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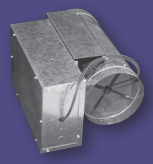
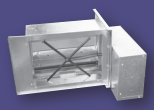
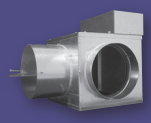


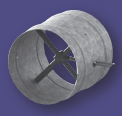
RVE
This retrofit terminal unit is designed to convert high pressure mechanical constant volume systems to low pressure variable volume systems and also used in exhaust, non reheat, or other supply applications requiring a round to round duct connections.



SVE
This slide-in, retrofit terminal unit is designed to convert constant volume or booster coil systems into modern, energy efficient variable air volume systems with low installation costs.



KLB
This unit is designed to maintain optimum occupant comfort by varying the amount of cold air from the constant volume air handler and bypassing the excess cooling air into the ceiling plenum or return air duct.



KMS
The Krueger Measuring Station (KMS) is designed to accurately measure airflow with a linear or four-quadrant multi-point differential pressure sensor in round duct applications.

Introduction: SVE

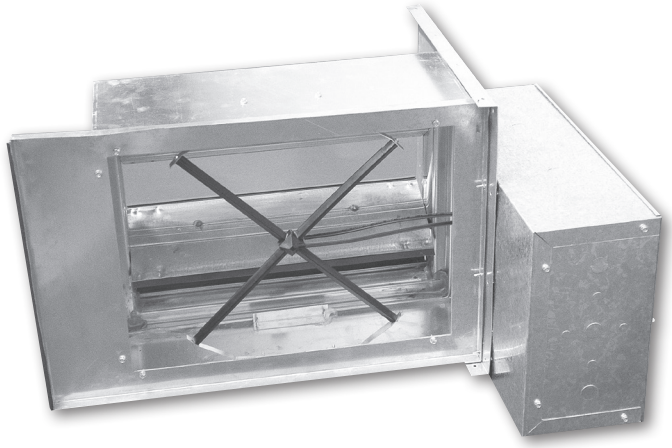
Krueger's Slide-In Retrofit Terminal Units convert constant volume or booster coil systems into modern, energy efficient variable air volume systems.

Slide-in retrofit terminal units are designed to transform inefficient constant volume systems to present day variable air volume systems with low installation costs. The resulting performance of a system incorporating the Krueger SVE series terminal units approaches that of a VAV system using LMHS single duct terminal units.

With the simple slide-in installation method, conversion costs are minimized. Simply cut a rectangular hole in the side of the duct, cut away the insulation (if present), slide the unit into the duct, and screw the mounting plate to the side of the duct.

MODEL
SVE - Slide-in, Retrofit Terminal Unit

FEATURES
- Available in many sizes; mounts in almost any square or rectangular duct.
- Gasketing around the orifice plate and mounting plate give the unit a tight seal inside the existing duct.
- Multi-point center averaging sensor amplifies flow signal for best control of low flow rates; center averaging feature provides signal accuracy, regardless of inlet duct configuration.
- Multi-blade damper is constructed of heavy gage galvanized steel to prevent vibration under high pressure conditions.
- Elastomer seals on edges of damper blades allow low leakage during full shut off.
- Pneumatic, analog, and direct digital controls available.
- Formed flanges provide added duct stiffness at insertion point.
- Casing may be configured to mount on either right or left side of existing duct.
- Field convertible linkage (pneumatic controls) allow NO/NC changeover without actuator removal.



SVE

SVE Unit Capacities

SVE, UNIT CAPACITIES

Inlet Size	Airflow CFM [L/s]	
	Max.	Min.*
A	456 [215]	79 [37]
B	656 [310]	114 [54]
C	875 [413]	152 [72]
D	1458 [688]	253 [119]
E	2042 [964]	354 [167]
F	1969 [929]	341 [161]
G	2188 [1033]	379 [179]
H	3281 [1548]	568 [268]
J	3938 [1859]	682 [322]
K	5104 [2409]	884 [417]
L	6563 [3097]	1137 [537]
M	6417 [3028]	1111 [524]
N	7875 [3717]	1364 [644]
P	10938 [5162]	1894 [894]
R	14583 [6882]	2526 [1192]

** Value is based on a signal of 0.03" WG differential pressure of the inlet sensor. Minimum may be 0.*

SVE Product Description

CASING
- All SVE unit casing components are constructed of 22 gage galvanized steel.

INLET
- All inlets are square or rectangular.

DAMPER ASSEMBLY
- All unit sizes utilize a multi-blade control damper.
- Damper blade incorporates a flexible gasket for tight airflow shutoff.

AIRFLOW SENSOR
- All units are equipped with a factory installed airflow sensor device.
- The K4 LineaCross is a four quadrant center averaging airflow sensor.
- Balancing taps are provided to allow for easy airflow verification.

CONTROLS
- Pneumatic, electric, analog, or factory mounted direct digital control types are available. A “no control” unit is also available for field mounting of direct digital controls.

CONTROL TRANSFORMER
- Electronic controlled units are available with a factory supplied and wired optional 24 volt control transformer, mounted inside the control enclosure.

LABELS
- Label information adhered to each unit includes model name, unit size, configuration code, airflow (CFM), balancing chart and tagging data.

PACKAGING
- Units are palletized. Each pallet of units is banded and stretch wrapped with cellophane.

SVE Selection Guidelines

Determine which unit size fits your particular retrofit application. SVE units with pneumatic or analog controls are mounted to the unit and factory calibrated.

Determine the required maximum and minimum airflow required for the zone. Select the SVE unit rated for airflows compatible with the required airflows. Keep in mind that the retrofit will add the ability to control airflow between maximum and minimum flow setpoints. These setpoints are field adjustable.

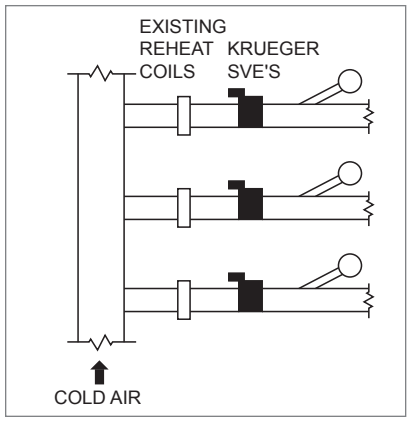
Select the SVE control package to be used for the project. Determine whether the retrofit unit is to be controlled by pneumatic, electric, analog, or factory mounted direct digital control.

Select the appropriate control scheme from the control’s section. The SVE retrofit terminal can be shipped with DDC controls by most DDC manufacturers. As an option, Krueger can provide a factory mounted 24 volt actuator compatible with most DDC control offerings.

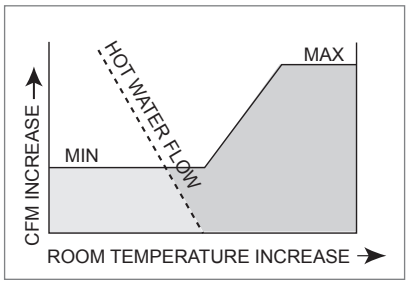
SVE Application Information

LOW PRESSURE, CONSTANT VOLUME BOOSTER COIL REHEAT SYSTEM

Cold air from the central air handler is distributed through the original duct system. The SVE retrofit terminal units convert the system to variable air volume operation.



Each SVE terminal unit is signaled by a direct acting thermostat. In the pneumatic example shown in the diagram, the pressure independent minimum airflow is set at a thermostat output pressure of 8 psi or less, while the maximum is set at 13 psi or greater.

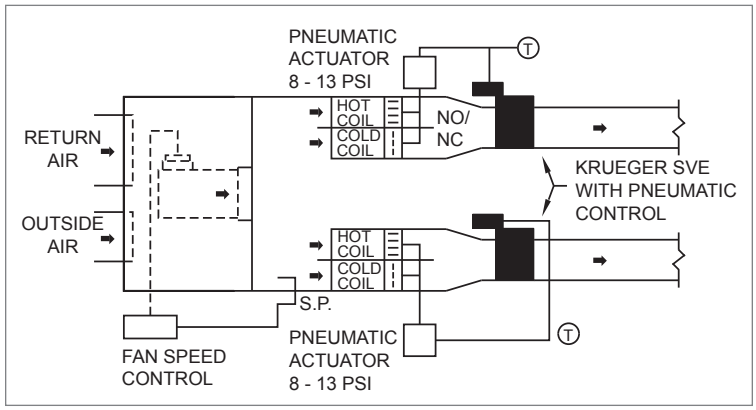


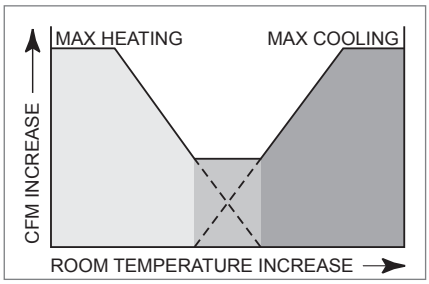
The existing reheat coil in each zone is actuated on a fall in room temperature as the thermostat output decreases from 8 to 3 psi.

MULTI-ZONE SYSTEM

Hot or cold air from the central multi-zone air handler is distributed through the original zone ducts. The SVE retrofit terminal units convert the system to variable air volume operation.

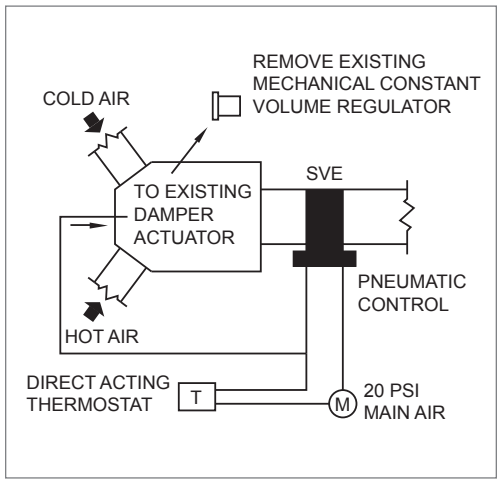
The multi-zone dampers provide a mixed airflow temperature of air at minimum airflow. The SVE valves provide VAV and pressure independent flow. Very little work is required to convert a multi-zone pressure dependent set of zones to an energy saving series of VAV zones. Each zone now has fixed maximum and minimum airflow without system hunting.



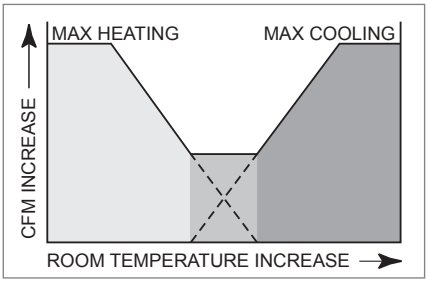


DUAL DUCT SYSTEM

Hot and cold air from the central air handler is distributed through the original supply ducts and terminal units. The SVE retrofit terminal units convert the system to variable air volume operation.



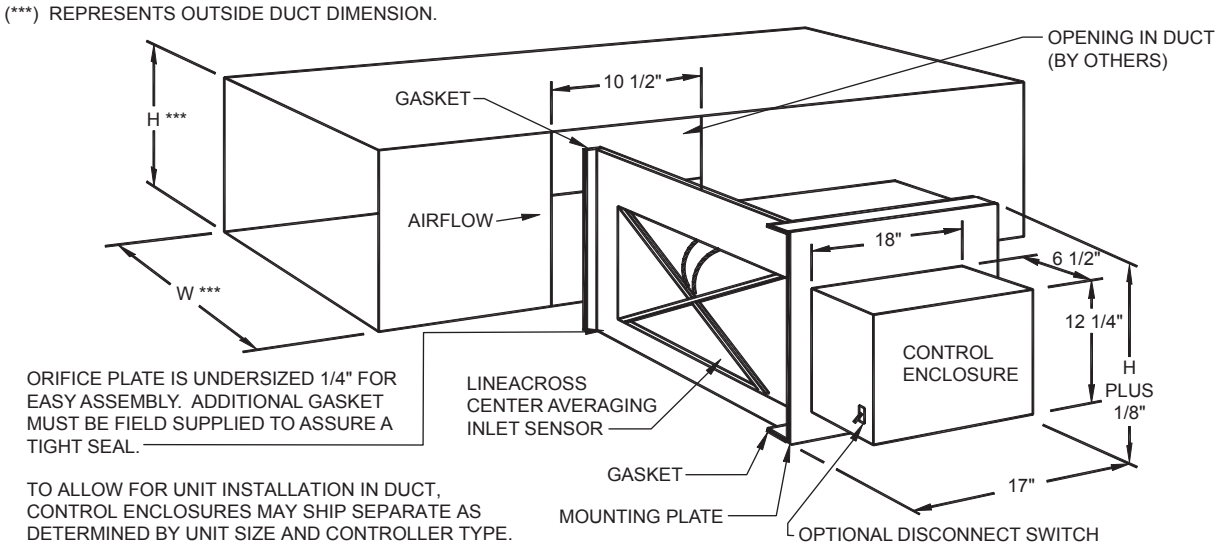
The mechanical constant volume regulator is removed from each existing terminal unit, while a SVE is installed in the discharge duct. A direct acting thermostat controls both the SVE and the modulating splitter damper in the existing terminal unit.



On a rise in room temperature, the SVE reduces the hot airflow. At the minimum airflow setting, the damper in the existing unit, which in this example, has an 8 - 13 psi actuator, begins to modulate, and mixing occurs. A further temperature rise increases the cold airflow to the maximum. Since the a total air volume is reduced, the main air handler fan may need to be slowed down.

SVE Unit with Electronic Controls Dimensional Information

SVE WITH ELECTRONIC CONTROLS, ISOMETRIC VIEW



SVE UNIT WITH ELECTRONIC CONTROLS, DIMENSIONAL DETAILS

Unit Size	Damper Size	Max. CFM*	Min. CFM**	Available Duct Sizes	
				Width (W)	Height (H)
A	5”x5”	456	79	5, 6, 8, 10, 12	5
				6, 8, 10, 12	6
				8, 10, 12	8
B	6”x6”	656	114	6, 8, 10, 12, 14	6
				8, 10, 12, 14	8
				10, 12, 14	10
C	8”x6”	875	152	8, 10, 12, 14, 16	6, 8
				10, 12, 14, 16	10
D	10”x8”	1458	253	10, 12, 14, 16, 18	8, 10
				12, 14, 16, 18	12
E	14”x8”	2042	354	14, 16, 18, 20, 22, 24	8, 10, 12
F	18”x6”	1969	341	18, 20, 22, 24, 26	6, 8, 10
G	12”x10”	2188	379	12, 14, 16, 18, 20, 22	10, 12
				14, 16, 18, 20, 22	14
H	18”x10”	3281	568	18, 20, 22, 24, 26, 28, 30	10, 12, 14
J	18”x12”	3938	682	18, 20, 22, 24, 26, 28	12, 14, 16
K	20”x14”	5104	884	20, 22, 24, 26, 28, 30	14, 16, 18
L	30”x12”	6563	1137	30, 32, 34, 36	12, 14, 16
M	22”x16”	6417	1111	22, 24, 26, 28, 30, 32, 34, 36	16, 18, 20
N	24”x18”	7875	1364	24, 26, 28, 30, 32, 34, 36	18, 20, 24, 26
P	30”x20”	10938	1894	30, 32, 34, 36, 38, 40, 42, 44, 46	20, 24, 26
R	40”x20”	14583	2526	40, 42, 44, 46, 48, 50, 52	20, 24, 26

* *Max CFM value is based on a 1” WG differential pressure signal from the inlet airflow sensor.*

** *Min CFM value is based on a .03” WG differential pressure signal from the inlet airflow sensor. Minimum may also be 0. To operate the a unit below Min CFM value shown above, the DDC Controller must be able to accurately read below 0.03” WG.*

SVE with Electronic Controls, Features & Options

STANDARD FEATURES

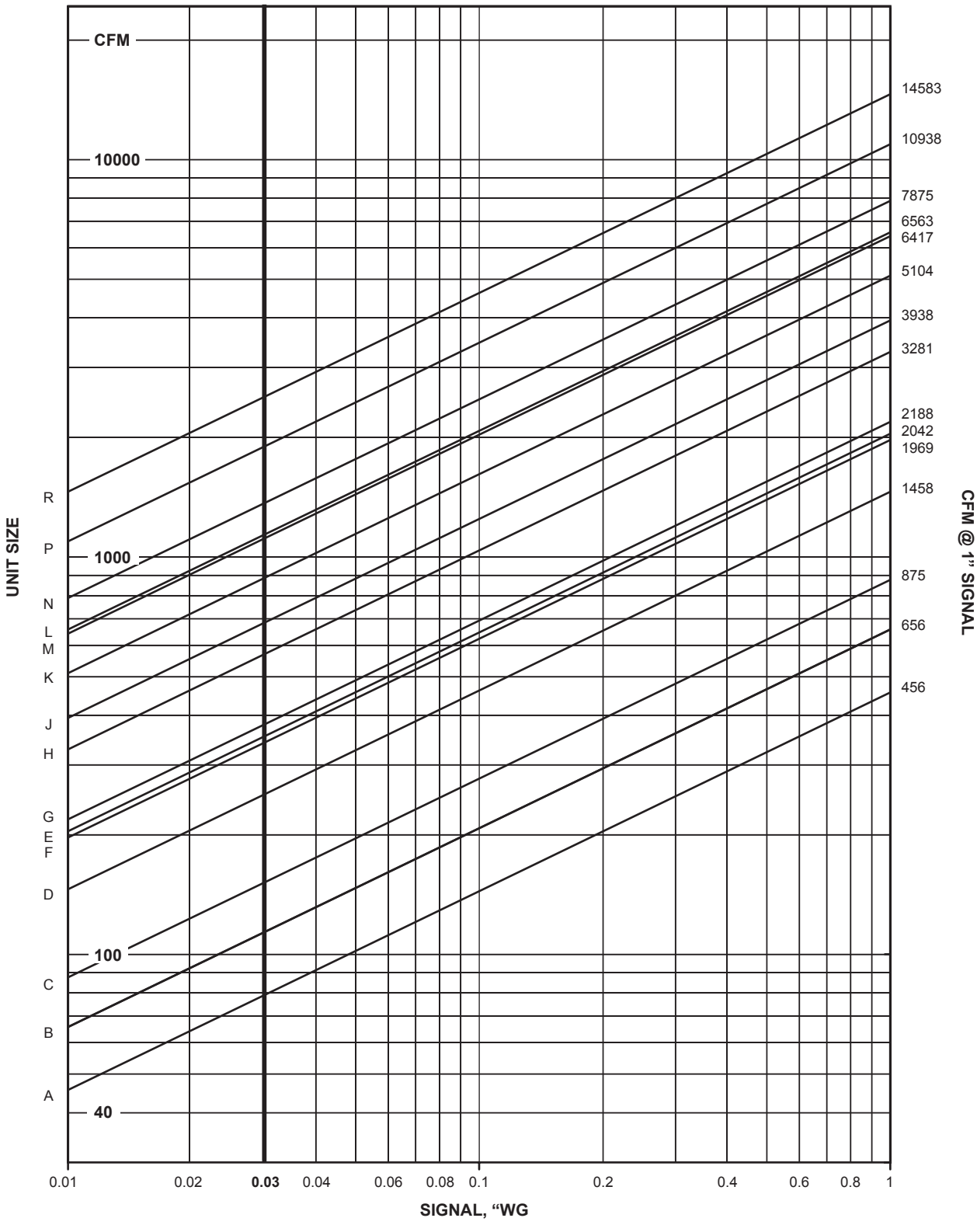
- 22 Gage galvanized steel casing construction.
- K4 LineaCross center averaging airflow sensor.
- Variety of pneumatic, electric, analog, and factory mounted direct digital control packages for pressure dependent and pressure independent systems.
- ETL Listed - Adherence to UL 429 for electrically operated valves for units with electronic controls.

OPTIONAL FEATURES

- Toggle disconnect switch for electric/electronic controls.
- Transformer for electric/electronic controls.
- Thermostat for pneumatic and electric controls.

SVE Reference Chart

SENSOR SIGNAL VS. CFM (BY UNIT SIZE): SVE



NOTE: CFM = $K\sqrt{\Delta P}$

SVE Performance Data

SVE, DISCHARGE SOUND DATA

Inlet Size	Flow Rate		Min Δ Ps		0.75" Δ Ps							1.5" Δ Ps							2.5" Δ Ps						
					Octave Band Sound Power, Lw						Lp	Octave Band Sound Power, Lw						Lp	Octave Band Sound Power, Lw						Lp
	CFM	(L/s)	"WG	(Pa)	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
A	75	(35)	0.057	(14.10)	72	57	47	36	39	28	**30**	80	68	59	45	49	37	**40**	86	75	67	51	56	43	**47**
	155	(73)	0.242	(60.22)	74	56	48	39	40	30	**33**	82	67	60	48	50	39	**43**	88	74	68	55	58	45	**50**
	235	(111)	0.556	(138.43)	76	56	49	41	41	32	**34**	83	66	60	50	51	40	**41**	89	74	69	57	59	46	**48**
	315	(149)	1.000	(248.72)	CFM Not Available*							84	66	61	52	52	41	**42**	90	74	69	59	59	47	**49**
B	114	(54)	0.058	(14.46)	71	56	49	35	39	28	**28**	78	66	62	44	49	36	**38**	84	74	71	51	56	43	**45**
	225	(106)	0.226	(56.31)	73	55	49	39	40	30	**31**	81	66	62	48	50	38	**41**	87	74	71	55	58	45	**48**
	350	(165)	0.548	(136.26)	74	55	49	41	41	31	**29**	82	65	62	50	51	40	**39**	88	73	71	57	59	46	**47**
	473	(223)	1.000	(248.86)	CFM Not Available*							83	65	62	52	52	40	**40**	89	73	71	59	59	47	**48**
C	152	(72)	0.037	(9.31)	71	56	50	36	40	28	**28**	78	67	62	45	50	37	**38**	84	74	72	51	57	43	**45**
	350	(165)	0.198	(49.35)	74	55	50	40	41	31	**28**	81	66	62	49	51	39	**38**	87	73	71	56	58	45	**45**
	575	(271)	0.535	(133.20)	75	54	50	43	42	32	**30**	83	65	62	52	52	40	**40**	88	73	71	58	59	47	**47**
	786	(371)	1.000	(248.90)	CFM Not Available*							84	65	62	53	52	41	**39**	89	72	71	60	60	48	**46**
D	253	(119)	0.079	(19.60)	67	53	46	32	37	25	**-**	75	64	60	41	47	34	**33**	81	72	69	48	55	41	**41**
	475	(224)	0.278	(69.08)	70	53	48	37	39	28	**24**	78	64	61	46	49	37	**34**	84	73	71	53	57	44	**42**
	675	(319)	0.561	(139.50)	72	53	48	40	40	30	**26**	80	65	62	49	51	39	**37**	86	73	71	56	58	46	**44**
	902	(426)	1.001	(249.11)	CFM Not Available*							82	65	62	51	52	40	**36**	88	73	72	58	60	47	**44**
E	354	(167)	0.071	(17.67)	68	55	49	35	39	28	**21**	76	65	61	43	49	36	**34**	81	73	70	49	56	42	**41**
	675	(319)	0.258	(64.26)	71	55	50	39	41	30	**25**	79	65	62	48	51	39	**35**	84	73	71	54	58	45	**41**
	1000	(472)	0.567	(141.03)	73	55	51	42	43	32	**25**	81	65	63	51	52	40	**34**	86	73	72	57	59	46	**41**
	1328	(627)	1.000	(248.73)	CFM Not Available*							82	65	63	53	53	41	**36**	87	73	72	59	60	47	**43**
F	341	(161)	0.072	(17.95)	68	54	48	34	38	27	**20**	75	65	61	43	48	36	**34**	81	72	70	49	55	42	**41**
	650	(307)	0.262	(65.23)	71	55	49	38	41	30	**25**	79	65	62	47	50	38	**34**	84	73	71	54	57	44	**42**
	950	(448)	0.560	(139.35)	73	55	50	41	42	31	**25**	81	65	62	50	52	40	**34**	86	73	72	56	59	46	**42**
	1270	(599)	1.001	(249.03)	CFM Not Available*							82	65	63	52	52	41	**36**	88	73	72	58	60	47	**43**
G	379	(179)	0.070	(17.35)	66	53	47	32	37	26	**-**	74	64	60	41	47	34	**28**	79	72	69	48	54	41	**35**
	725	(342)	0.255	(63.50)	70	54	49	38	40	29	**21**	78	65	61	47	50	38	**31**	83	72	71	53	57	44	**38**
	1075	(507)	0.561	(139.60)	72	54	50	41	42	31	**24**	80	65	62	50	52	40	**34**	86	73	72	57	59	46	**41**
	1435	(677)	1.000	(248.76)	CFM Not Available*							82	65	63	53	53	41	**36**	87	73	72	59	60	48	**43**
H	568	(268)	0.055	(13.77)	69	56	51	37	41	29	**22**	75	65	62	44	50	37	**30**	80	72	70	50	56	42	**37**
	1175	(555)	0.237	(58.95)	72	57	52	41	43	32	**24**	79	66	63	49	52	40	**32**	84	73	72	55	58	45	**39**
	1775	(838)	0.541	(134.52)	74	57	53	44	45	34	**26**	81	66	64	52	53	41	**35**	86	73	73	57	59	47	**41**
	2414	(1139)	1.000	(248.81)	CFM Not Available*							83	66	65	54	54	43	**37**	88	73	73	59	60	48	**43**
J	682	(322)	0.048	(11.88)	69	57	52	37	42	29	**22**	75	66	62	44	49	36	**30**	80	72	70	49	55	42	**36**
	1475	(696)	0.223	(55.58)	73	58	54	43	45	32	**25**	79	67	64	50	53	40	**33**	84	73	72	55	58	45	**39**
	2300	(1085)	0.543	(135.13)	76	59	56	46	47	35	**28**	82	67	66	53	55	42	**36**	86	73	73	58	60	47	**42**
	3121	(1473)	1.000	(248.82)	CFM Not Available*							84	67	67	55	56	43	**38**	88	73	74	60	61	49	**44**
K	884	(417)	0.032	(8.02)	71	59	54	40	45	29	**22**	77	66	62	47	53	36	**29**	81	71	69	52	58	41	**34**
	2225	(1050)	0.204	(50.83)	75	61	57	44	46	34	**28**	81	68	66	51	53	41	**35**	85	73	72	56	59	46	**40**
	3550	(1675)	0.520	(129.38)	77	62	59	46	46	37	**30**	83	69	67	53	54	44	**38**	87	74	74	58	59	49	**43**
	4923	(2323)	1.000	(248.82)	CFM Not Available*							85	69	69	54	54	46	**40**	89	75	75	59	59	51	**45**
L	1137	(537)	0.013	(3.20)	73	61	56	42	47	31	**25**	78	66	63	47	52	36	**31**	81	70	67	51	56	40	**35**
	2925	(1380)	0.085	(21.19)	78	64	61	47	50	37	**31**	82	69	68	52	55	42	**36**	85	73	73	56	59	46	**40**
	4725	(2230)	0.222	(55.30)	80	65	64	50	51	40	**34**	84	71	70	55	56	46	**39**	88	75	75	58	61	49	**43**
	6563	(3097)	0.429	(106.69)	82	66	66	51	52	43	**36**	86	72	72	56	57	48	**41**	89	76	77	60	61	51	**45**
M	1111	(524)	0.017	(4.17)	70	60	55	40	45	30	**21**	75	66	62	45	51	36	**27**	78	70	67	49	56	40	**31**
	2850	(1345)	0.110	(27.45)	77	63	60	47	49	36	**30**	81	69	67	52	55	42	**36**	85	73	72	56	59	46	**40**
	4625	(2183)	0.290	(72.29)	81	64	63	50	51	40	**35**	85	70	70	55	57	45	**40**	88	74	75	59	61	49	**44**
	6417	(3028)	0.559	(139.15)	83	65	65	53	52	42	**38**	87	71	72	58	58	47	**43**	91	75	77	62	62	51	**47**
N	1364	(644)	0.013	(3.21)	72	60	56	42	47	31	**24**	77	66	62	47	53	36	**29**	80	70	67	51	57	40	**33**
	3525	(1664)	0.086	(21.44)	77	63	61	47	49	37	**30**	81	69	68	52	55	42	**35**	84	73	72	56	59	46	**39**
	5650	(2666)	0.221	(55.09)	79	65	64	49	50	40	**33**	83	70	70	54	56	45	**38**	87	74	75	58	60	49	**42**
	7875	(3716)	0.430	(107.02)	81	66	66	51	51	42	**35**	85	71	72	56	56	48	**40**	88	75	77	60	61	51	**44**
P	1894	(894)	0.013	(3.21)	72	61	55	43	47	30	**24**	76	67	62	48	53	36	**29**	79	71	66	52	58	40	**33**
	4875	(2301)	0.086	(21.28)	76	63	61	46	48	36	**29**	81	69	67	52	54	41	**34**	84	73	72	55	59	45	**38**
	7875	(3716)	0.223	(55.52)	78	64	64	48	49	38	**32**	83	70	70	53	55	44	**37**	86	74	75	57	60	48	**41**
	10938	(5162)	0.430	(107.11)	80	65	66	49	50	40	**34**	84	71	72	54	56	46	**39**	87	74	76	58	60	50	**43**
R	2526	(1192)	0.013	(3.20)	73	62	55	43	46	27	**24**	77	67	61	48	53	34	**30**	80	71	66	52	57	38	**33**
	6500	(3068)	0.085	(21.21)	76	63	61	46	48	34	**29**	80	69	67	51	54	40	**34**	83	73	71	55	59	45	**38**
	10475	(4944)	0.221	(55.08)	78	64	63	48	48	37	**31**	82	69	70	53	55	43	**36**	85	73	74	57	59	48	**40**
	14583	(6882)	0.429	(106.76)	79	65	65	49	49	39	**33**	83	70	72	54	55	46	**38**	86	74	76	58	60	50	**42**

NOTE: See page D2-18 for notes. CFM value not available at 0.75" Δ Ps; the minimum required Δ Ps at the CFM exceeds the Δ Ps available.

SVE Performance Data

SVE, RADIATED SOUND DATA

Inlet Size	Flow Rate		Min Δ Ps		0.75" Δ Ps							1.5" Δ Ps							2.5" Δ Ps						
					Octave Band Sound Power, Lw						Lp	Octave Band Sound Power, Lw						Lp	Octave Band Sound Power, Lw						Lp
	CFM	(L/s)	"WG	(pa)	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
A	75	(35)	0.057	(14.10)	54	54	42	32	30	29	23	61	64	55	43	41	38	34	66	72	64	51	49	45	43
	155	(73)	0.242	(60.22)	57	54	43	32	30	33	23	64	64	56	43	41	42	35	69	72	65	51	49	48	43
	235	(111)	0.556	(138.43)	59	54	43	32	30	35	23	66	64	56	43	41	44	35	71	72	66	51	49	50	43
	315	(149)	1.000	(248.72)	CFM Not Available*							68	64	56	43	41	45	35	73	72	66	51	49	52	43
B	114	(54)	0.058	(14.46)	54	54	41	31	29	29	23	61	64	54	43	41	38	34	65	72	64	51	49	45	43
	225	(106)	0.226	(56.31)	57	54	42	31	29	33	23	64	64	55	43	41	42	35	69	72	65	51	49	48	43
	350	(165)	0.548	(136.26)	60	54	43	31	29	35	23	66	64	56	43	41	44	35	71	72	66	51	49	50	43
	473	(223)	1.000	(248.86)	CFM Not Available*							68	64	56	43	41	45	35	73	72	66	51	49	52	44
C	152	(72)	0.037	(9.31)	54	55	42	32	30	30	23	61	65	55	43	40	38	35	66	72	64	52	48	45	43
	350	(165)	0.198	(49.35)	59	55	43	32	30	34	23	65	65	56	43	40	43	35	70	72	66	51	48	49	43
	575	(271)	0.535	(133.20)	61	55	45	31	29	36	24	68	65	57	42	40	45	35	72	72	67	51	48	51	43
	786	(371)	1.000	(248.90)	CFM Not Available*							69	65	58	42	40	47	35	74	72	67	50	48	53	43
D	253	(119)	0.079	(19.60)	51	52	38	30	27	26	20	58	62	51	42	38	35	32	63	70	61	50	47	42	42
	475	(224)	0.278	(69.08)	56	53	41	30	28	31	21	63	64	54	42	39	40	34	68	71	64	51	48	47	43
	675	(319)	0.561	(139.50)	58	54	42	30	28	33	22	65	64	56	42	40	43	35	70	72	66	51	49	49	44
	902	(426)	1.001	(249.11)	CFM Not Available*							68	65	57	43	41	45	35	73	72	67	51	49	52	44
E	354	(167)	0.071	(17.67)	53	54	41	32	29	29	23	60	64	54	43	40	37	34	64	71	63	51	48	43	42
	675	(319)	0.258	(64.26)	58	55	44	33	30	33	24	64	65	56	43	41	42	35	69	72	65	51	49	48	43
	1000	(472)	0.567	(141.03)	60	56	45	33	31	36	25	67	65	58	43	41	44	36	71	72	67	51	49	50	44
	1328	(627)	1.000	(248.73)	CFM Not Available*							68	66	59	44	42	46	36	73	73	68	52	49	52	45
F	341	(161)	0.072	(17.95)	53	53	40	31	29	28	22	59	63	53	42	39	37	33	64	70	62	51	47	43	42
	650	(307)	0.262	(65.23)	57	55	43	32	30	32	23	64	64	56	43	40	41	35	68	72	65	51	48	47	43
	950	(448)	0.560	(139.35)	60	55	44	32	30	35	24	66	65	57	43	41	44	36	71	72	67	51	49	50	44
	1270	(599)	1.001	(249.03)	CFM Not Available*							68	66	58	43	41	45	36	73	73	68	52	49	52	45
G	379	(179)	0.070	(17.35)	51	53	39	30	27	26	21	58	63	52	42	39	35	33	63	70	61	50	47	42	41
	725	(342)	0.255	(63.50)	57	54	42	31	29	32	23	63	64	55	43	40	40	34	68	71	65	51	48	47	43
	1075	(507)	0.561	(139.60)	60	55	44	32	30	35	24	66	65	57	43	41	44	35	71	72	67	52	49	50	44
	1435	(677)	1.000	(248.76)	CFM Not Available*							68	66	59	44	42	46	36	73	73	68	52	50	52	45
H	568	(268)	0.055	(13.77)	55	56	43	34	31	31	25	61	65	55	44	41	38	35	65	71	63	51	48	44	42
	1175	(555)	0.237	(58.95)	59	57	46	34	32	35	26	65	66	58	44	42	43	36	69	72	66	52	49	48	44
	1775	(838)	0.541	(134.52)	62	58	48	35	33	38	27	68	67	59	45	42	45	37	72	73	68	52	50	51	45
	2414	(1139)	1.000	(248.81)	CFM Not Available*							69	67	60	45	43	47	38	74	74	69	52	50	53	45
J	682	(322)	0.048	(11.88)	55	57	44	34	31	30	26	60	65	55	43	40	37	35	64	70	63	50	47	42	42
	1475	(696)	0.223	(55.58)	61	59	48	35	33	36	28	66	67	58	45	42	43	37	69	72	66	52	49	48	44
	2300	(1085)	0.543	(135.13)	64	60	50	37	35	40	29	69	68	60	46	44	47	39	73	74	68	53	50	52	45
	3121	(1473)	1.000	(248.82)	CFM Not Available*							71	68	62	47	44	49	40	75	74	70	53	51	54	46
K	884	(417)	0.032	(8.02)	56	58	45	34	31	32	27	60	65	55	42	39	40	35	63	70	61	48	45	46	41
	2225	(1050)	0.204	(50.83)	63	61	51	38	36	35	31	67	68	60	46	44	43	39	71	73	67	52	50	49	45
	3550	(1675)	0.520	(129.38)	67	63	54	40	38	37	33	71	70	63	48	46	45	41	75	75	70	54	52	50	47
	4923	(2323)	1.000	(248.82)	CFM Not Available*							74	71	65	49	48	46	42	77	76	72	56	53	51	48
L	1137	(537)	0.013	(3.20)	59	62	58	44	42	37	32	62	67	66	50	48	43	41	65	71	72	55	53	48	48
	2925	(1380)	0.085	(21.19)	65	65	60	45	41	39	35	69	70	68	51	48	45	43	71	74	74	56	53	49	50
	4725	(2230)	0.222	(55.30)	69	67	61	45	41	40	37	72	72	69	52	48	45	45	75	76	75	56	52	50	51
	6563	(3097)	0.429	(106.69)	71	68	61	46	41	40	39	75	73	69	52	48	46	45	77	77	75	57	52	50	52
M	1111	(524)	0.017	(4.17)	57	60	57	39	40	33	32	60	65	66	46	46	39	41	63	69	72	51	51	44	48
	2850	(1345)	0.110	(27.45)	65	64	58	42	42	38	34	69	69	67	50	48	44	43	71	73	74	55	53	48	50
	4625	(2183)	0.290	(72.29)	69	66	59	44	43	40	36	73	71	68	52	49	46	44	75	75	75	57	54	51	51
	6417	(3028)	0.559	(139.15)	72	67	60	45	43	42	38	76	73	69	53	50	48	45	78	77	75	58	54	52	52
N	1364	(644)	0.013	(3.21)	58	61	57	39	39	35	32	62	66	65	46	45	41	41	64	70	71	51	50	45	47
	3525	(1664)	0.086	(21.44)	65	64	59	43	41	38	35	69	70	67	50	47	44	43	71	73	73	55	51	48	50
	5650	(2666)	0.221	(55.09)	69	66	60	45	42	39	37	72	71	68	52	48	45	44	75	75	74	57	52	50	51
	7875	(3716)	0.430	(107.02)	71	67	61	47	42	40	38	75	73	69	54	48	46	45	77	76	75	59	53	51	52
P	1894	(894)	0.013	(3.21)	59	60	56	41	39	35	31	63	66	65	48	46	41	40	65	70	71	53	50	46	47
	4875	(2301)	0.086	(21.28)	65	64	59	42	40	37	34	69	69	67	49	47	43	42	72	73	73	54	51	48	49
	7875	(3716)	0.223	(55.52)	68	65	60	43	41	38	35	72	71	68	50	47	44	43	75	75	74	55	52	49	50
	10938	(5162)	0.430	(107.11)	70	66	60	43	41	39	37	74	72	68	50	47	45	44	77	76	74	56	52	50	51
R	2526	(1192)	0.013	(3.20)	59	61	57	42	40	36	31	63	66	65	48	46	42	40	66	70	70	53	50	47	46
	6500	(3068)	0.085	(21.21)	65	64	59	44	41	38	34	69	69	67	50	47	44	42	72	73	72	54	51	48	49
	10475	(4944)	0.221	(55.08)	69	65	60	45	42	38	36	72	71	68	51	47	44	43	75	75	73	55	52	49	50
	14583	(6882)	0.429	(106.76)	71	66	60	46	42	39	37	74	72	68	52	48	45	44	77	76	74	56	52	49	51

NOTE: See page D2-18 for notes. CFM value not available at 0.75" Δ Ps; the minimum required Δ Ps at the CFM exceeds the Δ Ps available.

SVE Performance Data Notes

AHRI 885-08 DISCHARGE REDUCTIONS

AHRI 885-08 Discharge / < 300 CFM	Octave Bands					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining, 5', 8"x8"x1"	2	6	12	25	29	18
End Reflection	9	5	2	0	0	0
Power Division (0 outlets)	0	0	0	0	0	0
5', 8" Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total Attenuation	**24**	**28**	**39**	**53**	**59**	**40**

AHRI 885-08 Discharge 300-700 CFM	Octave Bands					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining, 5', 12"x12"x1"	2	4	10	20	20	14
10" End Reflection	9	5	2	0	0	0
Power Division (2 outlets)	3	3	3	3	3	3
5', 8" Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total Attenuation	**27**	**29**	**40**	**51**	**53**	**39**

AHRI 885-08 Discharge >700 CFM	Octave Bands					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining, 5', 15"x15"x1"	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Power Division (3 outlets)	5	5	5	5	5	5
5', 8" Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total Attenuation	**29**	**30**	**41**	**51**	**52**	**39**

AHRI 885-08 RADIATED REDUCTIONS

NC Radiated (dB re 10^{-12} Watts)	Octave Bands					
	2	3	4	5	6	7
Environmental Adjustment Factor	2	1	0	0	0	0
Plenum/Room Effect	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTES: Discharge sound power is the sound emitted from the unit discharge. Radiated sound power is the sound transmitted through the casing walls. All sound data is based on tests conducted in accordance with AHRI 880-11. Sound power levels are in dB, re 10^{-12} Watts. ΔPs is the difference in static pressure from inlet to discharge. NC application data is from AHRI Standard 885-08 Appendix E, as a function of flow rate shown. All data points listed are application ratings outside the scope of the Certification Program. Dash indicates a NC is less than 20. See Engineering section for reductions and definitions.

SVE Control Information

The following list shows the standard control arrangements available with the SVE product offering. Control packages offer a variety of pressure independent operating functions. Control functions are identified by the Krueger control package number.

PNEUMATIC CONTROL ARRANGEMENTS

All control packages are pressure independent and include a K4 LineaCross, four quadrant, center averaging inlet airflow sensor.

1102 - Single Function; DA-NO
1103 - Single Function; RA-NC
1104 - Multi-function; DA-NO
1105 - Multi-function; DA-NC
1106 - Multi-function; RA-NO
1107 - Multi-function; RA-NC

Pneumatic Control Legend:
DA - Direct Acting Thermostat
RA - Reverse Acting Thermostat
NO - Normally Open Damper Position
NC - Normally Closed Damper Position
Single Function Controller - Provides Single Function, DA-NO or RA-NC
Multi-function Controller - Capable of Providing DA-NO, DA-NC,RA-NC or RA-NO Functions

ANALOG CONTROL ARRANGEMENTS

All control packages are pressure independent and include a K4 LineaCross, four quadrant, center averaging inlet airflow sensor, controller/actuator, control enclosure and wall thermostat to match the control type. An optional 24 volt transformer is available that will be mounted and wired inside the control enclosures.

2100 - Heating Control
2101 - Cooling Control
2115 - Upstream Static Pressure Monitoring Control
2116 - Downstream Static Pressure Monitoring Control

DIRECT DIGITAL CONTROL ARRANGEMENT

Control packages are field supplied for factory mounting. All DDC control arrangements include a K4 LineaCross, four quadrant, center averaging inlet airflow sensor and control enclosure. An optional 24 volt transformer is available that will be mounted and wired inside the control enclosure.

SVE Suggested Specification & Configuration

1. SERIES: (XXX)
SVE - Slip-in Retrofit Terminal Unit

2. SENSOR TYPE: (X)
3 - K4 LineaCross (Four Quadrant)

3. UNIT CASING CONTROLS: (XX)
0L - Left-hand Side, 22 Gage
0R - Right-hand Side, 22 Gage

4. UNIT SIZE
MINIMUM DUCT SIZE SHOWN: (X)

A - 5”x5”	J - 18”x12”
B - 6”x6”	K - 20”x14”
C - 8”x6”	L - 30”x12”
D - 10”x8”	M - 22”x16”
E - 14”x8”	N - 24”x18”
F - 18”x6”	P - 30”x20
G - 12”x10”	R - 40”x20”
H - 18”x10”	

5. DUCT SIZE
MINIMUM DUCT SIZE SHOWN: (X)x(X)*

A - 5”x5”	J - 18”x12”
B - 6”x6”	K - 20”x14”
C - 8”x6”	L - 30”x12”
D - 10”x8”	M - 22”x16”
E - 14”x8”	N - 24”x18”
F - 18”x6”	P - 30”x20”
G - 12”x10”	R - 40”x20”
H - 18”x10”	

6. CONTROL TYPE: (X)
D - Digital Controls **
A - Analog Controls
P - Pneumatic Controls

7. UNIT ACCESSORIES: (X) (X)
0 - None
D - Disconnect for Controls
G - 24-24 VAC Transformer
H - 120-24 VAC Transformer
J - 208-24 VAC Transformer
K - 240-24 VAC Transformer
L - 277-24 VAC Transformer

* *For additional sizes, see page D2-14.*
** *Digital controls are supplied by others; mounted by Krueger.*

SVE UNIT
Furnish and install Krueger model SVE, factory-assembled, externally powered, slip-in variable air volume retrofit control terminal of the sizes shown in the plans.

Unit shall be complete with a damper assembly, flow sensor, externally mounted volume controller, and all required features.

Control box shall be clearly marked with an identification label that lists such information as nominal CFM, maximum and minimum factory-set airflow limits and control enclosure hand.

The control air damper assembly shall be constructed of heavy gage galvanized steel. Damper blade shall incorporate a flexible gasket for tight airflow shutoff and operate over a full 90-degrees. The retrofit terminal shall be designed to slide into the side of existing ductwork, with a maximum 10 1/2” length of duct opening required. Terminal orifice plate shall be undersized 1/4-inch for ease of installation. Gasket shall be field installed to assure tight seal. No additional components will be required inside the ductwork for mounting. A flange shall be provided for fastening the terminal to the ductwork with sheet metal.

The terminal shall be constructed of minimum 22 gage galvanized steel. The damper shall be opposed blade type, with airfoil shaped blades constructed of heavy gage steel. The damper shall have extruded vinyl blade edge seals and flexible metal compressible jamb seals. Leakage of the damper shall not exceed 2% of rated flow at 6” WG Ps.

Units shall have pressure-independent pneumatic, electronic, or communicating controls, as specified, capable of maintaining required airflow setpoints +/-5% of the unit’s capacity at any inlet pressure up to 6” WG. The controllers shall be capable of resetting between maximum and minimum (>350 FPM inlet duct velocity) set points to satisfy the room thermostat demand.

The unit shall be equipped with an amplified flow probe located in the damper section inlet. Airflow for the pressure independent controller (direct digital controls may be supplied by others) shall be determined with a factory supplied 12 point total pressure, center averaging cross flow sensor, having a magnification resulting in no greater than 2625 FPM at 1” developed signal.

Unit supplied shall be rated in accordance with AHRI 880 certification program at the rated flow rates and pressures. The unit manufacturer shall furnish octave band sound power data for both casing radiated and discharge sound levels with the selected lining and above flow sensor, as tested per AHRI Industry Standard 880-08, at the required flow rates and inlet pressures.

SAMPLE CONFIGURATION: SVE - 3 - 0L - F - L - D - D - 0