VARITHERM®

MECHANICAL VAV DIFFUSERS



price | VAV DIFFUSERS

VARITHERM®
Mechanical VAV Diffusers

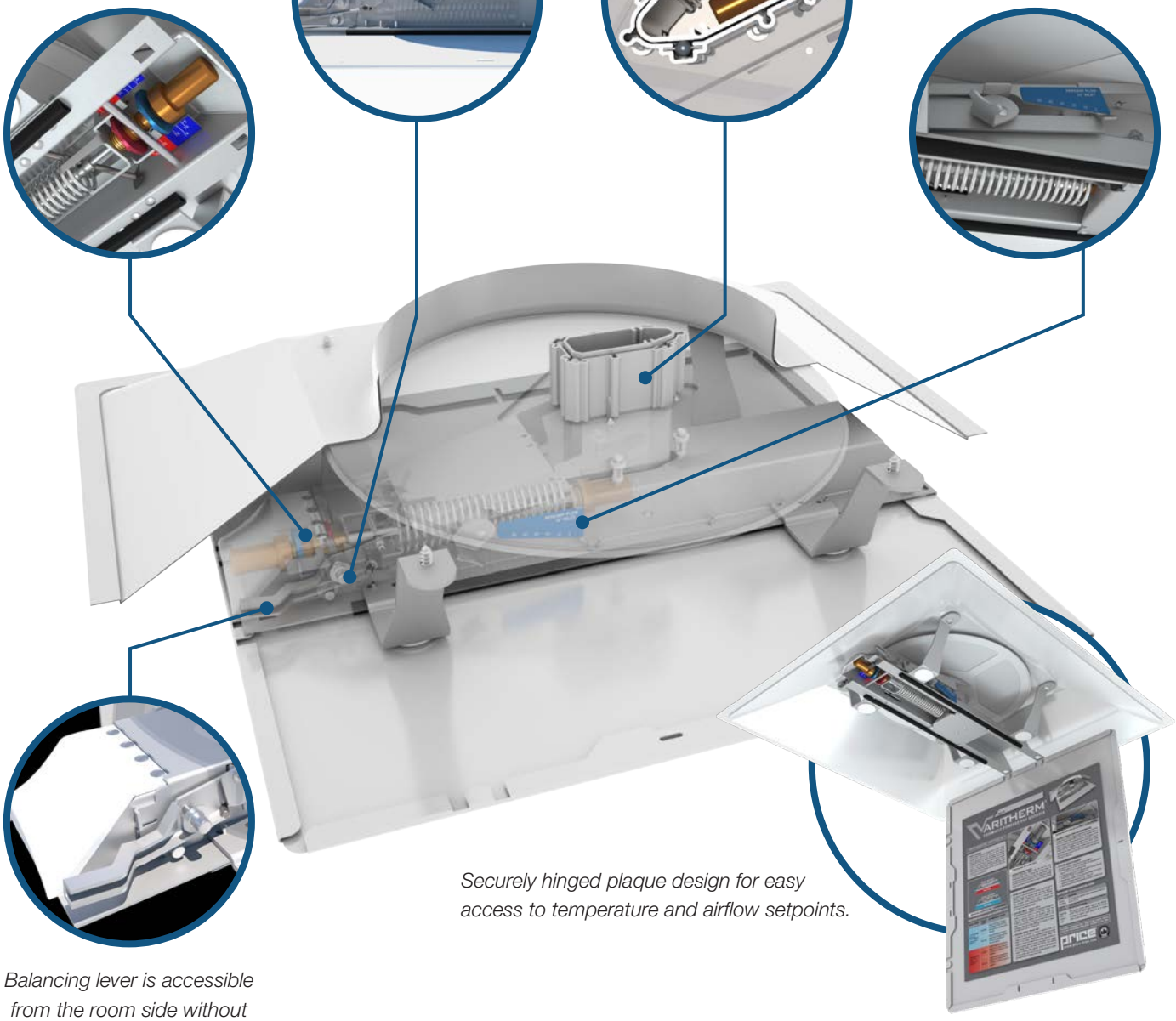
The Varitherm series of self-modulating diffusers provide optimal thermal comfort through integrated thermal sensors that continuously monitor room temperature to modulate the integrated damper. Damper modulation is done mechanically with a thermally powered wax actuator, eliminating the need for any electrical or controls wiring and making installation quick and easy.

Fully mechanical linkage with no electrical or controls required

Optional auto heating-cooling changeover

Individual heating and cooling setpoints with temperature gauge, adjustable from the room side

Easily adjustable minimum airflow to satisfy ventilation requirements



Securely hinged plaque design for easy access to temperature and airflow setpoints.

Balancing lever is accessible from the room side without opening the diffuser face

VARITHERM®
Mechanical VAV Diffusers

VAV diffusers provide superior air distribution with no dumping. They are energy efficient, easily adaptable to changes in the floor plan, and require little to no maintenance.



VPD

VPD Varitherm Square VAV Diffuser

Square plaque VAV diffuser with disc dampers

Small zone control with simple lever for balancing and easily adjustable minimum damper position settings.

Size: 24 in. / 600 mm

Inlet sizes: 6, 8, 10 and 12 in.



VBD

VBD Varitherm Square VAV Diffuser

Square plaque VAV diffuser with blade dampers

Utilizes four blade style dampers to better maintain throws on turn down and operate with lower noise.

Size: 24 in. / 600 mm

Inlet sizes: 6, 8, 10 and 12 in.



VKD

VKD Varitherm Small Square VAV Diffuser

Square plaque VAV diffuser with blade dampers

Specifically designed for task conditioning and provides VAV heating and cooling in a compact size favored by architects.

Size: 12 5/8 in. / 320 mm

Inlet sizes: 6 in / 150 mm



VRD

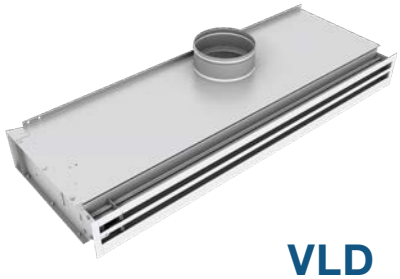
VRD Varitherm Round VAV Diffuser

Round plaque VAV diffuser

Round, flat lip and appearance panel provide an unobtrusive thermally powered diffuser when used with an exposed ductwork ceiling.

Size: 24 in. / 600 mm

Inlet sizes: 6, 8, 10 and 12 in.



VLD

VLD Varitherm Linear VAV Diffuser

Linear slot VAV diffuser

Streamlined aluminum extrusions provide slim, trim architectural shape and aerodynamic air distribution.

Lengths: 24, 36, 48 and 60 in. / 600, 900, 1200 and 1500 mm

Slots: 1, 2 and 4

See individual submittals for dimensions and border types.

RELIABLE PERFORMANCE

+ The design of the outer cone and damper ensures that the speed of the air exiting the diffuser is consistent even as airflow is reduced. Maintaining the speed of the air exiting the diffuser ensures Coanda across the ceiling, thus preventing dumping, creating even mixing and ensuring personal comfort.

EASY INSTALLATION

+ The Varitherm is easy to install as no wiring, calibration or thermostat is required.

RETROFIT APPLICATIONS

+ In the event that diffuser layout changes are required, the Varitherm can be moved from one location to another without reprogramming or the need to re-route cables.

EASY SETPOINT ADJUSTMENT

+ Temperature and airflow setpoint control for the Varitherm are room side accessible behind the easy-to-open diffuser plaque. The plaque pivots securely on hanger brackets, and is held closed with a set of clips.
+ Heating and cooling temperature setpoints are adjusted using clearly labeled blue and red dials. An adjustable flow dial, also located behind the diffuser plaque, allows minimum airflow to be set to maintain the minimum ventilation requirements of the space. For ease of balancing, the unit is equipped with a forced-open balancing lever that is accessible from the room side without opening the plaque.

TYPICAL APPLICATIONS

The Varitherm provides personal temperature control by modulating the flow of supply air into a particular space. This diffuser is an excellent choice for small zone VAV applications such as offices and boardrooms and can be used throughout a building as a primary VAV system. Well-suited for retrofit applications, the Varitherm can easily replace traditional diffusers to provide localized control and improved occupant thermal comfort in an existing system.

CONSTRUCTION OPTIONS

+ Application
  - Cooling-only
  - Heating and cooling



APPLICATION

The Price Varitherm series of products are available for cooling-only or for both heating and cooling applications. Refer to the chart below for damper operation in response to room temperature.

Mode	Room Temperature vs. Setpoint	Damper Operation
Cooling	Warmer	Opens
	Cooler	Closes
	Equal	No Movement
Heating	Warmer	Closes
	Cooler	Opens
	Equal	No Movement

VAV Cooling-Only

The cooling-only model is suitable for applications without heating requirements. The wax actuator is only calibrated for cool supply air and will not condition the space appropriately if warm supply air is used.

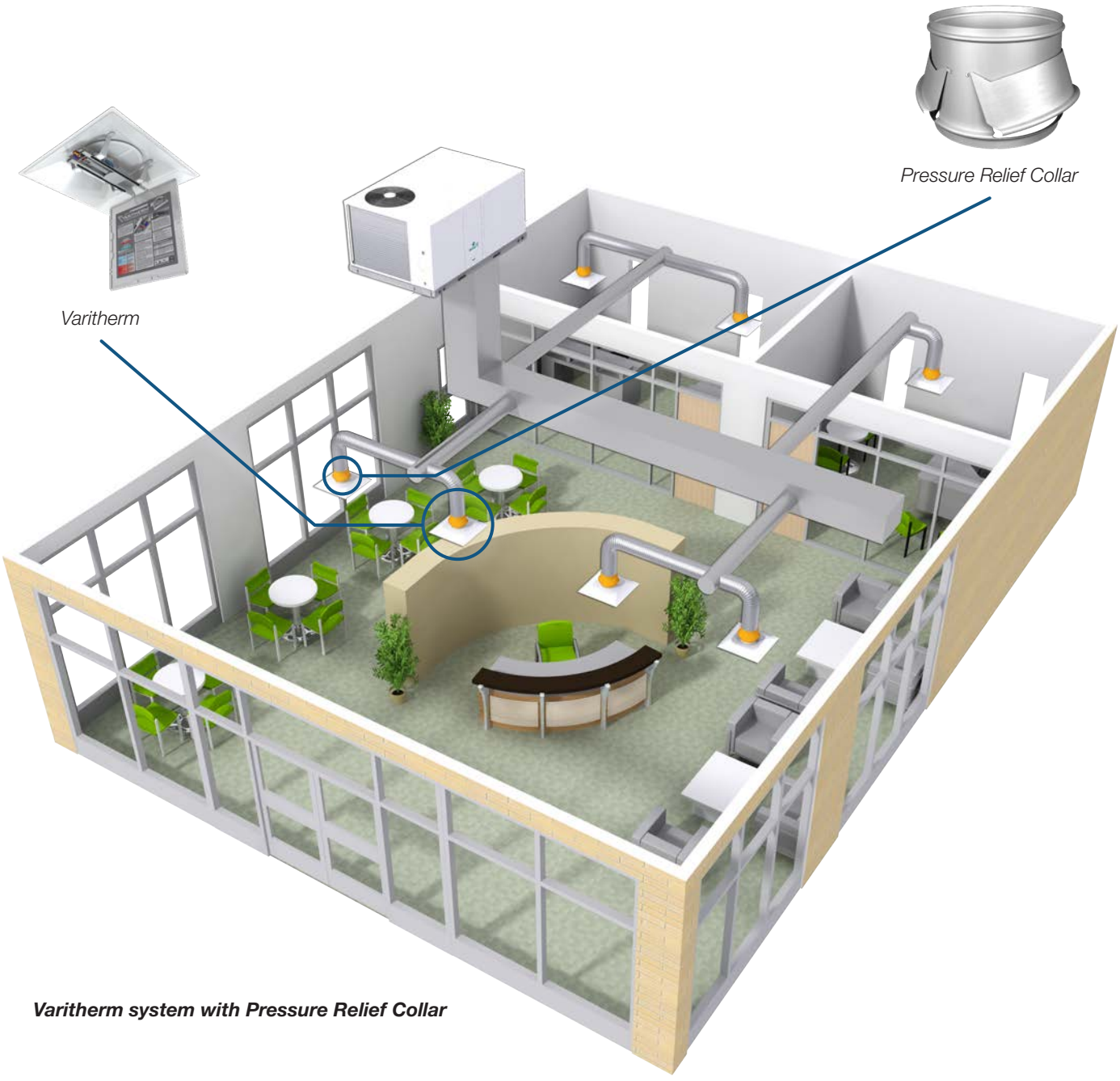
VAV Cooling and VAV Heating

The heating and cooling model is suitable for applications that require dedicated heating and cooling cycles. This model features dual temperature setpoints at the diffuser for control in heating and cooling and automatic heat/cool changeover.

SYSTEM PRESSURE CONTROL

Pressure Relief Collar

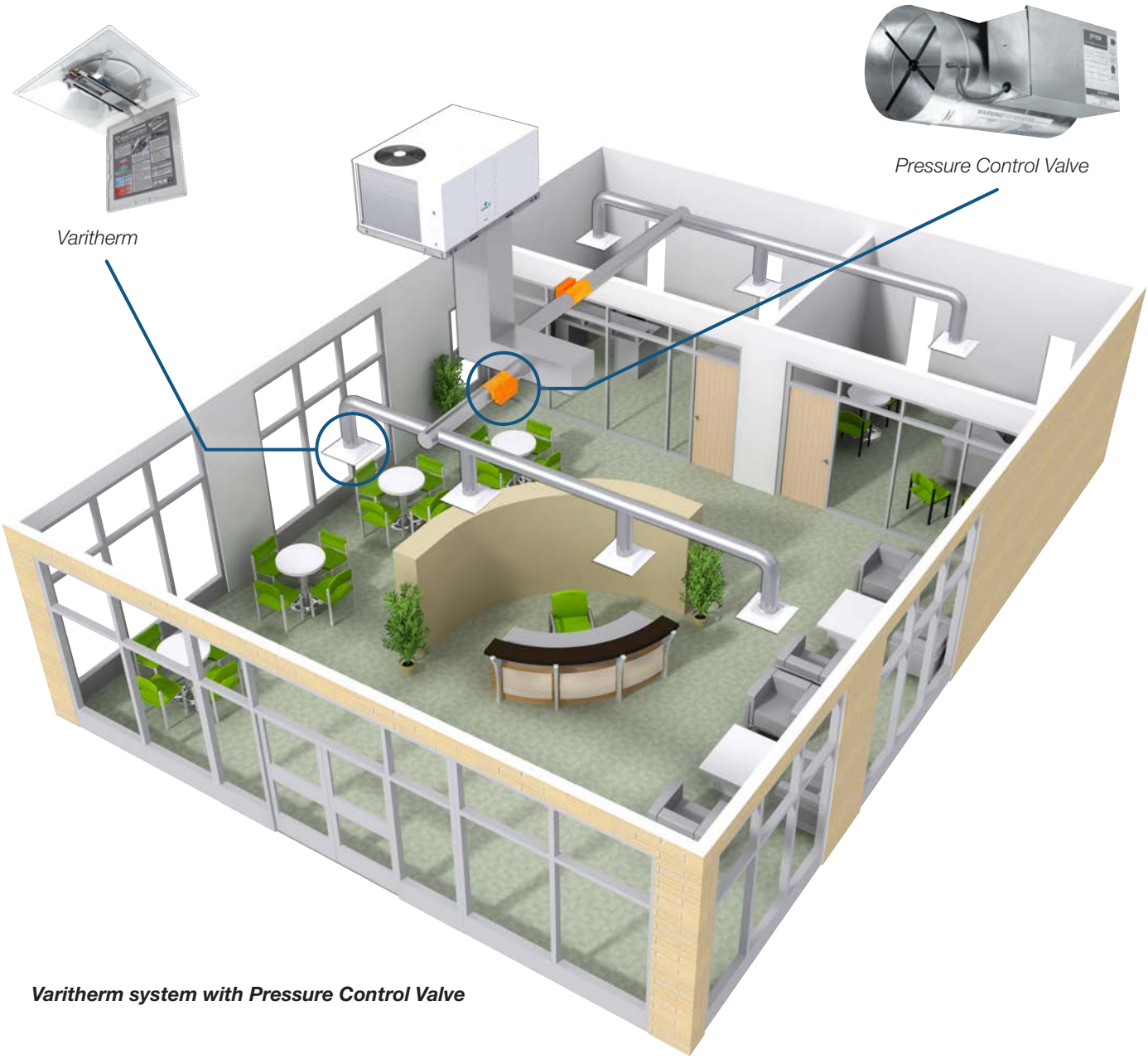
The Pressure Relief Collar (PRC) slips over the diffuser inlet to provide a simple and inexpensive solution to control inlet static pressure. To limit excessive diffuser noise and pressure drop, duct static pressure should be below 0.25 in. w.g. A PRC is recommended for applications where duct pressure may exceed the recommended limit, such as installations with a constant volume air handler where multiple Varitherm units are operating with a mostly closed damper. As duct pressure increases past 0.25 in. w.g. calibrated shutters gradually open to release excess air into the ceiling plenum return system.



Varitherm system with Pressure Relief Collar

Pressure Control Valve

The Pressure Control Valve (PCV), available in both round and rectangular models, uses electronic control to regulate duct pressure. To limit excessive diffuser noise and pressure drop, duct static pressure should be below 0.25 in. w.g. A PCV is recommended for applications where duct pressure will exceed the recommended limit and the air handler has a variable speed fan or as a bypass for air handlers with a constant volume fan. With the integral VAV damper, the PCV regulates airflow to maintain duct static pressure below 0.25 in. w.g.



Varitherm system with Pressure Control Valve

PERFORMANCE DATA

VPD: I-P (Inch-Pound)

Maximum Flow Selection Table

Inlet Size	Neck Velocity, fpm / Velocity Pressure	450 / 0.01	550 / 0.02	650 / 0.03	750 / 0.04	850 / 0.05	950 / 0.06	1100 / 0.08	1250 / 0.10
6	Static Pressure		0.05	0.07	0.10	0.12	0.15	0.20	0.25
	Total Pressure		0.07	0.10	0.14	0.16	0.20	0.27	0.35
	cfm		105	125	150	163	180	210	240
	NC		-	12	17	20	25	29	32
	Throw, ft		1-1-4	1-2-4	1-2-5	1-3-5	1-4-6	2-5-7	4-6-8
8	Static Pressure	0.05	0.07	0.10	0.12	0.15	0.20	0.25	
	Total Pressure	0.06	0.08	0.13	0.16	0.19	0.26	0.33	
	cfm	165	189	235	258	285	330	380	
	NC	-	16	18	21	25	30	34	
	Throw, ft	1-2-6	2-3-7	2-4-8	3-4-9	4-5-10	4-6-11	5-7-11	
10	Static Pressure	0.05	0.07	0.10	0.13	0.15	0.20	0.25	
	Total Pressure	0.06	0.09	0.13	0.16	0.19	0.26	0.32	
	cfm	255	296	360	404	440	510	570	
	NC	-	18	23	26	28	32	36	
	Throw, ft	2-4-7	2-4-8	2-6-10	4-7-10	5-7-11	6-8-12	7-10-13	
12	Static Pressure	0.05	0.08	0.10	0.15	0.20	0.25		
	Total Pressure	0.06	0.10	0.12	0.18	0.25	0.31		
	cfm	335	427	470	580	670	740		
	NC	-	21	25	31	35	38		
	Throw, ft	2-7-10	4-8-11	5-8-12	6-10-13	8-12-14	11-13-16		

Performance Notes:

1. Performance data is presented for the Varitherm® diffuser with the damper in the full open (maximum flow) position.
2. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
3. Airflow is in cfm.
4. All pressures are in in. w.g.
5. Throw values are measured in feet for terminal velocities of 150 fpm (minimum), 100 fpm (middle) and 50 fpm (maximum).
6. Throw data is based on supply air and room air at isothermal conditions.
7. NC values are based on room absorption of 10 dB re 10^{-12} Watts and one diffuser.
8. Blanks (-) indicate an NC level below 15.

Modulated Flow Selection Table - I-P Units

Inlet Size	.05 Duct Ps			0.10 Duct Ps			0.20 Duct Ps			0.25 Duct Ps		
	cfm	Throw, ft	NC	cfm	Throw, ft	NC	cfm	Throw, ft	NC	cfm	Throw, ft	NC
6	26	1-1-1	-	38	1-1-2	-	53	1-1-5	-	60	2-2-5	21
	53	1-1-2	-	75	1-2-3	16	105	2-2-6	20	120	3-4-6	25
	79	1-1-3	-	113	1-2-4	16	158	2-4-6	24	180	3-5-7	28
	105	1-1-4	-	150	1-2-5	17	210	2-5-7	29	240	4-6-8	32
8	41	1-1-2	-	59	1-1-4	-	83	1-2-5	20	95	2-4-6	25
	83	1-2-4	-	118	2-2-5	16	165	2-4-7	23	190	3-5-8	28
	124	1-2-5	-	176	2-3-7	18	248	3-5-9	27	285	4-6-9	31
	165	1-2-6	-	235	2-4-8	18	330	4-6-11	30	380	5-7-11	34
10	64	1-1-4	-	90	1-1-4	-	128	2-4-6	22	143	4-5-7	26
	128	2-2-5	-	180	2-3-6	18	255	4-5-8	25	285	5-6-9	29
	191	2-3-6	-	270	2-4-8	20	383	5-7-10	29	428	6-8-11	33
	255	2-4-7	-	360	2-6-10	23	510	6-8-12	32	570	7-10-13	36
12	84	1-1-5	-	118	1-2-6	-	168	2-4-8	23	185	2-6-10	31
	168	2-3-6	-	235	2-4-8	18	335	4-6-10	27	370	5-8-11	33
	251	2-5-8	-	343	4-6-10	22	503	6-9-12	31	555	8-11-14	36
	335	2-7-10	-	470	5-8-12	25	670	8-12-14	35	740	11-13-16	38

Performance Notes:

1. Performance data is presented for Varitherm® diffuser at several modulated damper positions with constant duct static pressures of .05, 0.10, 0.20, and 0.25 inches w.g.
2. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
3. Airflow is in cfm.
4. Throw values are measured in feet for terminal velocities of 150 fpm (minimum), 100 fpm (middle) and 50 fpm (maximum).
5. Throw data is based on supply air and room air at isothermal conditions.
6. NC values are based on room absorption of 10 dB re 10^{-12} Watts and one diffuser.
7. Blanks (-) indicate an NC level below 15.

PERFORMANCE DATA

VPD: SI (Metric)

Maximum Flow Selection Table

Inlet Size	Neck Velocity, l/s	2.3	2.8	3.3	3.8	4.3	4.8	5.6	6.4
	Velocity Pressure	3	5	7	9	11	14	19	24
150 mm	Static Pressure		12	18	25	30	37	50	62
	Total Pressure		17	24	34	41	51	68	86
	Air Flow		50	59	71	77	85	99	113
	NC		-	12	17	20	25	29	32
	Throw, m		0.4-0.4-1.1	0.4-0.5-1.2	0.4-0.7-1.5	0.4-0.9-1.6	0.4-1.1-1.8	0.7-1.5-2.2	1.1-1.8-2.6
200 mm	Static Pressure	12	16	25	30	37	50	62	
	Total Pressure	16	21	32	39	48	64	81	
	Air Flow	78	89	111	122	134	156	179	
	NC	-	16	18	21	25	30	34	
	Throw, m	0.4-0.7-1.8	0.5-0.8-2.1	0.7-1.1-2.6	0.9-1.2-2.7	1.1-1.5-2.9	1.1-1.8-3.3	1.5-2.2-3.3	
250 mm	Static Pressure	12	17	25	31	37	50	62	
	Total Pressure	16	21	32	40	48	64	80	
	Air Flow	120	140	170	191	208	241	269	
	NC	-	18	23	26	28	32	36	
	Throw, m	0.7-1.1-2.2	0.7-1.4-2.5	0.7-1.8-2.9	1.1-2.0-3.1	1.5-2.2-2.3	1.8-2.6-3.7	2.2-2.9-4.0	
300 mm	Static Pressure	12	20	25	37	50	62		
	Total Pressure	15	25	31	46	61	76		
	Air Flow	158	202	222	274	316	349		
	NC	-	21	25	31	35	38		
	Throw, m	0.7-2.2-2.9	1.2-2.4-3.4	1.5-2.6-3.7	1.8-2.9-4.0	2.6-3.7-4.4	3.3-4.0-4.8		

Performance Notes:

1. Performance data is presented for the Varitherm® diffuser with the damper in the full open (maximum flow) position.
2. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
3. Airflow is in L/s.
4. All pressures are in Pa.
5. Throw values are measured in meters for terminal velocities of 0.75 m/s (minimum), 0.5 m/s (middle) and 0.25 m/s (maximum).
6. Throw data is based on supply air and room air at isothermal conditions.
7. NC values are based on room absorption of 10 dB re 10^{-12} Watts and one diffuser.
8. Blanks (-) indicate an NC level below 15.

Modulated Flow Selection Table - SI Units (Metric)

Inlet Size	12Pa Duct Pressure			25Pa Duct Pressure			50Pa Duct Pressure			62Pa Duct Pressure		
	L/s	Throw, m	NC	L/s	Throw, m	NC	L/s	Throw, m	NC	L/s	Throw, m	NC
150 mm	12	0.4-0.4-0.4	-	18	0.4-0.4-0.7	-	25	0.4-0.4-1.5	-	28	0.7-0.7-1.5	21
	25	0.4-0.4-0.6	-	35	0.4-0.5-1.0	16	50	0.5-0.7-1.7	20	57	0.9-1.1-1.8	25
	37	0.4-0.4-0.9	-	53	0.4-0.6-1.2	16	74	0.6-1.1-2.0	24	85	1.0-1.5-2.2	28
	50	0.4-0.4-1.1	-	71	0.4-0.7-1.5	17	99	0.7-1.5-2.2	29	113	1.1-1.8-2.6	32
200 mm	19	0.4-0.4-0.7	-	28	0.4-0.4-1.1	-	39	0.4-0.7-1.5	20	45	0.7-1.1-1.8	25
	39	0.4-0.5-1.1	-	55	0.5-0.6-1.6	16	78	0.6-1.1-2.1	23	90	1.0-1.5-2.3	28
	58	0.4-0.6-1.5	-	83	0.6-0.9-2.1	18	117	0.9-1.5-2.7	27	134	1.2-1.8-2.8	31
	78	0.4-0.7-1.8	-	111	0.7-1.1-2.6	18	156	1.1-1.8-3.3	30	179	1.5-2.2-3.3	34
250 mm	30	0.4-0.4-1.1	-	42	0.4-0.4-1.1	-	60	0.7-1.1-1.8	22	67	1.1-1.5-2.2	26
	60	0.5-0.6-1.5	-	85	0.5-0.9-1.7	18	120	1.1-1.6-2.4	25	134	1.5-2.0-2.8	29
	90	0.6-0.9-1.8	-	127	0.6-1.3-2.3	20	180	1.5-2.1-3.0	29	202	1.8-2.4-3.4	33
	120	0.7-1.1-2.2	-	170	0.7-1.8-2.9	23	241	1.8-2.6-3.7	32	269	2.2-2.9-4.0	36
300 mm	40	0.4-0.4-1.5	-	55	0.4-0.7-1.8	-	79	0.7-1.1-2.6	23	87	0.7-1.8-2.9	31
	79	0.5-1.0-2.0	-	111	0.7-1.3-2.4	18	158	1.3-2.0-3.2	27	175	1.6-2.6-3.5	33
	119	0.6-1.6-2.4	-	166	1.1-2.0-3.0	22	237	2.0-2.8-3.8	31	262	2.4-3.3-4.1	36
	158	0.7-2.2-2.9	-	222	1.5-2.6-3.7	25	316	2.6-3.7-4.4	35	349	3.3-4.0-4.8	38

Performance Notes:

1. Performance data is presented for Varitherm® diffuser at several modulated damper positions with constant duct static pressures of 12, 25, 50, and 62 Pa.
2. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
3. Airflow is in L/s.
4. Throw values are measured in meters for terminal velocities of 0.75 m/s (minimum), 0.5 m/s (middle) and 0.25 m/s (maximum).
5. Throw data is based on supply air and room air at isothermal conditions.
6. NC values are based on room absorption of 10 dB re 10^{-12} Watts and one diffuser.
7. Blanks (-) indicate an NC level below 15.

PERFORMANCE DATA

VBD: I-P (Inch-Pound)

Inlet Designation	Inlet Diameter in.	Inlet Static Pressure in. w.g.	Maximum Flow CFM	Maximum Flow				25% Maximum Flow			
				Throw - Feet* @v_t				Throw - Feet* @v_t			
				50 FPM	100 FPM	150 FPM	[1]NC	50 FPM	100 FPM	150 FPM	[1]NC
6	5 15/16	0.05	100	6	4	3	<15	3	2	1	<15
		0.10	140	8	5	4	20	4	3	2	17
		0.11	147	8	5	4	21	4	3	2	18
		0.15	175	8	6	5	26	5	4	3	21
		0.20	200	9	7	6	31	6	5	3	24
		0.25	220	10	8	7	34	7	6	4	27
8	7 15/16	0.05	160	8	6	4	<15	5	3	2	<15
		0.10	225	10	7	5	20	6	4	3	16
		0.13	255	11	8	6	23	7	5	3	19
		0.15	275	11	8	6	25	7	5	3	21
		0.20	320	12	9	7	30	8	6	4	25
		0.25	355	13	10	8	34	9	6	4	28
10	9 15/16	0.05	260	9	7	5	15	7	6	4	<15
		0.10	370	11	8	6	23	9	7	5	18
		0.11	402	12	9	7	25	9	7	5	20
		0.15	450	13	10	8	27	10	8	6	22
		0.20	520	14	11	9	31	11	9	7	26
		0.25	580	15	12	10	34	12	10	7	29
12	11 15/16	0.05	350	11	8	6	15	7	6	4	<15
		0.10	470	13	10	8	23	9	7	5	19
		0.13	560	15	10	8	27	10	8	6	23
		0.15	576	15	12	10	28	10	8	6	24
		0.20	640	16	13	11	31	12	10	8	27
		0.25	720	17	14	12	34	14	11	9	30

Performance Notes:

1. *Throw data is for air 20ºF 11ºC lower than room temperature. Throws for isothermal air are 40 to 50% greater.
2. [1]NC based on Lw(10^{-12} watts reference) -10db
3. Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.
4. When bypassing air into the plenum at the diffuser with Price R-Rings, throw may be as low as 90% of and the NC 2db higher than those listed in the performance chart.
5. When blocking for direction with the directional baffles, the air volume for a given static pressure is reduced from maximum flow listed in the performance chart by:

Blow Patterns	Reduction
3-Way	0.78
2-Way	0.56
1-Way	0.34

PERFORMANCE DATA

VBD: SI (Metric)

Inlet Designation	Nominal Inlet Diameter mm	Inlet Static Pressure Pa	Maximum Flow		Maximum Flow Throw (m)* @vt=				25% Maximum Flow Throw (m)* @vt=			
			L/s	m³/h	0.25 m/s	0.50 m/s	0.75 m/s	†NC	0.25 m/s	0.50 m/s	0.75 m/s	†NC
6	150	10	43	157	1.7	1.2	0.9	<15	0.9	0.6	0.3	<15
		20	59	211	2.2	1.4	1.1	18	1.1	0.8	0.5	16
		30	73	262	2.6	1.7	1.4	22	1.3	1.0	0.7	19
		40	85	307	2.8	1.9	1.6	27	1.6	1.3	0.9	22
		50	95	341	2.8	2.2	1.8	31	1.8	1.5	0.9	24
		60	102	368	3.0	2.4	2.1	33	2.1	1.8	1.2	26
8	200	10	69	250	2.3	1.8	1.2	<15	1.5	0.9	0.6	<15
		20	94	339	2.8	2.0	1.4	18	1.7	1.1	0.8	16
		30	116	417	3.2	2.3	1.7	22	2.0	1.4	0.9	18
		40	134	484	3.4	2.5	1.9	26	2.2	1.6	1.0	22
		50	151	545	3.7	2.8	2.2	30	2.5	1.8	1.2	25
		60	165	593	3.9	3.0	2.4	33	2.7	1.9	1.2	27
10	250	10	112	405	2.6	2.1	1.5	<15	2.0	1.8	1.2	<15
		20	154	556	3.1	2.3	1.7	20	2.5	2.0	1.4	17
		30	190	685	3.6	2.7	2.1	25	2.9	2.3	1.7	20
		40	219	791	4.0	3.1	2.5	28	3.1	2.5	1.9	23
		50	246	886	4.3	3.4	2.8	31	3.4	2.8	2.2	26
		60	269	968	4.5	3.6	3.0	33	3.6	3.0	2.2	28
12	300	10	154	555	3.2	2.3	1.7	<15	2.0	1.8	1.2	<15
		20	200	719	3.7	2.8	2.2	20	2.5	2.0	1.4	17
		30	239	861	4.2	3.3	2.7	25	2.9	2.3	1.7	21
		40	272	981	4.7	3.8	3.1	28	3.2	2.6	2.0	24
		50	303	1091	4.9	4.0	3.4	31	3.7	3.1	2.5	27
		60	333	1200	5.1	4.2	3.6	33	4.2	3.3	2.7	29

Performance Notes:

1. All SI (metric) ratings are soft conversion from I-P ratings.
2. Throw data is for air 20ºF/11ºC lower than room temperature. Throws for isothermal air are 40 to 50% greater.
3. †NC based on Lw(10^{-12} watts reference) -10db
4. Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.
5. When bypassing air into the plenum at the diffuser with Price R-Rings, throw may be as low as 90% of and the NC 2db higher than those listed in the performance chart.
6. When blocking for direction with the directional baffles, the air volume for a given static pressure is reduced from maximum flow listed in the performance chart by:

Blow Patterns	Reduction
3-Way	0.78
2-Way	0.56
1-Way	0.34

PERFORMANCE DATA

VKD: I-P (Inch-Pound)

Nominal Length in.	Inlet Static Pressure in. w.g.	Maximum Flow CFM	Maximum Flow Throw - Feet* @v_t				25% Maximum Flow Throw - Feet* @v_t			
			50 FPM	100 FPM	150 FPM	†NC	50 FPM	100 FPM	150 FPM	†NC
6	0.05	115	8	6	4	<15	4/3/2	3	2	<15
	0.08	145	9	7	5	19	4/3/2	3	2	16
	0.10	165	10	7	6	22	5/4/3	4	3	16
	0.15	205	11	8	7	30	5/4/3	4	3	25
	0.20	235	12	9	8	34	6/5/4	5	4	30
	0.25	265	13	10	9	37	7/5/4	5	4	34

Performance Notes:

1. * Throw data is for air 20ºF 11ºC lower than room temperature. Throws for isothermal air are 40 to 50% greater.
2. † NC based on Lw(10^{-12} watts reference) -10db
3. Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.
4. When using Acutherm directional baffles for other than 4-way blow patterns, reduce the maximum air volume as shown below.

Inlet Designation	Reduction		
	3-Way	2-Way Opposite	2-Way Corner
6	0.99	1.00	0.99
8	0.97	0.87	0.86
10	0.88	0.72	0.75
12	0.85	0.77	0.65

PERFORMANCE DATA

VRD: I-P (Inch-Pound)

Inlet Designation	Inlet Diameter in.	Inlet Static Pressure in. w.g.	Maximum Flow CFM	Maximum Flow				25% Maximum Flow			
				Throw - Feet* @v_t				Throw - Feet* @v_t			
				50 FPM	100 FPM	150 FPM	†NC	50 FPM	100 FPM	150 FPM	†NC
6	5 15/16	0.05	95	3	1	<1	22	<1	<1	<1	<15
		0.10	130	4	2	1	24	2	<1	<1	18
		0.12	144	4	2	1	24	2	<1	<1	19
		0.15	165	5	3	1	25	3	<1	<1	21
		0.20	190	6	4	2	28	4	2	<1	23
		0.25	215	7	4	2	31	4	2	1	24
8	7 15/16	0.05	160	4	2	<1	<15	2	1	<1	<15
		0.10	218	6	2	1	22	3	2	<1	<15
		0.13	252	7	2	1	26	4	2	<1	<15
		0.15	275	8	3	1	29	4	2	<1	<15
		0.20	318	9	3	2	34	5	3	2	19
		0.25	360	9	4	2	39	6	3	2	22
10	9 15/16	0.05	240	6	4	2	21	3	1	<1	19
		0.10	333	8	6	3	27	5	3	<1	20
		0.14	407	9	7	4	32	6	4	1	21
		0.15	425	9	7	4	33	6	4	1	21
		0.20	495	10	8	5	38	7	5	2	25
		0.25	565	11	8	5	43	7	5	2	29
12	11 15/16	0.05	320	8	4	1	16	5	1	<1	16
		0.10	448	9	6	3	27	6	2	1	18
		0.15	540	10	7	4	36	7	2	1	19
		0.17	576	10	7	4	38	7	2	1	21
		0.20	630	11	8	5	41	8	3	1	24
		0.25	720	11	8	6	45	8	4	1	28

Performance Notes:

1. *Throw data is for air 20ºF 11ºC lower than room temperature. Throws for isothermal air are 40 to 50% greater.
2. †NC based on Lw(10^{-12} watts reference) -10db
3. Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.
4. Ratings independently verified by inchcape Testing Services, ETL Testing Laboratories (pending).

PERFORMANCE DATA

VRD: SI (Metric)

Inlet Designation	Nominal Inlet Diameter mm	Inlet Static Pressure Pa	Maximum Flow		Maximum Flow Throw (m)* @vt=				25% Maximum Flow Throw (m)* @vt=			
			L/s	m³/h	0.25 m/s	0.50 m/s	0.75 m/s	†NC	0.25 m/s	0.50 m/s	0.75 m/s	†NC
6	150	10	42	150	0.9	0.3	0.3	22	0.2	<0.3	<0.3	<15
		20	55	198	1.1	0.5	0.3	23	0.5	<0.3	<0.3	<15
		30	68	245	1.4	0.8	0.3	24	0.7	<0.3	<0.3	19
		40	80	290	1.6	1.0	0.4	26	1.0	0.4	<0.3	21
		50	90	324	1.8	1.1	0.5	28	1.1	0.5	0.3	23
		60	99	358	2.1	1.2	0.6	30	1.2	0.6	0.3	24
8	200	10	70	253	1.1	0.6	0.3	<15	0.6	0.3	<0.3	<15
		20	92	331	1.6	0.7	0.3	19	0.8	0.4	<0.3	<15
		30	114	410	2.1	0.8	0.3	25	1.0	0.5	<0.3	<15
		40	134	483	2.5	0.9	0.4	30	1.3	0.7	0.4	16
		50	150	541	2.6	1.0	0.5	34	1.5	0.8	0.5	19
		60	166	599	2.7	1.2	0.6	38	1.8	0.9	0.6	21
10	250	10	105	377	1.7	1.1	0.6	<15	0.8	0.2	<0.3	<15
		20	140	504	2.1	1.5	0.8	22	1.2	0.6	<0.3	18
		30	175	630	2.5	1.9	1.1	29	1.6	1.0	0.3	20
		40	208	748	2.8	2.2	1.4	34	1.9	1.3	0.4	22
		50	234	844	3.1	2.3	1.4	38	2.0	1.4	0.5	25
		60	261	939	3.3	2.4	1.5	42	2.1	1.5	0.6	28
12	300	10	139	501	2.4	1.2	0.2	<15	1.5	0.3	<0.3	<15
		20	188	676	2.7	1.6	0.7	23	1.7	0.5	0.3	17
		30	229	826	2.9	1.9	1.0	31	2.0	0.6	0.3	19
		40	264	951	3.1	2.2	1.3	37	2.2	0.7	0.3	20
		50	298	1074	3.2	2.3	1.6	41	2.3	1.0	0.3	24
		60	332	1197	3.3	2.4	1.8	44	2.4	1.2	0.3	27

Performance Notes:

1. All SI (metric) ratings are soft conversion from I-P ratings.
2. *Throw data is for air 20ºF/11ºC lower than room temperature. Throws for isothermal air are 40 to 50% greater.
3. †NC based on Lw(10^{-12} watts reference) -10db
4. Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.
5. Ratings indenpendently verified by inhcape Testing Services, ETL Testing Laboratries (pending).

PERFORMANCE DATA

VLD: 2-Slot 2-Way Linear – I-P (Inch-Pound)

Nominal Length in.	Inlet Static Pressure in. w.g.	Maximum Flow CFM	Maximum Flow Throw - Feet* @v_t				25% Maximum Flow Throw - Feet* @v_t			
			50 FPM	100 FPM	150 FPM	†NC	50 FPM	100 FPM	150 FPM	†NC
24	0.05	70	4	3	2	<15	3	<1	<1	<15
	0.10	90	5	4	3	<15	4	3	<1	<15
	0.15	120	9	7	4	21	6	4	3	20
	0.18	135	10	8	5	23	7	5	3	22
	0.20	140	10	8	5	25	7	5	3	24
	0.25	165	13	10	7	30	8	6	4	29
36	0.05	80	4	3	2	<15	3	<1	<1	<15
	0.10	115	7	5	3	16	4	3	<1	<15
	0.14	143	9	7	5	22	6	4	2	21
	0.15	150	9	7	5	23	6	4	2	22
	0.20	170	11	9	7	28	7	5	3	27
	0.25	185	13	10	8	32	8/6/4	6	4	31
48	0.05	150	7	5	3	<15	4	3	<1	<15
	0.10	200	11	9	7	16	6	4	2	19
	0.15	240	13	11	9	22	8	6	4	25
	0.17	256	15	12	9	23	9	6	4	27
	0.20	280	17	14	10	28	10	7	5	29
	0.25	310	19	15	11	32	12	9	6	32
60	0.05	170	6	4	3	<15	4	3	<1	<15
	0.10	240	8	6	4	20	5	3	2	19
	0.12	260	9	7	4	22	6	3	2	21
	0.15	290	10	8	5	26	7	4	3	25
	0.20	330	14	11	7	31	9	6	4	30
	0.25	370	19	14	9	34	11	8	5	33

Performance Notes:

1. * Throw data is for air 20ºF 11ºC lower than room temperature. Throws for isothermal air are 40 to 50% greater.
2. †NC based on Lw(10^{-12} watts reference) -10db
3. Ratings independently verified by Inchcape Testing Services, ETL Testing Laboratories.
4. Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.

The volume of induction air (into the ceiling) required in addition to rated air volume is:		
Inlet SP in. wg	**1- and 2- Slots CFM**	**4-Slots CFM**
0.05	7	11
0.10	9	14
0.15	11	17
0.20	12.5	20

PERFORMANCE DATA

VLD: 2-Slot 1-Way Linear – I-P (Inch-Pound)

Nominal Length in.	Inlet Static Pressure in. w.g.	Maximum Flow CFM	Maximum Flow				25% Maximum Flow			
			Throw - Feet* @v_t				Throw - Feet* @v_t			
			50 FPM	100 FPM	150 FPM	†NC	50 FPM	100 FPM	150 FPM	†NC
24	0.05	65	6	4	3	<15	4	3	<1	<15
	0.07	75	7	5	4	17	5	3	<1	17
	0.1	90	9	7	5	20	6	4	2	19
	0.15	110	14	11	7	25	9	6	4	24
	0.2	130	17	13	8	29	10	7	5	28
	0.25	145	19	14	9	32	12	9	6	31
36	0.05	85	5	3	2	16	3	<1	<1	<15
	0.1	120	9	7	5	23	5	4	2	22
	0.12	130	11	8	6	24	6	5	3	23
	0.15	145	13	10	7	26	8	6	4	25
	0.2	165	16	12	8	30	10	7	5	29
	0.25	180	18	14	9	33	12	9	6	32
48	0.05	150	8	6	4	17	5	4	2	<15
	0.1	200	15	13	8	24	9	6	4	20
	0.15	240	22	17	11	30	13	9	6	26
	0.17	256	23	17	11	31	13	10	6	27
	0.2	280	24	18	12	32	14	11	7	28
	0.25	310	25	19	13	35	15	12	7	31
60	0.05	170	6	4	3	17	4	3	<1	16
	0.1	230	14	11	7	24	8	6	4	23
	0.13	263	17	13	8	28	11	7	5	27
	0.15	280	19	14	9	30	12	8	5	29
	0.2	320	20	15	10	32	12	9	6	31
	0.25	360	22	17	11	35	13	10	6	34

Performance Notes:

1. * Throw data is for air 20ºF 11ºC lower than room temperature. Throws for isothermal air are 40 to 50% greater.
2. † NC based on Lw(10^{-12} watts reference) -10db
3. Ratings independently verified by Inchcape Testing Services, ETL Testing Laboratories.
4. Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.

The volume of induction air (into the ceiling) required in addition to rated air volume is:		
Inlet SP in. wg	**1- and 2- Slots CFM**	**4-Slots CFM**
0.05	7	11
0.10	9	14
0.15	11	17
0.20	12.5	20

PERFORMANCE DATA

VLD: 1-Slot 1-Way Linear – I-P (Inch-Pound)

Nominal Length in.	Inlet Static Pressure in. w.g.	Maximum Flow CFM	Maximum Flow				25% Maximum Flow			
			Throw - Feet* @v_t				Throw - Feet* @v_t			
			50 FPM	100 FPM	150 FPM	†NC	50 FPM	100 FPM	150 FPM	†NC
24	0.05	45	6	4	3	<15	4	3	<1	<15
	0.10	60	9	7	4	19	6	4	2	<15
	0.15	70	13	10	7	23	8	6	4	16
	0.18	76	15	11	8	25	9	7	5	19
	0.20	80	17	12	8	27	10	8	5	21
	0.25	90	19	14	9	30	12	9	6	24
36	0.05	70	6	4	3	<15	4	3	<1	<15
	0.07	78	8	6	4	17	5	3	<1	<15
	0.10	90	10	8	6	20	6	4	2	<15
	0.15	110	13	10	7	24	8	6	4	17
	0.20	125	18	14	9	28	10	7	5	21
	0.25	140	20	15	10	31	12	9	6	24
48	0.05	90	6	4	3	16	4	3	<1	<15
	0.10	125	14	10	6	23	8	6	4	17
	0.12	135	16	12	7	25	10	7	4	18
	0.15	150	20	14	8	28	12	8	5	20
	0.20	175	21	15	9	31	13	10	6	24
	0.25	190	22	17	11	34	14	12	7	28
60	0.05	100	6	5	4	17	4	3	<1	<15
	0.09	140	9	7	6	23	6	4	2	18
	0.10	150	10	8	6	24	6	4	2	19
	0.15	180	15	13	8	30	9	6	4	23
	0.20	210	17	13	9	32	10	7	5	26
	0.25	230	20	15	10	35	12	9	6	29

Performance Notes:

1. * Throw data is for air 20ºF 11ºC lower than room temperature. Throws for isothermal air are 40 to 50% greater.
2. †NC based on Lw(10^{-12} watts reference) -10db
3. Ratings independently verified by Inchcape Testing Services, ETL Testing Laboratories.
4. Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.

The volume of induction air (into the ceiling) required in addition to rated air volume is:		
Inlet SP in. wg	**1- and 2- Slots CFM**	**4-Slots CFM**
0.05	7	11
0.10	9	14
0.15	11	17
0.20	12.5	20

PERFORMANCE DATA

VLD: 4-Slot 2-Way Linear – I-P (Inch-Pound)

Nominal Length in.	Inlet Static Pressure in. w.g.	Maximum Flow CFM	Maximum Flow				25% Maximum Flow			
			Throw - Feet* @v_t				Throw - Feet* @v_t			
			50 FPM	100 FPM	150 FPM	[t]NC	50 FPM	100 FPM	150 FPM	[t]NC
24	0.05	150	4	3	2	<15	3	2	<1	<15
	0.10	210	7	5	3	23	4	3	<1	22
	0.13	240	8	6	4	25	5	4	2	24
	0.15	260	9	7	5	26	5	4	2	25
	0.20	300	11	9	7	30	7	5	3	29
	0.25	335	13	11	8	33	8	6	4	32
36	0.05	185	5	4	3	<15	3	2	<1	<15
	0.10	260	8	6	4	23	5	4	2	22
	0.13	296	9	7	5	25	6	5	3	24
	0.15	320	10	8	6	27	6	5	3	26
	0.20	370	12	10	8	31	8	6	4	30
	0.25	410	14	12	9	34	9	7	4	33
48	0.05	275	8	7	5	<15	5	4	3	<15
	0.10	390	11	9	7	25	9	7	4	24
	0.11	408	12	10	7	26	10	8	5	25
	0.15	480	14	12	9	32	12	10	7	31
	0.20	550	17	14	10	37	14	12	8	36
	0.25	620	20	17	12	39	16	14	10	38
60	0.05	430	9	8	6	20	5	4	2	<15
	0.09	570	11	10	8	28	8	6	4	19
	0.10	605	12	10	8	30	9	7	4	20
	0.15	745	16	14	10	35	14	11	7	29
	0.20	860	19	16	12	39	15	13	8	34
	0.25	960	21	18	13	42	18	15	10	36

Performance Notes:

1. * Throw data is for air 20ºF 11ºC lower than room temperature. Throws for isothermal air are 40 to 50% greater.
2. [t]NC based on Lw(10^{-12} watts reference) -10db
3. Ratings independently verified by Inchcape Testing Services, ETL Testing Laboratories.
4. Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.

The volume of induction air (into the ceiling) required in addition to rated air volume is:		
Inlet SP in. wg	**1- and 2- Slots CFM**	**4-Slots CFM**
0.05	7	11
0.10	9	14
0.15	11	17
0.20	12.5	20

PERFORMANCE DATA

VLD: 4-Slot 1-Way Linear – I-P (Inch-Pound)

Nominal Length in.	Inlet Static Pressure in. w.g.	Maximum Flow CFM	Maximum Flow				25% Maximum Flow			
			Throw - Feet* @v_t				Throw - Feet* @v_t			
			50 FPM	100 FPM	150 FPM	[t]NC	50 FPM	100 FPM	150 FPM	[t]NC
24	0.05	150	6	5	3	<15	4	3	<1	<15
	0.10	210	13	10	7	26	8	6	4	24
	0.13	240	17	13	8	27	10	7	5	25
	0.15	260	19	15	9	28	11	8	5	26
	0.20	300	20	16	10	33	12	9	6	31
	0.25	335	21	18	12	36	13	10	7	34
36	0.05	180	6	5	4	<15	4	3	<1	<15
	0.10	250	14	12	8	26	8	6	4	24
	0.11	262	15	12	8	27	9	6	4	25
	0.15	310	19	14	10	30	11	8	5	28
	0.20	360	21	18	12	34	13	10	7	32
	0.25	400	22	19	13	37	14	12	7	35
48	0.05	315	16	13	9	<15	9	7	4	<15
	0.08	393	18	15	11	23	10	8	5	22
	0.10	445	20	17	12	28	10	8	5	26
	0.15	545	26	23	16	34	13	10	7	32
	0.20	630	35	29	21	38	19	15	9	36
	0.25	700	37	32	24	42	21	18	12	39
60	0.05	400	17	14	11	16	9	7	4	<15
	0.10	570	25	22	15	28	12	10	7	20
	0.11	596	26	23	16	29	13	11	7	22
	0.15	700	32	26	18	34	15	13	9	31
	0.20	805	36	30	22	38	21	16	12	36
	0.25	903	40	33	25	41	25	19	14	38

Performance Notes:

1. * Throw data is for air 20ºF 11ºC lower than room temperature. Throws for isothermal air are 40 to 50% greater.
2. [t]NC based on Lw(10^{-12} watts reference) -10db
3. Ratings independently verified by Inchcape Testing Services, ETL Testing Laboratories.
4. Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.

The volume of induction air (into the ceiling) required in addition to rated air volume is:		
Inlet SP in. wg	**1- and 2- Slots CFM**	**4-Slots CFM**
0.05	7	11
0.10	9	14
0.15	11	17
0.20	12.5	20

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