

### ▼ Model AVW

The **Carnes Model AVW** is available as a basic control unit with hot water reheat and open end discharge, with an optional sound 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).
- One to four row hot water coils come factory attached with slip and drive connections.
- Unit discharge provided with slip and drive connection for easy installation.
- Thermally and acoustically insulated casing meets **UL** and **NFPA** standards. (*Water coil casing 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 hot water coil — **Model AVW**
- Sound Attenuator — **Model AXA**



IAQ Insulation  
Available



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in the AHRI 880  
Certification Program

Inlet Size (Inches)	CFM	1 Row		2 Row		Discharge and Radiated (NC Noise Criteria)															
		Minimum Pressure Drop (Damper Full Open)		Minimum Pressure Drop (Damper Full Open)		Min. Δ P <sub>s</sub> (Damper Full Open)				1.0" Δ P <sub>s</sub>				1.5" Δ P <sub>s</sub>				3.0" Δ P <sub>s</sub>			
		Min. Δ P <sub>s</sub>	Min. Δ P <sub>t</sub>	Min. Δ P <sub>s</sub>	Min. Δ P <sub>t</sub>	Discharge NC		Rad.	Δ P <sub>t</sub>	Discharge NC		Rad.	Δ P <sub>t</sub>	Discharge NC		Rad.	Δ P <sub>t</sub>	Discharge NC		Rad.	
		1 Row	1 Row	2 Row	2 Row	1 Row	2 Row	NC	1 Row	2 Row	NC	1 Row	2 Row	NC	1 Row	2 Row	NC	1 Row	2 Row	NC	
5	75	.032	.052	.036	.056	.052	—	—	1.02	—	—	1.520	—	—	13	3.020	12	12	20		
	100	.055	.091	.064	.100	.091	—	—	1.035	—	—	1.535	12	11	15	3.035	16	16	21		
	200	.211	.353	.233	.375	.353	—	—	1.142	19	18	20	1.642	23	24	23	3.142	28	27	27	
	300	.466	.786	.515	.834	.786	15	14	1.319	24	26	24	1.819	27	28	30	3.319	34	35	33	
	350	.615	1.050	.685	1.120	1.050	18	17	22	1.435	24	26	26	1.935	28	27	30	3.435	34	33	35
6	110	.026	.045	.036	.056	.045	—	—	1.019	—	—	1.519	11	10	18	3.020	16	15	24		
	200	.087	.151	.122	.186	.151	—	—	1.064	18	19	20	1.564	21	22	22	3.064	24	24	26	
	300	.186	.330	.250	.394	.330	—	—	1.144	23	22	22	1.644	27	28	26	3.144	31	31	31	
	400	.316	.572	.417	.673	.572	11	10	15	1.256	23	23	24	1.756	28	28	28	3.256	33	34	34
	500	.490	.889	.636	1.036	.889	17	17	21	1.400	25	24	27	1.900	30	29	30	3.400	35	36	37
7	140	.021	.038	.035	.051	.038	—	—	1.016	—	11	14	1.517	11	12	16	3.017	17	18	21	
	200	.040	.074	.068	.102	.074	—	—	1.034	14	16	19	1.534	17	19	21	3.034	21	24	25	
	400	.146	.281	.243	.379	.281	—	—	1.135	19	21	23	1.636	25	27	28	3.136	34	35	34	
	600	.322	.628	.528	.833	.628	10	12	16	1.305	24	23	27	1.806	28	28	31	3.306	36	37	38
	700	.397	.812	.658	1.074	.812	11	15	20	1.415	23	22	28	1.916	27	27	32	3.416	35	35	39
8	185	.023	.039	.039	.068	.039	—	—	1.016	14	14	19	1.515	15	16	21	3.016	21	22	24	
	400	.083	.155	.204	.277	.155	—	—	1.073	23	22	25	1.573	28	25	30	3.073	31	29	35	
	600	.171	.334	.430	.594	.334	—	—	1.164	28	23	27	1.664	33	29	32	3.164	38	37	39	
	800	.273	.564	.693	.984	.564	11	14	16	1.292	29	21	28	1.791	34	28	33	3.291	41	38	42
	1000	.399	.854	1.032	1.487	.854	19	21	23	1.456	30	22	31	1.955	36	28	35	3.455	42	38	44
10	300	.027	.043	.047	.063	.043	—	—	1.016	18	18	22	1.516	21	21	24	3.016	25	25	28	
	500	.057	.101	.105	.150	.101	—	—	1.045	24	22	25	1.544	31	28	30	3.045	35	33	36	
	800	.119	.233	.231	.345	.233	—	—	1.114	23	22	26	1.614	31	29	32	3.114	41	40	42	
	1200	.242	.498	.468	.724	.498	—	10	18	1.257	25	24	30	1.756	31	29	34	3.257	41	41	43
	1500	.360	.761	.713	1.114	.761	16	16	25	1.401	29	24	32	1.901	33	29	35	3.401	41	41	45
12	430	.020	.035	.035	.072	.035	—	—	1.015	24	22	23	1.515	29	27	27	3.015	30	28	33	
	800	.054	.107	.156	.209	.107	—	—	1.053	25	21	26	1.553	33	29	32	3.053	40	41	42	
	1200	.105	.225	.318	.437	.225	—	—	1.119	25	22	27	1.619	34	29	33	3.119	42	37	44	
	1800	.216	.484	.656	.925	.484	14	19	24	1.269	28	23	32	1.769	35	28	36	3.269	42	37	45
	2300	.323	.762	.997	1.436	.762	20	25	32	1.439	31	25	33	1.939	35	28	38	3.439	43	40	46
14	600	.033	.050	.060	.077	.050	—	—	1.017	22	21	24	1.516	25	27	28	3.017	31	30	35	
	1000	.065	.111	.134	.180	.111	—	—	1.046	22	22	25	1.546	30	28	33	3.046	37	37	42	
	1600	.143	.261	.305	.422	.261	—	—	1.118	24	22	26	1.618	30	27	32	3.118	37	40	43	
	2400	.303	.568	.657	.922	.568	18	20	24	1.265	28	25	31	1.765	33	30	34	3.265	38	36	43
	3100	.461	.903	.990	1.432	.903	24	27	33	1.442	29	27	34	1.942	36	30	37	3.442	42	40	44
16	780	.026	.041	.058	.071	.041	—	—	1.016	22	19	24	1.516	27	25	28	3.016	31	30	33	
	1600	.081	.147	.203	.268	.147	—	—	1.066	25	22	32	1.566	31	28	33	3.066	40	41	42	
	2400	.176	.324	.461	.609	.324	13	14	18	1.148	27	23	28	1.648	33	29	33	3.148	42	38	43
	3600	.353	.686	.917	1.250	.686	24	26	34	1.333	33	27	34	1.833	35	34	36	3.333	43	40	44
	4200	.466	.919	1.188	1.641	.919	27	30	35	1.453	34	—	35	1.953	40	31	40	3.453	44	41	45
18	1100	.028	.042	.052	.066	.042	—	—	1.015	22	21	25	1.514	26	25	28	3.014	32	30	35	
	2300	.102	.165	.191	.254	.165	—	—	1.063	28	25	28	1.563	34	33	34	3.063	41	40	43	
	3600	.232	.386	.414	.569	.386	18	18	34	1.155	31	29	31	1.654	35	33	35	3.155	44	42	45
	4500	.341	.583	.593	.835	.583	25	24	36	1.242	34	35	36	1.741	37	35	37	3.241	43	42	46
	5500	.462	.823	.815	1.176	.823	30	30	40	1.361	42	33	43	1.861	41	42	41	3.361	46	44	47
24	1480	.045	.055	.086	.097	.055	—	—	1.011	23	22	32	1.511	28	27	36	3.011	34	32	46	
	3200	.170	.220	.339	.389	.220	—	11	21	1.050	28	27	33	1.550	33	30	38	3.050	38	37	50
	4800	.335	.447	.630	.742	.447	22	23	34	1.112	31	29	35	1.613	35	33	39	3.113	42	41	49
	6000	.482	.658	.880	1.055	.658	28	28	39	1.176	35	30	39	1.676	37	36	41	3.176	43	42	50
	7300	.716	.976	1.298	1.558	.976	34	37	45	1.260	40	—	43	1.760	45	44	44	3.260	43	42	58

- NOTES:**
1. Δ P<sub>s</sub> static pressure difference from inlet to discharge.
  2. Δ P<sub>s</sub> is the minimum pressure required to deliver CFM shown with the primary damper in wide open position.
  3. Δ P<sub>t</sub> 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 ft<sup>3</sup>) 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 / ft<sup>2</sup> - 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 - 1 Row**

Inlet Size (Inches)	CFM	$\Delta P_s$	Minimum $\Delta P_s$							1.0" $\Delta P_s$							1.5" $\Delta P_s$							3.0" $\Delta P_s$						
			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	.032	35	23	17	17	16	17	44	43	41	41	40	37	45	44	43	44	44	41	47	49	47	49	50	49				
	100	.055	36	26	20	21	16	17	52	52	48	47	47	44	55	55	51	50	50	47	55	58	55	56	55	53				
	200	.211	50	47	41	39	37	32	62	61	55	54	53	50	64	64	59	57	57	55	66	68	64	63	63	61				
	300	.466	60	57	52	50	50	46	68	65	59	57	55	53	68	67	62	61	59	57	75	73	68	67	67	65				
	350	.615	61	61	56	53	53	50	71	66	61	58	56	54	71	69	64	62	60	58	75	74	70	69	68	66				
6	110	.026	33	25	17	16	16	18	52	51	49	49	48	45	53	54	51	52	51	48	55	57	55	56	55	53				
	200	.087	42	37	31	29	22	18	60	60	56	55	54	52	61	62	59	58	58	56	61	64	63	63	63	61				
	300	.186	50	47	43	39	38	33	64	64	59	57	56	54	65	67	62	61	61	59	67	71	69	67	67	65				
	400	.316	56	55	49	47	46	42	68	65	60	58	57	55	69	69	65	63	61	60	72	73	71	70	69	67				
	500	.490	60	60	55	53	51	50	70	67	62	60	57	56	72	71	66	64	62	61	73	75	73	72	70	69				
7	140	.021	35	23	17	17	16	17	50	51	51	50	48	45	52	53	54	54	51	48	54	57	58	59	56	54				
	200	.040	37	26	20	17	16	17	56	56	54	54	53	50	57	59	58	57	56	53	58	62	62	63	60	58				
	400	.146	46	43	40	39	35	28	65	62	58	57	57	54	64	67	62	62	61	59	67	74	70	69	69	67				
	600	.322	59	54	51	52	47	44	69	66	62	61	58	56	70	69	66	64	63	60	72	76	72	72	71	69				
	700	.397	60	56	54	55	50	47	69	66	64	62	59	56	71	69	67	65	63	60	73	76	73	72	71	69				
8	185	.023	39	24	18	19	18	18	56	56	55	54	50	48	58	57	57	54	51	48	60	62	61	62	59	57				
	400	.083	39	38	34	33	24	20	64	65	60	59	58	56	66	69	64	63	62	60	67	72	70	69	67	66				
	600	.171	51	49	44	46	39	36	68	69	62	61	59	57	70	73	67	65	64	62	72	78	74	73	71	70				
	800	.273	55	56	51	54	47	46	70	71	65	63	59	58	72	75	69	67	64	63	76	81	76	74	72	72				
	1000	.399	59	63	58	60	53	52	70	72	67	65	61	60	72	77	71	69	65	64	77	82	78	76	73	72				
10	300	.027	37	24	17	16	17	17	60	60	58	57	55	53	61	62	62	62	59	56	63	66	65	67	64	61				
	500	.057	37	33	26	25	18	17	64	66	60	58	56	54	66	72	65	63	61	59	67	75	72	72	69	67				
	800	.119	43	42	40	40	33	28	66	66	61	59	57	54	68	73	66	64	61	60	71	81	76	73	70	69				
	1200	.242	54	54	51	53	46	44	70	68	64	62	58	57	71	73	68	66	63	61	75	81	76	74	70	69				
	1500	.360	57	60	57	59	53	51	71	71	67	64	61	59	71	74	70	68	64	63	77	81	78	75	72	70				
12	430	.020	42	36	20	19	17	18	62	66	60	59	57	55	63	70	65	64	62	60	63	71	69	70	68	66				
	800	.054	38	35	33	29	21	20	66	68	62	60	58	57	68	74	58	65	63	61	67	80	77	74	71	70				
	1200	.105	46	45	44	41	37	34	67	68	64	61	59	58	70	75	69	66	63	63	72	82	79	76	72	70				
	1800	.216	55	56	56	53	50	50	68	70	67	64	62	61	72	76	71	68	65	65	75	82	79	77	73	72				
	2300	.323	59	63	64	59	57	56	69	73	69	67	64	63	74	76	73	71	67	67	76	83	80	77	74	73				
14	600	.033	40	31	22	24	24	21	64	64	61	59	57	55	67	67	65	65	63	60	66	71	70	71	70	68				
	1000	.065	40	37	34	32	27	20	66	65	62	59	57	55	69	72	68	65	63	60	72	78	76	75	72	70				
	1600	.143	48	47	47	45	44	41	66	67	64	61	60	59	70	72	69	66	63	62	72	78	79	76	71	70				
	2400	.303	57	58	59	55	55	54	70	70	67	63	63	62	75	74	70	68	66	65	76	79	79	77	73	72				
	3100	.461	63	64	68	61	61	60	70	71	70	66	65	64	75	77	73	70	68	67	79	82	79	77	74	73				
16	780	.026	46	35	26	27	26	22	64	65	62	60	58	55	65	69	66	65	63	60	67	73	70	72	70	68				
	1600	.081	47	44	41	40	38	29	69	68	63	61	59	58	74	73	69	66	64	62	75	80	79	77	73	71				
	2400	.176	55	54	52	50	51	49	72	69	65	62	61	61	73	74	70	67	65	65	78	82	79	77	73	71				
	3600	.353	64	63	70	58	59	60	74	74	69	66	64	65	78	76	72	69	67	68	82	83	80	78	74	73				
	4200	.466	65	66	71	62	62	63	74	75	72	68	66	67	77	80	75	71	68	69	83	84	80	79	75	74				
18	1100	.028	40	32	25	22	20	18	64	64	61	62	61	58	64	67	65	66	66	62	67	70	70	72	71	69				
	2300	.102	59	54	48	44	44	35	69	70	65	63	63	60	71	75	70	69	67	65	76	81	78	78	77	74				
	3600	.232	65	62	59	54	56	54	74	73	68	66	65	63	75	76	72	70	69	67	78	83	80	79	77	75				
	4500	.341	70	68	69	59	59	60	77	75	70	68	66	65	79	78	74	72	71	69	81	83	81	80	78	75				
	5500	.462	74	71	76	64	63	64	78	82	73	69	68	67	82	81	75	73	72	70	83	85	83	81	79	76				
24	1480	.045	44	37	31	27	25	21	65	66	64	64	62	58	67	69	69	69	67	64	70	73	75	76	74	71				
	3200	.170	57	54	51	48	48	44	68	70	67	65	63	61	72	74	72	70	68	65	75	79	79	78	76	73				
	4800	.335	68	65	63	58	57	56	73	73	70	68	66	64	74	76	75	72	70	67	78	82	82	80	77	75				
	6000	.482	73	70	70	63	61	61	78	76	72	69	67	65	78	78	75	73	71	69	80	83	83	81	78	76				
	7300	.662	75	75	74	67	66	64	78	81	76	70	66	66	89	80	75	75	70	69	83	83	82	81	80	76				

- NOTES:**
1. Based on tests conducted in accordance with AHRI Standard 880-2008.
  2.  $\Delta P_s$  static pressure difference from inlet to discharge.
  3.  $\Delta P_s$  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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Certification Program

**Sound Data (Sound Power by Octave Band)**

**Discharge Sound Power - 2 Row**

Inlet Size (Inches)	CFM	Minimum Δ P <sub>s</sub>							1.0" Δ P <sub>s</sub>							1.5" Δ P <sub>s</sub>							3.0" Δ P <sub>s</sub>						
		Sound Power (db) by Octave Band							Sound Power (db) by Octave Band							Sound Power (db) by Octave Band							Sound Power (db) by Octave Band						
		Δ P <sub>s</sub>	(2)	(3)	(4)	(5)	(6)	(7)	(2)	(3)	(4)	(5)	(6)	(7)	(2)	(3)	(4)	(5)	(6)	(7)	(2)	(3)	(4)	(5)	(6)	(7)			
5	75	.036	38	25	19	17	16	17	49	47	45	43	41	38	51	49	48	46	45	42	51	53	51	51	51	49			
	100	.064	36	27	22	20	16	17	53	52	48	46	44	41	55	54	51	49	48	45	54	58	55	54	54	51			
	200	.233	50	45	40	38	38	32	63	60	54	52	51	48	65	65	58	57	55	53	66	67	64	62	61	58			
	300	.515	60	56	52	48	49	46	69	64	59	55	54	51	71	67	62	59	58	55	76	72	68	66	65	62			
	350	.685	64	60	55	52	52	52	72	66	59	56	54	52	70	68	64	60	58	56	77	73	69	67	66	64			
6	110	.036	33	23	17	16	18	18	51	52	49	48	46	43	52	53	51	51	50	46	54	57	55	55	55	52			
	200	.122	43	38	32	29	24	20	60	61	55	54	53	50	61	63	58	58	57	54	61	65	63	63	62	60			
	300	.250	51	47	42	39	39	33	65	63	57	55	54	52	65	68	62	60	59	57	67	71	68	67	66	64			
	400	.417	55	54	49	46	46	43	69	65	60	56	55	53	68	69	64	61	60	58	72	74	71	69	69	66			
	500	.636	62	60	55	52	52	51	71	66	60	57	56	55	73	70	65	62	60	59	73	76	72	70	69	67			
7	140	.035	35	22	16	16	15	17	53	54	51	50	48	44	53	55	54	53	51	47	55	60	58	58	56	53			
	200	.068	35	28	21	17	15	17	57	58	54	53	52	49	58	61	59	57	55	52	60	65	63	63	60	57			
	400	.243	49	46	42	40	37	30	65	63	58	57	54	52	66	68	63	60	59	56	70	75	71	69	67	65			
	600	.528	60	56	52	52	49	46	70	65	60	58	55	55	72	69	65	62	60	58	74	77	73	71	68	66			
	700	.658	63	59	55	55	52	50	68	65	62	59	56	55	73	69	66	63	60	59	74	76	73	71	68	66			
8	185	.050	40	25	18	17	17	18	54	56	54	53	50	47	56	58	57	57	53	50	59	63	61	62	59	56			
	400	.204	44	42	38	37	31	23	62	64	58	56	54	52	65	67	64	62	59	57	66	70	70	69	67	65			
	600	.430	55	52	47	48	45	41	66	65	60	57	54	53	69	70	65	62	59	58	72	77	73	72	69	67			
	800	.693	57	58	54	55	52	50	66	64	60	58	55	54	70	70	66	63	60	59	74	79	74	72	69	67			
	1000	1.032	60	62	59	61	57	57	60	62	59	61	57	57	70	70	66	64	60	61	76	79	75	72	69	68			
10	300	.047	38	26	20	17	16	17	59	60	58	56	55	52	61	62	62	61	59	56	63	66	64	67	64	61			
	500	.105	38	34	26	24	20	19	63	64	59	57	56	54	66	69	65	63	62	60	66	73	71	71	69	67			
	800	.231	46	45	40	39	36	32	66	65	59	57	56	54	69	71	65	63	62	60	70	80	75	72	70	69			
	1200	.468	53	55	51	51	48	45	69	67	61	59	57	56	72	71	66	63	62	60	77	81	75	73	71	69			
	1500	.713	58	60	57	58	54	52	67	67	63	61	58	57	71	71	68	65	62	61	76	81	76	74	71	70			
12	430	.056	37	24	19	18	17	18	60	64	58	58	55	52	61	68	63	63	60	58	61	69	68	69	67	64			
	800	.156	39	40	36	35	31	24	62	64	59	56	55	53	66	71	66	63	60	58	67	71	75	73	70	68			
	1200	.318	46	49	46	45	44	41	64	65	61	57	57	56	67	71	66	63	61	60	70	78	76	73	70	68			
	1800	.656	54	58	57	55	55	55	64	64	62	59	59	59	70	70	68	64	62	63	74	78	76	73	70	69			
	2300	.997	60	61	64	60	60	61	60	61	64	60	60	61	68	68	68	65	64	64	75	80	77	74	71	71			
14	600	.060	42	32	24	24	25	22	68	63	60	58	57	53	69	68	64	64	62	59	69	70	69	70	70	67			
	1000	.134	43	39	36	34	30	22	69	65	61	58	56	53	73	70	66	63	61	59	73	78	75	74	71	69			
	1600	.305	51	49	48	46	46	42	68	65	61	58	58	57	73	70	67	63	62	61	75	80	76	74	70	69			
	2400	.657	59	58	60	56	58	56	68	66	63	60	61	61	74	72	68	65	65	64	78	77	76	74	71	71			
	3100	.990	64	63	68	62	63	63	64	66	67	62	63	63	74	72	70	66	66	66	80	80	77	75	73	72			
16	780	.058	43	31	24	26	24	21	66	63	61	59	56	53	68	68	65	65	62	59	68	71	70	71	70	67			
	1600	.203	49	46	44	42	40	32	66	65	61	58	57	54	70	70	67	64	61	59	77	81	77	75	71	68			
	2400	.461	59	55	54	53	54	50	70	66	62	60	60	58	72	71	67	64	63	62	76	79	76	75	71	69			
	3600	.971	63	63	69	61	63	62	66	65	63	62	63	63	75	75	69	66	66	66	80	80	77	75	72	72			
	4200	1.188	66	65	71	65	66	66	69	71	70	68	65	64	72	73	69	67	67	68	81	81	77	75	73	73			
18	1100	.052	40	34	28	24	21	22	63	64	61	61	59	57	64	67	65	66	64	61	68	70	70	70	69	67			
	2300	.191	57	53	47	43	43	38	67	68	64	62	60	59	70	74	69	67	65	64	73	80	77	76	74	72			
	3600	.414	64	62	58	53	54	53	73	71	67	64	62	62	73	74	71	68	66	66	79	82	79	77	74	73			
	4500	.593	69	67	68	59	58	60	77	76	68	64	63	64	77	76	72	69	68	68	81	82	80	78	75	74			
	5500	.815	73	71	76	64	63	65	74	74	68	65	64	66	80	82	74	70	69	69	81	84	80	79	76	75			
24	1480	.086	44	38	31	27	25	21	64	65	64	63	60	57	66	69	68	69	66	62	69	73	74	74	72	69			
	3200	.339	59	56	51	48	47	46	69	69	66	63	61	58	71	72	70	68	65	63	73	78	79	78	75	72			
	4800	.630	69	66	62	58	57	56	73	71	67	64	62	60	74	74	73	70	67	65	77	81	80	79	75	73			
	6000	.880	73	70	67	63	62	60	73	72	68	64	64	62	77	76	73	71	69	66	80	82	82	79	76	74			
	7300	1.318	80	78	73	68	69	67	74	74	71	71	70	69	86	84	73	70	69	68	80	82	84	79	78	75			

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



A Participating Member in the AHRI 880 Certification Program

**Sound Data (Sound Power by Octave Band)**

**Radiated Sound Power - 1 Row**

Inlet Size (Inches)	CFM	$\Delta P_s$	Minimum $\Delta P_s$							1.0" $\Delta P_s$							1.5" $\Delta P_s$							3.0" $\Delta P_s$						
			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)	(2)	(3)	(4)	(5)	(6)	(7)	(2)	(3)	(4)	(5)	(6)	(7)	(2)	(3)	(4)	(5)	(6)	(7)	(2)	(3)	(4)	(5)
5	75	.032	38	28	20	18	20	21	41	31	33	36	38	37	42	33	36	40	43	42	41	33	39	46	50	50				
	100	.055	40	28	21	18	20	22	49	44	40	40	41	39	49	44	42	43	45	43	49	44	44	47	51	51				
	200	.211	46	40	37	34	33	27	58	50	46	44	46	43	61	53	49	48	49	47	59	55	53	52	55	53				
	300	.466	52	47	45	42	43	37	62	54	50	47	48	45	66	57	54	50	51	49	68	60	58	56	57	55				
	350	.615	54	51	48	46	46	42	65	60	55	51	52	50	69	62	60	57	58	55	67	64	62	58	60	58				
6	110	.026	37	29	24	23	22	22	45	43	42	43	44	40	46	43	44	46	48	44	46	44	46	51	54	53				
	200	.087	39	31	31	26	23	22	53	51	46	45	46	42	54	51	48	48	50	46	53	52	51	52	56	54				
	300	.186	49	41	36	33	31	24	57	53	48	47	48	44	60	57	52	50	52	48	60	57	56	55	58	56				
	400	.316	49	47	42	41	39	33	61	55	50	48	49	44	63	58	54	52	53	49	65	62	59	57	59	57				
	500	.490	52	53	47	46	45	40	62	57	53	49	50	46	64	59	55	52	54	50	67	64	62	58	60	58				
7	140	.021	39	29	20	17	20	21	46	41	41	38	41	37	46	44	43	42	44	42	54	47	46	48	51	50				
	200	.040	40	29	20	17	20	21	53	48	45	42	45	41	52	49	47	45	48	44	54	52	51	50	53	51				
	400	.146	43	35	32	29	30	23	59	54	49	46	46	45	62	59	53	50	54	50	62	62	59	57	59	56				
	600	.322	54	45	43	40	42	35	64	56	52	47	51	47	65	60	56	52	55	51	67	67	63	59	62	59				
	700	.397	55	47	46	43	45	39	65	58	53	48	52	48	65	61	57	52	55	52	68	68	64	59	62	59				
8	185	.023	38	26	18	17	20	21	47	44	45	41	42	39	50	45	47	44	45	43	53	50	50	48	50	50				
	400	.083	41	29	24	20	22	21	57	52	51	48	49	46	57	56	55	52	52	49	58	58	60	56	56	54				
	600	.171	47	36	36	32	33	27	61	55	53	48	51	47	62	59	57	53	54	51	64	64	64	61	61	58				
	800	.273	52	44	43	40	41	35	61	56	54	49	51	47	64	61	58	53	55	52	67	67	66	61	62	59				
	1000	.399	54	49	49	45	47	41	64	58	56	50	52	49	65	63	60	54	56	52	68	70	68	62	63	60				
10	300	.027	40	29	22	18	20	22	54	52	48	44	47	43	55	53	50	47	50	47	58	56	54	52	55	53				
	500	.057	42	29	24	18	20	22	59	55	51	46	49	44	60	59	55	51	53	49	59	61	61	57	60	56				
	800	.119	42	34	35	30	26	22	60	54	52	47	50	45	63	59	57	52	54	49	64	67	66	60	61	57				
	1200	.242	49	44	44	42	38	32	65	58	55	49	51	46	67	63	59	54	55	50	68	69	67	61	62	59				
	1500	.360	52	50	51	48	44	39	65	60	57	52	52	47	66	64	60	54	56	51	69	69	69	62	63	59				
12	430	.020	41	30	24	23	22	22	56	54	49	46	48	45	56	57	53	50	52	50	57	59	58	56	58	57				
	800	.054	41	32	27	23	22	22	59	56	52	47	49	46	60	61	57	52	53	51	60	68	66	60	61	60				
	1200	.105	43	39	37	31	30	25	61	56	53	49	50	48	63	62	58	53	54	53	65	68	68	62	62	60				
	1800	.216	53	48	50	41	41	39	64	59	57	51	52	51	68	64	61	55	56	54	70	68	69	63	63	62				
	2300	.323	55	55	57	47	47	45	65	62	58	53	54	52	69	66	63	57	57	56	72	71	70	64	64	62				
14	600	.033	38	26	18	17	20	21	54	56	50	46	47	44	57	59	54	51	51	49	60	63	60	58	59	57				
	1000	.065	38	30	23	19	22	21	57	56	51	48	48	45	58	62	58	53	50	63	68	66	61	60	58					
	1600	.143	45	41	37	32	34	30	60	57	52	48	50	47	62	62	57	53	54	51	66	69	67	62	61	58				
	2400	.303	51	53	50	42	44	42	63	61	56	50	52	50	67	64	59	54	55	53	69	71	67	62	62	60				
	3100	.461	54	59	58	47	49	47	63	63	59	52	54	52	66	67	62	56	57	55	70	72	68	62	63	61				
16	780	.026	43	28	19	17	19	21	57	56	49	46	45	41	59	59	53	51	49	46	61	63	58	57	55	53				
	1600	.081	47	34	31	25	27	22	59	56	57	47	46	43	63	63	56	52	51	47	67	70	66	61	59	56				
	2400	.176	44	51	43	35	38	33	64	58	57	50	49	46	67	63	58	54	53	50	70	72	65	62	59	56				
	3600	.353	53	57	59	45	45	42	64	64	58	52	51	48	68	66	59	56	54	52	71	72	68	63	61	58				
	4200	.466	57	58	60	49	48	46	65	65	59	53	52	50	68	69	63	57	55	53	71	72	69	64	62	59				
18	1100	.028	43	29	21	19	21	23	58	54	51	51	51	46	59	58	54	53	54	50	62	61	60	59	59	56				
	2300	.102	46	41	32	26	31	23	62	58	54	49	50	46	66	64	58	55	55	51	69	70	67	63	63	59				
	3600	.232	55	64	49	38	43	38	66	60	56	50	52	48	68	64	60	55	56	51	72	71	69	63	63	59				
	4500	.341	59	63	61	43	45	43	71	63	58	52	53	49	71	66	62	56	57	52	74	72	70	63	63	59				
	5500	.462	62	64	65	48	48	46	69	72	61	53	54	50	75	69	63	57	57	53	77	73	71	64	63	59				
24	1480	.045	41	29	21	17	20	21	61	59	57	58	58	54	63	63	61	62	62	60	69	71	70	68	71	68				
	3200	.170	51	53	43	37	38	33	65	62	58	57	60	55	69	66	63	62	65	61	73	74	74	70	72	69				
	4800	.335	60	64	56	46	47	45	70	65	60	57	60	56	71	68	64	62	65	61	76	75	73	69	72	69				
	6000	.482	64	65	64	52	51	49	73	67	61	58	59	56	74	70	65	62	65	61	78	75	74	70	72	69				
	7300	.662	70	65	69	58	54	50	69	72	64	58	59	56	77	72	67	64	64	61	82	77	81	74	71	67				

- NOTES:**
1. Based on tests conducted in accordance with AHRI Standard 880-2008.
  2.  $\Delta P_s$  static pressure difference from inlet to discharge.
  3.  $\Delta P_s$  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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**Sound Data (Sound Power by Octave Band)**

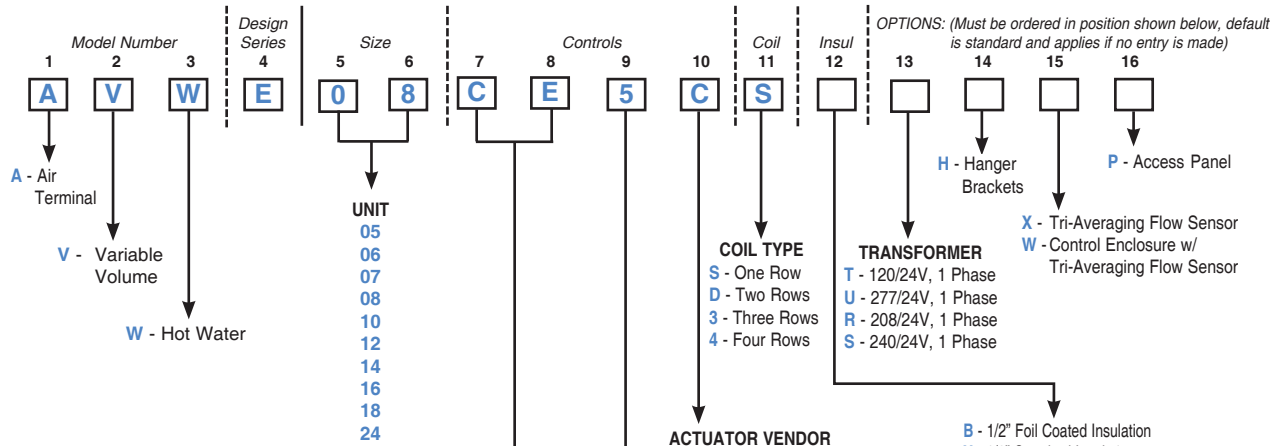
**Radiated Sound Power - 2 Row**

Inlet Size (Inches)	CFM	Minimum $\Delta P_s$							1.0" $\Delta P_s$							1.5" $\Delta P_s$							3.0" $\Delta P_s$						
		Sound Power (db) by Octave Band							Sound Power (db) by Octave Band							Sound Power (db) by Octave Band							Sound Power (db) by Octave Band						
		$\Delta P_s$	(2)	(3)	(4)	(5)	(6)	(7)	(2)	(3)	(4)	(5)	(6)	(7)	(2)	(3)	(4)	(5)	(6)	(7)	(2)	(3)	(4)	(5)	(6)	(7)			
5	75	.036	38	26	20	17	20	21	46	39	37	39	43	41	46	39	38	41	45	45	47	39	40	46	51	51			
	100	.064	40	28	20	17	20	21	49	44	40	40	43	42	49	44	42	43	45	45	54	44	43	47	50	52			
	200	.233	49	40	37	34	32	25	57	50	45	44	45	43	61	53	49	47	48	47	59	54	52	51	54	53			
	300	.515	52	47	45	43	43	38	63	54	49	47	48	45	64	56	52	50	50	49	68	59	57	55	56	54			
	350	.685	53	49	48	46	46	42	63	56	51	48	49	46	64	58	53	51	51	50	69	60	58	56	56	55			
6	110	.036	38	28	20	18	20	21	47	42	39	39	39	37	49	42	41	42	43	41	53	44	45	46	49	49			
	200	.122	41	32	26	22	21	21	55	50	45	44	44	40	56	52	47	47	47	45	55	52	50	51	52	51			
	300	.250	44	40	37	33	31	26	59	52	48	46	47	42	61	57	51	49	50	47	61	58	55	55	56	53			
	400	.417	51	46	43	40	38	33	61	55	50	47	47	42	62	58	53	50	51	47	66	61	59	57	58	55			
	500	.636	54	51	49	45	43	39	63	55	52	49	47	43	65	59	55	52	51	48	69	63	61	58	59	55			
7	140	.035	39	28	19	17	20	21	46	43	41	39	41	36	47	44	43	43	44	42	47	47	46	48	51	49			
	200	.068	39	29	20	17	20	21	50	49	45	43	45	39	53	50	47	46	48	43	53	52	51	50	53	50			
	400	.243	44	34	33	32	31	23	58	51	47	45	47	43	61	57	53	50	52	48	62	62	60	57	59	55			
	600	.528	53	45	43	41	42	36	62	54	50	46	48	45	63	57	54	51	52	49	67	66	62	58	60	56			
	700	.658	55	48	46	44	44	40	64	54	51	47	49	45	64	58	55	51	53	50	69	65	63	59	60	56			
8	185	.050	40	27	18	17	20	21	49	44	43	41	42	38	50	45	46	44	46	42	52	50	49	48	50	49			
	400	.204	46	32	25	23	24	23	58	51	48	44	46	41	60	56	53	50	51	46	59	59	59	56	57	52			
	600	.430	47	39	37	35	35	29	61	52	48	44	46	41	63	58	54	50	51	46	65	64	63	59	60	55			
	800	.693	51	45	43	40	42	37	62	53	49	45	46	42	64	58	54	50	51	47	67	66	63	59	60	55			
	1000	1.032	55	50	49	46	47	43	56	51	49	46	47	43	64	58	55	50	52	48	68	66	63	58	59	55			
10	300	.047	38	28	22	18	20	21	56	53	50	46	46	43	55	54	53	49	48	47	56	54	56	53	53	52			
	500	.105	40	28	24	20	20	21	58	55	50	45	46	43	60	59	56	51	51	49	60	61	63	58	58	56			
	800	.231	42	35	35	31	29	24	60	53	51	47	47	45	63	60	57	52	52	50	65	68	66	60	59	57			
	1200	.468	50	44	44	42	40	36	64	55	52	48	48	46	66	59	57	53	53	51	68	67	66	60	60	58			
	1500	.713	54	51	50	48	46	43	63	56	53	50	49	47	66	61	58	53	53	51	70	68	66	61	60	58			
12	430	.056	41	30	21	18	20	21	60	58	51	48	49	44	59	61	55	54	54	50	62	62	60	60	60	57			
	800	.156	42	39	36	32	29	23	62	60	55	51	50	46	64	65	59	54	54	51	66	71	67	63	63	60			
	1200	.318	46	46	44	41	40	34	63	60	56	54	53	51	66	65	61	57	57	54	68	73	69	64	63	60			
	1800	.656	54	55	53	51	50	48	61	58	57	54	55	53	67	64	62	59	59	58	71	72	69	66	65	64			
	2300	.997	58	58	59	55	56	54	59	59	59	56	56	55	66	64	62	59	60	59	72	72	70	67	67	66			
14	600	.060	40	28	20	20	20	21	55	55	48	45	46	41	57	59	53	50	51	47	62	63	61	58	59	54			
	1000	.134	40	31	25	22	22	21	57	55	50	46	46	42	61	62	56	51	51	47	64	67	64	60	60	56			
	1600	.305	43	43	39	35	36	29	61	56	51	47	49	45	63	63	56	52	53	50	66	69	66	60	60	57			
	2400	.657	52	53	51	45	46	42	60	59	54	49	51	47	66	63	58	54	55	52	69	69	65	61	61	59			
	3100	.990	56	59	58	50	52	49	56	59	58	50	52	49	65	63	60	54	56	53	70	71	65	62	62	60			
16	780	.058	43	29	21	17	19	21	58	55	49	45	45	39	59	60	53	50	50	45	60	63	57	57	56	52			
	1600	.203	41	38	36	33	30	24	57	54	49	46	46	40	62	60	54	51	50	45	67	63	64	60	58	54			
	2400	.461	49	53	47	43	43	36	63	56	51	49	49	44	67	61	55	53	53	48	68	68	63	60	59	55			
	3600	.971	53	57	59	52	51	47	56	56	52	52	52	48	65	65	58	55	55	51	71	69	64	61	61	58			
	4200	1.188	56	58	61	55	54	50	61	62	67	55	52	51	63	62	58	56	56	52	72	70	64	61	62	58			
18	1100	.052	44	32	21	18	19	20	59	54	51	49	48	45	59	57	54	53	54	49	61	60	61	59	59	55			
	2300	.191	46	43	34	26	28	24	61	57	53	49	49	43	65	63	58	54	53	49	68	70	67	63	61	57			
	3600	.414	55	65	49	38	40	35	67	60	55	50	50	46	68	63	59	55	54	49	71	70	68	63	61	57			
	4500	.593	59	63	61	43	44	41	70	65	57	50	50	47	72	65	61	56	55	51	73	71	68	63	61	58			
	5500	.815	63	64	65	48	48	46	65	64	57	50	51	48	73	71	63	56	55	52	76	72	69	64	62	58			
24	1480	.086	46	33	28	23	21	21	61	59	58	60	62	57	64	64	61	65	66	62	74	72	70	71	74	70			
	3200	.339	52	52	44	42	41	38	64	61	58	58	62	56	69	67	63	63	67	62	75	75	72	71	74	70			
	4800	.630	61	64	56	51	52	50	69	63	59	58	61	57	70	68	64	63	67	63	77	75	72	72	75	71			
	6000	.880	66	66	64	56	57	55	67	64	59	58	60	57	74	69	64	62	66	64	79	76	73	73	75	72			
	7300	1.318	70	65	69	62	62	59	68	65	58	54	56	51	72	73	66	61	64	64	80	79	76	73	75	72			

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



A Participating Member in the AHRI 880 Certification Program



- CONTROL TYPE**
- CA - Pneumatic Actuator with Mechanical Max./ Min. Stops by Carnes
  - CM - Pneumatic Actuator by Carnes
  - CE - Pneumatic Actuator by Carnes, Reset Controller by Carnes
  - CX - Pneumatic Actuator by Carnes (Multi-function) Reset Controller by Carnes
  - ER - Electric Actuator with Reheat Switch by Carnes (Enclosure Included)
  - EK - Electric Actuator with (2) Reheat Switches by Carnes (Enclosure Included)
  - ET - Analog Electronic Velocity Controller with Integral Damper Actuator (Enclosure Included)
  - DD - SimplyVAV, DDC by Carnes for Staged Heat
  - DM - SimplyVAV, DDC by Carnes for Modulating Heat
  - DO - DDC provided by Others, Mounted and Wired by Carnes, w/Carnes Inlet Sensor, w/3/8" Damper Shaft, w/Enclosure
  - DE - No Damper Controls. Enclosure w/Carnes Inlet Sensor, w/Bare 3/8" Damper Shaft
  - MA - Manual Damper by Carnes
  - NS - No Damper Controls, w/Carnes Inlet Sensor, w/Bare 3/8" Damper Shaft (No Enclosure)

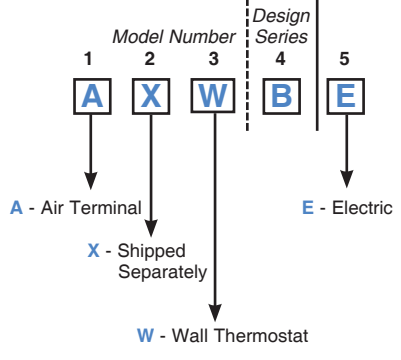
- CONTROLS, DAMPERS AND COIL ARRANGEMENTS**
- \*1 - Normally Open - Right Hand Controls  
(All Electric/Electronic/Manual Control Types/DO, DE, NS)  
(All Pneumatic Control Types for Reverse Acting Thermostat)
  - \*2 - Normally Open - Left Hand Controls  
(All Electric/Electronic/Manual Control types/DO, DE, NS)  
(All Pneumatic Control Types for Reverse Acting Thermostat)
  - 3 - Normally Closed - Right Hand Controls  
(All Pneumatic Control Types for Direct Acting Thermostat)
  - 4 - Normally Closed - Left Hand Controls  
(All Pneumatic Control Types for Direct Acting Thermostat)
  - 5 - Normally Open - Right Hand Controls  
(All Pneumatic Control Types for Direct Acting Thermostat)
  - 6 - Normally Open - Left Hand Controls  
(All Pneumatic Control Types for Direct Acting Thermostat)
  - 7 - Normally Closed - Right Hand Controls  
(All Pneumatic Control Types for Reverse Acting Thermostat)
  - 8 - Normally Closed - Left Hand Controls  
(All Pneumatic Control Types for Reverse Acting Thermostat)

- ACTUATOR VENDOR**
- C - Carnes OEM
  - D - DDC Actuator (DO Option Only)
  - N - Not Applicable (NS, DE Option Only)
- COIL TYPE**
- S - One Row
  - D - Two Rows
  - 3 - Three Rows
  - 4 - Four Rows
- TRANSFORMER**
- T - 120/24V, 1 Phase
  - U - 277/24V, 1 Phase
  - R - 208/24V, 1 Phase
  - S - 240/24V, 1 Phase
- OPTIONS:** (Must be ordered in position shown below, default is standard and applies if no entry is made)
- H - Hanger Brackets
  - P - Access Panel
  - X - Tri-Averaging Flow Sensor
  - W - Control Enclosure w/ Tri-Averaging Flow Sensor
  - B - 1/2" Foil Coated Insulation
  - Y - 1/2" Standard Insulation
  - C - Closed Cell Liner
  - D - Dual Wall Construction (Not for size 18/24)
  - G - 1" Glass Fiber Insulation
  - F - 1" Foil Coated Insulation
  - K - 1" Internal Rigid Insulation (Not for size 18/24)
  - H - 1" External Rigid Insulation (Not for size 18/24)
  - P - Dual Wall, Perforated Liner (Not for size 18/24)
  - N - No Insulation

\* 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.

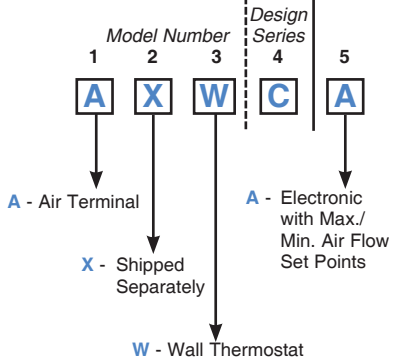
**NOTE:** Hand of controls is determined by facing the averaging flow sensor (inlet of the unit) with the supply air hitting the back of your head.

### ▼ Electric Thermostat



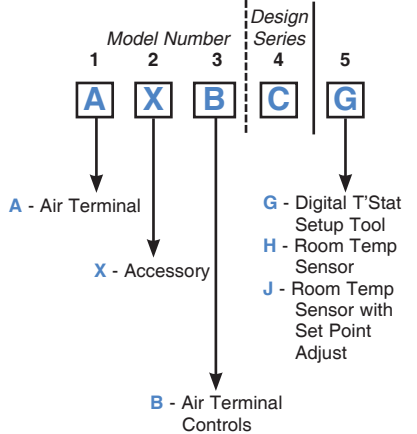
A Carnes Electric Thermostat **must be ordered** with the Electric EA and EB Control Options.

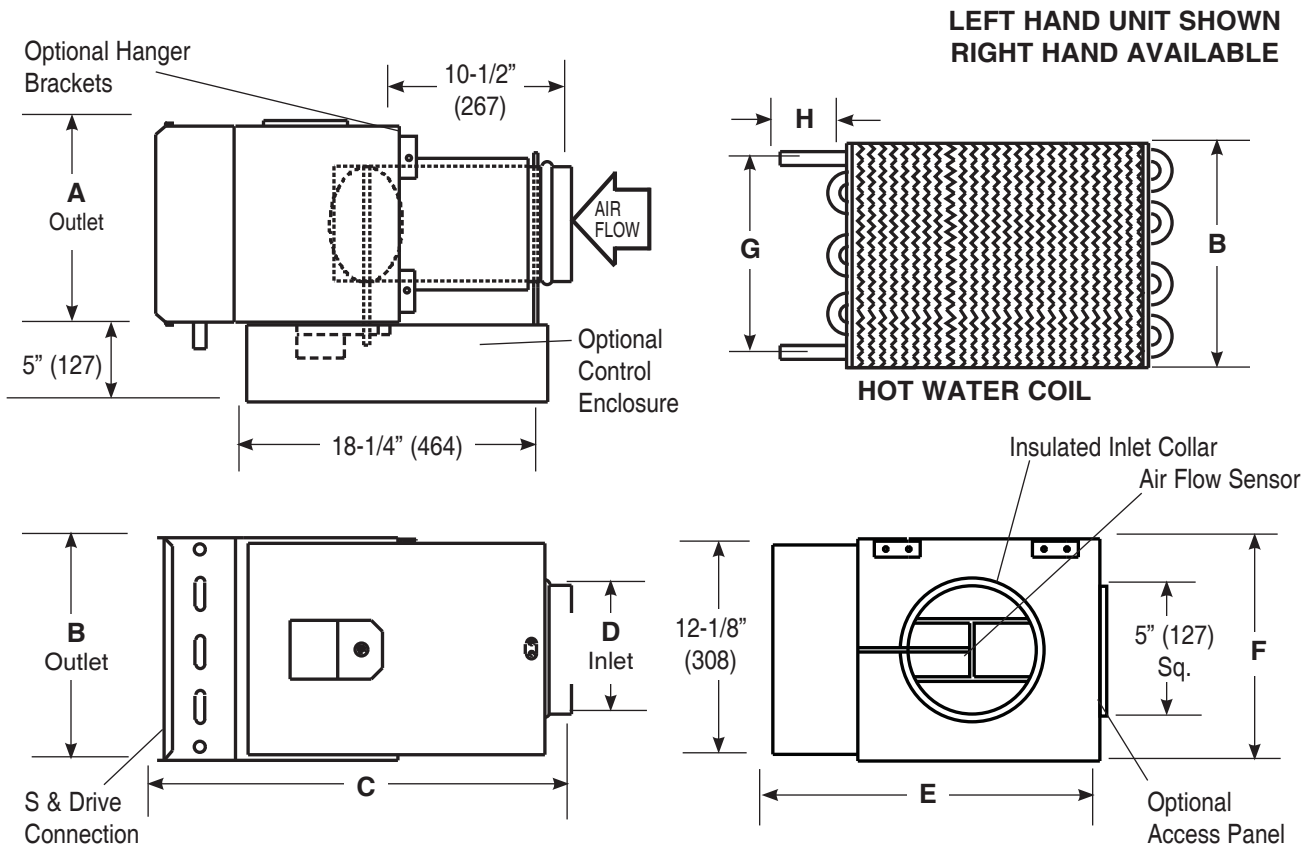
### ▼ Electronic Thermostat



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

### ▼ Direct Digital Control (DD/DC/DM)





**DIMENSIONAL LISTED IN INCHES (Millimeters)**

Unit Size	CFM Range	Outlet		1-Row	2-Row	Inlet	E	F	1-Row		2-Row		O.D. Conn.	
		A	B	C	C	D			G	H Max.	G	H Max.	1-Row Coil	2-Row Coil
05	0-350 (0-165)	12 (305)	8 (203)	23-5/8 (600)	25 (635)	4-7/8 (124)	17 (432)	8-1/8 (206)	6-1/4 (158)	3 (76)	6-7/8 (175)	3 (76)	1/2 (13)	1/2 (13)
06	0-500 (0-236)	12 (305)	8 (203)	23-5/8 (600)	25 (635)	5-7/8 (149)	17 (432)	8-1/8 (206)	6-1/4 (158)	3 (76)	6-7/8 (175)	3 (76)	1/2 (13)	1/2 (13)
07	0-700 (0-330)	12 (305)	10 (254)	23-5/8 (600)	25 (635)	6-7/8 (175)	17 (432)	10-1/8 (257)	8-3/4 (222)	3 (76)	9-3/8 (238)	3 (76)	1/2 (13)	5/8 (16)
08	0-1000 (0-472)	12 (305)	10 (254)	23-5/8 (600)	25 (635)	7-7/8 (200)	17 (432)	10-1/8 (257)	8-3/4 (222)	3 (76)	9-3/8 (238)	3 (76)	1/2 (13)	5/8 (16)
10	0-1500 (0-708)	14 (356)	12-1/2 (318)	23-5/8 (600)	25 (635)	9-7/8 (251)	19 (483)	12-5/8 (320)	11-1/4 (286)	3 (76)	11-7/8 (302)	3 (76)	1/2 (13)	5/8 (16)
12	0-2300 (0-1085)	16 (406)	15 (381)	23-5/8 (600)	25 (635)	11-7/8 (302)	21 (533)	15-1/8 (381)	13-3/4 (349)	3-1/2 (89)	13 (329)	4 (102)	5/8 (16)	7/8 (22)
14	0-3100 (0-1463)	20 (508)	17-1/2 (445)	23-5/8 (600)	25 (635)	13-7/8 (352)	25 (635)	17-5/8 (447)	16-1/4 (412)	3-1/2 (89)	15-1/2 (393)	4 (102)	5/8 (16)	7/8 (22)
16	0-4200 (0-1982)	24 (610)	18 (457)	24-5/8 (625)	26 (660)	15-7/8 (403)	29 (737)	18-1/8 (460)	16-1/4 (412)	3-1/2 (89)	15-1/2 (393)	4 (102)	5/8 (16)	7/8 (22)
18	0-5500 (0-2596)	32 (813)	17-1/2 (445)	26-5/8 (676)	28 (711)	15-7/8x17-7/8 (403x454)	37 (939)	17-5/8 (447)	16-1/4 (412)	3-1/2 (89)	15-1/2 (393)	4 (102)	5/8 (16)	7/8 (22)
24	0-7300 (0-3445)	32 (813)	17-1/2 (445)	26-5/8 (676)	28 (711)	15-7/8x23-7/8 (403x606)	37 (939)	17-5/8 (447)	16-1/4 (412)	3-1/2 (89)	15-1/2 (393)	4 (102)	5/8 (16)	7/8 (22)