Diffusers

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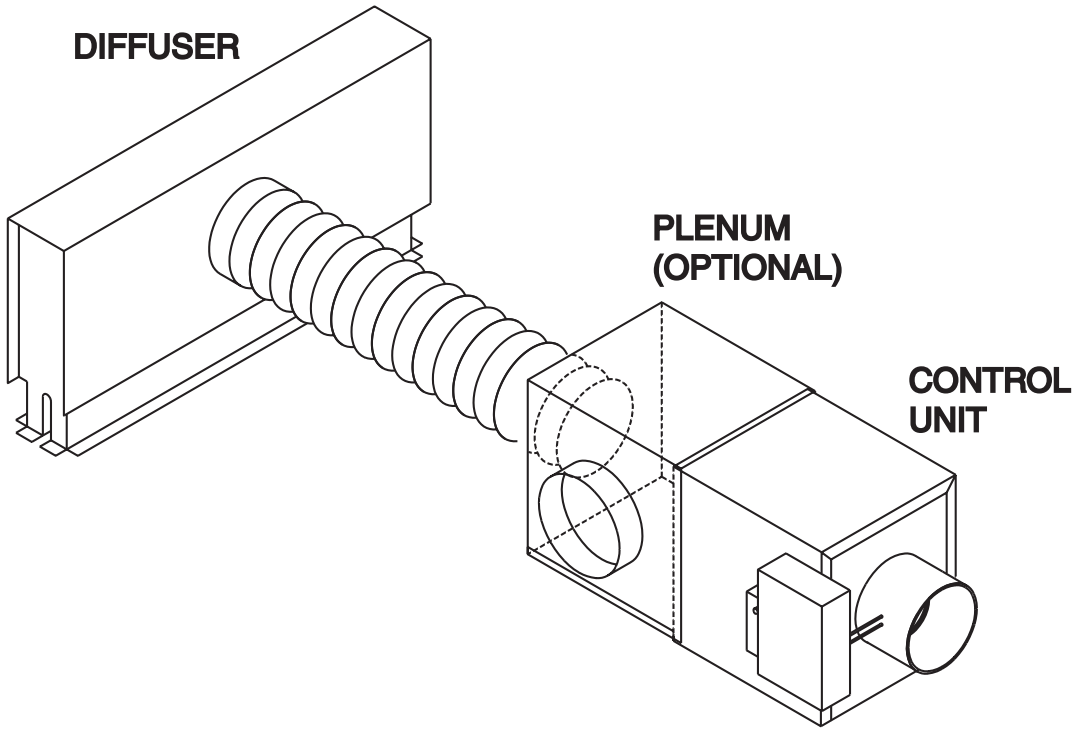
Introduction

In today's diverse building environment, we are seeing an expanding role of VAV applications across many different market segments. While this is happening, it is necessary to make sure the VAV systems and diffusers in particular are applied, installed, and operated correctly.

The purpose of this section of the catalog is to show these issues that need to be considered when selecting and placing diffusers.

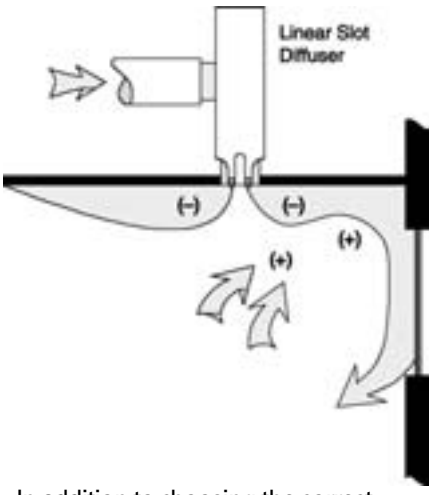


Diffusers

The VariTrane line of variable-air-volume (VAV) products has been an industry leader in performance and quality for many years. While most would associate the VariTrane name with VAV terminal units, the diffuser product line has grown significantly over the years.

Room Air Distribution

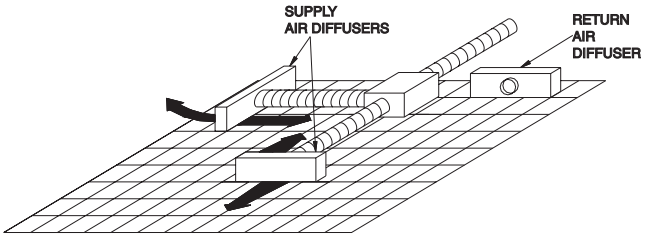
When variable-flow cooling and constant-flow heating are combined in a zone, the zone air diffusers are usually selected at partial cooling load to ensure proper operation. Ceiling-mounted linear slot diffusers are recommended since they perform well over a wide range of velocities. Cool air delivery takes advantage of the "Coanda" effect, whereby cool air discharged through a linear slot diffuser hugs the ceiling before descending, insuring proper operation over a wide range of flows without "dumping." When delivering warm air with constant flow velocities, or warm/cool air with variable flow velocities, the flow velocity must be high enough to ensure that the air reaches the floor. To prevent stratification, the warm air temperature should not be more than 20°F (6.7°C) above the zone air temperature.



In addition to choosing the correct diffuser type, the designer must properly size and place each diffuser in the zone to minimize noise and pressure drop while maximizing the throw and diffusion performance.

VariTrane Diffuser Types

The VariTrane line of diffusers contains a variety of different models. The following is a list of the diffuser types in the VariTrane line, an explanation of each type, and a short discussion of the proper application for each type.



NEVER DO THIS!!
(PERPENDICULAR AIR FLOWS)

Linear Slot Diffuser (LINR)

Linear slot diffusers are most commonly used in VAV systems. This type of diffuser has a fixed vane inside, which means that the pattern is not adjustable. The fixed vane allows a wide range of flows through the diffuser without causing drafts. Lower flanges provide ceiling tile support as an integral part of the diffuser housing.

Recommended Guidelines—Linear Slot Diffusers

Diffuser Placement—The maximum recommended distance between diffusers is three diffuser lengths. For example, if the diffuser length is 4 feet (1.219 m), the maximum separation distance would be 4 ft x 3 = 12ft (1.219 m x 3 = 3.658 m).

The maximum recommended distance for diffusers from an exterior wall, with parallel flow to the wall is two diffuser lengths. For example, if the diffuser length is 4 feet (1.219 m), the maximum distance from the exterior wall would be 4 ft x 2 = 8 ft (1.219 m x 2 = 2.438 m).

A simple rule for better air circulation is to avoid placing supply air linear slot diffusers that allow airflows to collide at right angles.

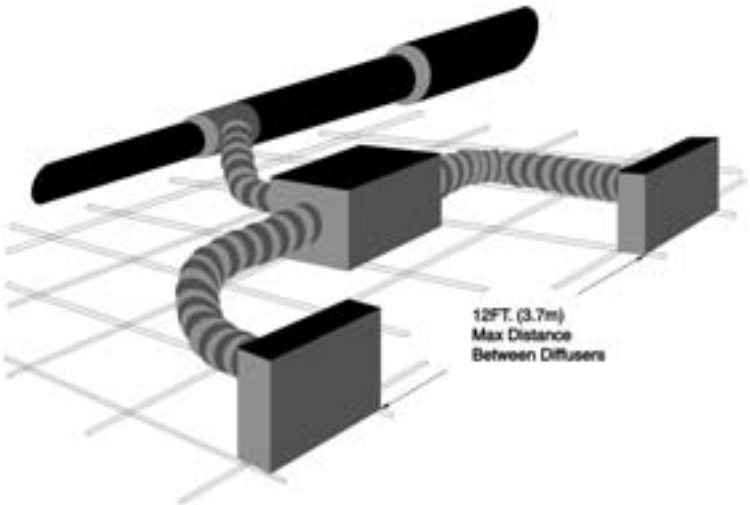
General Guidelines—When beginning the placement and layout of diffusers, assume that each diffuser delivers only 75% to 80% of its nominal airflow. If you start by using 100% of the nominal airflow, you will end up with high losses in performance, acoustical problems, and very little or no design flexibility.

A diffuser airflow rate is 50 cfm per linear foot (77.4 L/s per linear meter) of diffuser. Therefore, the recommended flow to use when designing is 50 cfm/linear ft x 0.8 = 40 cfm/linear ft (77.4 L/s/linear m x 0.8 = 61.9 L/s/linear m).

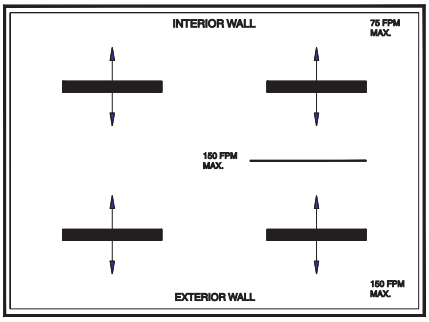
The nominal airflow of a diffuser is determined by multiplying the diffuser length, the number of slots, and the airflow per linear foot. Using the airflow per linear foot calculated above, a 4 foot, 2-slot, 2-way diffuser should be designed to handle 4 linear ft x 2 slots x 40 cfm/linear ft = 320 cfm (1.219 m x 2 slots x 61.9 L/s/linear m = 150.9 L/s).

To maximize the effectiveness of ventilation with ceiling diffusers, throws should be kept as long as possible. For proper air circulation, try to maintain at least a 20°F (6.7°C) difference between the supply air and room temperature. This provides for optimum performance.

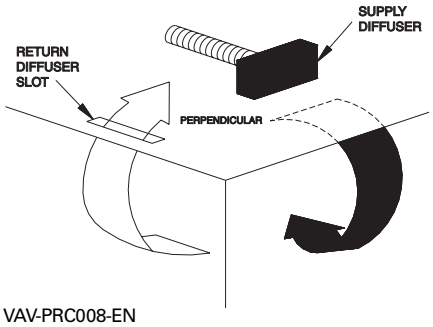
Collision Velocities—The collision velocity is the speed at which moving air meets a wall or another airflow



stream. For exterior walls, the collision velocity should be between 100 and 150 feet per minute (FPM) (0.508 and 0.762 m/s). Do not exceed 150 FPM (0.762 m/s) on an exterior wall. For interior walls, the collision velocity should be between 50 and 75 FPM (0.254 and 0.381 m/s). Try not to exceed 75 FPM (0.381 m/s) for interior walls. The maximum recommended collision velocity between airflow streams should not exceed 150 FPM (0.762 m/s). The collision velocity between airflow streams is determined by the addition of both velocities at the point of collision. Avoid collision of air velocities at right angles to each other by trying to maintain parallel flow. Following this guideline will allow one to maximize the "Coanda" effect and proper air diffusion in a zone. Experience indicates that mixed air after collision near the ceiling and below 150 FPM will produce comfort in the zone at the occupant's level.



Return Air Slots – Return air slots are placed perpendicular to supply air slots. This prevents supply air from bypassing the space, and allows for proper air circulation. With a suspended ceiling, low operating static pressure across the ceiling panels must be maintained. Failure to do so will cause the return air to be forced around the edges of the ceiling panels. When this happens, soiling of the panels will occur and the mechanical system can become choked for return air. A space-to-plenum pressure drop of 0.02 to 0.03 inches of water is acceptable under most conditions.



Fully Adjustable Pattern Flow (FAPF) – The FAPF diffuser, a type of ceiling diffuser outlet, should be used with lay-in ceilings. The primary benefit of this kind of diffuser is that it provides the most flexibility of adjustment of the airflow pattern. The FAPF diffuser provides adjustable vanes for horizontal or vertical throw. The dual-vane option allows each slot to be adjusted for left, right, or vertical throw. Besides pattern adjustments, the vanes also provide airflow dampering. In addition, the vanes are adjustable from the face of the diffuser so changes to the pattern can be made after the diffuser is installed.

Vane Adjustable Pattern Flow (VAPF) – The VAPF diffuser is very similar to the FAPF ceiling outlet diffusers. The primary difference is the design of the pattern adjustment vane. The VAPF diffuser should be used with lay-in ceilings. The pattern is adjustable for horizontal left, horizontal right, or vertical throw. The pattern adjustment vane contains a felt seal on the end to reduce air leakage around the vane. The vanes are adjustable from the face of the diffuser, allowing the pattern to be easily changed after installation.

Vane Adjustable Pattern Flow–Special (VAPS) – The VAPS diffuser is a special version of the VAPF diffuser. The design of the vane is slightly different from the VAPF model, but the VAPS has the same functionality. The VAPS has been popular in certain regions of the country.

Adjustable Air Bar Diffuser (AABD) – The AABD diffuser is another lay-in ceiling type of diffuser. The difference between the AABD and the FAPF or the VAPF is that the AABD has no adjustment vane. A sliding air bar in the outlet of the diffuser makes the pattern adjustments. The pattern is adjustable for horizontal left, horizontal right, or vertical throw.

Light Fixture Diffuser (LITE) – The LITE diffuser should be installed on a suspended ceiling light fixture. This type of diffuser is quite popular with architects, because the number of ceiling penetrations can be reduced. The diffuser is available with an integral sliding volume damper and with or without pattern control vanes (some light fixtures already contain pattern control vanes). Both the volume damper and the pattern control vanes (if necessary) are adjustable with a screwdriver from the face of the diffuser without removing the light fixture doorframe. The pattern control vane allows for either horizontal or vertical throw.

Induction Diffusers (INDT, INDB, INSR, INCB)—
Induction diffuser discharges air in a tight pattern along a ceiling. The discharged air then induces the room air into the air stream to effectively mix the streams. Induction diffusers are typically used in exterior zones that have unusually high heat loads or drafts. They are designed to be installed in suspended ceilings and have high induction horizontal airflow. The center down blow option provides a vertical air pattern for exterior walls or glass. Induction diffusers have adjustable blades for volume and direction control.

INDT –This type of induction diffuser contains a supply air outlet only. It will project air along a ceiling and provide mixing of the primary and room air streams.

INDT –This type of induction diffuser contains a standard supply air outlet along with down blow outlet. The down blow outlet will project a jet of primary air in a vertical direction while the standard outlet projects the induction jet. The down blow jet is often washed along an exterior glass window or aimed to combat something that is producing a draft in the space.

INSR –This type of induction diffuser contains a supply air outlet along with a separate return air inlet integrated into one device. This reduces the number of ceiling penetrations necessary.

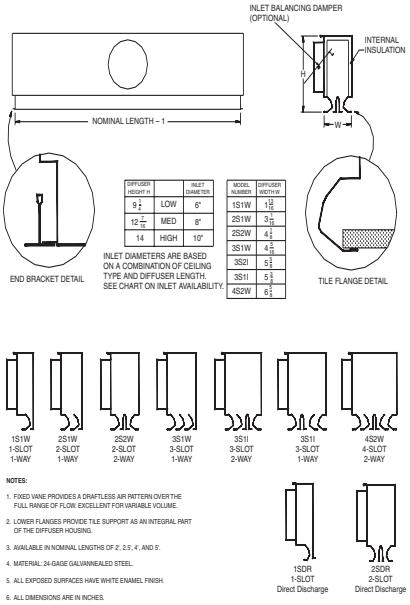
INCB –This type of induction diffuser contains a standard supply air outlet, a down blow outlet, and a separate return air inlet integrated into one device.

Perforated Diffuser (PERF)
The PERF diffusers are designed for use with lay-in ceilings and provide the most economical option for air diffusion. The pre-assembled diffuser is made to lay in a 24" x 24" (0.610 m x 0.610 m) ceiling opening and is available with multiple round inlet connection sizes. Outlets are available with disc or adjustable deflector. The air is projected in a circular pattern from the diffuser.

Linear Slot Diffusers

The features of the Linear Slot Diffuser are described by the product categories shown in bold. Within each category the options available are listed.

LINR



DIFFUSER HEIGHT H		INLET DIAMETER
9 1/2	LOW	6"
12 7/16	MED	8"
14	HIGH	10"

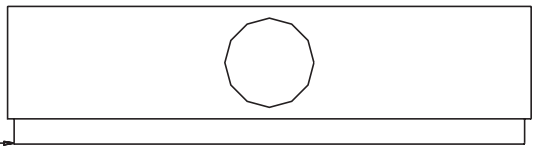
MODEL NUMBER	DIFFUSER WIDTH W
1S1W	1 11/16
2S1W	3 1/16
2S2W	4 1/16
3S1W	4 13/16
3S2I	5 3/16
3S1I	5 3/16
4S2W	6 1/16

NOTES:

1. FIXED VANE PROVIDES A DRAFTLESS AIR PATTERN OVER THE FULL RANGE OF FLOW. EXCELLENT FOR VARIABLE VOLUME.
2. LOWER FLANGES PROVIDE TILE SUPPORT AS AN INTEGRAL PART OF THE DIFFUSER HOUSING.
3. AVAILABLE IN NOMINAL LENGTHS OF 2', 2.5', 4', AND 5'.
4. MATERIAL: 24-GAGE GALVANNEALED STEEL.
5. ALL EXPOSED SURFACES HAVE WHITE ENAMEL FINISH.
6. ALL DIMENSIONS ARE IN INCHES.

MODL	**Model**
VLSD	Supply Diffuser
VLRD	Return Slot
DSEQ	**Design Sequence**
A	A Design Sequence
TYPE	**Diffuser Type**
LINR	Linear Diffuser
LGTH	**Diffuser Length**
2	Diffuser Length – 2'
2.5	Diffuser Length – 2 1/2'
4	Diffuser Length – 4'
5	Diffuser Length – 5'
HGTH	**Diffuser Height**
LOW	Low Height
MED	Medium Height
HIGH	High Height
NONE	For Return Slots
WDTH	**Ceiling Tee Width**
916	9/16" Ceiling Grid
1516	15/16" Ceiling Grid
SLOT	**Slot Configuration**
1S1W	1-Slot, 1-Way
2S1W	2-Slot, 1-Way
3S1W	3-Slot, 1-Way
2S2W	2-Slot, 2-Way
4S2W	4-Slot, 2-Way
1SDR	1-Slot, Direct Discharge
3S1I	3-Slot, 2 Way, Inlet on 1-Slot Side
3S2I	3-Slot, 2 Way, Inlet on 2-Slot Side
2SDR	2-Slot, Direct Discharge
CEIL	**Ceiling Type**
TBAR	15/16" T-Bar
2X2T	15/16" T-Bar with Center Notch
PLSR	Plaster Ceiling
T916	9/16" Narrow Faced Grid
D916	9/16" Narrow Regressed Grid
2X2N	9/16" Center Notch, Narrow Faced Grid
2X2D	9/16" Center Notch, Narrow Regressed Grid
SPLN	Concealed Spline
DMPR	**Damper Type**
FIRE	Fire Damper
BAL	Balancing Damper
HNGR	**Hanger Holes**
WITH	Hanger Holes

CEILING SYSTEM CROSS REFERENCE



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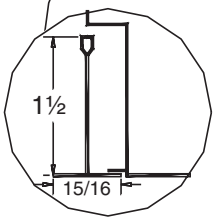
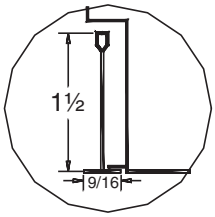
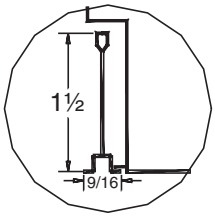


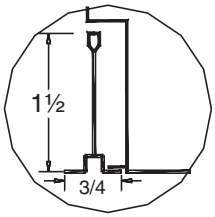
GRID TYPE	COMPANY/NAME OR MODEL
15/16"GRID STANDARD T-BAR GRID (T-BAR, 2x2T)	ARMSTRONG – PRELUDE SERIES CHICAGO METALLIC – 200/1800 SERIES USG/DONN – DX SERIES



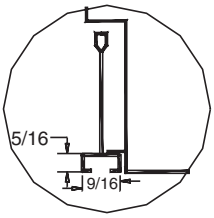
9/16" GRID NARROW FACED GRID (T916, 2x2N)	ARMSTRONG – SUPRAFINE CHICAGO METALLIC – TEMPRA 4000 USG/DONN – CENTRICITEE



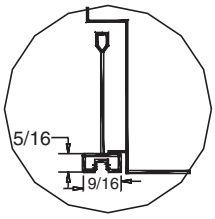
REVEAL GRID NARROW FACED GRID (T916, 2x2N)	CHICAGO METALLIC – STYLINE 3700 (9/16") USG/DONN – DX MERIDIAN (9/16")



REVEAL GRID NARROW FACED GRID (T916, 2x2N)	CHICAGO METALLIC – STYLINE 3800 (3/4")



BOLT SLOT GRID (FINELINE TYPE) NARROW REGRESSED GRID (D916, 2x2D)	ARMSTRONG – SILHOUETTE (1¾" HEIGHT) CHICAGO METALLIC – ULTRALINE 3500/3600 USG/DONN – FINELINE (1 25/32" HEIGHT) GORDON INC. – SIMPLICITY A-SERIES

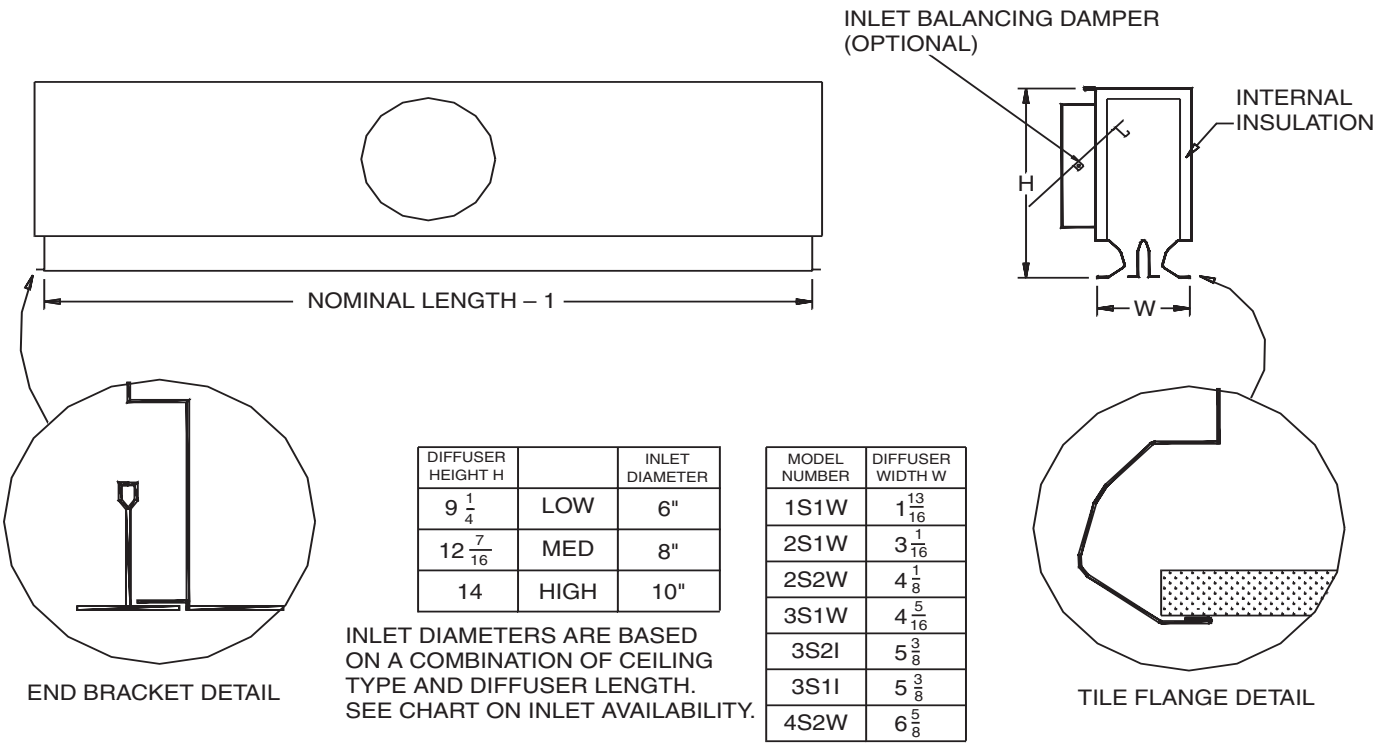


SCREW SLOT GRID (EXTRUDED ALUMINUM) NARROW REGRESSED GRID (D916, 2x2D)	ARMSTRONG – TRIMLOK USG/DONN – HIGHLINE GORDON INC. – SIMPLICITY B-SERIES

NOTES:
1. T-BAR HEIGHTS RANGE FROM 1½" – 2¼". CHECK WITH FACTORY TO ASSURE COMPATIBILITY BEFORE SPECIFYING DIFFUSERS FOR THESE TYPES OF GRIDS.

2. ALL DIMENSIONS ARE IN INCHES.

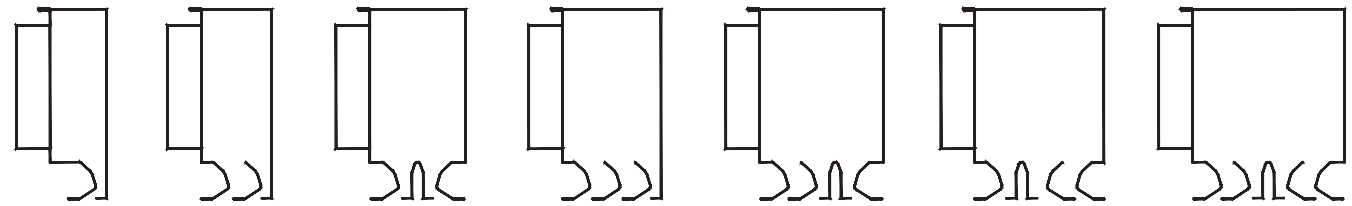
LINR



DIFFUSER HEIGHT H		INLET DIAMETER
$9\frac{1}{4}$	LOW	6"
$12\frac{7}{16}$	MED	8"
14	HIGH	10"

INLET DIAMETERS ARE BASED ON A COMBINATION OF CEILING TYPE AND DIFFUSER LENGTH. SEE CHART ON INLET AVAILABILITY.

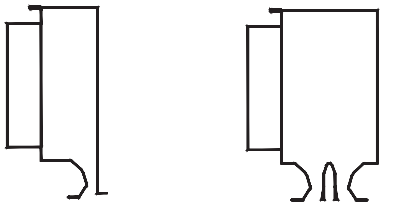
MODEL NUMBER	DIFFUSER WIDTH W
1S1W	$1\frac{13}{16}$
2S1W	$3\frac{1}{16}$
2S2W	$4\frac{1}{8}$
3S1W	$4\frac{5}{16}$
3S2I	$5\frac{3}{8}$
3S1I	$5\frac{3}{8}$
4S2W	$6\frac{5}{8}$



1S1W 1-SLOT 1-WAY | 2S1W 2-SLOT 1-WAY | 2S2W 2-SLOT 2-WAY | 3S1W 3-SLOT 1-WAY | 3S1I 3-SLOT 2-WAY | 3S1I 3-SLOT 1-WAY | 4S2W 4-SLOT 2-WAY

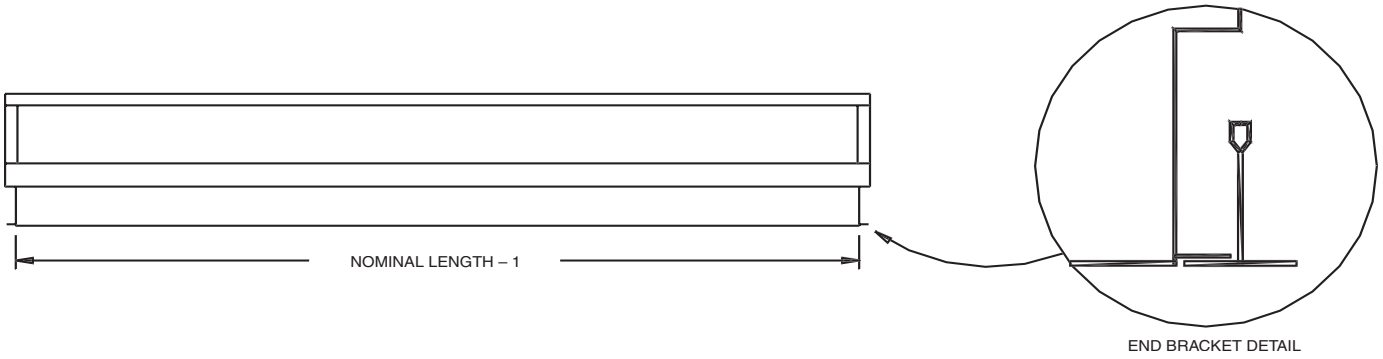
NOTES:

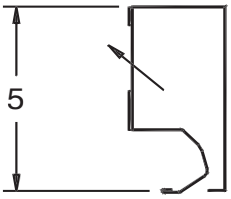
1. FIXED VANE PROVIDES A DRAFTLESS AIR PATTERN OVER THE FULL RANGE OF FLOW. EXCELLENT FOR VARIABLE VOLUME.
2. LOWER FLANGES PROVIDE TILE SUPPORT AS AN INTEGRAL PART OF THE DIFFUSER HOUSING.
3. AVAILABLE IN NOMINAL LENGTHS OF 2', 2.5', 4', AND 5'.
4. MATERIAL: 24-GAGE GALVANNEALED STEEL.
5. ALL EXPOSED SURFACES HAVE WHITE ENAMEL FINISH.
6. ALL DIMENSIONS ARE IN INCHES.



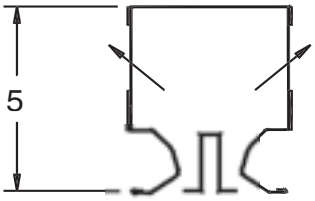
1SDR 1-SLOT Direct Discharge | 2SDR 2-SLOT Direct Discharge

LINR OPEN RETURNS





1S1W

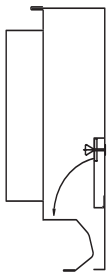


1S2W

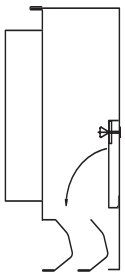
NOTES:

1. LOWER FLANGES PROVIDE TILE SUPPORT AS AN INTEGRAL PART OF THE DIFFUSER HOUSING.
2. AVAILABLE IN NOMINAL LENGTHS OF 2', 2.5', 4', AND 5'.
3. ALL EXPOSED SURFACES HAVE WHITE ENAMEL FINISH.
4. RETURNS ARE MADE OF 24-GAGE GALVANNEALED STEEL.
5. ALL DIMENSIONS ARE IN INCHES.

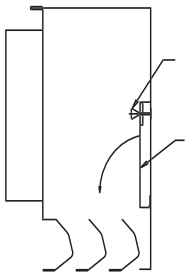
ONE WAY LINEAR SLOT DIFFUSER OR RETURN SLOT



1S1W
1-SLOT
1-WAY

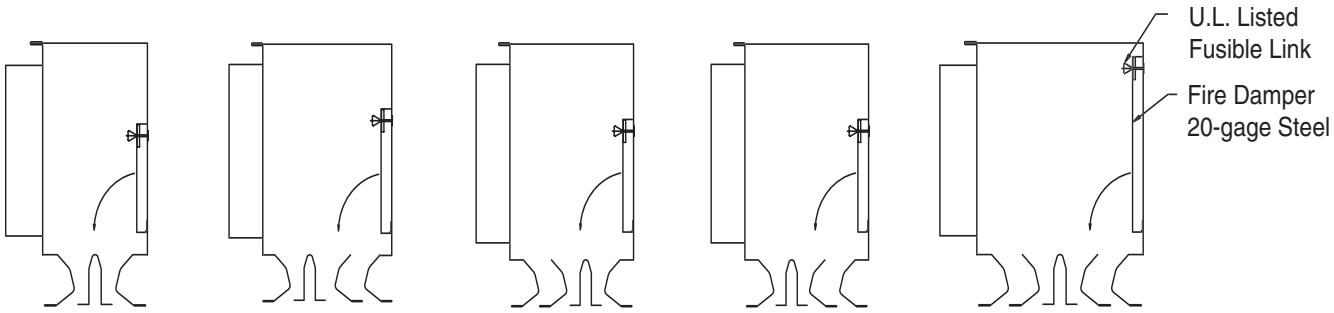


2S1W
2-SLOT
1-WAY



3S1W
3-SLOT
1-WAY

TWO WAY LINEAR SLOT DIFFUSER OR RETURN SLOT



2S2W
2-SLOT
2-WAY

3S1I
3-SLOT
1-WAY

3S2I
3-SLOT
2-WAY

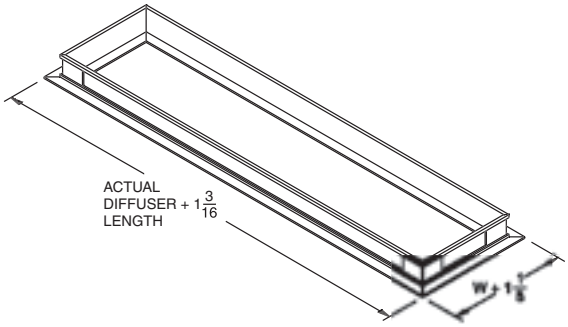
3S1I
3-SLOT
1-WAY

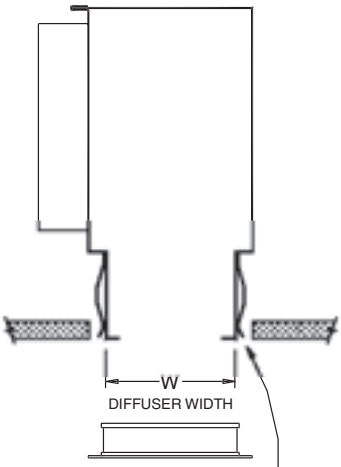
4S2W
4-SLOT
2-WAY

Notes:

1. Spring loaded dampers blades are hinged and held open by 158˚F (70˚C) fusible links.
2. This drawing is for pictorial view only and not to be used for dimensional purposes.
3. The UL Reference R6700 VOLUME 2 (1-SLOT and 2-SLOT models only).

SLOT DIFFUSER SURFACE MOUNT FRAMES FOR PLASTER CEILING

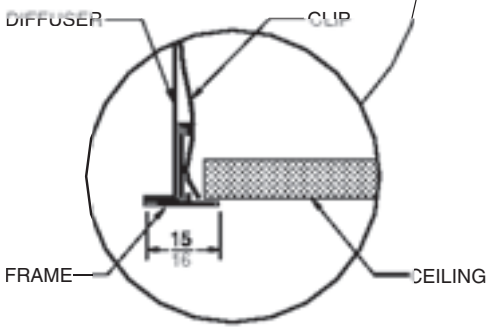




RECOMMENDED CEILING OPENING DIMENSIONS:
WIDTH – DIFFUSER WIDTH (W) + ¾
LENGTH = ACTUAL DIFFUSER LENGTH + ¾

NOTES:
1. ALL DIMENSIONS ARE IN INCHES.

MODEL NUMBER	DIFFUSER WIDTH W
1S1W	1 13/16
2S1W	3 1/16
2S2W	4 1/8
3S1W	4 5/16
3S1I	5 3/8
3S2I	5 3/8
4S2W	6 5/8



SECTION DETAIL
(INSTALLED)

Linear Slot Diffusers—Inlet Availability

Ceiling Type	Slot Arrangement	24" Length			30" Length			48" Length			60" Length		
		Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
15/16" T-Bar — Plaster	1-slot, 1-way	5"	5"	—	5"	5"	—	6"	6"	—	6"	6"	—
	2-slot, 1-way	—	6"	—	—	6"	—	—	8"	—	—	8"	—
	3-slot, 1-way	—	—	8"	—	—	8"	—	—	10"	—	—	10"
	2-slot, 2-way	6"	6"	6"	6"	6"	6"	8"o*	8"	8"	8"o*	8"	8"
	3-slot, 2-way	—	—	8"	—	—	8"	—	—	10"	—	-—	10"
	4-slot, 2-way	—	—	8"	—	—	8"	—	—	10"	—	—	10"
15/16" T-Bar with Center Notch (2 x 2 T)	1-slot, 1-way	—	—	—	—	—	—	6"	6"	—	—	—	—
	2-slot, 1-way	—	—	—	—	—	—	—	8"	—	—	—	—
	3-slot, 1-way	—	—	—	—	—	—	—	—	10"	—	—	—
	2-slot, 2-way	—	—	—	—	—	—	8"o*	8"	8"	—	—	—
	3-slot, 2-way	—	—	—	—	—	—	—	—	10"	—	—	—
	4-slot, 2-way	—	—	—	—	—	—	—	—	10"	—	—	—
9/16" Narrow Faced Grid or 9/16" Narrow Regressed Grid Or Concealed Spline	1-slot, 1-way	5"	5"	—	—	—	—	6"	6"	—	6"	6"	—
	2-slot, 1-way	—	6"	—	—	—	—	—	8"	—	—	8"	—
	3-slot, 1-way	—	—	8"	—	—	—	—	—	10"	—	—	10"
	2-slot, 2-way	6"	8"	10"	6"	8"	10"	6"	8"	10"	6"	8"	10"
	3-slot, 2-way	—	—	10"	—	—	10"	—	—	10"	—	—	10"
	4-slot, 2-way	—	—	10"	—	—	10"	—	—	10"	—	—	10"
9/16" Center Notch—Narrow Faced Grid or 9/16" Center Notch—Narrow Regressed Grid	1-slot, 1-way	—	—	—	—	—	—	6"	6"	—	—	—	—
	2-slot, 1-way	—	—	—	—	—	—	—	8"	—	—	—	—
	3-slot, 1-way	—	—	—	—	—	—	—	—	10"	—	—	—
	2-slot, 2-way	—	—	—	—	—	—	6"	8"	10"	—	—	—
	3-slot, 2-way	—	—	—	—	—	—	—	—	10"	—	—	—
	4-slot, 2way	—	—	—	—	—	—	—	—	10"	—	—	—

Note: *O- Oval

Table 1- Style LINR Diffuser Performance

Supply Slot Performance–2'

1S1W	**Cfm**	20	40	60	80	100
	TSP	.01	.03	.06	.10	.15
	Throw	11	17	22	25	27
	NC	(20)	(20)	(20)	22	27
2S1W	**Cfm**	40	80	120	160	200
	TSP	.01	.03	.07	.12	.18
	Throw	14	21	27	31	34
	NC	(20)	(20)	(20)	26	31
2S2W	**Cfm**	40	80	120	160	200
	TSP	.01	.03	.06	.09	.14
	Throw	11	17	22	25	27
	NC	(20)	(20)	(20)	22	27
3S1W	**Cfm**	60	120	180	240	300
	TSP	.01	.03	.06	.12	.19
	Throw	17	27	35	40	43
	NC	(20)	(20)	(20)	26	31
3S2W	**Cfm**	60	120	180	240	300
	TSP	.01	.03	.06	.10	.15
	Throw 1	11	17	22	25	27
	Throw 2	14	21	27	31	34
	NC	(20)	(20)	(20)	26	32
4S2W	**Cfm**	80	160	240	320	400
	TSP	.01	.03	.06	.10	.15
	Throw	14	21	27	31	34
	NC	(20)	(20)	21	29	36

Supply Slot Performance–4'

1S1W	**Cfm**	40	80	120	160	200
	TSP	.01	.03	.08	.14	.20
	Throw	11	17	22	25	27
	NC	(20)	(20)	(20)	26	32
2S1W	**Cfm**	80	160	240	320	400
	TSP	.01	.04	.08	.14	.22
	Throw	14	21	27	31	34
	NC	(20)	(20)	21	30	37
2S2W	**Cfm**	80	160	240	320	400
	TSP	.01	.03	.06	.09	.15
	Throw	11	17	22	25	27
	NC	(20)	(20)	(20)	26	32
3S1W	**Cfm**	120	240	360	480	600
	TSP	.01	.03	.06	.12	.19
	Throw	17	27	35	40	43
	NC	(20)	(20)	21	30	37
3S2W	**Cfm**	120	240	360	480	600
	TSP	.01	.03	.06	.10	.16
	Throw 1	11	17	22	25	27
	Throw 2	14	21	27	31	34
	NC	(20)	(20)	22	31	38
4S2W	**Cfm**	160	320	480	640	800
	TSP	.01	.03	.06	.11	.17
	Throw	14	21	27	31	34
	NC	(20)	(20)	26	34	42

Return Slot Performance–2'

1S1W	**Cfm**	20	40	60	80	100
	-SP	.01	.03	.06	.10	.18
2S2W	**Cfm**	40	80	120	160	200
	-SP	.01	.03	.06	.10	.19

Return Slot Performance–2.5'

1S1W	**Cfm**	25	50	75	100	125
	-SP	.01	.03	.06	.10	.18
2S2W	**Cfm**	50	100	150	200	250
	-SP	.01	.03	.06	.10	.19

Return Slot Performance–4'

1S1W	**Cfm**	40	80	120	160	200
	-SP	.01	.03	.06	.10	.19
2S2W	**Cfm**	80	160	240	320	400
	-SP	.01	.03	.06	.11	.20

Return Slot Performance–5'

1S1W	**Cfm**	50	100	150	200	250
	-SP	.01	.03	.06	.11	.22
2S2W	**Cfm**	100	200	300	400	500
	-SP	.01	.03	.06	.12	.23

Supply Slot Performance–2.5'

1S1W	**Cfm**	25	50	75	100	125
	TSP	.01	.03	.06	.11	.16
	Throw	11	17	22	25	27
	NC	(20)	(20)	(20)	23	28
2S1W	**Cfm**	50	100	150	200	250
	TSP	.01	.03	.07	.12	.19
	Throw	14	21	27	31	34
	NC	(20)	(20)	(20)	27	32
2S2W	**Cfm**	50	100	150	200	250
	TSP	.01	.03	.06	.09	.14
	Throw	11	17	22	25	27
	NC	(20)	(20)	(20)	23	28
3S1W	**Cfm**	75	150	225	300	375
	SP	.01	.03	.06	.12	.19
	Throw	17	27	35	40	43
	NC	(20)	(20)	(20)	27	33
3S2I	**Cfm**	75	150	225	300	375
3S1I	**TSP**	.01	.03	.06	.10	.15
	Throw 1	11	17	22	25	27
	Throw 2	14	21	27	31	34
	NC	(20)	(20)	(20)	27	33
4S2W	**Cfm**	100	200	300	400	500
	TSP	.01	.03	.06	.10	.15
	Throw	14	21	27	31	34
	NC	(20)	(20)	22	30	38

Supply Slot Performance–5'

1S1W	**Cfm**	50	100	150	200	250
	TSP	.01	.04	.09	.15	.24
	Throw	11	17	22	25	27
	NC	(20)	(20)	21	30	37
2S1W	**Cfm**	100	200	300	400	500
	TSP	.01	.04	.08	.14	.22
	Throw	14	21	27	31	34
	NC	(20)	(20)	24	35	43
2S2W	**Cfm**	100	200	300	400	500
	TSP	.01	.03	.06	.11	.17
	Throw	11	17	22	25	27
	NC	(20)	(20)	21	30	37
3S1W	**Cfm**	150	300	450	600	750
	TSP	.01	.03	.07	.13	.21
	Throw	17	27	35	40	43
	NC	(20)	(20)	24	35	43
3S2W	**Cfm**	150	300	450	600	750
	TSP	.01	.03	.06	.11	.18
	Throw 1	11	17	22	25	27
	Throw 2	14	21	27	31	34
	NC	(20)	(20)	25	36	44
4S2W	**Cfm**	200	400	600	800	1000
	TSP	.01	.03	.07	.13	.20
	Throw	14	21	27	31	34
	NC	(20)	(20)	32	40	48

TSP - Static pressure readings in in. wg.

Throw - Horizontal distance in feet to reach terminal velocity, VT, of 50 FPM.

Throw 1 and Throw 2 indicates number of slots throwing each direction on 3-slot, 2-way diffuser.

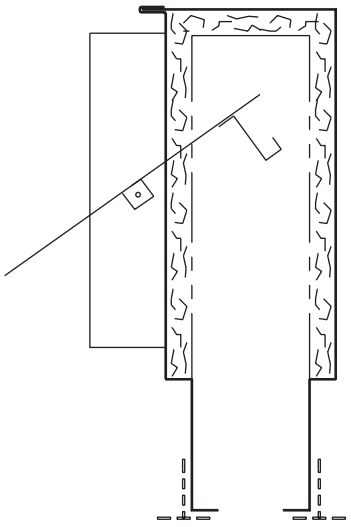
NC - A one number evaluation of sound generation derived from sound power levels (re: 10-12 watts) less 10 db room absorption. (20) indicates less than 20 NC rating. Data shown is for one diffuser. Additional diffusers will tend to increase the NC value by perhaps 2 db each, depending on size, air quantity and distance from other diffusers. Return applications will add +2 db to all values shown. Performance data is based on tests performed in accordance with ADC 1062 GRD-84 Test Code.

Diffusers—Adjustable Flow

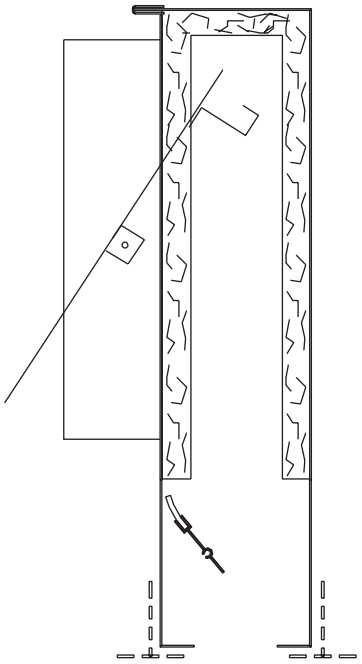
Model Number Description

Adjustable Flow Diffusers

The features of the Adjustable Flow Diffuser are described by the product categories shown in bold. Within each category the options available are listed.



FAPF



VAPF

MODL Model
VLSD Supply Diffuser
VLRD Return

DSEQ Design Sequence
A A Design Sequence

TYPE Diffuser Type
FAPF Fully Adjustable Pattern Flow Diffuser
VAPF Vane Adjustable Pattern Flow Diffuser
AABD Adjustable Air Bar Diffuser
VAPS Vane Adjustable Pattern Flow Diffuser

LGTH Diffuser Length
2 Diffuser Length – 2'
3 Diffuser Length – 3'
4 Diffuser Length – 4'
5 Diffuser Length – 5'
22 Diffuser Length – 22"
34 Diffuser Length – 34"
46 Diffuser Length – 46"
58 Diffuser Length – 58"
24 Diffuser Length – 23 3/4"
36 Diffuser Length – 35 3/4"
48 Diffuser Length – 47 3/4"
60 Diffuser Length – 59 3/4"

HGTH Diffuser Height
LOW Low Height
MED Medium Height
HIGH High Height

WDTH Ceiling Tee Width
9/16 Ceiling Grid – 9/16"
1516 Ceiling Grid – 15/16"

SLOT Slot Configuration
1SLT Slot – 1
2SLT Slot – 2
3SLT Slot – 3
4SLT Slot – 4

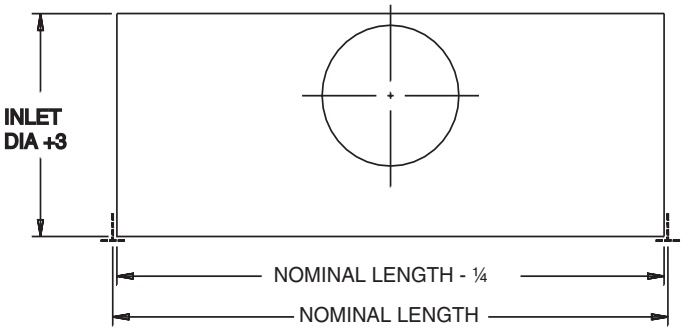
CEIL Ceiling Type
TBAR T-bar – 15/16"
T916 Narrow Faced T-bar – 9/16"
2X2T Center Notched Grid – 15/16"
2X2N Narrow Faced Center Notch – 9/16"
2X2D Narrow Regressed Cntr Notch – 9/16"
PLSR Plaster Ceiling
D916 Narrow Regressed T-bar - 9/16"
SPLN Concealed Spline

DMPR Damper Type
BAL Balancing Damper

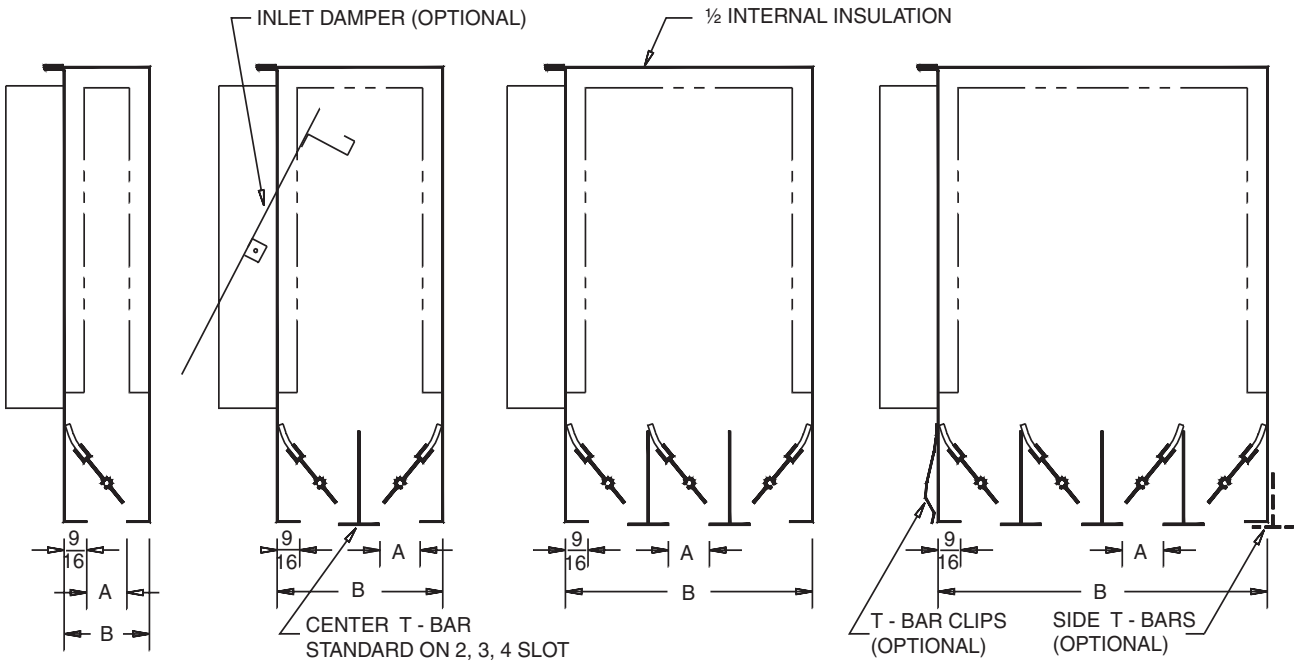
DISW Discharge Width
.5 Discharge Width – 1/2"
.75 Discharge Width – 3/4"
1.0 Discharge Width – 1"
1.25 Discharge Width – 1 1/4"
1.5 Discharge Width – 1 1/2"
2.0 Discharge Width – 2"
2.25 Discharge Width – 2 1/4"
2.5 Discharge Width – 2 1/2"

STYL Diffuser Style
NONE For VAPF, AABD, and VAPS
11 1-slot – one way
12 1-slot – 2-way left or right
13 1-slot – 1-way with 1 factory-installed T-bar
14 1-slot – 2-way left or right with 1 factory-installed T-bar
15 1-slot – 1-way with 2 factory-installed T-bars
16 1-slot – 2-way left or right with 2 factory-installed T-bars
21 2-slot – 2-way opposite
22 2-slot – 2-way opposite left or right
23 2-slot – 2-way opposite with 1 factory-installed T-bar
24 2-slot – 2-way opposite left or right with 1 factory-installed T-bar
25 2-slot – 2-way opposite with 2 factory-installed T-bars
26 2-slot – 2-way opposite left or right with 2 factory-installed T-bars
27 2-slot – 2-way opposite with 3 factory-installed T-bars
28 2-slot – 2-way opposite left or right with 3 factory-installed T-bars
29 2-slot – 2-way opposite with 2 factory-installed T-bars
33 3-slot – 1-way
34 3-slot – 2-way left or right
43 1-slot – 2-way opposite
44 4-slot – 2-way opposite left or right

VAPF



INLET DIAMETER	HEIGHT
6"	LOW - 9"
8"	MED - 11"
10"	HIGH - 13"



NOTES:

1. MATERIAL: 24-GAGE GALVANNEALED STEEL. ALL EXPOSED SURFACES PAINTED FLAT BLACK. T - BARS ARE WHITE.
2. AVAILABLE IN NOMINAL LENGTHS OF 2', 3', 4', & 5'.
3. ALUMINUM VANE WITH FELT SEAL IS FULLY ADJUSTABLE FROM THE FACE FOR LEFT, RIGHT, OR VERTICAL THROW.
4. DESIGNED FOR VARIABLE OR CONSTANT VOLUME SYSTEMS.
5. MAXIMUM PERFORMANCE AND FLEXIBILITY FOR INTERIOR OR PERIMETER APPLICATIONS IN A VARIETY OF CEILING SYSTEMS.
6. ALL DIMENSIONS ARE IN INCHES

SLOT WIDTH A	DIFFUSER WIDTH B			
	1-SLOT	2-SLOT	3-SLOT	4-SLOT
$\frac{3}{4}$"	$1\frac{7}{8}$"	$3\frac{5}{8}$"	$5\frac{5}{16}$"	7"
1"	$2\frac{1}{8}$"	$4\frac{1}{8}$"	$6\frac{1}{16}$"	8"
$1\frac{1}{2}$"	$2\frac{5}{8}$"	$5\frac{1}{8}$"	$7\frac{9}{16}$"	10"

Style VAPF Diffuser Performance

1-Slot–2' Discharge Width

.75	**Cfm**	15	25	35	50	75	100
(Ak .05)	**TSP**	.01	.02	.04	.09	.20	.35
(Low)	**Throw**	5	7	9	11	15	17
	NC	(20)	(20)	(20)	(20)	31	39
1.0	**Cfm**	20	35	50	75	100	125
(Ak .06)	**TSP**	.01	.03	.06	.14	.25	.39
(Low)	**Throw**	5	8	13	15	17	19
	NC	(20)	(20)	(20)	24	31	37
1.5	**Cfm**	25	50	85	100	125	175
(Ak .11)	**TSP**	.01	.02	.05	.08	.13	.26
(Med)	**Throw**	3	9	13	17	19	24
	NC	(20)	(20)	(20)	21	26	35

1-Slot–4' Discharge Width

.75	**Cfm**	25	50	75	100	125	175
(Ak .10)	**TSP**	.01	.03	.06	.10	.16	.32
(Low)	**Throw**	4	10	14	17	19	22
	NC	(20)	(20)	(20)	22	28	38
1.0	**Cfm**	50	75	100	150	200	250
(Ak .11)	**TSP**	.02	.04	.06	.14	.26	.40
(Med)	**Throw**	8	13	18	21	23	27
	NC	(20)	(20)	(20)	27	34	40
1.5	**Cfm**	50	100	150	200	250	300
(Ak .22)	**TSP**	.01	.02	.05	.09	.14	.20
(Med)	**Throw**	4	11	17	22	25	28
	NC	(20)	(20)	(20)	24	29	34

1-Slot–5' Discharge Width

.75	**Cfm**	50	75	100	125	150	200
(Ak .12)	**TSP**	.02	.03	.06	.09	.13	.23
(Med)	**Throw**	8	12	17	19	22	24
	NC	(20)	(20)	(20)	23	28	37
1.0	**Cfm**	75	100	150	200	250	300
(Ak .14)	**TSP**	.02	.04	.09	.16	.25	.36
(High)	**Throw**	9	14	20	24	27	28
	NC	(20)	(20)	22	30	35	40
1.5	**Cfm**	75	125	200	250	300	350
(Ak .28)	**TSP**	.01	.02	.05	.08	.12	.16
(High)	**Throw**	7	13	20	26	29	31
	NC	(20)	(20)	(20)	25	29	33

2-Slot–2' Discharge Width

.75	**Cfm**	25	50	75	100	125	150
(Ak .10)	**TSP**	.01	.03	.06	.10	.16	.22
(Low)	**Throw**	4	10	14	17	20	24
	NC	(20)	(20)	(20)	22	28	34
1.0	**Cfm**	50	75	100	125	150	200
(Ak .11)	**TSP**	.02	.04	.08	.12	.17	.30
(Low)	**Throw**	9	13	18	19	22	25
	NC	(20)	(20)	(20)	22	27	34
1.5	**Cfm**	50	100	150	200	250	300
(Ak .22)	**TSP**	.01	.02	.05	.09	.14	.20
(Med)	**Throw**	6	12	19	23	27	30
	NC	(20)	(20)	(20)	24	29	34

2-Slot–4' Discharge Width

.75	**Cfm**	50	100	150	200	250	300
(Ak .19)	**TSP**	.01	.03	.06	.10	.16	.23
(Med)	**Throw**	6	13	19	24	27	30
	NC	(20)	(20)	(20)	25	31	37
1.0	**Cfm**	100	150	200	250	300	400
(Ak .22)	**TSP**	.02	.05	.08	.12	.18	.32
(Med)	**Throw**	11	16	21	26	28	33
	NC	(20)	(20)	(20)	25	30	37

2-Slot–5' Discharge Width

.75	**Cfm**	75	125	200	250	300	375
(Ak .24)	**TSP**	.01	.02	.06	.10	.14	.22
(High)	**Throw**	7	13	20	26	29	32
	NC	(20)	(20)	(20)	26	31	38
1.0	**Cfm**	150	200	250	300	400	500
(Ak .28)	**TSP**	.03	.05	.07	.10	.18	.29
(High)	**Throw**	14	20	27	29	32	34
	NC	(20)	(20)	20	25	33	38

3-Slot–2' Discharge Width

.75	**Cfm**	50	75	125	175	225	250
(Ak .14)	**TSP**	.01	.02	.07	.13	.21	.26
(Med)	**Throw**	7	11	19	22	26	28
	NC	(20)	(20)	(20)	28	35	39
1.0	**Cfm**	75	100	150	175	225	300
(Ak .17)	**TSP**	.02	.03	.07	.10	.16	.28
(Med)	**Throw**	10	15	22	23	26	30
	NC	(20)	(20)	(20)	22	29	36
1.5	**Cfm**	75	125	200	250	300	375
(Ak .33)	**TSP**	.01	.02	.04	.06	.09	.14
(High)	**Throw**	5	12	20	26	29	32
	NC	(20)	(20)	(20)	21	25	31

3-Slot–4' Discharge Width

.75	**Cfm**	75	150	225	300	375	450
(Ak .29)	**TSP**	.01	.03	.06	.10	.16	.23
(High)	**Throw**	6	17	26	30	33	37
	NC	(20)	(20)	(20)	27	33	38
1.0	**Cfm**	150	225	300	400	500	600
(Ak .34)	**TSP**	.02	.04	.08	.14	.22	.31
(High)	**Throw**	16	23	31	34	39	43
	NC	(20)	(20)	21	29	34	39

4-Slot–2' Discharge Width

.75	**Cfm**	50	100	150	200	250	300
(Ak .19)	**TSP**	.01	.03	.06	.10	.16	.24
(Med)	**Throw**	5	14	20	24	28	30
	NC	(20)	(20)	(20)	25	31	37
1.0	**Cfm**	100	150	200	250	300	400
(Ak .22)	**TSP**	.02	.05	.08	.12	.18	.32
(Med)	**Throw**	13	19	26	28	30	34
	NC	(20)	(20)	(20)	25	30	37
1.5	**Cfm**	75	150	225	300	375	450
(Ak .44)	**TSP**	.01	.02	.03	.06	.09	.13
(High)	**Throw**	3	13	19	27	33	35
	NC	(20)	(20)	(20)	(20)	25	30

4-Slot–4' Discharge Width

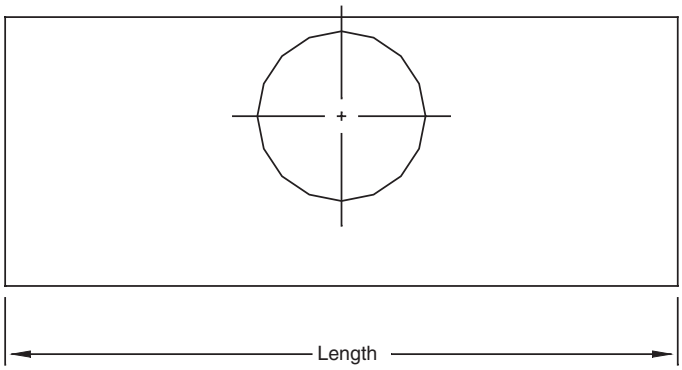
.75	**Cfm**	100	200	300	400	500	600
(Ak .39)	**TSP**	.01	.03	.06	.10	.16	.22
(High)	**Throw**	7	19	29	34	39	43
	NC	(20)	(20)	(20)	28	34	40

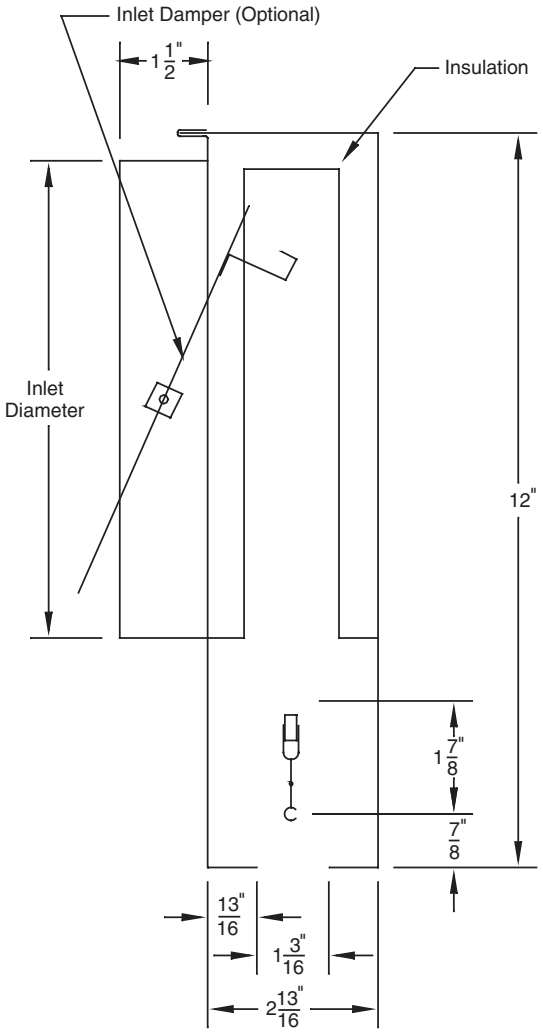
TSP - Total pressure readings in in. wg with horizontal throw.
Ak - Area factor along with cfm is used to determine the average face velocity - Vk = cfm / Ak

Throw - Horizontal distance in feet to reach terminal velocity, VT, of 50 FPM.

NC - A one number evaluation of sound generation derived from sound power levels (re: 10-12 watts) less 10 db room absorption. (20) indicates less than 20 NC rating. Data shown is for one diffuser. Additional diffusers will tend to increase the NC value by perhaps 2 db each, depending on size, air quantity and distance from other diffusers. Return applications will add +2 db to all values shown. Peformance data is based on tests performed in accordance with ADC 1062 GRD-84 Test Code.

VAPS





Open Return

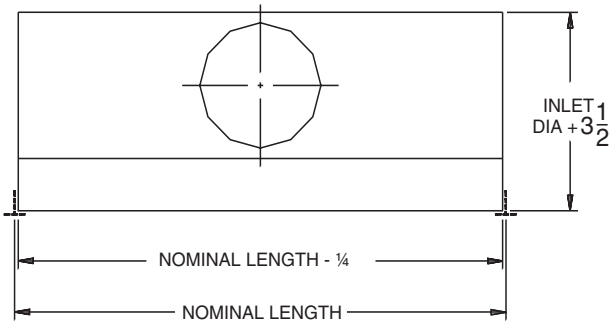
Supply Diffuser

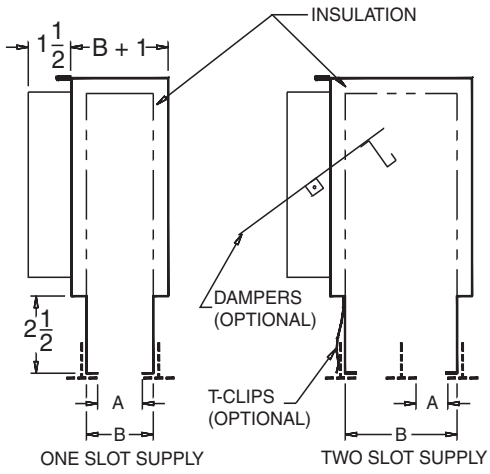
LENGTH	INLET
22"	6"
34"	7"
46"	8"
58"	10" OVAL
24" (23-3/4")	6"
36" (35-3/4")	7"
48" (47-3/4")	8"
60" (59-3/4")	10" OVAL

Notes:

1. Material: 24-gage galvannealed steel with exposed surfaces and pattern controller painted flat black.
2. Neck opening is located so that the bottom of inlet is above air pattern controller throughout the range of settings including vertical.
3. VAPS diffusers are only available for 15/16" T-Bar and 15/16" center notched grid ceilings.
4. All dimensions are in inches.

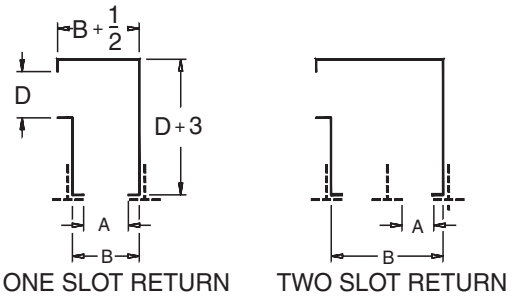
FAPF 1 and 2 SLOT





INLET DIAMETER	HEIGHT
6"	LOW - 9.5"
8"	MED - 11.5"
10"	HIGH - 13.5"

	ONE SLOT					TWO SLOT				
SLOT WIDTH A	1/2"	3/4"	1"	1 1/4"	1 1/2"	1/2"	3/4"	1"	1 1/4"	1 1/2"
OVERALL WIDTH B	1 1/4"	1 1/2"	1 3/4"	2"	3 1/4"	2 3/4"	3 1/4"	3 3/4"	4 1/4"	5 3/4"

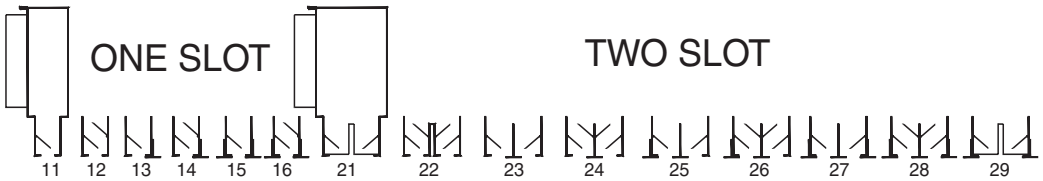


	ONE SLOT					TWO SLOT				
SLOT WIDTH A	1/2"	3/4"	1"	1 1/4"	1 1/2"	1/2"	3/4"	1"	1 1/4"	1 1/2"
OVERALL WIDTH B	1 1/4"	1 1/2"	1 3/4"	2"	3 1/4"	2 3/4"	3 1/4"	3 3/4"	4 1/4"	5 3/4"
OUTLET HEIGHT D	1/2"	3/4"	1"	1 1/4"	1 1/2"	1"	1 1/2"	2"	2 1/2"	3"

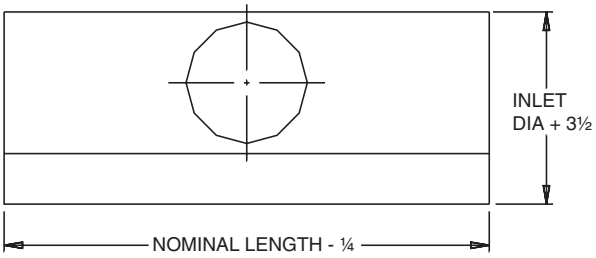
NOTES:

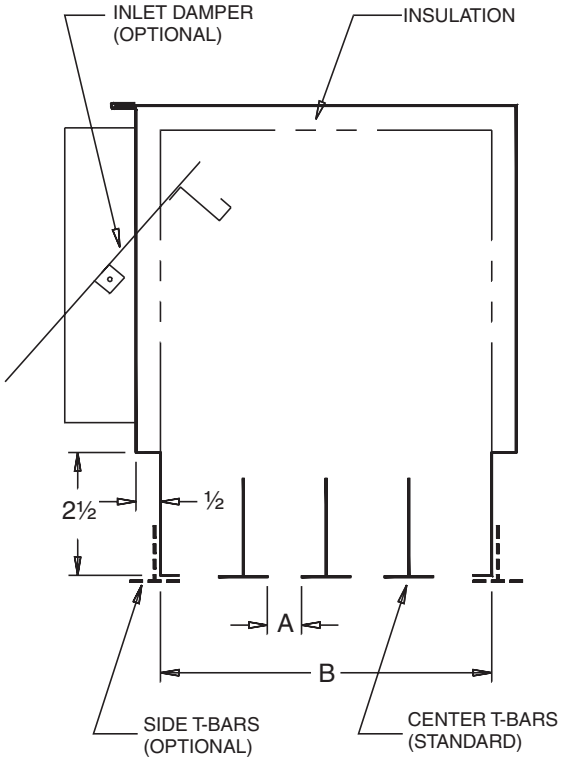
1. ADJUSTABLE VANES FOR HORIZONTAL OR VERTICAL THROW. DUAL VANE OPTION ALLOWS EACH SLOT TO BE ADJUSTED FOR LEFT, RIGHT OR VERTICAL THROW AND DAMPERING.
2. DIFFUSERS OVER 36" LONG HAVE VANES MADE IN TWO SEPARATE PIECES TO ALLOW SPLITTING AIR FLOW SETTINGS WITHIN EACH SLOT.
3. AVAILABLE IN NOMINAL LENGTHS FROM 2', 3', 4', AND 5'.
4. MATERIAL: 24-GAGE GALVANNEALED STEEL.
5. ALL EXPOSED SURFACES PAINTED FLAT BLACK. FACTORY-INSTALLED T-BARS ARE WHITE.
6. ALL DIMENSIONS ARE IN INCHES.

STYLES:



FAPF 3 and 4 SLOT





INLET DIAMETER	HEIGHT
6"	LOW - 9.5"
8"	MED - 11.5"
10"	HIGH - 13.5"

NOTES:

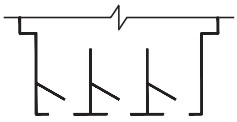
1. AVAILABLE IN NOMINAL LENGTHS FROM 2 TO 5 FEET.
2. MATERIAL: 24-GAGE GALVANNEALED STEEL.
3. ALL EXPOSED SURFACES PAINTED FLAT BLACK. FACTORY-INSTALLED T-BARS ARE WHITE.
4. ALL DIMENSIONS ARE IN INCHES.

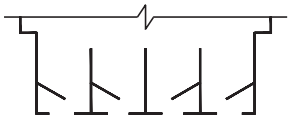
	THREE SLOT			FOUR SLOT		
SLOT WIDTH A	$\frac{3}{4}$"	1"	$1\frac{1}{2}$"	$\frac{3}{4}$"	1"	$1\frac{3}{4}$"
OVERALL WIDTH B	$4\frac{15}{16}$"	$5\frac{11}{16}$"	$7\frac{3}{16}$"	$6\frac{5}{8}$"	$7\frac{5}{8}$"	$9\frac{5}{8}$"

PATTERN CONFIGURATIONS

SINGLE VANES ALLOW EACH SLOT TO THROW IN ONE HORIZONTAL DIRECTION OR VERTICAL. SPECIFY THE NUMBER OF SLOTS TO THROW IN EACH DIRECTION. EX:

DUAL VANES ALLOW EACH SLOT TO BE ADJUSTED FOR RIGHT, LEFT OR VERTICAL THROW.


(STYL 33)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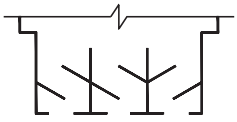
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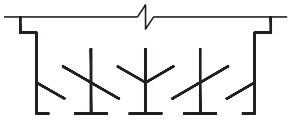

(STYL 44)

Style FAPF Diffuser Performance

1-Slot–2' Discharge Width

.5	**Cfm**	30	40	50	60	70	80	90	100			
	TSP	.08	.10	.16	.22	.31	.40	.50	.63			
	Throw	5	5	7	8	9	10	12	13			
	NC	(20)	(20)	26	31	36	40	44	46			
.75	**Cfm**	30	40	50	60	70	80	90	100			
	TSP	.04	.05	.08	.11	.15	.20	.25	.31			
	Throw	4	5	6	7	8	9	10	11			
	NC	(20)	(20)	21	26	31	35	38	41			
1.0	**Cfm**	50	60	70	80	90	100	120	140	160		
	TSP	.03	.04	.05	.07	.09	.10	.15	.21	.25		
	Throw	5	5	6	7	8	8	10	12	13		
	NC	(20)	(20)	(20)	23	28	29	37	40	43		
1.25	**Cfm**	60	70	80	90	100	120	140	160	180	200	
	TSP	.03	.04	.06	.08	.09	.13	.20	.23	.27	.30	
	Throw	5	6	6	7	8	9	11	13	14	14	
	NC	(20)	(20)	(20)	21	23	30	35	38	40	42	
1.5	**Cfm**	80	90	100	120	140	160	180	200	225		
	TSP	.04	.05	.06	.09	.13	.17	.21	.26	.32		
	Throw	8	9	10	12	14	16	18	20	22		
	NC	(20)	(20)	(20)	(20)	25	29	33	37	40		

1-Slot–4' Discharge Width

.5	**Cfm**	50	60	70	80	90	100	120	140	160		
	TSP	.04	.06	.07	.09	.12	.16	.22	.26	.35		
	Throw	5	6	6	7	9	10	12	13	14		
	NC	(20)	(20)	(20)	20	24	30	34	37	40		
.75	**Cfm**	80	90	100	120	140	160	180	200	225		
	TSP	.05	.06	.07	.10	.14	.19	.24	.29	.33		
	Throw	6	7	8	10	11	13	15	16	17		
	NC	(20)	(20)	22	27	32	37	41	44	46		
1.0	**Cfm**	100	120	140	160	180	200	225	250	275	300	
	TSP	.03	.04	.06	.07	.09	.11	.14	.17	.19	.22	
	Throw	6	7	8	10	11	12	14	15	16	18	
	NC	(20)	(20)	21	26	31	33	38	42	43	46	
1.25	**Cfm**	120	140	160	180	200	225	250	275	300	325	
	TSP	.03	.04	.06	.08	.10	.12	.15	.17	.20	.24	
	Throw	5	6	8	10	11	13	14	15	17	18	
	NC	(20)	(20)	20	24	30	32	35	40	42	45	
1.50	**Cfm**	140	160	180	200	225	250	275	300	325	350	400
	TSP	.03	.05	.05	.07	.09	.10	.13	.15	.18	.21	.26
	Throw	10	11	12	14	16	17	20	21	23	25	27
	NC	(20)	(20)	(20)	(20)	(20)	20	25	26	31	33	37

1-Slot–5' Discharge Width

1.50	**Cfm**	225	250	275	300	325	350	400	450	500	550	600
	TSP	.05	.06	.08	.09	.11	.13	.16	.19	.24	.32	.38
	Throw	14	16	17	19	21	22	25	29	32	36	38
	NC	(20)	(20)	(20)	20	21	24	29	33	36	40	43

Style FAPF Diffuser Performance (con't.)

2-Slot–2' Discharge Width

.5	**Cfm**	50	60	70	80	90	100	120	140	160	
	TSP	.04	.06	.07	.10	.13	.16	.22	.28	.32	
	Throw	4	4	5	6	7	8	9	10	11	
	NC	(20)	(20)	(20)	(20)	23	26	32	35	38	
.75	**Cfm**	80	90	100	120	140	160	180	200	220	
	TSP	.05	.06	.08	.11	.15	.20	.25	.31	.36	
	Throw	5	5	6	7	8	9	10	12	12	
	NC	(20)	21	24	29	34	38	42	45	48	
1.0	**Cfm**	100	120	140	160	180	200	220	240	260	280
	TSP	.03	.04	.06	.07	.09	.11	.15	.16	.19	.23
	Throw	5	5	6	7	8	9	11	11	12	13
	NC	(20)	23	26	31	36	38	42	44	47	48
1.25	**Cfm**	120	140	160	180	200	220	240	260	280	300
	TSP	.03	.04	.05	.06	.07	.08	.09	.10	.14	.16
	Throw	5	5	6	6	7	8	9	10	11	12
	NC	(20)	23	25	26	31	34	35	35	40	44
1.50	**Cfm**	140	160	180	200	220	240	260	280	300	325
	TSP	.03	.04	.05	.07	.08	.10	.12	.14	.17	.20
	Throw	7	8	9	11	11	12	13	14	15	16
	NC	(20)	(20)	(20)	(20)	(20)	20	22	25	27	29

2-Slot–4' Discharge Width

.5	**Cfm**	100	120	140	160	180	200	220	240	260	280
	TSP	.04	.05	.07	.10	.13	.15	.18	.22	.26	.29
	Throw	5	6	7	8	9	9	11	12	13	13
	NC	(20)	(20)	(20)	22	27	29	30	35	37	38
.75	**Cfm**	140	160	180	200	220	240	260	280	300	350
	TSP	.04	.06	.07	.08	.09	.11	.13	.15	.17	.24
	Throw	6	6	7	8	9	10	11	11	13	14
	NC	(20)	(20)	22	27	28	32	34	36	39	42
1.0	**Cfm**	180	200	220	240	260	280	300	350	400	450
	TSP	.02	.03	.03	.04	.05	.05	.06	.08	.10	.14
	Throw	6	6	7	7	8	9	9	11	12	14
	NC	(20)	(20)	20	22	25	27	30	35	38	41
1.25	**Cfm**	200	220	240	260	280	300	350	400	450	500
	TSP	.02	.03	.04	.05	.05	.05	.06	.08	.10	.13
	Throw	6	6	7	7	8	9	11	12	12	14
	NC	(20)	(20)	(20)	20	21	25	28	34	37	41
1.50	**Cfm**	300	325	350	375	400	450	500	550	600	700
	TSP	.03	.04	.05	.06	.06	.08	.10	.12	.15	.21
	Throw	10	11	12	12	15	16	17	20	21	25
	NC	(20)	(20)	(20)	(20)	(20)	(20)	21	24	28	33

2-Slot–5' Discharge Width

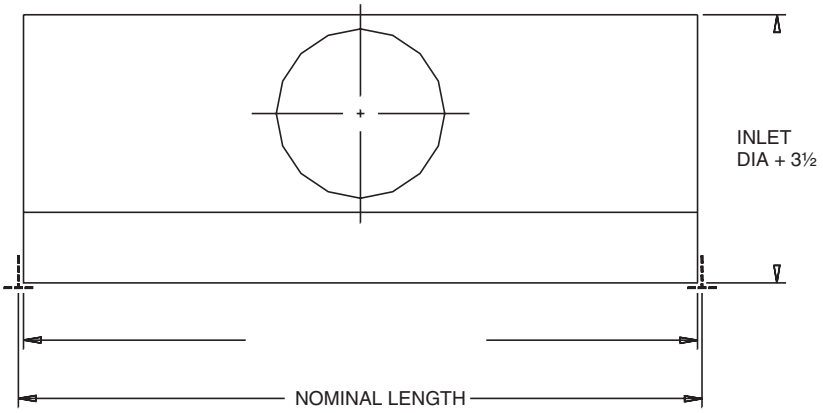
1.50	**Cfm**	325	350	375	400	450	500	550	600	700	800
	TSP	.03	.03	.04	.04	.05	.07	.07	.09	.13	.17
	Throw	11	12	13	14	15	16	17	18	24	26
	NC	(20)	(20)	(20)	(20)	(20)	(20)	(20)	20	25	29

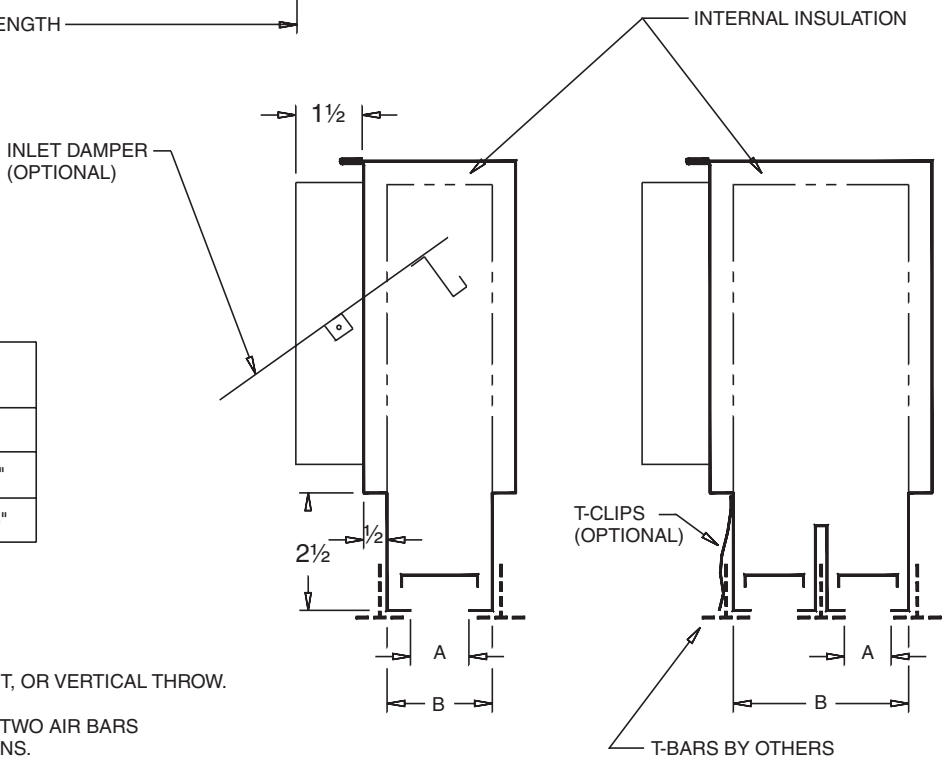
TSP -Total pressure readings in in. wg with horizontal throw.

Throw - Horizontal distance in feet to reach terminal velocity, VT, of 50 FPM.

NC - A one number evaluation of sound generation derived from sound power levels (re: 10-12 watts) less 8 db room absorption. (20) indicates less than 20 NC rating. Data shown is for one diffuser. Additional diffusers will tend to increase the NC value by perhaps 2 db each, depending on size, air quantity and distance from other diffusers. Return applications will add +2 db to all values shown. Performance data is based on tests performed in accordance with ADC 1062 GRD-84Test Code.

AABD





INLET DIAMETER	HEIGHT
6"	LOW – 9.5"
8"	MED – 11.5"
10"	HIGH – 13.5"

NOTES:
1. SLIDING AIR BAR PROVIDES LEFT, RIGHT, OR VERTICAL THROW.
2. DIFFUSERS OVER 36" IN LENGTH HAVE TWO AIR BARS PER SLOT TO ALLOW SPLIT AIR PATTERNS.
3. AVAILABLE IN NOMINAL LENGTHS FROM 2' TO 5'. NORMAL T-BAR APPLICATION IS NORMAL LENGTH LESS ¼".
4. MATERIAL: 24-GAGE GALVANNEALED STEEL. ALL EXPOSED SURFACES PAINTED BLACK.
5. ONLY AVAILABLE FOR 15/16" T-BAR AND CENTER NOTCHED GRID (2X2T) CEILING ONLY.
6. ALL DIMENSIONS ARE IN INCHES.

	ONE SLOT					TWO SLOT			
SLOT WIDTH A	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
OVERALL WIDTH B	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{3}{4}$	$3\frac{3}{8}$	$3\frac{1}{4}$	$3\frac{3}{4}$	$4\frac{3}{4}$	$5\frac{3}{4}$

Diffusers—Adjustable Flow

Performance Data—AABD

Style AABD Diffuser Performance

1-Slot–4' Discharge Width

.75 (Low)	**Cfm**	50	75	100	125	150
	TSP	.02	.05	.10	.15	.23
	Throw	4–7	9–12	13–17	15–21	17–25
	NC	(20)	23	31	37	43
1.0 (Med)	**Cfm**	75	100	125	150	175
	TSP	.04	.08	.12	.18	.23
	Throw	8–11	12–17	13–18	16–23	18–26
	NC	22	29	34	40	45
1.25 (Med)	**Cfm**	75	100	150	200	250
	TSP	.02	.05	.10	.17	.26
	Throw	7–11	10–14	13–18	16–23	20–31
	NC	(20)	21	32	40	47
1.50 (Med)	**Cfm**	75	100	150	200	250
	TSP	.02	.04	.08	.13	.21
	Throw	5–9	9–13	12–17	15–21	19–28
	NC	(20)	(20)	29	38	46
2.0 (Med)	**Cfm**	100	150	200	250	300
	TSP	.04	.07	.12	.18	.27
	Throw	8–12	10–14	12–17	15–21	18–26
	NC	(20)	26	36	43	48
2.25 (Med)	**Cfm**	100	150	200	250	300
	TSP	.03	.06	.09	.14	.20
	Throw	6–9	9–12	11–15	14–19	17–25
	NC	(20)	25	34	40	45
2.50 (Med)	**Cfm**	150	200	250	300	350
	TSP	.05	.09	.13	.18	.25
	Throw	7–11	10–14	13–18	15–21	18–26
	NC	24	33	40	44	49

2 Slot–4' Discharge Width

.75 (Med)	**Cfm**	100	150	200	250	300
	TSP	.02	.05	.10	.16	.24
	Throw	4–7	9–12	13–17	15–21	17–24
	NC	21	25	34	40	46
1.0 (Med)	**Cfm**	150	200	250	300	350
	TSP	.04	.08	.12	.18	.23
	Throw	8–11	12–17	13–18	16–23	18–26
	NC	23	32	37	43	49
1.25 (High)	**Cfm**	150	200	250	300	400
	TSP	.02	.05	.07	.10	.18
	Throw	7–11	10–14	11–16	13–18	16–23
	NC	(20)	23	28	35	43
1.50 (High)	**Cfm**	150	200	300	400	500
	TSP	.02	.04	.09	.14	.22
	Throw	5-9	9-13	12-17	15-21	19-28
	NC	(20)	21	32	41	49

UNIT LENGTH FACTORS

Multiply 48" data by the following factors:

Nominal Length	TSP	Throw	NC
24"	x 3.0	x 2.0	x 1.4
36"	x1.4	x 1.5	x 1.1
60"	x 0.8	x 0.9	x 1.0

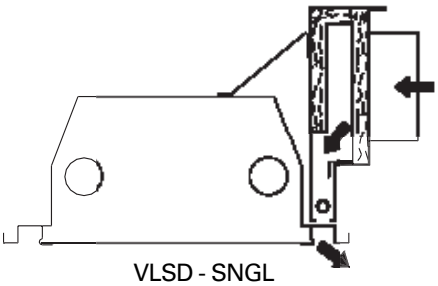
TSP - Static pressure readings in in. wg.

Throw - Horizontal distance in feet to reach terminal velocity, VT, of 50 FPM.

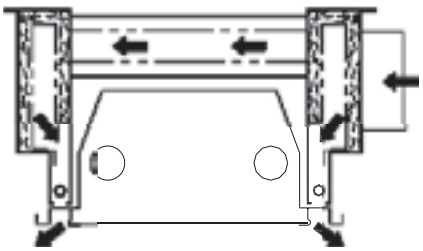
NC - A one number evaluation of sound generation derived from sound power levels (re: 10-12 watts) less 10 db room absorption. (20) indicates less than 20 NC rating. Data shown is for one diffuser. Additional diffusers will tend to increase the NC value by perhaps 2 db each, depending on size, air quantity and distance from other diffusers. Return applications will add +2 db to all values shown. Peformance data is based on tests performed in accordance with ADC 1062 GRD-84Test Code.

Light Fixture Diffusers

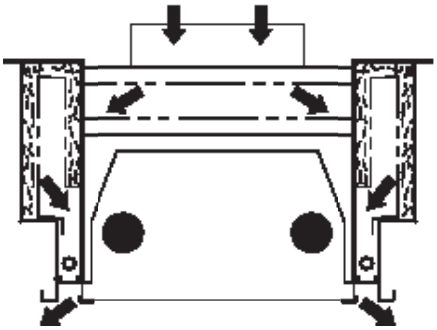
The features of the Light Fixture Diffuser are described by the product categories shown in bold. Within each category the options available are listed.



VLSD - SNGL
with Side Inlet



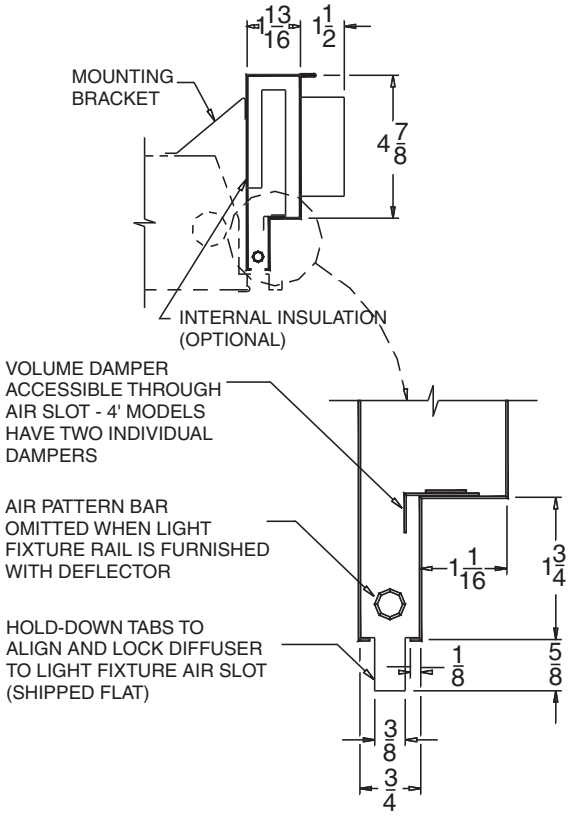
VLSD-Dual
with Side Inlet

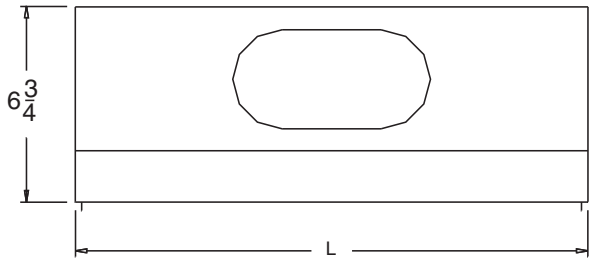


VLSD-DUAL
with Top Inlet

MODL	**Model**
VLSD	Supply Diffuser
VLRD	Return Diffuser
DSEQ	**Design Sequence**
A	A Design Sequence
TYPE	**Diffuser Type**
SNGL	Single Side Diffuser
DUAL	Dual Side Diffuser
LGTH	**Diffuser Length**
2	Diffuser Length – 2'
3	Diffuser Length – 3'
4	Diffuser Length – 4'
2x2	Light Fixture Diffuser Size – 2' x 2'
3x3	Light Fixture Diffuser Size – 3' x 3'
1x4	Light Fixture Diffuser Size – 1' x 4'
2x4	Light Fixture Diffuser Size – 2' x 4'
4x4	Light Fixture Diffuser Size – 4' x 4'
INLT	**Inlet Size And Location**
S5	5″ Side Inlet
S6	6″ Side Inlet
T5	5″ Top Inlet
T6	6″ Top Inlet
T7	7″ Top Inlet
T8	8″ Top Inlet
INSL	**Insulation**
NONE	No Insulation On Diffuser
INT	Matte-Faced – Internally Insulated
EXT	Foil-Faced – Externally Insulated

VLSD – SNGL



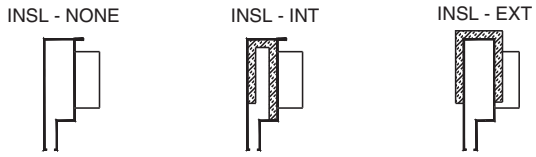


INSULATION

NONE - STEEL UNINSULATED

INT - STEEL WITH 1/2" FOIL FACED EXTERNAL INSULATION

EXT - STEEL WITH 1/2" FOIL FACED EXTERNAL INSULATION



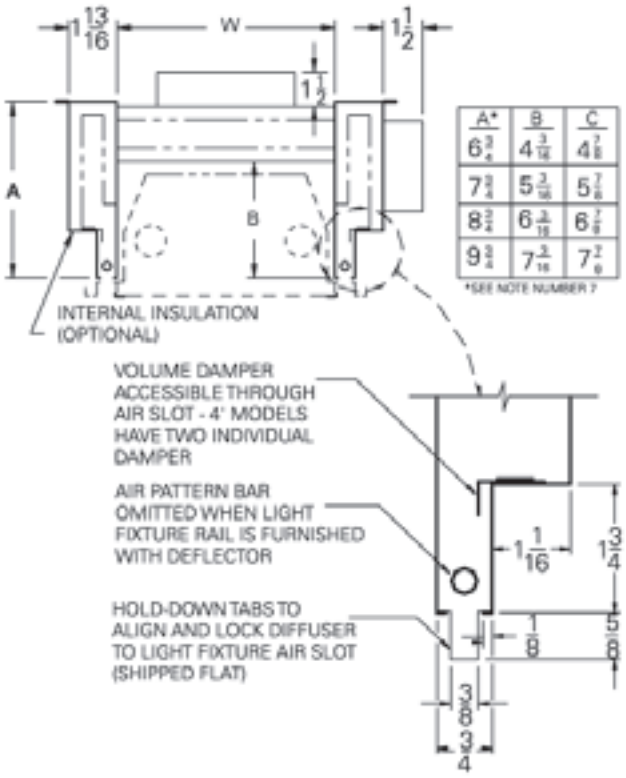
NOTES:

1. DIFFUSERS ARE AVAILABLE AS SUPPLY UNITS FOR REGRESSED OR FLUSH AIR HANDLING LIGHT DIFFUSERS.
2. MATERIAL: GALVANNEALED STEEL. EXPOSED SLOT AREA PAINTED FLAT BLACK.
3. HEIGHT: 6¾" STANDARD. CEILING CLEARANCE REQUIRED IS 7" PLUS AMOUNT LIGHT IS REGRESSED ABOVE CEILING LINE. (FOR SINGLE SIDE ONLY)
4. INLETS: 5" OR 6" OVAL STANDARD ON SIDE ENTRY.
5. ALL SUPPLY DIFFUSERS INCLUDE PLENUM, INSULATION (WHEN SPECIFIED) AND DUCT CONNECTION.
6. INSULATION IS U.L. LISTED AND MEETS NFPA 90A AND U.L. 181.
7. STANDARD DIFFUSER LENGTHS ARE STATED. ACTUAL LENGTH WILL VARY WITH LIGHT MANUFACTURER. TO INSURE COMPATIBILITY, LIST LIGHT MANUFACTURER AND MODEL NUMBER.
8. ALL DIMENSIONS ARE IN INCHES.

DIFFUSER LENGTH	AIR DIFFUSER LENGTH
2	20"
3	27"
4	40"

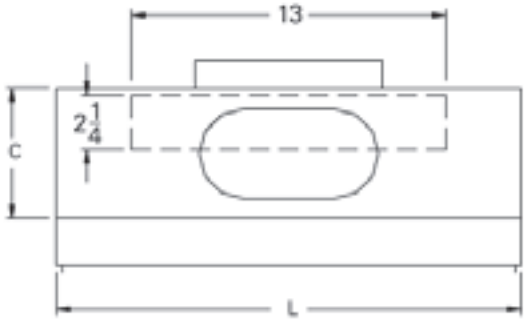
INLET
S5 - 5" SIDE INLET
S6 - 6" SIDE INLET

VLSD – DUAL



A*	B	C
6 3/4	4 3/16	4 7/8
7 3/4	5 3/16	5 7/8
8 3/4	6 3/16	6 7/8
9 3/4	7 3/16	7 7/8

*SEE NOTE NUMBER 7

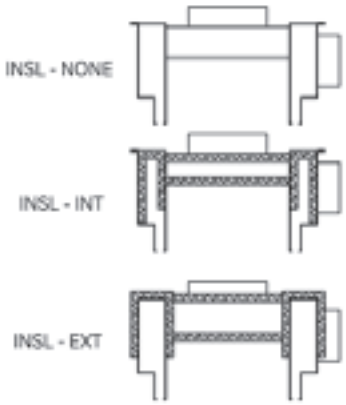


INSULATION

NONE - STEEL UNINSULATED

INT - STEEL WITH ½" INTERNAL MATTE FACED INSULATION

EXT - STEEL WITH ½" FOIL FACED EXTERNAL INSULATION

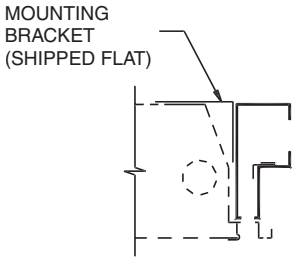


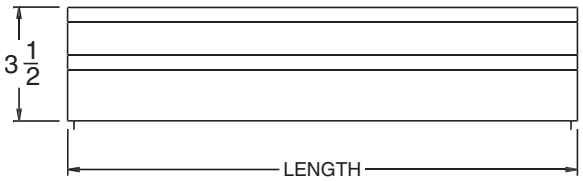
NOTES:

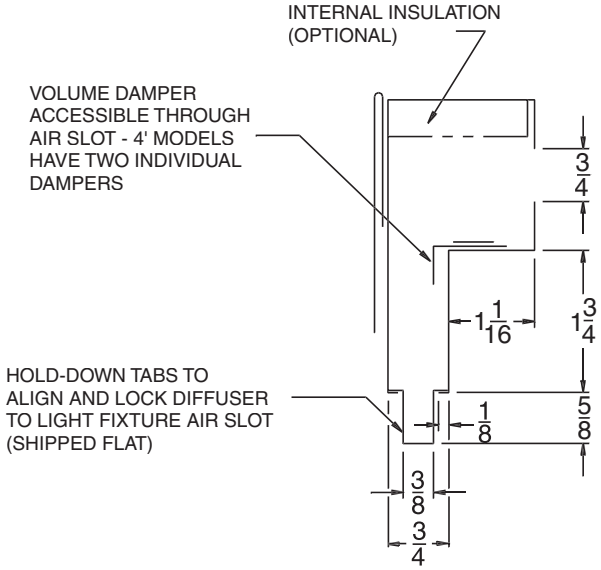
1. DIFFUSERS ARE AVAILABLE AS SUPPLY UNITS FOR REGRESSED OR FLUSH AIR HANDLING LIGHT DIFFUSERS.
2. MATERIAL: GALVANNEALED STEEL. EXPOSED SLOT AREA PAINTED FLAT BLACK.
3. DIFFUSER (EXCEPT 4 X 4 MODELS) IS NORMALLY SHIPPED FULLY ASSEMBLED. READY FOR JOB SITE INSTALLATION. SPECIFY FOR CROSSOVER AND DIFFUSERS UNASSEMBLED.
4. INLETS: 5" OR 6" OVAL STANDARD ON SIDE ENTRY. 5", 6", 7", & 8" ROUND ON TOP ENTRY.
5. ALL SUPPLY DIFFUSERS INCLUDE PLENUM, INSULATION (WHEN SPECIFIED) AND DUCT CONNECTION.
6. INSULATION IS U.L. LISTED AND MEETS NFPA 90A AND U.L. 181.
7. STANDARD DIFFUSER DIMENSIONS ARE STATED. DIMENSIONS A, B, C, W, & L WILL VARY WITH LIGHT MANUFACTURER TO INSURE COMPATIBILITY, LIST LIGHT MANUFACTURER AND MODEL NUMBER. CEILING CLEARANCE REQUIRED IS DIFFUSER HEIGHT PLUS ¼", PLUS AMOUNT LITE SLOT IS REGRESSED ABOVE CEILING LINE. TOP INLET UNITS EXTEND ABOVE THIS DIMENSION.
8. ALL DIMENSIONS ARE IN INCHES.

DIFFUSER LENGTH	LIGHT FIXTURE NOMINAL SIZE	AIR DIFFUSER DIM.	
		W	L
LIT1	1 X 4	9	40
LIT2	2 X 2	21	20
LIT3	3 X 3	33	27
LIT4	2 X 4	21	40
LIT5	4 X 4	45	40

VRLD – SNGL OPEN RETURNS







INSULATION

NONE - STEEL UNINSULATED

INT - STEEL WITH ½" INTERNAL MATTE FACED INSULATION

INSL - NONE

INSL - INT

LENGTH	AIR DIFFUSER LENGTH
2	20"
3	27"
4	40"

NOTES:

1. DIFFUSERS ARE AVAILABLE AS RETURN UNITS. FOR REGRESSED OR FLUSH AIR HANDLING LIGHT DIFFUSERS.
2. MATERIAL: GALVANNEALED STEEL EXPOSED AREA PAINTED FLAT BLACK.
3. INSULATION IS U.L. LISTED AND MEETS NFPA 90A AND U.L. 181.
4. HEIGHT: 3½" STANDARD. CEILING CLEARANCE REQUIRED IS 3¾" PLUS AMOUNT LIGHT IS REGRESSED ABOVE CEILING LINE.
5. STANDARD DIFFUSER LENGTHS ARE STATED. ACTUAL LENGTH WILL VARY WITH LIGHT MANUFACTURER. TO INSURE CMPATIBILITY, LIST LIGHT MANUFACTURER AND MODEL NUMBER.
6. ALL DIMENSIONS ARE IN INCHES.

Style LITE Diffuser Performance

VLSD-SNGL
Side inlet–2'

Cfm	30	40	50	60	70	80	90	100
Throw-V	3–4	4–6	5–7	6–8	7–9	8–10	9–10	9–11
Throw-H	6–8	7–10	8–12	9–13	10–14	11–15	12–16	13–17
TSP-5"	.04	.08	.13	.19	.25	.32	.41	50
TSP-6"	.04	.08	.12	.18	.24	.31	.39	.48
NC	(20)	(20)	22	29	33	36	41	44

VLSD-SNGL
Side inlet–3'

Cfm	40	50	60	70	80	90	100	110
Throw-V	3–5	4–6	5–7	6–8	6–9	7–9	7–10	8–10
Throw-H	4–6	5–8	6–10	8–11	9–13	10–14	11–15	12–16
TSP-5"	.04	.06	.09	.12	.17	.21	.27	.32
TSP-6"	.04	.06	.08	.11	.15	.19	.24	.29
NC	(20)	(20)	(20)	23	27	32	35	39

VLSD-SNGL
Side inlet–4'

Cfm	50	60	70	80	90	100	110	120
Throw-V	3–4	4–5	5–6	5–7	6–8	6–8	6–9	7–9
Throw-H	4–6	5–7	5–8	6–9	7–10	7–11	8–12	9–13
TSP-5"	.04	.06	.08	.11	.15	.17	.21	.25
TSP-6"	.04	.06	.08	.11	.14	.16	.20	.23
NC	(20)	(20)	(20)	23	27	30	34	37

VLSD-DUAL
Top inlet–2'

CFM	50	60	70	80	90	100	110	120
Throw-V	3–5	4–6	5–7	5–8	6–8	6–9	7–9	7–10
Throw-H	2–4	4–8	6–10	7–10	7–11	8–11	8–12	9–13
TSP-5"	.05	.07	.09	.12	.15	.18	.22	.26
TSP-6"	.04	.06	.08	.10	.13	.16	.19	.23
NC	(20)	(20)	(20)	22	26	31	33	36

VLSD-DUAL
Top inlet–3'

CFM	90	100	110	120	130	140	150	160
Throw-V	3–5	3–6	4–6	4–6	5–7	6–7	6–8	6–9
Throw-H	4–6	5–7	6–8	6–9	7–9	7–10	8–11	8–12
TSP-5"	.08	.10	.12	.15	.18	.20	.23	.28
TSP-6"	.08	.09	.11	.13	.16	.18	.20	.23
NC	20	23	26	28	32	33	34	37

VLSD-DUAL
Top inlet–4'

CFM	60	80	100	120	140	160	180	200
Throw-V	1–2	1–3	2–3	2–4	3–5	4–6	5–7	6–8
Throw-H	2–3	2–4	3–5	4–6	4–7	5–8	6–9	7–10
TSP-5"	.03	.06	.09	.13	.17	.22	.28	.35
TSP-6"	.03	.05	.08	.10	.14	.18	.23	.29
NC	(20)	(20)	21	24	31	33	37	41

VLSD-DUAL
Side Inlet–2'

Cfm	50	60	70	80	90	100	110	120
Throw-V	3–5	4–6	5–7	5–8	6–8	6–9	7–9	7–10
Throw-H	2–4	4–8	6–10	7–10	7–11	8–11	8–12	9–13
TSP-5"	.05	.06	.08	.10	.13	.16	.19	.23
TSP-6"	.04	.06	.08	.10	.12	.15	.18	.21
NC	(20)	(20)	(20)	21	25	29	32	36

VLSD-DUAL
Side Inlet–3'

Cfm	90	100	110	120	130	140	150	160
Throw-V	3–5	3–6	4–6	4–6	5–7	6–7	6–8	6–9
Throw-H	4–6	5–7	6–8	6–9	7–9	7–10	8–11	8–12
TSP-5"	.07	.08	.10	.12	.14	.17	.19	.22
TSP-6"	.06	.07	.09	.11	.13	.15	.17	.19
NC	(20)	20	23	25	29	30	33	34

VLSD-DUAL
Side Inlet–4'

Cfm	60	80	100	120	140	160	180	200
Throw-V	1–2	1–3	2–3	2–4	3–5	4–6	5–7	6–8
Throw-H	2–3	2–4	3–5	4–6	4–7	5–8	6–9	7–10
TSP-5"	.02	.04	.07	.10	.13	.16	.21	.26
TSP-6"	.02	.04	.06	.08	.11	.15	.19	.23
NC	(20)	(20)	(20)	21	26	30	33	37

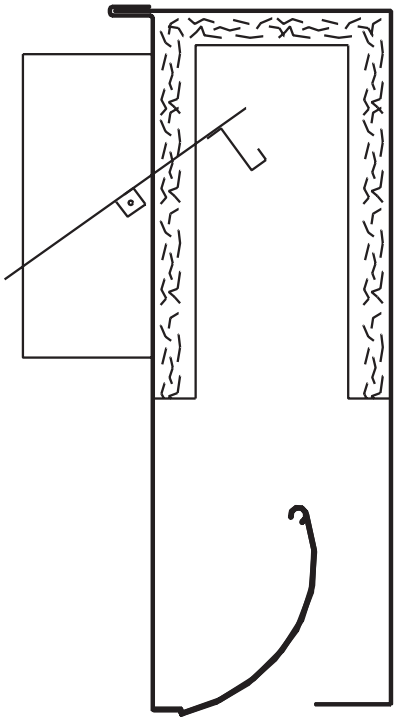
Projection - V and H are vertical and horizontal distance in feet to reach terminal velocities of 100 FPM and 50 FPM respectively.

TSP - Static pressure drop in in. wg across the diffuser with dampers full open and horizontal air projection.

NC - A one number evaluation of sound generation derived from sound power levels (re: 10-12 watts) less 8 db room absorption. (20) indicates less than 20 NC rating. Data shown is for one diffuser. Additional diffusers will tend to increase the NC value by perhaps 2 db each, depending on size, air quantity and distance from other diffusers. Return applications will add +2 db to all values shown. Performance data is based on tests performed in accordance with ADC 1062 GRD-84Test Code.

Induction Diffusers

The features of the Induction Diffuser are described by the product categories shown in bold. Within each category the options available are listed.

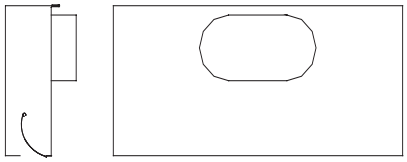


MODL	**Model**
VLSD	Supply Diffuser
DSEQ	**Design Sequence**
A	A Design Sequence
TYPE	**Diffuser Type**
INDT	Induction, Supply Only
INDB	Induction, Down Blow, Supply Only
INCB	Induction, Down Blow, Supply/Return
INSR	Induction, Supply/Return
LGTH	**Diffuser Length**
2	Diffuser Length - 2'
3	Diffuser Length - 3'
4	Diffuser Length - 4'
5	Diffuser Length - 5'
CEIL	**Ceiling Type**
TBAR	Tbar - 15/16"
2X2T	Center Notch Grid - 15/16"
PLSR	Plaster Ceiling
DMPR	**Damper Type**
BAL	Balancing Damper

INDT, INDB, INSR, INCB

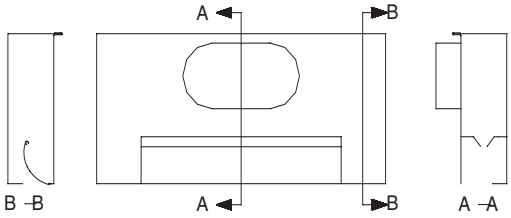
SUPPLY DIFFUSER

(INDT)



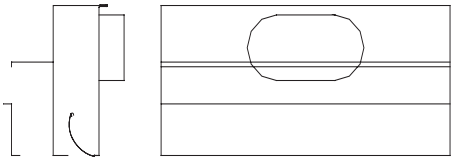
SUPPLY DIFFUSER WITH DOWNBLOW

(INDB)



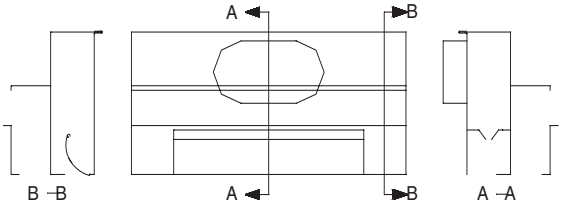
SUPPLY/RETURN DIFFUSER

(INSR)

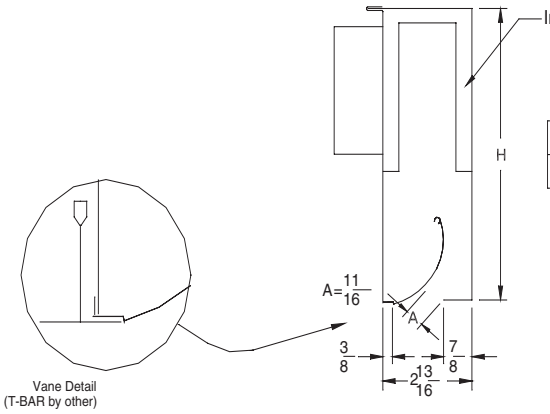


SUPPLY/RETURN WITH DOWNBLOW

(INCB)

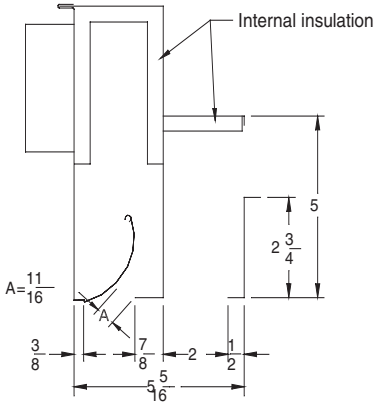


SUPPLY DIFFUSER



INLET SIZE	DIFFUSER HEIGHT H
6	8

SUPPLY/RETURN DIFFUSER



Notes:

1. High induction horizontal air flow.
2. Center down blow option provides a veritcal air pattern for exterior walls or glass. Adjustable Blades for volume and direction control.
3. Supply/Return combination diffusers allow room air to be returned to ceiling plenum.
4. Nominal lengths of 2', 3', 4', and 5'. Actual length is nominal minus 1/4 inch.
5. Material: 24-gage galvannealed steel. All exposed surfaces painted flat black.
6. All dimensions are in inches.

Style INDUCT Diffuser Performance

Supply Slot Performance – INDT, INSR

2'	**Cfm**	60	80	100	120	140	160	180	200
	TSP	.02	.03	.06	.08	.11	.14	.19	.23
	Throw	13	16	19	22	24	25	26	29
	NC	(20)	(20)	(20)	(20)	(20)	22	26	29
3'	**Cfm**	90	120	150	180	210	240	270	300
	TSP	.03	.04	.07	.10	.14	.18	.23	.29
	Throw	13	16	20	22	24	26	27	29
	NC	(20)	(20)	(20)	22	25	29	32	35
4'	**Cfm**	120	160	200	240	280	320	360	400
	TSP	.03	.05	.09	.12	.17	.22	.29	.36
	Throw	11	14	17	19	21	23	24	25
	NC	(20)	(20)	21	26	29	33	37	40
5'	**Cfm**	150	200	250	300	350	400	450	500
	TSP	.03	.05	.10	.13	.18	.24	.31	.39
	Throw	9	11	14	15	17	18	19	20
	NC	(20)	21	25	29	33	37	41	44

Supply Slot Performance with Down Blow– INDB, INCB

3'	**Cfm**	90	120	150	180	210	240	270	300
	TSP	.03	.06	.09	.13	.18	.23	.29	.35
	Throw H	11	16	19	22	24	26	27	29
	Throw V	4	5	5	6	6	7	7	8
	NC	20	25	31	35	40	43	45	48
4'	**Cfm**	120	160	200	240	280	320	360	400
	TSP	.03	.06	.09	.13	.18	.23	.29	.36
	Throw H	11	16	19	22	25	26	27	29
	Throw V	4	5	5	6	6	7	7	8
	NC	(20)	24	30	33	39	42	45	48
5'	**Cfm**	150	200	250	300	350	400	450	500
	TSP	.03	.06	.09	.14	.19	.24	.30	.38
	Throw H	11	16	19	21	24	25	26	27
	Throw V	4	5	5	6	6	7	7	8
	NC	(20)	24	30	33	38	42	44	47

Return Slot Performance – INSR, INCB

Cfm/Ft	30	40	50	60	70	80	90	100
Neg. SP	.01	.02	.03	.04	.06	.07	.09	.11

TSP - Static pressure readings in in. wg.

Throw - Horizontal distance in feet to reach terminal velocity, VT, of 50 FPM.

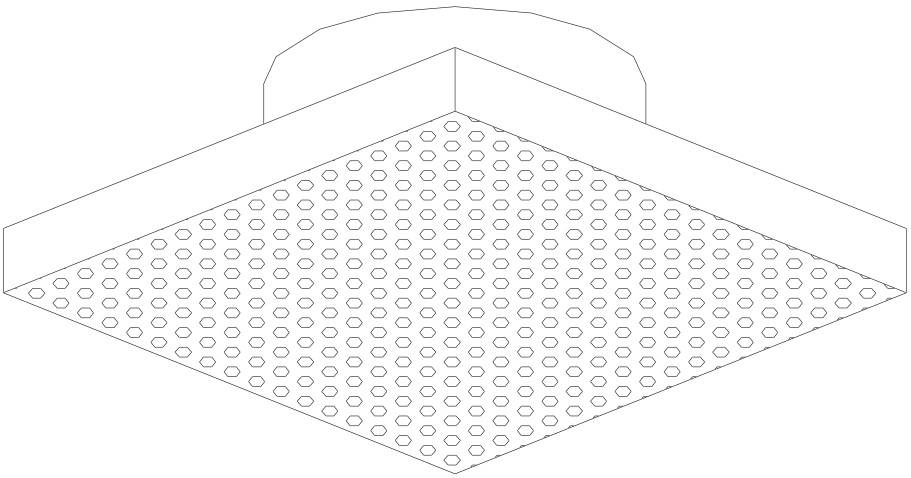
Vertical throw values are based on standard 12" long down blow slot and 3/8" width setting.

NC - A one number evaluation of sound generation derived from sound power levels (re: 10-12 watts) less 8 db room absorption. (20) indicates less than 20 NC rating. Data shown is for one diffuser. Additional diffusers will tend to increase the NC value by perhaps 2 db each, depending on size, air quantity and distance from other diffusers. Return applications will add +2 db to all valves shown. Performance data is based on tests performed in accordance with ADC 1062 GRD-84 Test Code.

Model Number Description

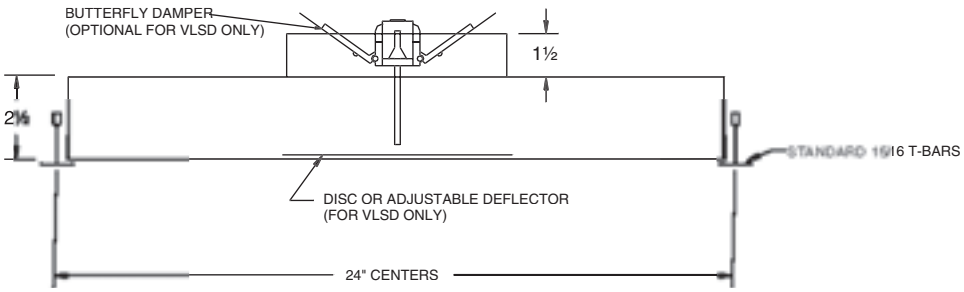
Perforated Diffusers

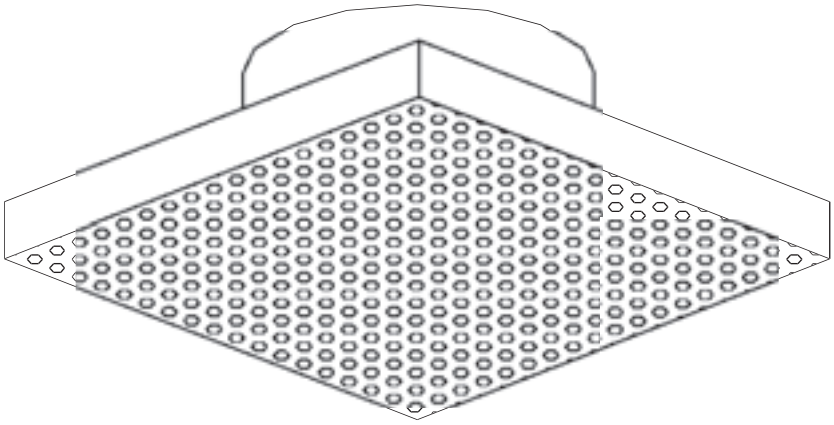
The features of the Perforated Diffuser are described by the product categories shown in bold. Within each category the options available are listed.



MODL	**Model**
VLSD	Supply Diffuser
VLRD	Return Diffuser
DSEQ	**Design Sequence**
A	A Design Sequence
DEFL	**Deflector**
ADJ	Adjustable Deflector
DISC	Disc Deflector
NONE	No Deflector
TYPE	**Diffuser Type**
PERF	Perforated Diffuser
CEIL	**Ceiling Type**
TBAR	T-bar – 15/16"
T916	Narrow Faced Grid – 9/16"
D916	Narrow Regressed Grid – 9/16"
INLT	**Inlet Size And Location**
6	6" Round Inlet, Top
8	8" Round Inlet, Top
10	10" Round Inlet, Top
12	12" Round Inlet, Top
14	14" Round Inlet, Top
DMPR	**Damper Type**
BFLY	Butterfly Damper

PERF





DEFL	
DISC	DISC DEFLECTOR (VLSD ONLY)
ADJ	ADJUSTABLE DEFLECTOR (VLSD ONLY)
NONE	NO DEFLECTOR (VLRD ONLY)

INLT	
6	6" TOP INLET
8	8" TOP INLET
10	10" TOP INLET
12	12" TOP INLET
14	14" TOP INLET

NOTES:
1. COMPLETELY ASSEMBLED FOR EASY LAY-IN INSTALLATION.
2. 22-GAGE PERFORATED STEEL FACE WITH WHITE FINISH AND 51% OPEN AREA.
3. 24-GAGE STEEL PLENUM WITH BLACK INTERIOR. THE FACE FOR LEFT, RIGHT, OR VERTICAL THROW.
4. ROUND INLET SIZES 6" THROUGH 14".
5. AVAILABLE WITH DISC OR ADJUSTABLE DEFLECTOR.
6. ALL DIMENSIONS ARE IN INCHES.

Table 1 - Style PERF Diffuser Performance

24 x 24 Nominal size
Inlet Size

6	**Cfm**	60	80	100	120	135	158	176	195	234
	TSP	.01	.01	.02	.03	.04	.05	.06	.08	.12
	Throw	1	2	3	3	4	4	5	5	6
	NC	—	—	—	20	21	23	27	30	35
8	**Cfm**	104	139	175	210	245	280	315	350	420
	TSP	.01	.02	.03	.04	.05	.06	.08	.10	.14
	Throw	2	3	4	4	5	6	7	7	8
	NC	—	—	—	20	26	29	33	35	40
10	**Cfm**	165	220	275	325	380	435	490	545	650
	TSP	.01	.02	.03	.04	.06	.08	.10	.12	.18
	Throw	2	4	5	5	6	7	8	8	9
	NC	—	—	20	24	29	33	36	39	44
12	**Cfm**	240	315	395	475	550	630	710	785	945
	TSP	.01	.02	.04	.05	.07	.09	.12	.14	.20
	Throw	3	4	5	6	7	9	9	10	11
	NC	—	—	22	28	32	36	39	42	49
14	**Cfm**	320	430	536	640	747	856	960	1070	1281
	TSP	.01	.02	.04	.06	.08	.10	.13	.16	.23
	Throw	3	5	6	7	8	10	10	11	12
	NC	—	20	25	30	36	39	42	45	50

TSP -Total pressure readings in in. wg across diffuser.

Throw - Horizontal distances in feet to reach terminal velocity, VT, of 50 FPM.

NC - A one number evaluation of sound generation derived from sound power levels (re: 10-12 watts) less 10 db room absorption. (20) indicates less than 20 NC rating. Data shown is for one diffuser. Additional diffusers will tend to increase the NC value by perhaps 2 db each, depending on size, air quantity and distance from other diffusers. Return applications will add +2 db to all valves shown. Performance data is based on tests performed at Donco Air Products and ETL Laboratories in accordance with ADC 1062 GRD-84 Test Code.

MODEL VLSD and VLRD Supply and Return Diffusers.

LINR

1. **General Casing**—This diffuser is constructed of 24-gage galvannealed steel. Hanger holes on each end of the diffuser for installation are optional. Slot edges formed over; provide double thickness tile support as an integral part of the diffuser housing. All exposed surfaces are finished with white enamel.
2. **Insulation**—The interior surface of the diffuser casing is acoustically- and thermally-lined with ½-inch (13 mm) 1.9 lb cu ft (30.4 kgs/cu m), R-Value of 2.1 density glass fiber with high-density facing. The insulation is UL listed and meets NFPA-90A and UL 181 standards.
3. **T-Bar Ceiling**—This diffuser is designed to install over the "T" of most standard exposed suspended ceilings. The end angle is provided to allow the slot to fit flush with the bottom of the "T" and ceiling tile.
4. **2x2 T-Bar Ceiling**—This diffuser is designed to install over the "T" of most standard exposed suspended ceilings. The notch is provided in the middle of the unit to allow the diffuser to set over the "T" located at the middle point.
5. **Concealed Spline Ceiling**—The diffuser is designed to sit in the center of the module, parallel to the main ceiling support member. The ceiling tile rests on the edge of the discharge slot and the flange. A t-bar insert is provided in the center of a two-way throw diffuser, when applicable.
6. **Plaster Ceiling**—The diffuser is designed to sit into the opening in the plaster. The diffuser must be used in conjunction with a trim frame for a finished appearance.
7. **Trim Frame**—The trim frame is extruded aluminum and designed to attach to the diffuser slot(s) with clips. The trim frame is finished with white enamel and is designed to set into the opening of a plaster ceiling for a finished appearance.
8. **Fire Damper**—An integral fusible link, 22-gage factory installed fire damper. The fusible link has a melting point of 158°F (70°C).
9. **Inlet Balancing Damper**—A factory-provided and -installed single-blade damper, with a position-locating handle for balancing air.
10. **Inlet**—The inlet connection is sized to fit standard, round, flexible ductwork.
11. **Agency Listing**—UL listed as environmental air terminal unit. Control #419X (1- and 2-slot only).

FAPF, VAPF, VAPS, AABD

1. **General Casing**—This diffuser is constructed of 24-gage galvannealed steel. All exposed surfaces of the diffuser are finished with flat black enamel. Factory-installed t-bars are finished with white enamel.
2. **Insulation**—The interior surface of the supply diffuser casing is acoustically- and thermally-lined with ½-inch (13 mm) 1.9 lb/cu ft (30.4 kg/cu m), R-Value of 2.1 density glass fiber with high-density facing. The insulation is UL listed and meets NFPA-90A and UL 181 standards.
3. **T-Bar Ceiling**—This diffuser is designed to install over the "T" of most standard exposed suspended ceilings. The end angle is provided to allow the slot to fit flush with the bottom of the "T" and ceiling tile.
4. **2x2 T-Bar Ceiling**—This diffuser is designed to install over the "T" of most standard exposed suspended ceilings. The notch is provided in the middle of the unit to allow the diffuser to set over the "T" located at the middle point.
5. **Plaster Ceiling**—The diffuser is designed to set into the opening in the plaster. The diffuser must be used in conjunction with a trim frame for a finished appearance. The trim frame is extruded aluminum with white finish.
6. **Inlet Balancing Damper**—A factory-provided and -installed single-blade damper, with a position-locating handle for balancing air.
7. **Inlet** –The inlet connection is sized to fit standard, round, flexible ductwork.

INDT

1. **General Casing** –This diffuser is constructed of 24-gage galvannealed steel. Exposed surfaces are finished with flat black enamel.
2. **Insulation** –The interior surface of the diffuser casing is acoustically- and thermally-lined with ½-inch (13 mm) 1.9 lb cu ft (30.4 kgs/cu m), R-Value of 2.1 density glass fiber with high-density facing. The insulation is UL listed and meets NFPA-90A and UL 181 standards.
3. **T-Bar Ceiling**—This diffuser is designed to install over the "T" of most standard exposed suspended ceilings.
4. **2x2 T-Bar Ceiling**—This diffuser is designed to install over the "T" of most standard exposed suspended ceilings. The notch is provided in the middle of the unit to allow the diffuser to set over the "T" located at the middle point.
5. **Plaster Ceiling**—The diffuser is designed to set into the opening in the plaster. The diffuser must be used in conjunction with a trim frame, for a finished appearance. The trim frame is extruded aluminum and designed to attach to the diffuser slot with clips. The trim frame is finished with white enamel.
6. **Inlet Balancing Damper**—A factory-provided and -installed single-blade damper, with a position-locating handle for balancing air.
7. **Inlet**—The inlet connection is sized to fit standard, round, flexible ductwork.

LITE

1. **General Casing**—This diffuser is constructed of 24-gage galvannealed steel. Hold-down tabs on the diffuser ends are provided to align and lock the diffuser to the light air slot. Exposed slot area is painted flat black.
2. **Insulation**—Optional. If used, the interior surface of the diffuser casing is acoustically and thermally lined with ½ inch (13 mm) 1.9 lb cu ft (30.4 kgs/cu m), R-Value of 2.1 density glass fiber with high-density facing. The insulation is UL listed and meets NFPA-90A and UL 181 standards. The external insulation is foil-faced.
3. **Dual Side Diffuser**—This diffuser is designed for dual-side installation on the light fixture.
4. **Single Side Diffuser**—This diffuser is designed for single-side installation on the light fixture. A side bracket is provided for extra support.
5. **Inlet**—The inlet connection is sized to fit standard, round, flexible ductwork.

PERF

1. **General Casing**—This diffuser plenum is constructed of 24-gage galvannealed steel with black interior. The diffuser face is 22-gage perforated steel with a white finish and 51% open area.
2. **Adjustable Deflector**—A set of four square louver-type deflectors attached to the backside of the perforated panel, directly below the inlet collar. Each deflector pivots to allow for one-, two-, three-, and four-way horizontal air patterns. Factory-set at a four-way air pattern.
3. **Disc Deflector**—A round disc attached to the backside of the perforated panel, directly below the inlet collar to deflect the air in a 360° horizontal air pattern.
4. **T-Bar Ceiling**—This diffuser is designed for easy lay-in installation in the suspended T-bar ceiling grid.
5. **Butterfly Damper**—A two-bladed volume damper located in the inlet collar. Adjustments are made through the perforated metal with a screwdriver.
6. **Inlet**—The inlet connection is sized to fit standard, round, flexible ductwork.