49	45	67	66	61	57	55	52				
	300	.431	59	54	50	46	44	35	71	63	56	51	49	43	72	67	60	55	53	47	75	72	67	60	58	54				
	350	.554	62	57	53	50	48	39	74	65	58	53	51	44	75	67	61	56	54	48	76	74	68	62	59	55				
6	110	.020	36	26	19	16	16	18	51	48	46	43	40	37	53	52	49	47	45	42	55	54	52	53	53	51				
	200	.071	40	36	30	22	18	18	61	58	51	46	42	41	61	60	54	51	46	45	61	62	59	58	54	52				
	300	.149	47	45	40	35	28	21	65	60	53	50	44	42	65	65	58	53	48	47	66	70	65	60	56	54				
	400	.272	54	51	47	44	37	30	69	63	57	53	47	43	68	66	60	56	52	48	73	74	70	62	59	55				
	500	.395	59	58	53	51	45	38	72	66	59	55	49	45	71	68	63	58	53	49	74	75	70	64	58	56				
7	140	.010	35	23	17	17	16	17	50	50	49	47	41	37	52	52	52	46	43	43	53	56	55	58	54	52				
	200	.023	35	26	19	17	16	17	57	56	51	48	42	39	57	58	56	53	47	44	57	61	59	60	55	52				
	400	.093	48	42	37	37	24	20	66	60	54	53	46	42	65	65	59	56	50	47	67	74	68	63	57	54				
	600	.208	58	52	49	50	39	33	72	64	60	57	48	45	72	66	62	60	52	49	73	74	70	66	59	57				
	700	.261	59	54	51	54	43	37	71	65	61	59	50	46	72	68	64	61	54	50	74	74	69	66	60	57				
8	185	.009	36	23	18	19	18	18	52	53	53	51	43	38	55	54	56	56	49	44	58	59	57	61	57	53				
	400	.039	36	35	31	31	18	18	62	60	55	53	44	42	63	63	60	57	49	46	64	68	67	65	59	54				
	600	.083	49	44	41	44	30	23	67	62	58	56	47	45	69	67	62	60	51	49	70	75	71	67	59	56				
	800	.138	53	50	48	52	39	34	69	65	62	60	51	48	70	69	64	62	53	51	75	77	72	68	60	57				
	1000	.212	58	56	54	59	46	42	71	68	64	63	53	51	72	71	67	65	56	54	76	77	72	70	62	59				
10	300	.008	37	24	17	18	17	17	55	57	58	54	45	41	57	58	61	59	51	46	59	62	64	66	60	55				
	500	.013	37	31	25	24	18	17	59	60	58	54	46	43	61	66	64	61	51	48	62	69	72	70	61	56				
	800	.024	43	41	38	39	24	19	63	61	59	56	48	45	66	66	63	60	52	49	68	75	74	71	61	57				
	1200	.047	51	50	50	51	39	32	71	67	63	60	52	48	72	70	66	63	55	51	74	74	72	71	62	59				
	1500	.069	56	55	56	58	47	41	71	70	67	63	55	51	73	73	68	65	58	54	75	77	74	72	64	60				
12	430	.001	34	24	20	19	18	18	57	60	58	46	46	43	57	62	63	61	52	49	60	64	65	66	61	57				
	800	.003	38	30	32	22	18	18	61	59	59	55	46	45	64	66	64	61	52	50	67	75	74	71	62	58				
	1200	.005	43	41	43	36	29	21	64	62	60	55	48	46	67	65	64	61	52	50	70	75	74	71	62	58				
	1800	.007	51	49	56	49	43	37	69	65	65	57	51	48	72	69	68	62	55	52	76	75	74	71	63	59				
	2300	.009	56	54	62	56	51	45	70	68	67	60	55	51	73	71	70	64	58	54	77	77	75	71	65	61				
14	600	.004	38	30	22	24	24	21	61	60	59	56	48	44	66	65	63	61	53	50	65	69	67	66	61	59				
	1000	.006	39	32	31	24	22	20	61	61	61	56	49	45	66	67	67	62	53	50	69	76	74	73	64	59				
	1600	.011	44	42	45	35	32	23	65	63	61	56	51	47	68	67	67	62	56	53	72	76	74	72	64	59				
	2400	.024	50	51	58	48	45	37	70	69	64	59	53	49	74	70	68	68	62	57	78	76	74	70	65	61				
	3100	.036	56	57	68	56	53	45	71	73	70	63	57	52	75	75	71	65	60	56	80	79	76	71	67	62				
16	780	.005	43	32	25	29	28	23	61	60	59	57	50	44	64	63	63	61	55	51	65	66	65	64	61	59				
	1600	.016	46	39	39	30	29	24	63	61	60	57	50	44	68	65	65	62	55	50	74	76	74	71	66	60				
	2400	.041	52	48	52	42	38	30	70	65	61	57	52	47	72	68	66	62	57	52	76	76	74	71	66	61				
	3600	.089	59	57	71	54	51	44	73	73	66	60	56	51	78	73	68	64	60	56	81	78	74	71	67	63				
	4200	.120	64	61	72	59	56	49	73	76	71	63	59	54	77	78	71	65	61	57	82	81	75	71	68	64				
18	1100	.001	40	32	25	21	20	20	61	60	57	58	51	47	62	63	61	61	55	52	65	68	66	66	61	59				
	2300	.006	57	51	46	39	36	33	67	64	59	58	50	48	71	70	63	61	55	53	73	77	73	70	66	61				
	3600	.024	64	60	59	50	45	37	72	68	63	59	54	51	75	72	65	62	57	54	79	79	74	70	66	62				
	4500	.038	69	65	69	57	52	45	78	73	66	62	58	54	79	75	69	65	60	57	81	80	75	70	66	62				
	5500	.056	74	70	77	62	57	52	82	77	70	65	61	57	82	79	71	67	63	59	83	82	76	72	67	64				
24	1480	.000	43	36	31	27	25	22	66	64	61	60	51	49	68	69	65	65	57	54	68	72	71	70	64	62				
	3200	.040	58	53	52	43	35	28	68	65	63	60	52	51	71	69	67	65	57	56	76	78	76	74	68	65				
	4800	.090	69	64	64	55	49	43	74	70	66	62	56	54	76	72	69	65	59	59	80	79	76	74	68	66				
	6000	.140	74	70	72	62	56	52	79	74	68	65	59	57	80	76	71	67	62	60	82	80	78	74	69	67				
	7300	.200	77	74	83	67	59	53	80	77	72	67	62	58	85	79	74	74	65	61	86	84	86	76	74	69				

- NOTES:**
1. Based on tests conducted in accordance with AHRI Standard 880-2008.
 2. ΔP_s static pressure difference from inlet to discharge.
 3. ΔP_s is the minimum pressure required to deliver CFM shown with primary damper in wide open position.
 4. Dash (—) indicates db level less than 10.



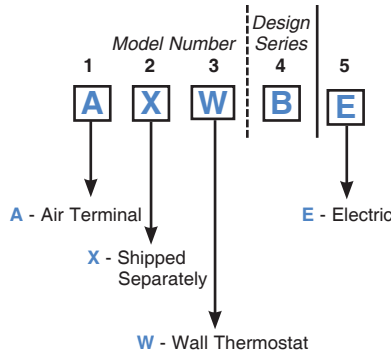
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* Electric, Electronic and DDC Units **DO NOT** fail open. '1' or '2' is used for Right or Left Hand Only. Electric/Electronic Units are shipped with the Damper in the Open Position.

NOTE: Hand of controls is determined by facing the averaging flow sensor (inlet of the unit) with the supply air hitting the back of your head.

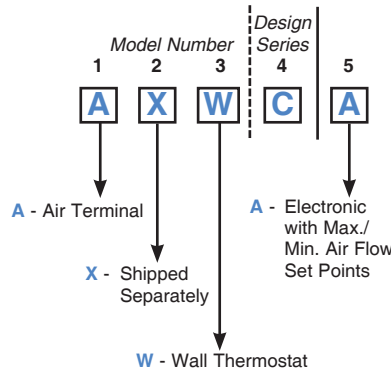
▼ Electric Thermostat



A Carnes Electric Thermostat **must be ordered** with the Electric ER and EK Control Options.

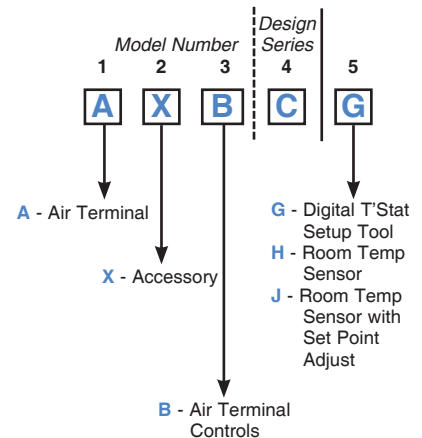
Power Transformers are included with the Electric Heater.

▼ Electronic Thermostat

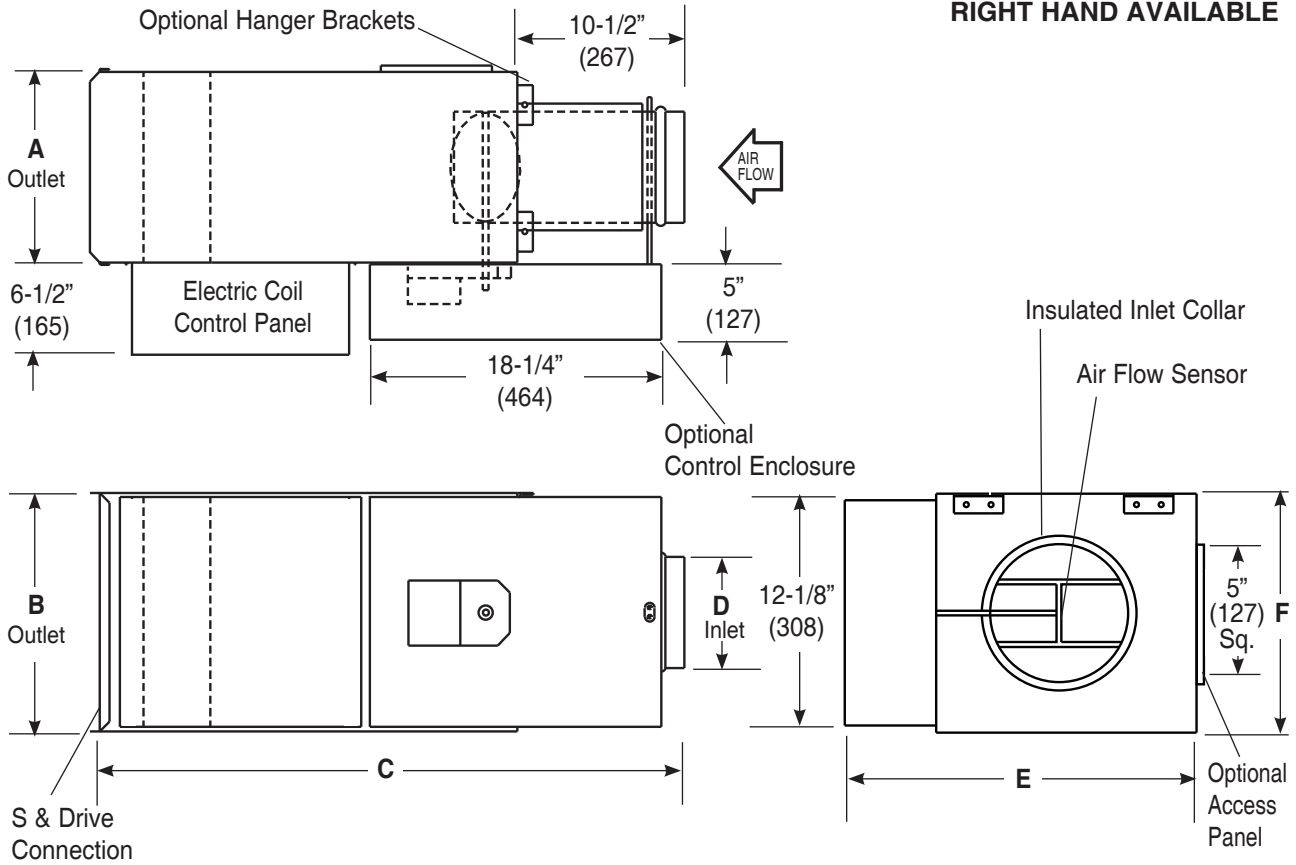


A Carnes Electronic Thermostat **must be ordered** with the ET Electronic Control Option.

▼ Direct Digital Control (DD/DC/DM)



LEFT HAND UNIT SHOWN
RIGHT HAND AVAILABLE



DIMENSIONS LISTED IN INCHES (Metric In Millimeters)								
Unit Size	CFM (L/s) Range	Outlet		C	Inlet		E	F
		A	B		D			
05	0-350 (0-165)	12 (305)	8 (203)	44-3/8 (1127)	4-7/8 (124)	18-1/2 (470)	8-1/8 (206)	
06	0-500 (0-236)	12 (305)	8 (203)	44-3/8 (1127)	5-7/8 (149)	18-1/2 (470)	8-1/8 (206)	
07	0-700 (0-330)	12 (305)	10 (254)	44-3/8 (1127)	6-7/8 (175)	18-1/2 (470)	10-1/8 (257)	
08	0-1000 (0-472)	12 (305)	10 (254)	44-3/8 (1127)	7-7/8 (200)	18-1/2 (470)	10-1/8 (257)	
10	0-1500 (0-708)	14 (356)	12-1/2 (318)	44-3/8 (1127)	9-7/8 (251)	20-1/2 (521)	12-5/8 (321)	
12	0-2300 (0-1085)	16 (406)	15 (381)	44-3/8 (1127)	11-7/8 (302)	22-1/2 (572)	15-1/8 (384)	
14	0-3100 (0-1463)	20 (508)	17-1/2 (445)	44-3/8 (1127)	13-7/8 (352)	26-1/2 (673)	17-5/8 (448)	
16	0-4200 (0-1982)	24 (610)	18 (457)	44-3/8 (1127)	15-7/8 (403)	30-1/2 (775)	18-1/8 (460)	
18	0-5500 (0-2596)	32 (813)	17-1/2 (445)	44-3/8 (1127)	15-7/8 x 17-7/8 (403 x 454)	38-1/2 (978)	17-5/8 (448)	
24	0-7300 (0-3445)	32 (813)	17-1/2 (445)	44-3/8 (1127)	15-7/8 x 23-7/8 (403 x 607)	38-1/2 (978)	17-5/8 (448)	