

CATALOG

SDL Single-Duct, Low-Height, VAV Terminals

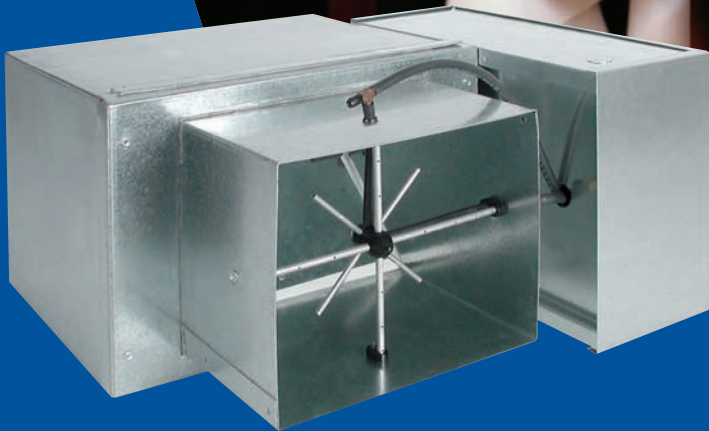


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- NOTES:
- All data herein is subject to change without notice. Some drawings are not shown in this catalog.
 - Drawings not for installation purposes.
 - Construction drawings and performance data contained herein should not be used for submittal purposes.
 - ETL Report Number 3052383-001.



FEATURES AND BENEFITS

QUIET COMFORT

Model SDL terminals are only 10" in height, making them ideal for shallow or congested ceiling plenum applications. SDL terminals provide variable air volume (VAV) control beyond the typical single duct box. They are specifically designed for precise air delivery throughout the entire operating range. They also offer improved space comfort and flexibility for a wide variety of HVAC applications.

SDL terminals take advantage of typical benefits provided by single duct units, while performing at extremely low sound levels. This is critical in today's buildings, where occupants are placing more emphasis on indoor acoustics.

The ability to provide comfort to the occupant is the measurement of quality for any VAV terminal. Comfort is achieved through quiet and precise control of airflow to the occupied space.

The SDL terminal provides the ultimate in airflow control with the patented FlowStar™ airflow sensor. No other sensor in the industry can match the FlowStar's ability to quietly and precisely measure airflow. Accurate airflow measurement is the basis for airflow control.

DESIGN FLEXIBILITY

Selection and Layout The SDL provides flexibility in system design. The compact cabinet design and quiet

operation give the system designer the versatility to place units directly above occupied spaces. It is not necessary to locate the unit in the crowded space above a hall or corridor. This will reduce lengthy and expensive discharge duct runs. The FlowStar™ sensor ensures accurate control, even when space constraints do not permit long straight inlet duct runs to the terminal.

Sizes Model SDL terminals are available in four unit sizes (10, 12, 14 and 16) to handle airflow capacities up to 4100 CFM. See the Model SDR catalog for construction details and performance data for unit sizes 4, 5, 6, and 8 (also 10" in height).

CONVENIENT INSTALLATION

Quality All SDL terminals are thoroughly inspected during each step of the manufacturing process, including a comprehensive "pre-ship" inspection, to assure the highest quality product available. All SDL terminals are packaged to minimize damage during shipment.

Quick Installation A standard single point electrical main power connection is provided with all electronic controls and electrical components located on the same side of the casing, for quick access, adjustment, and troubleshooting. Installation time is minimized with the availability of factory-calibrated controls and a low profile compact design.

The FlowStar™ sensor ensures accurate airflow measurement, regardless of the field installation conditions.

FEATURES AND BENEFITS

A calibration label and wiring diagram is located on the terminal for quick reference during start-up.

The terminal is constructed to allow installation with standard metal hanging straps. Optional hanger brackets for use with all-thread support rods or wire hangers are also available.

VALUE AND SECURITY

Quality All metal components are fabricated from galvanized steel. Unlike most manufacturers' terminals, the SDL is capable of withstanding a 125 hour salt spray test without showing any evidence of red rust.

Energy Efficiency In addition to quiet and accurate temperature control, the building owner will benefit from lower operating costs. The highly amplified velocity pressure signal from the FlowStar™ inlet sensor allows precise airflow control at low air velocities.

The FlowStar™ sensor's airfoil shape provides minimal pressure drop across the terminal. This allows the central fan to run at a lower pressure and with less brake horsepower.

Agency Certification Model SDL terminals with electronic controls and/or electric heat are listed with ETL as an assembly, and bear the ETL label.

SDL terminals and accessories are wired in compliance with all applicable NEC requirements and tested in accordance with AHRI Standard 880.

Maintenance and Service SDL terminals require no periodic maintenance and provide trouble-free operation. Controls are located on the outside of the unit casing for easy access by maintenance personnel.

CONTROLS

Model SDL terminals are available with DDC for BACnet, specifically designed for use with SDL terminals. These controls are designed to accommodate a multitude of control schemes. Consignment DDC controls are also available as an option on SDL terminals.

From the most basic to the most sophisticated sequence of operation, the controls are designed by experts in VAV single duct terminal operation. Refer to the Electronic Controls Selection Guide for a complete description of the sequences and schematic drawings that are available.

Available Control Types

- Verasys® ZEC Series DDC for BACnet (shown right)
- Pneumatic Controls
- Consignment DDC controls (factory mount and wire controls provided by others)

Optional Configuration Tool

- Mobile Access Portal (MAP) Gateway Tool (shown right, sold separately), allows for convenient configuration via direct connection to the ZEC.

Standard Features of ENVIRO-TEC Electronic Controls Include:

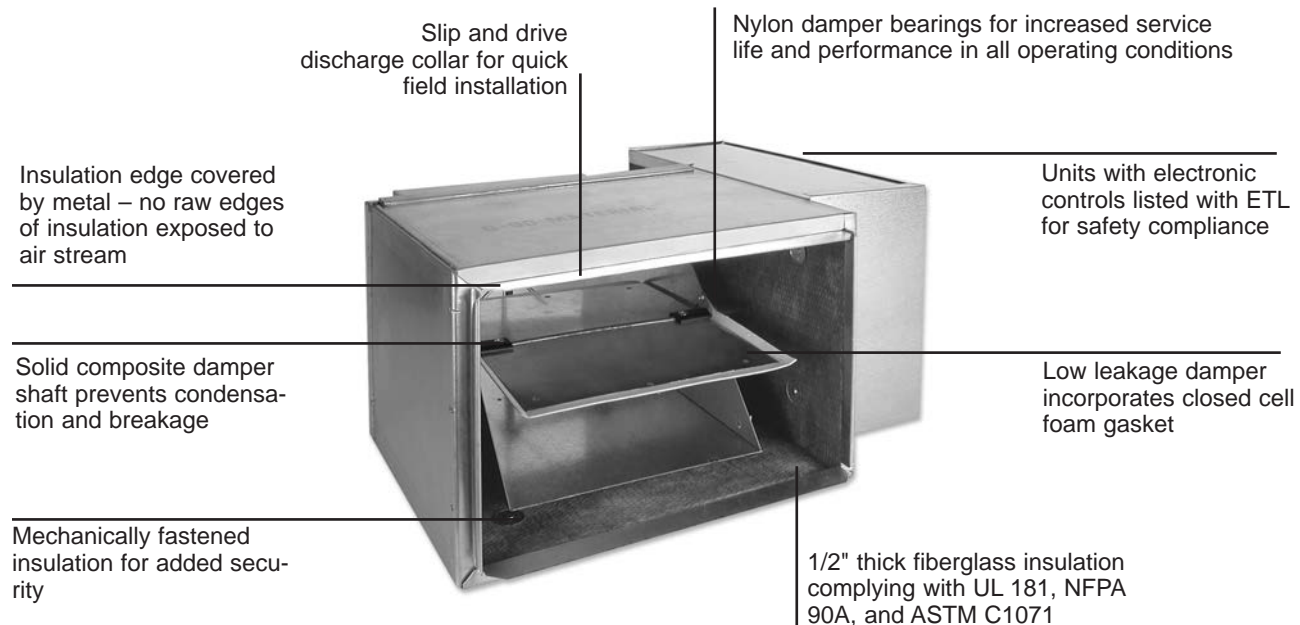
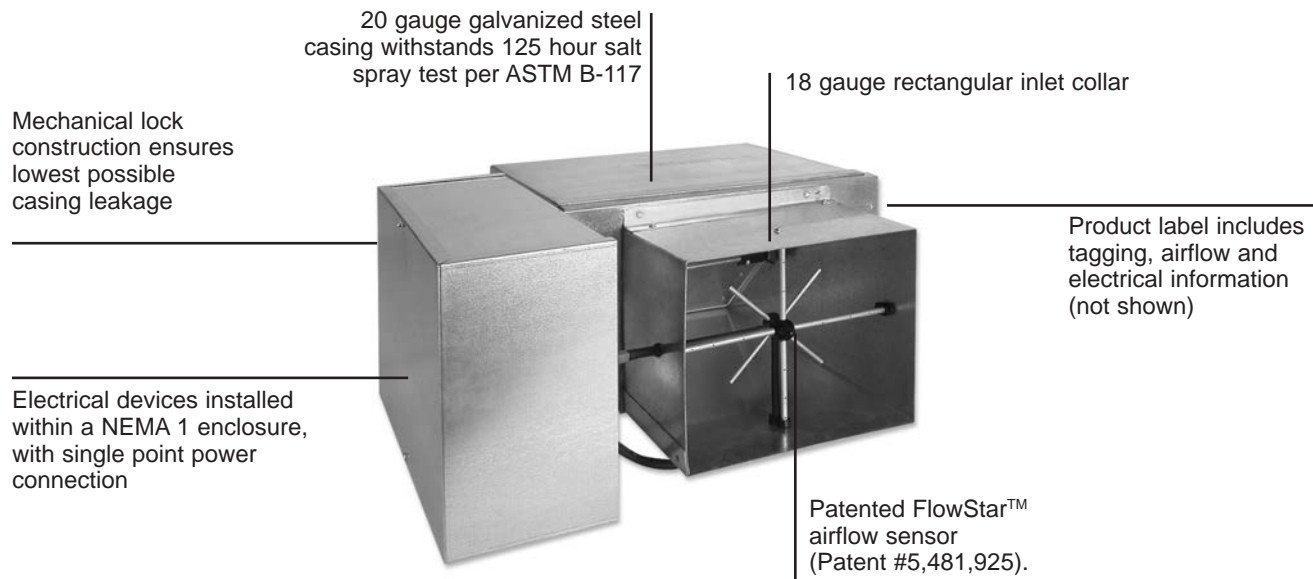
- Patented FlowStar™ Airflow Sensor
- ETL Listing
- NEMA 1 Enclosure
- 24 Volt Control Transformer
- Floating Modulating Actuator
- Balancing Tees and Plenum Rated Tubing



CONSTRUCTION FEATURES

MODEL SDL

The SDL terminal incorporates many **standard** features that are expensive options for other manufacturers.



OPTIONAL CONSTRUCTION FEATURES

- Mounting brackets (not shown) to accept all-thread hanging rods or wire hangers
- Double wall construction
- Scrim reinforced foil faced insulation meeting ASTM C1136 for mold, mildew, and humidity resistance
- Elastomeric closed cell foam insulation
- Hot water (SDL-WC) or electric heat (SDL-EH) coils
- Discharge sound attenuator (SDL-SA)
- Factory controls: Verasys® ZEC Series DDC for BACnet, Pneumatic, or Consignment DDC Controls
- Factory-provided, factory-assembled and shipped-loose piping packages

STANDARD AND OPTIONAL FEATURES

STANDARD FEATURES

Construction

- AHRI 880 certified and labeled
- 20 gauge galvanized steel construction
- 1/2" thick fiberglass insulation, mechanically fastened for added security
- Unit is invertible and may be installed with controls on left or right

Primary Air Valve

- 18 gauge galvanized steel construction
- Low thermal conductance damper shaft
- Position indicator on end of damper shaft
- Mechanical stops for open and closed position
- FlowStar™ center averaging airflow sensor
- Balancing tees
- Plenum rated sensor tubing

Hot Water Coils

- Designed and manufactured by ENVIRO-TEC
- AHRI 410 certified and labeled
- 1, 2, 3 or 4 rows
- Left or right hand connections
- Tested at a minimum of 450 PSIG under water and rated at 300 PSIG working pressure at 200°F

Electrical

- cETL listed for safety compliance with UL 1995
- NEMA 1 wiring enclosure

Electric Heat

- Designed and manufactured by ENVIRO-TEC
- cETL listed as an assembly for safety compliance
- Automatic reset primary and back-up secondary thermal limits
- Airflow switch
- Single point power connection
- Hinged electrical enclosure door
- Fusing per NEC

Controls

- Verasys® ZEC Series DDC for BACnet
- Pneumatic Controls

OPTIONAL FEATURES

Construction

- Foil faced scrim backed insulation
- Elastomeric closed cell foam insulation
- Double wall construction with 22 gauge liner

Hot Water Coil

- Coil access plate for cleaning coil

Electrical

- Toggle disconnect switch
- Primary and secondary transformer fusing

Electric Heat

- Proportional SSR heater control
- Door interlocking disconnect switches

Configuration Tool

- Mobile Access Portal (MAP) Gateway Tool (sold separately)

Controls

- Consignment DDC controls (factory mount and wire controls provided by others)

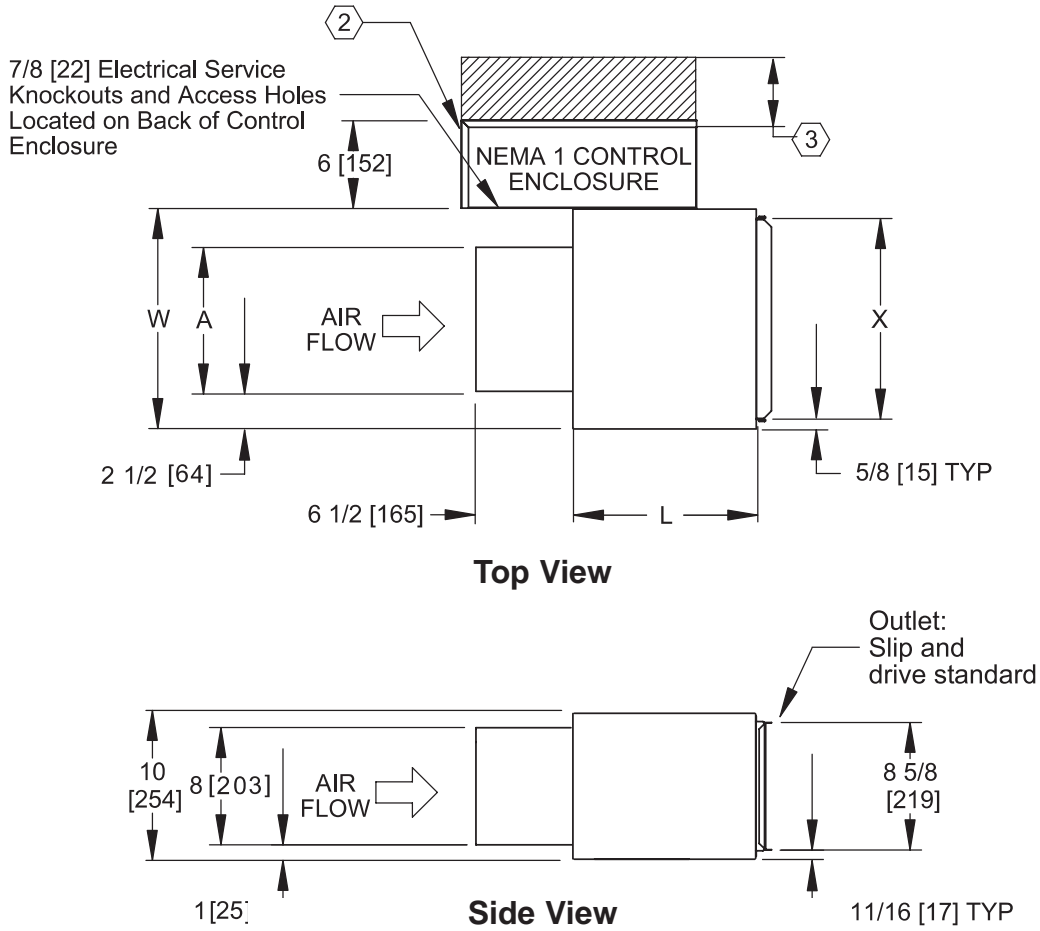
Piping Packages

- Factory-assembled and shipped-loose with unions for field installation
- 1/2" 2-way normally open or normally closed, two position electric motorized valves
- 24V floating point modulating control valves
- 0-10V proportional control valves
- Isolation ball valves with memory stop
- Fixed (FC) and adjustable (PICV) flow control devices
- Y-Strainers, P/T ports, 18" flexible hose

DIMENSIONAL & WEIGHT DATA

MODEL SDL

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



See Model SDR catalog for dimensional data of unit sizes 4, 5, 6, and 8.

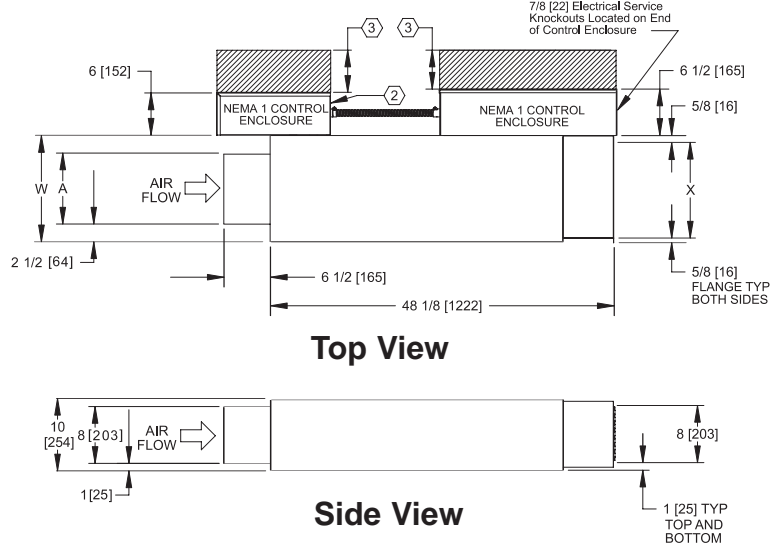
UNIT SIZE	DIMENSIONS				WEIGHTS	
	A	W	L	X	Single Wall	Double Wall
10	10 [254]	15 [381]	12 1/2 [318]	13 3/4 [349]	26 [12]	30 [14]
12	14 [356]	19 [483]	12 1/2 [318]	17 3/4 [451]	28 [13]	35 [16]
14	20 [508]	25 [635]	16 1/2 [419]	23 3/4 [603]	39 [18]	47 [21]
16	26 [660]	31 [787]	16 1/2 [419]	29 3/4 [756]	45 [20]	55 [25]

NOTES:

- All dimensions are in inches [mm] with a tolerance of $\pm 1/8"$ [3mm]. Weights are in pounds [kg]. Weights are for basic unit with indicated option and control enclosure. Actual weight will vary based on project specific requirements for unit options, appurtenances, and controls.
- Control enclosure is standard with factory mounted electronic controls.
- Check all national and local codes for required clearances.

MODEL SDL-EH (ELECTRIC HEAT)

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



See Model SDR catalog for dimensional data of unit sizes 4, 5, 6, and 8.

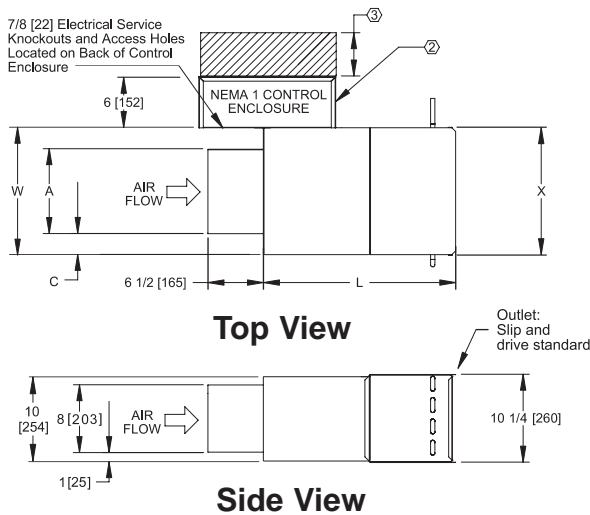
UNIT SIZE	A	W	X	TOTAL WEIGHT	
				Single Wall	Double Wall
10	10 [254]	15 [381]	13 3/4 [349]	62 [28]	77 [35]
12	14 [356]	19 [483]	17 3/4 [451]	74 [34]	93 [42]
14	20 [508]	25 [635]	23 3/4 [603]	90 [41]	110 [50]
16	26 [660]	31 [787]	29 3/4 [756]	103 [47]	126 [57]

NOTES:

1. All dimensions are in inches [mm]. Weights are in pounds [kg]. Weights are for basic unit with indicated option and control enclosure. Actual weight will vary based on project specific requirements for unit options, appurtenances, and controls.
2. Control enclosure is standard with factory mounted electronic controls.
3. Check all national and local codes for required clearances.

MODEL SDL-WC (HOT WATER COIL)

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



See Model SDR catalog for dimensional data of unit sizes 4, 5, 6, and 8.

UNIT SIZE	A	C	W	LENGTH L		X	COIL WEIGHTS (ADD TO SDL UNIT WEIGHT)							
				1,2,3 ROW COIL	4 ROW COIL		1 ROW		2 ROW		3 ROW		4 ROW	
							DRY	WET	DRY	WET	DRY	WET	DRY	WET
10	10 [254]	6 1/2 [165]	19 [483]	18 1/2 [470]	19 1/2 [495]	18 3/4 [476]	8 [4]	9 [4]	10 [5]	12 [6]	12 [5]	15 [7]	14 [6]	18 [8]
12	14 [356]	8 1/2 [216]	25 [635]	18 1/2 [470]	19 1/2 [495]	24 3/4 [629]	10 [4]	11 [5]	12 [5]	15 [7]	15 [7]	19 [9]	17 [8]	23 [10]
14	20 [508]	8 1/2 [216]	31 [787]	22 1/2 [572]	23 1/2 [597]	30 3/4 [781]	11 [5]	13 [6]	14 [6]	18 [8]	17 [8]	22 [10]	20 [9]	27 [12]
16	26 [660]	7 5/8 [194]	38 [965]	22 1/2 [572]	23 1/2 [597]	37 3/4 [959]	13 [6]	15 [7]	17 [8]	21 [9]	20 [9]	27 [12]	24 [11]	32 [15]

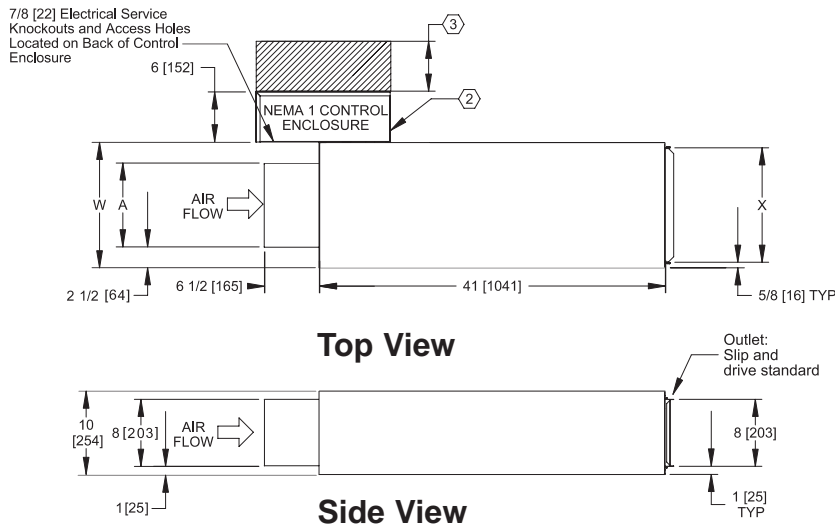
NOTES:

1. All dimensions are in inches [mm]. Weights are in pounds [kg]. Weights are for basic unit with indicated option and control enclosure. Actual weight will vary based on project specific requirements for unit options, appurtenances, and controls.
2. Control enclosure is standard with factory mounted electronic controls.
3. Check all national and local codes for required clearances.

DIMENSIONAL & WEIGHT DATA

MODEL SDL-SA (SOUND ATTENUATOR)

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



See Model SDR catalog for dimensional data of unit sizes 4, 5, 6, and 8.

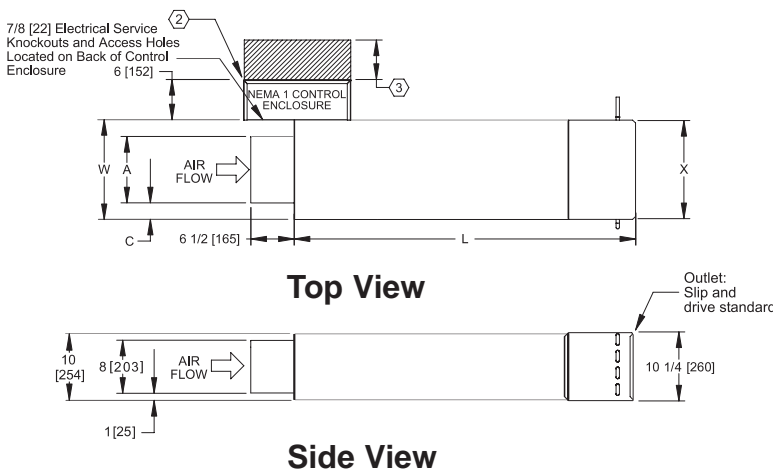
UNIT SIZE	A	W	X	TOTAL WEIGHT	
				Single Wall	Double Wall
10	10 [254]	15 [381]	13 3/4 [349]	43 [19]	58 [26]
12	14 [356]	19 [483]	17 3/4 [451]	49 [22]	68 [31]
14	20 [508]	25 [635]	23 3/4 [603]	62 [28]	82 [37]
16	26 [660]	31 [787]	29 3/4 [756]	73 [33]	96 [44]

NOTES:

1. All dimensions are in inches [mm]. Weights are in pounds [kg]. Weights are for basic unit with indicated option and control enclosure. Actual weight will vary based on project specific requirements for unit options, appurtenances, and controls.
2. Control enclosure is standard with factory mounted electronic controls.
3. Check all national and local codes for required clearances.

MODEL SDL-SA-WC (SOUND ATTENUATOR & HOT WATER COIL)

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



See Model SDR catalog for dimensional data of unit sizes 4, 5, 6, and 8.

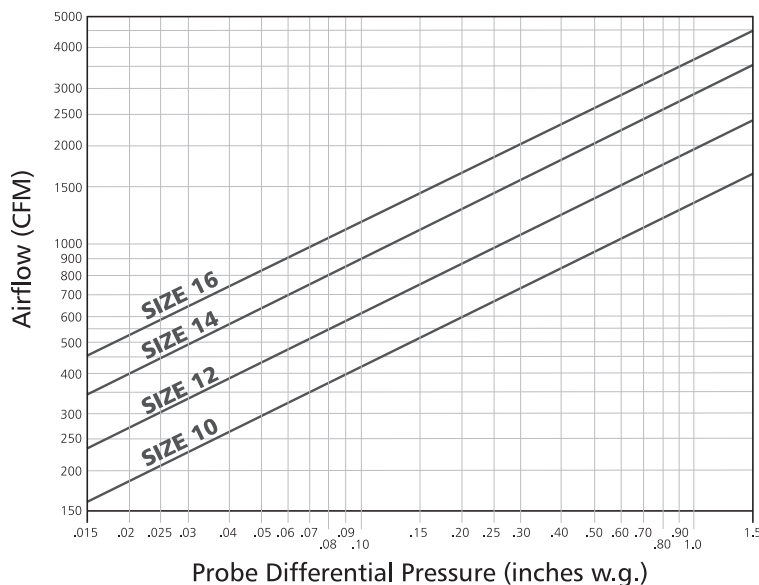
UNIT SIZE	A	C	W	LENGTH L		X	TOTAL WEIGHT (Wet Coils)							
				1,2,3 ROW COIL	4 ROW COIL		Coil Rows	Single Wall	Double Wall					
										10	10 [254]	6 1/2 [165]	19 [483]	47 [1194]
12	14 [356]	8 1/2 [216]	25 [635]	47 [1194]	48 [1221]	24 3/4 [629]	1 60 [27]	2 64 [29]	3 68 [31]	4 72 [33]	79 [36]	83 [38]	87 [39]	91 [41]
14	20 [508]	8 1/2 [216]	31 [787]	47 [1194]	48 [1221]	30 3/4 [781]	1 75 [34]	2 80 [36]	3 84 [38]	4 89 [40]	95 [43]	100 [45]	104 [47]	109 [49]
16	26 [660]	7 5/8 [194]	38 [965]	47 [1194]	48 [1221]	37 3/4 [959]	1 88 [40]	2 94 [43]	3 100 [45]	4 105 [48]	111 [50]	117 [53]	123 [56]	128 [58]

NOTES:

1. All dimensions are in inches [mm]. Weights are in pounds [kg]. Weights are for basic unit with indicated option and control enclosure. Actual weight will vary based on project specific requirements for unit options, appurtenances, and controls.
2. Control enclosure is standard with factory mounted electronic controls.
3. Check all national and local codes for required clearances.
4. For SDL-SA-WC weights with dry coil, add dry coil weights from SDL-WC table to SDL-SA unit weights.

AIRFLOW CALIBRATION, AHRI RATINGS

FLOWSTAR™ CALIBRATION CHART (For dead-end differential pressure transducers)



See the Model SDR catalog for primary airflow calibration and AHRI Ratings for unit sizes 4, 5, 6, and 8 (also 10" in height).

NOTE: Maximum and minimum CFM limits are dependent on the type of controls that are utilized. Refer to the table below for specific values. When DDC controls are furnished by others, the CFM limits are dependent on the specific control vendor that is employed. After obtaining the differential pressure range from the control vendor, the maximum and minimum CFM limits can be obtained from the chart above (many controllers are capable of controlling minimum setpoint down to .015" w.g.).

AIRFLOW RANGES (CFM)

UNIT SIZE	400 SERIES (PNEUMATIC) STANDARD CONTROLLER		7000 SERIES ANALOG ELECTRONIC		DDC CONSIGNMENT CONTROLS (See Notes Below)				
	MIN.	MAX.	MIN.	MAX.	MIN.			MAX.	
					Min. transducer differential pressure (in. w.g.)			Max. transducer differential pressure (in. w.g.)	
					0.015	0.03	0.05	1.0	≥1.5
10	235	1545	170	1600	170	235	305	1370	1600
12	340	2250	240	2300	240	340	435	1955	2300
14	495	3100	350	3100	350	495	640	2855	3100
16	660	4100	465	4100	465	660	850	3800	4100

NOTES:

1. Minimum and maximum airflow limits are dependent on the specific DDC controller supplied. Contact the control vendor to obtain the minimum and maximum differential pressure limits (inches W.G.) of the transducer utilized with the DDC controller.
2. Maximum CFM is limited to value shown in General Selection Data.



AHRI STANDARD RATINGS

SIZE	RATED AIRFLOW CFM	MINIMUM OPERATING PRESSURE (IN. W.G.)	STANDARD RATINGS - SOUND POWER LEVEL, dB RE: 1 X 10 ⁻¹² WATTS											
			RADIATED @ 1.5" WATER STATIC PRESSURE						DISCHARGE @ 1.5" WATER STATIC PRESSURE					
			Hz Octave Band Center Frequency											
			125	250	500	1000	2000	4000	125	250	500	1000	2000	4000
10	1100	0.01	56	56	54	48	43	38	70	67	63	61	61	56
12	1600	0.01	58	58	54	49	46	39	72	69	66	63	62	59
14	2100	0.01	61	59	54	49	45	38	73	69	66	63	62	59
16	2800	0.02	66	59	55	48	43	37	76	68	65	61	59	56

NOTE: Duct end corrections included in sound power levels per AHRI 880.

GENERAL SELECTION DATA

See Model SDR catalog for dimensional data of unit sizes 4, 5, 6, and 8.

TERMINAL SIZE	CFM	MINIMUM ΔPs				DISCHARGE NOISE CRITERIA (NC)						RADIATED NOISE CRITERIA (NC)		
		Model SDL / SDL-SA	Model SDL-EH	Model SDL-WC 1 Row	Model SDL-WC 2 Row	0.5" ΔPs		1.0" ΔPs		3.0" ΔPs		0.5" ΔPs	1.0" ΔPs	3.0" ΔPs
						Model SDL	Model SDL-SA	Model SDL	Model SDL-SA	Model SDL	Model SDL-SA			
10	600	0.01	0.03	0.07	0.14	--	--	--	--	26	25	--	20	30
	800	0.01	0.06	0.11	0.22	--	--	--	--	28	26	--	22	32
	1000	0.01	0.10	0.16	0.31	--	--	21	20	30	29	21	25	34
	1200	0.01	0.15	0.21	0.41	--	--	23	21	32	30	23	26	36
	1400	0.01	0.21	0.27	0.53	--	20	25	24	35	33	25	29	38
	1600	0.02	0.29	0.34	0.67	21	21	26	26	36	34	26	31	39
12	800	0.01	0.04	0.07	0.14	--	--	--	--	26	25	--	--	29
	1100	0.01	0.07	0.12	0.23	--	--	--	--	28	28	--	20	33
	1400	0.01	0.12	0.17	0.34	--	--	22	20	31	30	20	23	34
	1700	0.01	0.19	0.24	0.46	--	--	24	21	33	33	23	26	36
	2000	0.01	0.26	0.31	0.60	22	20	26	25	34	34	25	29	38
	2300	0.02	0.36	0.39	0.76	24	24	28	28	36	35	27	31	39
14	1100	0.01	0.04	0.08	0.16	--	--	--	--	26	26	--	--	28
	1500	0.01	0.08	0.14	0.27	--	--	20	--	29	29	--	20	31
	1900	0.01	0.13	0.20	0.39	--	--	22	--	33	33	20	23	35
	2300	0.01	0.19	0.27	0.53	--	--	24	21	35	35	22	25	36
	2700	0.02	0.27	0.35	0.69	23	20	27	23	37	36	24	28	38
	3100	0.02	0.36	0.44	0.87	25	23	29	25	38	36	27	30	39
16	1600	0.01	0.05	0.11	0.21	--	--	--	--	26	25	--	20	32
	2100	0.01	0.10	0.17	0.33	--	--	--	--	29	29	--	23	34
	2600	0.02	0.16	0.24	0.47	--	--	22	21	33	33	21	25	36
	3100	0.02	0.23	0.32	0.62	20	--	25	23	35	35	24	28	38
	3600	0.03	0.32	0.41	0.79	22	21	27	24	37	37	25	30	39
	4100	0.04	0.42	0.51	0.98	24	24	29	26	38	37	29	31	41

NOTES:

- Min. ΔPs is the static pressure difference between the terminal inlet and discharge with the damper wide open.
- Performance data obtained from tests conducted in accordance with AHRI Standard 880.
- Dash (-) indicates NC level less than 20.
- NC values are calculated using attenuation values provided in appendix E of AHRI 885-2008, as shown below.
- NC (sound pressure) levels predicted by subtracting appropriate values below from published sound power levels (following pages).

DISCHARGE ATTENUATION VALUES	OCTAVE BAND						
	2	3	4	5	6	7	
Small Box (< 300 CFM)	24	28	39	53	59	40	
Medium Box (300-700 CFM)	27	29	40	51	53	39	
Large Box (> 700 CFM)	29	30	41	51	52	39	

RADIATED ATTENUATION VALUES	OCTAVE BAND						
	2	3	4	5	6	7	
Type 2 - Mineral Fiber Ceiling	18	19	20	26	31	36	

SOUND POWER DATA

DISCHARGE SOUND POWER DATA - MODEL SDL-SA

See the Model SDR catalog for Sound Power Data for unit sizes 4, 5, 6, and 8 (also 10" in height)

TERMINAL SIZE	CFM	OCTAVE BAND NUMBERS																	
		0.5" ΔPs						1.0" ΔPs						3.0" ΔPs					
		2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7
10	600	58	53	47	43	36	36	62	59	53	49	42	38	67	66	62	61	51	48
	800	60	55	49	44	36	36	64	61	54	50	44	39	71	68	64	62	55	49
	1000	61	57	51	45	36	35	66	63	56	51	45	40	73	70	66	63	57	50
	1200	65	61	55	47	41	38	68	64	57	52	45	40	75	71	67	63	57	51
	1400	67	63	58	49	43	39	71	66	59	53	46	41	77	73	68	63	58	52
	1600	68	64	61	51	45	40	71	68	61	54	48	42	78	74	69	64	58	53
12	800	57	54	49	44	36	37	63	60	55	51	42	39	67	67	65	64	54	51
	1100	58	55	50	45	38	37	64	61	56	52	44	39	70	69	67	65	56	51
	1400	62	58	54	47	41	38	67	63	59	54	46	41	73	71	69	66	57	51
	1700	66	61	57	49	45	39	68	64	61	55	48	41	76	73	70	66	58	52
	2000	67	63	60	52	48	41	70	67	63	57	50	42	78	74	71	68	60	53
	2300	70	66	62	55	51	43	73	69	65	58	54	47	79	75	72	68	61	54
14	1100	57	52	47	42	35	33	64	60	55	48	41	38	68	68	62	60	50	45
	1500	59	54	50	44	35	33	65	61	55	49	44	39	72	71	67	65	56	51
	1900	62	57	53	46	39	35	67	62	58	51	46	41	76	73	69	65	57	52
	2300	65	60	56	48	44	37	69	64	60	54	48	42	80	75	70	65	58	53
	2700	67	63	59	51	47	41	70	65	62	55	50	43	82	76	71	65	60	54
	3100	69	65	62	54	50	43	73	67	64	57	53	47	82	76	72	66	61	56
16	1600	58	54	49	44	37	35	65	62	54	49	43	39	73	67	63	60	49	43
	2100	60	56	52	46	38	35	66	62	56	51	44	39	75	70	69	63	56	49
	2600	62	58	55	48	40	36	67	64	59	53	47	41	78	73	69	61	58	50
	3100	65	61	57	50	45	36	69	65	61	56	49	42	80	75	70	65	59	52
	3600	66	64	60	52	49	42	70	66	62	56	51	43	82	77	72	66	61	53
	4100	68	66	64	55	52	45	73	68	64	58	53	46	82	77	72	68	62	55

RADIATED SOUND POWER DATA - MODEL SDL-SA

TERMINAL SIZE	CFM	OCTAVE BAND NUMBERS																	
		0.5" ΔPs						1.0" ΔPs						3.0" ΔPs					
		2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7
10	600	41	43	42	36	32	26	46	48	46	40	37	32	54	55	55	52	48	42
	800	45	45	45	38	33	27	49	50	48	42	38	33	58	58	57	53	49	43
	1000	47	47	47	39	34	28	52	52	51	44	39	34	60	60	59	55	50	44
	1200	49	48	49	41	35	29	54	54	52	45	40	34	62	62	61	56	51	45
	1400	51	50	51	42	36	30	56	55	54	46	41	34	64	63	63	57	52	45
	1600	52	51	52	44	37	31	57	56	56	47	42	35	65	64	64	58	53	46
12	800	43	42	40	35	33	26	48	49	44	40	37	31	56	59	54	52	48	42
	1100	47	45	43	37	34	28	51	52	46	42	39	32	60	62	57	54	51	43
	1400	49	49	46	39	35	29	54	54	49	44	40	33	62	63	59	56	51	44
	1700	51	50	49	41	37	30	56	56	52	45	42	35	64	65	61	57	53	46
	2000	53	52	51	43	38	31	57	57	54	46	43	36	66	66	63	58	54	47
	2300	54	53	52	44	39	33	59	58	56	48	44	37	67	67	64	59	55	48
14	1100	47	45	40	36	32	25	52	50	44	39	36	30	60	58	53	50	47	41
	1500	50	46	43	37	34	27	55	52	46	41	38	32	63	61	56	53	49	42
	1900	53	49	46	40	36	28	57	54	49	43	39	34	65	64	58	55	51	44
	2300	55	51	48	41	37	30	59	56	51	45	41	35	67	65	60	56	52	45
	2700	56	52	50	43	39	31	61	57	53	46	44	36	69	67	62	57	54	46
	3100	58	53	53	44	40	32	62	59	55	47	45	38	70	67	64	59	55	48
16	1600	51	45	42	36	30	24	57	52	45	39	35	29	65	61	55	52	45	40
	2100	54	47	45	38	32	26	60	53	48	41	37	31	68	63	57	53	47	42
	2600	56	50	47	39	34	27	62	55	51	43	38	33	70	65	60	54	49	43
	3100	59	52	50	40	36	29	63	56	53	45	40	34	72	66	62	56	51	44
	3600	61	53	51	42	37	30	65	58	55	46	41	36	74	67	64	57	52	45
	4100	62	54	54	44	39	32	67	59	56	47	43	37	75	67	65	58	54	47

- Performance data obtained from tests conducted in accordance with AHRI Standard 880.
- Sound levels are expressed in decibels, dB re: 1 x 10⁻¹² watts.
- Duct end corrections included in sound power levels per AHRI 880.

ELECTRIC HEAT

MODEL SDL-EH

STANDARD FEATURES

- Designed, manufactured, and tested by ENVIRO-TEC
- cETL listed as an assembly
- Single point power connection
- Primary auto-reset high limit
- Secondary high limit
- Airflow switch
- Hinged control panel
- Ni-Chrome elements
- Primary/secondary power terminations
- Fusing per NEC
- Wiring diagram and ETL label
- Available kW increments are as follows:
0.5 to 12.0 kW – .50 kW; 12.0 to 26.0 kW – 1.0 kW; above 26.0 – 2.0 kW.

OPTIONAL FEATURES

- Disconnect (toggle or door interlocking)
- P.E. switches
- Manual reset secondary limit
- Proportional control (SSR)
- 24 V control transformer



SELECTION PROCEDURE

With standard heater elements, the maximum capacity (kW) is obtained by dividing the heating (minimum) SCFM by 70. In other words, the terminal must have at least 70 SCFM per kW. In addition, each size terminal has a maximum allowable kW based upon the specific heater element configuration (i.e. voltage, phase, number of steps, etc.). Contact your ENVIRO-TEC representative for design assistance.

Heaters require a minimum of 0.07" w.g. downstream static pressure to ensure proper operation.

Selection Equations

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

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

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

* Air density at sea level - reduce by 0.036 for each 1000 feet of altitude above sea level.

Calculating Line Amperage

$$\text{Single Phase Amps} = \frac{kW \times 1000}{\text{Volts}}$$

$$\text{Three Phase Amps} = \frac{kW \times 1000}{\text{Volts} \times 1.73}$$

UNIT VOLTAGE AND PHASE		ELECTRIC HEAT KW LIMITS							
		Unit Size							
		10		12		14		16	
		Min	Max	Min	Max	Min	Max	Min	Max
1 Phase	115/120	0.5	5.5	0.5	5.5	0.5	5.5	0.5	5.5
	208	0.5	9.5	0.5	9.5	0.5	9.5	0.5	9.5
	230/240	0.5	11	0.5	11	0.5	11	0.5	11
	277	0.5	13	0.5	13	0.5	13	0.5	13
	347	0.5	16	0.5	16	0.5	16	0.5	16
	460	0.5	20	0.5	22	0.5	22	0.5	22
3 Phase	480	0.5	20	0.5	23	0.5	23	0.5	23
	208	1	17	1	17	1	17	1	17
	240	1	19	1	19	1	19	1	19
	460/480	1	20	1	28	1	38	1	38

HOT WATER COIL DATA

MODEL SDL-WC



STANDARD FEATURES

- Coils are designed, manufactured, and tested by ENVIRO-TEC
- Aluminum fin construction with die-formed spacer collars for uniform spacing
- Mechanically expanded copper tubes leak tested to 450 PSIG air pressure and rated at 300 PSIG working pressure at 200°F
- Male sweat type water connections
- 1, 2, 3 and 4 row configurations

OPTIONAL FEATURES

- Coil circuiting options for reduced water pressure drop
- Right or left hand water connections
- Bottom and top access plates for cleaning
- Steam coils

DEFINITION OF TERMS

- EAT** Entering Air Temperature (°F)
- EWT** Entering Water Temperature (°F)
- LWT** Leaving Water Temperature (°F)
- LAT** Leaving Air Temperature
- CFM** Air Volume (Cubic Feet per Minute)
- GPM** Water Capacity (Gallons per Minute)
- MBH** 1,000 BTUH
- BTUH** Coil Heating Capacity (British Thermal Units per Hour)

SELECTION PROCEDURE

SDL-WC Hot Water Coil Performance Tables are based upon a temperature difference of 125°F between the entering water and the entering air. If this ΔT is suitable, proceed directly to the tables for selection. All pertinent performance data is tabulated. **For Variable Air Volume Applications, the static pressure drop must be based on the maximum air volume.**

ENTERING WATER - AIR TEMPERATURE DIFFERENTIAL (ΔT) CORRECTION FACTORS															
ΔT	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
FACTOR	0.15	0.19	0.23	0.27	0.31	0.35	0.39	0.43	0.47	0.51	0.55	0.59	0.63	0.67	0.71
ΔT	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165
FACTOR	0.75	0.79	0.83	0.88	0.92	0.96	1.00	1.04	1.08	1.13	1.17	1.21	1.25	1.29	1.33

The table above gives correction factors for various entering ΔT's (difference between EWT and EAT). Multiply MBH values obtained from selection tables by the appropriate correction factor above to obtain the actual MBH value. Air and water pressure drop can be read directly from the selection tables. The LAT and LWT can be calculated from the following fundamental formulas:

$$LAT = EAT + \frac{BTUH}{1.085 \times CFM}$$

$$LWT = EWT - \frac{BTUH}{500 \times GPM}$$

MODEL SDL-WC SIZE 10: STANDARD CIRCUITING

AIRFLOW			WATER FLOW			LAT (°F)		LWT (°F)		CAPACITY (MBH)	
Rate (CFM)	Air PD (IN.W.G.)		Rate (GPM)	Water PD (FT.W.G.)		1 Row	2 Row	1 Row	2 Row	1 Row	2 Row
				1 Row	2 Row						
250	1 Row 2 Row	0.02 0.03	0.5	0.42	0.15	96.6	112.1	134.0	117.0	11.3	15.5
			1.0	1.31	0.50	104.5	126.5	152.5	140.4	13.4	19.4
			2.0	4.60	1.60	109.8	135.9	164.8	157.5	14.8	21.9
			4.0	16.30	5.73	113.0	141.5	171.9	168.0	15.7	23.4
400	1 Row 2 Row	0.03 0.07	0.5	0.42	0.15	85.7	96.5	125.7	106.9	13.3	18.0
			1.0	1.31	0.50	93.2	110.5	146.1	130.9	16.5	24.0
			2.0	4.60	1.60	98.5	121.0	160.7	150.7	18.8	28.6
			4.0	16.30	5.73	101.8	127.7	169.6	163.8	20.3	31.5
550	1 Row 2 Row	0.06 0.11	0.5	0.42	0.15	79.5	87.6	120.5	101.1	14.6	19.4
			1.0	1.31	0.50	86.4	100.5	141.8	124.8	18.7	27.1
			2.0	4.60	1.60	91.4	110.9	157.7	145.9	21.7	33.3
			4.0	16.30	5.73	94.7	118.0	167.8	160.7	23.7	37.5
700	1 Row 2 Row	0.08 0.17	0.5	0.42	0.15	75.5	81.9	116.7	97.1	15.6	20.4
			1.0	1.31	0.50	81.8	93.6	138.5	120.4	20.3	29.3
			2.0	4.60	1.60	86.6	103.8	155.4	142.2	24.0	37.0
			4.0	16.30	5.73	89.8	110.9	166.4	158.3	26.4	42.4
850	1 Row 2 Row	0.12 0.23	0.5	0.42	0.15	72.7	77.9	113.7	94.3	16.3	21.1
			1.0	1.31	0.50	78.5	88.6	135.8	116.9	21.6	31.0
			2.0	4.60	1.60	83.1	98.4	153.5	139.2	25.9	39.9
			4.0	16.30	5.73	86.2	105.5	165.2	156.2	28.8	46.5
1000	1 Row 2 Row	0.15 0.30	0.5	0.42	0.15	70.6	75.0	111.4	92.1	16.9	21.7
			1.0	1.31	0.50	76.0	84.8	133.5	114.2	22.8	32.3
			2.0	4.60	1.60	80.4	94.2	151.8	136.7	27.5	42.4
			4.0	16.30	5.73	83.4	101.2	164.2	154.4	30.8	50.0
1150	1 Row 2 Row	0.19 0.38	0.5	0.42	0.15	68.9	72.7	109.4	90.4	17.4	22.1
			1.0	1.31	0.50	74.0	81.8	131.6	112.0	23.7	33.4
			2.0	4.60	1.60	78.2	90.7	150.4	134.5	28.9	44.5
			4.0	16.30	5.73	81.2	97.6	163.3	152.8	32.6	53.1
1300	1 Row 2 Row	0.23 0.46	0.5	0.42	0.15	67.6	70.9	107.8	88.9	17.8	22.5
			1.0	1.31	0.50	72.4	79.4	130.0	110.1	24.5	34.4
			2.0	4.60	1.60	76.5	87.9	149.1	132.7	30.2	46.4
			4.0	16.30	5.73	79.3	94.7	162.4	151.4	34.2	55.9

MODEL SDL-WC SIZE 10: MULTI-CIRCUITING

AIRFLOW			WATER FLOW			LAT (°F)		LWT (°F)		CAPACITY (MBH)	
Rate (CFM)	Air PD (IN.W.G.)		Rate (GPM)	Water PD (FT.W.G.)		1 Row	2 Row	1 Row	2 Row	1 Row	2 Row
				1 Row	2 Row						
250	1 Row 2 Row	0.02 0.03	0.5	0.09	0.04	93.0	106.1	138.0	123.5	10.3	13.9
			1.0	0.30	0.16	101.6	121.1	154.2	143.4	12.6	17.9
			2.0	1.01	0.60	107.7	132.1	165.3	158.6	14.3	20.9
			4.0	3.70	2.16	111.6	139.0	172.1	168.3	15.3	22.8
400	1 Row 2 Row	0.03 0.07	0.5	0.09	0.04	82.6	91.5	131.3	115.7	11.9	15.8
			1.0	0.30	0.16	90.3	105.2	148.7	135.5	15.3	21.8
			2.0	1.01	0.60	96.3	116.8	161.6	152.6	17.9	26.8
			4.0	3.70	2.16	100.4	124.8	169.9	164.5	19.7	30.2
550	1 Row 2 Row	0.06 0.11	0.5	0.09	0.04	76.8	83.4	127.1	111.1	13.0	16.9
			1.0	0.30	0.16	83.7	95.6	145.0	130.6	17.1	24.2
			2.0	1.01	0.60	89.4	106.7	159.0	148.5	20.5	30.8
			4.0	3.70	2.16	93.3	114.9	168.3	161.7	22.8	35.7
700	1 Row 2 Row	0.08 0.17	0.5	0.09	0.04	73.1	78.3	124.1	108.1	13.7	17.7
			1.0	0.30	0.16	79.4	89.2	142.2	127.1	18.5	25.9
			2.0	1.01	0.60	84.7	99.7	156.9	145.3	22.5	33.9
			4.0	3.70	2.16	88.4	107.8	167.0	159.5	25.4	40.1
850	1 Row 2 Row	0.12 0.23	0.5	0.09	0.04	70.5	74.8	121.8	105.9	14.3	18.2
			1.0	0.30	0.16	76.2	84.6	140.0	124.4	19.6	27.3
			2.0	1.01	0.60	81.2	94.5	155.3	142.9	24.1	36.3
			4.0	3.70	2.16	84.9	102.4	165.9	157.6	27.5	43.7
1000	1 Row 2 Row	0.15 0.30	0.5	0.09	0.04	68.6	72.2	120.0	104.2	14.7	18.6
			1.0	0.30	0.16	73.9	81.1	138.2	122.3	20.4	28.3
			2.0	1.01	0.60	78.6	90.4	153.8	140.8	25.5	38.3
			4.0	3.70	2.16	82.1	98.2	164.9	156.0	29.4	46.8
1150	1 Row 2 Row	0.19 0.38	0.5	0.09	0.04	67.1	70.2	118.5	102.9	15.1	19.0
			1.0	0.30	0.16	72.0	78.4	136.7	120.6	21.2	29.2
			2.0	1.01	0.60	76.5	87.2	152.6	139.1	26.8	40.1
			4.0	3.70	2.16	79.9	94.7	164.1	154.7	31.0	49.4
1300	1 Row 2 Row	0.23 0.46	0.5	0.09	0.04	65.9	68.7	117.3	101.7	15.4	19.3
			1.0	0.30	0.16	70.5	76.2	135.4	119.1	21.8	29.9
			2.0	1.01	0.60	74.8	84.5	151.5	137.6	27.8	41.5
			4.0	3.70	2.16	78.1	91.8	163.3	153.5	32.5	51.8

Data is based on 180°F entering water and 55°F entering air at sea level. See selection procedure for other conditions.

HOT WATER COIL DATA

MODEL SDL-WC SIZE 12: STANDARD CIRCUITING

AIRFLOW			WATER FLOW			LAT (°F)		LWT (°F)		CAPACITY (MBH)	
Rate (CFM)	Air PD (IN.W.G.)		Rate (GPM)	Water PD (FT.W.G.)		1 Row	2 Row	1 Row	2 Row	1 Row	2 Row
				1 Row	2 Row						
300	1 Row	0.01	0.5	0.09	0.16	93.0	110.6	129.6	106.5	12.4	18.1
			1.0	0.32	0.54	102.5	126.5	148.4	132.5	15.4	23.2
	2 Row	0.03	2.0	1.07	1.73	109.3	137.2	161.9	152.6	17.6	26.7
			4.0	3.92	6.17	113.6	143.4	170.2	165.3	19.1	28.7
500	1 Row	0.03	0.5	0.09	0.16	81.5	93.5	121.5	95.4	14.4	20.9
			1.0	0.32	0.54	89.7	108.4	141.5	121.0	18.8	28.9
	2 Row	0.06	2.0	1.07	1.73	96.2	120.1	157.1	144.0	22.3	35.2
			4.0	3.92	6.17	100.6	127.5	167.3	159.9	24.7	39.3
700	1 Row	0.05	0.5	0.09	0.16	75.6	84.6	116.3	89.0	15.6	22.4
			1.0	0.32	0.54	83.0	98.1	136.6	113.5	21.2	32.7
	2 Row	0.11	2.0	1.07	1.73	89.2	109.8	153.4	137.6	25.9	41.5
			4.0	3.92	6.17	93.5	117.8	165.0	155.6	29.2	47.6
900	1 Row	0.08	0.5	0.09	0.16	71.9	79.0	112.9	85.2	16.5	23.4
			1.0	0.32	0.54	78.5	91.1	133.2	108.5	22.9	35.2
	2 Row	0.16	2.0	1.07	1.73	84.2	102.2	150.8	133.0	28.5	46.0
			4.0	3.92	6.17	88.4	110.3	163.3	152.4	32.6	54.0
1100	1 Row	0.11	0.5	0.09	0.16	69.4	75.2	110.4	82.5	17.1	24.1
			1.0	0.32	0.54	75.3	86.1	130.6	104.8	24.2	37.0
	2 Row	0.22	2.0	1.07	1.73	80.7	96.6	148.7	129.4	30.6	49.6
			4.0	3.92	6.17	84.7	104.7	161.8	149.7	35.4	59.2
1300	1 Row	0.15	0.5	0.09	0.16	67.5	72.4	108.4	80.5	17.6	24.6
			1.0	0.32	0.54	72.9	82.3	128.5	101.9	25.3	38.4
	2 Row	0.29	2.0	1.07	1.73	78.0	92.3	146.9	126.4	32.4	52.5
			4.0	3.92	6.17	81.9	100.2	160.6	147.4	37.8	63.6
1500	1 Row	0.19	0.5	0.09	0.16	66.1	70.4	106.8	78.9	18.0	25.0
			1.0	0.32	0.54	71.1	79.4	126.7	99.6	26.2	39.6
	2 Row	0.37	2.0	1.07	1.73	75.9	88.8	145.3	124.0	33.9	55.0
			4.0	3.92	6.17	79.6	96.5	159.5	145.5	39.9	67.5
1700	1 Row	0.23	0.5	0.09	0.16	65.0	68.7	105.4	77.7	18.3	25.3
			1.0	0.32	0.54	69.6	77.0	125.1	97.6	26.9	40.6
	2 Row	0.45	2.0	1.07	1.73	74.1	86.0	144.0	121.8	35.2	57.1
			4.0	3.92	6.17	77.7	93.5	158.6	143.7	41.8	70.9

MODEL SDL-WC SIZE 12: MULTI-CIRCUITING

AIRFLOW			WATER FLOW			LAT (°F)		LWT (°F)		CAPACITY (MBH)	
Rate (CFM)	Air PD (IN.W.G.)		Rate (GPM)	Water PD (FT.W.G.)		1 Row	2 Row	1 Row	2 Row	1 Row	2 Row
				1 Row	2 Row						
300	1 Row	0.01	0.5	0.04	0.04	88.4	105.4	135.6	113.4	10.9	16.4
			1.0	0.14	0.17	98.3	121.6	151.2	135.8	14.1	21.6
	2 Row	0.03	2.0	0.51	0.62	106.1	133.6	163.0	153.8	16.6	25.5
			4.0	1.90	2.22	111.5	141.1	170.6	165.6	18.4	28.0
500	1 Row	0.03	0.5	0.04	0.04	77.8	89.4	129.5	104.3	12.4	18.6
			1.0	0.14	0.17	86.0	103.8	145.6	126.1	16.8	26.4
	2 Row	0.06	2.0	0.51	0.62	93.1	116.1	158.8	146.1	20.7	33.1
			4.0	1.90	2.22	98.4	124.8	167.9	160.6	23.5	37.8
700	1 Row	0.05	0.5	0.04	0.04	72.5	81.2	125.8	99.2	13.3	19.9
			1.0	0.14	0.17	79.6	93.9	141.8	120.0	18.7	29.5
	2 Row	0.11	2.0	0.51	0.62	86.2	105.8	155.7	140.6	23.7	38.5
			4.0	1.90	2.22	91.3	114.9	165.9	156.7	27.6	45.4
900	1 Row	0.08	0.5	0.04	0.04	69.3	76.2	123.3	96.0	13.9	20.7
			1.0	0.14	0.17	75.5	87.3	139.2	116.0	19.9	31.5
	2 Row	0.16	2.0	0.51	0.62	81.5	98.4	153.6	136.8	25.8	42.3
			4.0	1.90	2.22	86.3	107.4	164.3	153.8	30.5	51.1
1100	1 Row	0.11	0.5	0.04	0.04	67.0	72.8	121.5	93.8	14.3	21.2
			1.0	0.14	0.17	72.6	82.6	137.3	113.0	20.9	32.9
	2 Row	0.22	2.0	0.51	0.62	78.1	93.0	151.8	133.7	27.5	45.3
			4.0	1.90	2.22	82.7	101.7	163.1	151.5	33.0	55.7
1300	1 Row	0.15	0.5	0.04	0.04	65.4	70.4	120.1	92.1	14.7	21.7
			1.0	0.14	0.17	70.4	79.2	135.7	110.6	21.7	34.1
	2 Row	0.29	2.0	0.51	0.62	75.5	88.9	150.4	131.3	28.9	47.7
			4.0	1.90	2.22	79.9	97.3	162.0	149.5	35.0	59.6
1500	1 Row	0.19	0.5	0.04	0.04	64.2	68.5	119.0	90.8	15.0	22.0
			1.0	0.14	0.17	68.8	76.6	134.4	108.8	22.3	35.0
	2 Row	0.37	2.0	0.51	0.62	73.5	85.6	149.2	129.3	30.1	49.7
			4.0	1.90	2.22	77.7	93.7	161.1	147.8	36.8	62.9
1700	1 Row	0.23	0.5	0.04	0.04	63.3	67.1	118.0	89.7	15.2	22.3
			1.0	0.14	0.17	67.4	74.4	133.2	107.2	22.9	35.8
	2 Row	0.45	2.0	0.51	0.62	71.9	82.9	148.1	127.5	31.2	51.5
			4.0	1.90	2.22	75.9	90.8	160.3	146.3	38.4	65.9

Data is based on 180°F entering water and 55°F entering air at sea level. See selection procedure for other conditions.

MODEL SDL-WC SIZE 14: STANDARD CIRCUITING

AIRFLOW			WATER FLOW			LAT (°F)		LWT (°F)		CAPACITY (MBH)	
Rate (CFM)	Air PD (IN.W.G.)		Rate (GPM)	Water PD (FT.W.G.)		1 Row	2 Row	1 Row	2 Row	1 Row	2 Row
				1 Row	2 Row						
800	1 Row	0.05	0.5	0.10	0.18	75.3	83.1	108.5	81.4	17.6	24.3
			1.0	0.35	0.60	83.0	97.1	130.5	105.8	24.3	36.5
	2 Row	0.09	2.0	1.15	1.89	89.6	109.6	149.3	131.7	29.9	47.3
			4.0	4.15	6.67	94.2	118.3	162.6	151.9	34.0	54.9
1000	1 Row	0.07	0.5	0.10	0.18	71.9	78.2	105.4	78.2	18.4	25.1
			1.0	0.35	0.60	78.9	90.8	127.2	101.3	25.9	38.8
	2 Row	0.13	2.0	1.15	1.89	85.0	102.7	146.7	127.3	32.5	51.7
			4.0	4.15	6.67	89.5	111.5	160.8	148.7	37.4	61.2
1200	1 Row	0.09	0.5	0.10	0.18	69.6	74.8	103.0	76.0	19.0	25.7
			1.0	0.35	0.60	75.9	86.1	124.6	97.8	27.2	40.5
	2 Row	0.18	2.0	1.15	1.89	81.7	97.5	144.5	123.7	34.7	55.2
			4.0	4.15	6.67	86.0	106.1	159.4	146.0	40.3	66.5
1400	1 Row	0.12	0.5	0.10	0.18	67.8	72.2	101.1	74.3	19.4	26.1
			1.0	0.35	0.60	73.6	82.6	122.5	95.1	28.2	41.8
	2 Row	0.23	2.0	1.15	1.89	79.0	93.3	142.7	120.8	36.5	58.1
			4.0	4.15	6.67	83.2	101.8	158.1	143.7	42.7	71.0
1600	1 Row	0.14	0.5	0.10	0.18	66.5	70.3	98.9	72.5	20.0	26.6
			1.0	0.35	0.60	72.0	80.0	119.9	92.2	29.5	43.3
	2 Row	0.29	2.0	1.15	1.89	77.3	90.4	140.4	117.5	38.7	61.4
			4.0	4.15	6.67	81.5	99.0	156.5	141.0	45.9	76.3
1800	1 Row	0.18	0.5	0.10	0.18	65.4	68.8	97.6	71.5	20.3	26.8
			1.0	0.35	0.60	70.5	77.7	118.3	90.3	30.3	44.2
	2 Row	0.35	2.0	1.15	1.89	75.6	87.6	139.0	115.3	40.1	63.6
			4.0	4.15	6.67	79.6	96.0	155.4	139.1	48.0	80.0
2000	1 Row	0.21	0.5	0.10	0.18	64.5	67.5	96.5	70.6	20.6	27.1
			1.0	0.35	0.60	69.3	75.8	116.9	88.7	31.0	45.0
	2 Row	0.42	2.0	1.15	1.89	74.1	85.2	137.7	113.4	41.4	65.5
			4.0	4.15	6.67	78.0	93.4	154.4	137.5	49.9	83.3
2200	1 Row	0.24	0.5	0.10	0.18	63.7	66.4	95.5	69.8	20.8	27.2
			1.0	0.35	0.60	68.3	74.2	115.7	87.3	31.6	45.7
	2 Row	0.49	2.0	1.15	1.89	72.9	83.2	136.5	111.7	42.6	67.2
			4.0	4.15	6.67	76.7	91.2	153.6	136.0	51.6	86.2

MODEL SDL-WC SIZE 14: MULTI-CIRCUITING

AIRFLOW			WATER FLOW			LAT (°F)		LWT (°F)		CAPACITY (MBH)	
Rate (CFM)	Air PD (IN.W.G.)		Rate (GPM)	Water PD (FT.W.G.)		1 Row	2 Row	1 Row	2 Row	1 Row	2 Row
				1 Row	2 Row						
800	1 Row	0.05	0.5	0.04	0.05	72.5	80.4	118.2	90.8	15.2	22.0
			1.0	0.14	0.18	79.9	93.4	136.0	112.3	21.6	33.3
	2 Row	0.09	2.0	0.52	0.64	86.8	106.0	151.8	134.9	27.5	44.2
			4.0	1.93	2.29	92.1	115.5	163.5	153.1	32.2	52.5
1000	1 Row	0.07	0.5	0.04	0.05	69.5	75.9	115.8	88.1	15.8	22.7
			1.0	0.14	0.18	76.1	87.4	133.4	108.5	22.8	35.1
	2 Row	0.13	2.0	0.52	0.64	82.4	99.2	149.6	131.1	29.7	47.9
			4.0	1.93	2.29	87.5	108.7	162.0	150.2	35.2	58.2
1200	1 Row	0.09	0.5	0.04	0.05	67.5	72.8	114.0	86.1	16.2	23.2
			1.0	0.14	0.18	73.3	83.1	131.4	105.7	23.8	36.6
	2 Row	0.18	2.0	0.52	0.64	79.2	94.2	147.8	128.1	31.4	50.9
			4.0	1.93	2.29	84.0	103.4	160.7	147.8	37.7	62.9
1400	1 Row	0.12	0.5	0.04	0.05	65.9	70.5	112.6	84.5	16.6	23.6
			1.0	0.14	0.18	71.2	79.8	129.8	103.4	24.6	37.7
	2 Row	0.23	2.0	0.52	0.64	76.7	90.2	146.3	125.6	32.9	53.3
			4.0	1.93	2.29	81.3	99.1	159.5	145.8	39.9	66.9
1600	1 Row	0.14	0.5	0.04	0.05	64.8	68.8	111.1	83.0	16.9	23.9
			1.0	0.14	0.18	69.7	77.4	127.9	101.1	25.5	38.9
	2 Row	0.29	2.0	0.52	0.64	75.0	87.4	144.5	122.9	34.7	56.1
			4.0	1.93	2.29	79.6	96.3	158.1	143.4	42.6	71.6
1800	1 Row	0.18	0.5	0.04	0.05	63.8	67.4	110.2	82.0	17.2	24.2
			1.0	0.14	0.18	68.4	75.3	126.7	99.5	26.1	39.6
	2 Row	0.35	2.0	0.52	0.64	73.4	84.7	143.4	121.0	35.8	57.9
			4.0	1.93	2.29	77.8	93.3	157.2	141.8	44.4	74.8
2000	1 Row	0.21	0.5	0.04	0.05	63.0	66.3	109.3	81.2	17.4	24.4
			1.0	0.14	0.18	67.3	73.6	125.7	98.2	26.6	40.3
	2 Row	0.42	2.0	0.52	0.64	72.0	82.4	142.3	119.4	36.8	59.5
			4.0	1.93	2.29	76.2	90.8	156.4	140.3	46.0	77.6
2200	1 Row	0.24	0.5	0.04	0.05	62.4	65.3	108.6	80.5	17.6	24.6
			1.0	0.14	0.18	66.4	72.1	124.7	97.0	27.1	40.9
	2 Row	0.49	2.0	0.52	0.64	70.8	80.5	141.4	118.0	37.7	60.9
			4.0	1.93	2.29	74.9	88.6	155.7	139.0	47.4	80.2

Data is based on 180°F entering water and 55°F entering air at sea level. See selection procedure for other conditions.

HOT WATER COIL DATA

MODEL SDL-WC SIZE 16: STANDARD CIRCUITING

AIRFLOW			WATER FLOW			LAT (°F)		LWT (°F)		CAPACITY (MBH)	
Rate (CFM)	Air PD (IN.W.G.)		Rate (GPM)	Water PD (FT.W.G.)		1 Row	2 Row	1 Row	2 Row	1 Row	2 Row
				1 Row	2 Row						
1600	1 Row	0.10	0.5	0.11	0.12	67.4	70.9	93.0	68.3	21.4	27.6
			1.0	0.37	0.66	73.4	81.4	114.9	87.1	32.0	45.8
	2 Row	0.21	2.0	1.23	2.07	79.3	92.9	137.0	113.2	42.1	65.6
			4.0	4.42	7.25	83.8	102.2	154.4	138.2	50.0	81.9
1800	1 Row	0.12	0.5	0.11	0.12	66.2	69.3	91.6	67.3	21.8	27.9
			1.0	0.37	0.66	71.8	79.0	113.2	85.3	32.8	46.7
	2 Row	0.25	2.0	1.23	2.07	77.4	89.8	135.4	110.9	43.7	67.9
			4.0	4.42	7.25	81.8	99.0	153.2	136.2	52.2	85.8
2000	1 Row	0.15	0.5	0.11	0.12	65.2	68.0	90.4	66.5	22.1	28.1
			1.0	0.37	0.66	70.5	76.9	111.7	83.7	33.6	47.5
	2 Row	0.30	2.0	1.23	2.07	75.8	87.3	134.0	108.9	45.1	69.9
			4.0	4.42	7.25	80.1	96.3	152.2	134.4	54.3	89.4
2200	1 Row	0.17	0.5	0.11	0.12	64.4	66.9	89.4	65.8	22.3	28.2
			1.0	0.37	0.66	69.4	75.2	110.4	82.3	34.2	48.2
	2 Row	0.34	2.0	1.23	2.07	74.4	85.1	132.7	107.1	46.3	71.7
			4.0	4.42	7.25	78.6	93.8	151.2	132.8	56.2	92.6
2400	1 Row	0.20	0.5	0.11	0.12	63.7	65.9	88.5	65.2	22.6	28.4
			1.0	0.37	0.66	68.4	73.8	109.2	81.1	34.8	48.8
	2 Row	0.40	2.0	1.23	2.07	73.2	83.2	131.6	105.5	47.4	73.3
			4.0	4.42	7.25	77.3	91.7	150.4	131.3	57.9	95.5
2600	1 Row	0.23	0.5	0.11	0.12	63.1	65.1	87.7	64.7	22.8	28.5
			1.0	0.37	0.66	67.5	72.5	108.2	80.1	35.3	49.3
	2 Row	0.45	2.0	1.23	2.07	72.2	81.5	130.5	104.1	48.5	74.7
			4.0	4.42	7.25	76.1	89.8	149.6	129.9	59.5	98.1
2800	1 Row	0.25	0.5	0.11	0.12	62.6	64.4	87.0	64.3	22.9	28.6
			1.0	0.37	0.66	66.8	71.4	107.2	79.2	35.8	49.8
	2 Row	0.51	2.0	1.23	2.07	71.3	80.1	129.6	102.8	49.4	76.0
			4.0	4.42	7.25	75.1	88.2	148.8	128.7	60.9	100.6
3000	1 Row	0.28	0.5	0.11	0.12	62.1	63.8	86.3	63.9	23.1	28.7
			1.0	0.37	0.66	66.1	70.5	106.4	78.3	36.2	50.2
	2 Row	0.57	2.0	1.23	2.07	70.5	78.8	128.7	101.6	50.3	77.2
			4.0	4.42	7.25	74.2	86.6	148.1	127.6	62.3	102.8

MODEL SDL-WC SIZE 16: MULTI-CIRCUITING

AIRFLOW			WATER FLOW			LAT (°F)		LWT (°F)		CAPACITY (MBH)	
Rate (CFM)	Air PD (IN.W.G.)		Rate (GPM)	Water PD (FT.W.G.)		1 Row	2 Row	1 Row	2 Row	1 Row	2 Row
				1 Row	2 Row						
1600	1 Row	0.10	0.5	0.04	0.05	65.7	69.7	104.5	77.2	18.6	25.4
			1.0	0.33	0.42	71.2	79.1	122.6	95.2	28.1	41.8
	2 Row	0.21	2.0	0.54	0.68	77.0	90.0	141.0	118.3	38.2	60.6
			4.0	1.97	2.38	82.0	99.7	156.0	140.4	46.8	77.4
1800	1 Row	0.12	0.5	0.04	0.05	64.7	68.2	103.4	76.2	18.8	25.6
			1.0	0.33	0.42	69.8	76.8	121.3	93.6	28.8	42.6
	2 Row	0.25	2.0	0.54	0.68	75.2	87.1	139.7	116.3	39.5	62.6
			4.0	1.97	2.38	80.0	96.5	155.0	138.7	48.7	80.9
2000	1 Row	0.15	0.5	0.04	0.05	63.8	66.9	102.5	75.4	19.1	25.9
			1.0	0.33	0.42	68.6	75.0	120.2	92.2	29.4	43.3
	2 Row	0.30	2.0	0.54	0.68	73.7	84.7	138.5	114.6	40.6	64.3
			4.0	1.97	2.38	78.3	93.8	154.1	137.1	50.5	84.0
2200	1 Row	0.17	0.5	0.04	0.05	63.1	65.9	101.7	74.7	19.3	26.0
			1.0	0.33	0.42	67.5	73.4	119.1	91.0	29.9	43.9
	2 Row	0.34	2.0	0.54	0.68	72.5	82.6	137.5	113.0	41.6	65.8
			4.0	1.97	2.38	76.9	91.4	153.3	135.7	52.1	86.8
2400	1 Row	0.20	0.5	0.04	0.05	62.5	65.1	101.0	74.1	19.4	26.2
			1.0	0.33	0.42	66.7	72.1	118.2	90.0	30.3	44.4
	2 Row	0.40	2.0	0.54	0.68	71.4	80.8	136.6	111.7	42.5	67.2
			4.0	1.97	2.38	75.6	89.4	152.6	134.4	53.6	89.4
2600	1 Row	0.23	0.5	0.04	0.05	62.0	64.3	100.4	73.5	19.6	26.3
			1.0	0.33	0.42	65.9	70.9	117.4	89.1	30.7	44.8
	2 Row	0.45	2.0	0.54	0.68	70.4	79.3	135.7	110.5	43.3	68.4
			4.0	1.97	2.38	74.5	87.6	151.9	133.2	54.9	91.7
2800	1 Row	0.25	0.5	0.04	0.05	61.5	63.7	99.8	73.1	19.7	26.4
			1.0	0.33	0.42	65.2	69.9	116.7	88.3	31.1	45.2
	2 Row	0.51	2.0	0.54	0.68	69.5	77.9	135.0	109.4	44.1	69.4
			4.0	1.97	2.38	73.5	85.9	151.2	132.1	56.2	93.8
3000	1 Row	0.28	0.5	0.04	0.05	61.1	63.2	99.3	72.7	19.9	26.5
			1.0	0.33	0.42	64.7	69.0	116.0	87.5	31.4	45.6
	2 Row	0.57	2.0	0.54	0.68	68.8	76.7	134.3	108.4	44.8	70.4
			4.0	1.97	2.38	72.7	84.5	150.6	131.1	57.4	95.8

Data is based on 180°F entering water and 55°F entering air at sea level. See selection procedure for other conditions.

GUIDE SPECIFICATIONS

GENERAL

Furnish and install ENVIRO-TEC Model SDL Single Duct Low Height Variable Air Volume Terminal Units of the sizes and capacities as scheduled. Terminals shall be certified by AHRI and bear the AHRI 880 seal.

CONSTRUCTION

Terminals shall be constructed of not less than 20 gauge galvanized steel, able to withstand a 125 hour salt spray test per ASTM B-117. Stainless steel casings, or galvanized steel casings with a baked enamel paint finish, may be used as an alternative. The terminal casing shall be mechanically assembled (spot-welded casings are not acceptable).

Casing shall be internally lined with 1/2" thick fiberglass insulation, rated for a maximum air velocity of 5000 f.p.m. Maximum thermal conductivity shall be .24 (BTU • in) / (hr • ft² • °F). Insulation must meet all requirements of ASTM C1071 (including C665), UL 181 for erosion, and carry a 25/50 rating for flame spread/smoke developed per ASTM E-84, UL 723 and NFPA 90A. Raw insulation edges on the discharge of the unit must be covered with metal liner to eliminate flaking of insulation during field duct connections. Simple "buttering" of raw edges with an approved sealant is not acceptable.

All appurtenances including control assemblies, control enclosures, hot water heating coils, and electric heating coils shall not extend beyond the top and bottom of the unit casing. At an inlet velocity of 2000 f.p.m., the static pressure drop across the basic terminal or basic terminal with a sound attenuator shall not exceed 0.02" W.G. for all unit sizes.

PRIMARY AIR VALVE

Rectangular shaped primary air valves shall consist of minimum 18 gauge galvanized steel. Cylindrically shaped primary air valves shall consist of minimum 22 gauge galvanized steel and include embossment rings for rigidity. The damper blade shall be connected to a solid shaft by means of an integral molded sleeve which does not require screw or bolt fasteners. The shaft shall be manufactured of a low thermal conducting composite material, and include a molded damper position indicator visible from the exterior of the unit. The damper shall pivot in nylon bearings. The damper actuator shall be mounted on the exterior of the terminal for ease of service. The valve assembly shall include internal mechanical stops for both full open and closed positions. The damper blade seal shall be

secured without use of adhesives. The air valve leakage shall not exceed 2% of maximum inlet rated airflow at 3" W.G. inlet pressure.

PRIMARY AIRFLOW SENSOR

Differential pressure airflow sensor shall traverse the duct along two perpendicular diameters. Single axis sensor shall not be acceptable for duct diameters 6" or larger. A minimum of 12 total pressure sensing points shall be utilized. The total pressure inputs shall be averaged using a pressure chamber located at the center of the sensor. A sensor that delivers the differential pressure signal from one end of the sensor is not acceptable. The sensor shall output an amplified differential pressure signal that is at least 2.5 times the equivalent velocity pressure signal obtained from a conventional pitot tube. The sensor shall develop a differential pressure of 0.03" w.g. at an air velocity of < 450 FPM. Documentation shall be submitted which substantiates this requirement. Balancing taps and airflow calibration charts shall be provided for field airflow measurements.

HOT WATER COIL

Single duct terminal shall include an integral hot water coil where indicated on the plans. The coil shall be manufactured by the terminal unit manufacturer and shall have a minimum 22 gauge galvanized sheet metal casing. Stainless steel casings, or galvanized steel casings with a baked enamel paint finish, may be used as an alternative. Coil to be constructed of pure aluminum fins with full fin collars to assure accurate fin spacing and maximum tube contact. Fins shall be spaced with a minimum of 10 per inch and mechanically fixed to seamless copper tubes for maximum heat transfer.

Each coil shall be hydrostatically tested at 450 PSIG under water, and rated for a maximum 300 PSIG working pressure at 200°F.

ELECTRIC HEATERS

Terminal shall include an integral electric heater where indicated on the plans. Heater shall be manufactured by the terminal unit manufacturer, and shall be cETL listed as an assembly. Listing for heater only is not acceptable. The heater cabinet shall be constructed of not less than 20 gauge galvanized steel. Stainless steel cabinets, or galvanized steel casings with a baked enamel paint finish, may be used as an alternative. Heater shall have a hinged access panel for entry to the controls.

GUIDE SPECIFICATIONS

A power disconnect shall be furnished to render the heater non-operational. Heater shall be furnished with all controls necessary for safe operation and full compliance with UL 1996 and National Electric Code requirements.

Heater shall have a single point electrical connection. It shall include a primary disc-type automatic reset high temperature limit, secondary high limit(s), airflow switch, Ni-Chrome elements, and fusing per UL and NEC. Heater shall have complete wiring diagram and label indicating power requirement and kW output.

SOUND ATTENUATOR

Sound attenuator shall be provided where scheduled to meet acoustical performance requirements. Unit length shall be minimum 41 inches. Attenuator casing shall be constructed as specified for the base terminal.

OPTIONS

Foil Faced Insulation

Insulation shall be covered with scrim backed foil facing. All insulation edges shall be covered with foil or metal nosing. In addition to the basic requirements, insulation shall meet ASTM C1136 for insulation facings, and ASTM C1338 for mold, mildew and humidity resistance.

Elastomeric Closed Cell Foam Insulation

Provide Elastomeric Closed Cell Foam Insulation in lieu of standard. Insulation shall conform to UL 181 for erosion and NFPA 90A for fire, smoke and melting, and comply with a 25/50 Flame Spread and Smoke Developed Index per ASTM E-84 or UL 723. Additionally, insulation shall comply with Antimicrobial Performance Rating of 0, no observed growth, per ASTM G-21. Polyethylene insulation is not acceptable.

Double Wall Construction

The terminal casing shall be double wall construction using a 22 gauge galvanized metal liner covering all insulation.

Piping Packages

Provide a standard factory assembled non-insulated valve piping package to consist of a 2-way, on/off, motorized electric control valve, unions, and two ball isolation valves. Control valves are piped normally closed to the coil. Maximum entering water temperature on the control valve shall be 200°F. Maximum operating pressure shall be 450 PSIG.

Option: Provide 24V floating point modulating control valve (fail-in-place) in lieu of standard 2-position control valve with factory assembled valve piping package.

Option: Provide 0-10V proportional control valve (fail-in-place) 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: Normally open in lieu of Normally Closed on/off valves.

Option: Provide y-strainers, and/or pressure-temperature ports for each piping package.

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

CONTROLS

DDC for BACnet

Each VAV terminal unit shall be bundled with a digital controller. The controller shall be compatible with a MS/TP (Master-Slave/Token-Passing) BACnet system network. A unique network address and a BACnet site address shall be assigned to each controller, and referenced to the tagging system used on the drawings and in the schedules provided by the Project Engineer. All controllers shall be factory mounted and wired, with the controller's hardware address set, and all of the individual terminal's data pre-loaded into the controller. The terminal's data shall include, but not be limited to Max CFM, Min CFM, Heating CFM, and terminal K factor. Heating system operating data shall also be factory installed for all terminals with heat. Communications with the digital controller shall be accomplished through the MS/TP BACnet network or through a Bluetooth connector. The digital controller shall have hardware input and output connections to facilitate the specified sequence of operation in either the network mode, or on a stand-alone basis. The terminal unit manufacturer shall coordinate, where necessary, with the Temperature Control Contractor.

Pneumatic Controls

Units shall be controlled by a pneumatic differential pressure reset volume controller. Controller shall be capable of pressure independent operation down to 0.03 inches W.G. differential pressure and shall be factory set to the specified airflow (CFM). Controller shall not exceed 11.5 scim (Standard Cubic Inches per Minute) air consumption @ 20 PSIG. Unit primary air valve shall modulate in response to the room mounted thermostat and shall maintain airflow in relation to thermostat pressure regardless of system static pressure changes. An airflow (CFM) curve shall be affixed to the terminal unit expressing differential pressure vs. CFM. Pressure taps shall be provided for field use and ease of balancing. Terminal unit manufacturer shall supply and manufacture a 5 to 10 PSIG pneumatic actuator capable of a minimum of 45 in. lbs. of torque. Actual sequence of operation is shown on the contract drawings. Terminal unit manufacturer shall coordinate, where necessary, with the Temperature Control Contractor.

NOTES

NOTES

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