

diffusers

- 

duct mounted
- 

retrofit
- 

MRI compatible
- 

open ceiling
- 

wood grains
- 

energy solutions



f

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CONCENTRIC SUPPLY / RETURN DIFFUSERS

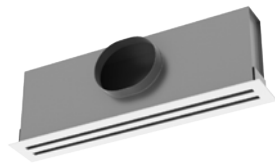
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linear diffusers			
			
ML / MLR	CT	LL	ML-TZ / MLR-TZ
LINEAR SLOT CEILING DIFFUSER • Ideal for continuous length applications • Full 180° pattern controller adjustment • Direction & volume of the discharged air can be adjusted gradually by moving the pattern controllers	LINEAR BAR DIFFUSER • Designed for heating or cooling applications • Available in 8 different core styles as well as a wide selection of frames & borders • Can be used in ceiling, side wall, sill or floor installations • MRI compatible	LINEAR LOUVER DIFFUSER • Available in 1-way or 2-way discharge patterns • Ideal for continuous length applications • Designed for heating or cooling applications • MRI compatible	LINEAR SLOT CEILING DIFFUSER • For use with Armstrong TechZone ceiling grids • Modular length applications • Full 180° pattern controller adjustment • Direction & volume discharged air can be adjusted gradually by moving the pattern controllers

	
MP	MLT
MODULINEAR DIFFUSER PLENUM • Designed specifically for field attachment of ML or MLR diffusers • Standard nominal lengths are 24, 36, 48, & 60 inches • Made from galvanized steel	MODULINEAR LAY-IN • Modular version of the ML diffuser with an MP plenum • Available in 2 and 4 foot module lengths • Insulated or non-insulated plenum options • Diffusers can be ordered without plenums



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round ceiling diffusers



TMR / TMR-AA

**TWO HORIZONTAL
DISCHARGE PATTERNS**

- Uniform 360° discharge pattern
- Provides excellent performance in variable air volume systems
- All sizes have 3 cones



TMRA / TMRA-AA

**VERTICAL TO
HORIZONTAL
DISCHARGE PATTERN**

- Adjustable round ceiling diffusers for use in heating & cooling applications
- All sizes have 4 cones
- Uniform 360° discharge pattern



XC-310

**ADJUSTABLE HEAVY
DUTY DIFFUSER**

- Discharge pattern can be adjusted from full horizontal to full vertical
- Suitable for factories, warehouses, convention halls, & other applications where ceilings are high & conditions are variable



V-1

ADJUSTABLE VORTEX

- Uniform 360° discharge pattern
- Unit spins the air creating Coanda effect
- Provides excellent performance in variable air volume systems

PAGES: F76-F106

perforated ceiling diffusers



PCS / PCS-AA / PCS-DF

CURVED BLADE DEFLECTORS

- 51% free area perforated face
- Can be adjusted before or after installation
- Discharge pattern can be adjusted from horizontal to vertical
- Provides excellent performance in variable air volume systems



PAS

ADJUSTABLE PATTERN CONTROLLERS

- 51% free area perforated face
- Provides tight, uniform, horizontal blanket of air that protects the ceiling against smudging
- Can be adjusted before or after installation
- Provides excellent performance in variable air volume systems



PSS / PSS-DF / PSS-AA

ADJUSTABLE STAR PATTERN

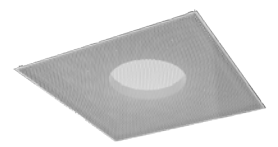
- 51% free area perforated face
- Generates high induction air pattern that maximizes throw
- Can be changed to either side blow or corner blow in the field



PMC / PMR

ADJUSTABLE MODULAR CORE

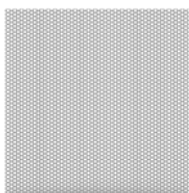
- 51% free area perforated face
- Adjustable to 1,2,3, or 4-way discharge pattern after installation
- Modular core sections are easily removable
- Provides excellent performance in variable air volume systems



PAR / PAR-AA

RETURN DIFFUSERS

- 51% free area perforated face
- Provides a matching appearance to supply diffusers

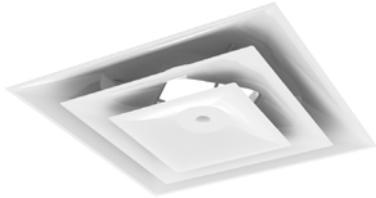


PXP / PXP-AA / PXP-DF

RETURN PANELS

- 51% free area perforated face
- Designed for return or exhaust applications
- Comprised of heavy gauge steel & aluminum

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TMS / TMS-AA / TMSA / TMSA-AA

HIGH PERFORMANCE

- Uniform 360° discharge pattern
- Designed to protect ceiling from streaking & smudging
- Available in steel or aluminum
- Provides excellent performance in variable air volume systems
- Available in fixed or adjustable pattern

square ceiling diffusers



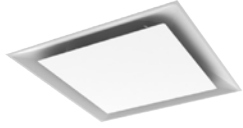
MCD / MCD-AA

ADJUSTABLE MODULAR CORE

- Adjustable to 1, 2, 3, or 4-way discharge pattern after installation
- Modular core sections are easily removable
- Available in steel or aluminum
- Provides excellent performance in variable air volume systems
- Maintains horizontal flow pattern from maximum to minimum cfm

PAGES: F121-F153

architectural ceiling diffusers



OMNI / OMNI-AA

SQUARE PLAQUE DIFFUSER

- Uniform 360° horizontal air pattern
- Designed for architectural ceilings
- Available in steel or aluminum
- Provides excellent performance in variable air volume systems



R-OMNI

STEEL ROUND PLAQUE DIFFUSER

- Uniform 360° discharge pattern
- Designed for architectural ceilings & exposed ductwork
- For use in heating or cooling applications
- Provides excellent performance in variable air volume systems



OMNI-RS

STEEL ROUND PLAQUE DIFFUSER

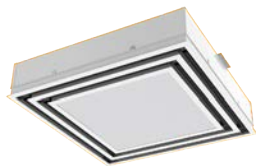
- Delivers a tight 360° horizontal air pattern
- Designed for architectural ceilings
- Provides excellent performance in variable air volume systems



DAT

LOUVERED PLAQUE

- Smooth plaque face allows diffuser to harmonize with ceiling system
- Designed for architectural ceilings
- Provides excellent performance in variable air volume systems
- Easy connection to flexible duct



MB / MBR

MODU-BLOC SERIES

- Choice of 1, 2, 3, or 4-slots
- Flow pattern guards against ceiling smudging
- Discharge patterns are individually adjustable for each slot
- Easy connection to flexible duct



TSW

SWIRL FACE

- Delivers a tight 360° circular air pattern
- Designed for architectural ceilings
- Provides excellent performance in variable air volume systems



SPECTRUM

CURVED PANEL PLAQUE FACE

- Center appliqué available in nine standard colors
- Provides a tight 4-way horizontal air discharge pattern
- Can be used for retrofit applications with perforated diffusers

PAGES: F154-F194

square & rectangular ceiling diffusers



TDC / TDC-AA / TDCA / TDC-AA

LOUVERED FACE, HIGH CAPACITY

- Handles large amount of air for a given pressure drop and noise level
- Maintains an unbroken horizontal flow pattern from maximum cfm down to minimum
- Excellent performance for variable air volume systems
- Available in fixed or adjustable pattern
- Available in steel or aluminum



TDV / TDV-AA

LOUVERED FACE, INDUCTION VANES

- High capacity ceiling diffusers
- Available in 1, 2, 3, or 4-way core sizes
- Maintains an unbroken horizontal flow pattern from maximum cfm down to minimum
- Excellent performance for variable air volume systems
- Integrated induction vanes for mixing air
- Available in steel or aluminum



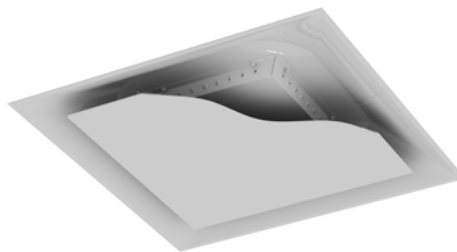
TDX / TDX-AA

LOUVERED FACE, INDUCTION NOZZLES

- High induction ceiling diffusers
- Available in 1, 2, 3, or 4-way core sizes
- Maintains an unbroken horizontal flow pattern from maximum cfm down to minimum
- Excellent performance for variable air volume systems
- Integrated induction nozzles for mixing air
- Available in steel or aluminum

PAGES: F195-F198

low flow architectural ceiling diffuser



TJD

LOW FLOW SQUARE PLAQUE DIFFUSER

- Uniform 360° horizontal air pattern
- Designed for architectural ceilings
- Available in steel or aluminum
- Provides excellent performance in variable air volume systems

PAGES: F199-F211

adjustable ceiling & nozzle diffusers



250 / 250-AA

ADJUSTABLE DISCHARGE PATTERN

- Designed for ceiling & sidewall installations
- Louvers are individually adjustable from the face of the diffuser
- Excellent performance for variable air volume systems
- Available in steel or aluminum



TBF-AA

PANEL-MOUNTED NOZZLES

- Provides precise control of high capacity jets
- Versatile diffuser for demanding spot cooling & heating HVAC applications
- Available in variety of nozzle sizes
- Available in steel or aluminum



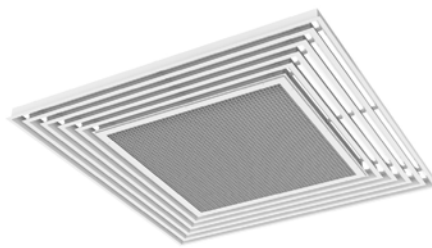
TND-AA

NOZZLE DIFFUSER

- Provides precise control of high capacity jets
- Versatile diffuser for demanding spot cooling & heating HVAC applications
- Available in variety of nozzle sizes

PAGES: F212-F215

combination supply / return ceiling diffuser



CSR / CSR-P

COMBINATION SUPPLY / RETURN

- Supply & return air are handled through one air device
- Compatible with unitary package units
- High capacity with long throws

LINEAR DIFFUSERS

Linear diffusers are long, narrow outlets that can be installed in multiple sections to achieve the appearance of one continuous length. Linear diffusers are also available to fit in modular ceiling systems. This family of diffusers has superior architectural appearance and is excellent for applications such as long corridors, large public areas, perimeter zones of offices and large exterior glass areas found in entrances and atriums.

- FlowBar Linear Diffusers (Model FL)
- Linear Slot Ceiling Diffusers (Model ML)
- Linear Bar Diffusers (Model CT)
- Linear Louver Diffusers (Model LL)
- Armstrong Techzone Ceiling Diffusers (Model ML-TZ)

ROUND CEILING DIFFUSERS

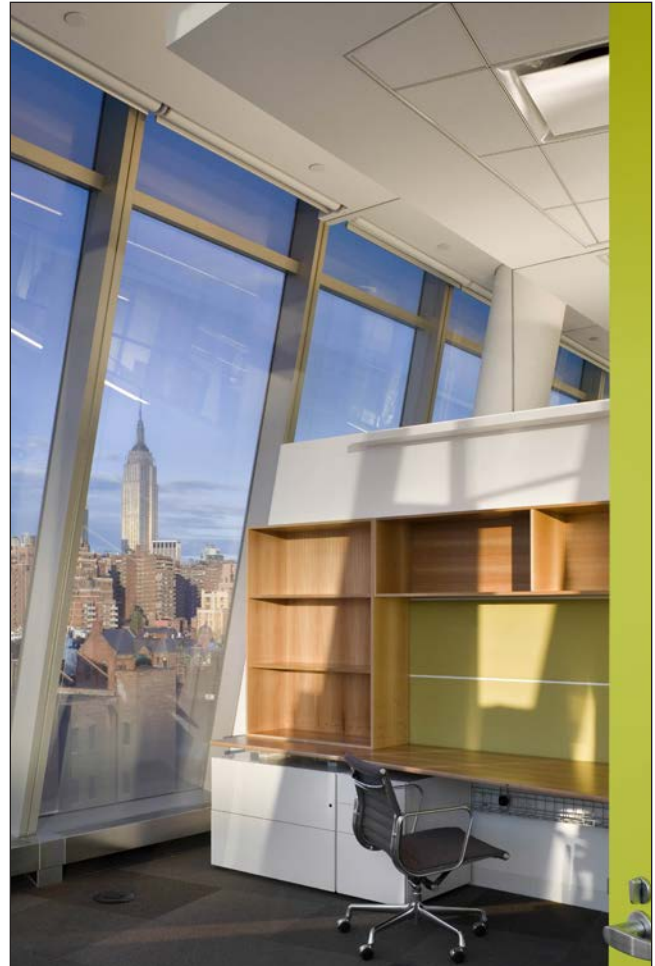
Titus round ceiling diffusers are available in a broad range of sizes. These devices are typically installed in sheet rock or exposed duct. Titus round diffusers are available with adjustable deflectors that allow the option for either horizontal or vertical flow. With their high capacity design, round ceiling diffusers are an excellent selection for gymnasiums, atriums, industrial facilities, and large retail stores.

- 2 Horizontal Pattern (Model TMR)
- Horizontal to Vertical Pattern (Model TMRA)
- Heavy Duty Adjustable (Model XC-310)
- Vortex Diffuser (Model V-1)
- Architectural Round (R-OMNI)

PERFORATED CEILING DIFFUSERS

Perforated ceiling diffusers are typically selected to meet architectural demands for air outlets that blend into the ceiling plane. Features include perforated face with 51% free area, round or square inlets, and multiple mounting options. Titus perforated diffusers can be selected with round or cross flow discharge patterns to maximize capacity or throw.

- Adjustable curved blade deflectors (Model PCS)
- Stamped pattern controllers (Model PAS)
- Star pattern (Model PSS)
- Modular core (Model PMC)
- Matching return with backpan (Model PAR)
- Matching return, perforated face only (Model PXP)



SQUARE CEILING DIFFUSERS

Titus square diffusers are designed to maximize engineering performance. This family of products includes the TMS fixed pattern diffuser, TMSA adjustable pattern diffuser, and the MCD modular core diffuser. All models are available in steel or aluminum construction and multiple mounting options. Titus square ceiling diffusers are an excellent choice for VAV (variable air volume) applications.

- High performance (Model TMS)
- High performance, adjustable pattern (Model TMSA)
- Modular Core, (Model MCD)

ARCHITECTURAL CEILING DIFFUSERS

Titus architectural diffusers are high performance products designed to provide a pleasing architectural appearance. These diffusers provide a tight horizontal ceiling pattern maximizing room air induction and comfort in the occupied space. They are an excellent choice for architects, engineers and design professionals who want to maximize performance and aesthetics in an air outlet.

- Square Plaque Diffuser (Model OMNI)
- Round Plaque Diffuser (Model R-OMNI)
- Square Backpan, Round Plaque Diffuser (Model OMNI-RS)
- Louvered with Plaque Face Diffuser (Model DAT)
- Modu-Bloc Diffuser, Adjustable (Model MB)
- Curved Plaque Face Diffuser (Model Spectrum)

SQUARE & RECTANGULAR CEILING DIFFUSERS LOUVERED FACE

Titus square and rectangular ceiling diffusers feature an aesthetically pleasing, louvered face design. These diffusers are available in 1-, 2-, 3- or 4-way airflow discharge patterns which provides a high level of flexibility in any design application. The units also offer an architecturally pleasing appearance with the diffuser face flush with the ceiling surface. All models are available in steel or aluminum construction and multiple mounting options.

- Louvered Face, Square, Rectangular, or Round Neck Inlet (Model TDC)
- Louvered Face, Square, Rectangular, or Round Neck inlet, Induction Vanes (TDV)
- Louvered Face, Square, Rectangular, or Round Neck inlet, Induction Nozzles (TDX)

SQUARE AND RECTANGULAR CEILING AND SIDE WALL DIFFUSERS

Square and rectangular ceiling and side wall diffusers can be applied to areas requiring directional patterns. The adjustable curved blades on the face of the 250 diffuser allow adjustment of the discharge airflow pattern from vertical to horizontal thereby providing maximum for ceiling or sidewall applications. The Titus TBF-AA TurboFuser features concentric round cones that provide superb aesthetics and is great for applications requiring spot cooling or heating control.

- Curved blades, adjustable discharge pattern (Model 250)
- Spot Heating and Cooling (Model TBF-AA TurboFuser)
- Spot Heating and Cooling (Model TND-AA Nozzle Diffuser)

LOW FLOW ARCHITECTURAL CEILING DIFFUSER

Titus has a solution for new low energy codes that employ the "Power of off" philosophy. The TJD is our architectural diffuser with an engineered

nozzle distribution manifold that provides great throw patterns and high mixing under extremely low airflow that would dump from any other conventional ceiling diffuser.

COMBINATION SUPPLY / RETURN CEILING DIFFUSER

Titus combination supply/return diffusers are designed for use with unitary roof top package systems. The CSR model features a combination supply/return diffuser face and no distribution plenum. The supply section of the face is constructed with louver blades to provide maximum performance with a flush face design. The return section in the center utilizes the 50F eggcrate core to maximize the return air performance. The CSR-P model features the same face design but includes a distribution plenum. Titus combination supply/return diffusers are compatible with unitary equipment from 2-½ to 25 tons.

CEILING DIFFUSERS FOR SPECIAL CEILING GRID DESIGNS

Narrow Tee, boltslot, TechZone, and regressed tile ceilings are just a few examples of the special ceiling grid types being offered today. Titus has a complete line of diffusers that are designed to integrate with these different ceilings types and maintain superior aesthetics and performance.

ML / MLR / ML-TZ / MLR-TZ

- Titus modulinear diffusers are designed for variable air volume systems. They project a uniform blanket of air that adheres to the ceiling even at low flow rates.
- Both the direction and volume of the discharge air can be adjusted gradually by moving the pattern controllers (see diagrams below)
- Full 180° pattern controller adjustment means there are no “lefts” or “rights.” Specifying, ordering, and installing are simplified.
- Model MLR returns are the same as the Model ML supply diffusers except that the pattern controllers are omitted.
- Choice of borders and mounting frames for various types of installations
- Available with one to eight slots
- Ideal for continuous length applications. Multiple sections are shipped with required alignment strips or pins for field installation.



ML / MLR / ML-TZ / MLR-TZ



metric sizes

duct mounted

open ceiling

MODELS:

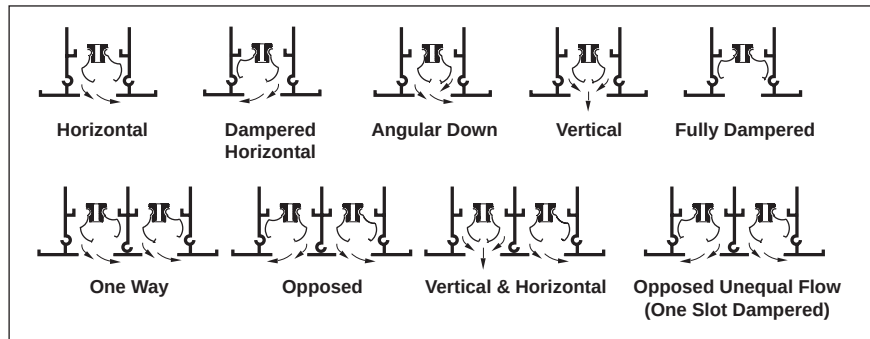
Supply Models:

ML-37 / ½" Slot
ML-38 / ¾" Slot
ML-39 / 1" Slot
ML-TZ / ¾" Slot

Return Models:

MLR-37 / ½" Slot
MLR-38 / ¾" Slot
MLR-39 / 1" Slot
MLR-TZ / ¾" Slot

 See website for Specifications



FINISHES:

Standard Finish - #26 White border. Black pattern controllers
Optional Finish - Anodized finishes available

OVERVIEW

Modulinear / Aluminum

The Titus ML Modulinear diffuser is a high performance, high quality linear slot diffuser. The unique “ice tong” deflector blades allow both changes in air volume and direction from the face of the diffuser. This diffuser is also available in 1 through 8-slot configurations.

ADDITIONAL FEATURES

- Maximum one piece section is 6 feet. Lengths greater than 6 feet are furnished in multiple sections.
- Optional Model MLF and MLRF diffusers are designed for field cutting to length and are furnished in 6-foot sections
- Maximum pattern controller length is 3 feet. Pattern controllers are furnished in multiple sections for a diffuser longer than 3 feet.
- Mounting frames are cut to length and assembled in the field
- Material is extruded aluminum with steel pattern controllers
- Optional curving to a 6-foot minimum radius available for architectural enhancement (fixed blades only)

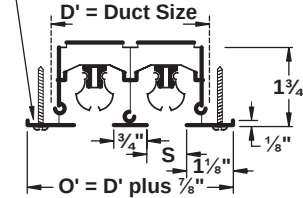
ML / MLR UNIT DIMENSIONS

Note: See page F18 for duct dimensions

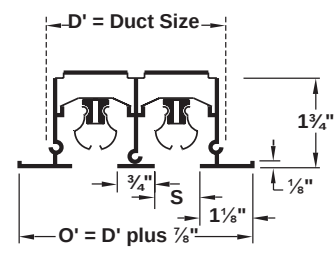
Border Types 1A, 1B both with

- Flange Border
- (1A) Screw Mounting
- (1B) Duct Mounting/lay-in application, No Screw Holes

Countersunk Screwholes for #8 SMS (5/16" from edge)



Border Type 1A

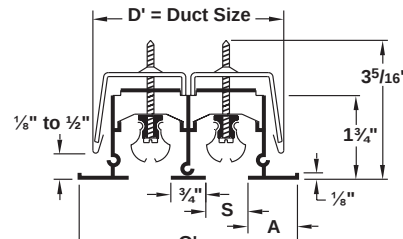


Border Type 1B

Border Types 2A, 2B both with

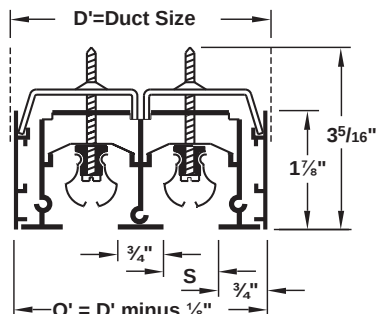
- Flange Border
- Concealed Mounting

Type	A	O'
2A	1 1/8"	D' + 3/4"
2B	7/8"	D' + 1/4"



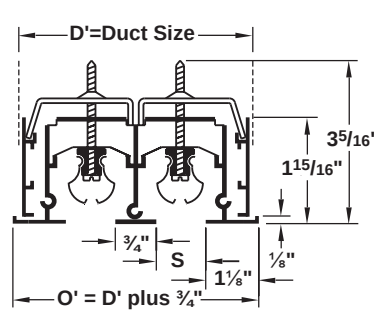
Frame & Border Type 3 with

- Flush Border
- Concealed Mounting



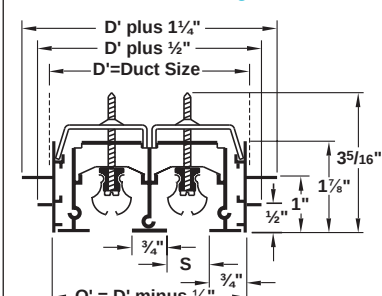
Frame & Border Type 4 with

- Flange Border
- Concealed Mounting



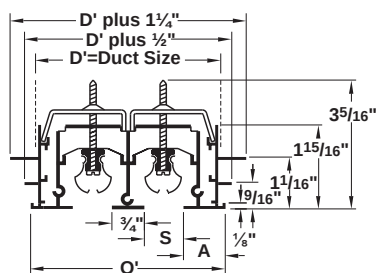
Frame & Border Type 6 with

- Plaster & Tile Mounting Frame
- Flush Border
- Concealed Mounting



Frame & Border Types 7A, 7B with

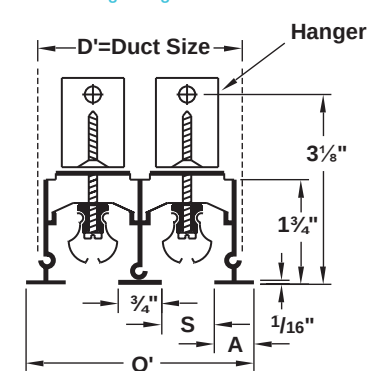
- Plaster & Tile Mounting Frame
- Flange Border
- Concealed Mounting



Type	A	O'
7A	1 1/8"	D' + 3/4"
7B	7/8"	D' + 1/4"

Border Types 9A, 9B with

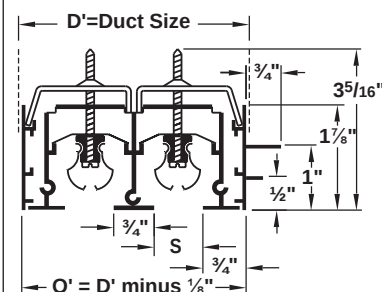
- Flange Border
- Ceiling Hangers



Type	A	O'
9A	3/4"	D' + 5/8"
9B	1 1/8"	D' + 1 3/8"

Border Type 11 with

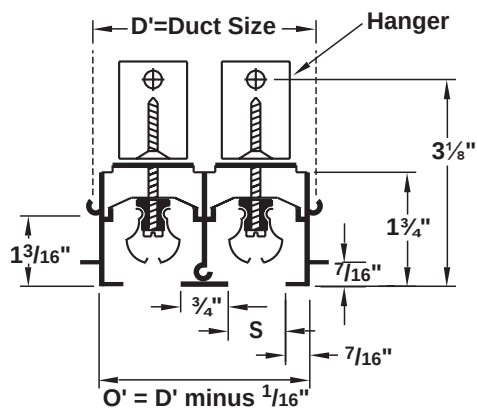
- Perimeter Plaster & Tile Mounting Frame
- Flush Border
- Concealed Mounting



ML / MLR UNIT DIMENSIONS

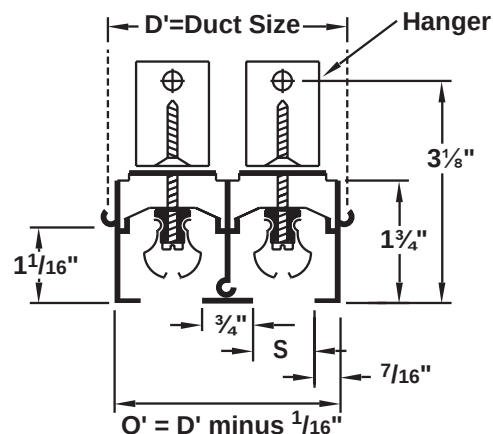
Border Type 12 with

- Spline Border
- Ceiling Hangers



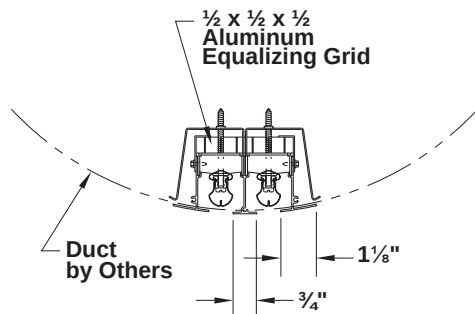
Border Type 15 with

- Flush Border
- Ceiling Hangers



Border Type 16 with

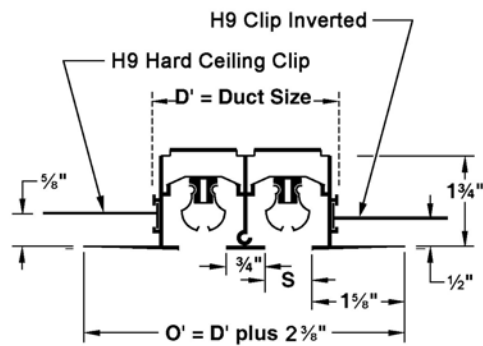
- Curved Flange Border
- Concealed Mounting
- Equalizing Grid



Standard selections: ML-38 and ML-39 only
 1 slot: duct diameters 10, 12, 14, 16, 18, 20, 22, 24"
 2 slot: duct diameters 12, 14, 16, 18, 20, 22, 24"
 3 slot: duct diameters 14, 16, 18, 20, 22, 24, 26, 28, 30"
 4 slot: duct diameters 20, 22, 24, 26, 28, 30, 32"

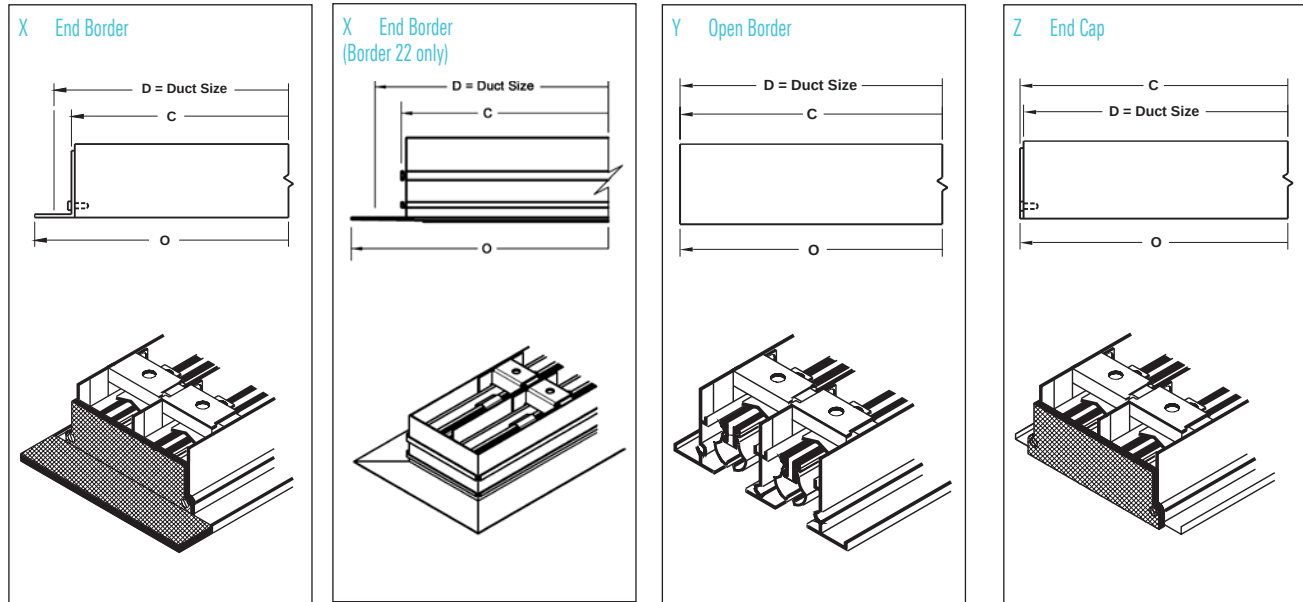
Border Type 22 with

- Tape & Spackle Border
- H9 Hard Ceiling Clip



Note: ML-37 is not available for Border 22

END FABRICATION



OVERALL LENGTH FOR VARIOUS END FABRICATIONS

Frame and/or Border Type	X X		X Y		X Z		Y Y		Y Z		Z Z	
	X-X		X-Y		X-Z		Y-Y		Y-Z		Z-Z	
	C	O	C	O	C	O	C	O	C	O	C	O
1A, 1B, 9B	$D - 1\frac{3}{8}$	$D + \frac{3}{4}$	$D - \frac{11}{16}$	$D + \frac{3}{8}$	$D - \frac{5}{8}$	$D + \frac{7}{16}$	D	D	$D + \frac{1}{16}$	$D + \frac{1}{16}$	$D + \frac{1}{8}$	$D + \frac{1}{8}$
2A, 4, 7A	$D - 1\frac{3}{8}$	$D + \frac{3}{4}$	$D - \frac{11}{16}$	$D + \frac{3}{8}$	$D - \frac{5}{8}$	$D + \frac{7}{16}$	D	D	$D + \frac{1}{16}$	$D + \frac{1}{16}$	$D + \frac{1}{8}$	$D + \frac{1}{8}$
3, 6, 11	$D - 1\frac{3}{8}$	D	$D - \frac{11}{16}$	D	$D - \frac{5}{8}$	$D + \frac{1}{16}$	D	D	$D + \frac{1}{16}$	$D + \frac{1}{16}$	$D + \frac{1}{8}$	$D + \frac{1}{8}$
2B, 7B	$D - 1\frac{3}{8}$	$D + \frac{1}{4}$	$D - \frac{11}{16}$	$D + \frac{1}{8}$	$D - \frac{5}{8}$	$D + \frac{3}{16}$	D	D	$D + \frac{1}{16}$	$D + \frac{1}{16}$	$D + \frac{1}{8}$	$D + \frac{1}{8}$
9A	$D - 1\frac{3}{8}$	D	$D - \frac{11}{16}$	D	$D - \frac{5}{8}$	$D + \frac{1}{16}$	D	D	$D + \frac{1}{16}$	$D + \frac{1}{16}$	$D + \frac{1}{8}$	$D + \frac{1}{8}$
12, 15	$D - \frac{11}{16}$	D	$D - \frac{5}{16}$	D	$D - \frac{1}{4}$	$D + \frac{1}{16}$	D	D	$D + \frac{1}{16}$	$D + \frac{1}{16}$	$D + \frac{1}{8}$	$D + \frac{1}{8}$
16	$D - 1\frac{3}{8}$	$D + \frac{3}{4}$	$D - \frac{11}{16}$	$D + \frac{3}{8}$	N/A	N/A	D	D	N/A	N/A	N/A	N/A
22	$D - 1\frac{3}{16}$	$D + 1\frac{1}{16}$	$D - \frac{19}{32}$	$D + \frac{17}{32}$	N/A	N/A	D	D	N/A	N/A	N/A	N/A

DUCT DIMENSION D' (WIDTH) FOR VARIOUS FRAME & BORDER TYPES

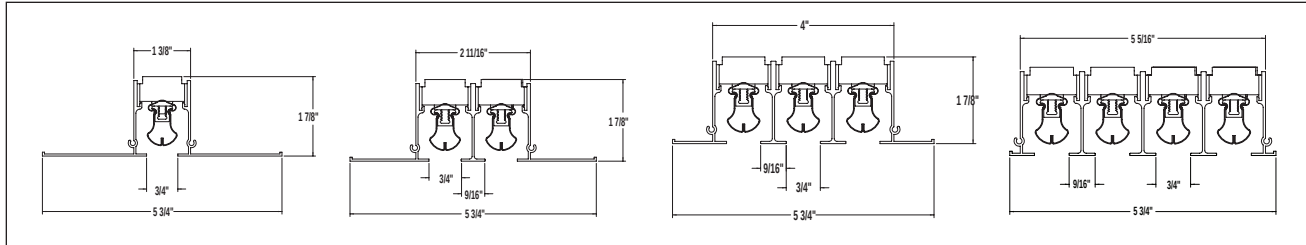
No. of Slots	Types 1A, 1B			Types 2A, 2B, 4, 7A, 7B, 16			Types 3, 6, 11			Types 9A, 9B, 12, 15, 22		
	ML/MLR 37	ML/MLR 38	ML/MLR 39	ML/MLR 37	ML/MLR 38	ML/MLR 39	ML/MLR 37	ML/MLR 38	ML/MLR 39	ML/MLR 37	ML/MLR 38	ML/MLR 39
	S = 1/2	S = 3/4	S = 1	S = 1/2	S = 3/4	S = 1	S = 1/2	S = 3/4	S = 1	S = 1/2	S = 3/4	S = 1
1	1 ⁷ / ₈	2 ¹ / ₈	2 ³ / ₈	2	2 ¹ / ₄	2 ¹ / ₂	2	2 ³ / ₈	2 ⁵ / ₈	1 ³ / ₈	1 ⁵ / ₈	1 ⁷ / ₈
2	3 ¹ / ₈	3 ⁵ / ₈	4 ¹ / ₈	3 ¹ / ₄	3 ³ / ₄	4 ¹ / ₄	3 ³ / ₈	3 ⁷ / ₈	4 ³ / ₈	2 ⁵ / ₈	3 ¹ / ₈	3 ⁵ / ₈
3	4 ³ / ₈	5 ¹ / ₈	5 ⁷ / ₈	4 ¹ / ₂	5 ¹ / ₄	6	4 ⁵ / ₈	5 ³ / ₈	6 ¹ / ₈	3 ⁷ / ₈	4 ⁵ / ₈	5 ³ / ₈
4	5 ⁵ / ₈	6 ⁵ / ₈	7 ⁵ / ₈	5 ³ / ₄	6 ³ / ₄	7 ³ / ₄	5 ⁷ / ₈	6 ⁷ / ₈	7 ⁷ / ₈	5 ¹ / ₈	6 ¹ / ₈	7 ¹ / ₈
5	6 ⁷ / ₈	8 ¹ / ₈	9 ³ / ₈	7	8 ¹ / ₄	9 ¹ / ₂	7 ¹ / ₈	8 ³ / ₈	9 ⁵ / ₈	6 ³ / ₈	7 ⁵ / ₈	8 ⁷ / ₈
6	8 ¹ / ₈	9 ⁵ / ₈	11 ¹ / ₈	8 ³ / ₄	9 ³ / ₄	11 ¹ / ₄	8 ³ / ₈	9 ⁷ / ₈	11 ³ / ₈	7 ⁵ / ₈	9 ¹ / ₈	10 ⁵ / ₈
7	9 ³ / ₈	11 ¹ / ₈	12 ⁷ / ₈	9 ¹ / ₂	11 ¹ / ₄	13	9 ⁵ / ₈	11 ³ / ₈	13 ¹ / ₈	8 ⁷ / ₈	10 ⁵ / ₈	12 ³ / ₈
8	10 ⁵ / ₈	12 ⁵ / ₈	14 ⁵ / ₈	10 ³ / ₄	12 ³ / ₄	14 ³ / ₄	10 ⁷ / ₈	12 ⁷ / ₈	14 ⁷ / ₈	10 ¹ / ₈	12 ¹ / ₈	14 ¹ / ₈

ML / MLR-37 Not Available in Type 22

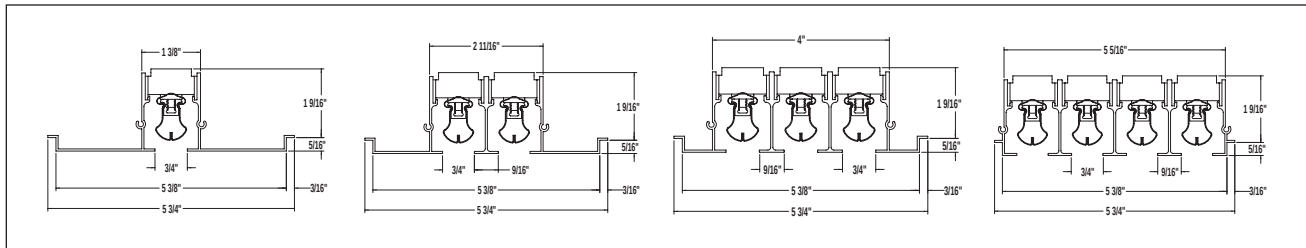
All dimensions are in inches

BORDER TYPES - ML-TZ, MLR-TZ

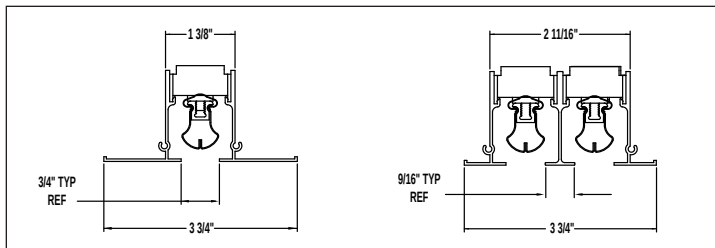
BORDER LT (LAY-IN T-BAR) FOR 6" NOMINAL WIDTH



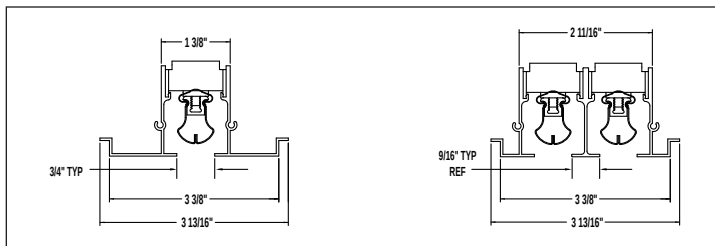
BORDER NT (NARROW TEE) FOR 6" NOMINAL WIDTH



BORDER LT (LAY-IN T-BAR) FOR 4" NOMINAL WIDTH

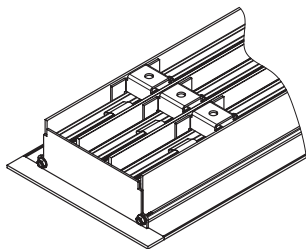
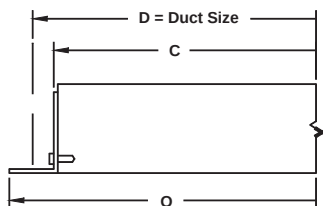


BORDER NT (NARROW TEE) FOR 4" NOMINAL WIDTH

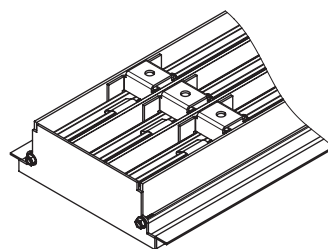
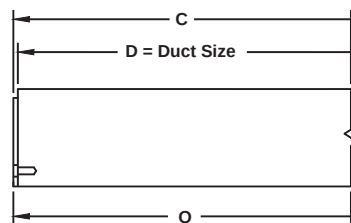


DIMENSIONS

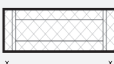
LT Border



NT Border



OVERALL LENGTH FOR LT AND NT BORDERS

Nominal Length (inches)	 Border LT		 NT Border	
	C	O	C	O
24	22 ⁵ / ₈	23 ¹³ / ₁₆	23 ³ / ₈	23 ³ / ₈
30	28 ⁵ / ₈	29 ¹³ / ₁₆	29 ³ / ₈	29 ³ / ₈
36	34 ⁵ / ₈	35 ¹³ / ₁₆	35 ³ / ₈	35 ³ / ₈
48	46 ⁵ / ₈	47 ¹³ / ₁₆	47 ³ / ₈	47 ³ / ₈
60	58 ⁵ / ₈	59 ¹³ / ₁₆	59 ³ / ₈	59 ³ / ₈
72	70 ⁵ / ₈	71 ¹³ / ₁₆	71 ³ / ₈	71 ³ / ₈

FIELD CUT DIFFUSERS

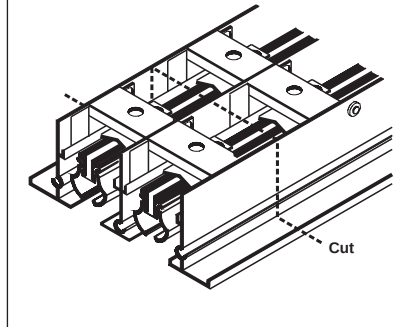
Available Supply Models:

MLF-37 / 1/2" Slot
MLF-38 / 3/4" Slot
MLF-39 / 1" Slot

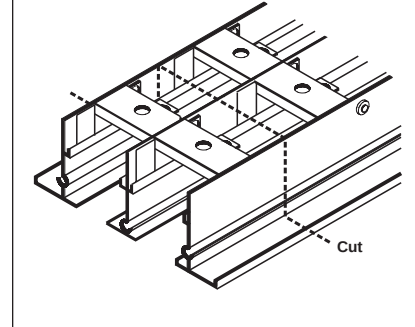
Available Return Models:

MLRF-37 / 1/2" Slot
MLRF-38 / 3/4" Slot
MLRF-39 / 1" Slot

MLF - Supply



MLRF - Return

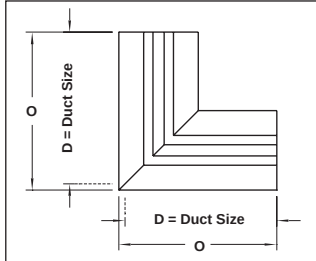


- Ideal when the exact length of an ML or MLR diffuser is not known until it is being installed
- Standard factory cut diffusers can be trimmed up to 6 inches. If more than 6 inches are to be removed, use the optional field cut diffuser.
- The field cut ML or MLR diffuser is 72 inches long, with the sides pre-punched to assure the proper alignment of field installed spacers. These field installed spacers provide additional rigidity during and after cutting.

MITERED CORNERS

Available Models:

MC-37 / 1/2" Slot
MC-38 / 3/4" Slot
MC-39 / 1" Slot



DIMENSIONS FOR 90° MITERED CORNERS

No. of Slots	1A, 1B		2A, 4, 7A		2B, 7B		3, 6, 11		9A		9B		12, 15		22	
	O	D	O	D	O	D	O	D	O	D	O	D	O	D	O	D
1, 2	12 ⁷ / ₁₆	12	12 ³ / ₈	12	12 ¹ / ₈	12	11 ⁷ / ₈	12	12 ⁵ / ₁₆	12	12 ¹¹ / ₁₆	12	12	12	13 ³ / ₁₆	12
3-8	24 ⁷ / ₁₆	24	24 ³ / ₈	24	24 ¹ / ₈	24	23 ⁷ / ₈	24	24 ⁵ / ₁₆	24	24 ¹¹ / ₁₆	24	24	24	25 ³ / ₁₆	24

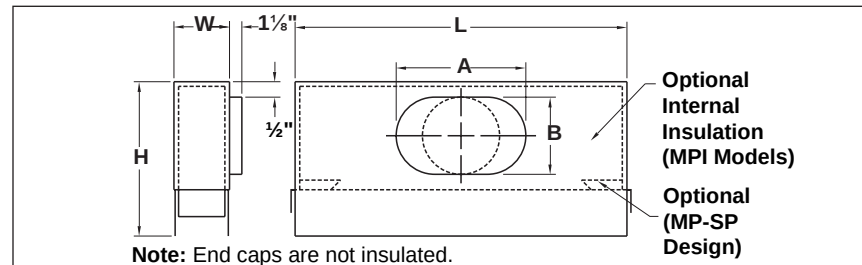
Note: Dimensions shown will vary for other angles

PLENUMS

Available Uninsulated Models:

MP-37 / 1/2" Slot
MP-38 / 3/4" Slot
MP-39 / 1" Slot

MP-37-SP / 1/2" Slot
MP-38-SP / 3/4" Slot
MP-39-SP / 1" Slot



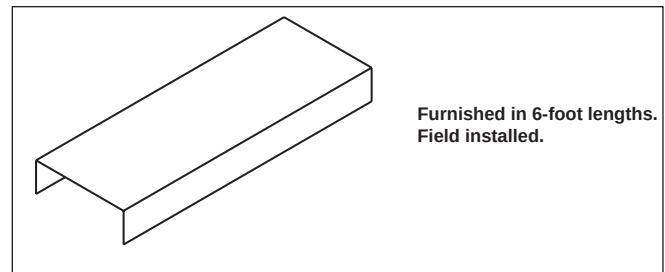
Available Insulated Models:

MPI-37 / 1/2" Slot
MPI-38 / 3/4" Slot
MPI-39 / 1" Slot

MPI-37-SP / 1/2" Slot
MPI-38-SP / 3/4" Slot
MPI-39-SP / 1" Slot

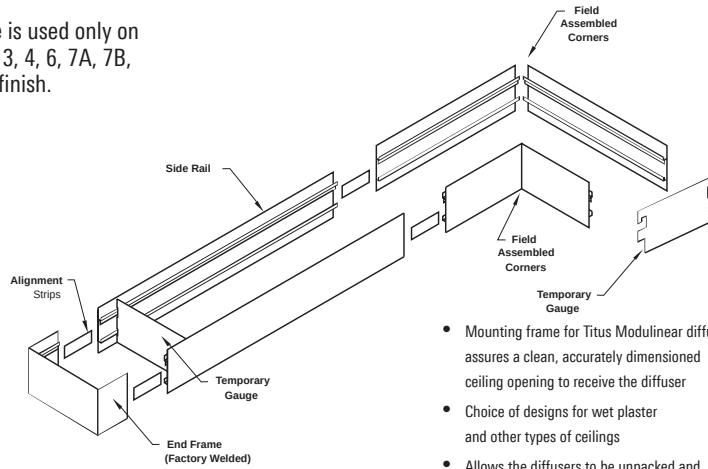
BLANK-OFFS

BLKS / Cold Rolled Steel
/ Fits over Neck
/ Black Finish
BLKV / Vinyl
/ Fits in Slot
/ Black Finish



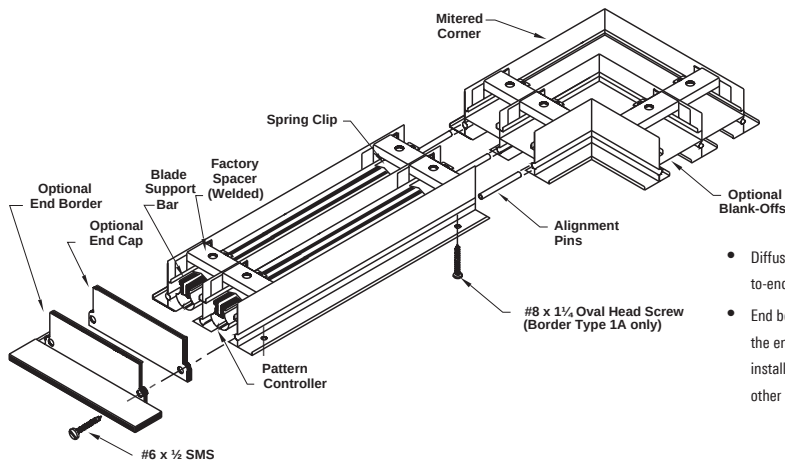
MOUNTING FRAME ASSEMBLY

Note: Mounting frame is used only on Frame & Border Types 3, 4, 6, 7A, 7B, 11. Shipped with mill finish.



- Mounting frame for Titus Modular diffusers assures a clean, accurately dimensioned ceiling opening to receive the diffuser
- Choice of designs for wet plaster and other types of ceilings
- Allows the diffusers to be unpacked and installed after construction is finished

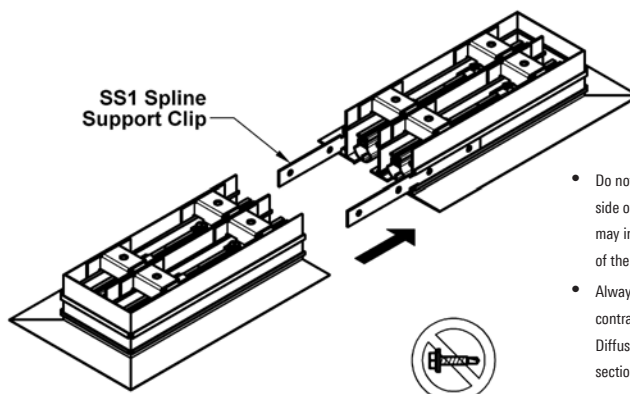
- Diffusers can be removed and replaced easily, without disfiguring the ceiling
- Furnished with the diffusers in Frame & Border Types 3, 4, 6, 7A, 7B and 11
- Cut to length in the field



- Diffusers can be joined together end-to-end to form long, continuous slots
- End borders and end caps close off the ends of the diffusers and simplify installations ending at walls and other stopping points (see page F17)

- Factory-made mitered corners are accurately welded and carefully finished for a smooth, unbroken corner treatment. Mitered corners are rendered inactive with factory-installed blank-offs. (see page F20)
- Alignment pins maintain close joints between sections

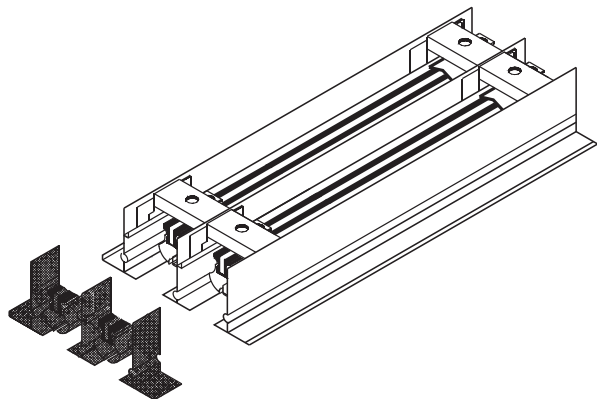
(Border 22)
Align Y-Y ends using supplied SS1 Spline Support Clips



- Do not screw support clips into side of diffuser. The screws may interfere with adjustment of the diffuser blades.
- Always allow for expansion and contraction per the Grilles and Diffusers Engineering Guidelines section of the Catalog

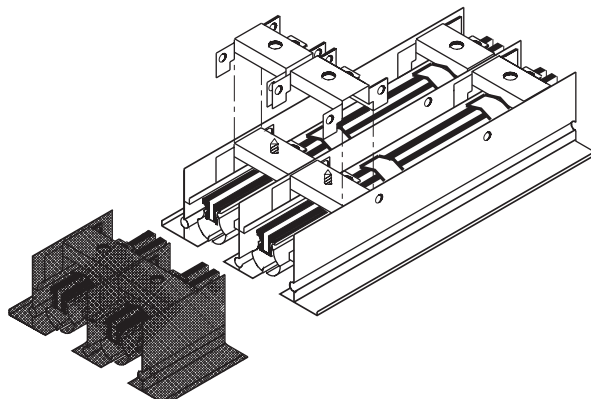


Factory Cut Diffuser (Trimming)



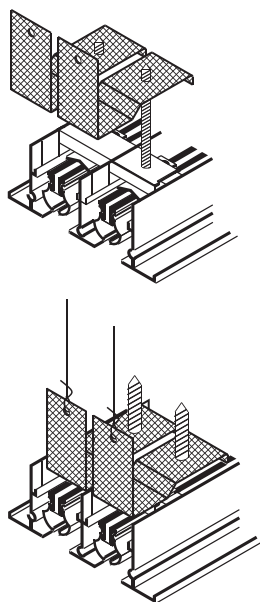
- Titus Modulinear diffusers are so simple and rugged they are routinely cut to length in the field with a fine tooth, high-speed carbon steel metal cutting blade
- Factory-cut diffuser Model ML (above) or MLR is ordered for a specified length from the factory, but can be trimmed as much as 3 inches from each end in the field

Field Cut Diffuser



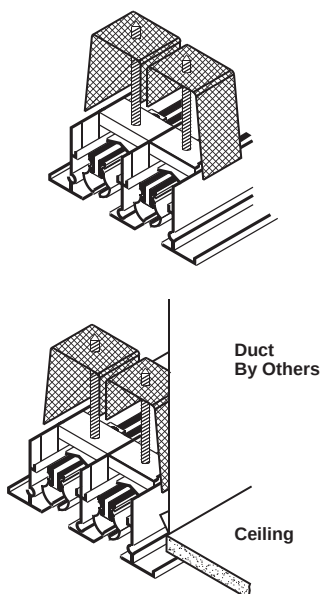
- Field-cut diffuser Model MLF (above) or MLRF is shipped in standard 6-foot lengths
- Model MLF or MLRF diffuser can be cut to any length. Field-installed spacers and other hardware are furnished with the diffuser for one field cut. Additional field cut kits are available at additional cost.
- Unit is shipped without end caps or end borders

Hanger Bracket
for Border Types 9A, 9B, 12, 15



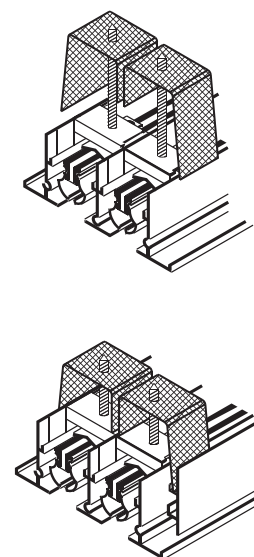
These hanger brackets are a convenient means of attaching hanger wires to support the diffuser from the structural members of the building.

Hanger Bracket
for Border Types 2A, 2B



Here the diffuser is simply pushed up into the duct until the outer legs of the hanger brackets snap into the hems of the duct. Screws then snug the diffuser against the ceiling.

Hanger Bracket
for Frame & Border
Types 3, 4, 6, 7A, 7B, 11



For installation in a Titus mounting frame, these hanger brackets function like the duct type brackets at the left. The outer legs of the brackets engage the side rails of the mounting frame.

ML-37 / 1/2" SLOT SPACING WIDTH / SUPPLY WITH CONTINUOUS PLENUM

1-Slot	Airflow, cfm/ft.	5	10	16	21	26	31	36	42	47
	Static Pressure	0.006	0.023	0.051	0.090	0.141	0.203	0.277	0.362	0.458
	NC (Noise Criteria)	-	-	20	27	32	37	40	44	46
	Horizontal	1-1-6	3-6-12	6-11-15	10-12-17	11-14-19	12-15-21	13-16-23	14-17-25	15-18-26
	Vertical	2	6	9	11	12	14	15	16	17
2-Slot	Airflow, cfm/ft.	10	21	31	42	52	62	73	83	94
	Static Pressure	0.006	0.023	0.051	0.090	0.141	0.203	0.277	0.362	0.458
	NC (Noise Criteria)	-	13	23	30	35	40	43	47	49
	Horizontal	1-3-10	5-10-17	10-15-21	14-17-25	16-19-28	17-21-30	19-23-33	20-25-35	21-26-37
	Vertical	4	8	13	16	17	19	20	22	24
3-Slot	Airflow, cfm/ft.	16	31	47	62	78	94	109	125	140
	Static Pressure	0.006	0.023	0.051	0.090	0.141	0.203	0.277	0.362	0.458
	NC (Noise Criteria)	-	15	25	32	37	41	45	48	51
	Horizontal	2-4-13	7-13-21	13-18-26	17-21-30	19-24-34	21-26-37	23-28-40	25-30-43	26-32-45
	Vertical	5	10	15	19	21	23	25	27	28
4-Slot	Airflow, cfm/ft.	21	42	62	83	104	125	146	166	187
	Static Pressure	0.006	0.023	0.051	0.090	0.141	0.203	0.277	0.362	0.458
	NC (Noise Criteria)	-	16	26	33	38	43	46	50	52
	Horizontal	3-6-14	10-14-25	14-21-30	19-25-35	22-28-39	25-30-43	27-33-46	28-35-49	30-37-52
	Vertical	7	12	18	22	25	27	29	31	33
5-Slot	Airflow, cfm/ft.	26	52	78	104	130	156	182	208	234
	Static Pressure	0.006	0.023	0.051	0.090	0.141	0.203	0.277	0.362	0.458
	NC (Noise Criteria)	-	17	27	34	39	44	47	51	53
	Horizontal	3-7-16	11-16-28	16-24-34	22-28-39	25-31-44	28-34-48	30-36-52	32-39-55	34-41-58
	Vertical	7	14	20	25	28	30	32	35	37
6-Slot	Airflow, cfm/ft.	31	62	94	125	156	187	218	250	281
	Static Pressure	0.006	0.023	0.051	0.090	0.141	0.203	0.277	0.362	0.458
	NC (Noise Criteria)	-	18	28	35	40	44	48	51	54
	Horizontal	4-9-18	12-18-30	18-26-37	24-30-43	28-34-48	30-37-52	33-40-56	35-43-60	37-45-64
	Vertical	7	16	22	27	30	33	35	38	40
7-Slot	Airflow, cfm/ft.	36	73	109	146	182	218	255	291	328
	Static Pressure	0.006	0.023	0.051	0.090	0.141	0.203	0.277	0.362	0.458
	NC (Noise Criteria)	-	19	29	35	41	45	49	52	55
	Horizontal	6-10-19	13-19-33	19-28-40	25-33-46	30-36-52	33-40-56	35-43-61	38-46-65	40-49-69
	Vertical	8	16	24	29	32	35	38	41	43
8-Slot	Airflow, cfm/ft.	42	83	125	166	208	250	291	333	374
	Static Pressure	0.006	0.023	0.051	0.090	0.141	0.203	0.277	0.362	0.458
	NC (Noise Criteria)	-	19	29	36	41	46	49	53	55
	Horizontal	7-10-20	14-20-35	20-30-43	27-35-49	32-39-55	35-43-60	38-46-65	40-49-70	43-52-74
	Vertical	8	17	26	31	35	38	41	43	45

NC corrections for various diffuser lengths

Length	2	4	6	8	10
Supply	-3	0	+2	+3	+5
Return	0	+3	+5	+6	+8

Throw correction multiplier for length

Length	2	4	8	10
Throw Correction	0.72	1.0	1.5	1.7

ML-38, -TZ / 3/4" SLOT SPACING WIDTH / SUPPLY WITH CONTINUOUS PLENUM

1-Slot	Airflow, cfm/ft.	6	12	19	25	31	37	43	50	56
	Static Pressure	0.004	0.016	0.037	0.065	0.102	0.146	0.199	0.260	0.330
	NC (Noise Criteria)	-	-	14	20	26	30	34	37	40
	Horizontal	1-2-6	3-6-16	6-12-20	11-16-23	13-18-26	16-20-28	18-22-31	19-23-33	20-25-35
	Vertical	2	6	10	12	14	15	16	17	18
2-Slot	Airflow, cfm/ft.	12	25	37	50	62	74	87	99	112
	Static Pressure	0.004	0.016	0.037	0.065	0.102	0.146	0.199	0.260	0.330
	NC (Noise Criteria)	-	-	17	23	29	33	37	40	43
	Horizontal	1-3-11	5-11-22	11-17-28	15-22-33	19-26-37	22-28-40	25-31-43	27-33-46	28-35-49
	Vertical	4	9	14	17	19	21	23	24	25
3-Slot	Airflow, cfm/ft.	19	37	56	74	93	112	130	149	167
	Static Pressure	0.004	0.016	0.037	0.065	0.102	0.146	0.199	0.260	0.330
	NC (Noise Criteria)	-	-	18	25	31	35	39	42	45
	Horizontal	2-5-14	8-14-27	14-20-35	18-27-40	23-32-45	27-35-49	31-38-53	33-40-57	35-43-60
	Vertical	6	11	17	21	23	26	28	30	32
4-Slot	Airflow, cfm/ft.	25	50	74	99	124	149	174	198	223
	Static Pressure	0.004	0.016	0.037	0.065	0.102	0.146	0.199	0.260	0.330
	NC (Noise Criteria)	-	-	20	26	32	36	40	43	46
	Horizontal	3-6-16	11-16-32	16-24-40	21-32-46	26-37-52	32-40-57	36-43-61	38-46-66	40-49-70
	Vertical	6	13	19	24	27	30	32	34	36
5-Slot	Airflow, cfm/ft.	31	62	93	124	155	186	217	248	279
	Static Pressure	0.004	0.016	0.037	0.065	0.102	0.146	0.199	0.260	0.330
	NC (Noise Criteria)	-	-	21	27	33	37	41	44	47
	Horizontal	4-8-18	12-18-35	18-26-45	24-35-52	29-41-58	35-45-64	40-49-69	42-52-73	45-55-78
	Vertical	7	14	21	27	30	33	36	38	40
6-Slot	Airflow, cfm/ft.	37	74	112	149	186	223	260	298	335
	Static Pressure	0.004	0.016	0.037	0.065	0.102	0.146	0.199	0.260	0.330
	NC (Noise Criteria)	-	12	21	28	34	38	42	45	48
	Horizontal	5-10-19	13-19-39	19-29-49	26-39-57	32-45-64	39-49-70	43-53-75	46-57-81	49-60-85
	Vertical	8	15	24	30	33	36	39	42	45
7-Slot	Airflow, cfm/ft.	43	87	130	174	217	260	304	347	391
	Static Pressure	0.004	0.016	0.037	0.065	0.102	0.146	0.199	0.260	0.330
	NC (Noise Criteria)	-	12	22	29	34	39	42	45	48
	Horizontal	6-10-21	14-21-42	21-31-53	28-42-61	35-49-69	42-53-75	47-58-81	50-61-87	53-65-92
	Vertical	8	16	24	32	36	39	42	45	48
8-Slot	Airflow, cfm/ft.	50	99	149	198	248	298	347	397	446
	Static Pressure	0.004	0.016	0.037	0.065	0.102	0.146	0.199	0.260	0.330
	NC (Noise Criteria)	-	13	23	29	35	39	43	46	49
	Horizontal	7-11-22	15-22-45	22-33-57	30-45-66	37-52-73	45-57-81	50-61-87	54-66-93	57-70-99
	Vertical	8	16	24	33	38	42	45	48	51

NC corrections for various diffuser lengths

Length	2	4	6	8	10
Supply	-3	0	+2	+3	+5
Return	0	+3	+5	+6	+8

Throw correction multiplier for length

Length	2	4	8	10
Throw Correction	0.72	1.0	1.5	1.7

ML-39 / 1" SLOT SPACING WIDTH / SUPPLY WITH CONTINUOUS PLENUM

1-Slot	Airflow, cfm/ft.	7	13	20	26	33	40	46	53	59
	Static Pressure	0.004	0.014	0.032	0.057	0.089	0.128	0.174	0.228	0.288
	NC (Noise Criteria)	-	-	13	20	26	30	34	37	40
	Horizontal	1-2-6	3-6-16	6-12-21	11-16-24	14-19-27	16-21-29	18-22-32	20-24-34	21-25-36
	Vertical	2	8	12	14	15	17	18	19	20
2-Slot	Airflow, cfm/ft.	13	26	40	53	66	79	92	106	119
	Static Pressure	0.004	0.014	0.032	0.057	0.089	0.128	0.174	0.228	0.288
	NC (Noise Criteria)	-	-	16	23	29	33	37	40	43
	Horizontal	1-3-12	5-12-23	12-17-29	15-23-34	19-27-38	23-29-42	26-32-45	28-34-48	29-36-51
	Vertical	5	11	16	19	22	24	26	28	30
3-Slot	Airflow, cfm/ft.	20	40	59	79	99	119	139	158	178
	Static Pressure	0.004	0.014	0.032	0.057	0.089	0.128	0.174	0.228	0.288
	NC (Noise Criteria)	-	-	18	25	30	35	39	42	45
	Horizontal	2-5-14	8-14-28	14-21-36	19-28-42	23-33-46	28-36-51	32-39-55	34-42-59	36-44-62
	Vertical	7	13	20	24	27	29	32	34	36
4-Slot	Airflow, cfm/ft.	26	53	79	106	132	158	185	211	238
	Static Pressure	0.004	0.014	0.032	0.057	0.089	0.128	0.174	0.228	0.288
	NC (Noise Criteria)	-	-	19	26	32	36	40	43	46
	Horizontal	3-6-16	11-16-33	16-24-42	22-33-48	27-38-54	33-42-59	37-45-63	39-48-68	42-51-72
	Vertical	8	15	23	28	31	34	36	39	42
5-Slot	Airflow, cfm/ft.	33	66	99	132	165	198	231	264	297
	Static Pressure	0.004	0.014	0.032	0.057	0.089	0.128	0.174	0.228	0.288
	NC (Noise Criteria)	-	-	20	27	33	37	41	44	47
	Horizontal	4-8-18	12-18-36	18-27-46	24-36-54	30-42-60	36-46-66	41-50-71	44-54-76	46-57-80
	Vertical	9	17	25	31	34	38	41	43	45
6-Slot	Airflow, cfm/ft.	40	79	119	158	198	238	277	317	356
	Static Pressure	0.004	0.014	0.032	0.057	0.089	0.128	0.174	0.228	0.288
	NC (Noise Criteria)	-	12	21	28	33	38	42	45	48
	Horizontal	5-10-20	13-20-40	20-30-51	27-40-59	33-46-66	40-51-72	45-55-78	48-59-83	51-62-88
	Vertical	9	19	28	34	38	41	45	48	51
7-Slot	Airflow, cfm/ft.	46	92	139	185	231	277	323	370	416
	Static Pressure	0.004	0.014	0.032	0.057	0.089	0.128	0.174	0.228	0.288
	NC (Noise Criteria)	-	12	22	29	34	38	42	45	48
	Horizontal	6-11-22	14-22-43	22-32-55	29-43-63	36-50-71	43-55-78	48-59-84	52-63-90	55-67-95
	Vertical	10	20	30	36	41	45	48	52	55
8-Slot	Airflow, cfm/ft.	53	106	158	211	264	317	370	422	475
	Static Pressure	0.004	0.014	0.032	0.057	0.089	0.128	0.174	0.228	0.288
	NC (Noise Criteria)	-	13	23	29	35	39	43	46	49
	Horizontal	8-12-23	15-23-46	23-35-59	31-46-68	38-54-76	46-59-83	52-63-90	55-68-96	59-72-102
	Vertical	11	22	32	39	43	48	52	55	58

NC corrections for various diffuser lengths

Length	2	4	6	8	10
Supply	-3	0	+2	+3	+5
Return	0	+3	+5	+6	+8

Throw correction multiplier for length

Length	2	4	8	10
Throw Correction	0.72	1.0	1.5	1.7

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the engineering section of this catalog for additional information.
- Horizontal throw values given are for terminal velocities of 150, 100 and 50 fpm
- Throw values given are for isothermal conditions, and are based on 4-foot active section. For other lengths, see the Throw Correction Table.
- Pressure is given in inches of WG for ML only
- Vertical throw values are given for terminal velocities of 50 fpm
- For divided throw, use the cfm-per-foot value for the number of slots in each direction. For sound, use the NC values for cfm-per-foot for the total number of slots.
- Each NC value represents the noise criteria curve which will not be exceeded by the sound pressure in any of the octave bands, 2nd through 7th, with a room absorption of 10 dB, re 10⁻¹² watts
- For vertical throw, deduct 11 NC
- Dash (-) in space denotes an NC value of less than 10
- NC is based on 4-foot lengths; for other lengths use the NC correction table
- Throws listed are for the 1-way pattern. For divided airflow, select the airflow in each direction according to the number of slots aimed in that direction, with the total airflow apportioned between slots. For an explanation of catalog throw data, see the Engineering Guidelines section of the catalog.
- Data obtained using plenums with duct velocities less than 800 fpm. See model MP (pages F34-F45) for data with Titus plenums.
- For continuous lengths it is recommended that maximum active lengths are no longer than 10 feet

RETURN PERFORMANCE DATA FOR PLENUM MLR-37 APPLICATIONS

- All pressures are in inches of water
- NC values are based on a room absorption of 10 dB, re 10⁻¹² watts, with a 10-foot active diffuser section (see the table below)
- Dash (—) in space denotes NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- For continuous lengths it is recommended that maximum active lengths are no longer than 10 feet

No. of Slots	Negative SP	0.011	0.025	0.045	0.072	0.103	0.180	0.275	0.415
1	cfm per ft.	10	15	20	25	30	40	50	60
	NC	—	—	14	20	25	33	39	44
2	cfm per ft.	20	30	40	50	60	80	100	120
	NC	—	—	17	23	28	36	42	47
3	cfm per ft.	30	45	60	75	90	120	150	180
	NC	—	11	19	25	30	38	44	49
4	cfm per ft.	40	60	80	100	120	160	200	240
	NC	—	12	20	26	31	39	45	50
5	cfm per ft.	50	75	100	125	150	200	250	300
	NC	—	13	21	27	32	40	46	51
6	cfm per ft.	60	90	120	150	180	240	300	360
	NC	—	14	22	28	33	41	47	52
7	cfm per ft.	70	105	140	175	210	280	350	420
	NC	—	15	23	29	34	42	48	53
8	cfm per ft.	80	120	160	200	240	320	400	480
	NC	—	15	23	29	34	42	48	53

NC Correction for Various MLR Lengths

Length (ft.)	2	4	10	15	20
MLR	-7	-4	0	+2	+3

MLR-38, -TZ

No. of Slots	Negative SP	0.007	0.028	0.063	0.108	0.170	0.250	0.345	0.450
1	cfm per ft.	10	20	30	40	50	60	70	80
	NC	—	—	18	26	32	37	41	45
2	cfm per ft.	20	40	60	80	100	120	140	160
	NC	—	10	21	29	35	40	44	48
3	cfm per ft.	30	60	90	120	150	180	210	240
	NC	—	12	23	31	37	42	46	50
4	cfm per ft.	40	80	120	160	200	240	280	320
	NC	—	13	24	32	38	43	47	51
5	cfm per ft.	50	100	150	200	250	300	350	400
	NC	—	14	25	33	39	44	48	52
6	cfm per ft.	60	120	180	240	300	360	420	480
	NC	—	15	26	34	40	45	49	53
7	cfm per ft.	70	140	210	280	350	420	490	560
	NC	—	16	27	35	41	46	50	54
8	cfm per ft.	80	160	240	320	400	480	560	640
	NC	—	16	27	35	41	46	50	54

MLR-39

No. of Slots	Negative SP	0.018	0.040	0.070	0.108	0.160	0.215	0.280	0.450
1	cfm per ft.	20	30	40	50	60	70	80	100
	NC	—	11	19	25	30	34	38	44
2	cfm per ft.	40	60	80	100	120	140	160	200
	NC	—	14	22	28	33	37	41	47
3	cfm per ft.	60	90	120	150	180	210	240	300
	NC	—	16	24	30	35	39	43	49
4	cfm per ft.	80	120	160	200	240	280	320	400
	NC	—	17	25	31	36	40	44	50
5	cfm per ft.	100	150	200	250	300	350	400	500
	NC	—	18	26	32	37	41	45	51
6	cfm per ft.	120	180	240	300	360	420	480	600
	NC	—	19	27	33	38	42	46	52
7	cfm per ft.	140	210	280	350	420	490	560	700
	NC	—	20	28	34	39	43	47	53
8	cfm per ft.	160	240	320	400	480	560	640	800
	NC	—	20	28	34	39	43	47	53

ML-NT / MLR-NT

- The ML Modulinear diffuser is a high performance, high quality linear slot diffuser. The unique “ice tong” deflector blades allow both changes in air volume and direction from the face of the diffuser.
- Available in one to eight slots
- Available in 24" or 48" lengths
- Made of extruded aluminum with steel deflectors



ML-NT / MLR-NT

MODELS:

Supply Models:

ML-37-NT / ½" Slot
ML-38-NT / ¾" Slot
ML-39-NT / 1" Slot

Return Models:

MLR-37-NT / ½" Slot
MLR-38-NT / ¾" Slot
MLR-39-NT / 1" Slot

FINISH:

Standard Finish - #26 White

OVERVIEW

Modulinear Narrow Tee / Aluminum

ML-NT diffusers are compatible with 24" x 24" modules for regressed narrow tee ceiling systems. The Titus ML Modulinear is a high performance, high quality linear slot diffuser. The unique “ice tong” deflector blades allow both changes in air volume and direction from the face of the diffuser.

For Performance Data and Notes, please refer to pages F24-F27 for models (ML-37-NT / ML-38-NT / ML-39-NT) and pages F28-F29 for models (MLR-37-NT / MLR-38-NT / MLR-39-NT).



See website for Specifications

MP / MPI

- Titus Series MP plenums are designed specifically for field attachment of ML or MLR Modulinear diffusers
- Utilizes the Modulinear diffuser's excellent variable air volume performance. The air stays on the ceiling in a tight, horizontal pattern, even at low volumes.
- Widths available to fit all Models ML and MLR Modulinear diffusers
- Standard nominal lengths are 24, 36, 48, and 60 inches
- End caps can be turned up to allow plenums to be installed on continuous runs of ML diffusers
- Optional internal insulation (MPI and MPI-SP models)
- Optional field mounted inlet dampers are available
- Material is galvanized steel



MP / MPI

Redefine your comfort zone.™ | www.titus-hvac.com

MODELS:

Models:

MP-37 / ½" Slot
 MP-38 / ¾" Slot
 MP-39 / 1" Slot

Special Performance Models:

MP-37-SP / ½" Slot
 MP-38-SP / ¾" Slot
 MP-39-SP / 1" Slot

MPI-37 / ½" Slot
 MPI-38 / ¾" Slot
 MPI-39 / 1" Slot

OVERVIEW

Modulinear Diffuser Plenums / Steel

The Titus MP is an optional plenum for use with the ML modulinear series. When combined with the ML diffuser the MP provides a tight horizontal air pattern that clings to the ceiling even at low volumes.

See pages [F34-F46](#) for further explanation of the MP-SP performance.


[See website for Specifications](#)

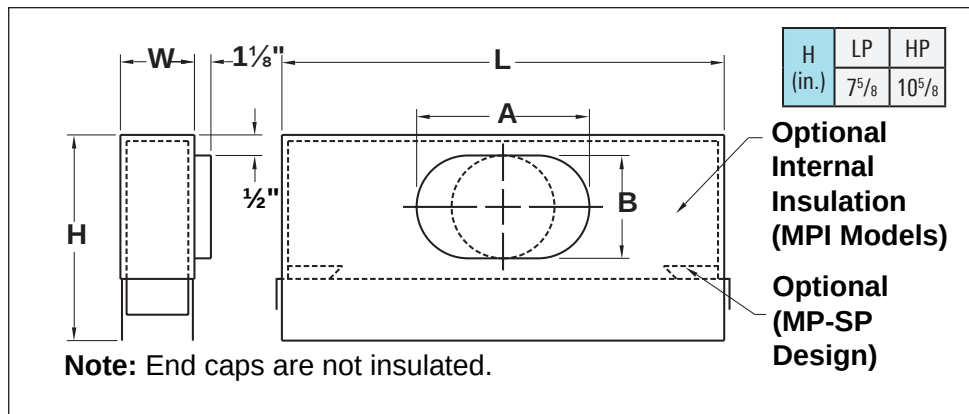
ADDITIONAL FEATURES

- Optional MP-SP models maximize air diffusion by shortening the throw and widening the spread of the discharge air. This is accomplished by internal baffling. The result is improved short-throw applications.
- With the air directed against an outside wall, the ML diffuser mounted in an MP-SP allows effective handling of the thermal load by thoroughly blanketing the wall or window surface

F

MP / MPI

MP / MPI UNIT DIMENSIONS



Border Types: 3, 4, 6, 7A, 7B, & 11

ML/MLR End Fabrication	L
XX	N - 1/4
XY	N - 1/4
YY	N - 1/4
ZZ	N - 1/4

ML/MLR Type	Width			
	Number of Slots			
	MP-37	MP-38	MP-39	MP-40
1	2 ³ / ₁₆	2 ⁷ / ₁₆	2 ¹¹ / ₁₆	3 ³ / ₁₆
2	3 ⁷ / ₁₆	3 ¹⁵ / ₁₆	4 ⁷ / ₁₆	5 ⁷ / ₁₆
3	4 ¹¹ / ₁₆	5 ⁷ / ₁₆	6 ³ / ₁₆	7 ¹¹ / ₁₆
4	5 ¹⁵ / ₁₆	6 ¹⁵ / ₁₆	7 ¹⁵ / ₁₆	9 ¹⁵ / ₁₆
5	7 ³ / ₁₆	8 ⁷ / ₁₆	9 ¹¹ / ₁₆	N/A
6	8 ⁷ / ₁₆	9 ¹⁵ / ₁₆	11 ⁷ / ₁₆	N/A
7	9 ¹¹ / ₁₆	11 ⁷ / ₁₆	13 ³ / ₁₆	N/A
8	10 ¹⁵ / ₁₆	12 ¹⁵ / ₁₆	14 ¹⁵ / ₁₆	N/A

MODEL MP OR MP-SP PLENUM FOR ML AND MLR DIFFUSERS

Border Types 1A, 1B, 3, 4, 6, 7A, 7B, 11, 9A, 9B, 12, 15, 22

All Border Types

Note: Units with 12 inch inlets are 10⁵/₈ inches high

Nominal Length N (inches)	Standard Inlets
24	6, 8, 10
36	6, 8, 10
48	6, 8, 10, 12
60	6, 8, 10, 12
72	6, 8, 10, 12

Standard Inlet Size	Dimensions	
	A	B
6 Oval	6 ¹ / ₄	5 ¹ / ₄
8 Oval	9 ³ / ₈	5 ¹ / ₄
10 Oval	12 ¹ / ₂	5 ¹ / ₄
12 Oval	14 ¹ / ₈	7 ⁷ / ₈
No Inlet	-	-

Border Types: 1A, 1B, 9A, 9B, 12, 15 & 22 End Fabrication

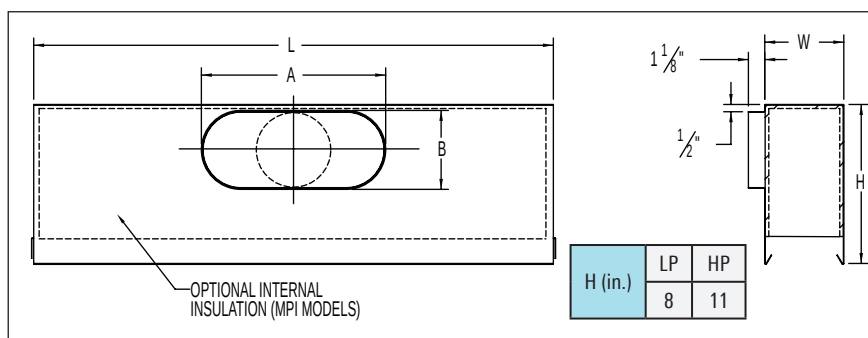
ML/MLR End Fabrication	L
XX	N - 7/8
XY	N - 7/8
YY	N - 1/4
ZZ	N - 1/4

ML/MLR Type	Width							
	Number of Slots							
	1	2	3	4	5	6	7	8
MP-37	1 ⁷ / ₁₆	2 ¹¹ / ₁₆	3 ¹⁵ / ₁₆	5 ³ / ₁₆	6 ⁷ / ₁₆	7 ¹¹ / ₁₆	8 ¹⁵ / ₁₆	10 ³ / ₁₆
MP-38	1 ¹¹ / ₁₆	3 ³ / ₁₆	4 ¹¹ / ₁₆	6 ³ / ₁₆	7 ¹¹ / ₁₆	9 ³ / ₁₆	10 ¹¹ / ₁₆	12 ³ / ₁₆
MP-39	1 ¹⁵ / ₁₆	3 ¹¹ / ₁₆	5 ⁷ / ₁₆	7 ³ / ₁₆	8 ¹⁵ / ₁₆	10 ¹¹ / ₁₆	12 ⁷ / ₁₆	14 ³ / ₁₆

MODEL MP OR MP-SP PLENUM FOR ML AND MLR DIFFUSERS

Border Types 2A, 2B

Nominal Length N (inches)	Standard Inlets
24	6, 8, 10
36	6, 8, 10
48	6, 8, 10, 12
60	6, 8, 10, 12
72	6, 8, 10, 12



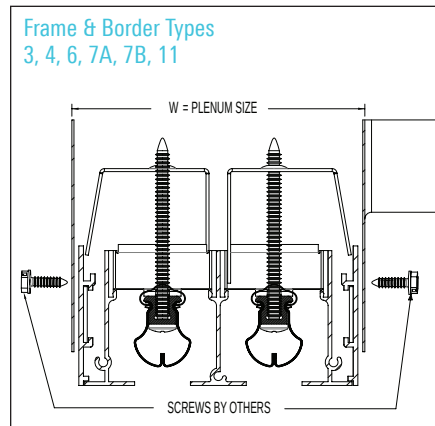
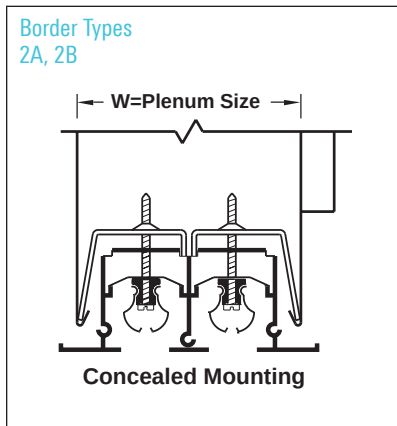
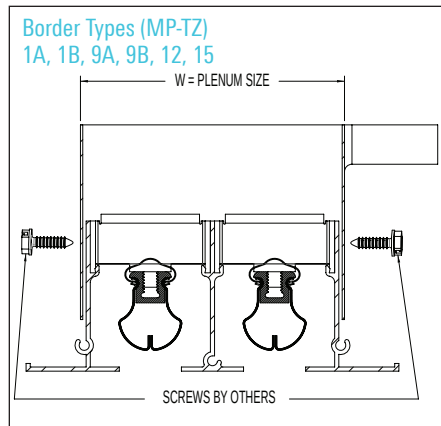
Standard Inlet Size	Dimensions	
	A	B
6 Oval	6 ¹ / ₄	5 ¹ / ₄
8 Oval	9 ³ / ₈	5 ¹ / ₄
10 Oval	12 ¹ / ₂	5 ¹ / ₄
12 Oval	14 ¹ / ₈	7 ⁷ / ₈
No Inlet	-	-

ML/MLR End Fabrication	L
XX	N - 7/8
XY	N - 7/8
YY	N - 1/4
ZZ	N - 1/4

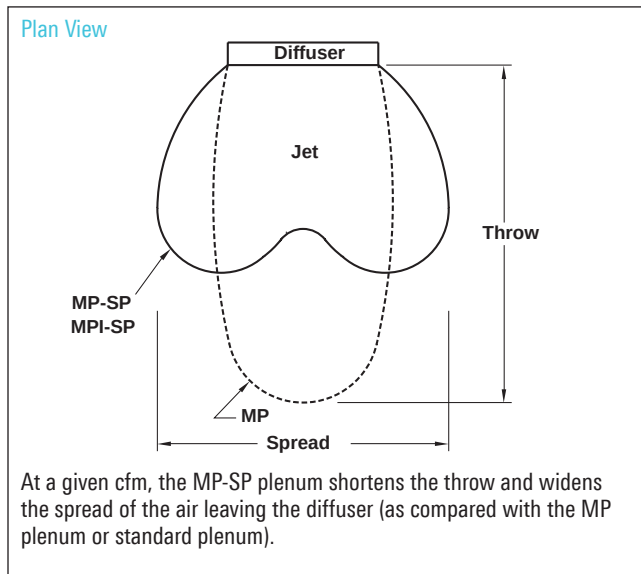
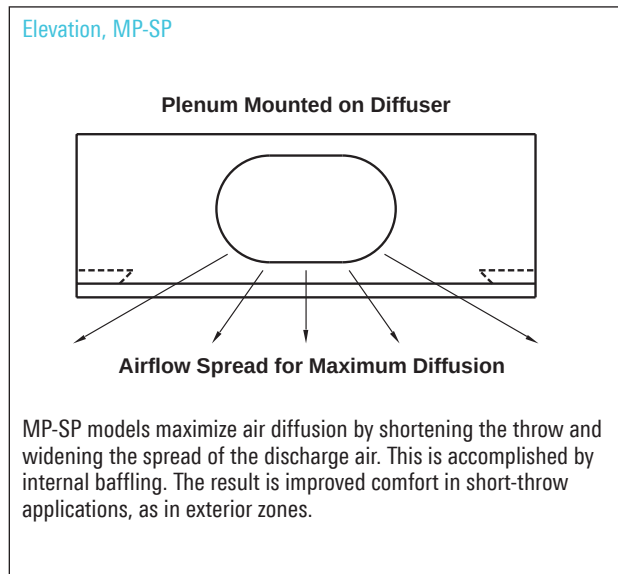
ML/MLR Type	Width (W)							
	Number of Slots							
	1	2	3	4	5	6	7	8
MP-37	2 ³ / ₁₆	3 ⁷ / ₁₆	4 ¹¹ / ₁₆	5 ¹⁵ / ₁₆	7 ³ / ₁₆	8 ⁷ / ₁₆	9 ¹¹ / ₁₆	10 ¹⁵ / ₁₆
MP-38	2 ⁷ / ₁₆	3 ¹⁵ / ₁₆	5 ⁷ / ₁₆	6 ¹⁵ / ₁₆	8 ⁷ / ₁₆	9 ¹⁵ / ₁₆	11 ⁷ / ₁₆	12 ¹⁵ / ₁₆
MP-39	2 ¹¹ / ₁₆	4 ⁷ / ₁₆	6 ³ / ₁₆	7 ¹⁵ / ₁₆	9 ¹¹ / ₁₆	11 ⁷ / ₁₆	13 ³ / ₁₆	14 ¹⁵ / ₁₆

All dimensions are in inches

INSTALLATION DETAILS / TRIMMING, CUTTING, HANGING



MP-SP PERFORMANCE



ML-37 / 1/2" SLOT SPACING WIDTH / ONE-SLOT / SUPPLY WITH MP-37 PLENUM

6" Inlet	2 ft.	Airflow, cfm	20	33	45	58	70	83	95
		Total Pressure	0.017	0.046	0.087	0.143	0.212	0.294	0.390
		Static Pressure	0.017	0.044	0.084	0.137	0.203	0.282	0.374
		NC (Noise Criteria)	-	21	29	34	39	43	46
		Throw	3-6-12	7-10-20	9-14-24	12-18-27	14-21-30	17-23-32	20-24-34
	4 ft.	Airflow, cfm	30	48	65	83	100	118	135
		Total Pressure	0.017	0.043	0.081	0.131	0.193	0.266	0.351
		Static Pressure	0.016	0.039	0.074	0.119	0.175	0.241	0.319
		NC (Noise Criteria)	-	19	27	32	37	41	44
		Throw	2-5-11	5-9-15	8-12-17	10-14-19	12-15-21	13-16-23	14-17-25
8" Inlet	2 ft.	Airflow, cfm	25	38	50	63	75	88	100
		Total Pressure	0.028	0.063	0.111	0.174	0.251	0.341	0.446
		Static Pressure	0.027	0.062	0.110	0.172	0.247	0.336	0.439
		NC (Noise Criteria)	-	20	27	32	37	40	43
		Throw	4-8-15	8-12-22	10-15-25	13-19-28	15-22-31	18-23-33	20-25-35
	4 ft.	Airflow, cfm	35	55	75	95	115	135	155
		Total Pressure	0.015	0.037	0.068	0.110	0.161	0.222	0.292
		Static Pressure	0.014	0.035	0.065	0.104	0.152	0.209	0.276
		NC (Noise Criteria)	-	19	26	32	36	40	43
		Throw	3-6-13	7-10-16	9-13-18	11-15-21	13-16-23	14-17-25	15-19-26
10" Inlet	2 ft.	Airflow, cfm	25	35	45	55	65	75	85
		Total Pressure	0.039	0.077	0.127	0.190	0.265	0.353	0.453
		Static Pressure	0.039	0.076	0.126	0.189	0.264	0.351	0.451
		NC (Noise Criteria)	-	16	22	27	31	34	37
		Throw	4-8-15	7-11-21	9-14-24	11-17-26	13-20-29	15-22-31	17-23-33
	4 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.017	0.044	0.085	0.138	0.205	0.285	0.378
		Static Pressure	0.016	0.043	0.082	0.134	0.198	0.275	0.365
		NC (Noise Criteria)	-	20	28	34	38	42	45
		Throw	4-7-13	8-12-17	11-14-20	13-16-23	14-18-25	16-19-27	17-21-29
12" Inlet	4 ft.	Airflow, cfm	45	70	95	120	145	170	195
		Total Pressure	0.025	0.060	0.111	0.176	0.257	0.354	0.466
		Static Pressure	0.025	0.059	0.109	0.174	0.255	0.350	0.461
		NC (Noise Criteria)	-	18	25	30	35	39	42
		Throw	5-8-14	8-13-18	11-15-21	13-16-23	15-18-26	16-20-28	17-21-30

ML-38, -TZ / 3/4" SLOT SPACING WIDTH / ONE-SLOT / SUPPLY WITH MP-38 PLENUM

6" Inlet	2 ft.	Airflow, cfm	20	35	50	65	80	95	110
		Total Pressure	0.015	0.045	0.091	0.154	0.233	0.328	0.440
		Static Pressure	0.014	0.042	0.087	0.146	0.222	0.312	0.419
		NC (Noise Criteria)	-	18	26	32	37	41	45
		Throw	1-3-10	4-9-18	8-13-25	11-16-29	13-20-32	16-24-34	18-26-37
	4 ft.	Airflow, cfm	40	60	80	100	120	140	160
		Total Pressure	0.018	0.041	0.072	0.113	0.163	0.222	0.290
		Static Pressure	0.015	0.034	0.061	0.095	0.137	0.187	0.244
		NC (Noise Criteria)	-	20	27	32	36	40	43
		Throw	2-5-12	5-9-16	8-12-19	10-15-21	12-16-23	14-18-25	15-19-27
8" Inlet	2 ft.	Airflow, cfm	25	35	45	55	65	75	85
		Total Pressure	0.037	0.072	0.118	0.177	0.247	0.329	0.422
		Static Pressure	0.036	0.071	0.117	0.175	0.244	0.325	0.417
		NC (Noise Criteria)	-	14	20	24	28	32	35
		Throw	2-5-13	4-9-18	7-11-23	9-14-26	11-16-29	13-19-31	14-21-33
	4 ft.	Airflow, cfm	40	68	95	123	150	178	205
		Total Pressure	0.014	0.041	0.080	0.134	0.200	0.280	0.374
		Static Pressure	0.013	0.037	0.074	0.123	0.185	0.259	0.345
		NC (Noise Criteria)	-	19	27	33	38	42	45
		Throw	2-5-12	6-10-17	9-14-21	12-17-23	15-18-26	16-20-28	18-21-30
10" Inlet	2 ft.	Airflow, cfm	30	35	40	45	50	55	60
		Total Pressure	0.115	0.157	0.205	0.259	0.320	0.387	0.460
		Static Pressure	0.115	0.156	0.204	0.258	0.319	0.386	0.459
		NC (Noise Criteria)	-	11	14	17	19	22	24
		Throw	3-7-15	4-9-18	6-10-20	7-11-23	8-13-25	9-14-26	10-15-27
	4 ft.	Airflow, cfm	40	68	95	123	150	178	205
		Total Pressure	0.015	0.044	0.086	0.143	0.215	0.301	0.401
		Static Pressure	0.015	0.042	0.083	0.138	0.207	0.289	0.386
		NC (Noise Criteria)	-	16	24	30	35	39	42
		Throw	2-5-12	6-10-17	9-14-21	12-17-23	15-18-26	16-20-28	18-21-30
12" Inlet	4 ft.	Airflow, cfm	60	78	95	113	130	148	165
		Total Pressure	0.067	0.112	0.169	0.236	0.316	0.406	0.509
		Static Pressure	0.067	0.111	0.167	0.235	0.313	0.403	0.505
		NC (Noise Criteria)	-	15	20	24	27	30	33
		Throw	5-9-16	8-11-19	9-14-21	11-16-23	13-17-24	15-18-26	16-19-27

Performance notes appear at end of performance data

ML-39 / 1" SLOT SPACING WIDTH / ONE-SLOT / SUPPLY WITH MP-39 PLENUM

6" Inlet	2 ft.	Airflow, cfm	20	35	50	65	80	95	110
		Total Pressure	0.008	0.025	0.051	0.086	0.130	0.183	0.246
		Static Pressure	0.007	0.023	0.046	0.078	0.118	0.167	0.224
		NC (Noise Criteria)	-	18	27	33	38	42	45
		Throw	1-2-8	3-6-15	6-11-22	9-14-28	12-17-32	14-21-34	16-24-37
	4 ft.	Airflow, cfm	35	55	75	95	115	135	155
		Total Pressure	0.010	0.026	0.048	0.076	0.112	0.154	0.203
		Static Pressure	0.008	0.020	0.037	0.060	0.088	0.121	0.160
		NC (Noise Criteria)	-	18	26	31	36	40	43
		Throw	1-2-9	2-6-14	5-10-18	7-12-21	10-15-23	12-17-25	13-19-26
8" Inlet	2 ft.	Airflow, cfm	30	45	60	75	90	105	120
		Total Pressure	0.021	0.046	0.082	0.128	0.185	0.251	0.328
		Static Pressure	0.020	0.045	0.080	0.124	0.179	0.244	0.318
		NC (Noise Criteria)	-	20	27	32	36	40	43
		Throw	2-5-13	5-10-20	8-13-26	11-16-31	13-20-34	15-23-36	17-26-39
	4 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.009	0.024	0.045	0.074	0.109	0.151	0.201
		Static Pressure	0.008	0.021	0.039	0.064	0.096	0.133	0.176
		NC (Noise Criteria)	-	18	26	32	36	40	44
		Throw	1-3-10	3-8-17	7-12-20	10-15-23	12-18-25	14-19-27	16-21-29
10" Inlet	2 ft.	Airflow, cfm	30	45	60	75	90	105	120
		Total Pressure	0.031	0.071	0.126	0.197	0.283	0.385	0.503
		Static Pressure	0.031	0.070	0.124	0.194	0.280	0.381	0.498
		NC (Noise Criteria)	-	17	24	29	34	37	41
		Throw	2-5-13	5-10-20	8-13-26	11-16-31	13-20-34	15-23-36	17-26-39
	4 ft.	Airflow, cfm	50	78	105	133	160	188	215
		Total Pressure	0.012	0.030	0.055	0.088	0.128	0.176	0.231
		Static Pressure	0.012	0.028	0.051	0.081	0.119	0.163	0.214
		NC (Noise Criteria)	-	20	27	32	37	41	44
		Throw	2-5-13	5-10-19	9-13-22	11-17-24	14-19-27	16-21-29	18-22-31
12" Inlet	4 ft.	Airflow, cfm	60	90	120	150	180	210	240
		Total Pressure	0.023	0.052	0.093	0.145	0.209	0.284	0.371
		Static Pressure	0.023	0.051	0.091	0.142	0.205	0.278	0.364
		NC (Noise Criteria)	-	19	26	31	35	39	42
		Throw	3-7-15	7-12-20	10-15-23	13-18-26	15-20-28	18-22-31	19-23-33

ML-37 / ½" SLOT SPACING WIDTH / TWO-SLOT / SUPPLY WITH MP-37 PLENUM

6" Inlet	2 ft.	Airflow, cfm	20	40	60	80	100	120	140
		Total Pressure	0.008	0.031	0.069	0.123	0.193	0.278	0.378
		Static Pressure	0.007	0.028	0.063	0.112	0.175	0.252	0.343
		NC (Noise Criteria)	-	15	25	32	37	41	45
		Throw	1-2-8	4-8-17	8-13-26	12-17-32	15-22-35	17-26-39	20-30-42
	4 ft.	Airflow, cfm	40	63	85	108	130	153	175
		Total Pressure	0.021	0.050	0.093	0.149	0.218	0.299	0.394
		Static Pressure	0.018	0.043	0.080	0.128	0.187	0.258	0.340
		NC (Noise Criteria)	-	15	22	28	33	36	40
		Throw	1-3-10	3-7-16	6-11-20	9-14-22	11-17-24	13-19-26	15-20-28
8" Inlet	2 ft.	Airflow, cfm	30	50	70	90	110	130	150
		Total Pressure	0.011	0.030	0.060	0.099	0.147	0.206	0.274
		Static Pressure	0.010	0.029	0.056	0.093	0.139	0.194	0.258
		NC (Noise Criteria)	-	17	24	30	35	39	43
		Throw	2-5-13	6-11-22	10-15-30	13-20-34	16-24-37	19-28-40	22-31-43
	4 ft.	Airflow, cfm	60	90	120	150	180	210	240
		Total Pressure	0.023	0.051	0.091	0.143	0.206	0.280	0.366
		Static Pressure	0.020	0.046	0.082	0.127	0.183	0.250	0.326
		NC (Noise Criteria)	-	20	27	32	36	40	43
		Throw	3-7-15	7-12-20	10-15-23	13-18-26	15-20-28	18-22-31	19-23-33
10" Inlet	2 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.017	0.044	0.085	0.138	0.205	0.285	0.378
		Static Pressure	0.016	0.043	0.082	0.134	0.198	0.275	0.365
		NC (Noise Criteria)	-	20	28	34	38	42	45
		Throw	4-8-17	9-14-28	13-20-34	17-25-38	20-30-42	24-32-45	28-34-49
	4 ft.	Airflow, cfm	60	95	130	165	200	235	270
		Total Pressure	0.015	0.039	0.072	0.116	0.171	0.236	0.312
		Static Pressure	0.014	0.035	0.066	0.106	0.156	0.216	0.285
		NC (Noise Criteria)	-	18	26	31	36	40	43
		Throw	3-7-15	7-12-21	11-17-24	14-19-27	17-21-30	19-23-33	20-25-35
12" Inlet	4 ft.	Airflow, cfm	70	113	155	198	240	283	325
		Total Pressure	0.014	0.036	0.068	0.110	0.162	0.225	0.298
		Static Pressure	0.013	0.034	0.064	0.105	0.155	0.214	0.283
		NC (Noise Criteria)	-	18	26	32	36	40	43
		Throw	4-9-18	10-14-23	13-19-26	17-21-30	19-23-33	21-25-36	22-27-38

Performance notes appear at end of performance data

ML-38, -TZ / ¾" SLOT SPACING WIDTH / TWO-SLOT / SUPPLY WITH MP-38 PLENUM

6" Inlet	2 ft.	Airflow, cfm	30	50	70	90	110	130	150
		Total Pressure	0.010	0.028	0.055	0.092	0.137	0.191	0.255
		Static Pressure	0.009	0.024	0.047	0.077	0.115	0.161	0.214
		NC (Noise Criteria)	-	16	24	30	34	38	42
		Throw	1-3-10	3-7-18	6-12-25	10-16-32	13-20-37	15-23-40	18-27-43
	4 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.016	0.040	0.076	0.124	0.182	0.252	0.334
		Static Pressure	0.011	0.029	0.055	0.089	0.131	0.181	0.239
		NC (Noise Criteria)	-	16	24	29	34	38	41
		Throw	1-3-10	3-6-17	5-12-22	9-15-25	12-18-28	14-21-30	16-23-32
8" Inlet	2 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.014	0.038	0.072	0.118	0.174	0.242	0.321
		Static Pressure	0.013	0.035	0.067	0.109	0.161	0.224	0.296
		NC (Noise Criteria)	-	18	26	31	36	40	43
		Throw	2-5-14	5-12-23	10-16-32	14-20-38	17-25-42	20-29-45	23-34-49
	4 ft.	Airflow, cfm	60	95	130	165	200	235	270
		Total Pressure	0.013	0.031	0.059	0.095	0.139	0.192	0.253
		Static Pressure	0.010	0.025	0.047	0.076	0.111	0.154	0.203
		NC (Noise Criteria)	-	16	24	29	34	38	41
		Throw	2-4-13	4-9-20	8-14-24	12-17-27	14-21-30	16-23-33	19-25-35
10" Inlet	2 ft.	Airflow, cfm	50	75	100	125	150	175	200
		Total Pressure	0.024	0.054	0.096	0.149	0.215	0.292	0.382
		Static Pressure	0.023	0.052	0.092	0.144	0.207	0.281	0.367
		NC (Noise Criteria)	-	18	25	31	35	39	42
		Throw	3-7-18	7-13-27	12-18-35	15-22-40	18-27-43	21-31-47	24-35-50
	4 ft.	Airflow, cfm	70	110	150	190	230	270	310
		Total Pressure	0.013	0.032	0.059	0.094	0.138	0.190	0.251
		Static Pressure	0.011	0.027	0.051	0.081	0.119	0.164	0.216
		NC (Noise Criteria)	-	17	24	30	34	38	41
		Throw	2-5-15	5-12-22	10-16-26	13-20-29	16-23-32	19-25-35	22-26-37
12" Inlet	4 ft.	Airflow, cfm	90	140	190	240	290	340	390
		Total Pressure	0.018	0.044	0.080	0.128	0.187	0.257	0.339
		Static Pressure	0.017	0.041	0.076	0.120	0.176	0.242	0.318
		NC (Noise Criteria)	-	19	26	31	36	40	43
		Throw	4-8-19	9-15-25	13-20-29	17-23-33	20-26-36	23-28-39	24-30-42

ML-39 / 1" SLOT SPACING WIDTH / TWO-SLOT / SUPPLY WITH MP-39 PLENUM

6" nlet	2 ft.	Airflow, cfm	30	50	70	90	110	130	150
		Total Pressure	0.008	0.021	0.041	0.068	0.102	0.143	0.190
		Static Pressure	0.006	0.017	0.033	0.054	0.081	0.113	0.150
		NC (Noise Criteria)	-	16	24	30	35	39	42
		Throw	1-2-7	2-5-15	4-9-22	7-14-28	10-17-34	13-20-40	15-23-43
	4 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.014	0.035	0.066	0.107	0.158	0.218	0.288
		Static Pressure	0.009	0.023	0.044	0.072	0.106	0.147	0.194
		NC (Noise Criteria)	-	17	24	30	34	38	42
		Throw	1-2-7	2-4-15	4-8-20	6-13-25	8-15-28	12-18-30	14-21-32
8" Inlet	2 ft.	Airflow, cfm	40	63	85	108	130	153	175
		Total Pressure	0.009	0.022	0.040	0.064	0.094	0.129	0.170
		Static Pressure	0.008	0.019	0.035	0.056	0.082	0.113	0.149
		NC (Noise Criteria)	-	17	25	30	35	38	42
		Throw	1-3-12	3-7-19	6-13-26	10-17-33	13-20-40	16-23-44	18-27-47
	4 ft.	Airflow, cfm	60	95	130	165	200	235	270
		Total Pressure	0.010	0.025	0.046	0.075	0.110	0.152	0.200
		Static Pressure	0.007	0.019	0.035	0.056	0.082	0.114	0.150
		NC (Noise Criteria)	-	17	24	30	34	38	41
		Throw	1-2-9	3-6-17	5-11-24	8-15-27	12-18-30	14-21-33	16-24-35
10" Inlet	2 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.008	0.021	0.040	0.066	0.098	0.136	0.180
		Static Pressure	0.007	0.020	0.038	0.061	0.091	0.126	0.167
		NC (Noise Criteria)	-	16	23	29	34	38	41
		Throw	1-3-12	3-8-20	7-14-28	11-18-35	14-22-42	17-25-45	20-29-49
	4 ft.	Airflow, cfm	60	100	140	180	220	260	300
		Total Pressure	0.007	0.019	0.037	0.061	0.091	0.128	0.170
		Static Pressure	0.005	0.015	0.030	0.049	0.074	0.103	0.137
		NC (Noise Criteria)	-	15	23	29	34	38	41
		Throw	1-2-9	3-7-18	6-13-25	9-16-28	13-20-31	16-24-34	18-26-37
12" Inlet	4 ft.	Airflow, cfm	90	135	180	225	270	315	360
		Total Pressure	0.011	0.024	0.042	0.066	0.095	0.130	0.170
		Static Pressure	0.010	0.021	0.038	0.059	0.086	0.116	0.152
		NC (Noise Criteria)	-	18	25	30	34	38	41
		Throw	2-5-16	5-12-24	9-16-28	14-20-32	16-24-35	19-27-38	22-28-40

Performance notes appear at end of performance data

ML-37 / ½" SLOT SPACING WIDTH / THREE-SLOT / SUPPLY WITH MP-37 PLENUM

6" Inlet	2 ft.	Airflow, cfm	35	55	75	95	115	135	155
		Total Pressure	0.018	0.045	0.083	0.133	0.195	0.268	0.354
		Static Pressure	0.016	0.039	0.073	0.117	0.171	0.236	0.311
		NC (Noise Criteria)	-	17	24	30	34	38	41
		Throw	2-4-12	4-9-20	7-13-27	11-17-34	14-20-38	16-24-41	18-28-44
	4 ft.	Airflow, cfm	60	85	110	135	160	185	210
		Total Pressure	0.041	0.081	0.136	0.205	0.288	0.385	0.496
		Static Pressure	0.034	0.068	0.115	0.173	0.242	0.324	0.417
		NC (Noise Criteria)	-	16	22	27	31	35	38
		Throw	2-4-13	3-7-18	5-12-22	8-14-25	11-17-27	13-19-29	15-22-31
8" Inlet	2 ft.	Airflow, cfm	45	68	90	113	135	158	180
		Total Pressure	0.016	0.036	0.064	0.100	0.144	0.196	0.256
		Static Pressure	0.015	0.033	0.058	0.091	0.131	0.179	0.233
		NC (Noise Criteria)	-	17	24	30	34	37	41
		Throw	3-6-16	6-12-24	10-16-32	13-20-38	16-24-41	19-28-44	21-32-47
	4 ft.	Airflow, cfm	70	105	140	175	210	245	280
		Total Pressure	0.025	0.056	0.100	0.157	0.226	0.307	0.401
		Static Pressure	0.022	0.049	0.087	0.136	0.195	0.266	0.347
		NC (Noise Criteria)	-	17	24	29	34	37	41
		Throw	2-5-15	5-11-22	9-15-25	12-18-28	15-22-31	17-23-33	20-25-35
10" Inlet	2 ft.	Airflow, cfm	50	78	105	133	160	188	215
		Total Pressure	0.014	0.035	0.064	0.101	0.147	0.203	0.266
		Static Pressure	0.014	0.032	0.060	0.095	0.138	0.190	0.250
		NC (Noise Criteria)	-	18	25	31	35	39	42
		Throw	3-7-18	8-14-28	12-19-36	16-24-41	19-28-45	22-33-48	25-37-52
	4 ft.	Airflow, cfm	80	120	160	200	240	280	320
		Total Pressure	0.020	0.046	0.081	0.127	0.183	0.249	0.325
		Static Pressure	0.018	0.040	0.072	0.112	0.162	0.220	0.288
		NC (Noise Criteria)	-	18	25	30	34	38	41
		Throw	3-6-17	6-13-23	11-17-27	14-21-30	17-23-33	20-25-35	22-27-38
12" Inlet	4 ft.	Airflow, cfm	90	138	185	233	280	328	375
		Total Pressure	0.014	0.033	0.059	0.093	0.135	0.185	0.243
		Static Pressure	0.013	0.030	0.055	0.086	0.125	0.171	0.224
		NC (Noise Criteria)	-	17	24	29	34	37	41
		Throw	4-8-19	8-14-25	13-19-29	16-23-32	20-25-35	22-27-38	24-29-41

ML-38, -TZ / ¾" SLOT SPACING WIDTH / THREE-SLOT / SUPPLY WITH MP-38 PLENUM

6" Inlet	2 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.012	0.032	0.062	0.101	0.150	0.209	0.277
		Static Pressure	0.009	0.025	0.048	0.078	0.115	0.160	0.212
		NC (Noise Criteria)	-	16	23	29	34	38	41
		Throw	1-2-10	3-7-19	6-13-26	9-17-33	14-20-41	16-24-45	18-28-49
	4 ft.	Airflow, cfm	70	108	145	183	220	258	295
		Total Pressure	0.025	0.060	0.109	0.173	0.251	0.344	0.452
		Static Pressure	0.017	0.039	0.072	0.113	0.165	0.226	0.296
		NC (Noise Criteria)	-	17	24	29	34	38	41
		Throw	1-3-11	3-6-18	5-12-25	8-16-29	12-19-31	15-22-34	17-25-36
8" Inlet	2 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.012	0.030	0.058	0.093	0.137	0.190	0.252
		Static Pressure	0.010	0.026	0.049	0.080	0.118	0.163	0.215
		NC (Noise Criteria)	-	17	24	30	34	38	42
		Throw	2-4-15	4-10-23	8-16-32	14-20-41	16-25-46	19-29-50	22-33-54
	4 ft.	Airflow, cfm	80	125	170	215	260	305	350
		Total Pressure	0.016	0.040	0.073	0.117	0.172	0.236	0.311
		Static Pressure	0.012	0.029	0.053	0.086	0.125	0.172	0.227
		NC (Noise Criteria)	-	17	24	29	34	38	41
		Throw	2-4-14	4-9-21	7-15-28	11-18-31	15-22-34	17-26-37	20-28-40
10" Inlet	2 ft.	Airflow, cfm	60	95	130	165	200	235	270
		Total Pressure	0.014	0.036	0.068	0.110	0.161	0.222	0.293
		Static Pressure	0.013	0.033	0.062	0.100	0.146	0.202	0.267
		NC (Noise Criteria)	-	18	25	31	36	39	43
		Throw	2-6-17	6-14-28	12-19-38	16-24-45	19-29-50	23-34-54	26-39-58
	4 ft.	Airflow, cfm	100	150	200	250	300	350	400
		Total Pressure	0.017	0.038	0.068	0.106	0.152	0.208	0.271
		Static Pressure	0.013	0.030	0.053	0.083	0.120	0.163	0.213
		NC (Noise Criteria)	-	18	25	30	35	38	41
		Throw	2-6-17	6-12-26	10-17-30	14-21-34	17-26-37	20-28-40	23-30-42
12" Inlet	4 ft.	Airflow, cfm	120	180	240	300	360	420	480
		Total Pressure	0.016	0.036	0.063	0.099	0.142	0.193	0.252
		Static Pressure	0.014	0.031	0.055	0.086	0.125	0.169	0.221
		NC (Noise Criteria)	-	18	25	30	35	38	41
		Throw	4-8-21	8-15-28	14-21-33	17-26-37	21-28-40	24-31-43	27-33-46

Performance notes appear at end of performance data

ML-39 / 1" SLOT SPACING WIDTH / THREE-SLOT / SUPPLY WITH MP-39 PLENUM

6" Inlet	2 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.010	0.027	0.051	0.083	0.124	0.172	0.228
		Static Pressure	0.007	0.019	0.037	0.060	0.089	0.123	0.163
		NC (Noise Criteria)	-	16	24	30	34	38	41
		Throw	1-2-6	2-4-16	4-8-23	6-13-29	9-18-35	12-21-41	16-24-48
	4 ft.	Airflow, cfm	70	108	145	183	220	258	295
		Total Pressure	0.023	0.054	0.099	0.157	0.228	0.312	0.410
		Static Pressure	0.014	0.034	0.061	0.097	0.141	0.194	0.254
		NC (Noise Criteria)	-	17	24	30	34	38	41
		Throw	1-2-7	2-4-16	3-8-21	5-12-27	8-16-31	11-19-34	14-22-36
8" Inlet	2 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.016	0.040	0.076	0.124	0.182	0.252	0.334
		Static Pressure	0.014	0.036	0.068	0.110	0.162	0.225	0.297
		NC (Noise Criteria)	-	17	24	30	35	39	42
		Throw	1-3-10	3-6-20	5-12-28	9-18-35	13-21-43	17-25-50	19-29-54
	4 ft.	Airflow, cfm	80	125	170	215	260	305	350
		Total Pressure	0.014	0.034	0.063	0.100	0.147	0.202	0.266
		Static Pressure	0.009	0.023	0.043	0.069	0.100	0.138	0.182
		NC (Noise Criteria)	-	17	24	30	34	38	41
		Throw	1-2-9	2-6-19	5-10-25	7-16-31	11-19-34	15-23-37	17-26-40
10" Inlet	2 ft.	Airflow, cfm	60	95	130	165	200	235	270
		Total Pressure	0.009	0.024	0.044	0.071	0.104	0.144	0.190
		Static Pressure	0.008	0.020	0.038	0.061	0.090	0.124	0.164
		NC (Noise Criteria)	-	18	26	31	36	40	43
		Throw	2-4-15	4-9-24	8-16-33	12-21-41	17-25-50	20-30-54	23-34-58
	4 ft.	Airflow, cfm	90	140	190	240	290	340	390
		Total Pressure	0.011	0.027	0.049	0.079	0.115	0.158	0.208
		Static Pressure	0.008	0.020	0.036	0.058	0.084	0.116	0.152
		NC (Noise Criteria)	-	17	24	30	34	38	41
		Throw	1-3-12	3-7-21	6-13-28	9-18-33	13-21-36	17-25-39	19-29-42
12" Inlet	4 ft.	Airflow, cfm	100	165	230	295	360	425	490
		Total Pressure	0.008	0.021	0.041	0.067	0.100	0.139	0.185
		Static Pressure	0.006	0.017	0.034	0.055	0.082	0.114	0.152
		NC (Noise Criteria)	-	17	24	30	35	39	42
		Throw	2-4-14	4-10-24	8-17-32	14-22-36	18-27-40	21-31-44	24-33-47

ML-37 / ½" SLOT SPACING WIDTH / FOUR-SLOT / SUPPLY WITH MP-37 PLENUM

6" Inlet	2 ft.	Airflow, cfm	40	63	85	108	130	153	175
		Total Pressure	0.021	0.050	0.093	0.149	0.218	0.299	0.394
		Static Pressure	0.018	0.043	0.080	0.128	0.187	0.258	0.340
		NC (Noise Criteria)	-	15	22	28	33	36	40
		Throw	1-3-12	3-7-19	6-13-26	10-17-33	13-20-40	16-23-44	18-27-47
	4 ft.	Airflow, cfm	70	93	115	138	160	183	205
		Total Pressure	0.052	0.090	0.139	0.199	0.269	0.350	0.442
		Static Pressure	0.043	0.075	0.116	0.165	0.224	0.291	0.367
		NC (Noise Criteria)	-	14	19	23	27	30	33
		Throw	1-3-13	2-6-17	4-9-21	6-12-25	7-15-27	10-17-29	12-19-30
8" Inlet	2 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.016	0.041	0.077	0.125	0.184	0.254	0.336
		Static Pressure	0.014	0.036	0.069	0.111	0.164	0.227	0.300
		NC (Noise Criteria)	-	17	25	30	35	39	42
		Throw	2-5-15	5-12-25	10-17-34	14-22-42	17-26-46	21-31-50	24-35-54
	4 ft.	Airflow, cfm	60	103	145	188	230	273	315
		Total Pressure	0.017	0.048	0.097	0.161	0.243	0.341	0.456
		Static Pressure	0.014	0.041	0.082	0.137	0.206	0.290	0.387
		NC (Noise Criteria)	-	12	21	27	31	35	39
		Throw	1-2-9	3-7-19	6-13-26	10-17-29	14-21-32	16-25-35	19-27-38
10" Inlet	2 ft.	Airflow, cfm	60	95	130	165	200	235	270
		Total Pressure	0.015	0.039	0.072	0.116	0.171	0.236	0.312
		Static Pressure	0.014	0.035	0.066	0.106	0.156	0.216	0.285
		NC (Noise Criteria)	-	18	26	31	36	40	43
		Throw	3-7-18	7-15-29	13-20-40	17-25-45	21-31-50	24-36-54	28-41-58
	4 ft.	Airflow, cfm	90	140	190	240	290	340	390
		Total Pressure	0.022	0.054	0.099	0.157	0.230	0.316	0.415
		Static Pressure	0.019	0.046	0.086	0.136	0.199	0.274	0.360
		NC (Noise Criteria)	-	17	24	30	34	38	41
		Throw	2-5-16	6-13-25	11-17-29	15-22-33	18-26-36	21-28-39	24-30-42
12" Inlet	4 ft.	Airflow, cfm	100	165	230	295	360	425	490
		Total Pressure	0.014	0.037	0.072	0.118	0.175	0.244	0.325
		Static Pressure	0.012	0.033	0.064	0.106	0.158	0.220	0.292
		NC (Noise Criteria)	-	17	25	30	35	39	42
		Throw	3-7-18	8-15-27	14-21-32	18-26-36	22-28-40	25-31-44	27-33-47

Performance notes appear at end of performance data

ML-38, -TZ / ¾" SLOT SPACING WIDTH / FOUR-SLOT / SUPPLY WITH MP-38 PLENUM

6" Inlet	2 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.016	0.040	0.076	0.124	0.182	0.252	0.334
		Static Pressure	0.011	0.029	0.055	0.089	0.131	0.181	0.239
		NC (Noise Criteria)	-	16	24	29	34	38	41
		Throw	1-3-10	3-6-20	5-12-28	9-18-35	13-21-43	17-25-50	19-29-54
	4 ft.	Airflow, cfm	90	125	160	195	230	265	300
		Total Pressure	0.038	0.074	0.121	0.179	0.249	0.331	0.424
		Static Pressure	0.024	0.046	0.075	0.111	0.155	0.205	0.263
		NC (Noise Criteria)	-	16	22	27	31	34	37
		Throw	1-3-12	2-6-19	4-9-24	6-14-29	8-17-32	11-20-35	14-22-37
8" Inlet	2 ft.	Airflow, cfm	70	105	140	175	210	245	280
		Total Pressure	0.017	0.038	0.068	0.106	0.153	0.209	0.272
		Static Pressure	0.014	0.031	0.055	0.085	0.123	0.167	0.218
		NC (Noise Criteria)	-	19	25	31	35	39	42
		Throw	2-5-18	5-11-26	9-18-35	14-22-44	18-26-51	21-31-55	23-35-59
	4 ft.	Airflow, cfm	100	155	210	265	320	375	430
		Total Pressure	0.022	0.052	0.096	0.152	0.222	0.305	0.401
		Static Pressure	0.015	0.036	0.065	0.104	0.152	0.208	0.274
		NC (Noise Criteria)	-	17	24	30	34	38	41
		Throw	2-4-14	4-9-23	7-16-31	11-20-35	16-24-38	19-28-41	21-31-44
10" Inlet	2 ft.	Airflow, cfm	70	110	150	190	230	270	310
		Total Pressure	0.013	0.032	0.059	0.094	0.138	0.190	0.251
		Static Pressure	0.011	0.027	0.051	0.081	0.119	0.164	0.216
		NC (Noise Criteria)	-	17	24	30	34	38	41
		Throw	2-5-18	5-12-28	10-19-38	16-24-48	19-29-54	23-34-58	26-39-62
	4 ft.	Airflow, cfm	120	185	250	315	380	445	510
		Total Pressure	0.020	0.047	0.085	0.135	0.197	0.270	0.355
		Static Pressure	0.014	0.034	0.063	0.099	0.145	0.198	0.261
		NC (Noise Criteria)	-	19	26	31	36	39	43
		Throw	2-5-18	5-12-27	10-19-34	16-23-38	19-28-41	22-32-45	25-34-48
12" Inlet	4 ft.	Airflow, cfm	130	210	290	370	450	530	610
		Total Pressure	0.013	0.034	0.065	0.105	0.156	0.216	0.286
		Static Pressure	0.011	0.028	0.053	0.087	0.128	0.178	0.236
		NC (Noise Criteria)	-	18	25	31	36	39	43
		Throw	3-6-19	7-16-31	13-21-36	18-27-41	22-32-45	26-35-49	30-37-52

ML-39 / 1" SLOT SPACING WIDTH / FOUR-SLOT / SUPPLY WITH MP-39 PLENUM

6" Inlet	2 ft.	Airflow, cfm	50	83	115	148	180	213	245
		Total Pressure	0.014	0.037	0.072	0.119	0.177	0.246	0.327
		Static Pressure	0.009	0.025	0.048	0.080	0.119	0.165	0.220
		NC (Noise Criteria)	-	17	25	31	36	40	43
		Throw	1-2-7	2-4-18	4-9-25	6-14-32	9-20-39	13-23-46	18-27-53
	4 ft.	Airflow, cfm	90	130	170	210	250	290	330
		Total Pressure	0.035	0.074	0.127	0.193	0.274	0.368	0.477
		Static Pressure	0.021	0.044	0.075	0.114	0.162	0.218	0.282
		NC (Noise Criteria)	-	17	24	29	33	36	39
		Throw	1-2-8	2-4-16	3-7-22	5-10-27	6-15-32	9-19-36	11-21-39
8" Inlet	2 ft.	Airflow, cfm	60	95	130	165	200	235	270
		Total Pressure	0.020	0.049	0.092	0.148	0.218	0.301	0.397
		Static Pressure	0.017	0.043	0.080	0.130	0.190	0.263	0.347
		NC (Noise Criteria)	-	17	24	30	34	38	41
		Throw	1-2-9	3-6-21	5-11-28	8-18-36	12-22-44	16-26-51	20-29-58
	4 ft.	Airflow, cfm	90	150	210	270	330	390	450
		Total Pressure	0.016	0.043	0.085	0.141	0.210	0.294	0.391
		Static Pressure	0.010	0.028	0.055	0.090	0.135	0.189	0.251
		NC (Noise Criteria)	-	17	25	31	35	39	43
		Throw	1-2-8	2-5-19	5-10-27	8-17-35	11-21-39	16-25-42	19-29-45
10" Inlet	2 ft.	Airflow, cfm	70	110	150	190	230	270	310
		Total Pressure	0.009	0.023	0.042	0.068	0.100	0.138	0.181
		Static Pressure	0.007	0.018	0.034	0.055	0.081	0.111	0.147
		NC (Noise Criteria)	-	17	25	30	35	39	42
		Throw	1-3-13	4-8-24	7-15-33	11-21-41	15-25-50	20-29-58	22-34-62
	4 ft.	Airflow, cfm	90	155	220	285	350	415	480
		Total Pressure	0.009	0.028	0.056	0.094	0.142	0.200	0.267
		Static Pressure	0.006	0.019	0.039	0.065	0.098	0.137	0.184
		NC (Noise Criteria)	-	15	23	29	34	38	42
		Throw	1-2-8	2-6-20	5-11-28	8-18-36	13-22-40	18-27-43	21-31-46
12" Inlet	4 ft.	Airflow, cfm	120	200	280	360	440	520	600
		Total Pressure	0.008	0.024	0.046	0.076	0.114	0.159	0.212
		Static Pressure	0.007	0.018	0.036	0.059	0.088	0.123	0.164
		NC (Noise Criteria)	-	17	25	31	35	39	43
		Throw	1-3-13	4-9-26	8-18-35	13-23-40	19-28-44	22-33-48	26-37-52

Performance notes appear at end of performance data

ML-37-SP / ½" SLOT SPACING WIDTH / ONE-SLOT / SUPPLY WITH MP-37-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	15	25	35	45	55	65	75
		Total Pressure	0.012	0.032	0.063	0.105	0.156	0.218	0.291
		Static Pressure	0.011	0.031	0.061	0.101	0.151	0.211	0.281
		NC (Noise Criteria)	-	17	25	31	35	39	43
		Throw	1-3-10	4-8-16	8-11-21	10-15-24	12-18-26	14-20-29	16-22-31
	4 ft.	Airflow, cfm	30	45	60	75	90	105	120
		Total Pressure	0.021	0.047	0.083	0.130	0.187	0.254	0.332
		Static Pressure	0.019	0.043	0.077	0.120	0.172	0.235	0.306
		NC (Noise Criteria)	-	20	27	32	36	40	43
		Throw	2-5-9	5-7-11	6-9-13	8-10-14	9-11-15	10-12-17	10-13-18
8" Inlet	2 ft.	Airflow, cfm	20	30	40	50	60	70	80
		Total Pressure	0.021	0.048	0.085	0.133	0.192	0.262	0.342
		Static Pressure	0.021	0.047	0.084	0.132	0.190	0.258	0.337
		NC (Noise Criteria)	-	17	24	29	33	37	40
		Throw	3-6-13	6-10-19	9-13-23	11-16-25	13-19-28	15-21-30	17-23-32
	4 ft.	Airflow, cfm	35	53	70	88	105	123	140
		Total Pressure	0.018	0.040	0.071	0.111	0.161	0.219	0.285
		Static Pressure	0.017	0.038	0.068	0.106	0.153	0.208	0.272
		NC (Noise Criteria)	-	20	26	32	36	40	43
		Throw	3-5-10	5-8-12	7-10-14	9-11-15	10-12-17	10-13-18	11-14-19
10" Inlet	2 ft.	Airflow, cfm	25	35	45	55	65	75	85
		Total Pressure	0.047	0.092	0.152	0.227	0.317	0.423	0.543
		Static Pressure	0.047	0.092	0.151	0.226	0.316	0.421	0.540
		NC (Noise Criteria)	-	18	24	29	33	36	39
		Throw	4-8-16	8-11-21	10-15-24	12-18-26	14-20-29	16-22-31	18-23-33
	4 ft.	Airflow, cfm	40	63	85	108	130	153	175
		Total Pressure	0.020	0.049	0.091	0.145	0.212	0.291	0.384
		Static Pressure	0.019	0.048	0.088	0.141	0.206	0.283	0.373
		NC (Noise Criteria)	-	21	28	34	38	42	45
		Throw	4-6-10	6-9-13	9-11-15	10-12-17	11-13-19	12-14-20	12-15-22
12" Inlet	4 ft.	Airflow, cfm	45	68	90	113	135	158	180
		Total Pressure	0.030	0.067	0.119	0.186	0.267	0.364	0.475
		Static Pressure	0.029	0.066	0.118	0.184	0.265	0.360	0.471
		NC (Noise Criteria)	-	19	26	31	35	39	42
		Throw	5-7-11	7-9-13	9-11-15	10-12-17	11-13-19	12-14-20	13-15-22

ML-38-SP, -TZ / ¾" SLOT SPACING WIDTH / ONE-SLOT / SUPPLY WITH MP-38-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	20	33	45	58	70	83	95
		Total Pressure	0.017	0.046	0.088	0.144	0.213	0.297	0.393
		Static Pressure	0.017	0.044	0.085	0.138	0.205	0.284	0.377
		NC (Noise Criteria)	-	18	26	31	36	40	43
		Throw	1-3-11	4-9-17	7-12-24	10-15-27	12-18-30	15-22-32	17-25-35
	4 ft.	Airflow, cfm	35	55	75	95	115	135	155
		Total Pressure	0.017	0.041	0.076	0.122	0.179	0.247	0.325
		Static Pressure	0.014	0.036	0.066	0.106	0.155	0.214	0.282
		NC (Noise Criteria)	-	20	27	33	37	41	44
		Throw	2-4-9	4-7-12	6-9-14	8-11-16	10-12-18	11-13-19	12-14-20
8" Inlet	2 ft.	Airflow, cfm	25	35	45	55	65	75	85
		Total Pressure	0.044	0.086	0.142	0.212	0.295	0.393	0.505
		Static Pressure	0.043	0.085	0.140	0.209	0.293	0.389	0.500
		NC (Noise Criteria)	-	16	22	26	30	34	37
		Throw	2-5-13	4-9-18	7-12-24	10-15-26	11-17-29	13-20-31	15-22-33
	4 ft.	Airflow, cfm	40	68	95	123	150	178	205
		Total Pressure	0.017	0.049	0.096	0.160	0.240	0.336	0.448
		Static Pressure	0.016	0.045	0.090	0.150	0.224	0.314	0.419
		NC (Noise Criteria)	-	21	29	35	40	44	47
		Throw	2-5-10	6-8-13	8-11-16	10-13-18	12-14-20	13-15-22	14-17-23
10" Inlet	2 ft.	Airflow, cfm	30	35	40	45	50	55	60
		Total Pressure	0.138	0.187	0.245	0.310	0.383	0.463	0.551
		Static Pressure	0.137	0.187	0.244	0.309	0.382	0.462	0.550
		NC (Noise Criteria)	-	13	16	19	21	24	26
		Throw	3-7-16	4-9-18	6-11-21	7-12-24	9-13-25	10-15-26	11-16-28
	4 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.018	0.048	0.093	0.151	0.224	0.311	0.413
		Static Pressure	0.018	0.047	0.090	0.146	0.217	0.301	0.400
		NC (Noise Criteria)	-	17	25	31	35	39	42
		Throw	2-5-10	5-8-13	7-11-15	10-12-18	11-14-19	12-15-21	13-16-23
12" Inlet	4 ft.	Airflow, cfm	55	70	85	100	115	130	145
		Total Pressure	0.068	0.110	0.162	0.224	0.296	0.378	0.470
		Static Pressure	0.067	0.109	0.161	0.222	0.294	0.376	0.467
		NC (Noise Criteria)	-	15	19	23	26	29	32
		Throw	4-7-12	6-9-14	7-11-15	8-12-16	10-12-18	11-13-19	11-14-20

ML-39-SP / 1" SLOT SPACING WIDTH / ONE-SLOT / SUPPLY WITH MP-39-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	20	35	50	65	80	95	110
		Total Pressure	0.010	0.030	0.061	0.103	0.155	0.219	0.294
		Static Pressure	0.009	0.028	0.056	0.095	0.144	0.203	0.272
		NC (Noise Criteria)	-	20	29	35	40	44	47
		Throw	1-2-8	3-6-16	6-11-23	10-15-29	12-18-32	14-22-35	17-25-37
	4 ft.	Airflow, cfm	35	55	75	95	115	135	155
		Total Pressure	0.012	0.031	0.057	0.091	0.134	0.184	0.243
		Static Pressure	0.010	0.025	0.047	0.075	0.110	0.152	0.200
		NC (Noise Criteria)	-	20	28	33	38	42	45
		Throw	1-2-8	2-6-12	5-8-14	7-10-16	8-12-18	10-13-19	11-14-20
8" Inlet	2 ft.	Airflow, cfm	30	45	60	75	90	105	120
		Total Pressure	0.025	0.055	0.098	0.154	0.221	0.301	0.393
		Static Pressure	0.024	0.054	0.096	0.150	0.216	0.293	0.383
		NC (Noise Criteria)	13	22	29	34	38	42	45
		Throw	2-5-14	5-10-21	8-14-27	11-17-31	14-21-34	16-24-37	18-27-39
	4 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.011	0.028	0.054	0.088	0.131	0.181	0.240
		Static Pressure	0.010	0.025	0.048	0.079	0.117	0.163	0.215
		NC (Noise Criteria)	-	20	28	34	38	42	46
		Throw	1-3-9	3-7-13	6-10-15	8-12-18	10-14-19	12-15-21	13-16-23
10" Inlet	2 ft.	Airflow, cfm	30	43	55	68	80	93	105
		Total Pressure	0.038	0.076	0.127	0.191	0.268	0.358	0.461
		Static Pressure	0.037	0.075	0.125	0.189	0.265	0.355	0.457
		NC (Noise Criteria)	-	18	24	29	33	36	39
		Throw	2-5-14	4-9-19	7-13-25	10-15-29	12-18-32	14-21-34	16-24-37
	4 ft.	Airflow, cfm	50	78	105	133	160	188	215
		Total Pressure	0.015	0.036	0.066	0.105	0.153	0.210	0.276
		Static Pressure	0.014	0.034	0.062	0.099	0.144	0.197	0.260
		NC (Noise Criteria)	11	22	29	34	39	43	46
		Throw	2-5-11	5-8-14	8-11-17	10-13-19	11-15-21	13-16-22	14-17-24
12" Inlet	4 ft.	Airflow, cfm	60	90	120	150	180	210	240
		Total Pressure	0.028	0.063	0.111	0.174	0.250	0.340	0.445
		Static Pressure	0.027	0.061	0.109	0.171	0.246	0.334	0.437
		NC (Noise Criteria)	11	21	28	33	37	41	44
		Throw	3-6-13	6-10-15	9-13-18	11-14-20	13-15-22	14-17-24	15-18-25

ML-37-SP / ½" SLOT SPACING WIDTH / TWO-SLOT / SUPPLY WITH MP-37-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	20	40	60	80	100	120	140
		Total Pressure	0.009	0.037	0.083	0.148	0.231	0.332	0.452
		Static Pressure	0.009	0.034	0.077	0.136	0.213	0.306	0.417
		NC (Noise Criteria)	-	17	27	34	39	43	47
		Throw	1-2-8	4-8-18	8-14-27	12-18-32	15-23-36	18-27-39	21-30-42
	4 ft.	Airflow, cfm	40	63	85	108	130	153	175
		Total Pressure	0.025	0.060	0.111	0.178	0.260	0.358	0.472
		Static Pressure	0.022	0.053	0.098	0.157	0.230	0.317	0.417
		NC (Noise Criteria)	-	17	24	30	35	38	42
		Throw	1-3-9	3-7-13	6-9-15	8-12-17	9-13-19	11-14-20	12-15-22
8" Inlet	2 ft.	Airflow, cfm	30	53	75	98	120	143	165
		Total Pressure	0.013	0.040	0.082	0.138	0.210	0.296	0.396
		Static Pressure	0.012	0.038	0.078	0.132	0.200	0.282	0.378
		NC (Noise Criteria)	-	20	28	34	39	43	47
		Throw	2-5-14	6-12-24	11-17-31	15-22-35	18-27-39	22-30-43	25-32-46
	4 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.019	0.049	0.092	0.149	0.220	0.304	0.402
		Static Pressure	0.017	0.044	0.084	0.136	0.200	0.277	0.366
		NC (Noise Criteria)	-	19	27	32	37	41	44
		Throw	2-5-11	5-9-15	8-12-17	10-14-19	12-15-21	13-16-23	14-18-25
10" Inlet	2 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.020	0.053	0.101	0.166	0.246	0.341	0.452
		Static Pressure	0.019	0.051	0.099	0.161	0.238	0.331	0.439
		NC (Noise Criteria)	-	22	30	36	40	44	47
		Throw	4-6-10	7-9-13	9-11-15	10-12-18	11-14-19	12-15-21	13-16-23
	4 ft.	Airflow, cfm	55	88	120	153	185	218	250
		Total Pressure	0.015	0.039	0.074	0.119	0.175	0.242	0.320
		Static Pressure	0.014	0.036	0.068	0.111	0.163	0.225	0.297
		NC (Noise Criteria)	-	18	26	32	36	40	43
		Throw	2-6-12	6-9-15	9-13-18	11-14-20	13-16-22	14-17-24	15-18-26
12" Inlet	4 ft.	Airflow, cfm	70	113	155	198	240	283	325
		Total Pressure	0.017	0.043	0.081	0.132	0.194	0.269	0.356
		Static Pressure	0.016	0.041	0.078	0.126	0.187	0.259	0.342
		NC (Noise Criteria)	-	20	28	34	38	42	45
		Throw	4-8-14	8-12-17	11-14-20	13-16-23	15-18-25	16-19-27	17-21-29

Performance notes appear at end of performance data

ML-38-SP, -TZ / ¾" SLOT SPACING WIDTH / TWO-SLOT / SUPPLY WITH MP-38-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	30	50	70	90	110	130	150
		Total Pressure	0.012	0.034	0.066	0.110	0.164	0.229	0.305
		Static Pressure	0.011	0.029	0.058	0.095	0.142	0.199	0.265
		NC (Noise Criteria)	-	18	26	32	36	40	44
		Throw	1-3-10	3-7-19	6-13-26	10-17-34	14-21-37	16-24-41	19-28-44
	4 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.019	0.048	0.091	0.148	0.218	0.302	0.399
		Static Pressure	0.014	0.037	0.070	0.113	0.167	0.231	0.305
		NC (Noise Criteria)	-	18	26	31	36	40	43
		Throw	1-3-9	3-6-14	5-10-17	8-12-19	10-15-21	12-16-23	13-18-25
8" Inlet	2 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.017	0.045	0.086	0.141	0.209	0.290	0.385
		Static Pressure	0.016	0.042	0.081	0.132	0.195	0.271	0.360
		NC (Noise Criteria)	-	20	28	33	38	42	45
		Throw	2-5-15	5-12-24	10-17-34	14-21-38	17-26-42	21-31-46	24-35-49
	4 ft.	Airflow, cfm	60	93	125	158	190	223	255
		Total Pressure	0.015	0.036	0.065	0.103	0.150	0.206	0.271
		Static Pressure	0.013	0.030	0.054	0.086	0.125	0.172	0.226
		NC (Noise Criteria)	-	18	25	30	35	38	42
		Throw	2-4-11	4-8-16	7-11-18	9-14-20	11-16-23	13-17-24	15-18-26
10" Inlet	2 ft.	Airflow, cfm	50	75	100	125	150	175	200
		Total Pressure	0.029	0.064	0.114	0.179	0.257	0.350	0.457
		Static Pressure	0.028	0.062	0.111	0.173	0.249	0.339	0.443
		NC (Noise Criteria)	-	20	27	33	37	41	44
		Throw	3-6-12	6-9-14	8-12-16	10-13-18	12-14-20	12-15-22	13-16-23
	4 ft.	Airflow, cfm	70	110	150	190	230	270	310
		Total Pressure	0.015	0.038	0.070	0.113	0.165	0.228	0.300
		Static Pressure	0.014	0.033	0.062	0.100	0.146	0.201	0.265
		NC (Noise Criteria)	-	19	26	32	36	40	43
		Throw	2-5-12	5-10-17	9-13-20	11-16-23	13-18-25	15-19-27	17-20-29
12" Inlet	4 ft.	Airflow, cfm	90	143	195	248	300	353	405
		Total Pressure	0.022	0.054	0.101	0.163	0.240	0.331	0.437
		Static Pressure	0.021	0.051	0.096	0.155	0.228	0.314	0.415
		NC (Noise Criteria)	-	21	28	34	39	42	46
		Throw	4-8-15	8-13-19	11-16-23	15-18-26	16-20-28	18-22-31	19-23-33

ML-39-SP / 1" SLOT SPACING WIDTH / TWO-SLOT / SUPPLY WITH MP-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	30	53	75	98	120	143	165
		Total Pressure	0.009	0.028	0.057	0.096	0.146	0.205	0.275
		Static Pressure	0.008	0.023	0.047	0.079	0.120	0.169	0.227
		NC (Noise Criteria)	-	19	28	34	39	43	46
		Throw	1-2-7	2-5-17	5-10-24	8-16-32	12-19-39	15-23-43	18-27-46
	4 ft.	Airflow, cfm	50	83	115	148	180	213	245
		Total Pressure	0.016	0.044	0.086	0.142	0.211	0.295	0.392
		Static Pressure	0.012	0.032	0.063	0.103	0.153	0.214	0.284
		NC (Noise Criteria)	-	19	27	33	38	42	45
		Throw	1-2-7	2-4-13	4-9-18	6-11-20	9-14-22	11-16-24	12-18-26
8" Inlet	2 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.011	0.028	0.054	0.088	0.131	0.181	0.240
		Static Pressure	0.010	0.025	0.048	0.079	0.117	0.163	0.215
		NC (Noise Criteria)	-	20	28	34	38	42	46
		Throw	1-3-12	3-8-21	7-15-29	11-19-37	15-23-42	18-27-46	20-31-49
	4 ft.	Airflow, cfm	60	98	135	173	210	248	285
		Total Pressure	0.012	0.031	0.060	0.098	0.145	0.201	0.267
		Static Pressure	0.009	0.025	0.047	0.077	0.115	0.159	0.211
		NC (Noise Criteria)	-	19	27	33	37	41	45
		Throw	1-2-9	3-6-15	5-10-19	9-13-21	11-16-24	13-18-26	14-19-28
10" Inlet	2 ft.	Airflow, cfm	40	70	100	130	160	190	220
		Total Pressure	0.010	0.029	0.060	0.101	0.153	0.216	0.289
		Static Pressure	0.009	0.028	0.056	0.095	0.144	0.203	0.272
		NC (Noise Criteria)	-	19	28	34	39	43	46
		Throw	1-3-12	4-9-23	8-16-32	14-21-41	17-26-45	20-31-49	24-36-53
	4 ft.	Airflow, cfm	60	105	150	195	240	285	330
		Total Pressure	0.008	0.025	0.051	0.086	0.130	0.184	0.246
		Static Pressure	0.007	0.021	0.043	0.072	0.109	0.154	0.207
		NC (Noise Criteria)	-	18	27	33	38	42	45
		Throw	1-2-9	3-7-16	7-11-20	10-15-23	12-18-25	14-19-28	17-21-30
12" Inlet	4 ft.	Airflow, cfm	90	140	190	240	290	340	390
		Total Pressure	0.013	0.031	0.057	0.090	0.132	0.181	0.238
		Static Pressure	0.012	0.028	0.052	0.082	0.120	0.165	0.218
		NC (Noise Criteria)	-	21	28	34	38	42	45
		Throw	2-5-14	6-11-19	10-14-23	12-18-25	15-20-28	17-21-30	19-23-32

Performance notes appear at end of performance data

ML-37-SP / ½" SLOT SPACING WIDTH / THREE-SLOT / SUPPLY WITH MP-37-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	35	55	75	95	115	135	155
		Total Pressure	0.022	0.053	0.099	0.159	0.233	0.321	0.424
		Static Pressure	0.019	0.048	0.089	0.143	0.210	0.289	0.381
		NC (Noise Criteria)	-	19	26	32	36	40	43
		Throw	2-4-13	4-9-21	7-14-28	11-18-35	14-21-38	17-25-41	19-29-44
	4 ft.	Airflow, cfm	60	80	100	120	140	160	180
		Total Pressure	0.049	0.086	0.135	0.194	0.264	0.345	0.436
		Static Pressure	0.042	0.075	0.117	0.168	0.229	0.299	0.379
		NC (Noise Criteria)	-	17	22	26	30	33	36
		Throw	2-4-11	3-6-14	4-9-16	6-11-18	8-12-19	9-14-21	11-15-22
8" Inlet	2 ft.	Airflow, cfm	45	70	95	120	145	170	195
		Total Pressure	0.019	0.046	0.085	0.136	0.199	0.273	0.359
		Static Pressure	0.018	0.043	0.079	0.126	0.184	0.253	0.333
		NC (Noise Criteria)	-	20	28	33	38	41	45
		Throw	3-6-17	6-13-26	11-18-35	15-22-39	18-27-43	21-32-46	24-35-50
	4 ft.	Airflow, cfm	70	105	140	175	210	245	280
		Total Pressure	0.030	0.068	0.120	0.188	0.270	0.368	0.480
		Static Pressure	0.027	0.060	0.107	0.166	0.240	0.326	0.426
		NC (Noise Criteria)	-	19	26	31	36	39	43
		Throw	2-5-12	5-9-17	8-12-19	10-15-22	12-17-24	14-18-26	16-19-27
10" Inlet	2 ft.	Airflow, cfm	50	78	105	133	160	188	215
		Total Pressure	0.017	0.041	0.076	0.121	0.177	0.242	0.319
		Static Pressure	0.016	0.039	0.072	0.115	0.167	0.230	0.302
		NC (Noise Criteria)	-	20	27	33	37	41	44
		Throw	3-7-19	8-14-29	13-20-37	16-25-41	20-30-45	23-35-49	27-37-52
	4 ft.	Airflow, cfm	80	118	155	193	230	268	305
		Total Pressure	0.024	0.052	0.091	0.141	0.201	0.272	0.353
		Static Pressure	0.022	0.047	0.082	0.127	0.182	0.246	0.319
		NC (Noise Criteria)	-	19	26	31	35	39	42
		Throw	3-6-14	6-10-18	9-14-20	11-16-23	13-18-25	15-19-27	16-20-29
12" Inlet	4 ft.	Airflow, cfm	90	138	185	233	280	328	375
		Total Pressure	0.017	0.039	0.071	0.112	0.162	0.222	0.291
		Static Pressure	0.016	0.037	0.066	0.105	0.152	0.207	0.272
		NC (Noise Criteria)	-	19	26	31	36	39	43
		Throw	4-8-15	8-12-19	11-16-22	14-18-25	16-19-27	17-21-30	18-22-32

ML-38-SP, -TZ / ¾" SLOT SPACING WIDTH / THREE-SLOT / SUPPLY WITH MP-38-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	40	65	90	115	140	165	190
		Total Pressure	0.015	0.039	0.074	0.121	0.180	0.250	0.331
		Static Pressure	0.012	0.031	0.060	0.098	0.145	0.201	0.267
		NC (Noise Criteria)	-	18	25	31	36	40	43
		Throw	1-2-10	3-7-20	6-13-27	9-18-35	14-21-42	17-25-46	19-29-49
	4 ft.	Airflow, cfm	70	108	145	183	220	258	295
		Total Pressure	0.030	0.072	0.131	0.207	0.301	0.412	0.541
		Static Pressure	0.022	0.051	0.093	0.147	0.214	0.294	0.385
		NC (Noise Criteria)	-	19	26	31	36	40	43
		Throw	1-3-10	3-6-15	5-10-20	8-13-22	11-16-24	12-18-26	14-20-28
8" Inlet	2 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.014	0.036	0.069	0.112	0.165	0.228	0.301
		Static Pressure	0.013	0.032	0.061	0.098	0.145	0.200	0.265
		NC (Noise Criteria)	-	19	26	32	36	40	44
		Throw	2-4-15	4-10-24	8-17-34	14-21-42	17-26-46	20-30-50	23-35-54
	4 ft.	Airflow, cfm	80	130	180	230	280	330	380
		Total Pressure	0.019	0.051	0.099	0.161	0.238	0.331	0.439
		Static Pressure	0.015	0.040	0.076	0.124	0.184	0.256	0.339
		NC (Noise Criteria)	-	19	27	33	38	41	45
		Throw	2-4-11	4-9-19	8-13-22	11-17-25	13-19-27	16-21-30	18-23-32
10" Inlet	2 ft.	Airflow, cfm	60	100	140	180	220	260	300
		Total Pressure	0.017	0.048	0.094	0.156	0.233	0.325	0.433
		Static Pressure	0.016	0.045	0.087	0.144	0.215	0.301	0.401
		NC (Noise Criteria)	-	21	29	35	40	44	47
		Throw	2-6-18	7-15-30	14-21-42	18-27-48	22-34-53	26-40-57	30-44-62
	4 ft.	Airflow, cfm	100	155	210	265	320	375	430
		Total Pressure	0.020	0.049	0.089	0.142	0.208	0.285	0.375
		Static Pressure	0.017	0.040	0.073	0.117	0.171	0.234	0.308
		NC (Noise Criteria)	-	21	28	34	38	42	45
		Throw	2-6-14	6-11-20	10-15-24	13-19-27	15-21-29	18-22-32	20-24-34
12" Inlet	4 ft.	Airflow, cfm	120	185	250	315	380	445	510
		Total Pressure	0.019	0.045	0.082	0.130	0.189	0.260	0.341
		Static Pressure	0.017	0.040	0.074	0.117	0.170	0.233	0.306
		NC (Noise Criteria)	-	21	28	34	38	42	45
		Throw	4-8-17	8-13-22	12-18-26	15-20-29	18-23-32	20-24-34	21-26-37

Performance notes appear at end of performance data

ML-39-SP / 1" SLOT SPACING WIDTH / THREE-SLOT / SUPPLY WITH MP-39-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	40	70	100	130	160	190	220
		Total Pressure	0.012	0.037	0.076	0.128	0.193	0.273	0.365
		Static Pressure	0.009	0.028	0.058	0.097	0.148	0.208	0.279
		NC (Noise Criteria)	-	20	28	34	39	43	47
		Throw	1-2-6	2-5-18	4-10-26	8-17-34	12-21-42	16-25-49	19-29-53
	4 ft.	Airflow, cfm	70	108	145	183	220	258	295
		Total Pressure	0.028	0.065	0.119	0.188	0.273	0.374	0.491
		Static Pressure	0.019	0.045	0.081	0.128	0.186	0.255	0.335
		NC (Noise Criteria)	-	19	26	32	36	40	43
		Throw	1-2-7	2-4-13	3-8-18	5-11-22	8-14-24	11-16-26	12-18-28
8" Inlet	2 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.019	0.048	0.091	0.148	0.218	0.302	0.399
		Static Pressure	0.017	0.044	0.083	0.134	0.198	0.274	0.363
		NC (Noise Criteria)	-	19	26	32	37	41	44
		Throw	1-3-10	3-6-21	5-12-29	9-18-37	13-22-45	18-26-50	20-30-54
	4 ft.	Airflow, cfm	80	135	190	245	300	355	410
		Total Pressure	0.017	0.047	0.094	0.156	0.234	0.328	0.437
		Static Pressure	0.012	0.035	0.069	0.115	0.172	0.241	0.321
		NC (Noise Criteria)	-	21	29	35	40	44	47
		Throw	1-2-9	3-7-17	6-12-23	10-15-26	12-19-28	15-22-31	17-23-33
10" Inlet	2 ft.	Airflow, cfm	60	100	140	180	220	260	300
		Total Pressure	0.011	0.031	0.061	0.101	0.151	0.211	0.281
		Static Pressure	0.010	0.028	0.054	0.090	0.134	0.187	0.249
		NC (Noise Criteria)	-	22	29	35	40	44	48
		Throw	2-4-15	4-10-26	9-18-37	15-24-48	19-29-53	23-34-57	26-40-62
	4 ft.	Airflow, cfm	90	148	205	263	320	378	435
		Total Pressure	0.013	0.036	0.069	0.113	0.167	0.233	0.309
		Static Pressure	0.010	0.028	0.053	0.088	0.130	0.181	0.241
		NC (Noise Criteria)	-	20	28	34	38	42	46
		Throw	1-3-11	3-8-18	7-13-23	11-16-26	13-20-29	16-22-32	18-24-34
12" Inlet	4 ft.	Airflow, cfm	100	165	230	295	360	425	490
		Total Pressure	0.009	0.025	0.049	0.080	0.119	0.166	0.221
		Static Pressure	0.008	0.021	0.042	0.068	0.102	0.142	0.189
		NC (Noise Criteria)	-	19	26	32	37	41	44
		Throw	2-4-12	4-10-21	8-14-25	12-18-28	15-22-31	18-24-34	20-26-36

ML-37-SP / ½" SLOT SPACING WIDTH / FOUR-SLOT / SUPPLY WITH MP-37-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	40	63	85	108	130	153	175
		Total Pressure	0.025	0.060	0.111	0.178	0.260	0.358	0.472
		Static Pressure	0.022	0.053	0.098	0.157	0.230	0.317	0.417
		NC (Noise Criteria)	-	17	24	30	35	38	42
		Throw	1-3-12	3-7-20	6-13-27	10-17-35	14-21-41	16-25-44	19-28-47
	4 ft.	Airflow, cfm	70	90	110	130	150	170	190
		Total Pressure	0.062	0.102	0.152	0.213	0.283	0.364	0.455
		Static Pressure	0.053	0.088	0.131	0.183	0.243	0.312	0.390
		NC (Noise Criteria)	-	15	20	24	27	30	33
		Throw	1-3-11	2-5-14	4-8-17	5-10-19	7-11-20	8-13-21	10-14-23
8" Inlet	2 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.019	0.049	0.092	0.149	0.220	0.304	0.402
		Static Pressure	0.017	0.044	0.084	0.136	0.200	0.277	0.366
		NC (Noise Criteria)	-	19	27	32	37	41	44
		Throw	2-5-16	5-12-26	10-18-36	15-23-42	18-27-46	22-32-50	25-37-54
	4 ft.	Airflow, cfm	60	98	135	173	210	248	285
		Total Pressure	0.020	0.052	0.100	0.164	0.242	0.337	0.446
		Static Pressure	0.017	0.046	0.088	0.143	0.212	0.294	0.390
		NC (Noise Criteria)	-	13	21	27	31	35	39
		Throw	1-2-9	3-6-15	5-10-19	9-13-21	11-16-24	13-18-26	14-19-28
10" Inlet	2 ft.	Airflow, cfm	60	98	135	173	210	248	285
		Total Pressure	0.018	0.049	0.093	0.152	0.226	0.313	0.416
		Static Pressure	0.017	0.045	0.087	0.141	0.210	0.291	0.386
		NC (Noise Criteria)	-	21	29	35	39	43	46
		Throw	3-6-13	7-11-16	10-13-19	12-15-21	14-17-24	15-18-26	16-19-28
	4 ft.	Airflow, cfm	90	140	190	240	290	340	390
		Total Pressure	0.026	0.064	0.118	0.188	0.275	0.378	0.497
		Static Pressure	0.024	0.057	0.105	0.167	0.244	0.336	0.442
		NC (Noise Criteria)	-	19	26	32	36	40	43
		Throw	2-5-14	6-11-19	10-14-23	12-18-25	15-20-28	17-21-30	19-23-32
12" Inlet	4 ft.	Airflow, cfm	100	165	230	295	360	425	490
		Total Pressure	0.016	0.044	0.086	0.141	0.210	0.292	0.389
		Static Pressure	0.015	0.040	0.079	0.129	0.192	0.268	0.356
		NC (Noise Criteria)	-	19	27	32	37	41	44
		Throw	3-7-15	8-13-21	12-18-25	15-20-28	18-22-31	19-24-34	21-26-36

Performance notes appear at end of performance data

ML-38-SP, -TZ / ¾" SLOT SPACING WIDTH / FOUR-SLOT / SUPPLY WITH MP-38-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	50	80	110	140	170	200	230
		Total Pressure	0.019	0.048	0.091	0.148	0.218	0.302	0.399
		Static Pressure	0.014	0.037	0.070	0.113	0.167	0.231	0.305
		NC (Noise Criteria)	-	18	26	31	36	40	43
		Throw	1-3-10	3-6-21	5-12-29	9-18-37	13-22-45	18-26-50	20-30-54
	4 ft.	Airflow, cfm	90	123	155	188	220	253	285
		Total Pressure	0.046	0.085	0.135	0.198	0.273	0.359	0.458
		Static Pressure	0.031	0.058	0.093	0.135	0.186	0.245	0.313
		NC (Noise Criteria)	-	18	23	28	31	35	38
		Throw	1-3-11	2-5-15	4-9-19	6-12-22	8-14-24	10-16-26	12-18-28
8" Inlet	2 ft.	Airflow, cfm	70	105	140	175	210	245	280
		Total Pressure	0.020	0.046	0.082	0.127	0.183	0.250	0.326
		Static Pressure	0.017	0.038	0.068	0.106	0.153	0.208	0.272
		NC (Noise Criteria)	-	21	27	33	37	41	44
		Throw	2-5-18	5-11-28	9-18-37	14-23-46	18-28-52	22-32-56	25-37-60
	4 ft.	Airflow, cfm	100	155	210	265	320	375	430
		Total Pressure	0.026	0.062	0.115	0.183	0.266	0.366	0.481
		Static Pressure	0.019	0.046	0.084	0.134	0.196	0.269	0.353
		NC (Noise Criteria)	-	19	26	32	36	40	43
		Throw	2-4-12	4-9-19	7-13-24	11-16-27	13-20-29	16-22-32	18-24-34
10" Inlet	2 ft.	Airflow, cfm	70	110	150	190	230	270	310
		Total Pressure	0.015	0.038	0.070	0.113	0.165	0.228	0.300
		Static Pressure	0.014	0.033	0.062	0.100	0.146	0.201	0.265
		NC (Noise Criteria)	-	19	26	32	36	40	43
		Throw	2-5-12	5-10-17	9-13-20	11-16-23	13-18-25	15-19-27	17-20-29
	4 ft.	Airflow, cfm	120	185	250	315	380	445	510
		Total Pressure	0.024	0.056	0.102	0.162	0.236	0.324	0.425
		Static Pressure	0.018	0.044	0.079	0.126	0.184	0.252	0.331
		NC (Noise Criteria)	-	21	28	33	38	41	45
		Throw	2-5-15	5-12-22	10-16-26	13-20-29	16-23-32	18-24-34	21-26-37
12" Inlet	4 ft.	Airflow, cfm	130	210	290	370	450	530	610
		Total Pressure	0.016	0.041	0.077	0.126	0.186	0.258	0.342
		Static Pressure	0.013	0.035	0.066	0.107	0.159	0.221	0.292
		NC (Noise Criteria)	-	20	27	33	38	41	45
		Throw	3-6-16	7-13-24	12-18-28	15-22-31	19-25-35	22-27-38	23-29-40

ML-39-SP / 1" SLOT SPACING WIDTH / FOUR-SLOT / SUPPLY WITH MP-39-SP PLENUM

6" Inlet	2 ft.	Airflow, cfm	50	85	120	155	190	225	260
		Total Pressure	0.016	0.047	0.094	0.157	0.236	0.330	0.441
		Static Pressure	0.012	0.034	0.068	0.114	0.171	0.240	0.320
		NC (Noise Criteria)	-	20	28	34	39	43	46
		Throw	1-2-7	2-5-19	4-9-27	7-16-35	11-22-43	15-26-51	20-30-57
	4 ft.	Airflow, cfm	90	130	170	210	250	290	330
		Total Pressure	0.042	0.089	0.151	0.231	0.328	0.441	0.571
		Static Pressure	0.028	0.058	0.100	0.152	0.216	0.290	0.376
		NC (Noise Criteria)	-	19	26	31	35	38	41
		Throw	1-2-8	2-4-14	3-7-18	5-10-23	6-13-26	9-16-28	11-18-30
8" Inlet	2 ft.	Airflow, cfm	60	95	130	165	200	235	270
		Total Pressure	0.023	0.059	0.110	0.178	0.261	0.360	0.476
		Static Pressure	0.021	0.053	0.099	0.159	0.233	0.322	0.425
		NC (Noise Criteria)	-	19	26	32	36	40	43
		Throw	1-2-9	3-6-22	5-11-30	8-18-38	12-23-46	16-27-54	21-31-59
	4 ft.	Airflow, cfm	90	150	210	270	330	390	450
		Total Pressure	0.019	0.052	0.102	0.168	0.252	0.351	0.468
		Static Pressure	0.013	0.036	0.072	0.118	0.177	0.247	0.328
		NC (Noise Criteria)	-	19	27	33	37	41	45
		Throw	1-2-8	2-5-16	5-10-23	8-15-27	11-18-30	14-21-32	16-24-35
10" Inlet	2 ft.	Airflow, cfm	70	115	160	205	250	295	340
		Total Pressure	0.011	0.030	0.058	0.095	0.141	0.197	0.261
		Static Pressure	0.009	0.025	0.049	0.080	0.119	0.165	0.219
		NC (Noise Criteria)	-	20	28	34	39	43	46
		Throw	1-3-13	4-9-26	7-17-37	12-23-47	18-29-56	22-34-61	26-39-66
	4 ft.	Airflow, cfm	90	155	220	285	350	415	480
		Total Pressure	0.011	0.033	0.067	0.113	0.170	0.239	0.320
		Static Pressure	0.008	0.025	0.050	0.083	0.126	0.177	0.237
		NC (Noise Criteria)	-	17	25	31	36	40	44
		Throw	1-2-8	2-6-17	5-11-24	8-15-28	13-19-31	15-22-33	17-25-36
12" Inlet	4 ft.	Airflow, cfm	120	205	290	375	460	545	630
		Total Pressure	0.010	0.030	0.059	0.099	0.149	0.209	0.280
		Static Pressure	0.008	0.024	0.048	0.080	0.121	0.169	0.226
		NC (Noise Criteria)	-	19	28	34	39	43	46
		Throw	1-3-13	4-10-22	9-16-28	13-20-32	17-25-35	20-27-38	23-29-41

Performance notes appear at end of performance data

MODULINEAR DIFFUSER PLENUMS

Available Models:

MP-37
MP-38
MP-39

MPI-37
MPI-38
MPI-39

- Data is valid only for Titus ML linear diffusers with Titus supplied MP plenums
- Data was obtained from testing in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance with flexible duct inlet may vary in the field. See the Engineering Guidelines section for additional information.

- NC values were determined from octave band 2 thru 7 sound power levels with a 10 dB room absorption
- Pressures are in inches WG
- Throw values are listed for terminal velocities of 150, 100 and 50 fpm under isothermal conditions. For an explanation of catalog throw data, see the Engineering Guidelines section of this catalog.
- Throw values listed are for the one-way air pattern. For divided airflow, select the airflow in each direction according to the number of sides aimed in that direction, with the total airflow apportioned between slots.

SPECIAL PERFORMANCE

Available Models:

MP-37-SP
MP-38-SP
MP-39-SP

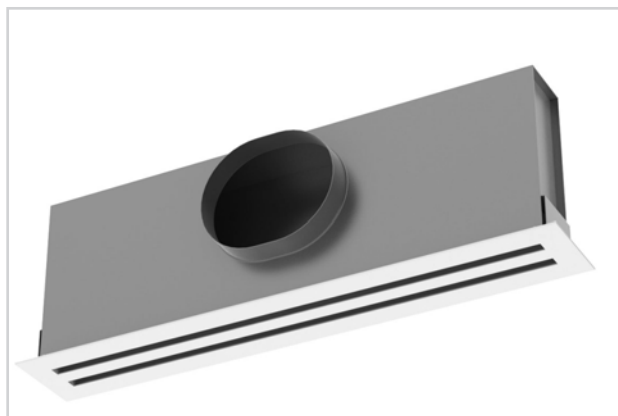
MPI-37-SP
MPI-38-SP
MPI-39-SP

- Data is valid only for Titus ML linear diffusers with Titus supplied MP-SP plenums
- Pressures are in inches WG
- Data was obtained from testing in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance with flexible duct inlet, may vary in the field. See the Engineering Guidelines section for additional information.

- NC values were determined from octave band 2 thru 7 sound power levels with a 10 dB room absorption
- Spread can be determined by multiplying the throw by 0.5
- Throw values are listed for terminal velocities of 150, 100 and 50 fpm under isothermal conditions. For an explanation of catalog throw data, see the Engineering Guidelines section of this catalog.
- Throw values listed are for the one-way air pattern. For divided airflow, select the airflow in each direction according to the number of sides aimed in that direction, with the total airflow apportioned between slots.

MLT / MLTR

- Nominal diffuser lengths are 2 and 4 feet
- Diffuser material - extruded aluminum
- Plenum - steel



MLT / MLTR

MODELS:

Supply Models:
MLT-37 / 1/2" Slot
MLT-38 / 3/4" Slot
MLT-39 / 1" Slot

MLTI-37 / 1/2" Slot
MLTI-38 / 3/4" Slot
MLTI-39 / 1" Slot

Return Models:
MLTR-37 / 1/2" Slot
MLTR-38 / 3/4" Slot
MLTR-39 / 1" Slot

MLTRI-37 / 1/2" Slot
MLTRI-38 / 3/4" Slot
MLTRI-39 / 1" Slot

FINISH:

Standard Finish - #26 White border



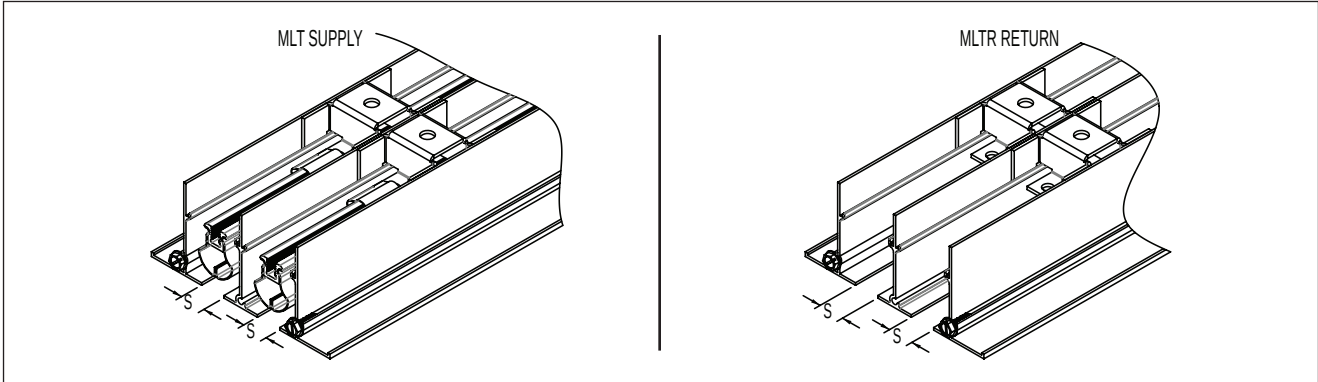
See website for Specifications

OVERVIEW

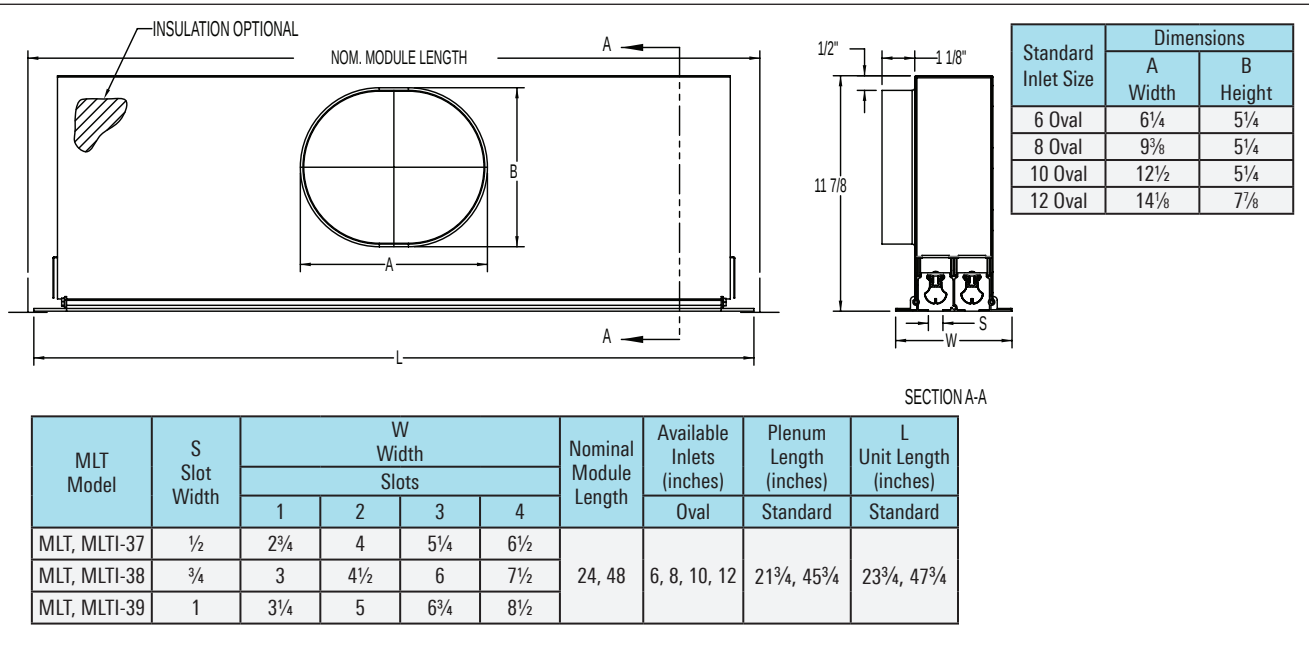
Modulinear / Lay-in

The Titus MLT supply diffuser is specifically designed for standard and narrow tee lay-in applications. The MLT is a supply diffuser and plenum, available in 24 and 48 inch nominal lengths and 1 through 4 slots. The plenums are available in nominal oval inlet sizes of 6 through 12 inches. The MLT features the unique "ice tong" deflector blades that allow both changes in air volume and direction from the face of the diffuser.

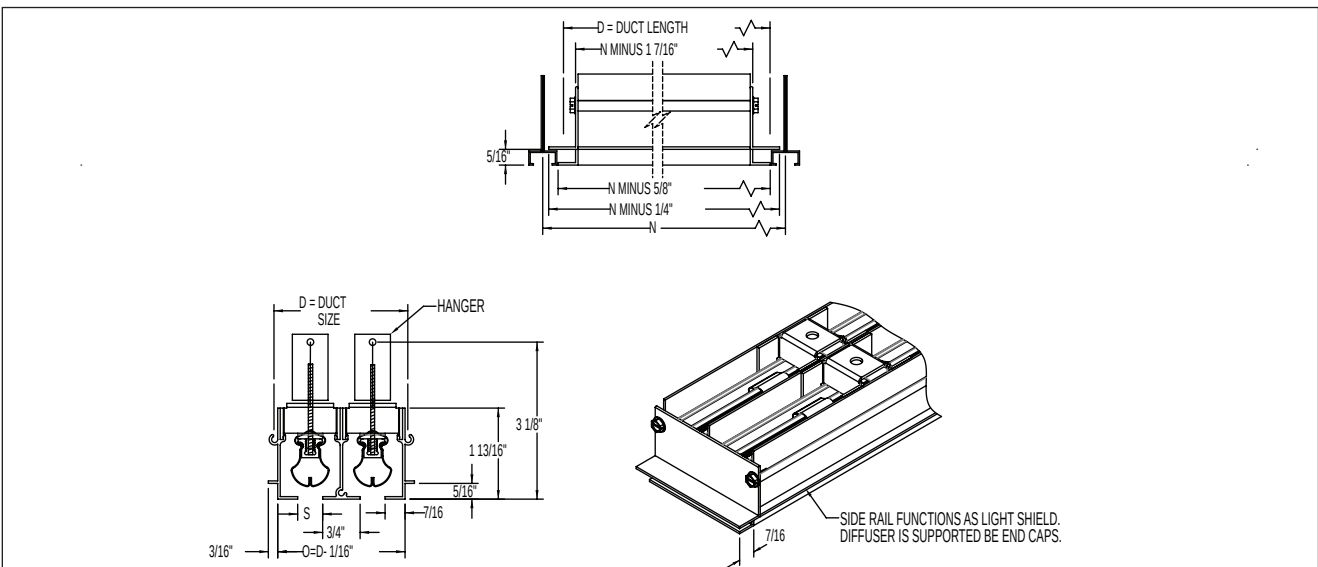
MLT UNIT DIMENSIONS



BORDER 1B



BORDER NT

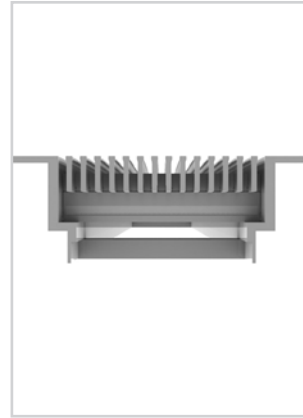


Linear Bar Diffusers

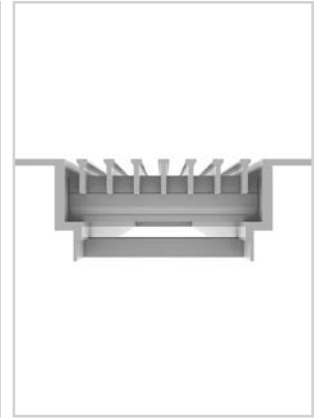
diffusers

CT

- When both appearance and performance are of prime importance in an air distribution system, Titus linear bar diffusers are a logical choice
- Designed for both heating and cooling applications, supply as well as return
- Available in eight different core styles plus a wide selection of frames and borders
- Can be selected for ceiling, side wall, or sill installations. Heavy duty models (Frames 5 and 6) are designed especially for typical floor installations.
- Accessories such as directional blades, dampers, blank-offs, access doors and mitered corners make these diffusers even more versatile
- Ideal for continuous length applications. Multiple sections are shipped with required alignment strips or pins for field installation.



CT-480



CT-580



metric sizes



wood grains



MRI compatible

MODELS:

1/4" Spacing

CT-480 / 1/8" Bars / 0° Deflection
CT-481 / 1/8" Bars / 15° Deflection

1/2" Spacing

CT-580 / 1/8" Bars / 0° Deflection
CT-581 / 1/8" Bars / 15° Deflection
CT-540 / 1/4" Bars / 0° Deflection
CT-541 / 1/4" Bars / 15° Deflection

7/16" Spacing

CT-PP-0 / 7/32" Bars / 0° Deflection
CT-PP-3 / 7/32" Bars / 30° Deflection

FINISHES:

Standard Finish - #26 White

Optional Finishes - #01 Aluminum / #04 Mill / #25 Off White / #84 Black
Anodized finishes available

OVERVIEW

Fixed Bars / Pencil Proof-Aluminum

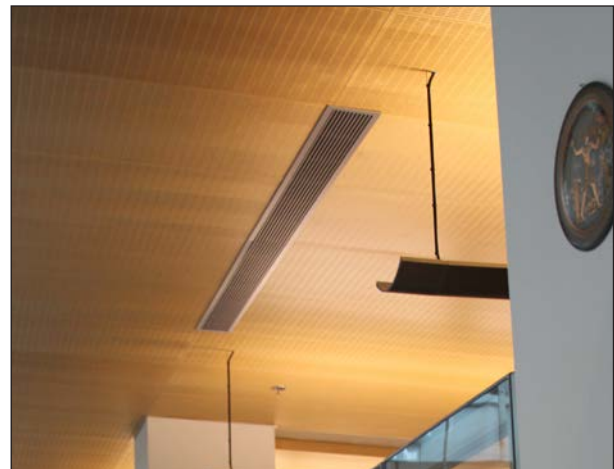
When both appearance and performance are of prime importance in an air distribution system, Titus linear bar diffusers are a logical choice. Designed for both heating and cooling applications, supply as well as return.

ADDITIONAL FEATURES

- Maximum one piece section is 6 feet. Lengths greater than 6 feet are furnished in multiple sections.
- Sections can be joined together end-to-end for continuous appearance, using standard alignment strips or alignment wires



See website for Specifications

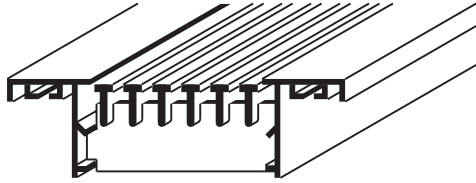


CT diffuser installed in the ceiling of a building on a college campus

- All deflection bars are fixed and parallel to the long dimension
- Fixed bars and support bars are extruded aluminum
- Optional curving to a 2' feet (24" minimum radius) on most models, available for architectural enhancement

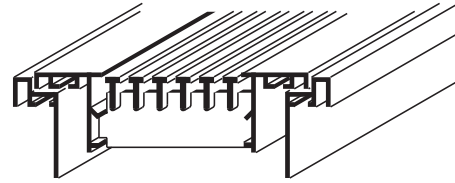
BORDERS & FRAMES - CORE COMBINATIONS

Core with Border



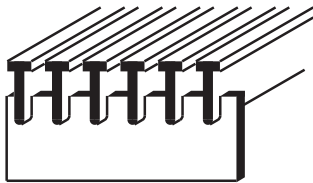
Type 13 border is shown. For other available types, please see F49.

Core with Border & Frame



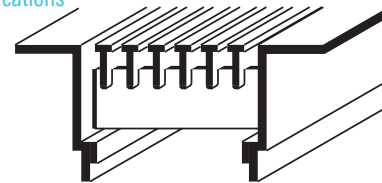
Type 1A frame & border combination is shown. For other available types, please see F50.

Core Only



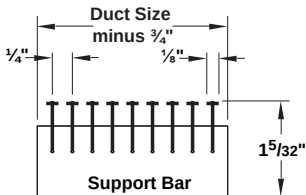
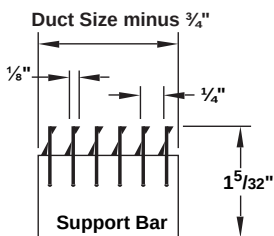
Model CT-540 core is shown. For other available models, please see below.

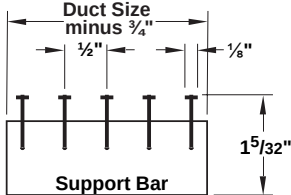
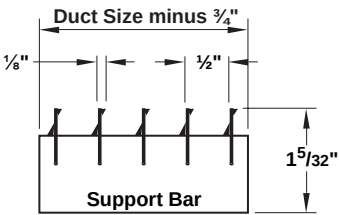
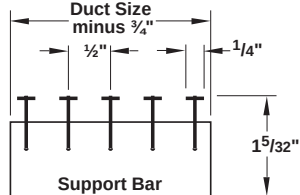
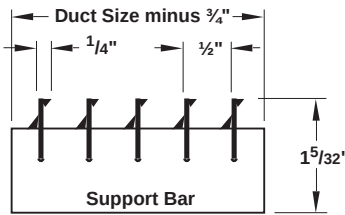
Core with Heavy Duty Mounting Frame for Floor Applications



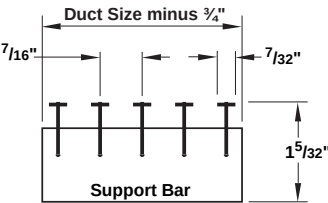
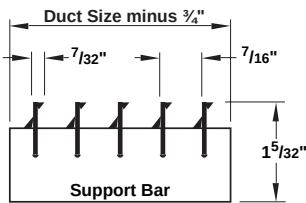
Type 5 heavy duty mounting frame is shown. For other available types, please see F50.

AVAILABLE CORES

1/4" Spacing
1/8" Bars
Model CT-480 - 0° Deflection 
Model CT-481 - 15° Deflection 

1/2" Spacing
1/8" Bars
Model CT-580 - 0° Deflection 
Model CT-581 - 15° Deflection 
1/4" Bars
Model CT-540 - 0° Deflection 
Model CT-541 - 15° Deflection 

See Note

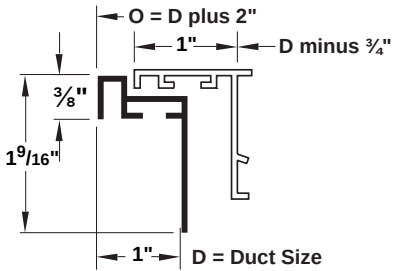
Pencil Proof
Model CT-PP-0 - 0° Deflection 
Model CT-PP-3 - 30° Deflection 

See Note

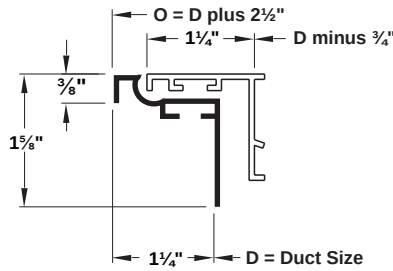
Note: Not recommended for floor applications with heavy loads or high traffic. See page F53 for maximum floor loading.

All dimensions are in inches

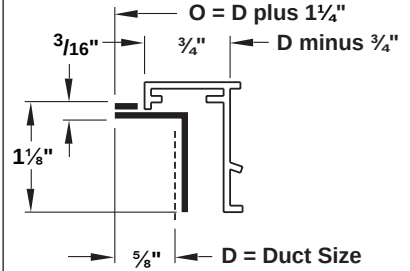
Frame & Border Type 1A with
• 1" Border



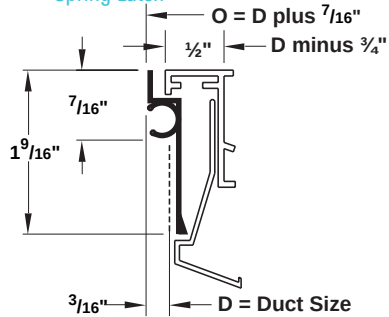
Frame & Border Type 1B with
• 1 1/4" Border



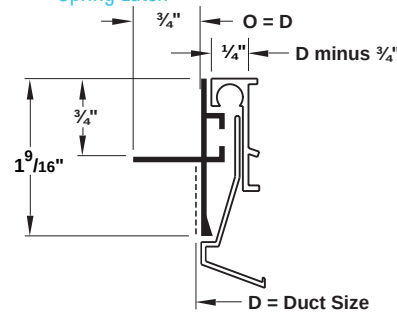
Frame & Border Type 2 with
• 3/4" Border



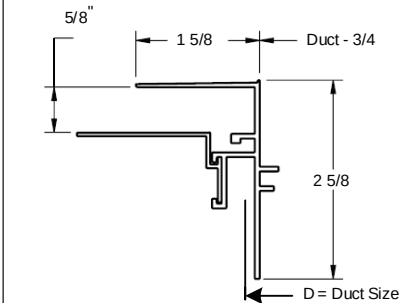
Frame & Border Type 3 with
• 1/2" Border
• Spring Latch



Frame & Border Type 4 with
• 1/4" Border
• Spring Latch

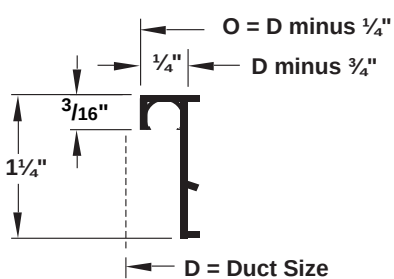


Border Type 22 Tape & Spackle

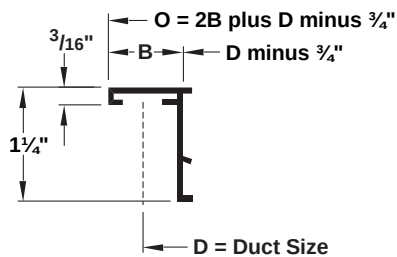


BORDER TYPES

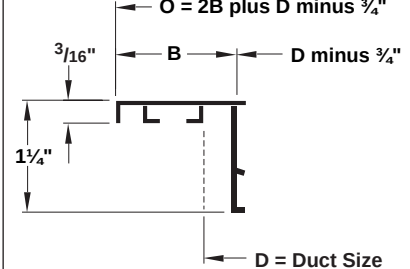
Border Type 7 with
• 1/4" Border



Border Type 11 & 12
• (11) 1/2" Border
• (12) 3/4" Border

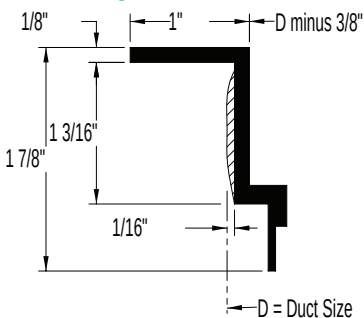


Border Type 13 & 14 with
• (13) 1" Border
• (14) 1 1/4" Border

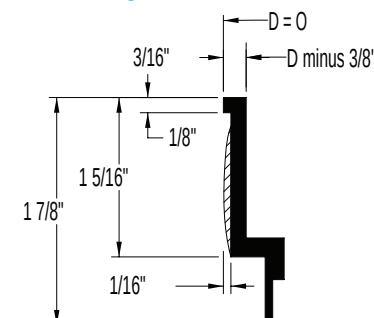


HEAVY DUTY MOUNTING FRAMES FOR FLOOR APPLICATIONS (see loading limitations Submittal D-CT-HD)

Frame Type 5
• 1" Flange



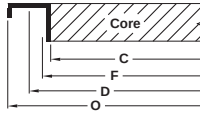
Frame Type 6
• No Flange



DIMENSIONS

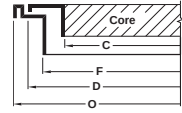
diffusers

Border Types (Type 11 Shown)



Type	F Border Length	O Overall Length	C Core Opening Length
5	D	D plus 1 ⁵ / ₈	D minus 3 ³ / ₈
6	D	D	D minus 3 ³ / ₈
7	D minus 5 ⁵ / ₈	D minus 1 ¹ / ₄	D minus 3 ³ / ₄
11	D minus 5 ⁵ / ₈	D plus 1 ¹ / ₄	D minus 3 ³ / ₄
12	D minus 5 ⁵ / ₈	D plus 3 ³ / ₄	D minus 3 ³ / ₄
13	D minus 5 ⁵ / ₈	D plus 1 ¹ / ₄	D minus 3 ³ / ₄
14	D minus 5 ⁵ / ₈	D plus 1 ³ / ₄	D minus 3 ³ / ₄
22	D minus 5 ⁵ / ₈	D plus 2 ¹ / ₂	D minus 3 ³ / ₄

Frame & Border Type (Type 1A & 1B Shown)



Type	F Frame Length	O Overall Length	C Core Opening Length
1A	D	D plus 2	D minus 3 ³ / ₄
1B	D	D plus 2 1 ¹ / ₂	D minus 3 ³ / ₄
2	D	D plus 1 1 ¹ / ₄	D minus 3 ³ / ₄
3	D	D plus 7 ⁷ / ₁₆	D minus 3 ³ / ₄
4	D	D	D minus 3 ³ / ₄

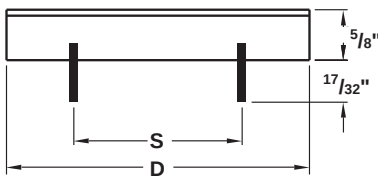
MAXIMUM FLOOR LOADING

(Frames 5 and 6 with standard support bars on 6" centers)

Model	Max. Vertical Distributed Load (lbs./in. ²)	Max. Vertical Live Load (lbs./ft. ²)	Max. Horizontal Load (lbs.)
CT-480/CT-481	300	300	50
CT-580/CT-581	200	200	50
CT-540/CT-541	250	250	50
CT-PP-0/CT-PP-3	250	250	50

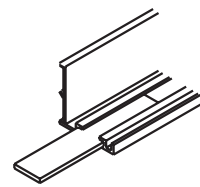
Note: If placing furniture on cores, furniture legs should be a minimum of core spacing plus two bars wide to avoid placing a horizontal load on cores. Maximum duct width available is 12".

CORE ONLY OPTION



S = 9" maximum support bar spacing
D = 72" maximum for one piece
Core Only is an option available for field framing
Standard widths are as shown
See page F51 for core details. Core will ship 3³/₄" smaller than the duct width.

ALIGNMENT STRIPS

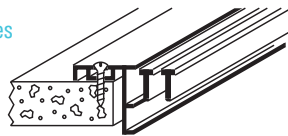


Used with border width 1¹/₂" or wider. Alignment pins used with 1¹/₄" borders.

AVAILABLE FASTENINGS

Type A

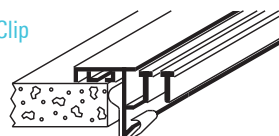
- Screw Holes



For ceiling, side wall, sill, or floor. Used with Frame & Border Types 1B, 5, 11, 12, 13, 14.

Type B

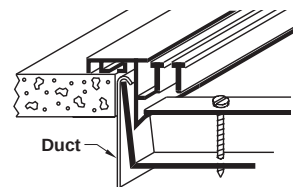
- Spring Clip



For sill installations. Used with Frame & Border Types 11, 12, 13, 14. Must use AG-35B Damper instead of AG-35.

Type C

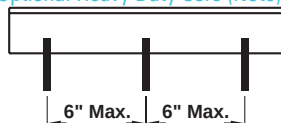
- Concealed Fastening



For ceiling, side wall, or sill. Used with Frame and Border Types 1A, 1B, 2, 3, 4, 7, 11, 12, 13, 14, & Border Type 22

ADDITIONAL REINFORCING (Optional) (Except frame types 5 and 6)

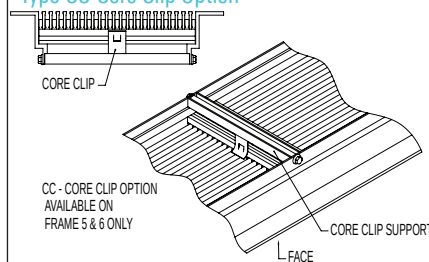
Type H - Optional Heavy Duty Core (Note)



Optional Heavy Duty Core has support bars on 6" maximum centers. (Standard core has 9" maximum centers.) See maximum floor loading shown above.

Note: Frame types 5 and 6 have support bars on 6" centers as standard.

Type CC-Core Clip Option



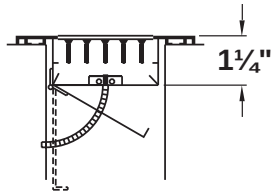
CC - CORE CLIP OPTION
AVAILABLE ON
FRAME 5 & 6 ONLY

Notes:

- Used without spring latch in Frame & Border Types 3 and 4.
- Not for use with Cores CT-480 and CT-481 (1¹/₄" bar spacing). Screwdriver will not fit between bars.

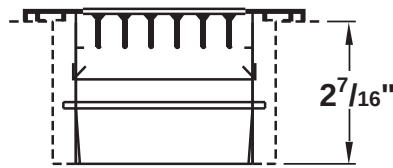
All dimensions are in inches

Model AG-30 Single Blade Damper



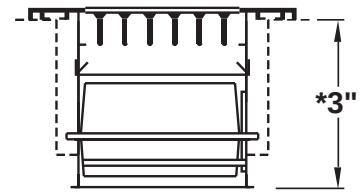
For Model CT diffuser widths 2" through 4". Friction hinge on 2" widths. Screwdriver operator on 2 1/2" through 4". Cannot be attached to Frame and Border Types 3, 4, 5, or 6. For those types use Model AG-35B damper on diffusers 3" and wider.

Model 07 Directional Blades



For all widths of Model CT diffusers 3" or greater. Cannot be attached to Frame and Border Types 3 and 4. Can be used with Type 5 or 6 if Type B Spring Clip Fastening is omitted.

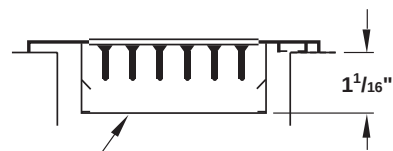
Model AG-35 Opposed Blade Damper



For Model CT diffusers 3" and wider. Not recommended for Models CT-480 and CT-481. Cannot be attached to Frame and Border Types 3 and 4. Use Model AG-35B damper for those types.

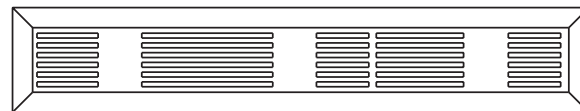
Note: Minimum duct width is 3"
*For floor models, dimension is 4"

Model BLKS Steel Blank-Off

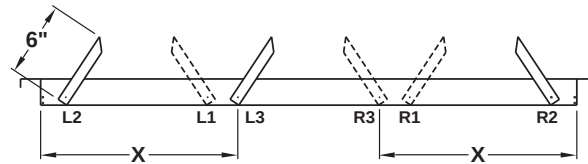


For all widths of Model CT diffusers. Furnished in 6' lengths for field cutting and installation. Steel, painted flat black.

Model AD Access Door (Not available on Types 3, 4, 5, 6, and 22; and not available when damper is required)



Note:
Maximum
Length
is 6 feet.



Specify
Dimension X

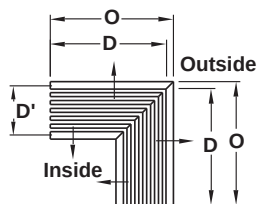
MITERED CORNERS

Available Models:

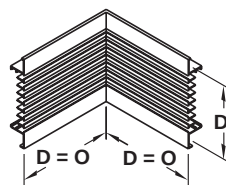
MC-480 / 1/4" Spacing / 1/8" Bars / 0° Deflection
MC-481 / 1/4" Spacing / 1/8" Bars / 15° Deflection
MC-580 / 1/2" Spacing / 1/8" Bars / 0° Deflection
MC-581 / 1/2" Spacing / 1/8" Bars / 15° Deflection
MC-540 / 1/2" Spacing / 1/4" Bars / 0° Deflection
MC-541 / 1/2" Spacing / 1/4" Bars / 15° Deflection

Available Pencil Proof Models:

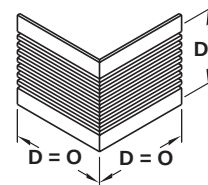
MC-PP-0 / 7/16" Spacing / 7/32" Bars / 0° Deflection
MC-PP-3 / 7/16" Spacing / 7/32" Bars / 30° Deflection



Floor, Ceiling, or Sill
Type O / 0° Deflection
Type A / Deflection Inside
Type B / Deflection Outside



Type C / Side Wall, Inside



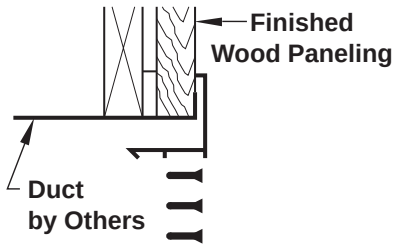
Type D / Side Wall, Outside

OVERALL DIMENSION O FOR VARIOUS FRAME AND BORDER TYPES

Duct Width D'	Duct Length D	Frame & Border Type												
		1A	1B	2	3	4	5	6	7	11	12	13	14	C0
2-4	12	12 15/16	13 3/16	12 5/8	12 3/16	12	12 13/16	12	11 7/8	12 1/8	12 3/8	12 5/8	12 7/8	12
4 1/2-10	18	18 15/16	19 3/16	18 5/8	18 3/16	18	18 13/16	18	17 7/8	18 1/8	18 3/8	18 5/8	18 7/8	18
10 1/2-12	24	24 15/16	24 3/16	24 5/8	24 3/16	24	24 13/16	24	23 7/8	24 1/8	24 3/8	24 5/8	24 7/8	24

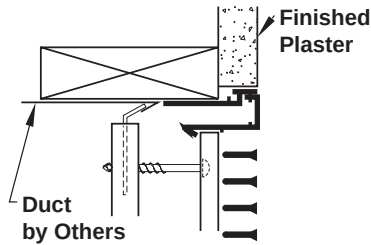
All dimensions are in inches

A1 Side Wall



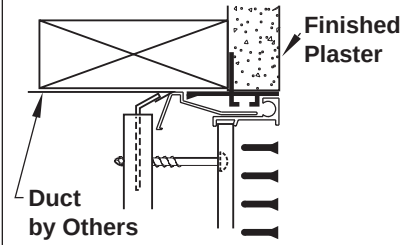
Border Type 11, 12, 13 or 14

A2 Side Wall



Frame & Border Type 3 with Concealed Fastening

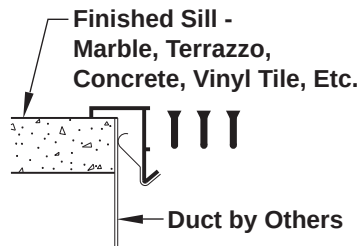
A3 Side Wall



Frame & Border Type 4 with Concealed Fastening

B1 Raised Sill

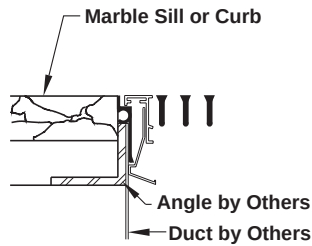
Not for Floor Installations



Border Type 11, 12, 13 or 14

B2 Raised Sill

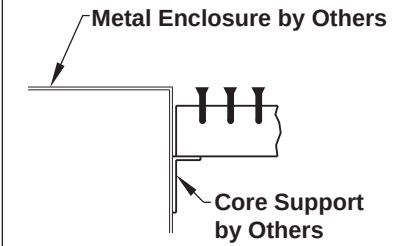
Not for Floor Installations



Frame & Border Type 3

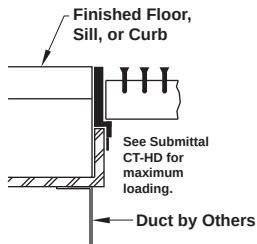
B3 Raised Sill

Not for Floor Installations



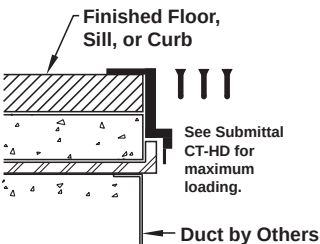
Core Only

C1 Floor or Sill



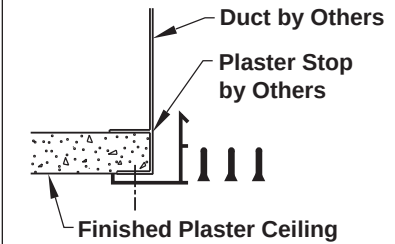
Frame Type 6 plus Heavy Duty Core

C2 Floor or Sill



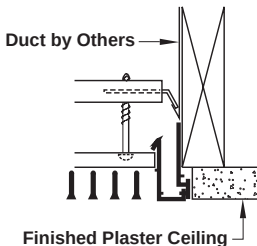
Frame Type 5 plus Heavy Duty Core

D1 Ceiling



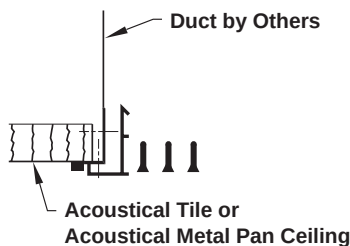
Border Type 11, 12, 13 or 14

D2 Ceiling



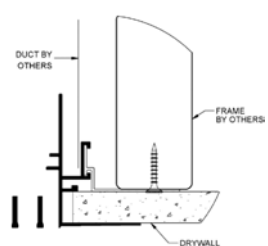
Frame and Border Type 3 with Concealed Fastening

D3 Ceiling



Frame and Border Type 2

D4 Ceiling



Frame Type 22

CT-480 / 1/8" THICK BARS / 0° DEFLECTION / 1/4" SPACING WIDTH

Effective Area, Square Feet	Nominal Duct Width, Inches										
0.048	2	Total Pressure	0.011	0.024	0.042	0.068	0.097	0.134	0.173	0.217	0.272
		cfm per foot	19	28	37	47	56	66	75	84	94
		Noise Criteria (NC)	-	-	-	14	19	24	27	31	34
		Throw, Side Wall	3-5-10	5-8-15	7-10-18	8-13-20	10-15/-22	12-17-23	14-18-25	15-19-26	16-20-28
0.066	2½	Total Pressure	0.011	0.024	0.043	0.066	0.096	0.13	0.17	0.215	0.266
		cfm per foot	26	39	52	65	78	91	104	117	130
		Noise Criteria (NC)	-	-	-	15	20	25	29	32	35
		Throw, Side Wall	3-6-12	6-9-18	8-12-21	10-15-23	12-18-25	14-19-27	16-21-29	18-22-31	19-23-33
0.084	3	Total Pressure	0.01	0.024	0.041	0.066	0.095	0.128	0.168	0.211	0.262
		cfm per foot	33	50	66	83	100	116	133	149	166
		Noise Criteria (NC)	-	-	-	16	21	26	30	33	36
		Throw, Side Wall	3-7-13	7-10-20	9-13-23	11-17-26	14-20-29	16-22-31	18-23-33	20-25-35	21-26-37
0.103	3½	Total Pressure	0.011	0.024	0.043	0.066	0.095	0.13	0.169	0.216	0.265
		cfm per foot	41	61	82	102	122	143	163	184	204
		Noise Criteria (NC)	-	-	11	17	22	27	30	34	37
		Throw, Side Wall	4-8-15	8-11-22	10-15-26	13-19-29	15-22-32	18-24-34	20-26-37	23-28-39	24-29-41
0.121	4	Total Pressure	0.011	0.024	0.044	0.068	0.097	0.133	0.173	0.221	0.271
		cfm per foot	49	73	98	122	146	171	195	220	244
		Noise Criteria (NC)	-	-	12	18	23	28	32	35	38
		Throw, Side Wall	4-8-17	8-12-25	11-17-28	14-21-32	17-25-35	19-27-38	22-28-40	25-30-43	26-32-45
0.157	5	Total Pressure	0.011	0.024	0.042	0.066	0.094	0.129	0.168	0.212	0.263
		cfm per foot	63	94	125	157	188	220	251	282	314
		Noise Criteria (NC)	-	-	12	19	24	29	32	36	39
		Throw, Side Wall	5-9-19	9-14-28	12-19-32	16-23-36	19-28-39	22-30-43	25-32-46	28-34-48	29-36-51
0.194	6	Total Pressure	0.011	0.024	0.042	0.066	0.095	0.129	0.168	0.213	0.263
		cfm per foot	78	116	155	194	233	272	310	349	388
		Noise Criteria (NC)	-	-	13	20	25	30	33	37	40
		Throw, Side Wall	6-10-21	10-16-31	14-21-36	17-26-40	21-31-44	24-34-47	28-36-51	31-38-54	33-40-57

CT-481 / 1/8" THICK BARS / 15° DEFLECTION / 1/4" SPACING WIDTH

Effective Area, Square Feet	Nominal Duct Width, Inches										
0.049	2	Total Pressure	0.011	0.024	0.042	0.068	0.096	0.133	0.172	0.216	0.271
		cfm per foot	19	28	37	47	56	66	75	84	94
		Noise Criteria (NC)	-	-	14	21	26	31	34	38	41
		Throw, Side Wall	3-5-10	5-7-15	7-10-18	8-13-20	10-15-22	12-17-23	13-18-25	15-19-26	16-20-28
0.066	2½	Total Pressure	0.011	0.024	0.042	0.066	0.095	0.129	0.169	0.214	0.264
		cfm per foot	26	39	52	65	78	91	104	117	130
		Noise Criteria (NC)	-	-	16	22	27	31	35	39	42
		Throw, Side Wall	3-6-12	6-9-18	8-12-21	10-15-23	12-18-25	14-19-27	16-21-29	18-22-31	19-23-33
0.083	3	Total Pressure	0.01	0.024	0.041	0.065	0.095	0.127	0.167	0.21	0.26
		cfm per foot	33	50	66	83	100	116	133	149	166
		Noise Criteria (NC)	-	-	16	23	28	32	36	39	42
		Throw, Side Wall	4-7-14	7-10-20	9-14-23	11-17-26	14-20-29	16-22-31	18-23-33	20-25-35	21-26-37
0.100	3½	Total Pressure	0.011	0.024	0.043	0.066	0.094	0.129	0.168	0.214	0.263
		cfm per foot	41	61	82	102	122	143	163	184	204
		Noise Criteria (NC)	-	-	17	24	29	33	37	40	43
		Throw, Side Wall	4-8-15	8-11-22	10-15-26	13-19-29	15-22-32	18-24-34	20-26-37	23-28-39	24-29-41
0.117	4	Total Pressure	0.011	0.024	0.044	0.067	0.097	0.132	0.172	0.219	0.27
		cfm per foot	49	73	98	122	146	171	195	220	244
		Noise Criteria (NC)	-	-	18	25	30	34	38	41	44
		Throw, Side Wall	5-8-17	8-13-25	11-17-28	14-21-32	17-25-35	20-27-38	22-28-40	25-30-43	26-32-45
0.151	5	Total Pressure	0.011	0.023	0.041	0.065	0.094	0.128	0.167	0.211	0.261
		cfm per foot	63	94	125	157	188	220	251	282	314
		Noise Criteria (NC)	-	-	19	25	30	35	39	42	45
		Throw, Side Wall	5-10-19	10-14-28	13-19-32	16-24-36	19-28-39	22-30-43	25-32-46	28-34-48	29-36-51
0.186	6	Total Pressure	0.011	0.023	0.042	0.065	0.094	0.128	0.167	0.211	0.261
		cfm per foot	78	116	155	194	233	272	310	349	388
		Noise Criteria (NC)	-	11	20	26	31	36	39	43	46
		Throw, Side Wall	6-11-21	11-16-31	14-21-36	18-27-40	21-31-44	25-34-47	28-36-51	31-38-54	33-40-57

Performance notes appear at end of performance data

CT-580 / 1/8" THICK BARS / 0° DEFLECTION / 1/2" SPACING WIDTH

Effective Area, Square Feet	Nominal Duct Width, Inches										
0.055	2	Total Pressure	0.009	0.021	0.037	0.058	0.084	0.114	0.149	0.189	0.234
		cfm per foot	22	33	44	55	66	77	88	99	110
		Noise Criteria (NC)	-	-	-	12	17	21	25	28	31
		Throw, Side Wall	3-6-11	6-8-17	7-11-19	9-14-21	11-17-23	13-18-25	15-19-27	17-20-29	17-21-30
0.076	2½	Total Pressure	0.009	0.019	0.033	0.051	0.073	0.098	0.128	0.161	0.199
		cfm per foot	30	44	58	72	86	100	114	128	142
		Noise Criteria (NC)	-	-	-	12	17	21	24	28	30
		Throw, Side Wall	3-6-13	6-9-19	8-12-22	10-15-24	12-18-27	14-20-29	16-22-31	18-23-33	20-24-34
0.096	3	Total Pressure	0.009	0.02	0.036	0.057	0.083	0.113	0.149	0.189	0.234
		cfm per foot	38	58	78	98	118	138	158	178	198
		Noise Criteria (NC)	-	-	-	14	19	24	27	31	34
		Throw, Side Wall	4-7-14	7-11-22	10-15-25	12-19-28	15-22-31	18-24-34	20-26-36	22-27-38	23-29-40
0.117	3½	Total Pressure	0.008	0.019	0.034	0.053	0.076	0.103	0.135	0.171	0.211
		cfm per foot	46	69	92	115	138	161	184	207	230
		Noise Criteria (NC)	-	-	-	14	19	23	27	30	33
		Throw, Side Wall	4-8-16	8-12-4	11-16-28	13-20-31	16-24-34	19-26-37	21-28-39	24-29-41	25-31-44
0.138	4	Total Pressure	0.009	0.02	0.035	0.054	0.077	0.104	0.136	0.171	0.211
		cfm per foot	56	83	110	137	164	191	218	245	272
		Noise Criteria (NC)	-	-	-	15	20	24	28	31	34
		Throw, Side Wall	5-9-18	9-13-26	12-18-30	15-22-34	17-26-37	20-28-40	23-30-42	26-32-45	27-34-47
0.179	5	Total Pressure	0.009	0.019	0.034	0.052	0.075	0.102	0.133	0.168	0.207
		cfm per foot	72	107	142	177	212	247	282	317	352
		Noise Criteria (NC)	-	-	-	16	21	25	29	32	35
		Throw, Side Wall	5-10-20	10-15-30	13-20-34	16-25-38	20-30-42	23-32-45	26-34-48	30-36-51	31-38-54
0.221	6	Total Pressure	0.008	0.019	0.035	0.054	0.079	0.107	0.14	0.178	0.22
		cfm per foot	88	133	178	223	268	313	358	403	448
		Noise Criteria (NC)	-	-	11	17	22	27	30	34	37
		Throw, Side Wall	6-11-22	11-17-33	15-22-38	19-28-43	22-33-47	26-36-51	30-39-54	33-41-58	35-43-61

CT-581 / 1/8" THICK BARS / 15° DEFLECTION / 1/2" SPACING WIDTH

Effective Area, Square Feet	Nominal Duct Width, Inches										
0.055	2	Total Pressure	0.009	0.021	0.037	0.058	0.084	0.114	0.149	0.189	0.233
		cfm per foot	22	33	44	55	66	77	88	99	110
		Noise Criteria (NC)	-	-	12	19	24	29	33	36	40
		Throw, Side Wall	3-6-11	6-8-17	7-11-19	9-14-21	11-17-23	13-18-25	15-19-27	17-20-29	17-21-30
0.075	2½	Total Pressure	0.009	0.02	0.035	0.055	0.08	0.108	0.142	0.179	0.221
		cfm per foot	30	45	60	75	90	105	120	135	150
		Noise Criteria (NC)	-	-	13	20	25	30	34	37	40
		Throw, Side Wall	3-6-13	6-10-19	9-13-22	11-16-25	13-19-27	15-21-29	17-22-32	19-24-33	20-25-35
0.096	3	Total Pressure	0.009	0.019	0.034	0.054	0.077	0.105	0.137	0.174	0.215
		cfm per foot	38	57	76	95	114	133	152	171	190
		Noise Criteria (NC)	-	-	14	20	26	30	34	38	41
		Throw, Side Wall	4-7-15	7-11-22	10-15-25	12-18-28	15-22-31	17-23-33	19-25-35	22-27-38	23-28-40
0.116	3½	Total Pressure	0.008	0.018	0.033	0.052	0.075	0.102	0.133	0.169	0.209
		cfm per foot	45	68	91	114	137	160	183	206	229
		Noise Criteria (NC)	-	-	14	21	26	31	35	38	41
		Throw, Side Wall	4-8-16	8-12-4	11-16-27	13-20-31	16-24-34	19-26-36	21-28-39	24-29-41	25-31-44
0.136	4	Total Pressure	0.008	0.018	0.033	0.051	0.074	0.101	0.132	0.167	0.206
		cfm per foot	53	80	107	134	161	188	215	242	269
		Noise Criteria (NC)	-	-	14	21	27	31	35	39	42
		Throw, Side Wall	4-9-17	9-13-26	11-17-30	14-22-33	17-26-37	20-28-39	23-30-42	26-32-45	27-33-47
0.176	5	Total Pressure	0.008	0.018	0.032	0.05	0.073	0.099	0.13	0.164	0.203
		cfm per foot	69	104	139	174	209	244	279	314	349
		Noise Criteria (NC)	-	-	15	22	28	32	36	40	43
		Throw, Side Wall	5-10-19	10-15-29	13-20-34	16-25-38	20-29-42	23-32-45	26-34-48	29-36-51	31-38-54
0.216	6	Total Pressure	0.008	0.018	0.031	0.049	0.07	0.095	0.124	0.157	0.194
		cfm per foot	85	127	169	211	253	295	337	379	421
		Noise Criteria (NC)	-	-	16	23	28	33	37	40	43
		Throw, Side Wall	6-11-22	11-16-32	14-22-37	18-27-42	21-32-46	25-35-49	29-37-53	32-40-56	34-42-59

Performance notes appear at end of performance data

CT-540 / ¼" THICK BARS / 0° DEFLECTION / ½" SPACING WIDTH

Effective Area, Square Feet	Nominal Duct Width, Inches										
0.053	2	Total Pressure	0.009	0.02	0.036	0.058	0.082	0.113	0.146	0.184	0.23
		cfm per foot	19	28	37	47	56	66	75	84	94
		Noise Criteria (NC)	-	-	-	14	19	24	28	31	34
		Throw, Side Wall	2-5-10	5-7-14	6-10-18	8-12-20	10-14-22	11-17-23	13-18-25	14-19-26	16-20-28
0.075	2½	Total Pressure	0.009	0.02	0.036	0.056	0.081	0.11	0.144	0.182	0.224
		cfm per foot	26	39	52	65	78	91	104	117	130
		Noise Criteria (NC)	-	-	-	15	21	25	29	33	36
		Throw, Side Wall	3-6-11	6-8-17	7-11-21	9-14-23	11-17-25	13-19-27	15-21-29	17-22-31	19-23-33
0.097	3	Total Pressure	0.009	0.02	0.035	0.055	0.08	0.108	0.142	0.178	0.221
		cfm per foot	33	50	66	83	100	116	133	149	166
		Noise Criteria (NC)	-	-	-	16	22	26	30	33	37
		Throw, Side Wall	3-6-13	6-10-19	8-13-23	11-16-26	13-19-29	15-22-31	17-23-33	19-25-35	21-26-37
0.119	3½	Total Pressure	0.009	0.02	0.036	0.056	0.08	0.11	0.143	0.182	0.224
		cfm per foot	41	61	82	102	122	143	163	184	204
		Noise Criteria (NC)	-	-	11	18	23	27	31	35	38
		Throw, Side Wall	3-7-14	7-10-21	9-14-26	12-18-29	14-21-32	16-24-34	19-26-37	21-28-39	23-29-41
0.141	4	Total Pressure	0.009	0.021	0.037	0.057	0.082	0.113	0.146	0.186	0.229
		cfm per foot	49	73	98	122	146	171	195	220	244
		Noise Criteria (NC)	-	-	12	19	24	28	32	36	39
		Throw, Side Wall	4-8-15	8-12-23	10-15-28	13-19-32	15-23-35	18-27-38	21-28-40	23-30-43	26-32-45
0.185	5	Total Pressure	0.009	0.02	0.035	0.056	0.08	0.109	0.142	0.179	0.222
		cfm per foot	63	94	125	157	188	220	251	282	314
		Noise Criteria (NC)	-	-	13	19	25	29	33	36	39
		Throw, Side Wall	4-9-17	9-13-26	11-17-32	14-22-36	17-26-39	20-30-43	23-32-46	26-34-48	29-36-51
0.228	6	Total Pressure	0.009	0.02	0.035	0.056	0.08	0.109	0.142	0.18	0.222
		cfm per foot	78	116	155	194	233	272	310	349	388
		Noise Criteria (NC)	-	-	14	20	26	30	34	37	40
		Throw, Side Wall	4-10-19	10-14-29	13-19-36	16-24-40	19-29-44	22-34-47	26-36-51	29-38-54	32-40-57

CT-541 / ¼" THICK BARS / 15° DEFLECTION / ½" SPACING WIDTH

Effective Area, Square Feet	Nominal Duct Width, Inches										
0.048	2	Total Pressure	0.011	0.025	0.043	0.069	0.098	0.136	0.176	0.221	0.277
		cfm per foot	19	28	37	47	56	66	75	84	94
		Noise Criteria (NC)	-	-	12	19	25	30	33	37	40
		Throw, Side Wall	3-5-10	5-8-15	7-10-18	8-13-20	10-15-2	12-17-23	14-18-25	15-19-26	16-20-28
0.068	2½	Total Pressure	0.011	0.024	0.043	0.067	0.097	0.132	0.173	0.219	0.27
		cfm per foot	26	39	52	65	78	91	104	117	130
		Noise Criteria (NC)	-	-	14	21	26	31	35	38	41
		Throw, Side Wall	3-6-12	6-9-18	8-12-21	10-15-23	12-1-25	14-19-27	16-21-29	18-22-31	19-23-33
0.088	3	Total Pressure	0.011	0.024	0.042	0.067	0.097	0.13	0.171	0.214	0.266
		cfm per foot	33	50	66	83	100	116	133	149	166
		Noise Criteria (NC)	-	-	15	22	27	32	36	39	42
		Throw, Side Wall	3-7-13	7-10-20	9-13-23	11-17-26	13-20-29	15-22-31	18-23-33	20-25-35	21-26-37
0.108	3½	Total Pressure	0.011	0.024	0.043	0.067	0.096	0.132	0.172	0.219	0.269
		cfm per foot	41	61	82	102	122	143	163	184	204
		Noise Criteria (NC)	-	-	16	23	28	33	37	40	43
		Throw, Side Wall	4-7-15	7-11-22	10-15-26	12-18-29	15-22-32	17-24-34	20-26-37	22-28-39	24-29-41
0.128	4	Total Pressure	0.011	0.025	0.044	0.069	0.099	0.135	0.176	0.224	0.276
		cfm per foot	49	73	98	122	146	171	195	220	244
		Noise Criteria (NC)	-	-	17	24	29	34	38	41	44
		Throw, Side Wall	4-8-16	8-12-24	11-16-28	13-20-32	16-24-35	19-27-38	22-28-40	24-30-43	26-32-45
0.168	5	Total Pressure	0.011	0.024	0.042	0.067	0.096	0.131	0.171	0.215	0.267
		cfm per foot	63	94	125	157	188	220	251	282	314
		Noise Criteria (NC)	-	-	18	25	30	35	39	42	45
		Throw, Side Wall	4-9-18	9-14-27	12-18-32	15-23-36	18-27-39	21-30-43	24-32-46	27-34-48	29-36-51
0.208	6	Total Pressure	0.011	0.024	0.043	0.067	0.096	0.131	0.171	0.216	0.267
		cfm per foot	78	116	155	194	233	272	310	349	388
		Noise Criteria (NC)	-	-	19	26	31	36	40	43	46
		Throw, Side Wall	5-10-20	10-15-30	13-20-36	17-25-40	20-30-44	24-34-47	27-36-51	30-38-54	33-40-57

Performance notes appear at end of performance data

CT-PP-0 / 7/32" THICK BARS / 0° DEFLECTION / 7/16" SPACING WIDTH

Effective Area, Square Feet	Nominal Duct Width, Inches										
0.050	2	Total Pressure	0.013	0.03	0.053	0.084	0.12	0.164	0.214	0.271	0.334
		cfm per foot	20	30	40	50	60	70	80	90	100
		Noise Criteria (NC)	-	-	-	14	19	23	27	30	33
		Throw, Side Wall	3-5-11	5-8-16	7-11-18	9-13-20	11-16-22	12-17-24	14-18-26	16-19-27	17-20-29
0.072	2½	Total Pressure	0.013	0.03	0.053	0.084	0.12	0.164	0.214	0.271	0.334
		cfm per foot	28	42	56	70	84	98	112	126	140
		Noise Criteria (NC)	-	-	-	15	20	25	29	32	35
		Throw, Side Wall	3-6-12	6-9-19	8-12-22	10-15-24	12-19-26	14-20-28	16-22-30	19-23-32	20-24-34
0.094	3	Total Pressure	0.015	0.034	0.06	0.093	0.134	0.182	0.238	0.302	0.372
		cfm per foot	38	57	76	95	114	133	152	171	190
		Noise Criteria (NC)	-	-	12	18	23	27	31	35	38
		Throw, Side Wall	4-7-15	7-11-22	10-15-25	12-18-8	15-22-31	17-23-33	20-25-35	22-27-38	23-28-40
0.115	3½	Total Pressure	0.015	0.033	0.058	0.091	0.132	0.179	0.234	0.296	0.365
		cfm per foot	46	69	92	115	138	161	184	207	230
		Noise Criteria (NC)	-	-	12	19	24	28	32	35	38
		Throw, Side Wall	4-8-16	8-12-24	11-16-28	13-20-31	16-24-34	19-26-37	21-28-39	24-29-41	25-31-44
0.137	4	Total Pressure	0.014	0.032	0.058	0.09	0.13	0.177	0.231	0.292	0.36
		cfm per foot	54	81	108	135	162	189	216	243	270
		Noise Criteria (NC)	-	-	13	19	24	29	32	36	39
		Throw, Side Wall	4-9-17	9-13-26	12-17-30	14-22-33	17-26-37	20-28-40	23-30-42	26-32-45	27-33-47
0.180	5	Total Pressure	0.015	0.033	0.058	0.091	0.13	0.176	0.23	0.291	0.358
		cfm per foot	72	107	142	177	212	247	282	317	352
		Noise Criteria (NC)	-	-	14	20	26	30	34	37	40
		Throw, Side Wall	5-10-20	10-15-30	13-20-34	16-25-38	20-30-42	23-32-45	26-34-48	29-36-51	31-38-54
0.224	6	Total Pressure	0.011	0.028	0.054	0.088	0.131	0.182	0.241	0.309	0.385
		cfm per foot	75	122	169	216	263	310	357	404	451
		Noise Criteria (NC)	-	-	14	21	27	31	35	39	42
		Throw, Side Wall	4-9-19	10-15-31	14-21-37	18-27-42	22-33-47	26-36-51	30-38-54	33-41-58	35-43-61

CT-PP-3 / 7/32" THICK BARS / 30° DEFLECTION / 7/16" SPACING WIDTH

Effective Area, Square Feet	Nominal Duct Width, Inches										
0.048	2	Total Pressure	0.012	0.028	0.051	0.08	0.116	0.159	0.209	0.265	0.328
		cfm per foot	19	29	39	49	59	69	79	89	99
		Noise Criteria (NC)	-	-	16	22	28	32	36	39	43
		Throw, Side Wall	3-5-10	5-8-15	7-10-18	9-13-20	11-16-22	12-17-24	14-18-26	16-19-27	17-20-29
0.066	2½	Total Pressure	0.012	0.026	0.046	0.072	0.104	0.141	0.184	0.233	0.288
		cfm per foot	26	39	52	65	78	91	104	117	130
		Noise Criteria (NC)	-	-	16	22	27	32	36	39	42
		Throw, Side Wall	3-6-12	6-9-18	8-12-21	10-15-23	12-18-25	14-19-27	16-21-29	18-22-31	19-23-33
0.084	3	Total Pressure	0.011	0.026	0.046	0.073	0.105	0.144	0.188	0.238	0.295
		cfm per foot	33	50	67	84	101	118	135	152	169
		Noise Criteria (NC)	-	-	17	23	29	33	37	40	43
		Throw, Side Wall	3-7-13	7-10-20	9-14-24	11-17-26	14-20-29	16-22-31	18-24-33	20-25-35	22-26-37
0.102	3½	Total Pressure	0.011	0.025	0.044	0.069	0.099	0.135	0.177	0.224	0.276
		cfm per foot	40	60	80	100	120	140	160	180	200
		Noise Criteria (NC)	-	-	17	23	29	33	37	40	43
		Throw, Side Wall	4-7-15	7-11-22	10-15-26	12-19-29	15-22-32	17-24-34	20-26-36	22-27-39	23-29-41
0.120	4	Total Pressure	0.012	0.027	0.048	0.076	0.11	0.15	0.196	0.248	0.307
		cfm per foot	49	74	99	124	149	174	199	224	249
		Noise Criteria (NC)	-	-	19	25	31	35	39	42	45
		Throw, Side Wall	4-8-17	8-13-25	11-17-29	14-21-32	17-25-35	20-27-38	23-29-41	25-30-43	26-32-45
0.156	5	Total Pressure	0.011	0.026	0.047	0.073	0.106	0.144	0.188	0.238	0.294
		cfm per foot	63	95	127	159	191	223	255	287	319
		Noise Criteria (NC)	-	11	19	26	31	36	40	43	46
		Throw, Side Wall	5-9-19	9-14-28	13-19-32	16-24-36	19-28-40	22-30-43	25-32-46	28-34-49	30-36-51
0.192	6	Total Pressure	0.011	0.025	0.045	0.071	0.102	0.139	0.182	0.231	0.285
		cfm per foot	76	115	154	193	232	271	310	349	388
		Noise Criteria (NC)	-	11	20	26	32	36	40	43	46
		Throw, Side Wall	5-10-21	10-16-31	14-21-36	17-26-40	21-31-44	24-34-47	28-36-51	31-38-54	33-40-57

Performance notes appear at end of performance data

- All pressures are in inches of water
- Throw velocities are given for terminal velocities of 150, 100 and 50 fpm. For an explanation of catalog throw data, see the Engineering Guidelines section.
- Throw values are based on an active section 4 feet long
- Multipliers for correcting the throw for other lengths are shown in the table below

Throw Correction for Length (multiply)

Active Length (ft)	2	4	8	10
Throw Correction	0.72	1	1.5	1.7

Note: Throw values based on applications with surface effect. Use the multiplier of 0.7 for free jet applications

- NC values are based on a room absorption of 10 dB, re 10⁻¹² watts, with a 4-foot active diffuser section. Corrections for other lengths are shown in the table below.

NC Correction for Length (add)

Active Length (ft)	2	4	6	8	10
NC Correction	-3	0	2	3	5

- When the diffuser is used as a return intake, the NC value is increased by 4, and the negative static pressure is 0.8 times the listed total pressure
- Dash (–) in space denotes an NC value less than 10
- For continuous lengths, the selection for NC is usually based on a 10-foot section
- These products have been tested per ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet and supply plenums, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- Maximum available width 24 inches except frames 5 and 6 (12" width). Consult your Titus representative for performance data.
- For continuous lengths it is recommended that maximum active lengths are no longer than 10 feet

Linear Louver Diffusers

diffusers

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LL-1 / LL-2

- Titus architectural linear louver diffusers combine crisply sculptured styling, careful workmanship, and effective air distribution
- Designed for both heating and cooling applications, supply as well as return
- Excellent performance in variable air volume systems. Ceiling mounted diffusers maintain a uniform, horizontal discharge pattern over widely varying flow rates.
- Available in both one-way and two-way discharge patterns
- Choice of three different frame types, all with removable cores
- Accessories such as directional blades, dampers, blank-offs, and mitered corners make these diffusers even more versatile
- Ideal for continuous length applications. Multiple sections are shipped with required alignment strips or pins for field installation.



LL-1



LL-2



metric sizes

MODELS:

LL-1 / 1-Way Pattern / Fixed Louvers
LL-2 / 2-Way Pattern / Fixed Louvers

FINISHES:

Standard Finish - #26 White
Optional Finishes - #01 Aluminum, #04 Mill, #25 Off White, #84 Black
Anodized finishes available

OVERVIEW

Architectural / Adjustable / Aluminum

Titus architectural linear louver diffusers combine crisply sculptured styling, careful workmanship, and effective air distribution. They offer excellent performance in variable air volume systems. Ceiling mounted diffusers maintain a uniform, horizontal discharge pattern over widely varying flow rates.

ADDITIONAL FEATURES

- Maximum one piece section is 6 feet. Lengths greater than 6 feet are furnished in multiple sections.
- Material is extruded aluminum



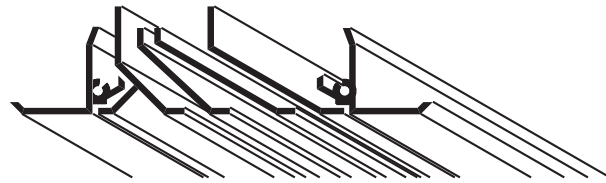
See website for Specifications



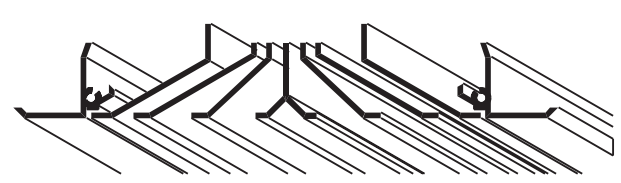
Rendering of the LL-1 installed along the perimeter of an office building

CHOICE OF FLOW PATTERN

LL-1 - One-Way Pattern

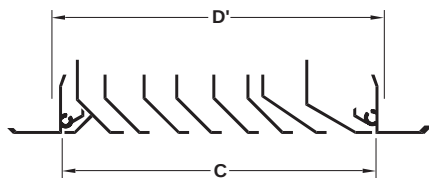


LL-2 - Two-Way Pattern



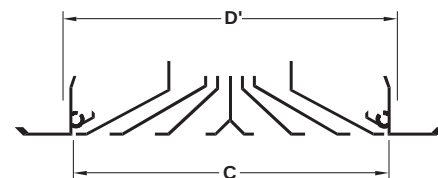
AVAILABLE WIDTHS

LL-1 - One-Way Pattern



Nominal Duct Width	3½, 4¼, 5, 5¾, 6½, 8, 9½, 11¾
Actual Duct Width D'	3⅝, 4⅜, 5⅛, 5⅞, 6⅝, 8⅛, 9⅝, 11⅞
Face Width C	3⅜, 4⅞, 4⅞, 5⅝, 6⅝, 7⅞, 9⅝, 11⅝

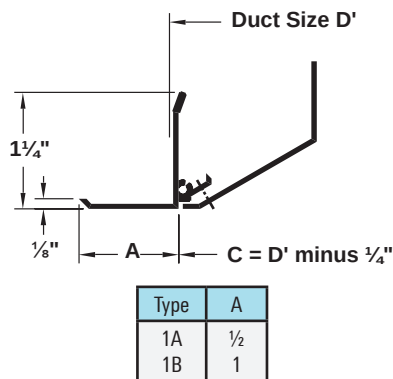
LL-2 - Two-Way Pattern



Nominal Duct Width	6¼, 7¾, 9¼, 10¾, 12¼
Actual Duct Width D'	6⅜, 7⅞, 9⅞, 10⅞, 12⅞
Face Width C	6⅞, 7⅞, 9⅞, 10⅞, 12⅞

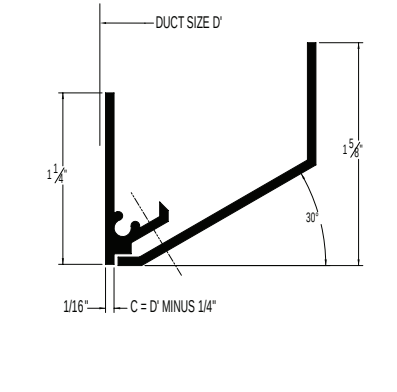
Frame Types 1A & 1B

- Surface Flange, Duct Mount



Frame Type 2

- No Flange, Duct Mount



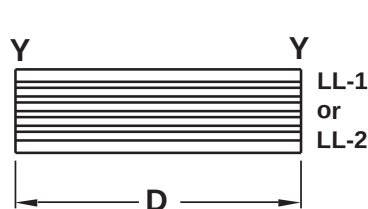
END FABRICATION

X-X End Borders

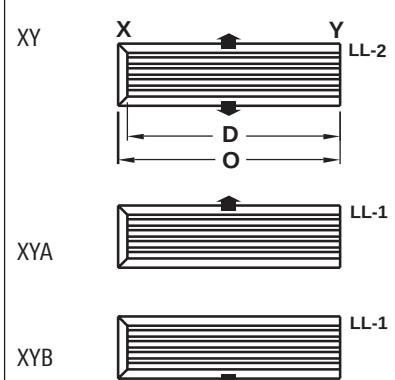


Frame	O
1A	D + ¾
1B	D + 1¼
Frame	O
2	D - ⅛

Y-Y End Borders



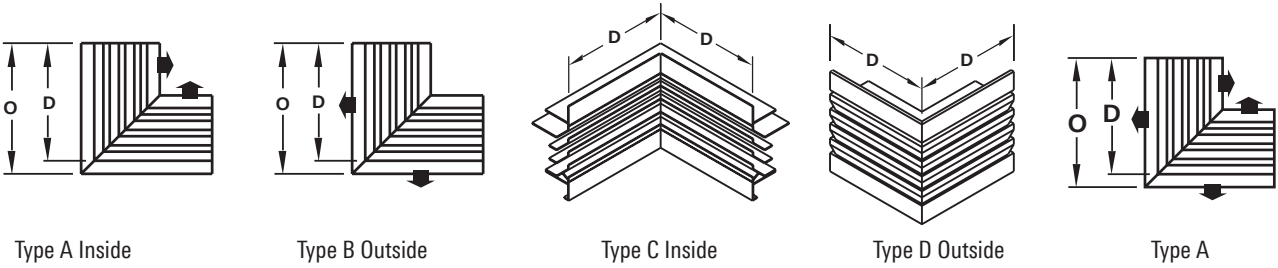
X-Y End Borders



Frame	O	Frame	O
1A	D + ¾	2	D - ⅛
1B	D + ⅞		

All dimensions are in inches

Mitered Corners



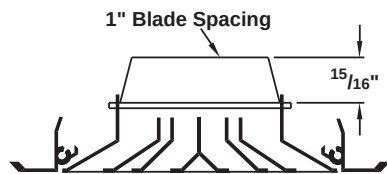
MODEL MC-1 / ONE-WAY

Frame Type	Corner Types A & B				Corner Types C & D			
	Width		Width		Width		Width	
	3½ – 5¾		6½ – 11¾		3½ – 5¾		6¼ – 11¾	
	D	O	D	O	D	O	D	O
1A	12	12 ³ / ₈	24	24 ³ / ₈	12	12	24	24
1B	12	12 ³ / ₄	24	24 ³ / ₄	12	12	24	24
2	12	11 ¹⁵ / ₁₆	24	23 ¹⁵ / ₁₆	12	12	24	24

MODEL MC-2 / TWO-WAY

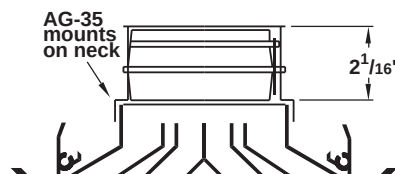
Frame Type	Corner Type A	
	Width	
	6¼ – 12¼	
	D	O
1A	24	24 ³ / ₈
1B	24	24 ³ / ₄
2	24	23 ¹⁵ / ₁₆

Model 07 Directional Blades



Model 07 is integral part of diffuser.

Model AG-35



Opposed Blade Damper. AG-35 will not mount on Model 07 Directional Blades.

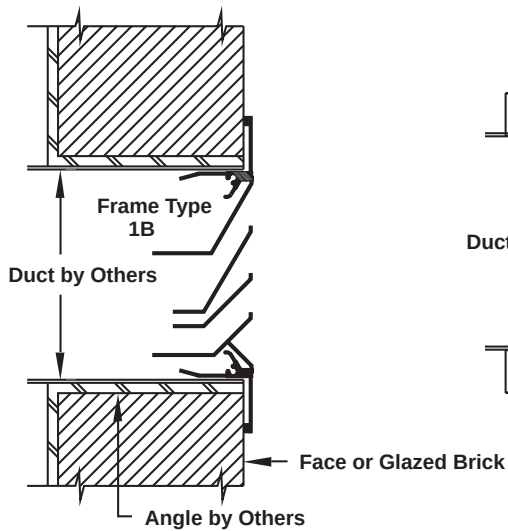
Model LL BLK - Blank-Off



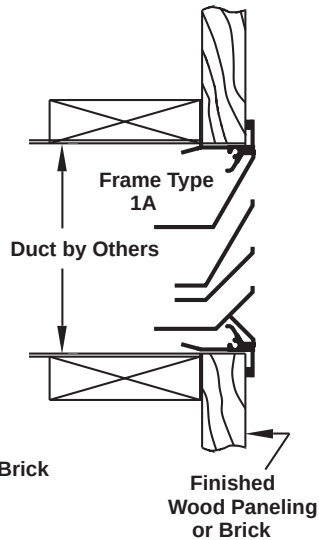
For all widths of Model LL diffusers. Furnished in 6-foot lengths for field cutting and installation. Steel, painted flat black.

Side Wall

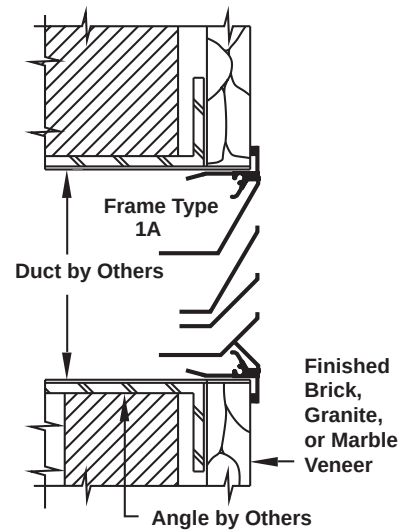
A1 Side Wall



A2 Side Wall

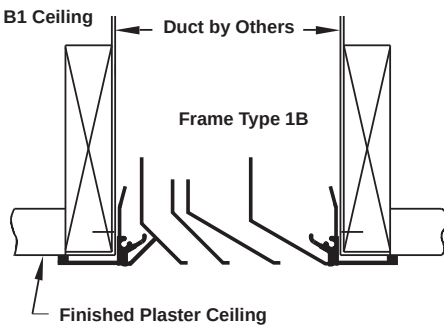


A3 Side Wall

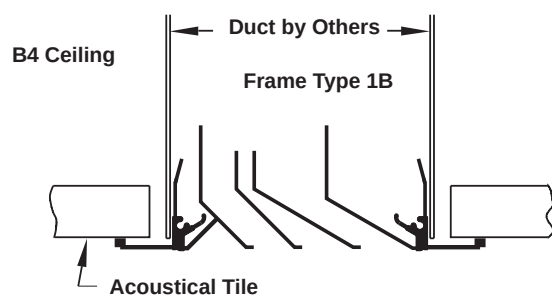


Ceiling

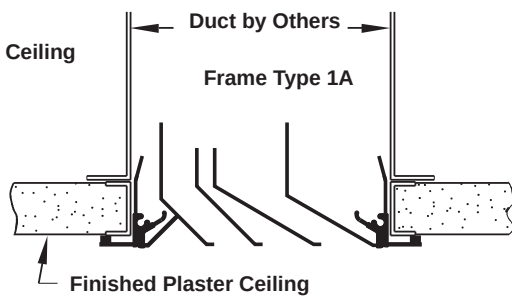
B1 Ceiling



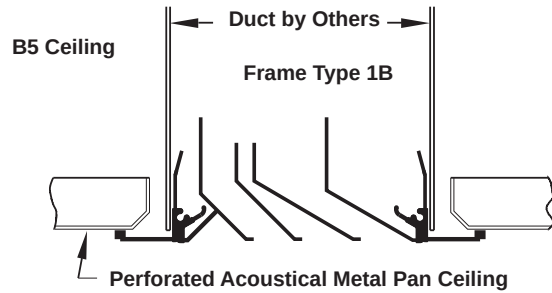
B4 Ceiling



B3 Ceiling



B5 Ceiling



Note: Remove shipping clip before installation

LL-1 / ONE-WAY BLOW PATTERN

Effective Area, Square Feet*	Nominal Duct Width, Inches										
0.043	3½	Total Pressure	0.003	0.008	0.014	0.022	0.032	0.043	0.057	0.071	0.089
		cfm per foot	21	32	42	53	64	74	85	95	106
		NC (Noise Criteria)	-	14	21	27	31	35	38	41	44
		Throw, Ceiling	6-9-14	9-12-18	11-14-20	13-16-23	14-18-25	15-19-27	17-20-29	18-21-30	18-23-32
		Feet, Side Wall	4-6-12	6-9-16	8-12-19	10-15-21	12-16-23	14-18-25	15-19-27	16-20-28	17-21-30
0.072	4¼	Total Pressure	0.005	0.012	0.021	0.032	0.046	0.062	0.082	0.104	0.127
		cfm per foot	30	46	61	76	91	106	122	137	152
		NC (Noise Criteria)	-	17	24	29	34	38	41	44	47
		Throw, Ceiling	6-9-17	10-14-21	13-17-24	16-19-27	17-21-30	18-23-32	20-24-34	21-26-36	22-27-38
		Feet, Side Wall	4-7-13	7-10-20	9-13-22	11-17-25	13-19-27	16-21-30	18-22-32	19-24-34	20-25-35
0.106	5	Total Pressure	0.006	0.015	0.026	0.040	0.057	0.079	0.103	0.129	0.159
		cfm per foot	40	61	81	101	121	142	162	182	202
		NC (Noise Criteria)	-	18	25	30	35	39	42	45	48
		Throw, Ceiling	7-10-20	10-16-24	14-20-28	17-22-31	20-24-34	21-26-37	23-28-40	24-30-42	26-31-44
		Feet, Side Wall	4-7-15	7-11-22	10-15-26	12-18-29	15-22-32	17-24-34	20-26-37	22-27-39	24-29-41
0.136	5¾	Total Pressure	0.008	0.019	0.033	0.052	0.074	0.101	0.133	0.168	0.207
		cfm per foot	52	79	105	131	157	183	210	236	262
		NC (Noise Criteria)	-	20	27	32	37	41	44	47	50
		Throw, Ceiling	8-12-22	12-18-28	16-23-32	20-25-36	23-28-39	24-30-42	26-32-45	28-34-48	29-36-50
		Feet, Side Wall	4-8-17	8-13-25	11-17-29	14-21-33	17-25-36	20-28-39	22-29-42	25-31-44	27-33-47
0.169	6½	Total Pressure	0.010	0.023	0.041	0.065	0.093	0.127	0.166	0.219	0.259
		cfm per foot	67	100	133	167	200	234	267	307	334
		NC (Noise Criteria)	11	21	28	34	39	42	46	49	52
		Throw, Ceiling	9-14-25	14-20-31	18-25-36	23-28-40	25-31-44	27-34-48	29-36-51	31-39-55	33-40-57
		Feet, Side Wall	5-10-19	10-14-29	13-19-33	16-24-37	19-29-41	22-31-44	26-33-47	29-36-50	30-37-53
0.231	8	Total Pressure	0.013	0.028	0.050	0.079	0.109	0.155	0.196	0.262	0.309
		cfm per foot	90	135	180	225	265	315	355	410	445
		NC (Noise Criteria)	11	21	29	34	39	43	46	50	52
		Throw, Ceiling	10-16-30	16-24-36	21-30-42	26-33-47	29-36-51	32-39-55	34-41-59	36-45-63	38-46-66
		Feet, Side Wall	6-11-22	11-17-33	15-22-39	18-28-43	22-33-47	26-36-51	29-38-54	34-41-58	35-43-61
0.296	9½	Total Pressure	0.014	0.032	0.058	0.092	0.134	0.184	0.231	0.296	0.368
		cfm per foot	115	170	230	290	350	410	460	520	580
		NC (Noise Criteria)	11	21	29	35	39	43	46	49	52
		Throw, Ceiling	12-18-33	17-26-41	24-33-47	30-37-53	34-41-58	36-45-63	39-47-67	41-50-71	43-53-75
		Feet, Side Wall	6-13-25	12-18-37	17-25-44	21-32-49	25-38-54	30-41-58	33-44-62	38-46-66	40-49-69
0.389	11¾	Total Pressure	0.019	0.040	0.072	0.116	0.160	0.219	0.344	0.375	0.440
		cfm per foot	160	235	315	400	470	550	690	720	780
		NC (Noise Criteria)	12	22	29	35	39	43	49	50	52
		Throw, Ceiling	14-22-39	21-32-48	28-39-55	36-44-62	39-48-67	42-52-73	47-58-82	48-59-83	50-61-87
		Feet, Side Wall	8-15-30	15-22-44	20-30-51	25-38-58	30-44-62	35-48-67	44-53-76	45-55-77	46-57-80

LL-2 / TWO-WAY BLOW PATTERN

Effective Area, Square Feet*	Nominal Duct Width, Inches										
0.101	6¼	Total Pressure	0.005	0.012	0.021	0.033	0.047	0.064	0.084	0.105	0.131
		cfm per foot	41	62	82	103	124	144	165	185	206
		NC (Noise Criteria)	-	18	25	31	35	39	42	45	48
		Throw, Ceiling	5-8-14	8-12-17	10-14-19	12-15-22	14-17-24	15-18-25	16-19-27	17-20-29	18-22-30
0.157	7¾	Total Pressure	0.008	0.018	0.031	0.049	0.070	0.095	0.125	0.158	0.195
		cfm per foot	62	94	125	156	187	218	250	281	312
		NC (Noise Criteria)	-	21	28	33	38	42	45	48	51
		Throw, Ceiling	6-9-17	9-14-21	13-17-24	15-19-26	17-21-29	18-22-31	19-24-34	21-25-36	22-26-37
0.213	9¼	Total Pressure	0.010	0.022	0.040	0.062	0.089	0.053	0.159	0.201	0.248
		cfm per foot	84	126	168	210	252	194	336	378	420
		NC (Noise Criteria)	12	22	29	35	39	43	46	49	52
		Throw, Ceiling	7-11-19	11-16-24	15-19-27	18-22-31	19-24-34	17-21-30	22-27-39	24-29-41	25-31-43
0.269	10¾	Total Pressure	0.012	0.027	0.048	0.074	0.107	0.146	0.190	0.241	0.297
		cfm per foot	107	160	214	267	320	374	427	481	534
		NC (Noise Criteria)	13	23	30	35	40	44	47	50	52
		Throw, Ceiling	8-12-22	12-19-27	17-22-31	20-25-35	22-27-38	24-29-41	25-31-44	27-33-47	28-35-49
0.325	12¼	Total Pressure	0.014	0.031	0.055	0.086	0.125	0.169	0.221	0.270	0.345
		cfm per foot	131	197	262	328	394	459	525	580	656
		NC (Noise Criteria)	13	23	30	36	40	44	47	50	53
		Throw, Ceiling	9-14-24	14-21-30	18-24-34	22-27-38	24-30-42	26-32-45	28-34-49	29-36-51	31-38-54

- All pressures are in inches of water
- Throw velocities are given for isothermal terminal velocities of 150, 100 and 50 fpm. For an explanation of data, see the Engineering Guidelines section.
- Throw values are based on an active section 4 feet long. Multipliers for correcting the throw for other lengths are shown in the following table
- NC values are based on a room absorption of 10 dB, re 10⁻¹² watts, with a 4-foot active diffuser section. Corrections for other lengths are shown in the table below.
- When the diffuser is used as a return intake, the NC value is increased by 4, and the negative static pressure is 0.8 times the listed total pressure

Throw Correction for Length (multiply)

Active Length (ft)	2	4	8	10
Throw Correction	0.72	1	1.5	1.7

- Dash (-) in space denotes an NC value less than 10
- For continuous lengths, the selection for NC is usually based on a 10-foot section
- These products have been tested per ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- An asterisk (*) indicates effective free area per linear foot

NC Correction for Length (add)

Active Length (ft)	2	4	6	8	10
NC Correction	-3	0	2	3	5

Round Ceiling Diffusers

TMR / TMR-AA

- Models TMR and TMR-AA round ceiling diffusers are designed for cooling applications
- All sizes have three cones, giving a uniform appearance where different sizes are used in the same area
- Uniform 360° discharge pattern
- Excellent performance in variable air volume systems
- The two horizontal discharge settings allow the diffuser to be adjusted for two different flow rate conditions. At Position 1, maximum capacity is obtained. At Position 2, induction is increased.
- Adjustment achieved by removing the two inner cones as a unit and repositioning six screws
- Spring lock allows easy removal and replacement of the two inner cones



TMR / TMR-AA

MODELS:

TMR / Steel
TMR-AA / Aluminum

FINISHES:

Standard Finish - #26 White
Optional Finish - #01 Aluminum

OVERVIEW

Two Horizontal Discharge Patterns

Models TMR and TMR-AA round ceiling diffusers are designed for cooling applications. All sizes have three cones, giving a uniform appearance where different sizes are used in the same area. They deliver a uniform 360° discharge pattern and exhibit excellent performance in variable air volume systems.

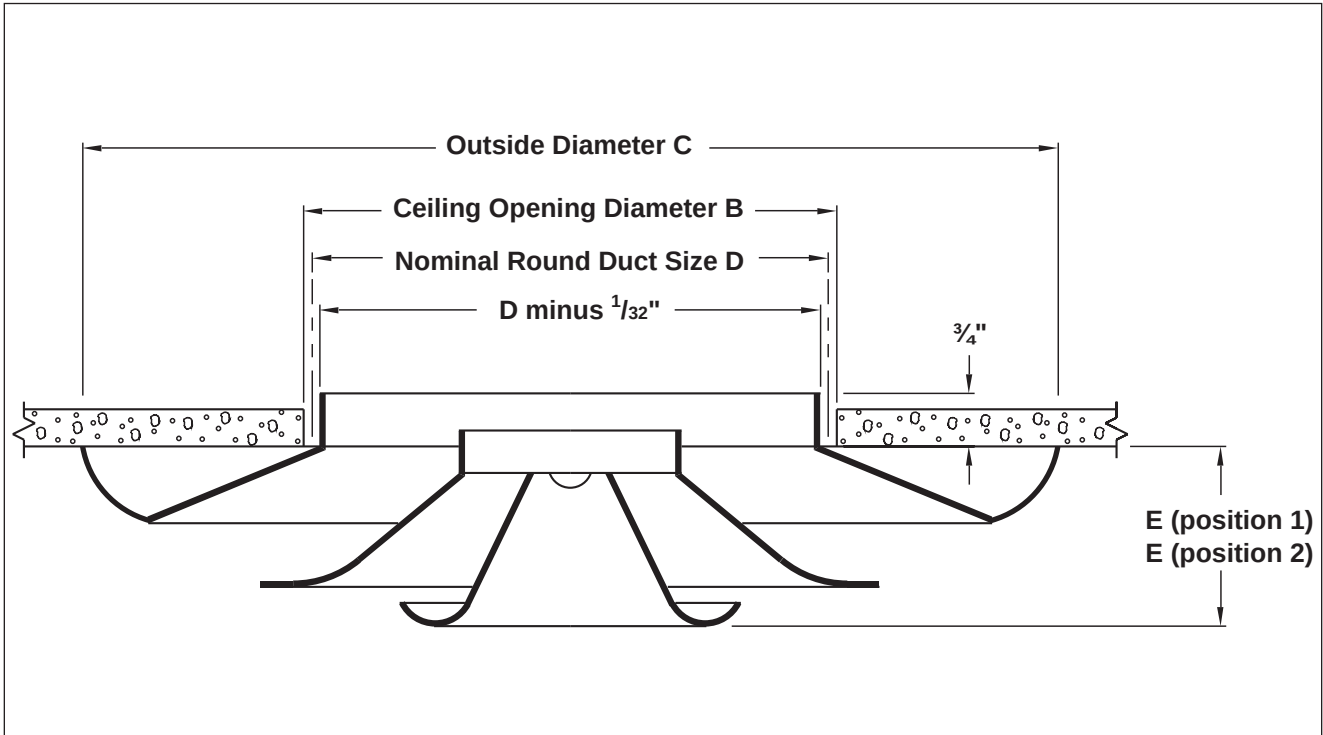
ADDITIONAL FEATURES

- Retainer cable provided to allow the inner core assembly to hang during maintenance of diffusers with a neck size of 12 inches or greater
- Material is steel (TMR) or aluminum (TMR-AA) with steel screws



See website for Specifications

TMR / TMR-AA UNIT DIMENSIONS



Note: Position 1 is with cones down. Position 2 is with cones up.

Nominal Round Duct Size D	B	C	E (Pos. 1)	E (Pos. 2)
6	6½	11⅞	1¾	1⅞
8	8½	14¾	2⅞	1½
10	10½	18¼	2⅞	2⅞
12	12½	22	3⅞	2⅞
14	14½	26	3⅞	2⅞
16	16½	29	4	3¼
18	18½	32½	4¾	3⅞
20 (Note)	20½	36	5⅞	4⅞
24 (Note)	24½	43¼	7¾	6⅞
30 (Note)	30½	53¾	8⅞	6⅞
36 (Note)	36½	64½	10⅞	8⅞

Note: Sizes 20 through 36 are available in steel only

TMR / TMR-AA

		Neck Velocity	400	500	600	700	800	900	1000	1200	1400
		Velocity Pressure	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.090	0.122
		Total Pressure, Pos. 1	0.029	0.045	0.065	0.089	0.116	0.146	0.181	0.260	0.354
		Total Pressure, Pos. 2	0.047	0.074	0.106	0.145	0.189	0.239	0.295	0.425	0.578
6" Dia.	Airflow, cfm	80	100	120	140	160	180	200	235	275	
	NC, Pos.1	-	-	-	14	19	23	26	32	37	
	NC, Pos.2	-	12	18	22	26	29	32	38	42	
	Throw feet, Pos. 1	2-2-5	2-3-6	2-4-7	3-4-8	3-5-8	4-6-9	4-6-9	5-7-10	6-7-11	
		Throw feet, Pos. 2	2-3-6	2-4-7	3-4-7	3-5-8	4-6-8	4-6-9	5-7-9	6-7-10	6-8-11
8" Dia.	Airflow, cfm	140	175	210	245	280	315	350	420	490	
	NC, Pos.1	-	-	12	17	21	25	28	34	39	
	NC, Pos.2	-	14	19	24	28	31	34	39	44	
	Throw feet, Pos. 1	2-3-7	3-4-8	3-5-9	4-6-10	4-7-11	5-7-11	5-8-12	7-9-13	8-10-14	
		Throw feet, Pos. 2	3-4-8	3-5-9	4-6-9	4-7-10	5-8-11	6-8-12	8-9-13	8-10-14	
10" Dia.	Airflow, cfm	218	273	327	382	436	491	545	654	763	
	NC, Pos.1	-	-	14	19	23	27	30	36	41	
	NC, Pos.2	-	15	20	25	29	32	35	41	45	
	Throw feet, Pos. 1	3-4-8	3-5-10	4-6-12	5-7-12	5-8-13	6-9-14	7-10-15	8-12-16	10-12-18	
		Throw feet, Pos. 2	3-5-9	4-6-11	5-7-12	5-8-13	6-9-14	7-10-14	8-11-15	9-12-17	10-13-18
12" Dia.	Airflow, cfm	315	390	470	550	630	705	785	940	1100	
	NC, Pos.1	-	-	16	20	25	29	32	38	43	
	NC, Pos.2	-	16	21	26	30	33	36	42	46	
	Throw feet, Pos. 1	3-5-10	4-6-12	5-7-14	6-9-15	7-10-16	7-11-17	8-12-18	10-14-20	11-15-21	
		Throw feet, Pos. 2	4-6-11	5-7-13	6-8-14	7-10-15	8-11-16	8-12-17	9-13-18	11-14-20	12-15-22
14" Dia.	Airflow, cfm	425	530	635	745	850	955	1060	1270	1490	
	NC, Pos.1	-	11	17	22	26	30	33	39	44	
	NC, Pos.2	11	17	22	27	31	34	37	42	47	
	Throw feet, Pos. 1	4-6-11	5-7-14	6-8-16	7-10-17	8-11-19	8-13-20	9-14-21	11-16-23	13-17-25	
		Throw feet, Pos. 2	4-7-13	5-8-15	7-10-16	8-11-18	9-13-19	10-14-20	11-15-21	13-16-23	14-18-25
16" Dia.	Airflow, cfm	560	700	840	980	1120	1260	1400	1680	1960	
	NC, Pos.1	-	12	18	23	27	31	34	40	45	
	NC, Pos.2	11	18	23	28	31	35	38	43	48	
	Throw feet, Pos. 1	4-7-13	5-8-16	7-10-18	8-11-20	9-13-21	10-15-23	11-16-24	13-18-26	15-20-28	
		Throw feet, Pos. 2	5-8-15	6-9-17	8-11-19	9-13-20	10-15-22	11-16-23	13-17-24	15-19-27	17-20-29
18" Dia.	Airflow, cfm	710	885	1060	1240	1420	1590	1770	2120	2480	
	NC, Pos.1	-	13	19	24	28	32	35	41	46	
	NC, Pos.2	12	18	24	28	32	36	39	44	48	
	Throw feet, Pos. 1	5-7-15	6-9-18	7-11-21	9-13-22	10-15-24	11-17-25	12-18-27	15-21-29	17-22-32	
		Throw feet, Pos. 2	6-8-17	7-11-19	8-13-21	10-15-23	11-17-25	13-18-26	14-19-27	17-21-30	19-23-32
20" Dia.	Airflow, cfm	875	1100	1310	1530	1750	1970	2190	2610	3060	
	NC, Pos.1	-	14	20	25	29	33	36	42	47	
	NC, Pos.2	13	19	24	29	33	36	39	45	49	
	Throw feet, Pos. 1	5-8-16	7-10-21	8-12-23	10-14-25	11-16-27	12-18-28	14-20-30	16-23-33	19-25-35	
		Throw feet, Pos. 2	6-9-19	8-12-22	9-14-24	11-16-25	13-19-27	14-20-29	16-22-30	19-24-33	21-25-36
24" Dia.	Airflow, cfm	1260	1570	1880	2200	2510	2820	3140	3770	4400	
	NC, Pos.1	-	16	22	27	31	35	38	44	49	
	NC, Pos.2	14	20	25	30	34	37	40	46	50	
	Throw feet, Pos. 1	7-10-20	8-12-24	10-15-28	11-17-30	13-20-32	15-22-34	16-24-36	20-28-39	23-30-42	
		Throw feet, Pos. 2	8-11-23	9-14-26	11-17-28	13-20-31	15-23-33	17-24-35	19-26-36	23-28-40	25-31-43
30" Dia.	Airflow, cfm	1960	2450	2940	3430	3920	4410	4900	5880	6860	
	NC, Pos.1	-	18	23	28	33	37	40	46	51	
	NC, Pos.2	15	21	27	31	35	38	41	47	51	
	Throw feet, Pos. 1	8-12-24	10-15-31	12-18-35	14-21-37	16-24-40	18-27-42	20-31-45	24-35-49	28-37-53	
		Throw feet, Pos. 2	9-14-28	12-18-32	14-21-35	16-25-38	19-28-41	21-31-43	23-32-46	28-35-50	31-38-54
36" Dia.	Airflow, cfm	2820	3520	4230	4930	5630	6340	7040	8450	9850	
	NC, Pos.1	12	19	25	30	34	38	41	47	52	
	NC, Pos.2	16	22	28	32	36	39	43	48	52	
	Throw feet, Pos. 1	10-15-29	12-18-37	15-22-41	17-26-45	19-29-48	22-33-51	24-37-53	29-41-59	34-45-63	
		Throw feet, Pos. 2	11-17-34	14-21-39	17-25-42	20-29-46	22-34-49	25-37-52	28-39-55	34-42-60	37-46-65

- All pressures given are in inches of water
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions
- To obtain static pressure, subtract the velocity pressure from the total pressure
- If the diffuser is mounted on an exposed duct, the throw values are 70% of those listed in the table and will project downward
- Each NC value represents the noise criteria curve which will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- Diffusers are shipped in Position 2 (cones down)
- Data obtained from tests conducted in accordance with ANSI / ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the section, Engineering Guidelines, for additional information.
- For an explanation of catalog throw data, see the Engineering Guidelines section of this catalog

TMRA / TMRA-AA

- Models TMRA and TMRA-AA adjustable round ceiling diffusers are designed for both heating and cooling applications
- All sizes have four cones, giving uniformity of appearance where different sizes are used in the same area
- Discharge pattern can be adjusted for horizontal flow by extending the cones or for vertical flow by retracting the cones
- Uniform 360° discharge pattern
- Excellent performance in variable air volume systems and open ceiling applications
- Type 1 with three fixed cone positions, is adjusted by removing the three inner cones as a unit and repositioning. Available in duct sizes 6" through 36" steel, 6" through 18" aluminum.
- Type 2 (steel only) is adjusted by sliding the three inner cones up or down. Available in duct sizes 6" through 12".
- Type 3 (steel only) is adjusted by rotating the center cone. Available in duct sizes 6" through 36".



TMRA / TMRA-AA



energy solutions



open ceiling

MODELS:

TMRA / Steel

TMRA-AA / Aluminum

FINISHES:

Standard Finish - #26 White

Optional Finish - #01 Aluminum

OVERVIEW

Vertical to Horizontal Discharge Patterns / Adjustable

The TMRA is an adjustable round ceiling diffuser designed for both heating and cooling applications. All sizes have four cones, giving uniformity of appearance where different sizes are used in the same area. It delivers a uniform 360° discharge pattern and exhibits excellent performance in variable air volume systems.

ADDITIONAL FEATURES

- Optional Type B outer cone reduces ceiling smudging. Also useful where the plenum height or the space for the ceiling openings is limited. Available for diffusers with duct sizes 6" through 24" for steel diffusers, 6" through 18" for aluminum diffusers.
- Spring lock allows easy removal and replacement of the three inner cones



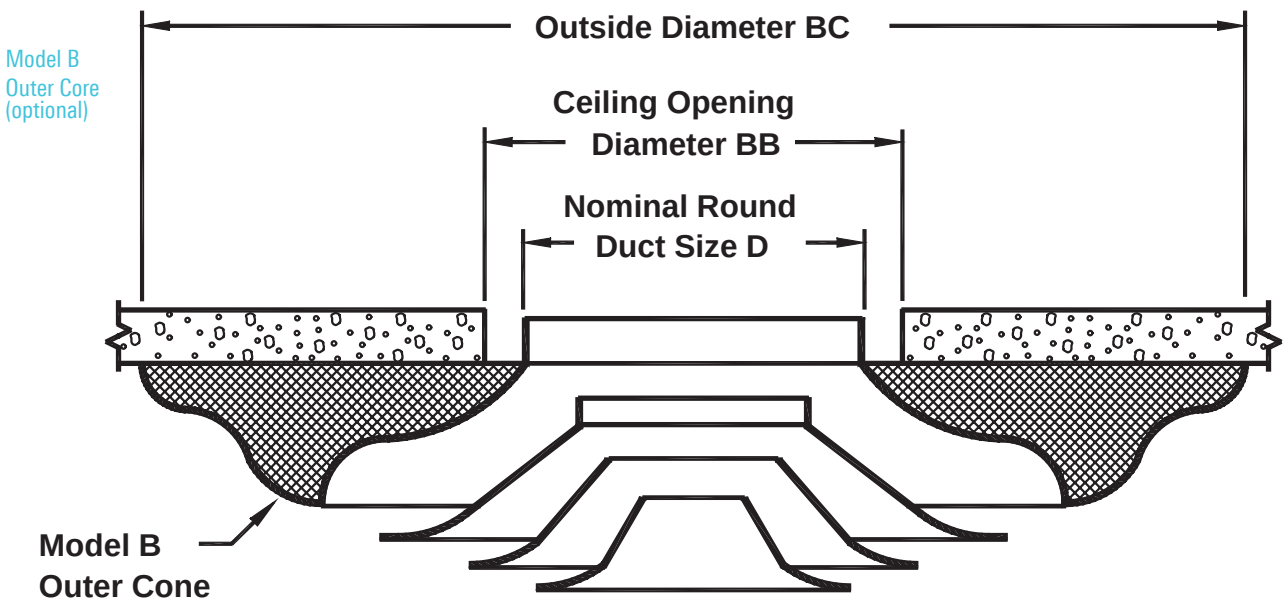
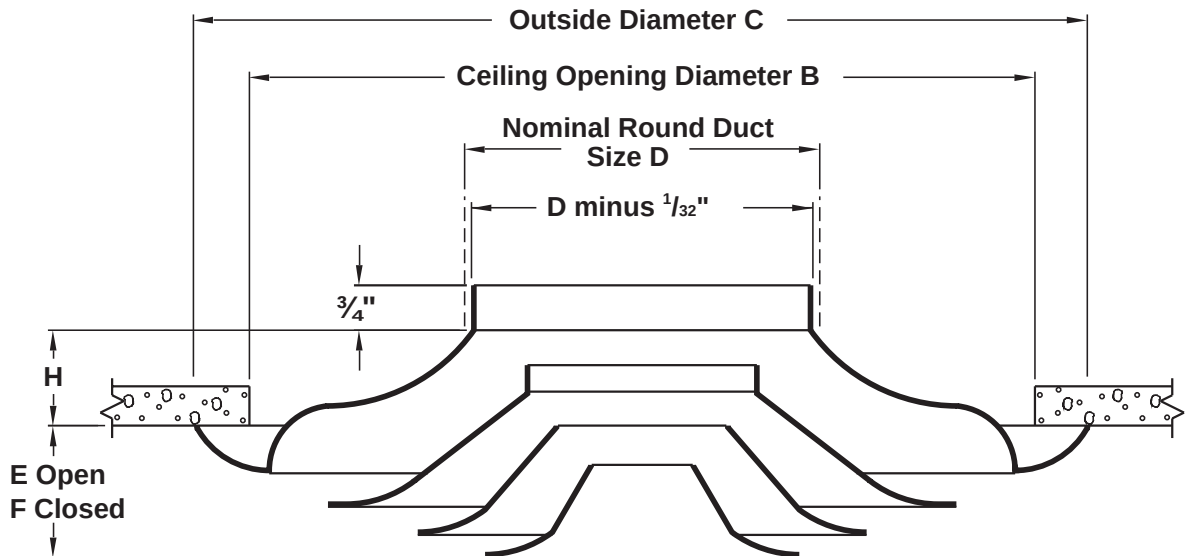
See website for Specifications



TMRA-AA installed in an office environment

- Retainer cable provided to allow the inner core assembly to hang during maintenance of diffusers with a neck size of 12 inches or greater
- Material is steel or aluminum with steel components

TMRA / TMRA-AA UNIT DIMENSIONS



Nominal Round Duct Size D	B	C	E	F	H	P ¹	Type B Cone	
							BB	BC
6	12	13½	1⅞	1⅞	1⅞	-	7	17¾
8	16	18	1⅞	1⅞	2⅞	-	9	23¾
10	20	22½	2¼	1⅞	2⅞	-	11	29
12	24	27	2⅞	1¼	3¼	-	13	34⅞
14	28	31½	3⅞	1⅞	3¼	2½	15	40⅞
16	32	36	3⅞	1⅞	4¼	2⅞	17	46¾
18	36	40½	3¼	1½	4⅞	2¾	19	51⅞
20 ²	40	45½	4⅞	1⅞	5⅞	3½	21	56¼
24 ²	48	54½	4⅞	1⅞	6½	3⅞	25	67
30 ²	60	67½	5⅞	1⅞	8	3⅞	NA	NA
36 ²	60	67½	5⅞	1⅞	8	4⅞	NA	NA

Note 1: The adjusting shaft will project above the diffuser neck on sizes 14 through 36 of TMRA models with Type 3 Rotating Adjustment. The maximum projection is the same as Dimension P. Neck-mounted dampers are not compatible when in a heating configuration.

Note 2: Sizes 20 through 36 are available in steel only

TMRA / TMRA-AA

	Neck Velocity	400	500	600	700	800	900	1000	1200	1400
	Velocity Pressure	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.090	0.122
	Total Pressure, Hor.	0.021	0.033	0.047	0.064	0.084	0.106	0.131	0.189	0.257
	Total Pressure, Vert.	0.027	0.043	0.061	0.083	0.109	0.138	0.170	0.245	0.334
6"	Airflow, cfm	80	100	120	140	160	180	200	235	275
	NC, Horizontal	-	15	20	25	29	32	35	41	45
	Horizontal Throw Ft.	2-2-5	2-3-6	2-3-7	3-4-7	3-5-8	3-5-8	4-6-9	4-7-9	5-7-10
8"	Airflow, cfm	140	175	210	245	280	315	350	420	490
	NC, Horizontal	-	16	21	26	30	33	36	42	47
	Horizontal Throw Ft.	2-3-6	2-4-7	3-4-9	3-5-10	4-6-10	4-7-11	5-7-11	6-9-12	7-10-13
10"	Airflow, cfm	218	273	327	382	436	491	545	654	763
	NC, Horizontal	-	17	22	27	31	34	37	43	47
	Horizontal Throw Ft.	2-4-7	3-5-9	4-6-11	4-7-12	5-7-13	6-8-13	6-9-14	7-11-16	9-12-17
12"	Airflow, cfm	315	390	470	550	630	705	785	940	1100
	NC, Horizontal	11	17	23	27	31	35	38	43	48
	Horizontal Throw Ft.	3-4-9	4-6-11	4-7-13	5-8-14	6-9-15	7-10-16	7-11-17	9-13-19	10-14-20
14"	Airflow, cfm	425	530	635	745	850	955	1060	1270	1490
	NC, Horizontal	11	18	23	28	32	35	39	44	49
	Horizontal Throw Ft.	3-5-10	4-6-13	5-8-15	6-9-17	7-10-18	8-12-19	9-13-20	10-15-22	12-17-23
16"	Airflow, cfm	560	700	840	980	1120	1260	1400	1680	1960
	NC, Horizontal	12	18	24	28	32	36	39	45	49
	Horizontal Throw Ft.	4-6-12	5-7-15	6-9-18	7-10-19	8-12-20	9-13-22	10-15-23	12-18-25	14-19-27
18"	Airflow, cfm	710	885	1060	1240	1420	1590	1770	2120	2480
	NC, Horizontal	12	19	24	29	33	36	40	45	50
	Horizontal Throw Ft.	4-7-13	6-8-17	7-10-20	8-12-21	9-13-23	10-15-24	11-17-26	13-20-28	16-21-30
20"	Airflow, cfm	875	1100	1310	1530	1750	1970	2190	2610	3060
	NC, Horizontal	13	19	25	29	33	37	40	45	50
	Horizontal Throw Ft.	5-7-15	6-9-19	7-11-22	9-13-24	10-15-25	11-17-27	12-19-28	15-22-31	17-24-34
24"	Airflow, cfm	1260	1570	1880	2200	2510	2820	3140	3770	4400
	NC, Horizontal	13	20	25	30	34	38	41	46	51
	Horizontal Throw Ft.	6-9-18	7-11-22	9-13-26	10-16-29	12-18-30	13-20-32	15-22-34	18-26-37	21-29-40
30"	Airflow, cfm	1960	2450	2940	3430	3920	4410	4900	5880	6860
	NC, Horizontal	14	21	26	31	35	38	42	47	52
	Horizontal Throw Ft.	7-11-22	9-14-28	11-17-33	13-20-36	15-22-38	17-25-40	19-28-43	22-33-47	26-36-50
36"	Airflow, cfm	2820	3520	4230	4930	5630	6340	7040	8450	9850
	NC, Horizontal	15	22	27	32	36	39	42	48	52
	Horizontal Throw Ft.	9-13-27	11-17-33	13-20-40	16-23-43	18-27-46	20-30-48	22-33-51	27-40-56	31-43-60

Downward Projection of Heated Air, Ft.										
Neck Velocity	400	500	600	700	800	900	1000	1200	1400	
10° F Differential	6-6-3	8-8-6	10-12-11	13-15-16	15-19-24	17-23-28	19-25-33	21-32-42	25-38-52	
20° F Differential	4-4-2	6-7-5	7-8-7	9-11-11	10-14-16	12-16-20	13-18-24	15-17-30	17-25-36	
30° F Differential	3-3-2	5-5-4	6-7-6	7-9-9	9-11-13	10-13-16	11-15-19	13-18-25	14-20-30	
40° F Differential	3-2-2	4-4-3	5-6-6	7-8-9	8-10-12	9-12-15	10-13-17	11-16-22	12-18-27	

Note: The three neck velocity values used are for 6-, 12- and 24" diffusers respectively

- All pressures are given in inches of water
- Throw values are given for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions
- To obtain static pressure, subtract the velocity pressure from the total pressure
- If the diffuser is mounted on an exposed duct, the throw values are 70 percent of those listed in the table
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2nd through 7th, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- Add 1 NC for vertical setting
- Downward projection of heated air values represent the distance to a total air velocity of essentially zero
- Data obtained from tests conducted in accordance with ANSI / ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the section Engineering Guidelines of this catalog for additional information.
- For an explanation of catalog throw data, see the section, Engineering Guidelines

XC-310

- Model XC-310 heavy duty round ceiling diffusers are designed for both heating and cooling applications
- Uniform 360° discharge pattern
- Excellent performance in variable air volume applications
- Discharge pattern can be adjusted from full horizontal to full vertical. At the full vertical setting the diffuser forces the air in a long downward projection. The result is effective heating and spot cooling from high mounting locations.
- Especially suitable for factories, warehouses, convention halls, coliseums, shopping malls, and other applications where ceilings are high and conditions are variable



XC-310



factories



open ceiling



See website for Specifications

MODEL:

XC-310 / Steel / Ring Operated / Vertical to Horizontal Discharge Pattern

FINISH:

Standard Finish - #26 White

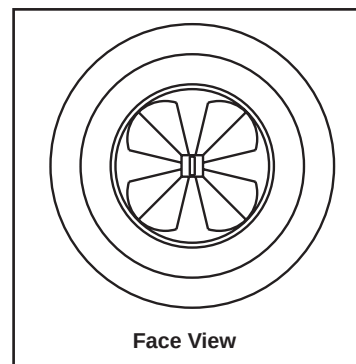
OVERVIEW

Adjustable Heavy Duty / Steel

Titus model XC-310 heavy duty round ceiling diffusers are especially suitable for factories, warehouses, convention halls, coliseums, shopping malls, and other applications where ceilings are high and conditions are variable.

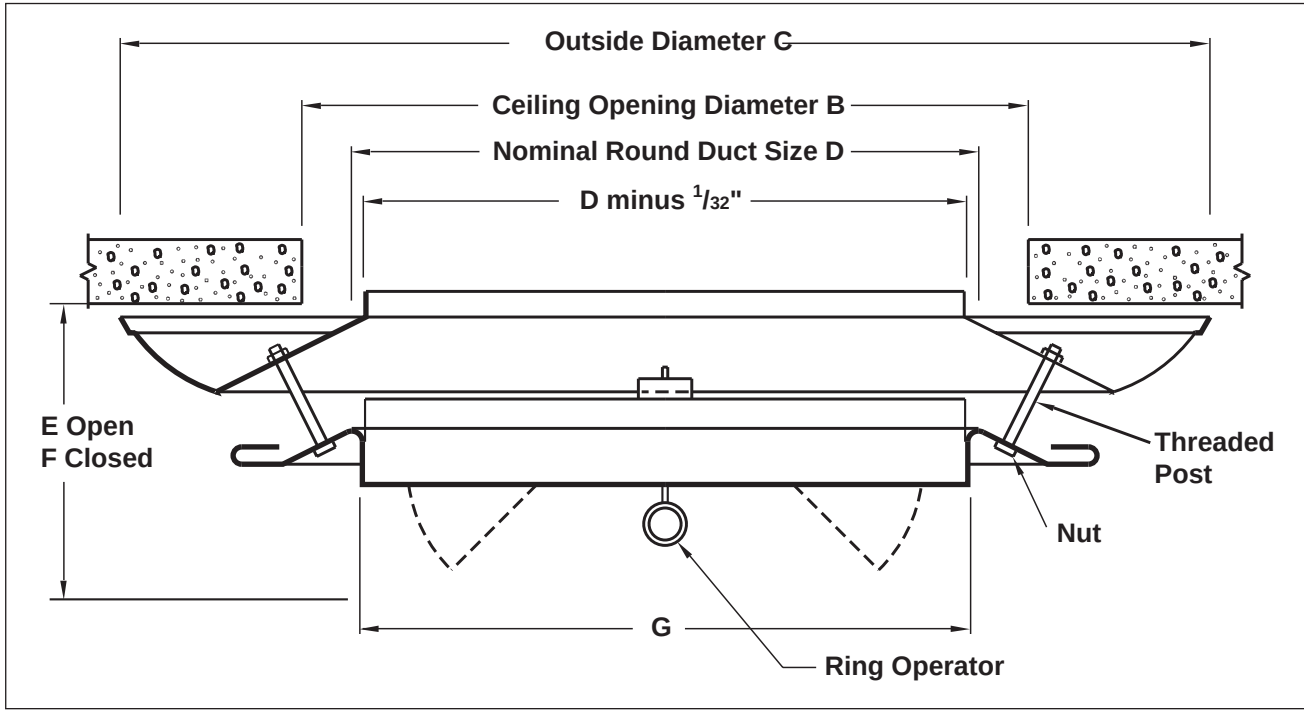
ADDITIONAL FEATURES

- Ring operator can be adjusted with a pole
- Outer cone is contoured to guard against ceiling smudging
- Optional damper is adjustable by removing the inner core of the diffuser
- Material is steel



Face View

XC-310 UNIT DIMENSIONS



Nominal Round Duct Size D	B	C	E	F	G
10	10½	18¼	7½	3	10
12	12½	22	9⅜	4	12
14	14½	26	6¾	4	14
16	16½	29	8½	5	16
18	18½	32½	9⅞	5	18
20	20½	36	10⅜	5½	20
24	24½	43¼	12¼	6⅝	24
30	30½	53⅝	13⅞	8¼	30
36	36½	64⅜	15⅝	10	36

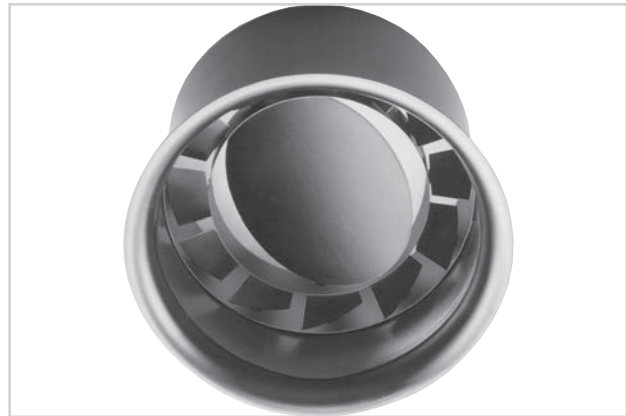
XC-310

10" Dia.	Neck Velocity	400	500	600	700	800	900	1000	1200	1400	1600
	Velocity Pressure	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.090	0.122	0.160
	Air Flow, cfm	220	270	330	380	435	490	545	655	765	870
	Total Pressure, H	0.021	0.033	0.047	0.064	0.083	0.105	0.130	0.187	0.255	0.333
	Total Pressure, V	0.012	0.019	0.027	0.037	0.048	0.061	0.076	0.109	0.148	0.194
	NC (Noise Criterion), H.	-	17	22	27	31	35	38	44	49	53
	NC (Noise Criterion), V.	-	14	19	24	28	32	35	41	46	50
	Throwfeet, H.	1-2-4	2-2-5	2-3-6	2-3-7	3-4-8	3-4-9	3-5-10	4-6-12	4-7-13	5-8-15
	Throw feet, V, 20F Cool Delta-T, 50 fpm	16	20	24	28	32	36	40	48	56	63
	Throw feet, V, 40F Heat Delta-T, 50 fpm	5	7	8	9	11	12	13	16	19	21
12" Dia.	Air Flow, cfm	315	390	470	550	630	705	785	940	1100	1255
	Total Pressure, H	0.021	0.032	0.046	0.063	0.083	0.104	0.129	0.186	0.253	0.330
	Total Pressure, V	0.012	0.019	0.028	0.038	0.050	0.063	0.078	0.113	0.153	0.200
	NC (Noise Criterion), H.	11	18	23	28	32	36	39	45	50	54
	NC (Noise Criterion), V.	-	15	20	25	29	33	36	42	47	51
	Throwfeet, H.	2-2-5	2-3-6	2-3-7	3-4-8	3-5-9	3-5-10	4-6-12	5-7-14	5-8-16	6-9-18
	Throw feet, V, 20F Cool Delta-T, 50 fpm	14	20	24	28	33	36	41	49	57	65
	Throw feet, V, 40F Heat Delta-T, 50 fpm	4	6	8	9	11	12	14	16	19	22
	Air Flow, cfm	425	530	635	745	850	955	1060	1270	1490	1695
	Total Pressure, H	0.020	0.032	0.046	0.063	0.082	0.103	0.128	0.184	0.250	0.327
14" Dia.	Total Pressure, V	0.012	0.018	0.028	0.038	0.050	0.063	0.078	0.113	0.153	0.200
	NC (Noise Criterion), H.	12	19	24	29	33	37	40	46	51	55
	NC (Noise Criterion), V.	-	16	21	26	30	34	37	43	48	52
	Throwfeet, H.	2-3-5	2-3-7	3-4-8	3-5-9	4-5-11	4-6-12	4-7-13	5-8-16	6-9-19	7-11-21
	Throw feet, V, 20F Cool Delta-T, 50 fpm	13	20	26	31	35	39	44	52	61	70
	Throw feet, V, 40F Heat Delta-T, 50 fpm	4	6	8	10	12	13	15	17	20	23
	Air Flow, cfm	560	700	840	980	1120	1260	1400	1680	1960	2240
	Total Pressure, H	0.012	0.018	0.026	0.035	0.046	0.058	0.072	0.103	0.140	0.183
	Total Pressure, V	0.020	0.032	0.046	0.062	0.080	0.102	0.128	0.180	0.245	0.318
	NC (Noise Criterion), H.	12	19	25	30	34	38	41	44	52	56
16" Dia.	NC (Noise Criterion), V.	-	16	22	27	31	35	38	41	49	53
	Throwfeet, H.	2-3-5	3-4-8	3-5-9	4-5-11	4-6-12	5-7-14	5-8-15	6-8-17	7-11-22	8-12-25
	Throw feet, V, 20F Cool Delta-T, 50 fpm	13	20	29	34	38	43	48	58	67	77
	Throw feet, V, 40F Heat Delta-T, 50 fpm	4	6	9	11	13	14	16	18	22	26
	Air Flow, cfm	710	885	1060	1240	1420	1590	1770	2120	2480	2830
	Total Pressure, H	0.020	0.031	0.045	0.061	0.079	0.101	0.124	0.179	0.243	0.318
	Total Pressure, V	0.011	0.017	0.028	0.038	0.050	0.063	0.078	0.113	0.153	0.200
	NC (Noise Criterion), H.	13	20	26	31	35	38	42	47	52	56
	NC (Noise Criterion), V.	-	17	23	28	32	35	39	44	49	53
	Throwfeet, H.	2-3-7	3-4-9	3-5-10	4-6-12	5-7-14	5-8-16	6-9-17	7-10-21	8-12-24	9-14-28
18" Dia.	Throw feet, V, 20F Cool Delta-T, 50 fpm	14	21	30	37	42	47	53	63	74	84
	Throw feet, V, 40F Heat Delta-T, 50 fpm	4	6	9	12	14	16	18	21	25	28
	Air Flow, cfm	875	1100	1310	1530	1750	1970	2190	2610	3060	3500
	Total Pressure, H	0.020	0.031	0.044	0.060	0.078	0.099	0.122	0.176	0.239	0.312
	Total Pressure, V	0.010	0.016	0.028	0.038	0.050	0.063	0.078	0.113	0.153	0.200
	NC (Noise Criterion), H.	14	21	26	31	35	39	42	48	53	57
	NC (Noise Criterion), V.	11	18	23	28	32	36	39	45	50	54
	Throwfeet, H.	3-4-8	3-5-10	4-6-12	4-7-13	5-8-15	6-9-17	6-10-19	8-11-23	9-13-27	10-15-31
	Throw feet, V, 20F Cool Delta-T, 50 fpm	14	23	32	40	46	52	57	68	80	92
	Throw feet, V, 40F Heat Delta-T, 50 fpm	4	7	9	13	15	17	19	23	27	31
20" Dia.	Air Flow, cfm	1260	1570	1880	2200	2510	2820	3140	3770	4400	5020
	Total Pressure, H	0.019	0.029	0.042	0.057	0.075	0.095	0.117	0.169	0.230	0.300
	Total Pressure, V	0.010	0.014	0.028	0.038	0.050	0.063	0.078	0.113	0.153	0.200
	NC (Noise Criterion), H.	15	22	27	32	36	40	43	49	54	58
	NC (Noise Criterion), V.	12	19	24	29	33	37	40	46	51	55
	Throwfeet, H.	3-5-9	4-6-12	5-7-14	5-8-16	6-9-18	7-10-21	8-12-23	9-14-28	11-16-32	12-18-37
	Throw feet, V, 20F Cool Delta-T, 50 fpm	16	25	35	47	54	60	67	81	94	107
	Throw feet, V, 40F Heat Delta-T, 50 fpm	5	7	10	14	18	20	22	27	31	36
	Air Flow, cfm	1963	2454	2945	3436	3927	4418	4909	5890	6872	7854
	Total Pressure, H	0.017	0.027	0.039	0.053	0.069	0.088	0.108	0.156	0.213	0.278
24" Dia.	Total Pressure, V	0.009	0.014	0.020	0.027	0.036	0.045	0.056	0.081	0.110	0.144
	NC (Noise Criterion), H.	16	23	29	34	38	41	45	50	55	59
	NC (Noise Criterion), V.	13	20	26	31	35	38	42	47	52	56
	Throwfeet, H.	4-6-12	5-7-14	6-9-17	7-10-20	8-12-23	9-13-26	10-14-29	12-17-35	13-20-40	15-23-46
	Throw feet, V, 20F Cool Delta-T, 50 fpm	19	29	42	57	66	74	82	99	115	132
	Throw feet, V, 40F Heat Delta-T, 50 fpm	2	3	5	7	9	11	14	20	25	28
	Air Flow, cfm	2827	3534	4241	4948	5655	6362	7069	8482	9896	11310
	Total Pressure, H	0.016	0.024	0.035	0.048	0.063	0.079	0.098	0.141	0.191	0.250
	Total Pressure, V	0.007	0.012	0.017	0.023	0.030	0.038	0.046	0.067	0.091	0.119
	NC (Noise Criterion), H.	17	24	30	35	39	42	46	51	56	60
36" Dia.	NC (Noise Criterion), V.	14	21	27	32	36	39	43	48	53	57
	Throwfeet, H.	5-7-14	6-9-17	7-10-21	8-12-24	9-14-28	10-16-31	12-17-35	14-21-41	16-24-48	18-28-55
	Throw feet, V, 20F Cool Delta-T, 50 fpm	22	34	49	67	78	88	98	117	137	156
	Throw feet, V, 40F Heat Delta-T, 50 fpm	1	2	3	4	5	6	8	11	15	20

- All pressures are in inches of water
- Radius of diffusion values are given for a terminal velocity of 50 fpm with a 20°F cooling temperature differential
- Vertical projection values are given for a terminal velocity of 50 fpm. Minimum projections are for a 40°F heating temperature differential, while maximum projections are for a 20°F cooling differential.
- NC values are based on a room absorption of 10 dB, re 10⁻¹² watts. Values shown are for the horizontal discharge pattern (center closed). For the vertical pattern (center open), subtract three.
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.

V-1

- Model V-1 round ceiling diffusers are designed for both heating and cooling applications
- Vortex generators spin the air in a spiral pattern. This creates a Coanda effect, forcing the air to adhere to the curved border and spread evenly across the ceiling.
- Uniform 360° discharge pattern
- Excellent performance in variable air volume applications
- Especially suitable for foyers, waiting rooms and other areas with recessed lighting fixtures. Complements black light and down light fixtures.
- Adjusted from horizontal to vertical discharge vortex by opening the blank-off plate in the center



V-1



recessed lighting

MODEL:

V-1 / Vortex Diffuser

FINISH:

Standard Finish - #84 Black

OVERVIEW

Adjustable Vortex / Steel

Vortex generators spin the air in a spiral pattern. This creates a Coanda effect, forcing the air to adhere to the curved border and spread evenly across the ceiling. These diffusers are especially suitable for foyers, waiting rooms and other areas with recessed lighting fixtures.

ADDITIONAL FEATURES

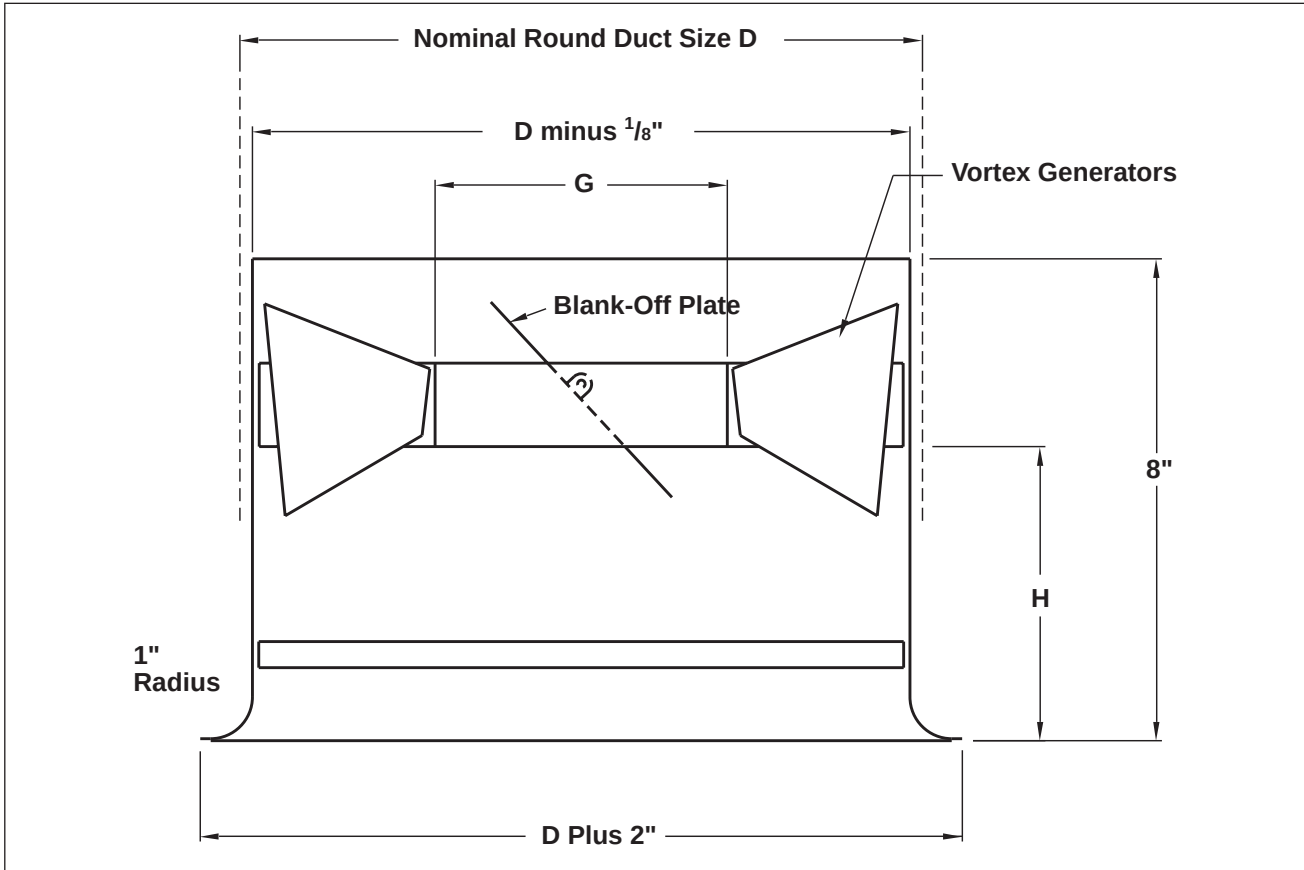
- Optional damper is adjusted through the diffuser face. Access for adjustment is gained by opening the blank-off plate.
- Material is steel



See website for Specifications

DIMENSIONS

V-1 UNIT DIMENSIONS



Nominal Round Duct Size D	G	H
6	3 ⁷ / ₈	3 ⁷ / ₈
8	5 ¹ / ₈	3 ⁷ / ₈
10	6 ³ / ₁₆	3 ⁷ / ₈
12	8 ⁷ / ₁₆	4 ⁷ / ₈
14	9 ⁷ / ₁₆	4 ⁷ / ₈
16	10 ⁷ / ₁₆	4 ⁷ / ₈
18	12 ⁷ / ₁₆	4 ⁷ / ₈

V-1

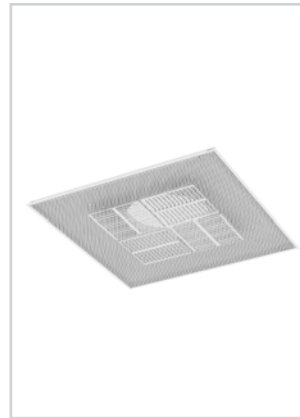
6" Dia.	Airflow, cfm	50	75	87	100	115	125	137	150
	Total Press.	0.07	0.14	0.19	0.25	0.33	0.39	0.47	0.56
	Rad. of Diff.	1-1-1	1-1-2	1-2-2	1-2-3	1-2-3	2-2-4	2-3-4	2-3-5
	NC	—	19	23	27	30	34	37	39
8" Dia.	Airflow, cfm	125	150	175	200	225	250	275	300
	Total Press.	0.12	0.18	0.23	0.3	0.38	0.47	0.55	0.66
	Rad. of Diff.	1-2-3	2-2-4	2-3-4	2-3-5	2-3-6	2-4-6	3-4-7	3-5-8
	NC	20	25	29	32	35	39	42	44
10" Dia.	Airflow, cfm	150	175	200	225	250	275	300	325
	Total Press.	0.15	0.2	0.26	0.33	0.4	0.48	0.56	0.65
	Rad. of Diff.	1-2-3	2-2-4	2-3-4	2-3-5	2-4-6	2-4-6	3-4-7	3-5-8
	NC	21	25	28	32	35	38	40	42
12" Dia.	Airflow, cfm	225	250	275	300	325	350	375	400
	Total Press.	0.18	0.23	0.27	0.32	0.38	0.45	0.5	0.57
	Rad. of Diff.	2-3-4	2-3-5	2-3-6	2-4-6	3-4-7	3-4-7	3-5-8	3-5-8
	NC	26	29	32	35	37	39	41	43
14" Dia.	Airflow, cfm	250	300	350	400	450	500	550	600
	Total Press.	0.11	0.15	0.2	0.26	0.34	0.41	0.5	0.6
	Rad. of Diff.	2-3-5	2-3-6	2-4-7	3-5-8	3-5-9	3-6-10	4-6-11	4-7-12
	NC	23	29	33	27	41	44	47	49
16" Dia.	Airflow, cfm	400	450	500	550	600	650	700	750
	Total Press.	0.18	0.22	0.29	0.35	0.41	0.48	0.56	0.64
	Rad. of Diff.	2-4-7	3-4-7	3-5-8	3-5-9	4-6-10	4-6-11	4-7-12	4-7-13
	NC	30	33	36	39	42	44	46	49
18" Dia.	Airflow, cfm	500	550	600	650	700	750	800	850
	Total Press.	0.22	0.27	0.32	0.37	0.44	0.5	0.57	0.64
	Rad. of Diff.	3-4-8	3-5-9	3-5-9	3-6-10	4-6-11	4-7-12	4-7-13	4-8-14
	NC	31	34	37	39	41	43	45	47

- All pressures are in inches of water
- Radius of diffusion values (feet) are given for terminal velocities of 150, 100 and 50 fpm
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- NC (noise criteria) values are based on a room absorption of 10 dB, re 10⁻¹² watts

Perforated Ceiling Diffusers

PAS / PAR / PDS / PDR

- Titus perforated ceiling diffusers are designed for both heating and cooling applications
- Excellent performance in variable air volume systems
- A tight, uniform, horizontal blanket of air protects the ceiling against smudging
- Return models have the same face and border construction as the supply models, for harmonious appearance in the room
- Discharge pattern (supply models) can be adjusted to vertical as well as to 1-, 2-, 3- or 4-way horizontal. Can be adjusted before or after installation.
- Discharge pattern is easily adjusted by unlatching and dropping the perforated face, then rotating the pattern controllers
- Dropping the perforated face also gives access to the optional damper



PAS



PAR



metric sizes

MODELS:

Steel Models:

PAS / Supply / Flush Face

PAR / Return / Flush Face

PDS / Supply / Drop Face

PDR / Return / Drop Face

Aluminum Models:

PAS-AA / Supply / Flush Face

PAR-AA / Return / Flush Face

FINISH:

Standard Finish - #26 White

OVERVIEW

1-, 2-, 3-, or 4-Way Discharge Pattern

Perforated ceiling diffusers are typically selected to meet architectural demands for air outlets that blend into the ceiling plane. Titus perforated diffusers can be selected for a round pattern to maximize capacity or star pattern to maximize throw.

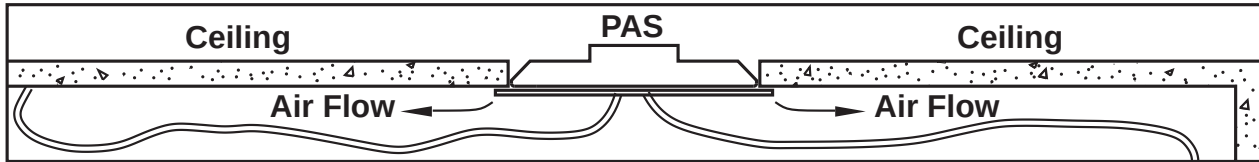
ADDITIONAL FEATURES

- Perforated face has $\frac{3}{16}$ " diameter holes on $\frac{1}{4}$ " staggered centers
- Inlet collar (neck) has ample depth for easy duct connection
- Material is heavy gauge steel backpan; steel or aluminum perforated face according to the model selected
- Optional factory-installed R-6 foil-backed insulation available for 24 x 24" full face models, neck sizes 6-16, borders 1, 2, 3 and 4



See website for Specifications

TYPICAL DISCHARGE PATTERN - ELEVATION



Nominal Duct Size D	Face or Ceiling Module Size					
	12x12	24x12	16x16	20x20	24x24	48x24
6 x 6	•	•	•	•	•	•
8 x 8			•	•	•	•
10 x 10	□			•	•	•
12 x 12					•	•
14 x 14			□			
15 x 15					•	•
18 x 6		•				
18 x 18				□	□	
22 x 10		□				
22 x 22					□	
46 x 22						□
6" Dia.	•	•	•	•	•	•
8" Dia.			•	•	•	•
10" Dia.			•	•	•	•
12" Dia.				•	•	•
14" Dia.				•	•	•
16" Dia.					•	•

• Available in supply models and return models

□ Available in return models only

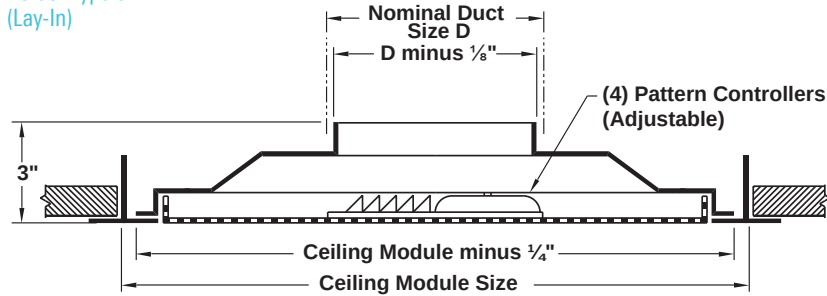
•/□ Shaded areas indicate sizes available with aluminum face

DIMENSIONS

diffusers

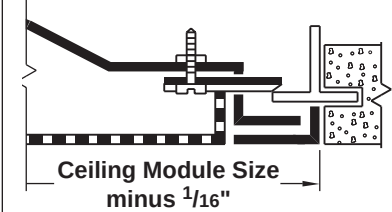
MODELS PAS / PAS-AA / SUPPLY

Border Type 3
(Lay-In)

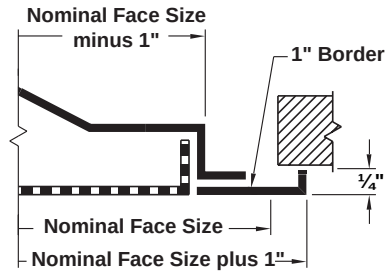


Border Type 4SL
(Spline Side Lock)

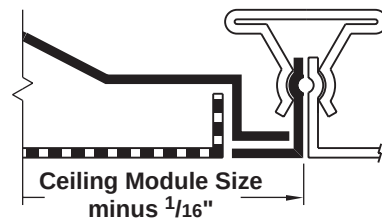
Note: 4SL can be installed after ceiling tiles are in place



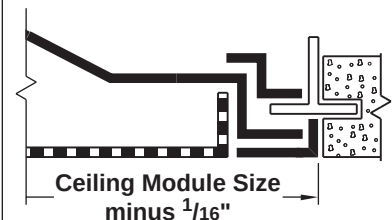
Border Type 1
(Surface Mount)



Border Type 2
(Snap-In)

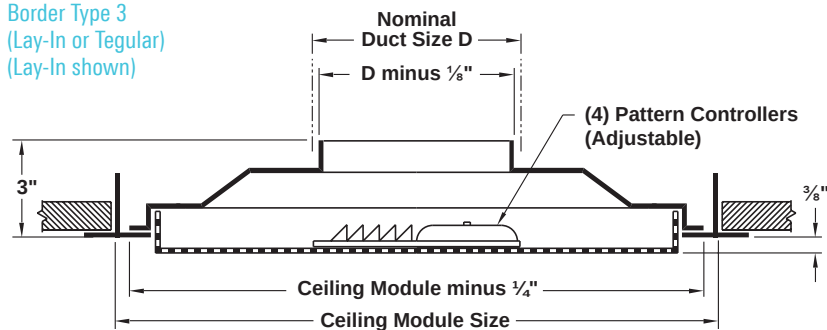


Border Type 4
(Spline)



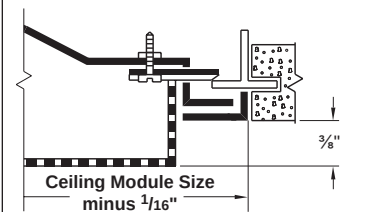
MODEL PDS - SUPPLY

Border Type 3
(Lay-In or Tegal)
(Lay-In shown)

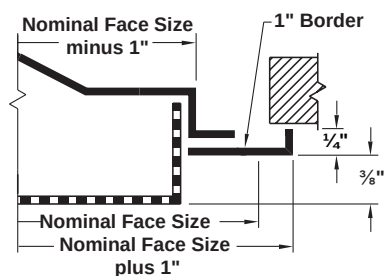


Border Type 4SL
(Spline Side Lock)

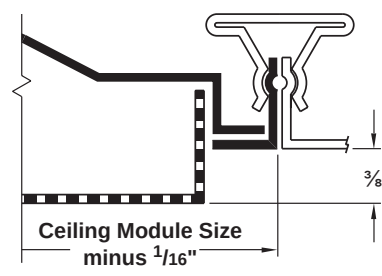
Note: 4SL can be installed after ceiling tiles are in place.



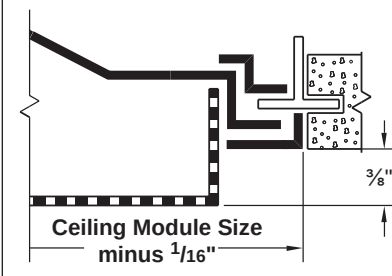
Border Type 1
(Surface Mount)



Border Type 2
(Snap-In)



Border Type 4
(Spline)





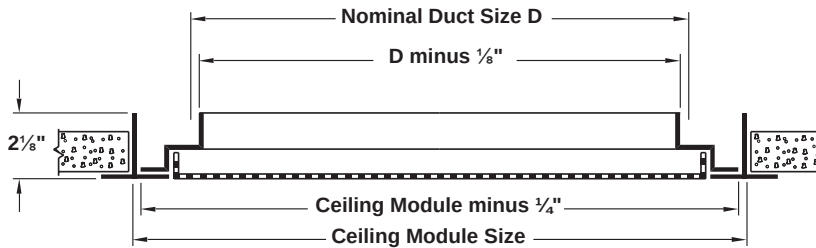
OPTIONAL MOLDED INSULATION BLANKET

Insulation is R-6 where blanket has the most depth. One" clearance on each side of neck is left for insulated duct connection. 24 x 24" module size only. Blanket is factory installed.

MODELS PAR, PAR-AA - RETURN

Border Type 3

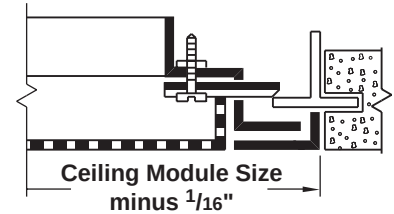
(Lay-In when duct size = module size - 2)



Border Type 4SL

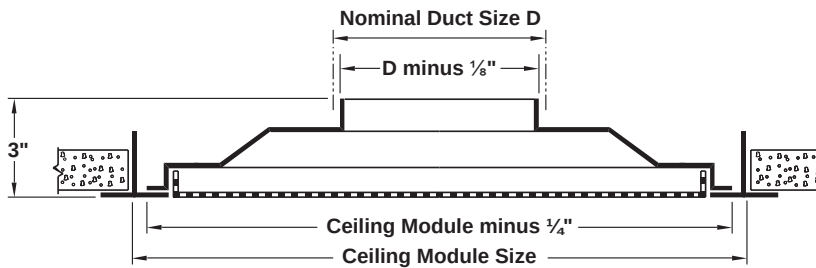
(Spline Side Lock)

Note: 4SL can be installed after ceiling tiles are in place



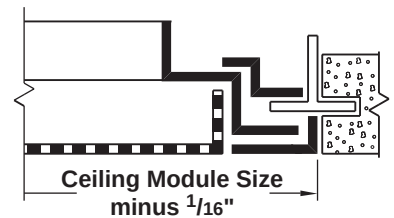
Border Type 3

(Lay-In for other standard duct sizes)



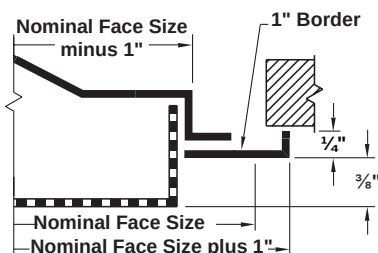
Border Type 4

(Spline)



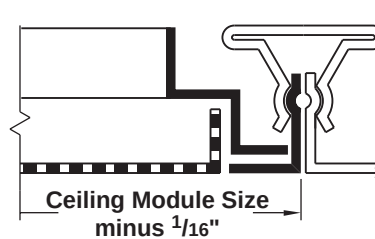
Border Type 1

(Surface Mount)



Border Type 2

(Snap-In)

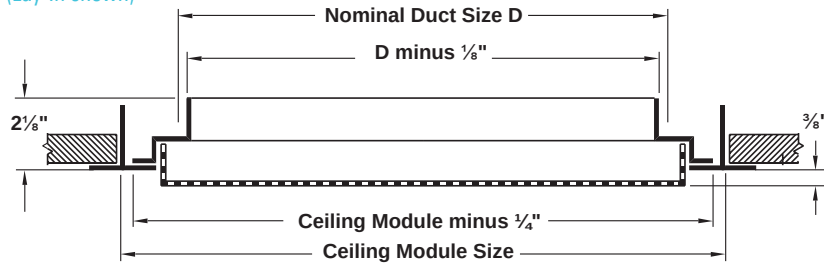


DIMENSIONS

diffusers

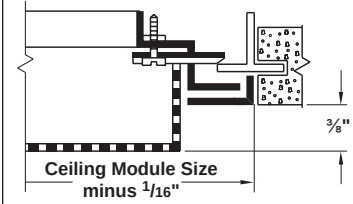
MODEL PDR - RETURN

Border Type 3
(Lay-In or Tegular when duct size = module size - 2)
(Lay-In shown)

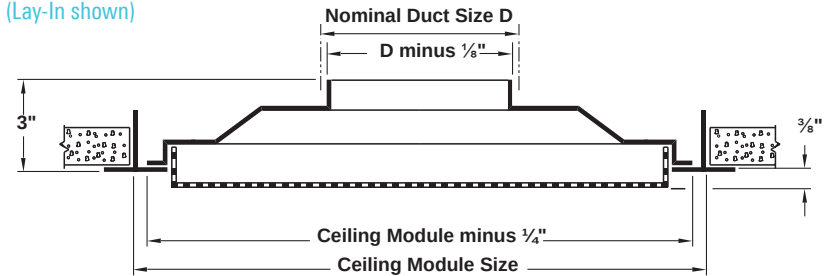


Border Type 4SL
(Spline Side Lock)

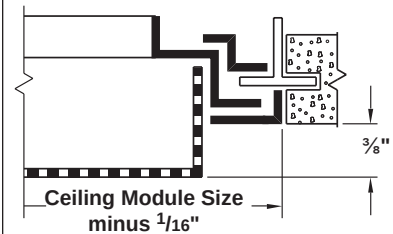
Note: 4SL can be installed after ceiling tiles are in place



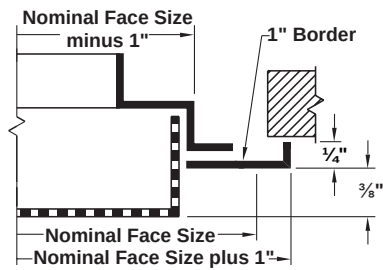
Border Type 3
(Lay-In or Tegular for other standard duct sizes)
(Lay-In shown)



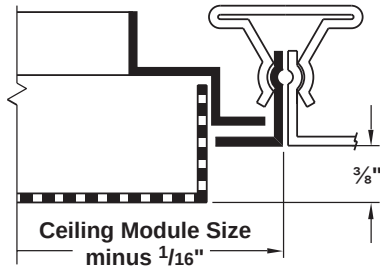
Border Type 4
(Spline)



Border Type 1
(Surface Mount)



Border Type 2
(Snap-In)



PAS FLUSH FACE / SUPPLY / STEEL / ADJUSTABLE

		Neck Velocity	300	400	500	600	700	800	1000	1200	1400
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
12 x 12 Module	6" Dia.	Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.016	0.028	0.044	0.064	0.087	0.113	0.177	0.255	0.347
		NC (Noise Criteria)	-	-	-	16	21	25	32	38	43
		1-Way - Horizontal Throw	1-2-7	2-4-10	2-6-12	4-7-15	5-9-17	6-10-18	8-12-20	10-15-22	11-17-23
		2-Way - Horizontal Throw	1-2-5	2-4-7	2-4-9	4-5-11	4-6-12	5-7-14	6-9-17	7-11-18	8-12-20
	6 x 6 Neck	3-Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-5-11	4-6-12	5-8-14	6-9-15	7-11-16
		4-Way - Horizontal Throw	1-2-3	1-2-5	2-3-6	2-3-7	3-4-8	3-5-9	4-6-11	5-7-12	5-8-13
		Airflow, cfm	75	100	125	150	175	200	250	300	350
		Total Pressure	0.017	0.029	0.046	0.066	0.090	0.118	0.184	0.265	0.360
		NC (Noise Criteria)	-	-	13	19	23	28	35	41	45
24 x 12 Module	6" Dia.	1-Way - Horizontal Throw	1-2-8	2-4-11	3-6-14	4-8-17	5-10-19	7-11-20	9-14-22	11-17-24	13-19-26
		2-Way - Horizontal Throw	1-2-6	2-4-8	3-5-10	4-6-12	5-7-14	5-8-16	7-10-19	8-12-21	9-14-22
		3-Way - Horizontal Throw	1-3-5	2-3-7	3-4-9	3-5-10	4-6-12	5-7-14	6-9-16	7-10-17	8-12-19
		4-Way - Horizontal Throw	1-2-4	1-3-5	2-3-7	3-4-8	3-5-9	3-5-10	4-7-12	5-8-13	6-9-15
	6 x 6 Neck	Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.016	0.028	0.044	0.064	0.087	0.113	0.177	0.255	0.347
		NC (Noise Criteria)	-	-	-	16	21	25	32	38	43
		1-Way - Horizontal Throw	1-2-7	2-4-10	2-6-12	4-7-15	5-9-17	6-10-18	8-12-20	10-15-22	11-17-23
		2-Way - Horizontal Throw	1-2-5	2-4-7	2-4-9	4-5-11	4-6-12	5-7-14	6-9-17	7-11-18	8-12-20
		3-Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-5-11	4-6-12	5-8-14	6-9-15	7-11-16
16 x 16 Module	6" Dia.	4-Way - Horizontal Throw	1-2-3	1-2-5	2-3-6	2-3-7	3-4-8	3-5-9	4-6-11	5-7-12	5-8-13
		Airflow, cfm	75	100	125	150	175	200	250	300	350
		Total Pressure	0.017	0.029	0.046	0.066	0.090	0.118	0.184	0.265	0.360
		NC (Noise Criteria)	-	-	13	19	23	28	35	41	45
		1-Way - Horizontal Throw	1-2-8	2-4-11	3-6-14	4-8-17	5-10-19	7-11-20	9-14-22	11-17-24	13-19-26
	6 x 6 Neck	2-Way - Horizontal Throw	1-2-6	2-4-8	3-5-10	4-6-12	5-7-14	5-8-16	7-10-19	8-12-21	9-14-22
		3-Way - Horizontal Throw	1-3-5	2-3-7	3-4-9	3-5-10	4-6-12	5-7-14	6-9-16	7-10-17	8-12-19
		4-Way - Horizontal Throw	1-2-4	1-3-5	2-3-7	3-4-8	3-5-9	3-5-10	4-7-12	5-8-13	6-9-15
	8" Dia.	Airflow, cfm	105	140	175	209	244	279	349	419	489
		Total Pressure	0.018	0.032	0.049	0.071	0.097	0.126	0.197	0.284	0.386
		NC (Noise Criteria)	-	-	16	22	27	31	38	44	49
		1-Way - Horizontal Throw	1-3-10	3-6-14	4-9-17	6-10-20	8-12-22	9-14-24	12-17-26	14-20-29	16-22-31
		2-Way - Horizontal Throw	1-3-8	3-5-10	4-6-13	5-8-15	6-9-18	7-10-20	8-13-22	10-15-25	12-18-27
	8 x 8 Neck	3-Way - Horizontal Throw	2-3-6	3-4-9	4-5-11	4-6-13	5-8-15	6-9-17	7-11-18	9-13-20	10-15-22
		4-Way - Horizontal Throw	1-2-5	2-3-7	3-4-8	3-5-10	4-6-12	4-7-13	5-8-15	7-10-16	8-12-17
		Airflow, cfm	133	178	222	267	311	356	444	533	622
		Total Pressure	0.019	0.034	0.052	0.075	0.103	0.134	0.210	0.302	0.411
		NC (Noise Criteria)	-	12	19	25	29	34	41	47	51
	10" Dia.	1-Way - Horizontal Throw	2-4-12	3-7-16	5-10-20	7-12-23	9-14-25	10-16-27	13-20-30	16-23-33	18-25-35
		2-Way - Horizontal Throw	2-4-9	3-6-11	5-7-14	6-9-17	7-10-20	8-11-23	10-14-25	11-17-28	13-20-30
		3-Way - Horizontal Throw	2-4-7	3-5-10	4-6-12	5-7-15	6-9-17	6-10-19	8-12-21	10-15-23	11-17-25
		4-Way - Horizontal Throw	1-3-6	2-4-7	3-5-9	4-6-11	4-7-13	5-7-15	6-9-16	7-11-18	9-13-19
		Airflow, cfm	164	218	273	327	382	436	545	654	764
	10" Neck	Total Pressure	0.020	0.036	0.056	0.080	0.109	0.143	0.223	0.321	0.437
		NC (Noise Criteria)	-	14	21	27	32	36	43	49	54
		1-Way - Horizontal Throw	2-4-13	3-7-17	5-11-22	7-13-26	10-15-28	12-17-30	15-22-33	17-26-36	20-28-39
		2-Way - Horizontal Throw	2-4-10	3-6-13	5-8-16	6-10-19	7-11-22	8-13-25	11-16-28	13-19-31	15-22-33
		3-Way - Horizontal Throw	2-4-8	4-5-11	4-7-13	5-8-16	6-9-19	7-11-21	9-13-23	11-16-25	13-19-27
		4-Way - Horizontal Throw	1-3-6	3-4-8	3-5-10	4-6-12	5-7-14	5-8-16	7-10-18	8-12-20	10-14-21

PAS FLUSH FACE / SUPPLY / STEEL / ADJUSTABLE

		Neck Velocity	300	400	500	600	700	800	1000	1200	1400
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
20 x 20 Module	6" Dia.	Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.016	0.028	0.044	0.064	0.087	0.113	0.177	0.255	0.347
		NC (Noise Criteria)	-	-	-	16	21	25	32	38	43
		1-Way - Horizontal Throw	1-2-8	2-4-10	3-7-13	4-8-15	6-9-17	7-10-18	9-13-20	10-15-22	12-17-23
		2-Way - Horizontal Throw	1-2-6	2-4-8	3-5-10	4-6-11	4-7-13	5-8-15	6-10-17	8-11-18	9-13-20
		3-Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-10	4-6-11	4-6-12	5-8-14	6-10-15	8-11-16
		4-Way - Horizontal Throw	1-2-4	2-2-5	2-3-6	2-4-7	3-4-9	3-5-10	4-6-11	5-7-12	6-9-13
	6 x 6 Neck	Airflow, cfm	75	100	125	150	175	200	250	300	350
		Total Pressure	0.017	0.029	0.046	0.066	0.090	0.118	0.184	0.265	0.360
		NC (Noise Criteria)	-	-	13	19	23	28	35	41	45
		1-Way - Horizontal Throw	1-3-9	2-5-12	3-7-15	5-9-17	7-10-19	8-12-20	10-15-22	12-17-24	14-19-26
		2-Way - Horizontal Throw	1-3-6	2-4-9	3-5-11	4-6-13	5-8-15	6-9-17	7-11-19	9-13-21	10-15-22
		3-Way - Horizontal Throw	1-3-5	2-4-7	3-5-9	4-5-11	4-6-13	5-7-14	6-9-16	7-11-17	9-13-19
		4-Way - Horizontal Throw	1-2-4	2-3-6	2-3-7	3-4-8	3-5-10	4-6-11	5-7-12	6-8-13	7-10-15
	8" Dia.	Airflow, cfm	105	140	175	209	244	279	349	419	489
		Total Pressure	0.018	0.032	0.049	0.071	0.097	0.126	0.197	0.284	0.386
		NC (Noise Criteria)	-	-	16	22	27	31	38	44	49
		1-Way - Horizontal Throw	1-3-10	3-6-14	4-9-17	6-10-20	8-12-22	9-14-24	12-17-26	14-20-29	16-22-31
		2-Way - Horizontal Throw	1-3-8	3-5-10	4-6-13	5-8-15	6-9-18	7-10-20	8-13-22	10-15-25	12-18-27
		3-Way - Horizontal Throw	2-3-6	3-4-9	4-5-11	4-6-13	5-8-15	6-9-17	7-11-18	9-13-20	10-15-22
		4-Way - Horizontal Throw	1-2-5	2-3-7	3-4-8	3-5-10	4-6-12	4-7-13	5-8-15	7-10-16	8-12-17
	8 x 8 Neck	Airflow, cfm	133	178	222	267	311	356	444	533	622
		Total Pressure	0.019	0.034	0.052	0.075	0.103	0.134	0.210	0.302	0.411
		NC (Noise Criteria)	-	12	19	25	29	34	41	47	51
		1-Way - Horizontal Throw	2-4-12	3-7-16	5-10-20	7-12-23	9-14-25	10-16-27	13-20-30	16-23-33	18-25-35
		2-Way - Horizontal Throw	2-4-9	3-6-11	5-7-14	6-9-17	7-10-20	8-11-23	10-14-25	11-17-28	13-20-30
		3-Way - Horizontal Throw	2-4-7	3-5-10	4-6-12	5-7-15	6-9-17	6-10-19	8-12-21	10-15-23	11-17-25
		4-Way - Horizontal Throw	1-3-6	2-4-7	3-5-9	4-6-11	4-7-13	5-7-15	6-9-16	7-11-18	9-13-19
	10" Dia.	Airflow, cfm	164	218	273	327	382	436	545	654	764
		Total Pressure	0.020	0.036	0.056	0.080	0.109	0.143	0.223	0.321	0.437
		NC (Noise Criteria)	-	14	21	27	32	36	43	49	54
		1-Way - Horizontal Throw	2-4-13	3-7-17	5-11-22	7-13-26	10-15-28	12-17-30	15-22-33	17-26-36	20-28-39
		2-Way - Horizontal Throw	2-4-10	3-6-13	5-8-16	6-10-19	7-11-22	8-13-25	11-16-28	13-19-31	15-22-33
		3-Way - Horizontal Throw	2-4-8	4-5-11	4-7-13	5-8-16	6-9-19	7-11-21	9-13-23	11-16-25	13-19-27
		4-Way - Horizontal Throw	1-3-6	3-4-8	3-5-10	4-6-12	5-7-14	5-8-16	7-10-18	8-12-20	10-14-21
	10 x 10 Neck	Airflow, cfm	208	278	347	417	486	556	694	833	972
		Total Pressure	0.022	0.039	0.061	0.087	0.119	0.155	0.243	0.349	0.476
		NC (Noise Criteria)	-	16	23	29	34	38	45	51	56
		1-Way - Horizontal Throw	2-5-15	4-8-20	6-12-25	8-15-29	11-17-31	13-20-33	16-25-37	20-29-41	23-31-44
		2-Way - Horizontal Throw	2-5-11	4-7-14	6-9-18	7-11-21	8-13-25	10-14-28	12-18-32	14-21-35	17-25-37
		3-Way - Horizontal Throw	2-5-9	4-6-12	5-8-15	6-9-18	7-11-21	8-12-23	10-15-26	12-18-29	14-21-31
		4-Way - Horizontal Throw	2-3-7	3-5-9	4-6-12	5-7-14	5-8-16	6-9-18	8-12-20	9-14-22	11-16-24
	12" Dia.	Airflow, cfm	236	314	393	471	550	628	785	942	1100
		Total Pressure	0.032	0.057	0.089	0.128	0.174	0.227	0.355	0.510	0.695
		NC (Noise Criteria)	-	18	25	30	35	40	47	52	57
		1-Way - Horizontal Throw	7-12-22	10-16-25	13-19-28	16-22-31	18-23-33	20-25-35	23-28-40	25-31-43	27-33-47
		2-Way - Horizontal Throw	6-8-17	8-11-21	9-14-24	11-17-26	13-20-28	15-21-30	19-24-34	21-26-37	23-28-40
		3-Way - Horizontal Throw	5-7-14	6-10-18	8-12-20	10-14-21	11-16-23	13-18-25	16-20-28	18-21-30	19-23-33
		4-Way - Horizontal Throw	4-6-11	5-7-14	6-9-15	7-11-17	9-13-18	10-14-19	12-15-22	14-17-24	15-18-26
	14" Dia.	Airflow, cfm	321	428	535	641	748	855	1069	1283	1497
		Total Pressure	0.034	0.060	0.093	0.135	0.183	0.239	0.374	0.538	0.733
		NC (Noise Criteria)	12	21	28	34	38	43	50	56	60
		1-Way - Horizontal Throw	8-14-25	12-18-29	15-23-33	18-25-36	21-27-39	24-29-41	27-33-46	29-36-51	32-39-55
		2-Way - Horizontal Throw	7-10-20	9-13-25	11-17-28	13-20-30	15-23-33	18-25-35	22-28-39	25-30-43	27-33-47
		3-Way - Horizontal Throw	6-8-17	7-11-20	9-14-23	11-17-25	13-19-27	15-20-29	19-23-32	20-25-35	22-27-38
		4-Way - Horizontal Throw	4-6-13	6-9-16	7-11-18	9-13-20	10-15-21	11-16-23	14-18-25	16-20-28	17-21-30

PAS FLUSH FACE / SUPPLY / STEEL / ADJUSTABLE

24 x 24 Module	6" Dia.	Neck Velocity	300	400	500	600	700	800	1000	1200	1400
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
		Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.016	0.028	0.044	0.064	0.087	0.113	0.177	0.255	0.347
		NC (Noise Criteria)	-	-	-	16	21	25	32	38	43
		1-Way - Horizontal Throw	1-2-8	2-4-10	3-7-13	4-8-15	6-9-17	7-10-18	9-13-20	10-15-22	12-17-23
		2-Way - Horizontal Throw	1-2-6	2-4-8	3-5-10	4-6-11	4-7-13	5-8-15	6-10-17	8-11-18	9-13-20
		3-Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-10	4-6-11	4-6-12	5-8-14	6-10-15	8-11-16
		4-Way - Horizontal Throw	1-2-4	2-2-5	2-3-6	2-4-7	3-4-9	3-5-10	4-6-11	5-7-12	6-9-13
		Airflow, cfm	75	100	125	150	175	200	250	300	350
	6 x 6 Neck	Total Pressure	0.017	0.029	0.046	0.066	0.090	0.118	0.184	0.265	0.360
		NC (Noise Criteria)	-	-	13	19	23	28	35	41	45
		1-Way - Horizontal Throw	1-3-9	2-5-12	3-7-15	5-9-17	7-10-19	8-12-20	10-15-22	12-17-24	14-19-26
		2-Way - Horizontal Throw	1-3-6	2-4-9	3-5-11	4-6-13	5-8-15	6-9-17	7-11-19	9-13-21	10-15-22
		3-Way - Horizontal Throw	1-3-5	2-4-7	3-5-9	4-5-11	4-6-13	5-7-14	6-9-16	7-11-17	9-13-19
		4-Way - Horizontal Throw	1-2-4	2-3-6	2-3-7	3-4-8	3-5-10	4-6-11	5-7-12	6-8-13	7-10-15
	8" Dia.	Airflow, cfm	105	140	175	209	244	279	349	419	489
		Total Pressure	0.018	0.032	0.049	0.071	0.097	0.126	0.197	0.284	0.386
		NC (Noise Criteria)	-	-	16	22	27	31	38	44	49
		1-Way - Horizontal Throw	1-3-10	3-6-14	4-9-17	6-10-20	8-12-22	9-14-24	12-17-26	14-20-29	16-22-31
		2-Way - Horizontal Throw	1-3-8	3-5-10	4-6-13	5-8-15	6-9-18	7-10-20	8-13-22	10-15-25	12-18-27
		3-Way - Horizontal Throw	2-3-6	3-4-9	4-5-11	4-6-13	5-8-15	6-9-17	7-11-18	9-13-20	10-15-22
	8 x 8 Neck	4-Way - Horizontal Throw	1-2-5	2-3-7	3-4-8	3-5-10	4-6-12	4-7-13	5-8-15	7-10-16	8-12-17
		Airflow, cfm	133	178	222	267	311	356	444	533	622
		Total Pressure	0.019	0.034	0.052	0.075	0.103	0.134	0.210	0.302	0.411
		NC (Noise Criteria)	-	12	19	25	29	34	41	47	51
		1-Way - Horizontal Throw	2-4-12	3-7-16	5-10-20	7-12-23	9-14-25	10-16-27	13-20-30	16-23-33	18-25-35
		2-Way - Horizontal Throw	2-4-9	3-6-11	5-7-14	6-9-17	7-10-20	8-11-23	10-14-25	11-17-28	13-20-30
24 x 24 Module	10" Dia.	3-Way - Horizontal Throw	2-4-7	3-5-10	4-6-12	5-7-15	6-9-17	6-10-19	8-12-21	10-15-23	11-17-25
		4-Way - Horizontal Throw	1-3-6	2-4-7	3-5-9	4-6-11	4-7-13	5-7-15	6-9-16	7-11-18	9-13-19
		Airflow, cfm	164	218	273	327	382	436	545	654	764
		Total Pressure	0.020	0.036	0.056	0.080	0.109	0.143	0.223	0.321	0.437
		NC (Noise Criteria)	-	14	21	27	32	36	43	49	54
		1-Way - Horizontal Throw	2-4-13	3-7-17	5-11-22	7-13-26	10-15-28	12-17-30	15-22-33	17-26-36	20-28-39
	10 x 10 Neck	2-Way - Horizontal Throw	2-4-10	3-6-13	5-8-16	6-10-19	7-11-22	8-13-25	11-16-28	13-19-31	15-22-33
		3-Way - Horizontal Throw	2-4-8	4-5-11	4-7-13	5-8-16	6-9-19	7-11-21	9-13-23	11-16-25	13-19-27
		4-Way - Horizontal Throw	1-3-6	3-4-8	3-5-10	4-6-12	5-7-14	5-8-16	7-10-18	8-12-20	10-14-21
		Airflow, cfm	208	278	347	417	486	556	694	833	972
		Total Pressure	0.022	0.039	0.061	0.087	0.119	0.155	0.243	0.349	0.476
		NC (Noise Criteria)	-	16	23	29	34	38	45	51	56
	12" Dia.	1-Way - Horizontal Throw	2-5-15	4-8-20	6-12-25	8-15-29	11-17-31	13-20-33	16-25-37	20-29-41	23-31-44
		2-Way - Horizontal Throw	2-5-11	4-7-14	6-9-18	7-11-21	8-13-25	10-14-28	12-18-32	14-21-35	17-25-37
		3-Way - Horizontal Throw	2-5-9	4-6-12	5-8-15	6-9-18	7-11-21	8-12-23	10-15-26	12-18-29	14-21-31
		4-Way - Horizontal Throw	2-3-7	3-5-9	4-6-12	5-7-14	5-8-16	6-9-18	8-12-20	9-14-22	11-16-24
		Airflow, cfm	236	314	393	471	550	628	785	942	1100
		Total Pressure	0.032	0.057	0.089	0.128	0.174	0.227	0.355	0.510	0.695
	12 x 12 Neck	NC (Noise Criteria)	-	18	25	30	35	40	47	52	57
		1-Way - Horizontal Throw	7-12-22	10-16-25	13-19-28	16-22-31	18-23-33	20-25-35	23-28-40	25-31-43	27-33-47
		2-Way - Horizontal Throw	6-8-17	8-11-21	9-14-24	11-17-26	13-20-28	15-21-30	19-24-34	21-26-37	23-28-40
		3-Way - Horizontal Throw	5-7-14	6-10-18	8-12-20	10-14-21	11-16-23	13-18-25	16-20-28	18-21-30	19-23-33
		4-Way - Horizontal Throw	4-6-11	5-7-14	6-9-15	7-11-17	9-13-18	10-14-19	12-15-22	14-17-24	15-18-26
		Airflow, cfm	300	400	500	600	700	800	1000	1200	1400
24 x 24 Module	14" Dia.	Total Pressure	0.033	0.059	0.092	0.133	0.181	0.236	0.369	0.531	0.723
		NC (Noise Criteria)	-	20	27	33	38	42	49	55	60
		1-Way - Horizontal Throw	8-13-24	12-18-28	15-22-32	18-24-35	20-26-37	23-28-40	26-32-45	28-35-49	31-37-53
		2-Way - Horizontal Throw	6-10-19	9-13-24	11-16-27	13-19-29	15-22-32	17-24-34	21-27-38	24-29-42	26-32-45
		3-Way - Horizontal Throw	5-8-16	7-11-20	9-14-22	11-16-24	13-19-26	14-20-28	18-22-31	20-24-34	21-26-37
		4-Way - Horizontal Throw	4-6-12	6-8-16	7-10-17	8-12-19	10-15-21	11-16-22	14-17-25	16-19-27	17-21-29
	16" Dia.	Airflow, cfm	321	428	535	641	748	855	1069	1283	1497
		Total Pressure	0.034	0.060	0.093	0.135	0.183	0.239	0.374	0.538	0.733
		NC (Noise Criteria)	12	21	28	34	38	43	50	56	60
		1-Way - Horizontal Throw	8-14-25	12-18-29	15-23-33	18-25-36	21-27-39	24-29-41	27-33-46	29-36-51	32-39-55
		2-Way - Horizontal Throw	7-10-20	9-13-25	11-17-28	13-20-30	15-23-33	18-25-35	22-28-39	25-30-43	27-33-47
		3-Way - Horizontal Throw	6-8-17	7-11-20	9-14-23	11-17-25	13-19-27	15-20-29	19-23-32	20-25-35	22-27-38
	16 x 16 Neck	4-Way - Horizontal Throw	4-6-13	6-9-16	7-11-18	9-13-20	10-15-21	11-16-23	14-18-25	16-20-28	17-21-30
		Airflow, cfm	419	559	698	838	977	1117	1396	1676	1955
		Total Pressure	0.036	0.063	0.099	0.143	0.194	0.253	0.396	0.570	0.776
		NC (Noise Criteria)	14	23	31	36	41	45	53	58	63
		1-Way - Horizontal Throw	10-16-29	14-21-33	17-26-37	21-29-41	24-31-44	27-33-47	31-37-53	33-41-58	36-44-63
		2-Way - Horizontal Throw	8-11-23	10-15-28	13-19-32	15-23-35	18-26-38	20-28-40	25-32-45	28-35-49	31-38-53
		3-Way - Horizontal Throw	6-10-19	9-13-23	11-16-26	13-19-29	15-22-31	17-23-33	21-26-37	23-29-41	25-31-44
		4-Way - Horizontal Throw	5-7-15	7-10-18	8-12-21	10-15-23	11-17-24	13-18-26	16-21-29	18-23-32	20-24-34

PDS DROP FACE / SUPPLY / STEEL / ADJUSTABLE

		Neck Velocity	300	400	500	600	700	800	1000	1200	1400
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
12 x 12 Module	6" Dia.	Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.014	0.025	0.039	0.056	0.077	0.100	0.157	0.226	0.307
		NC (Noise Criteria)	-	-	-	13	18	22	30	35	40
		1-Way - Horizontal Throw	1-2-7	2-4-10	2-6-12	4-7-13	5-9-14	6-10-15	8-12-17	10-13-19	11-14-20
		2-Way - Horizontal Throw	1-2-5	2-4-7	2-4-9	4-5-11	4-6-12	5-7-13	6-9-15	7-11-16	8-12-18
		3-Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-5-9	4-6-10	5-8-11	6-9-12	7-9-13
		4-Way - Horizontal Throw	1-2-3	1-2-5	2-3-6	2-3-7	3-4-8	3-5-8	4-6-9	5-7-10	5-8-11
	6 x 6 Neck	Airflow, cfm	75	100	125	150	175	200	250	300	350
		Total Pressure	0.015	0.026	0.041	0.059	0.080	0.105	0.164	0.236	0.321
		NC (Noise Criteria)	-	-	-	16	21	25	32	38	43
		1-Way - Horizontal Throw	1-2-8	2-4-11	3-6-14	4-8-15	5-10-16	7-11-17	9-14-19	11-15-21	13-16-23
		2-Way - Horizontal Throw	1-2-6	2-4-8	3-5-10	4-6-12	5-7-14	5-8-15	7-10-17	8-12-19	9-14-20
		3-Way - Horizontal Throw	1-3-5	2-3-7	3-4-9	3-5-10	4-6-10	5-7-11	6-9-13	7-10-14	8-10-15
24 x 12 Module	6" Dia.	Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.014	0.025	0.039	0.056	0.077	0.100	0.157	0.226	0.307
		NC (Noise Criteria)	-	-	-	13	18	22	30	35	40
		1-Way - Horizontal Throw	1-2-7	2-4-10	2-6-12	4-7-13	5-9-14	6-10-15	8-12-17	10-13-19	11-14-20
		2-Way - Horizontal Throw	1-2-5	2-4-7	2-4-9	4-5-11	4-6-12	5-7-13	6-9-15	7-11-16	8-12-18
		3-Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-5-9	4-6-10	5-8-11	6-9-12	7-9-13
		4-Way - Horizontal Throw	1-2-3	1-2-5	2-3-6	2-3-7	3-4-8	3-5-8	4-6-9	5-7-10	5-8-11
	6 x 6 Neck	Airflow, cfm	75	100	125	150	175	200	250	300	350
		Total Pressure	0.015	0.026	0.041	0.059	0.080	0.105	0.164	0.236	0.321
		NC (Noise Criteria)	-	-	-	16	21	25	32	38	43
		1-Way - Horizontal Throw	1-2-8	2-4-11	3-6-14	4-8-15	5-10-16	7-11-17	9-14-19	11-15-21	13-16-23
		2-Way - Horizontal Throw	1-2-6	2-4-8	3-5-10	4-6-12	5-7-14	5-8-15	7-10-17	8-12-19	9-14-20
		3-Way - Horizontal Throw	1-3-5	2-3-7	3-4-9	3-5-10	4-6-10	5-7-11	6-9-13	7-10-14	8-10-15
16 x 16 Module	6" Dia.	Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.014	0.025	0.039	0.056	0.077	0.100	0.157	0.226	0.307
		NC (Noise Criteria)	-	-	-	13	18	22	30	35	40
		1-Way - Horizontal Throw	1-2-8	2-4-10	3-7-12	4-8-13	6-9-14	7-10-15	9-12-17	10-13-19	12-14-20
		2-Way - Horizontal Throw	1-2-6	2-4-8	3-5-10	4-6-11	4-7-13	5-8-13	6-10-15	8-11-16	9-13-18
		3-Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-6-9	4-6-10	5-8-11	6-9-12	8-9-13
		4-Way - Horizontal Throw	1-2-4	2-2-5	2-3-6	2-4-7	3-4-8	3-5-8	4-6-9	5-7-10	6-8-11
	6 x 6 Neck	Airflow, cfm	75	100	125	150	175	200	250	300	350
		Total Pressure	0.015	0.026	0.041	0.059	0.080	0.105	0.164	0.236	0.321
		NC (Noise Criteria)	-	-	-	16	21	25	32	38	43
		1-Way - Horizontal Throw	1-3-9	2-5-12	3-7-14	5-9-15	7-10-16	8-12-17	10-14-19	12-15-21	13-16-23
		2-Way - Horizontal Throw	1-3-6	2-4-9	3-5-11	4-6-13	5-8-14	6-9-15	7-11-17	9-13-19	10-14-20
		3-Way - Horizontal Throw	1-3-5	2-4-7	3-5-9	4-5-10	4-6-10	5-7-11	6-9-13	7-10-14	9-10-15
		4-Way - Horizontal Throw	1-2-4	2-3-6	2-3-7	3-4-8	3-5-9	4-6-9	5-7-10	6-8-11	7-9-12
	8" Dia.	Airflow, cfm	105	140	175	209	244	279	349	419	489
		Total Pressure	0.016	0.028	0.044	0.064	0.087	0.113	0.177	0.255	0.347
		NC (Noise Criteria)	-	-	13	19	24	28	35	41	46
		1-Way - Horizontal Throw	1-3-10	3-6-14	4-9-16	6-10-18	8-12-19	9-14-20	12-16-23	14-18-25	16-19-27
		2-Way - Horizontal Throw	1-3-8	3-5-10	4-6-13	5-8-15	6-9-17	7-10-18	8-13-20	10-15-22	12-17-24
		3-Way - Horizontal Throw	2-3-6	3-4-9	4-5-10	4-6-11	5-8-12	6-9-13	7-10-15	9-11-16	10-12-18
		4-Way - Horizontal Throw	1-2-5	2-3-7	3-4-8	3-5-9	4-6-10	4-7-11	5-8-12	7-9-13	8-10-14
	8 x 8 Neck	Airflow, cfm	133	178	222	267	311	356	444	533	622
		Total Pressure	0.017	0.030	0.047	0.068	0.093	0.121	0.190	0.273	0.372
		NC (Noise Criteria)	-	-	16	22	27	31	38	44	49
		1-Way - Horizontal Throw	2-4-12	3-7-16	5-10-18	7-12-20	9-14-21	10-16-23	13-18-26	16-20-28	18-21-30
		2-Way - Horizontal Throw	2-4-9	3-6-11	5-7-14	6-9-17	7-10-19	8-11-20	10-14-23	11-17-25	13-19-27
		3-Way - Horizontal Throw	2-4-7	3-5-10	4-6-12	5-7-13	6-9-14	6-10-15	8-12-17	10-13-18	11-14-20
		4-Way - Horizontal Throw	1-3-6	2-4-7	3-5-9	4-6-11	4-7-11	5-7-12	6-9-14	7-11-15	9-11-16
	10" Dia.	Airflow, cfm	164	218	273	327	382	436	545	654	764
		Total Pressure	0.018	0.032	0.051	0.073	0.099	0.130	0.203	0.292	0.398
		NC (Noise Criteria)	-	-	18	24	29	33	40	46	51
		1-Way - Horizontal Throw	2-4-13	3-7-17	5-11-20	7-13-22	10-15-24	12-17-25	15-20-28	17-22-31	19-24-34
		2-Way - Horizontal Throw	2-4-10	3-6-13	5-8-16	6-10-19	7-11-21	8-13-22	11-16-25	13-19-27	15-21-30
		3-Way - Horizontal Throw	2-4-8	4-5-11	4-7-13	5-8-14	6-9-15	7-11-17	9-13-18	11-14-20	13-15-22
		4-Way - Horizontal Throw	1-3-6	3-4-8	3-5-10	4-6-12	5-7-13	5-8-14	7-10-15	8-12-17	10-13-18

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		Neck Velocity	300	400	500	600	700	800	1000	1200	1400
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
20 x 20 Module	6" Dia.	Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.014	0.025	0.039	0.056	0.077	0.100	0.157	0.226	0.307
		NC (Noise Criteria)	-	-	-	13	18	22	30	35	40
		1-Way - Horizontal Throw	1-2-8	2-4-10	3-7-12	4-8-13	6-9-14	7-10-15	9-12-17	10-13-19	12-14-20
		2-Way - Horizontal Throw	1-2-6	2-4-8	3-5-10	4-6-11	4-7-13	5-8-13	6-10-15	8-11-16	9-13-18
		3-Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-6-9	4-6-10	5-8-11	6-9-12	8-9-13
		4-Way - Horizontal Throw	1-2-4	2-2-5	2-3-6	2-4-7	3-4-8	3-5-8	4-6-9	5-7-10	6-8-11
	6 x 6 Neck	Airflow, cfm	75	100	125	150	175	200	250	300	350
		Total Pressure	0.015	0.026	0.041	0.059	0.080	0.105	0.164	0.236	0.321
		NC (Noise Criteria)	-	-	-	16	21	25	32	38	43
		1-Way - Horizontal Throw	1-3-9	2-5-12	3-7-14	5-9-15	7-10-16	8-12-17	10-14-19	12-15-21	13-16-23
		2-Way - Horizontal Throw	1-3-6	2-4-9	3-5-11	4-6-13	5-8-14	6-9-15	7-11-17	9-13-19	10-14-20
		3-Way - Horizontal Throw	1-3-5	2-4-7	3-5-9	4-5-10	4-6-10	5-7-11	6-9-13	7-10-14	9-10-15
		4-Way - Horizontal Throw	1-2-4	2-3-6	2-3-7	3-4-8	3-5-9	4-6-9	5-7-10	6-8-11	7-9-12
	8" Dia.	Airflow, cfm	105	140	175	209	244	279	349	419	489
		Total Pressure	0.016	0.028	0.044	0.064	0.087	0.113	0.177	0.255	0.347
		NC (Noise Criteria)	-	-	13	19	24	28	35	41	46
		1-Way - Horizontal Throw	1-3-10	3-6-14	4-9-16	6-10-18	8-12-19	9-14-20	12-16-23	14-18-25	16-19-27
		2-Way - Horizontal Throw	1-3-8	3-5-10	4-6-13	5-8-15	6-9-17	7-10-18	8-13-20	10-15-22	12-17-24
		3-Way - Horizontal Throw	2-3-6	3-4-9	4-5-10	4-6-11	5-8-12	6-9-13	7-10-15	9-11-16	10-12-18
		4-Way - Horizontal Throw	1-2-5	2-3-7	3-4-8	3-5-9	4-6-10	4-7-11	5-8-12	7-9-13	8-10-14
	8 x 8 Neck	Airflow, cfm	133	178	222	267	311	356	444	533	622
		Total Pressure	0.017	0.030	0.047	0.068	0.093	0.121	0.190	0.273	0.372
		NC (Noise Criteria)	-	-	16	22	27	31	38	44	49
		1-Way - Horizontal Throw	2-4-12	3-7-16	5-10-18	7-12-20	9-14-21	10-16-23	13-18-26	16-20-28	18-21-30
		2-Way - Horizontal Throw	2-4-9	3-6-11	5-7-14	6-9-17	7-10-19	8-11-20	10-14-23	11-17-25	13-19-27
		3-Way - Horizontal Throw	2-4-7	3-5-10	4-6-12	5-7-13	6-9-14	6-10-15	8-12-17	10-13-18	11-14-20
		4-Way - Horizontal Throw	1-3-6	2-4-7	3-5-9	4-6-11	4-7-11	5-7-12	6-9-14	7-11-15	9-11-16
	10" Dia.	Airflow, cfm	164	218	273	327	382	436	545	654	764
		Total Pressure	0.018	0.032	0.051	0.073	0.099	0.130	0.203	0.292	0.398
		NC (Noise Criteria)	-	-	18	24	29	33	40	46	51
		1-Way - Horizontal Throw	2-4-13	3-7-17	5-11-20	7-13-22	10-15-24	12-17-25	15-20-28	17-22-31	19-24-34
		2-Way - Horizontal Throw	2-4-10	3-6-13	5-8-16	6-10-19	7-11-21	8-13-22	11-16-25	13-19-27	15-21-30
		3-Way - Horizontal Throw	2-4-8	4-5-11	4-7-13	5-8-14	6-9-15	7-11-17	9-13-18	11-14-20	13-15-22
		4-Way - Horizontal Throw	1-3-6	3-4-8	3-5-10	4-6-12	5-7-13	5-8-14	7-10-15	8-12-17	10-13-18
	10 x 10 Neck	Airflow, cfm	208	278	347	417	486	556	694	833	972
		Total Pressure	0.020	0.036	0.056	0.080	0.109	0.143	0.223	0.321	0.437
		NC (Noise Criteria)	-	13	21	26	31	35	43	48	53
		1-Way - Horizontal Throw	2-5-15	4-8-20	6-12-23	8-15-25	11-17-27	13-20-29	16-23-32	20-25-35	22-27-38
		2-Way - Horizontal Throw	2-5-11	4-7-14	6-9-18	7-11-21	8-13-24	10-14-25	12-18-28	14-21-31	17-24-34
		3-Way - Horizontal Throw	2-5-9	4-6-12	5-8-15	6-9-16	7-11-17	8-12-19	10-15-21	12-16-23	14-17-25
		4-Way - Horizontal Throw	2-3-7	3-5-9	4-6-12	5-7-13	5-8-14	6-9-15	8-12-17	9-13-19	11-14-20
	12" Dia.	Airflow, cfm	236	314	393	471	550	628	785	942	1100
		Total Pressure	0.027	0.048	0.076	0.109	0.148	0.194	0.303	0.436	0.593
		NC (Noise Criteria)	-	15	22	28	33	37	44	50	55
		1-Way - Horizontal Throw	7-12-19	10-15-22	13-17-24	15-19-26	16-20-29	18-22-30	20-24-34	22-26-37	23-29-40
		2-Way - Horizontal Throw	6-8-16	8-11-19	9-14-21	11-16-23	13-18-25	15-19-27	17-21-30	19-23-33	21-25-36
		3-Way - Horizontal Throw	5-7-12	6-10-14	8-11-16	10-12-17	11-13-19	11-14-20	13-16-22	14-17-24	15-19-26
		4-Way - Horizontal Throw	4-6-10	5-7-12	6-9-13	7-10-14	9-11-15	9-12-16	11-13-18	12-14-20	12-15-22
	14" Dia.	Airflow, cfm	321	428	535	641	748	855	1069	1283	1497
		Total Pressure	0.029	0.052	0.081	0.116	0.158	0.206	0.322	0.464	0.631
		NC (Noise Criteria)	-	18	25	31	36	40	47	53	58
		1-Way - Horizontal Throw	8-14-22	12-18-25	15-20-28	18-22-31	19-24-33	21-25-36	23-28-40	25-31-44	27-33-47
		2-Way - Horizontal Throw	7-10-19	9-13-22	11-17-25	13-19-27	15-21-29	18-22-31	20-25-35	22-27-38	24-29-42
		3-Way - Horizontal Throw	6-8-14	7-11-16	9-13-18	11-14-20	13-15-22	13-16-23	15-18-26	16-20-28	18-22-31
		4-Way - Horizontal Throw	4-6-12	6-9-13	7-11-15	9-12-16	10-13-18	11-13-19	12-15-21	13-16-23	15-18-25

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24 x 24 Module	6" Dia.	Neck Velocity	300	400	500	600	700	800	1000	1200	1400
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
		Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.014	0.025	0.039	0.056	0.077	0.100	0.157	0.226	0.307
		NC (Noise Criteria)	-	-	-	13	18	22	30	35	40
		1-Way - Horizontal Throw	1-2-8	2-4-10	3-7-12	4-8-13	6-9-14	7-10-15	9-12-17	10-13-19	12-14-20
		2-Way - Horizontal Throw	1-2-6	2-4-8	3-5-10	4-6-11	4-7-13	5-8-13	6-10-15	8-11-16	9-13-18
		3-Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-6-9	4-6-10	5-8-11	6-9-12	8-9-13
		4-Way - Horizontal Throw	1-2-4	2-2-5	2-3-6	2-4-7	3-4-8	3-5-8	4-6-9	5-7-10	6-8-11
	6 x 6 Neck	Airflow, cfm	75	100	125	150	175	200	250	300	350
		Total Pressure	0.015	0.026	0.041	0.059	0.080	0.105	0.164	0.236	0.321
		NC (Noise Criteria)	-	-	-	16	21	25	32	38	43
		1-Way - Horizontal Throw	1-3-9	2-5-12	3-7-14	5-9-15	7-10-16	8-12-17	10-14-19	12-15-21	13-16-23
		2-Way - Horizontal Throw	1-3-6	2-4-9	3-5-11	4-6-13	5-8-14	6-9-15	7-11-17	9-13-19	10-14-20
		3-Way - Horizontal Throw	1-3-5	2-4-7	3-5-9	4-5-10	4-6-10	5-7-11	6-9-13	7-10-14	9-10-15
		4-Way - Horizontal Throw	1-2-4	2-3-6	2-3-7	3-4-8	3-5-9	4-6-9	5-7-10	6-8-11	7-9-12
		Airflow, cfm	105	140	175	209	244	279	349	419	489
	8" Dia.	Total Pressure	0.016	0.028	0.044	0.064	0.087	0.113	0.177	0.255	0.347
		NC (Noise Criteria)	-	-	13	19	24	28	35	41	46
		1-Way - Horizontal Throw	1-3-10	3-6-14	4-9-16	6-10-18	8-12-19	9-14-20	12-16-23	14-18-25	16-19-27
		2-Way - Horizontal Throw	1-3-8	3-5-10	4-6-13	5-8-15	6-9-17	7-10-18	8-13-20	10-15-22	12-17-24
		3-Way - Horizontal Throw	2-3-6	3-4-9	4-5-10	4-6-11	5-8-12	6-9-13	7-10-15	9-11-16	10-12-18
		4-Way - Horizontal Throw	1-2-5	2-3-7	3-4-8	3-5-9	4-6-10	4-7-11	5-8-12	7-9-13	8-10-14
		Airflow, cfm	133	178	222	267	311	356	444	533	622
		Total Pressure	0.017	0.030	0.047	0.068	0.093	0.121	0.190	0.273	0.372
	8 x 8 Neck	NC (Noise Criteria)	-	-	16	22	27	31	38	44	49
		1-Way - Horizontal Throw	2-4-12	3-7-16	5-10-18	7-12-20	9-14-21	10-16-23	13-18-26	16-20-28	18-21-30
		2-Way - Horizontal Throw	2-4-9	3-6-11	5-7-14	6-9-17	7-10-19	8-11-20	10-14-23	11-17-25	13-19-27
		3-Way - Horizontal Throw	2-4-7	3-5-10	4-6-12	5-7-13	6-9-14	6-10-15	8-12-17	10-13-18	11-14-20
		4-Way - Horizontal Throw	1-3-6	2-4-7	3-5-9	4-6-11	4-7-11	5-7-12	6-9-14	7-11-15	9-11-16
		Airflow, cfm	164	218	273	327	382	436	545	654	764
		Total Pressure	0.018	0.032	0.051	0.073	0.099	0.130	0.203	0.292	0.398
		NC (Noise Criteria)	-	-	18	24	29	33	40	46	51
	10" Dia.	1-Way - Horizontal Throw	2-4-13	3-7-17	5-11-20	7-13-22	10-15-24	12-17-25	15-20-28	17-22-31	19-24-34
		2-Way - Horizontal Throw	2-4-10	3-6-13	5-8-16	6-10-19	7-11-21	8-13-22	11-16-25	13-19-27	15-21-30
		3-Way - Horizontal Throw	2-4-8	4-5-11	4-7-13	5-8-14	6-9-15	7-11-17	9-13-18	11-14-20	13-15-22
		4-Way - Horizontal Throw	1-3-6	3-4-8	3-5-10	4-6-12	5-7-13	5-8-14	7-10-15	8-12-17	10-13-18
		Airflow, cfm	208	278	347	417	486	556	694	833	972
		Total Pressure	0.020	0.036	0.056	0.080	0.109	0.143	0.223	0.321	0.437
		NC (Noise Criteria)	-	13	21	26	31	35	43	48	53
		1-Way - Horizontal Throw	2-5-15	4-8-20	6-12-23	8-15-25	11-17-27	13-20-29	16-23-32	20-25-35	22-27-38
	10 x 10 Neck	2-Way - Horizontal Throw	2-5-11	4-7-14	6-9-18	7-11-21	8-13-24	10-14-25	12-18-28	14-21-31	17-24-34
		3-Way - Horizontal Throw	2-5-9	4-6-12	5-8-15	6-9-16	7-11-17	8-12-19	10-15-21	12-16-23	14-17-25
		4-Way - Horizontal Throw	2-3-7	3-5-9	4-6-12	5-7-13	5-8-14	6-9-15	8-12-17	9-13-19	11-14-20
		Airflow, cfm	236	314	393	471	550	628	785	942	1100
		Total Pressure	0.027	0.048	0.076	0.109	0.148	0.194	0.303	0.436	0.593
		NC (Noise Criteria)	-	15	22	28	33	37	44	50	55
		1-Way - Horizontal Throw	7-12-19	10-15-22	13-17-24	15-19-26	16-20-29	18-22-30	20-24-34	22-26-37	23-29-40
		2-Way - Horizontal Throw	6-8-16	8-11-19	9-14-21	11-16-23	13-18-25	15-19-27	17-21-30	19-23-33	21-25-36
	12" Dia.	3-Way - Horizontal Throw	5-7-12	6-10-14	8-11-16	10-12-17	11-13-19	11-14-20	13-16-22	14-17-24	15-19-26
		4-Way - Horizontal Throw	4-6-10	5-7-12	6-9-13	7-10-14	9-11-15	9-12-16	11-13-18	12-14-20	12-15-22
		Airflow, cfm	300	400	500	600	700	800	1000	1200	1400
		Total Pressure	0.029	0.051	0.079	0.114	0.156	0.203	0.317	0.457	0.622
		NC (Noise Criteria)	-	17	24	30	35	39	46	52	57
		1-Way - Horizontal Throw	8-13-21	12-17-24	15-19-27	17-21-30	19-23-32	20-24-34	22-27-38	24-30-42	26-32-46
		2-Way - Horizontal Throw	6-10-19	9-13-21	11-16-24	13-19-26	15-20-28	17-21-30	20-24-34	21-26-37	23-28-40
		3-Way - Horizontal Throw	5-8-14	7-11-16	9-13-18	11-14-19	12-15-21	13-16-22	14-18-25	16-19-27	17-21-30
	12 x 12 Neck	4-Way - Horizontal Throw	4-6-11	6-8-13	7-10-15	8-11-16	10-12-17	11-13-18	12-15-21	13-16-23	14-17-24
		Airflow, cfm	321	428	535	641	748	855	1069	1283	1497
		Total Pressure	0.029	0.052	0.081	0.116	0.158	0.206	0.322	0.464	0.631
		NC (Noise Criteria)	-	18	25	31	36	40	47	53	58
		1-Way - Horizontal Throw	8-14-22	12-18-25	15-20-28	18-22-31	19-24-33	21-25-36	23-28-40	25-31-44	27-33-47
		2-Way - Horizontal Throw	7-10-19	9-13-22	11-17-25	13-19-27	15-21-29	18-22-31	20-25-35	22-27-38	24-29-42
		3-Way - Horizontal Throw	6-8-14	7-11-16	9-13-18	11-14-20	13-15-22	13-16-23	15-18-26	16-20-28	18-22-31
		4-Way - Horizontal Throw	4-6-12	6-9-13	7-11-15	9-12-16	10-13-18	11-13-19	12-15-21	13-16-23	15-18-25
	14" Dia.	Airflow, cfm	419	559	698	838	977	1117	1396	1676	1955
		Total Pressure	0.031	0.055	0.086	0.124	0.169	0.220	0.344	0.496	0.675
		NC (Noise Criteria)	12	21	28	34	38	43	50	56	60
		1-Way - Horizontal Throw	10-16-25	14-20-29	17-23-32	20-25-35	22-27-38	23-29-41	26-32-45	29-35-50	31-38-54
		2-Way - Horizontal Throw	8-11-22	10-15-25	13-19-28	15-22-31	18-24-34	20-25-36	23-28-40	25-31-44	27-34-48
		3-Way - Horizontal Throw	6-10-16	9-13-19	11-15-21	13-16-23	14-18-25	15-19-26	17-21-30	19-23-32	20-25-35
		4-Way - Horizontal Throw	5-7-13	7-10-15	8-12-17	10-13-19	11-14-20	13-15-22	14-17-24	15-19-27	17-20-29
		Airflow, cfm	419	559	698	838	977	1117	1396	1676	1955
	16" Dia.	Total Pressure	0.031	0.055	0.086	0.124	0.169	0.220	0.344	0.496	0.675
		NC (Noise Criteria)	12	21	28	34	38	43	50	56	60
		1-Way - Horizontal Throw	10-16-25	14-20-29	17-23-32	20-25-35	22-27-38	23-29-41	26-32-45	29-35-50	31-38-54
		2-Way - Horizontal Throw	8-11-22	10-15-25	13-19-28	15-22-31	18-24-34	20-25-36	23-28-40	25-31-44	27-34-48
		3-Way - Horizontal Throw	6-10-16	9-13-19	11-15-21	13-16-23	14-18-25	15-19-26	17-21-30	19-23-32	20-25-35
		4-Way - Horizontal Throw	5-7-13	7-10-15	8-12-17	10-13-19	11-14-20	13-15-22	14-17-24	15-19-27	17-20-29

PERFORMANCE DATA

diffusers

- Data obtained from tests conducted in accordance with ANSI / ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions
- For an explanation of catalog throw data, see the section, Engineering Guidelines
- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure

PAR, PXP, PMR, PXP-DR, PDR PERFORMANCE DATA

PAR, PXP, PMR - FLUSH FACE - RETURN; PXP-DR, PDR - DROP FACE - RETURN

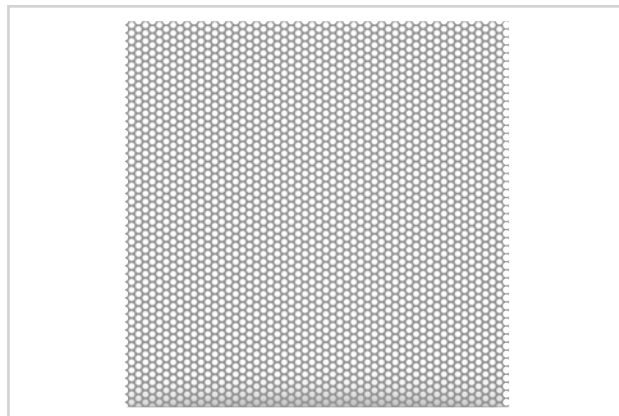
12 x 12 Face	Neck Size	Neck Vel, fpm	300	400	500	600	700	800	1000	1200	1400
		Vp, in. Wg	0.01	0.01	0.02	0.02	0.03	0.04	0.06	0.09	0.12
		Ps (-), in. Wg	0.03	0.06	0.09	0.13	0.17	0.23	0.36	0.51	0.70
	6 Dia. *	Flow Rate, cfm	59	78	98	118	137	157	196	235	275
		Room NC	-	-	-	14	18	21	27	32	36
	6 x 6 Neck *	Flow Rate, cfm	75	100	125	150	175	200	250	300	350
		Room NC	-	-	12	17	21	24	30	35	39
	10 x 10 Neck	Flow Rate, cfm	208	278	347	417	486	556	694	833	972
Room NC		15	23	29	33	37	41	47	51	55	
24 x 24 Face	Neck Size	Neck Vel, fpm	300	400	500	600	700	800	1000	1200	1400
		Vp, in. Wg	0.01	0.01	0.02	0.02	0.03	0.04	0.06	0.09	0.12
		Ps (-), in. Wg	0.03	0.06	0.09	0.13	0.18	0.24	0.37	0.54	0.73
	6 Dia. *	Flow Rate, cfm	59	78	98	118	137	157	196	235	275
		Room NC	-	-	-	13	17	20	26	31	34
	6 x 6 Neck *	Flow Rate, cfm	75	100	125	150	175	200	250	300	350
		Room NC	-	-	-	14	18	21	27	32	35
	8 Dia. *	Flow Rate, cfm	105	140	174	209	244	279	349	419	488
		Room NC	-	-	13	17	21	24	30	35	38
	8 x 8 Neck *	Flow Rate, cfm	133	178	222	267	311	356	444	533	622
		Room NC	-	-	14	18	22	25	31	36	39
	10 Dia. *	Flow Rate, cfm	164	218	273	327	382	436	545	654	763
		Room NC	-	-	16	20	24	27	33	38	41
	10 x 10 Neck *	Flow Rate, cfm	208	278	347	417	486	556	694	833	972
		Room NC	-	11	17	21	25	28	34	39	42
	12 Dia. *	Flow Rate, cfm	235	314	392	471	549	628	785	942	1099
		Room NC	-	12	17	22	26	29	34	39	43
	12 x 12 Neck *	Flow Rate, cfm	300	400	500	600	700	800	1000	1200	1400
		Room NC	-	14	20	24	28	31	37	42	45
	14 Dia. *	Flow Rate, cfm	320	427	534	641	748	855	1068	1282	1495
		Room NC	-	15	21	25	29	32	38	43	46
	15 x 15 Neck *	Flow Rate, cfm	469	625	781	938	1094	1250	1563	1875	2188
		Room NC	-	16	22	26	30	33	39	44	47
	16 Dia. *	Flow Rate, cfm	419	558	698	837	977	1116	1395	1674	1953
		Room NC	11	18	24	28	32	35	41	46	49
	18 x 18 Neck *	Flow Rate, cfm	675	900	1125	1350	1575	1800	2250	2700	3150
		Room NC	11	18	24	28	32	36	41	46	49
	22 x 22 Neck	Flow Rate, cfm	1008	1344	1681	2017	2353	2689	3361	4033	4706
Room NC		13	20	26	30	34	37	43	47	51	
Other Sizes	Neck Size	Neck Vel, fpm	300	400	500	600	700	800	1000	1200	1400
		Vp, in. Wg	0.01	0.01	0.02	0.02	0.03	0.04	0.06	0.09	0.12
		Ps (-), in. Wg	0.03	0.06	0.09	0.13	0.17	0.23	0.36	0.51	0.70
	10 x 22 (12 x 24 Face)	Flow Rate, cfm	458	611	764	917	1069	1222	1528	1833	2139
		Room NC	-	-	-	14	18	21	27	32	36
	14 x 14 (16 x 16 Face)	Flow Rate, cfm	408	544	681	817	953	1089	1361	1633	1906
		Room NC	-	-	12	17	21	24	30	35	39
	18 x 18 (20 x 20 Face)	Flow Rate, cfm	675	900	1125	1350	1575	1800	2250	2700	3150
		Room NC	-	11	17	22	26	29	35	40	44
	22 x 46 (24 x 48 Face)	Flow Rate, cfm	2108	2811	3514	4217	4919	5622	7028	8433	9839
Room NC		12	20	25	30	34	38	43	48	52	

PAR, PXP, PMR, PXP-DR, PDR PERFORMANCE NOTES

- Supply unit with deflectors removed
- Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006
- Noise Criteria (NC) based on a room absorption of 10 dB, re 10⁻¹² watts, measured per ANSI/ASHRAE Standard 70-2006
- These products have been tested per ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field.
- See the section, Engineering Guidelines for additional information

PXP / PXP-DF / PXP-AA

- Model PXP Series perforated panels are designed for return or exhaust applications
- Panels match Models PAS, PDS, and PAS-AA supply diffusers in appearance after installation
- Installed by laying between T-bars
- Perforated panel has $\frac{3}{16}$ " diameter holes on $\frac{1}{4}$ " staggered centers
- Material is heavy gauge steel or aluminum
- MRI compatible (PXP-AA)



PXP / PXP-DF / PXP-AA



MRI compatible



See website for Specifications

MODELS:

Steel Models:

PXP / Return Panel / Flush Face

PXP-DF / Return Panel / Drop Face

Aluminum Model:

PXP-AA / Return Panel / Flush Face

FINISH:

Standard Finish - #26 White

OVERVIEW

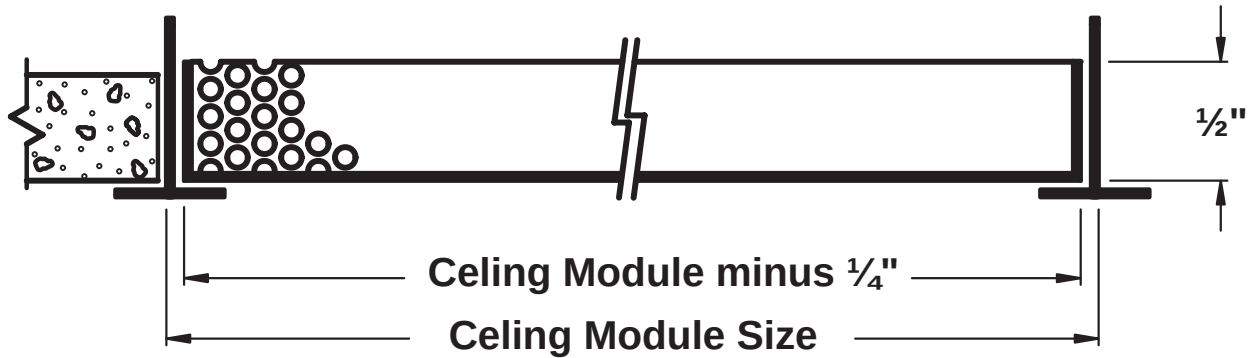
Return Panels

Model PXP Series perforated panels are designed for return or exhaust applications. Panels match Models PAS, PDS, and PAS-AA supply diffusers in appearance after installation.

For Performance Data and notes, please refer to the PAR / PXP / PMR / PXP-DR / PDR table on page F89.

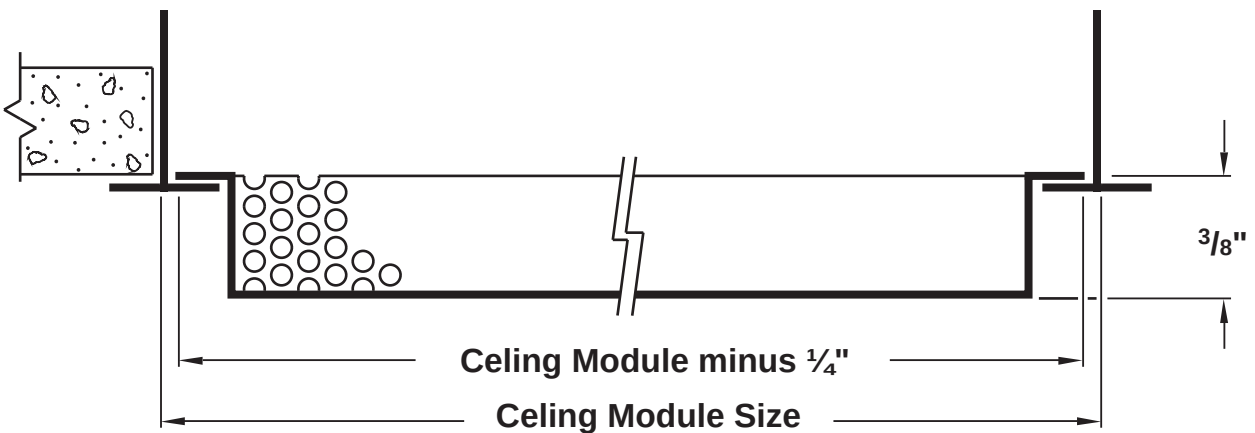
PXP / PXP-DF / PXP-AA UNIT DIMENSIONS

Model PXP and PXP-AA
(Lay-In)



Ceiling Module Sizes Available: 12 x 12, 16 x 16, 20 x 20, 24 x 12, 24 x 24, 48 x 24

Model PXP-DF (Lay-In or Tegular)
(Lay-In shown)



Ceiling Module Sizes Available: 12 x 12, 16 x 16, 20 x 20, 24 x 12, 24 x 24, 48 x 24

PSS / PSS-DF / PSS-AA

- Titus Series PSS perforated star diffusers generate a high induction air pattern that maximizes throw
- PSS diffusers deliver a horizontal blanket of air that adheres to the ceiling even at varying volumes. An excellent choice for VAV systems.
- Deflector is mounted directly under the neck of the diffuser to generate the long-throw star pattern
- Pressure drop and noise levels are lower than typical curved blade perforated diffusers
- Vertical air pattern can be obtained by turning all deflector blades inward
- Three-way pattern or corner blow can be field adjusted with no increase in pressure drop or sound level
- Available with either side blow or corner blow. Side blow maximizes throw. Corner blow maximizes wall surface coverage in a perimeter installation.



PSS / PSS-DF / PSS-AA

MODELS:

Steel Models:
PSS / Flush Face
PSS-DF / Drop Face

Aluminum Model:
PSS-AA / Flush Face

FINISH:

Standard Finish - #26 White

OVERVIEW

Star Pattern / Adjustable

Titus Series PSS perforated star diffusers generate a high induction air pattern that maximizes throw. The deflector is mounted directly under the neck of the diffuser to generate the long-throw star pattern. As a result, pressure drop and noise levels are lower than typical curved blade perforated diffusers.

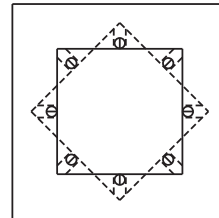
ADDITIONAL FEATURES

- Can be changed to either side blow or corner blow in the field
- Round neck with deep collar for easy connection to flexible duct
- Perforated face is hinged to allow access to the star deflector. The optional damper is adjustable after removal of the star deflector.
- Perforated face has $\frac{3}{16}$ " holes on $\frac{1}{4}$ " staggered centers
- Material is heavy gauge steel backpan with steel or aluminum perforated face, according to the model selected
- Optional factory-installed R-6 foil-backed insulation available for 24 x 24" full face models, neck sizes 6-16, borders 1, 2, 3 and 4

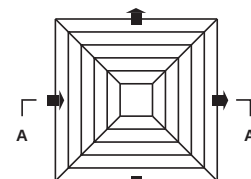


See website for Specifications

FIELD ADJUSTMENTS



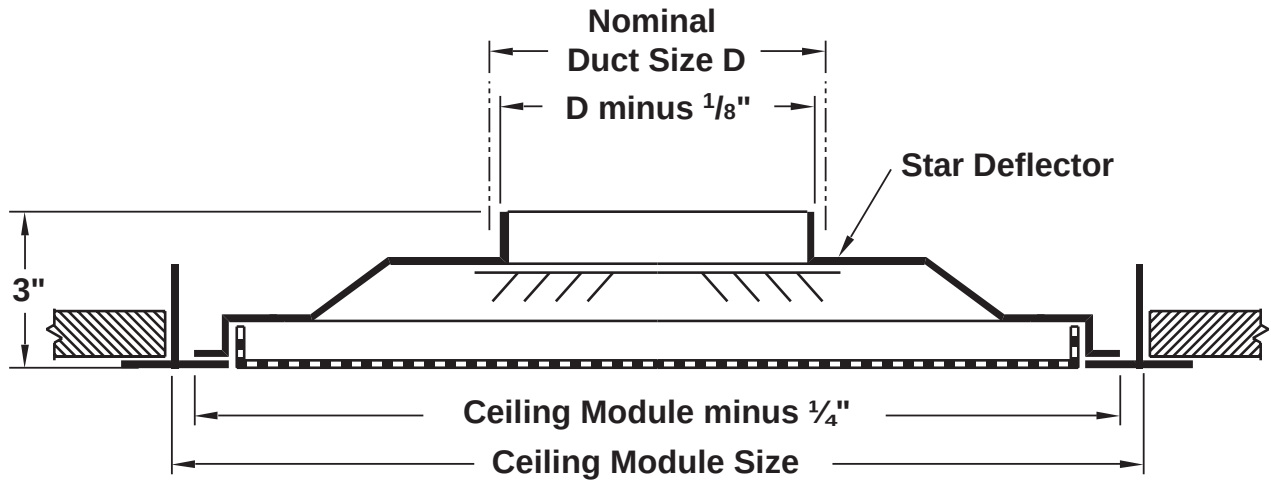
Pattern can be changed from side blow to corner blow and vice versa by removing four screws, rotating deflector 45 degrees, and replacing screws.



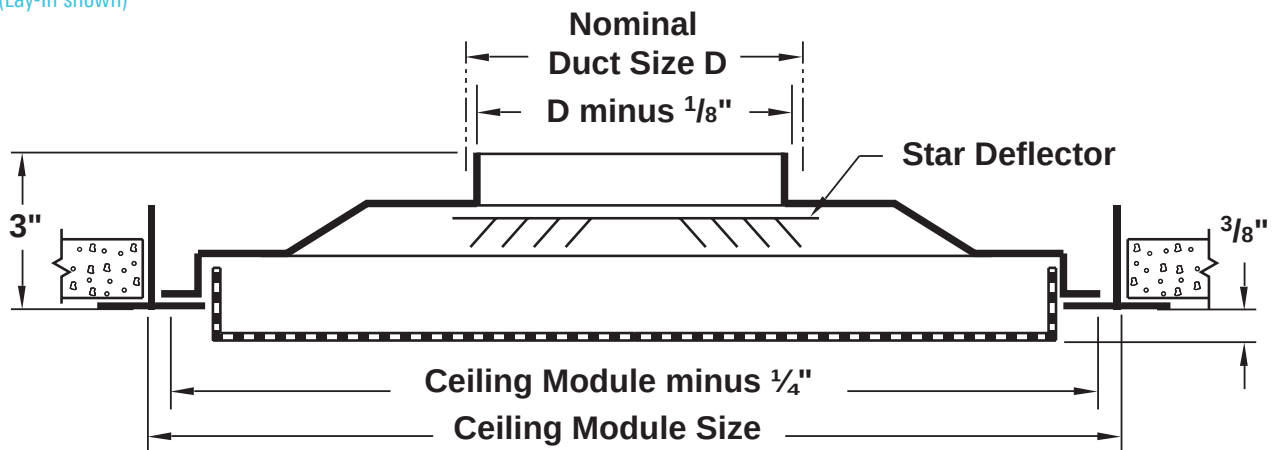
Section A-A
Back Blades Front Blades
Back blades can be redirected to produce directional adjustment pattern as shown above.

PSS / PSS-DF / PSS-AA UNIT DIMENSIONS

Models PSS and PSS-AA
Border Type 3 (Lay-In)



Models PSS-DF
Border Type 3
(Lay-In or Tegalur)
(Lay-In shown)



DIMENSIONS

diffusers

BORDER TYPES

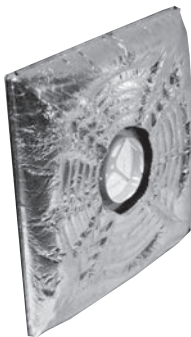
In addition to Border Type 3 (lay-in), as dimensioned on the preceding page, Series PSS diffusers are also available in border types to fit the various ceiling systems shown here.

- All of these border types can be furnished with both the 12 x 12" and 24 x 24" face or ceiling module size
- The table below indicates the round and square neck sizes that can be selected

AVAILABLE SIZES

Nominal Duct Size D	Face or Ceiling Module Size	
	12 x 12	24 x 24
6x6	•	•
8x8		•
10 x 10		•
12 x 12		•
6" Dia.	•	•
8" Dia.		•
10" Dia.		•
12" Dia.		•
14" Dia.		•
16" Dia.		•

• Indicates available size. Not all sizes available in all duct sizes.

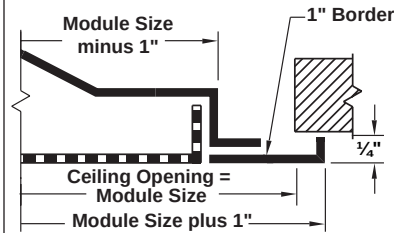


Optional Molded Insulation Blanket

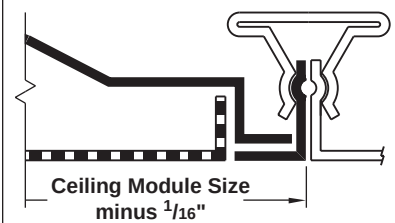
Insulation is R-6 where blanket has the most depth. One" clearance on each side of neck is left for insulated duct connection. 24 x 24" fmodule size only. Blanket is factory installed.

MODELS PSS, PSS-AA

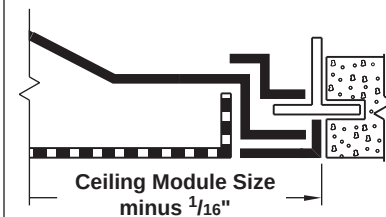
Border Type 1 (Surface Mount)



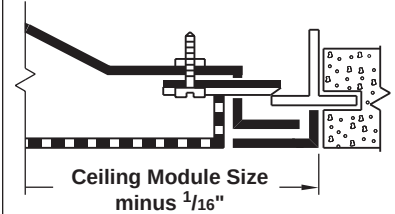
Border Type 2 (Snap-In)



Border Type 4 (Spline)



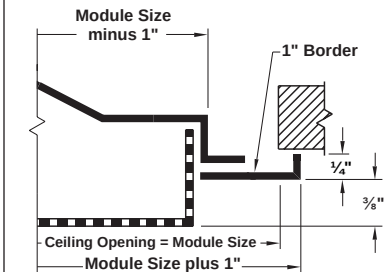
Border Type 4SL (Spline Side Lock)



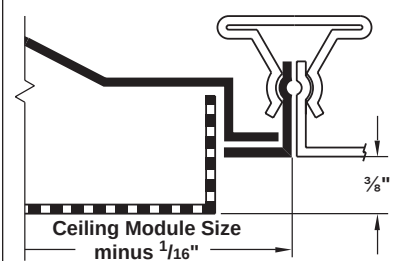
Note: 4SL can be installed after ceiling tiles are in place

MODEL PSS-DF

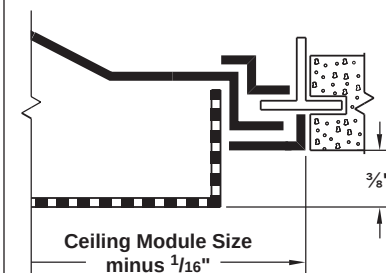
Border Type 1 (Surface Mount)



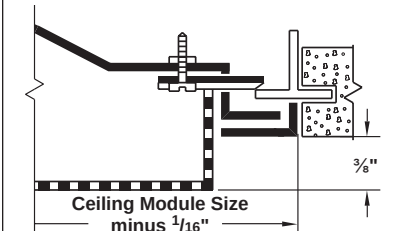
Border Type 2 (Snap-In)



Border Type 4 (Spline)

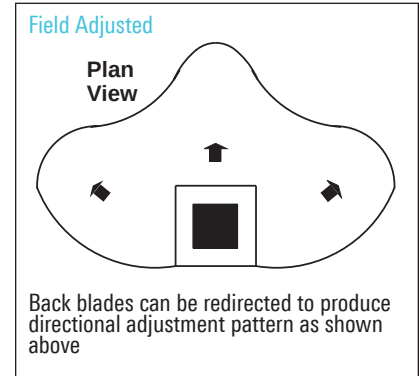
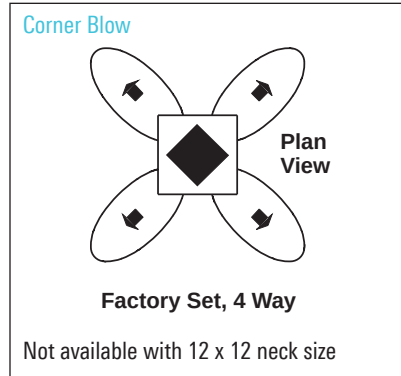
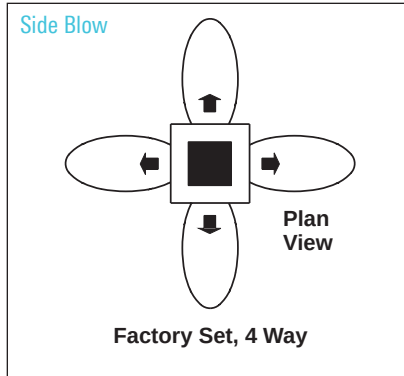


Border Type 4SL (Spline Side Lock)

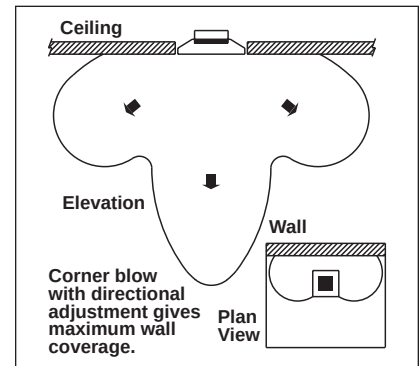
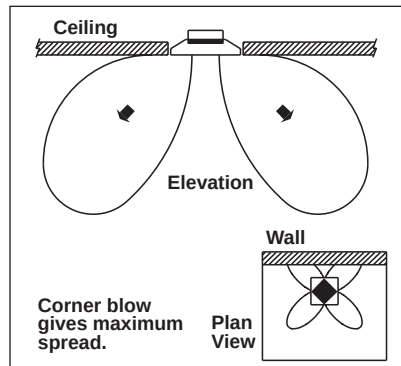
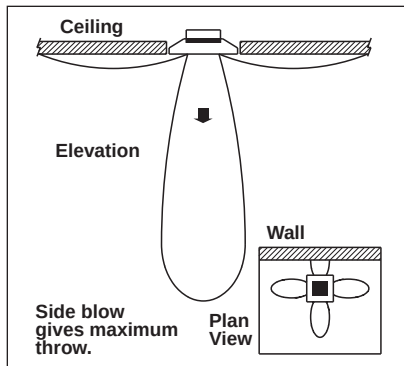


Note: 4SL can be installed after ceiling tiles are in place

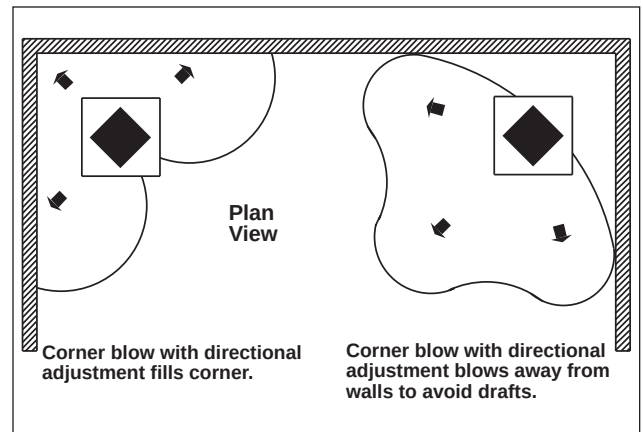
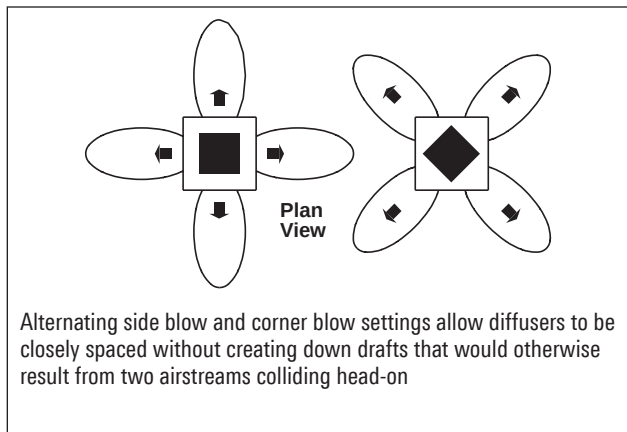
AVAILABLE DISCHARGE PATTERNS



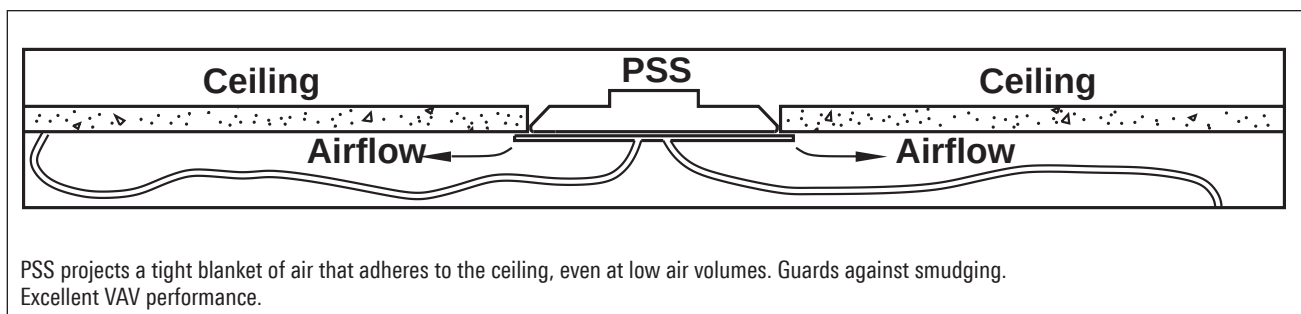
EXTERIOR ZONE APPLICATIONS ILLUSTRATING WALL EFFECT



INTERIOR ZONE APPLICATIONS



TYPICAL DISCHARGE PATTERN - ELEVATION



PSS / ADJUSTABLE / SIDE AND CORNER BLOW PATTERN

		Neck Velocity	300	400	500	600	700	800	1000	1200	1400
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
12 x 12 Module	6" Dia.	Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.022	0.039	0.060	0.087	0.118	0.154	0.241	0.347	0.473
		NC (Noise Criteria)	-	-	16	22	27	32	39	45	50
		Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-6-10	4-6-10	5-8-12	6-9-13	8-10-14
	6 x 6 Neck	Airflow, cfm	75	100	125	150	175	200	250	300	350
		Total Pressure	0.024	0.043	0.067	0.097	0.131	0.172	0.268	0.386	0.525
		NC (Noise Criteria)	-	-	17	23	28	33	40	46	51
		Throw	2-3-6	3-4-8	3-5-9	4-6-10	5-7-11	5-8-12	6-9-13	8-10-14	9-11-15
	6" Dia.	Airflow, cfm	59	79	98	118	137	157	196	236	275
		Total Pressure	0.016	0.029	0.045	0.065	0.088	0.115	0.180	0.258	0.352
		NC (Noise Criteria)	-	-	16	22	27	32	39	45	50
		Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-6-10	4-6-10	5-8-12	6-9-13	8-10-14
24 x 24 Module	6 x 6 Neck	Airflow, cfm	75	100	125	150	175	200	250	300	350
		Total Pressure	0.017	0.030	0.047	0.067	0.091	0.119	0.187	0.269	0.366
		NC (Noise Criteria)	-	-	17	23	28	33	40	46	51
		Throw	2-3-6	3-4-8	3-5-9	4-6-10	5-7-11	5-8-12	6-9-13	8-10-14	9-11-15
	8" Dia.	Airflow, cfm	105	140	175	209	244	279	349	419	489
		Total Pressure	0.018	0.032	0.050	0.072	0.098	0.128	0.200	0.288	0.392
		NC (Noise Criteria)	-	11	19	25	30	34	41	48	53
		Throw	2-4-7	3-5-10	4-6-11	5-7-12	6-9-13	6-10-14	8-11-15	10-12-17	11-13-18
	8 x 8 Neck	Airflow, cfm	133	178	222	267	311	356	444	533	622
		Total Pressure	0.019	0.034	0.053	0.076	0.104	0.136	0.212	0.306	0.416
		NC (Noise Criteria)	-	12	20	26	31	35	42	49	54
		Throw	3-4-9	4-6-11	5-7-12	6-9-14	7-10-15	8-11-16	9-12-17	11-14-19	12-15-21
	10" Dia.	Airflow, cfm	164	218	273	327	382	436	545	654	764
		Total Pressure	0.020	0.036	0.056	0.081	0.111	0.145	0.226	0.325	0.443
		NC (Noise Criteria)	-	13	20	26	32	36	43	49	54
		Throw	3-5-10	4-6-12	5-8-14	6-10-15	8-11-16	9-12-17	11-14-19	12-15-21	13-16-23
	10 x 10 Neck	Airflow, cfm	208	278	347	417	486	556	694	833	972
		Total Pressure	0.022	0.039	0.061	0.088	0.120	0.157	0.246	0.354	0.481
		NC (Noise Criteria)	-	14	21	27	33	37	44	50	55
		Throw	4-6-11	5-8-14	6-9-15	8-11-17	9-13-18	10-14-20	13-15-22	14-17-24	15-18-26
	12" Dia.	Airflow, cfm	236	314	393	471	550	628	785	942	1100
		Total Pressure	0.023	0.041	0.064	0.093	0.126	0.165	0.258	0.371	0.505
		NC (Noise Criteria)	-	15	22	28	33	37	45	51	56
		Throw	4-6-12	5-8-15	7-10-16	8-12-18	9-14-19	11-15-21	13-16-23	15-18-25	16-19-27
	12 x 12 Neck	Airflow, cfm	300	400	500	600	700	800	1000	1200	1400
		Total Pressure	0.021	0.036	0.057	0.082	0.112	0.146	0.228	0.328	0.447
		NC (Noise Criteria)	-	16	23	29	34	38	46	52	57
		Throw	5-7-14	6-9-17	8-12-18	9-14-20	11-15-22	12-17-23	15-18-26	17-20-29	18-22-31
	14" Dia.	Airflow, cfm	321	428	535	641	748	855	1069	1283	1497
		Total Pressure	0.021	0.037	0.057	0.083	0.112	0.147	0.229	0.330	0.449
		NC (Noise Criteria)	-	16	23	29	34	39	46	52	57
		Throw	5-7-15	6-10-17	8-12-19	10-15-21	11-16-23	13-17-24	16-19-27	17-21-30	18-23-32
	16" Dia.	Airflow, cfm	419	559	698	838	977	1117	1396	1676	1955
		Total Pressure	0.021	0.038	0.059	0.085	0.115	0.151	0.235	0.339	0.461
		NC (Noise Criteria)	-	17	24	30	35	40	47	53	58
		Throw	6-8-17	7-11-20	9-14-22	11-17-24	13-18-26	15-20-28	18-22-31	20-24-34	21-26-37

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions
- For an explanation of catalog throw data, see the Engineering Guidelines section of this catalog
- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure

PCS / PCS-DF / PCS-AA

- Titus Series PCS ceiling diffusers are designed for longer throws
- Good performance in variable air volume systems
- Discharge pattern can be adjusted from horizontal to vertical. Can be adjusted before or after installation.
- Discharge pattern is adjusted by dropping the hinged, perforated face and moving the curved deflector blades (see the Removing Perforated Face and Adjusting Pattern Controllers diagram within this section)
- Dropping the perforated face also gives access for adjusting the optional damper
- Perforated face has $\frac{3}{16}$ " diameter holes on $\frac{1}{4}$ " staggered centers
- Round inlet collar is approximately $1\frac{1}{2}$ " deep for easy duct connection
- Material is heavy gauge steel backpan with steel or aluminum perforated face, according to the model selected



PCS / PCS-DF / PCS-AA

MODELS:

Steel Models:
 PCS / Flush Face
 PCS-DF / Drop Face

Aluminum Model:
 PCS-AA / Flush Face

FINISH:

Standard Finish - #26 White

OVERVIEW

Curved Blade – 1-, 2-, 3-, or 4-Way Deflectors

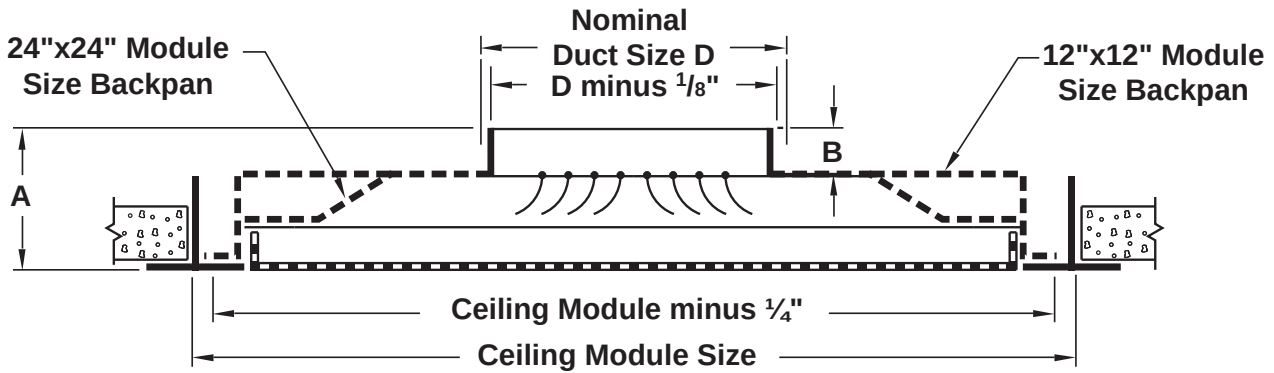
Titus Series PCS ceiling diffusers are designed for longer throws. Discharge patterns can be adjusted from either horizontal to vertical before or after installation.



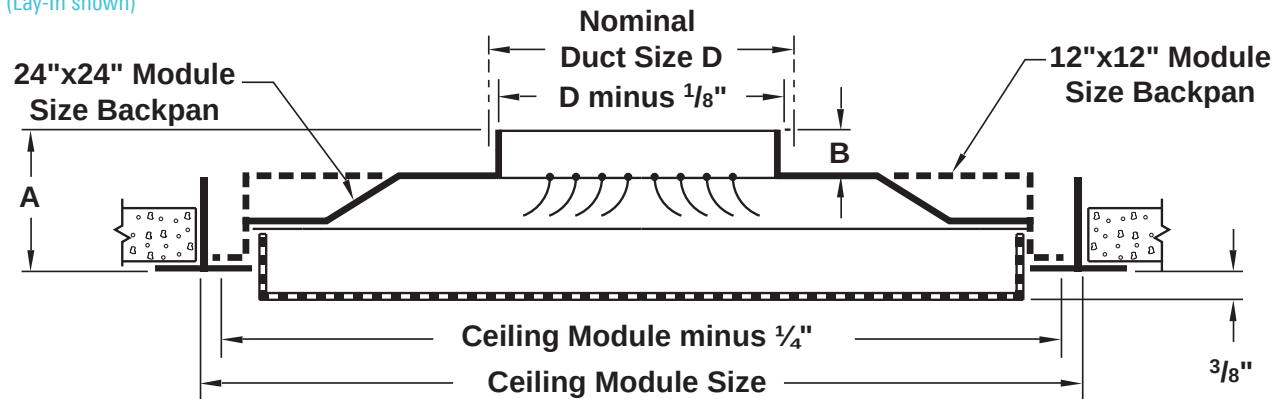
See website for Specifications

PCS / PCS-DF / PCS-AA UNIT DIMENSIONS

Model PCS and PCS-AA
Border Type 3 (Lay-In)



Model PCS-DF
Border Type 3
(Lay-In or Tegular)
(Lay-In shown)



Face or Ceiling Module Size	Neck Sizes	Dimension	
		A	B
12 x 12	6, 8	4	2
12 x 12	6 x 6, 8 x 8	3 3/8	1 3/8
24 x 12	6, 8	3 1/2	1 1/2
24 x 12	6 x 6, 8 x 8, 18 x 6	3 1/2	1 1/2
16 x 16 (note 1)	6, 8, 10	3 1/2	1 1/2
16 x 16	6 x 6, 8 x 8, 10 x 10, 12 x 12	3 1/2	1 1/2
20 x 20 (note 1)	6, 8, 10, 12, 14	3 1/2	1 1/2
20 x 20	6 x 6, 8 x 8, 10 x 10, 12 x 12	3 1/2	1 1/2
24 x 24	6, 8	3 1/4	1
	10, 12, 14, 15, 16, 6 x 6, 8 x 8, 10 x 10, 12 x 12, 14 x 14, 15 x 15, 16 x 16	3 3/4	1 1/2
48 x 24	6, 8, 10, 12, 14, 16, 6 x 6, 8 x 8, 10 x 10, 12 x 12, 16 x 16, 18x18	3 1/2	1 1/2

Note 1: Module Size 16 x 16 and 20 x 20 are only available with Border Type 3

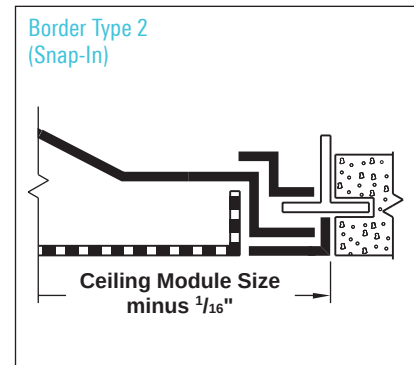
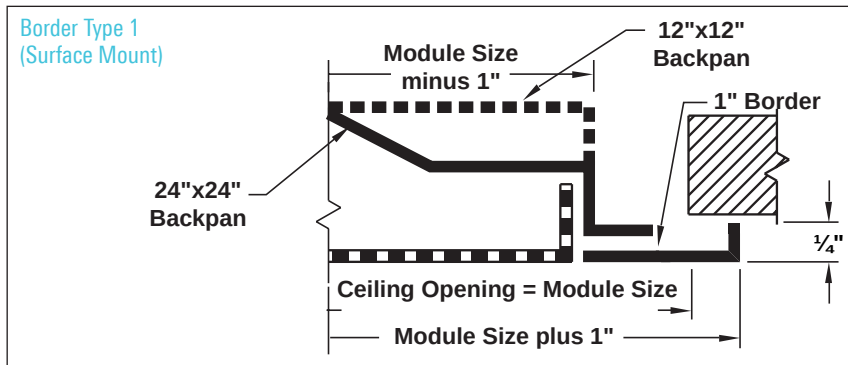
Note 2: Shaded neck sizes indicate the die-stamped backpan shown above is used. The square backpan is used for all other neck sizes.

BORDER TYPES

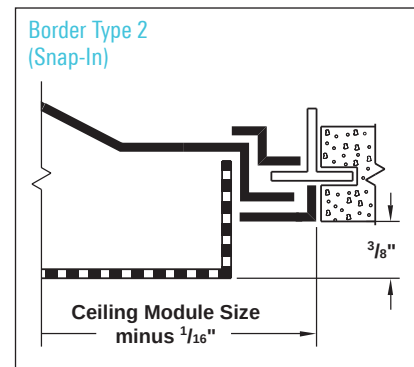
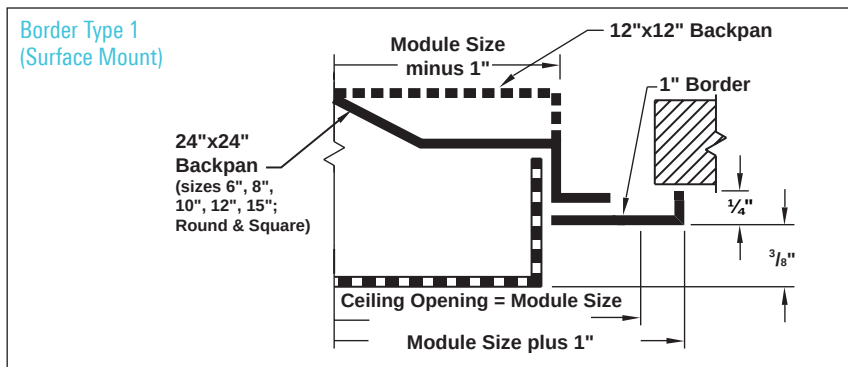
In addition to Border Type 3 (lay-in), as dimensioned on the preceding page, Series PCS diffusers are also available in border types to fit the various ceiling systems shown here

- All of these border types can be furnished with both the 12 x 12" and 24 x 24" face or ceiling module size
- The following tables indicate the round and square neck sizes that can be selected

MODELS PCS / PCS-AA



MODEL PCS-DF



AVAILABLE SIZES

Inlet Size	PCS, PCS-DF, PCS-AA					
	Square Backpan Module Size					
	12 x 12	24 x 12	16 x 16	20 x 20	24 x 24	48 x 24
6 x 6	□	•	•	•	□	•
8 x 8	•	•	•	•	□	•
10 x 10			•	•	□	•
12 x 12			•	•	□	•
14 x 14					•	
15 x 15					•	
16 x 16					•	•
18 x 6		•				
18 x 18					□	•

Inlet Size	PCS, PCS-DF, PCS-AA					
	Square Backpan Module Size					
	12 x 12	24 x 12	16 x 16	20 x 20	24 x 24	48 x 24
6" Dia.	□	•	•	•	□	•
8" Dia.	•	•	•	•	□	•
10" Dia.			•	•	□	•
12" Dia.				•	□	•
14" Dia.				•	□	
15" Dia.					•	
16" Dia.					□	•

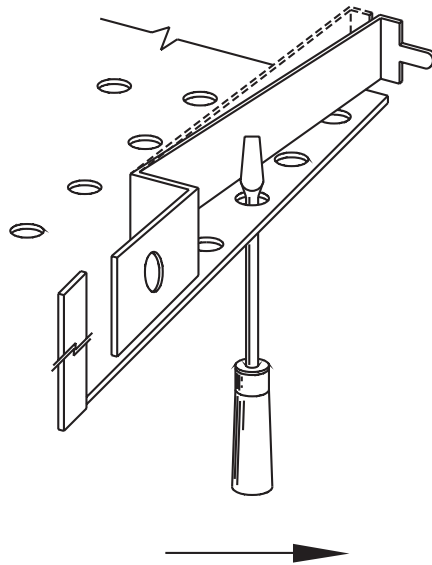
- Indicates available size. Not all sizes available in all border types
- Indicates aluminum (AA) available
- /□ Shaded area indicates stamped, formed backpan size

All dimensions are in inches

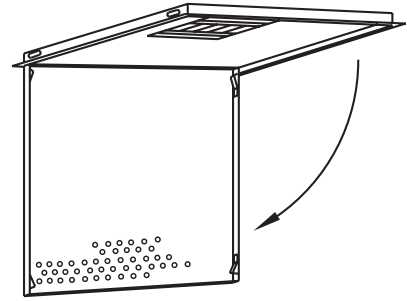
INSTALLATIONS

REMOVING PERFORATED FACE

1. Insert small screwdriver or other slim instrument to push latch inward from border
2. Repeat on opposite side

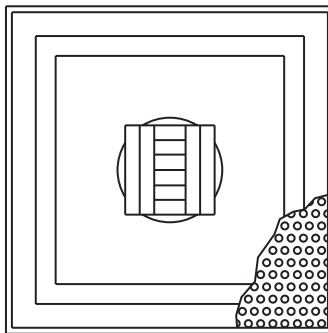


3. Face will now swing down with the other side hinging

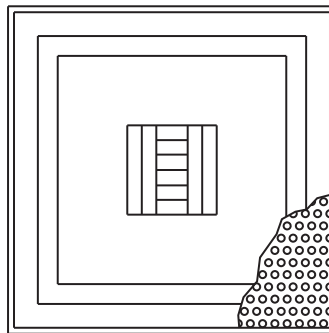


ADJUSTING PATTERN CONTROLLERS

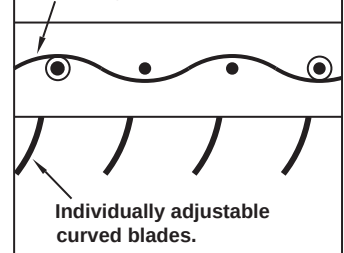
Round Neck - 4-Way



Square Neck - 4-Way

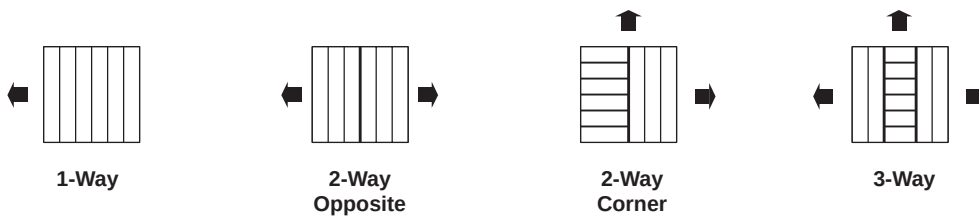


Tension wire holds blades in position after pattern has been adjusted.



The pattern deflector in the neck of the diffuser consists of individually adjustable blades. These blades vary the discharge pattern from full horizontal to vertical and also damper the air volume.

The standard model PCS diffuser has a 4-way discharge pattern. Also available are the patterns below.



PCS / ROUND / CURVED BLADE / ADJUSTABLE - 1-, 2-, 3- OR 4-WAY DEFLECTORS

		Neck Velocity	300	400	500	600	700	800	900	1000	1100
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
12" x 12" Module Size	6" Neck	Air Flow, cfm	59	78	98	118	137	157	176	196	216
		NC (Noise Criteria)	-	-	13	19	25	29	33	36	40
		Total Pressure	0.014	0.025	0.039	0.056	0.076	0.100	0.126	0.156	0.189
		4 Way - Horizontal Throw	1-1-5	1-2-7	2-4-8	2-5-8	3-6-9	4-7-10	5-7-10	6-8-11	6-8-11
		3 Way - Horizontal Throw	1-2-8	2-4-11	3-6-13	4-8-14	5-9-15	7-11-16	8-12-17	9-13-18	10-14-19
	8" Neck	2 Way - Horizontal Throw	1-2-8	2-4-12	3-6-15	4-8-17	5-11-18	7-12-19	8-14-21	10-15-22	11-16-23
		1 Way - Horizontal Throw	1-3-9	2-4-12	3-7-15	4-9-18	6-11-20	8-12-21	9-14-23	10-15-24	11-17-25
		Air Flow, cfm	105	140	175	209	244	279	314	349	384
		NC (Noise Criteria)	-	-	15	21	26	30	34	38	41
		Total Pressure	0.020	0.036	0.056	0.081	0.110	0.144	0.182	0.224	0.272
24" x 24" Module Size	6" Neck	4 Way - Horizontal Throw	1-2-7	1-3-9	2-5-10	3-7-11	5-8-12	6-9-13	7-10-14	8-10-15	8-11-15
		3 Way - Horizontal Throw	1-3-11	2-5-14	3-8-17	5-11-19	7-12-21	9-14-22	11-16-23	12-17-25	13-18-26
		2 Way - Horizontal Throw	1-3-11	2-5-16	3-8-20	5-11-23	7-14-24	9-16-26	11-18-28	13-20-29	15-22-30
		1 Way - Horizontal Throw	1-3-12	3-6-17	4-9-21	6-12-25	8-14-27	11-17-28	12-19-30	14-21-32	15-23-33
	8" Neck	Air Flow, cfm	105	140	175	209	244	279	314	349	384
		NC (Noise Criteria)	-	14	19	23	26	29	32	34	36
		Total Pressure	0.011	0.020	0.031	0.045	0.061	0.080	0.101	0.125	0.151
		4 Way - Horizontal Throw	1-1-6	1-2-9	2-4-11	2-6-12	3-8-13	4-9-14	6-10-15	7-11-16	8-12-17
		3 Way - Horizontal Throw	1-2-7	1-3-11	2-5-14	3-7-16	5-10-17	6-11-18	7-13-19	9-14-20	10-15-21
	10" Neck	2 Way - Horizontal Throw	1-3-11	2-5-14	3-7-16	5-11-17	6-13-19	8-14-20	11-15-21	13-16-22	13-16-23
		1 Way - Horizontal Throw	1-3-12	2-5-18	4-8-20	5-12-22	7-16-24	9-18-25	12-19-27	15-20-28	16-21-30
		Air Flow, cfm	164	218	273	327	382	436	491	545	600
		NC (Noise Criteria)	-	15	20	24	27	30	33	35	37
		Total Pressure	0.015	0.027	0.042	0.061	0.082	0.108	0.136	0.168	0.204
	12" Neck	4 Way - Horizontal Throw	1-2-7	1-3-11	2-5-14	3-7-15	4-9-17	5-11-18	7-12-19	9-14-20	10-15-21
		3 Way - Horizontal Throw	1-2-9	2-4-14	3-6-18	4-9-19	6-12-21	7-14-22	9-16-24	11-18-25	13-19-26
		2 Way - Horizontal Throw	1-3-13	3-6-18	4-9-20	6-13-21	8-16-23	11-18-25	13-19-26	16-20-28	17-21-29
		1 Way - Horizontal Throw	2-4-15	3-7-22	5-10-25	7-15-27	9-20-30	12-22-32	15-24-34	18-25-35	21-26-37
	14" Neck	Air Flow, cfm	236	314	393	471	550	628	707	785	864
		NC (Noise Criteria)	-	16	21	25	29	31	34	36	38
		Total Pressure	0.018	0.032	0.050	0.072	0.098	0.128	0.162	0.200	0.241
		4 Way - Horizontal Throw	1-2-8	2-4-13	3-6-16	4-8-18	5-11-20	7-13-21	8-15-23	10-16-24	12-18-25
		3 Way - Horizontal Throw	1-3-11	2-5-17	3-8-21	5-11-23	7-15-25	9-17-27	11-19-29	14-21-30	16-22-32
	16" Neck	2 Way - Horizontal Throw	2-4-16	3-7-21	5-11-24	7-16-26	10-20-28	13-21-30	16-22-32	19-24-33	20-25-35
		1 Way - Horizontal Throw	2-4-18	4-8-27	6-12-30	8-18-33	11-24-35	14-27-38	18-28-40	22-30-42	25-31-44
		Air Flow, cfm	321	428	535	641	748	855	962	1069	1176
		NC (Noise Criteria)	11	17	22	26	29	32	35	37	39
		Total Pressure	0.022	0.039	0.061	0.088	0.119	0.156	0.197	0.243	0.294
	18" Neck	4 Way - Horizontal Throw	1-2-10	2-4-15	3-7-19	4-10-21	6-13-23	8-15-25	10-17-26	12-19-28	14-21-29
		3 Way - Horizontal Throw	1-3-13	3-6-20	4-9-25	6-13-27	8-17-29	10-20-31	13-22-33	16-25-35	18-26-37
		2 Way - Horizontal Throw	2-5-19	4-8-25	6-13-27	8-19-30	11-23-32	15-25-35	19-26-37	22-27-39	24-29-41
		1 Way - Horizontal Throw	2-5-21	4-9-1	6-14-35	9-21-38	13-28-41	16-31-44	21-33-47	26-35-49	29-37-52
		Air Flow, cfm	419	559	698	838	977	1117	1257	1396	1536
		NC (Noise Criteria)	12	18	23	27	30	33	36	38	40
		Total Pressure	0.026	0.046	0.072	0.103	0.141	0.184	0.232	0.287	0.347
		4 Way - Horizontal Throw	1-3-11	2-5-17	3-8-22	5-11-25	7-15-27	9-17-28	11-20-30	14-22-32	16-24-33
		3 Way - Horizontal Throw	2-4-15	3-7-23	5-10-28	7-15-31	9-20-34	12-23-36	15-26-38	18-28-40	21-30-42
		2 Way - Horizontal Throw	2-5-21	4-9-28	7-15-31	9-21-34	13-26-37	17-28-40	21-30-42	26-31-44	27-33-47
		1 Way - Horizontal Throw	3-6-24	5-11-36	7-17-40	11-24-44	14-31-47	19-36-51	24-38-54	29-40-57	33-42-59

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions
- For an explanation of catalog throw data, see the Engineering Guidelines section of this catalog
- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure

PCS / SQUARE / CURVED BLADE / ADJUSTABLE - 1-, 2-, 3- OR 4-WAY DEFLECTORS

		Neck Velocity	300	400	500	600	700	800	900	1000	1100
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
12" x 12" Module Size	6" x 6" Neck	Air Flow, cfm	75	100	125	150	175	200	225	250	275
		NC (Noise Criteria)	-	-	14	20	25	30	33	37	40
		Total Pressure	0.016	0.029	0.045	0.065	0.089	0.116	0.146	0.181	0.219
		4 Way - Horizontal Throw	1-2-6	1-3-8	2-4-9	3-6-10	4-7-10	5-8-11	6-8-12	7-9-12	7-9-13
		3 Way - Horizontal Throw	1-2-9	2-4-12	3-7-15	4-9-16	6-11-17	7-12-19	9-4-20	10-15-21	11-15-22
	8" x 8" Neck	2 Way - Horizontal Throw	1-2-9	2-4-14	3-7-17	4-9-19	6-12-21	7-14-22	9-15-23	11-17-25	12-18-26
		1 Way - Horizontal Throw	1-3-11	2-5-14	4-8-18	5-11-21	7-12-22	9-14-24	11-16-25	12-18-27	13-19-28
		Air Flow, cfm	133	178	222	267	311	356	400	444	489
		NC (Noise Criteria)	-	-	15	21	26	31	35	38	41
		Total Pressure	0.023	0.041	0.064	0.092	0.125	0.164	0.207	0.256	0.309
24" x 24" Module Size	6" x 6" Neck	4 Way - Horizontal Throw	1-2-8	2-4-10	3-6-12	4-8-13	5-9-14	7-10-15	8-11-16	9-12-16	10-12-17
		3 Way - Horizontal Throw	1-3-12	2-6-16	4-9-20	6-12-21	8-14-23	10-16-25	12-18-26	13-20-28	15-21-29
		2 Way - Horizontal Throw	1-3-12	2-6-18	4-9-23	6-12-25	8-16-27	10-18-29	12-20-31	15-23-33	17-24-34
		1 Way - Horizontal Throw	2-4-14	3-7-19	5-11-23	7-14-28	9-16-30	12-19-32	14-21-34	16-23-36	17-26-38
	8" x 8" Neck	Air Flow, cfm	75	100	125	150	175	200	225	250	275
		NC (Noise Criteria)	-	13	18	22	25	28	30	33	35
		Total Pressure	0.010	0.017	0.026	0.038	0.052	0.068	0.086	0.106	0.128
		4 Way - Horizontal Throw	1-1-5	1-2-7	1-3-9	2-5-10	3-6-11	4-7-12	5-8-13	6-9-13	7-10-14
		3 Way - Horizontal Throw	1-2-6	1-3-10	2-4-12	3-6-13	4-8-14	5-10-15	6-11-16	8-12-17	9-13-18
	10" x 10" Neck	2 Way - Horizontal Throw	1-2-9	2-4-12	3-6-13	4-9-15	5-11-16	7-12-17	9-13-18	11-13-19	11-14-20
		1 Way - Horizontal Throw	1-3-10	2-4-15	3-7-17	4-10-19	6-13-20	8-15-21	10-16-23	12-17-24	14-18-25
		Air Flow, cfm	133	178	222	267	311	356	400	444	489
		NC (Noise Criteria)	-	15	19	23	27	30	32	35	37
		Total Pressure	0.014	0.025	0.039	0.056	0.076	0.100	0.126	0.156	0.189
	12" x 12" Neck	4 Way - Horizontal Throw	1-2-6	1-3-10	2-4-12	3-6-14	4-8-15	5-10-16	6-11-17	8-12-18	9-13-19
		3 Way - Horizontal Throw	1-2-8	2-4-13	3-6-16	4-8-18	5-11-19	7-13-20	8-14-21	10-16-23	12-17-24
		2 Way - Horizontal Throw	1-3-12	2-5-16	4-8-18	5-12-19	7-15-21	9-16-22	12-17-24	14-18-25	15-19-26
		1 Way - Horizontal Throw	1-3-13	3-6-20	4-9-23	6-13-25	8-18-27	11-20-29	13-21-30	17-23-32	19-24-33
	14" x 14" Neck	Air Flow, cfm	208	278	347	417	486	556	625	694	764
		NC (Noise Criteria)	-	16	21	25	28	31	34	36	38
		Total Pressure	0.017	0.031	0.048	0.070	0.095	0.124	0.157	0.193	0.234
		4 Way - Horizontal Throw	1-2-8	2-3-12	2-5-15	3-8-17	5-11-19	6-12-20	8-14-21	10-15-22	11-17-23
		3 Way - Horizontal Throw	1-3-11	2-5-16	3-7-20	5-11-22	6-14-24	8-16-25	11-18-27	13-20-28	15-21-30
	15" x 15" Neck	2 Way - Horizontal Throw	2-4-15	3-7-20	5-10-22	7-15-24	9-19-26	12-20-28	15-21-30	18-22-31	19-23-33
		1 Way - Horizontal Throw	2-4-17	3-7-25	5-12-28	7-17-31	10-22-33	13-25-36	17-27-38	21-28-40	23-30-42
	16" x 16" Neck	Air Flow, cfm	300	400	500	600	700	800	900	1000	1100
		NC (Noise Criteria)	-	17	22	26	29	32	35	37	39
		Total Pressure	0.020	0.035	0.055	0.079	0.107	0.140	0.177	0.218	0.264
		4 Way - Horizontal Throw	1-2-9	2-4-15	3-7-19	4-9-21	6-13-22	7-15-24	9-17-25	12-19-27	14-20-28
		3 Way - Horizontal Throw	1-3-13	2-6-19	4-9-24	6-13-26	8-17-28	10-19-30	13-22-32	16-24-34	18-25-36
	17" x 17" Neck	2 Way - Horizontal Throw	2-5-18	4-8-24	6-13-27	8-18-29	11-22-31	14-24-34	18-25-36	22-27-38	23-28-39
		1 Way - Horizontal Throw	2-5-20	4-9-30	6-14-34	9-20-37	12-27-40	16-30-43	20-32-45	25-34-48	28-35-50
	18" x 18" Neck	Air Flow, cfm	408	544	681	817	953	1089	1225	1361	1497
		NC (Noise Criteria)	12	18	23	27	30	33	36	38	40
		Total Pressure	0.026	0.046	0.072	0.103	0.141	0.184	0.232	0.287	0.347
		4 Way - Horizontal Throw	1-3-11	2-5-17	3-8-22	5-11-24	7-15-26	9-17-28	11-19-30	13-22-31	16-23-33
		3 Way - Horizontal Throw	2-4-15	3-7-22	5-10-28	7-15-31	9-20-33	12-22-35	15-25-38	18-28-40	21-29-42
	19" x 19" Neck	2 Way - Horizontal Throw	2-5-21	4-9-28	6-15-31	9-21-34	13-26-37	17-28-39	21-29-42	25-31-44	27-33-46
		1 Way - Horizontal Throw	3-6-24	5-10-35	7-16-39	10-24-43	14-31-47	19-35-50	24-37-53	29-39-56	33-41-59
	20" x 20" Neck	Air Flow, cfm	469	625	781	938	1094	1250	1406	1563	1719
		NC (Noise Criteria)	12	18	23	27	31	34	36	38	40
		Total Pressure	0.027	0.049	0.076	0.110	0.150	0.196	0.247	0.305	0.370
		4 Way - Horizontal Throw	1-3-12	2-5-19	4-8-23	5-12-26	7-16-28	9-19-30	12-21-32	14-23-34	17-25-35
		3 Way - Horizontal Throw	2-4-16	3-7-24	5-11-30	7-16-33	10-21-36	12-24-38	16-27-40	19-30-42	22-32-45
	21" x 21" Neck	2 Way - Horizontal Throw	3-6-23	4-10-30	7-16-33	10-23-36	14-28-39	18-30-42	23-32-45	27-33-47	28-35-49
		1 Way - Horizontal Throw	3-6-25	5-11-38	8-18-42	11-25-46	15-33-50	20-38-54	25-40-57	31-42-60	35-44-63
	22" x 22" Neck	Air Flow, cfm	533	711	889	1067	1244	1422	1600	1778	1956
		NC (Noise Criteria)	13	19	24	28	31	34	36	39	41
		Total Pressure	0.030	0.054	0.084	0.121	0.165	0.215	0.273	0.337	0.407
		4 Way - Horizontal Throw	1-3-12	2-6-20	4-9-25	6-12-28	8-17-30	10-20-32	12-22-34	15-25-36	18-27-38
		3 Way - Horizontal Throw	2-4-17	3-7-26	5-12-32	7-17-35	10-22-38	13-26-41	17-29-43	21-32-45	23-34-48
	23" x 23" Neck	2 Way - Horizontal Throw	3-6-24	5-11-32	7-17-35	11-24-39	15-30-42	19-32-45	24-34-48	29-35-50	30-37-53
		1 Way - Horizontal Throw	3-7-27	5-12-40	8-19-45	12-27-49	16-35-53	21-40-57	27-43-61	33-45-64	37-47-67

Narrow Tee

- Titus has a complete line of perforated diffusers that are designed to integrate into narrow tee ceiling systems
- Perforated face blends diffuser into ceiling system



NARROW TEE

MODELS:

Supply Models:
 PAS-NT / Round Pattern
 PSS-NT / Star Pattern
 PCS-NT / Curved Blade

Return Models:
 PAR-NT / Return
 PXP-NT / Return Panel

FINISH:

Standard Finish - #26 White

OVERVIEW

Narrow Tee / Steel

Perforated ceiling diffusers are typically selected to meet architectural demands for air outlets that blend into the ceiling plane. Titus perforated diffusers can be selected for a round pattern to maximize capacity or star pattern to maximize throw.

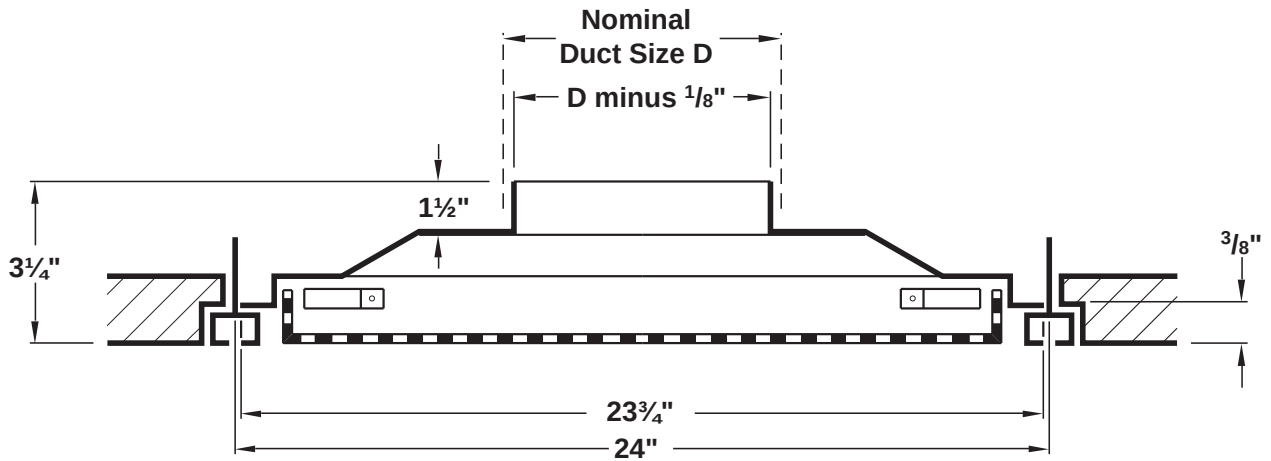
For Performance Data and Notes, please refer to page [F86](#) for PAS-NT / page [F92](#) for PAR-NT and PXP-NT / page [F100](#) for PSS-NT / page [F105](#) for PCS-NT.



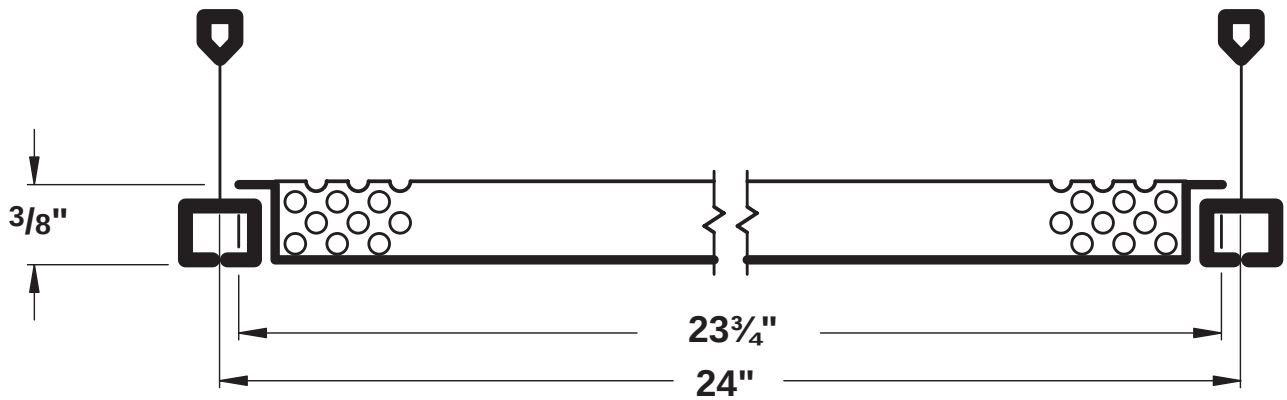
See website for Specifications

NARROW TEE UNIT DIMENSIONS

PAR-NT (shown)



PXP-NT (shown)



PMC / PMC-DF / PMR

- Titus Model PMC perforated, modular core diffuser is extremely flexible; it can be adjusted for a 1-, 2-, 3- or 4-way discharge pattern after it has been installed
- Perforated face provides the architectural advantage of blending the diffuser into the ceiling system and at the same time offering the performance of the modular core diffuser for variable air volume applications. (Maintains a horizontal flow pattern from maximum to minimum cfm in VAV systems)
- Perforated face discourages unwanted tampering with the air pattern adjustment by providing a barrier in front of the modular core
- Perforated face has $\frac{3}{16}$ " diameter holes on $\frac{1}{4}$ " staggered centers
- Each of the modular core sections can easily be removed from the frame and rotated to provide 1-, 2-, 3-way or a vertical air pattern
- Shipped with the modular core set for a 4-way discharge



PMC / PMC-DF / PMR

MODELS:

Supply Models:
PMC / Flush Face
PMC-DF / Drop Face

Return Model:
PMR / Flush Face

FINISH:

Standard Finish - #26 White

OVERVIEW

Modular Core – 1-, 2-, 3-, or 4-Way Adjustable / Steel

PMC perforated, modular core diffuser can be adjusted for a 1, 2, 3 or 4-way discharge pattern after installation. The perforated face provides an architectural advantage of blending the diffuser into the ceiling system and at the same time offering the performance of the modular core diffuser.

ADDITIONAL FEATURES

- Optional AG-95 damper is accessible for adjustment by opening the perforated face and removing a core module
- Material is heavy gauge steel perforated face and backpan; modular core section is steel
- New core design results in a higher quality overall assembly, and easier changes to modular core placement

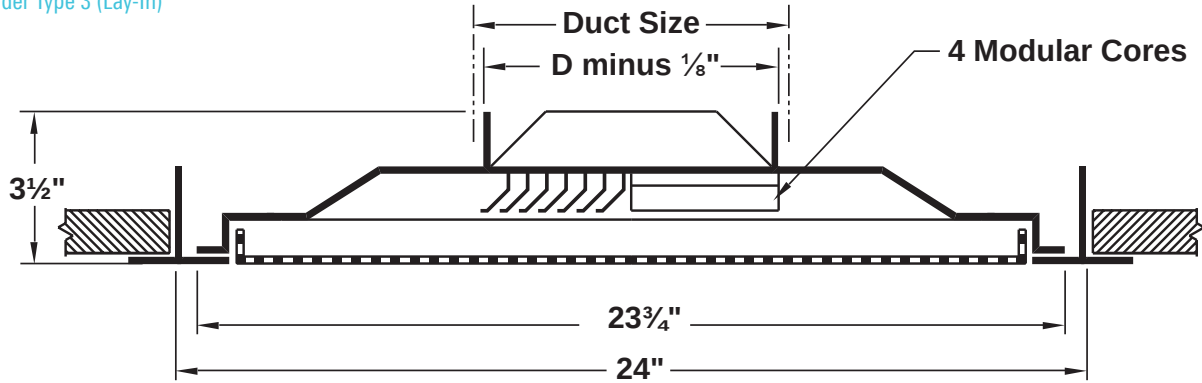


See website for Specifications

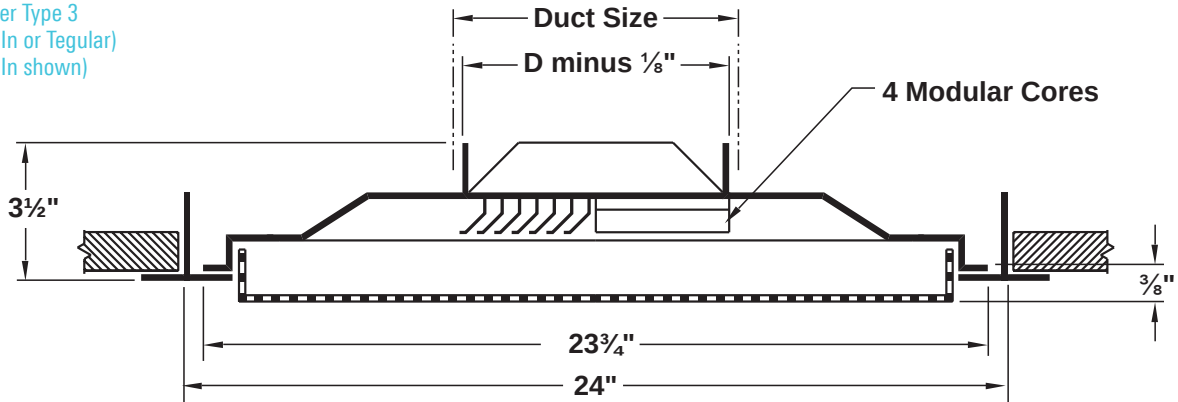
DIMENSIONS

PMC / PMC-DF / PMR UNIT DIMENSIONS

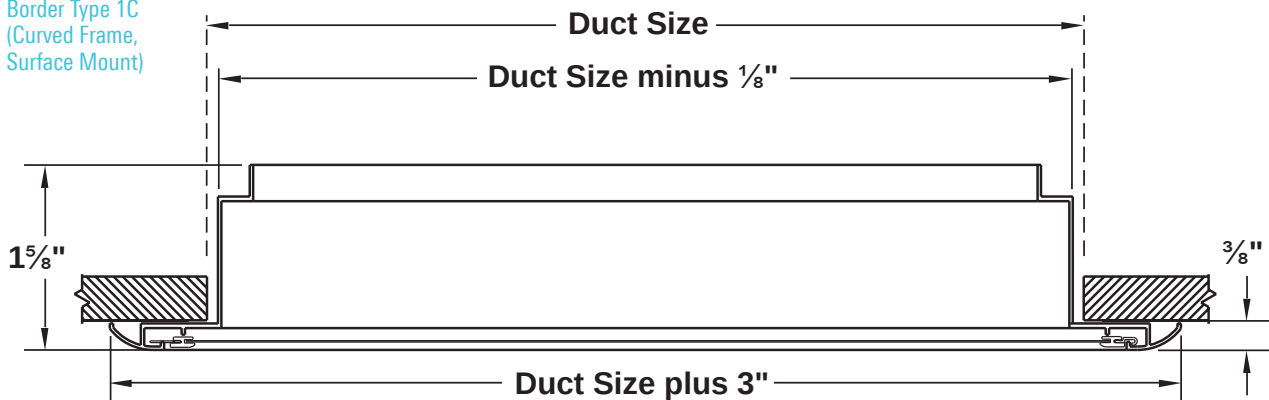
Model PMC
Border Type 3 (Lay-In)



Model PMC-DF
Border Type 3
(Lay-In or Tegal)
(Lay-In shown)



Model PMR
Border Type 1C
(Curved Frame,
Surface Mount)



Note: For PMR Border Types 1 and 3 select the PAR return

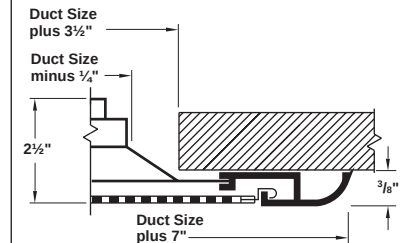
BORDER TYPES

In addition to Border Type 3 (lay-in), as dimensioned on the preceding page, PMC diffusers are also available in border types for surface mounting applications

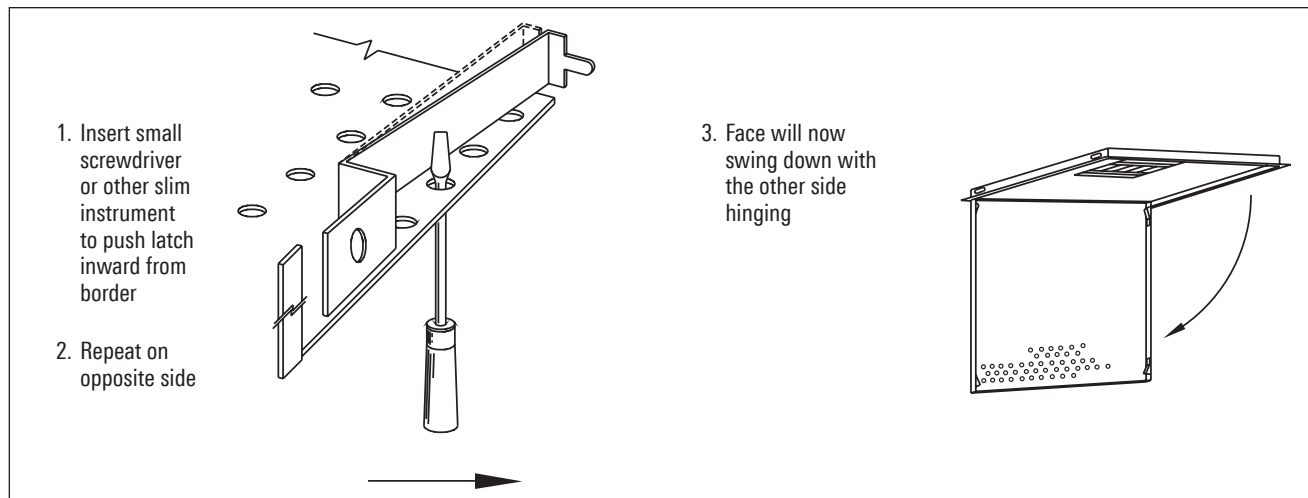
AVAILABLE DUCT SIZES

Border Types 3, 1C		PMR Module Border Type 1C		
Duct Sizes (inches)				
6 x 6	12 x 12	6 x 6	12 x 12	20 x 20
8 x 8	14 x 14	8 x 8	14 x 14	22 x 22
10 x 10	16 x 16	10 x 10	16 x 16	22 x 10
	18 x 18		18 x 18	46 x 22

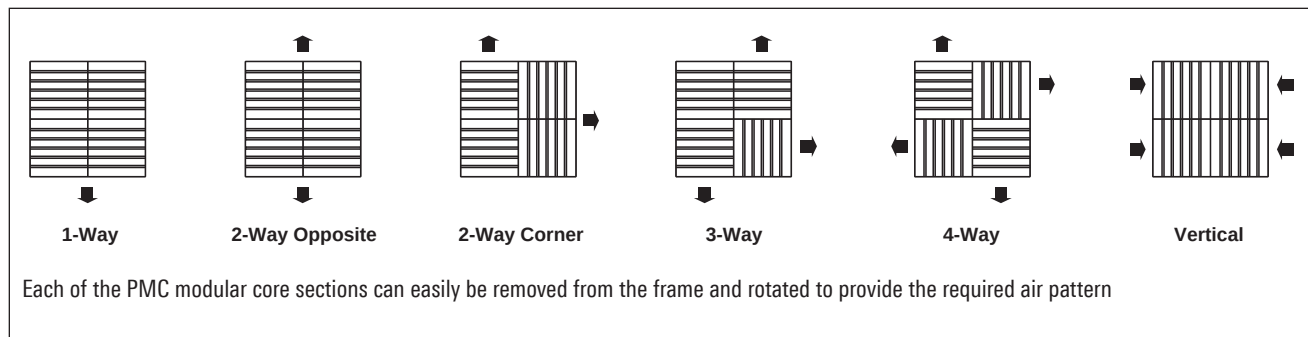
Border Type 1C (Surface Mount, Curved Frame)



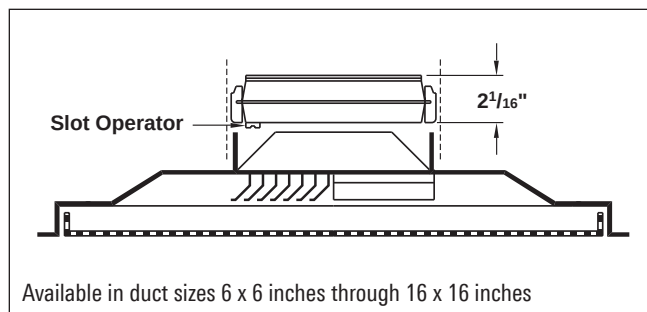
REMOVING PERFORATED FACE - BORDER TYPE 3



MODULAR CORE ADJUSTMENTS



OPTIONAL MODEL AG-95 - OPPOSED-BLADE DAMPER



PMC / SUPPLY / MODULAR CORE - 1-, 2-, 3- OR 4-WAY BLOW PATTERN

		Neck Velocity								
		300	400	500	600	700	800	900	1000	1100
		Velocity Pressure								
		0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
		Air Flow, cfm								
		75	100	125	150	175	200	225	250	275
		Total Pressure								
		0.008	0.014	0.022	0.031	0.043	0.056	0.070	0.087	0.105
		NC (Noise Criteria)								
		-	-	12	17	22	27	30	34	37
6 x 6 Neck	1 Way - Horizontal Throw	3-5-9	4-6-12	5-8-15	6-9-18	7-11-21	8-12-22	9-14-23	10-15-25	11-17-26
	2 Way - Horizontal Throw	1-3-6	2-4-8	3-5-10	4-6-12	5-7-13	5-8-14	6-9-15	7-10-16	7-11-17
	3 Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-5-11	4-6-12	5-7-13	5-8-13	6-9-14
	4 Way - Horizontal Throw	1-1-3	1-2-4	2-2-5	2-3-5	2-3-6	2-4-7	3-4-8	3-5-9	3-5-9
	Air Flow, cfm	133	178	222	267	311	356	400	444	489
		Total Pressure								
		0.011	0.020	0.031	0.044	0.060	0.079	0.100	0.123	0.149
		NC (Noise Criteria)								
		-	-	17	22	27	32	35	39	42
8 x 8 Neck	1 Way - Horizontal Throw	4-6-12	5-8-16	7-10-20	8-12-24	9-14-27	11-16-29	12-18-31	13-20-33	15-22-34
	2 Way - Horizontal Throw	2-4-8	3-5-11	4-7-13	5-8-16	6-9-18	7-11-19	8-12-20	9-13-21	10-15-22
	3 Way - Horizontal Throw	2-3-6	3-4-8	3-5-10	4-6-12	5-7-14	6-8-16	6-9-17	7-10-18	8-11-19
	4 Way - Horizontal Throw	1-2-4	2-2-5	2-3-6	2-4-7	3-4-8	3-5-10	4-5-11	4-6-12	4-7-13
	Air Flow, cfm	208	278	347	417	486	556	625	694	764
		Total Pressure								
		0.015	0.027	0.042	0.061	0.083	0.109	0.137	0.170	0.205
		NC (Noise Criteria)								
		-	14	21	26	31	36	39	43	46
10 x 10 Neck	1 Way - Horizontal Throw	5-8-15	7-10-20	8-13-25	10-15-30	12-18-34	13-20-37	15-23-39	17-25-41	18-28-43
	2 Way - Horizontal Throw	2-5-10	4-7-13	6-8-17	7-10-20	8-12-22	9-13-24	10-15-25	11-17-27	12-18-28
	3 Way - Horizontal Throw	2-4-8	3-5-10	4-6-13	5-8-16	6-9-18	7-10-20	8-12-21	9-13-22	9-14-23
	4 Way - Horizontal Throw	1-2-5	2-3-6	3-4-8	3-5-9	4-5-11	4-6-12	5-7-14	5-8-15	6-8-16
	Air Flow, cfm	300	400	500	600	700	800	900	1000	1100
		Total Pressure								
		0.020	0.036	0.057	0.082	0.111	0.145	0.184	0.227	0.274
		NC (Noise Criteria)								
		-	17	24	30	35	39	43	46	49
12 x 12 Neck	1 Way - Horizontal Throw	6-9-18	8-12-24	10-15-30	12-18-36	14-21-41	16-24-44	18-27-47	20-30-49	22-33-52
	2 Way - Horizontal Throw	3-6-12	5-8-16	7-10-20	8-12-24	9-14-27	11-16-29	12-18-30	13-20-32	15-22-34
	3 Way - Horizontal Throw	2-5-9	4-6-12	5-8-16	6-9-19	7-11-22	8-12-24	9-14-25	10-16-27	11-17-28
	4 Way - Horizontal Throw	2-3-5	2-4-7	3-5-9	4-5-11	4-6-13	5-7-14	5-8-16	6-9-18	7-10-19
	Air Flow, cfm	469	625	781	938	1094	1250	1406	1563	1719
		Total Pressure								
		0.030	0.053	0.083	0.119	0.162	0.212	0.268	0.331	0.401
		NC (Noise Criteria)								
		12	21	28	34	39	43	47	50	53
16 x 16 Neck	1 Way - Horizontal Throw	8-11-23	10-15-30	13-19-38	15-23-45	18-26-51	20-30-55	23-34-58	25-38-61	28-41-64
	2 Way - Horizontal Throw	4-8-15	6-10-20	8-13-25	10-15-30	12-18-33	13-20-36	15-23-38	17-25-40	18-28-42
	3 Way - Horizontal Throw	3-6-12	5-8-16	6-10-19	8-12-23	9-14-27	10-16-30	12-17-32	13-19-34	14-21-35
	4 Way - Horizontal Throw	2-3-7	3-5-9	4-6-11	5-7-14	5-8-16	6-9-18	7-10-20	8-11-22	8-12-23
	Air Flow, cfm	675	900	1125	1350	1575	1800	2025	2250	2475
		Total Pressure								
		0.041	0.073	0.115	0.165	0.225	0.294	0.372	0.459	0.556
		NC (Noise Criteria)								
		15	24	31	37	42	46	50	53	56
18 x 18 Neck	1 Way - Horizontal Throw	9-14-27	12-18-36	15-23-45	18-27-54	21-32-62	24-36-66	27-41-70	30-45-74	33-50-77
	2 Way - Horizontal Throw	4-9-18	7-12-24	10-15-30	12-18-36	14-21-40	16-24-43	18-27-46	20-30-48	22-33-50
	3 Way - Horizontal Throw	4-7-14	6-9-19	8-12-23	9-14-28	11-16-33	12-19-36	14-21-38	16-23-40	17-26-42
	4 Way - Horizontal Throw	2-4-8	4-5-11	5-7-14	5-8-16	6-9-19	7-11-22	8-12-24	9-14-27	10-15-28
	Air Flow, cfm	675	900	1125	1350	1575	1800	2025	2250	2475

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- Throw values are given for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines, for an explanation of catalog throw data.
- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2nd through 7th, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure

Square Ceiling Diffusers

diffusers

TMS / TMS-AA

- Titus Models TMS and TMS-AA square ceiling diffusers deliver supply air in a true 360° pattern. Designed to protect ceilings from streaking and smudging.
- Excellent performance in variable air volume systems. The uniform, nearly horizontal jet from the outer cone maintains effective room air distribution even when the air volume varies over a considerable range.
- All sizes have three cones, giving a uniform appearance where different neck sizes are used in the same area
- Screwdriver adjustment of the optional damper is achieved without removing the inner cone. (See Step 2 in Adjusting Optional Damper, Removing Center Core diagram on page 111)
- Quick removal of the inner cone with a hex key. (See Step 3 in Adjusting Optional Damper, Removing Center Core diagram on page 111)
- All cones are die-stamped, one piece construction. Smooth, clean surfaces with no corner joints.



TMS / TMS-AA



metric sizes



energy solutions



open ceiling

MODELS:

TMS / Steel

TMS-AA / Aluminum

FINISH:

Standard Finish - #26 White

OVERVIEW

High Performance

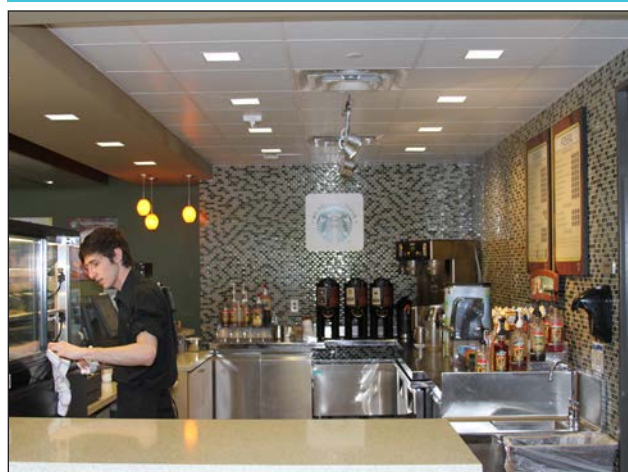
The TMS is a square ceiling diffuser that delivers supply air in a true 360° pattern with low pressure drop. The uniform, nearly horizontal jet from the outer cone maintains effective room air distribution even when the air volume varies over a considerable range. All sizes have three cones, giving a uniform appearance where different neck sizes are used in the same area.

ADDITIONAL FEATURES

- Optional factory-installed R-6 foil-backed insulation available for 24 x 24" full face models, neck sizes 6-15, borders 1, 2, 3 and 4
- Optional (SB) sectorizing baffle is available. Consult your Titus representative for details.
- Material: all sizes are available in steel (Model TMS). Only the 24 x 24" ceiling module is available in aluminum with steel bar (Model TMS-AA).



See website for Specifications



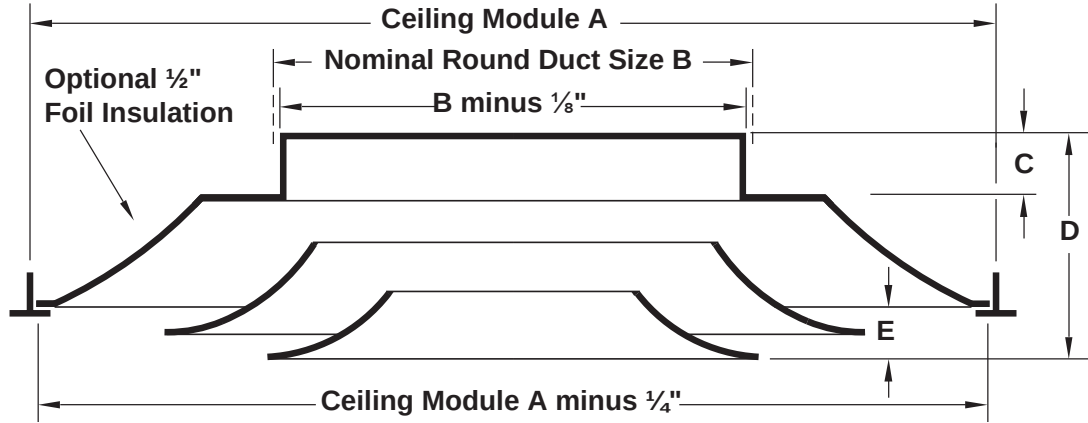
TMS installed in a ceiling of an kitchen / breakroom area in an office building

DIMENSIONS

TMS / TMS-AA UNIT DIMENSIONS

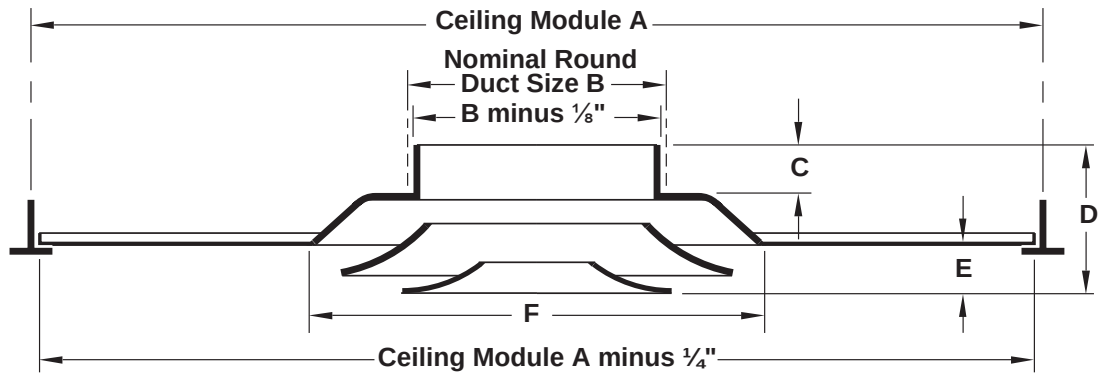
Frame Type 3
Full Face (Lay-In)

(note 1)



Frame Type 3
Panel Mounted
(Lay-In)

(note 1)



Ceiling Module A	Nominal Round Duct Size B	C	D	E
12 x 12	4, 5 (note 2)	3 ¹ / ₈	5 ³ / ₈	1 ¹ / ₈
12 x 12	6, 7 (note 3)	1 ¹ / ₈	3 ³ / ₈	1 ¹ / ₈
12 x 12	8	1 ¹ / ₄	3 ¹ / ₂	1 ¹ / ₈
20 x 20	4, 5*	2 ³ / ₄	6 ³ / ₈	1 ¹ / ₄
20 x 20	6, 8, 10	3 ¹ / ₄	4 ³ / ₈	1 ¹ / ₄
24 x 24	6, 8	1 ¹ / ₄	5	1 ¹ / ₄
24 x 24	10, 12, 14, 15	1 ³ / ₈	5 ¹ / ₈	1 ¹ / ₄

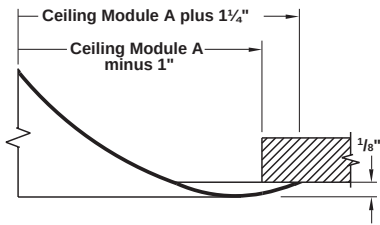
Ceiling Module A	Nominal Round Duct Size B	Nominal Face Size F	C	D	E
24 x 24	4, 5 (note 2)	12 x 12	3 ¹ / ₈	5 ³ / ₈	1 ¹ / ₈
24 x 24	6, 7 (note 3)	12 x 12	1 ¹ / ₈	3 ³ / ₈	1 ¹ / ₈
24 x 24	8	12 x 12	1 ¹ / ₄	3 ¹ / ₂	1 ¹ / ₈

Notes:

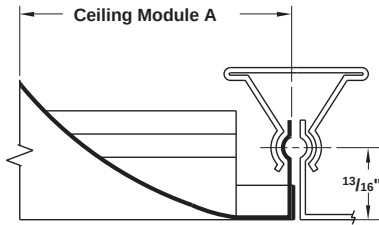
1. Aluminum construction is available in full face 24" x 24" ceiling module only. Steel construction is available in all sizes.
2. Adapter is provided for sizes 4 and 5
3. The smallest neck size available in aluminum is 6 inches

OTHER AVAILABLE FRAME TYPES

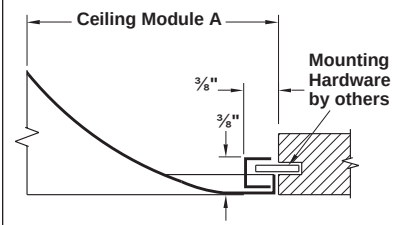
Frame Type 1
(Surface Mount) Full Face



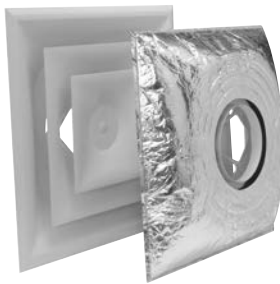
Frame Type 2
(Snap-In) Full Face or Panel Mounted



Frame Type 4
(Spline) Full Face or Panel Mounted

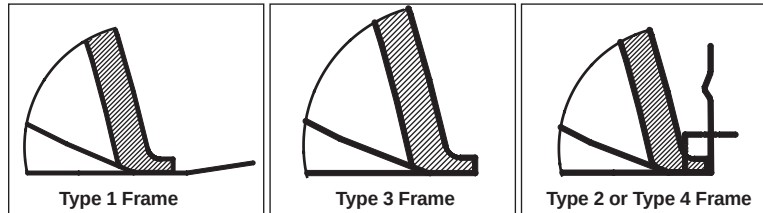
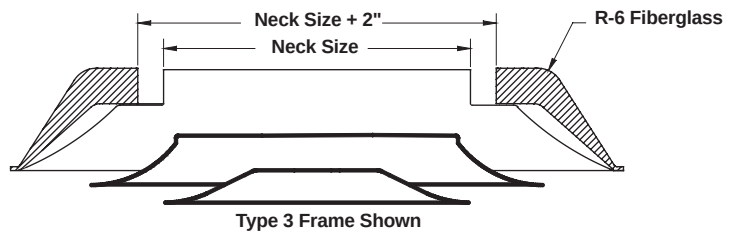


Ceiling Module	Face Size	Nominal Round Duct Sizes	Frame Types
12 x 12	12 x 12	4, 5, 6, 7, 8	1, 2, 3, 4
24 x 24	24 x 24	6, 8, 10, 12, 14, 15	1, 2, 3, 4
24 x 24 (Panel)	12 x 12	4, 5, 6, 7, 8	2, 3, 4

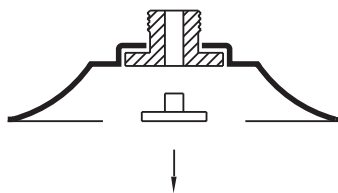


Optional Molded Insulation Blanket

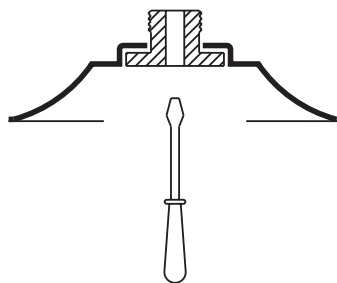
Insulation is R-6 where blanket has the most depth. One" clearance on each side of neck is left for insulated duct connection. 24 x 24" full face models only.



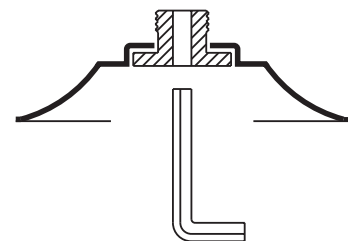
ADJUSTING OPTIONAL DAMPER - REMOVING CENTER CONE



1. Remove center plug



2. Insert screwdriver through hex hole to adjust optional damper



Insert hex key (by others) and unscrew center hub to remove center cone

TMS / SQUARE CEILING / ROUND NECK / HIGH PERFORMANCE

		Neck Velocity	400	500	600	700	800	1000	1200	1400	1600
		Velocity Pressure	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122	0.160
12" x 12" Module Size	4" Dia.	Airflow, cfm	35	44	52	61	70	87	105	122	140
		Total Pressure	0.012	0.018	0.026	0.035	0.046	0.072	0.104	0.141	0.184
		NC (Noise Criteria)	-	-	-	-	12	20	26	31	36
		Throw feet	1-1-3	1-2-4	1-2-4	2-3-5	2-3-6	2-4-7	3-4-7	3-5-8	4-6-8
	5" Dia.	Airflow, cfm	55	68	82	95	109	136	164	191	218
		Total Pressure	0.015	0.023	0.033	0.044	0.058	0.091	0.131	0.178	0.232
		NC (Noise Criteria)	-	-	-	-	15	23	29	34	39
		Throw feet	1-2-4	2-2-5	2-3-6	2-3-7	2-4-7	3-5-8	4-6-9	4-7-10	5-7-10
	6" Dia.	Airflow, cfm	79	98	118	137	157	196	236	275	314
		Total Pressure	0.018	0.028	0.041	0.056	0.073	0.114	0.164	0.223	0.291
		NC (Noise Criteria)	-	-	-	13	18	25	32	37	42
		Throw feet	2-2-5	2-3-6	2-3-7	3-4-8	3-5-9	4-6-10	5-7-11	5-8-12	6-9-13
	7" Dia.	Airflow, cfm	107	134	160	187	214	267	321	374	428
		Total Pressure	0.020	0.031	0.045	0.062	0.081	0.126	0.181	0.247	0.322
		NC (Noise Criteria)	-	-	-	15	20	28	34	39	44
		Throw feet	2-3-5	2-3-7	3-4-8	3-5-9	4-5-10	4-7-12	5-8-13	6-9-14	7-10-15
	8" Dia.	Airflow, cfm	140	175	209	244	279	349	419	489	559
		Total Pressure	0.022	0.035	0.050	0.069	0.090	0.140	0.202	0.275	0.359
		NC (Noise Criteria)	-	-	12	17	22	29	36	41	46
		Throw feet	2-3-6	3-4-8	3-5-9	4-5-11	4-6-12	5-8-13	6-9-14	7-11-16	8-12-17
20" x 20" Module Size	6" Dia.	Airflow, cfm	79	98	118	137	157	196	236	275	
		Total Pressure	0.016	0.025	0.035	0.048	0.063	0.099	0.142	0.193	
		NC (Noise Criteria)	-	-	-	14	18	24	30	34	
		Throw feet	1-1-4	1-2-4	2-3-5	2-3-6	2-4-7	3-4-9	4-5-10	4-6-12	
	8" Dia.	Airflow, cfm	140	175	209	244	279	349	419	489	
		Total Pressure	0.017	0.027	0.038	0.057	0.067	0.105	0.152	0.207	
		NC (Noise Criteria)	-	-	-	13	19	23	29	34	
		Throw feet	2-4-5	2-4-6	3-4-8	4-6-9	5-7-12	5-8-13	5-9-15	5-10-17	
	10" Dia.	Airflow, cfm	218	273	327	382	436	545	654	764	
		Total Pressure	0.020	0.032	0.045	0.062	0.081	0.126	0.180	0.240	
		NC (Noise Criteria)	-	-	17	20	24	31	36	41	
		Throw feet	2-5-7	3-6-10	4-7-11	4-8-14	5-9-15	6-9-18	7-11-19	8-12-21	
24" x 24" Module Size	6" Dia.	Airflow, cfm	79	98	118	137	157	196	236	275	314
		Total Pressure	0.016	0.025	0.035	0.048	0.063	0.099	0.142	0.193	0.252
		NC (Noise Criteria)	-	-	-	12	16	22	28	32	36
		Throw feet	1-2-4	1-2-4	2-3-5	2-3-6	2-4-7	3-4-9	4-5-11	4-6-12	5-7-13
	8" Dia.	Airflow, cfm	140	175	209	244	279	349	419	489	559
		Total Pressure	0.016	0.025	0.036	0.049	0.064	0.101	0.145	0.197	0.257
		NC (Noise Criteria)	-	-	11	15	19	26	31	36	40
		Throw feet	2-3-5	2-3-7	3-4-8	3-5-9	4-5-11	4-7-13	5-8-14	6-9-16	7-11-17
	10" Dia.	Airflow, cfm	218	273	327	382	436	545	654	764	873
		Total Pressure	0.017	0.026	0.037	0.051	0.066	0.103	0.149	0.202	0.264
		NC (Noise Criteria)	-	-	14	18	22	29	34	39	43
		Throw feet	2-4-7	3-5-9	4-5-11	4-6-13	5-7-14	6-9-17	7-11-18	8-13-20	10-14-21
	12" Dia.	Airflow, cfm	314	393	471	550	628	785	942	1100	1257
		Total Pressure	0.017	0.027	0.038	0.052	0.068	0.106	0.153	0.208	0.272
		NC (Noise Criteria)	-	11	16	21	24	31	36	41	45
		Throw feet	3-5-9	4-6-11	5-7-14	5-8-16	6-9-18	8-11-20	9-14-22	11-16-23	12-18-25
	14" Dia.	Airflow, cfm	428	535	641	748	855	1069	1283	1497	1710
		Total Pressure	0.018	0.028	0.040	0.054	0.071	0.110	0.159	0.216	0.282
		NC (Noise Criteria)	-	13	18	22	26	33	38	43	47
		Throw feet	4-5-11	5-7-14	5-8-16	6-10-19	7-11-21	9-14-23	11-16-25	13-19-27	14-21-29
	15" Dia.	Airflow, cfm	491	614	736	859	982	1227	1473	1718	1963
		Total Pressure	0.018	0.028	0.040	0.055	0.072	0.112	0.162	0.220	0.287
		NC (Noise Criteria)	-	13	19	23	27	34	39	44	48
		Throw feet	4-6-12	5-7-15	6-9-18	7-10-21	8-12-22	10-15-25	12-18-27	14-21-29	16-22-31

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- If the diffuser is mounted on an exposed duct, the throw values are 70% of those listed in the table
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines, for an explanation of catalog throw data.
- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Each NC value represents the noise criteria curve which will not be exceeded by the sound pressure in any of the octave bands, 2nd through 7th, with a room absorption of 10 dB, re 10-12 watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure

TMSA / TMSA-AA

- Titus Models TMSA and TMSA-AA diffusers include adjustable vanes which vary the discharge pattern between vertical and horizontal
- All sizes have three cones, giving a uniform appearance where different neck sizes are used in the same area
- Screwdriver adjustment of the optional damper is achieved without removing the inner cone. (See Step 2 in Adjusting Optional Damper, Removing Center Cone diagram in this section)
- Quick removal of the inner cone with a hex key. (See Step 3 in Adjusting Optional Damper, Removing Center Cone diagram in this section)
- All cones are die-stamped, one piece construction. Smooth, clean surfaces.
- Optional (SB) sectorizing baffle is available. Consult your Titus representative for details.



TMSA / TMSA-AA



metric sizes

open ceiling



See website for Specifications

MODELS:

TMSA / Steel
TMSA-AA / Aluminum

FINISH:

Standard Finish - #26 White

OVERVIEW

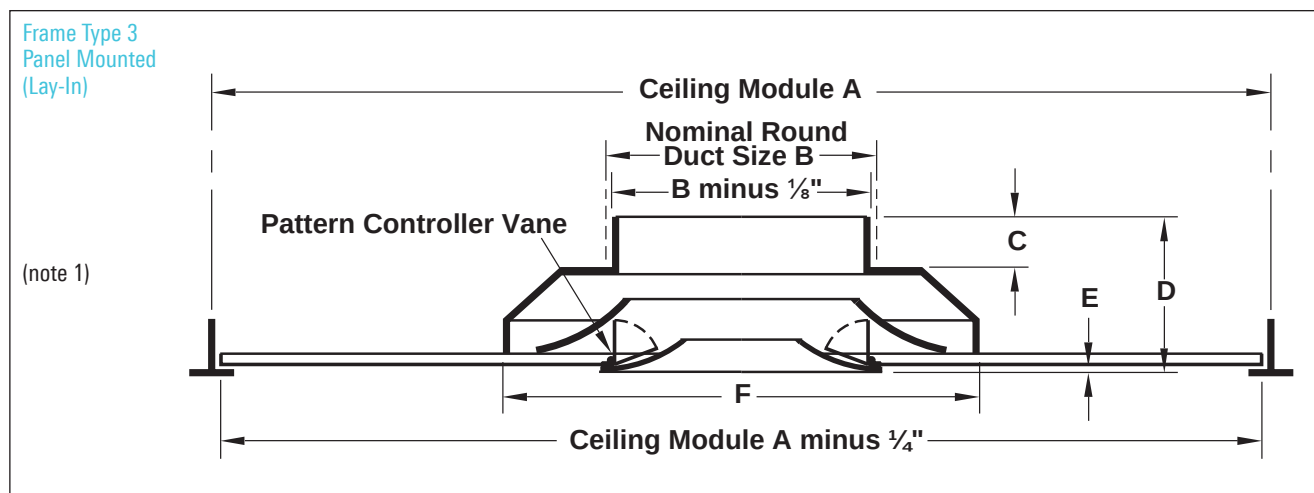
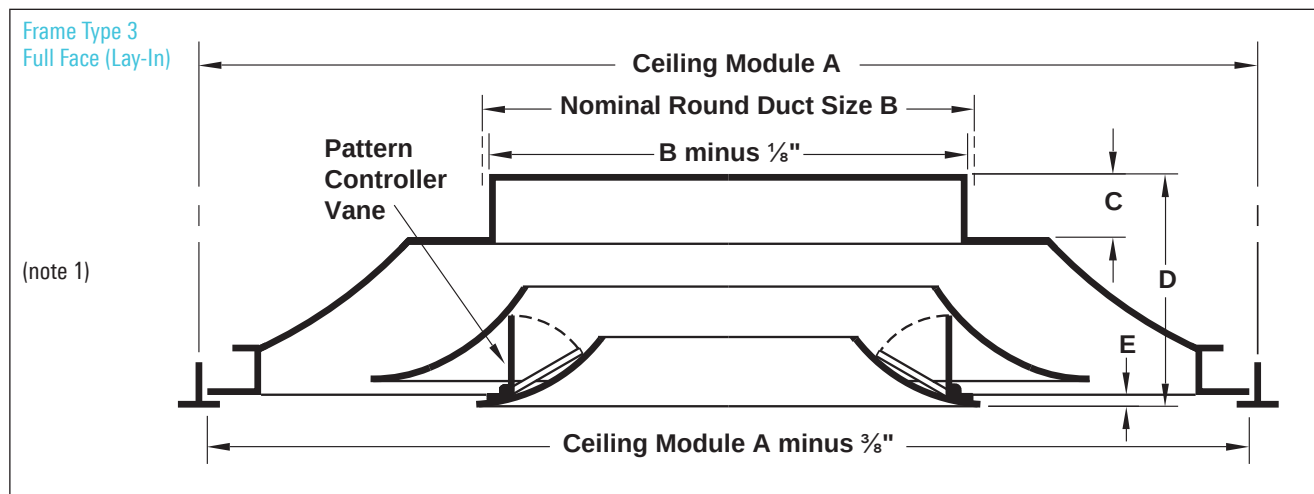
High Performance / Horizontal to Vertical
Discharge Pattern / Adjustable

Titus Models TMSA and TMSA-AA diffusers feature adjustable vanes which vary the discharge pattern between vertical and horizontal for heating and cooling applications. These diffusers deliver supply air in 360° pattern and are designed to protect ceilings from smudging. All sizes have 3 cones providing a uniform appearance.

ADDITIONAL FEATURES

- Material: all sizes are available in steel (Model TMSA). Only the 24 x 24" ceiling module is available in aluminum with steel support bar (Model TMSA-AA).
- Delivers supply air in 360° pattern. Designed to help protect ceilings from streaking and smudging.

TMSA / TMSA-AA UNIT DIMENSIONS



Ceiling Module A	Nominal Round Duct Size B	C	D	E
12 x 12	4, 5 (note 2)	3 ¹ / ₈	5 ³ / ₈	3 ³ / ₈
12 x 12	6, 7 (note 3)	1 ¹ / ₈	3 ³ / ₈	3 ³ / ₈
12 x 12	8	1 ¹ / ₄	3 ¹ / ₂	5 ⁵ / ₈
20 x 20	4, 5*	2 ³ / ₄	6 ³ / ₈	1 ¹ / ₄
20 x 20	6, 8, 10	3 ³ / ₄	4 ³ / ₈	1 ¹ / ₄
24 x 24	6, 8	1 ¹ / ₄	5	1 ¹ / ₄
24 x 24	10, 12, 14, 15	1 ³ / ₈	5 ¹ / ₈	1 ¹ / ₄

Ceiling Module A	Nominal Round Duct Size B	Nominal Face Size F	C	D	E
24 x 24	4, 5 (note 2)	12 x 12	3 ¹ / ₈	5 ³ / ₈	3 ³ / ₈
24 x 24	6, 7 (note 3)	12 x 12	1 ¹ / ₈	3 ³ / ₈	3 ³ / ₈
24 x 24	8	12 x 12	1 ¹ / ₄	3 ¹ / ₂	5 ⁵ / ₈

Notes:

- Aluminum construction is available in full face 24" x 24" ceiling module only. Steel construction is available in all sizes.
- Adapter is provided for sizes 4 and 5
- The smallest neck size available in aluminum is 6 inches

TMSA / SQUARE CEILING / ROUND NECK / HIGH PERFORMANCE / HORIZONTAL TO VERTICAL DISCHARGE

Neck Velocity			400	500	600	700	800	1000	1200	1400	1600
Velocity Pressure			0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122	0.160
12" x 12" Module Size	4" Dia.	Airflow, cfm	35	44	52	61	70	87	105	122	140
		Total Pressure	Horizontal Vertical	0.012 0.013	0.018 0.021	0.026 0.030	0.036 0.041	0.046 0.053	0.072 0.083	0.104 0.120	0.142 0.164
		Throw feet		1-1-2 1-1-2	1-2-3 1-1-2	1-2-4 1-1-3	1-2-4 1-2-3	2-2-5 1-2-3	2-3-6 1-2-3	2-4-7 2-3-4	3-4-8 2-3-4
		NC (Noise Criteria)	Horizontal Vertical	- -	- -	- -	- -	13 16	20 21	25 26	30 30
	5" Dia.	Airflow, cfm	55	68	82	95	109	136	164	191	218
		Total Pressure	Horizontal Vertical	0.018 0.022	0.028 0.034	0.041 0.049	0.056 0.066	0.073 0.086	0.114 0.135	0.164 0.194	0.223 0.265
		Throw feet		1-2-3 1-1-2	1-2-4 1-1-3	2-2-5 1-2-3	2-3-5 1-2-3	2-3-6 1-2-4	3-4-8 2-3-4	3-5-9 2-3-5	4-5-10 3-3-5
		NC (Noise Criteria)	Horizontal Vertical	- -	- -	- -	14 12	18 15	25 22	31 27	36 32
	6" Dia.	Airflow, cfm	78	98	118	137	157	196	235	274	314
		Total Pressure	Horizontal Vertical	0.026 0.032	0.041 0.049	0.059 0.071	0.080 0.097	0.105 0.126	0.164 0.198	0.236 0.284	0.321 0.387
		Throw feet		1-2-4 1-1-3	2-2-5 1-2-3	2-3-6 1-2-4	2-3-7 2-2-4	2-4-7 2-3-4	3-5-9 2-3-5	4-6-11 3-4-5	4-7-12 3-4-6
		NC (Noise Criteria)	Horizontal Vertical	- -	- -	14 12	19 17	23 21	30 27	36 32	40 37
	7" Dia.	Airflow, cfm	107	134	160	187	214	267	320	374	427
		Total Pressure	Horizontal Vertical	0.036 0.044	0.056 0.068	0.080 0.098	0.110 0.133	0.143 0.174	0.223 0.272	0.322 0.392	0.438 0.533
		Throw feet		1-2-4 1-2-3	2-3-5 1-2-4	2-3-7 2-2-4	3-4-8 2-3-5	3-4-9 2-3-5	4-5-11 3-4-6	4-7-13 3-4-6	5-8-14 4-5-7
		NC (Noise Criteria)	Horizontal Vertical	- -	12 -	18 16	23 21	27 25	34 31	40 37	44 41
	8" Dia.	Airflow, cfm	140	175	209	244	279	349	419	489	558
		Total Pressure	Horizontal Vertical	0.047 0.057	0.073 0.090	0.105 0.129	0.143 0.175	0.187 0.229	0.292 0.358	0.421 0.516	0.573 0.702
		Throw feet		2-2-5 1-2-4	2-3-6 1-2-4	2-4-7 2-3-5	3-4-9 2-3-6	3-5-10 2-4-6	4-6-12 3-4-7	5-7-14 4-5-7	6-9-16 4-6-8
		NC (Noise Criteria)	Horizontal Vertical	- -	16 15	22 20	26 25	31 29	37 35	43 41	48 45

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- If the diffuser is mounted on an exposed duct, the throw values are 70% of those listed in the table
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines for the catalog throw data information.
- NC values are based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB

- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure
- Horizontal throw is along a surface
- Vertical throw is a free jet

TMSA / SQUARE CEILING / ROUND NECK / HIGH PERFORMANCE / HORIZONTAL TO VERTICAL DISCHARGE

			Neck Velocity	400	500	600	700	800	1000	1200	1400	1600
			Velocity Pressure	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122	0.160
24" x 24" Module Size	6" Dia.	Airflow, cfm		78	98	118	137	157	196	235	274	314
		Total Pressure	Horizontal	0.018	0.028	0.040	0.055	0.072	0.112	0.162	0.220	0.287
			Vertical	0.019	0.030	0.043	0.058	0.076	0.118	0.171	0.232	0.303
		Throw feet	Horizontal	2-3-5	2-3-6	3-4-7	3-5-8	3-6-8	4-7-9	4-7-10	4-7-11	5-8-12
			Vertical	0-1-1	1-1-2	1-1-2	1-1-2	1-1-3	1-1-4	1-2-4	1-2-4	1-2-5
		NC (Noise Criteria)	Horizontal	-	-	-	14	18	25	30	35	39
			Vertical	-	-	-	13	17	24	29	34	38
	8" Dia.	Airflow, cfm		140	175	209	244	279	349	419	489	558
		Total Pressure	Horizontal	0.018	0.028	0.041	0.056	0.073	0.114	0.164	0.223	0.291
			Vertical	0.022	0.034	0.049	0.067	0.088	0.137	0.197	0.269	0.351
		Throw feet	Horizontal	2 - 3 - 5	2-3-6	3-4-8	3-5-9	3-5-10	4-6-11	5-8-12	6-9-13	7-10-14
			Vertical	0 - 1 - 1	1-1-2	1-1-2	1-1-2	1-1-3	1-2-4	1-2-4	2-2-5	2-3-6
		NC (Noise Criteria)	Horizontal	-	-	12	17	21	28	33	38	42
			Vertical	-	-	12	16	20	27	32	37	41
	10" Dia.	Airflow, cfm		218	273	327	382	436	545	654	763	872
		Total Pressure	Horizontal	0.018	0.029	0.041	0.056	0.073	0.114	0.164	0.224	0.292
			Vertical	0.030	0.047	0.068	0.092	0.120	0.188	0.271	0.369	0.482
		Throw feet	Horizontal	2-3-6	3-4-8	3-5-10	4-6-11	4-6-13	5-8-14	6-10-15	8-11-17	9-13-18
			Vertical	1-1-2	1-1-2	1-1-3	1-2-3	1-2-4	1-2-4	2-3-5	2-3-6	2-4-7
		NC (Noise Criteria)	Horizontal	-	-	15	20	24	31	37	41	45
			Vertical	-	12	18	22	26	33	38	43	47
	12" Dia.	Airflow, cfm		314	393	471	550	628	785	942	1099	1256
		Total Pressure	Horizontal	0.018	0.029	0.041	0.056	0.073	0.114	0.165	0.224	0.293
			Vertical	0.040	0.063	0.090	0.123	0.161	0.251	0.361	0.492	0.642
		Throw feet	Horizontal	3-4-8	3-5-10	4-6-12	5-7-14	5-8-15	6-10-17	8-12-18	9-14-20	10-15-21
			Vertical	1-1-2	1-1-3	1-2-3	1-2-4	1-2-4	2-3-5	2-3-6	2-4-7	3-4-9
		NC (Noise Criteria)	Horizontal	-	12	18	23	27	34	39	44	48
			Vertical	-	17	23	27	31	38	43	48	52
	14" Dia.	Airflow, cfm		428	535	641	748	855	1069	1283	1497	1710
		Total Pressure	Horizontal	0.029	0.045	0.065	0.089	0.116	0.181	0.261	0.355	0.464
			Vertical	0.044	0.068	0.098	0.134	0.175	0.273	0.393	0.535	0.699
		Throw feet	Horizontal	5-8-15	6-10-19	8-11-21	9-13-22	10-15-24	13-19-27	15-21-29	18-22-31	19-24-34
			Vertical	2-5-7	3-6-8	5-6-9	6-7-10	6-7-10	7-8-12	7-9-13	8-10-14	8-10-15
		NC (Noise Criteria)	Horizontal	-	-	12	18	23	32	39	45	50
			Vertical	12	18	23	28	32	38	43	48	51
	15" Dia.	Airflow, cfm		491	614	736	859	982	1227	1472	1718	1963
		Total Pressure	Horizontal	0.031	0.048	0.069	0.094	0.123	0.192	0.277	0.377	0.492
			Vertical	0.041	0.064	0.092	0.125	0.164	0.256	0.369	0.502	0.655
		Throw feet	Horizontal	5-8-16	7-10-20	8-12-22	10-14-24	11-16-25	14-20-28	16-22-31	19-24-34	21-25-36
			Vertical	2-5-8	4-6-9	5-7-10	6-7-10	6-8-11	7-9-12	8-10-14	8-10-15	9-11-16
		NC (Noise Criteria)	Horizontal	-	-	13	19	24	32	39	45	50
			Vertical	-	17	22	27	31	37	42	47	50

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- If the diffuser is mounted on an exposed duct, the throw values are 70% of those listed in the table
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines for the catalog throw data information.
- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- To obtain static pressure, subtract the velocity pressure from the total pressure
- Horizontal throw is along a surface
- Vertical throw is a free jet

MCD / MCD-AA

- Titus Model MCD modular core diffuser is extremely flexible; it can be adjusted for a 1-, 2-, 3-, or 4-way pattern after it has been installed
- Maintains a horizontal flow pattern from maximum to minimum cfm, making the MCD an excellent choice for variable air volume systems
- Optional AG-95 opposed blade damper is accessible for adjustment from the diffuser face by removing a core module
- MCD is shipped with the modular core set for 4-way discharge
- Material is heavy gauge steel (MCD) or aluminum with miscellaneous steel parts (MCD-AA)
- New core design results in a higher quality overall assembly, and easier changes to modular core placement
- Now available with round neck for flex duct applications



MCD / MCD-AA

MODELS:

MCD / Steel
MCD-AA / Aluminum

FINISH:

Standard Finish - #26 White

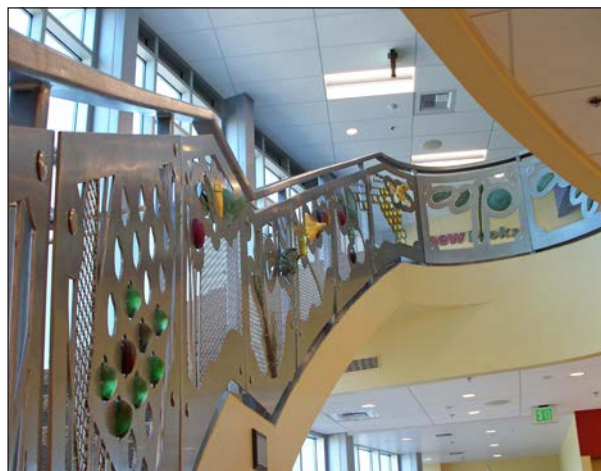
OVERVIEW

Modular Core - 1-, 2-, 3-, or 4-Way Adjustable

Titus Model MCD modular core diffuser is extremely flexible; it can be adjusted for a 1, 2, 3, or 4-way pattern after it has been installed. The MCD maintains a horizontal flow pattern from maximum to minimum cfm, making it an excellent choice for variable air volume systems.



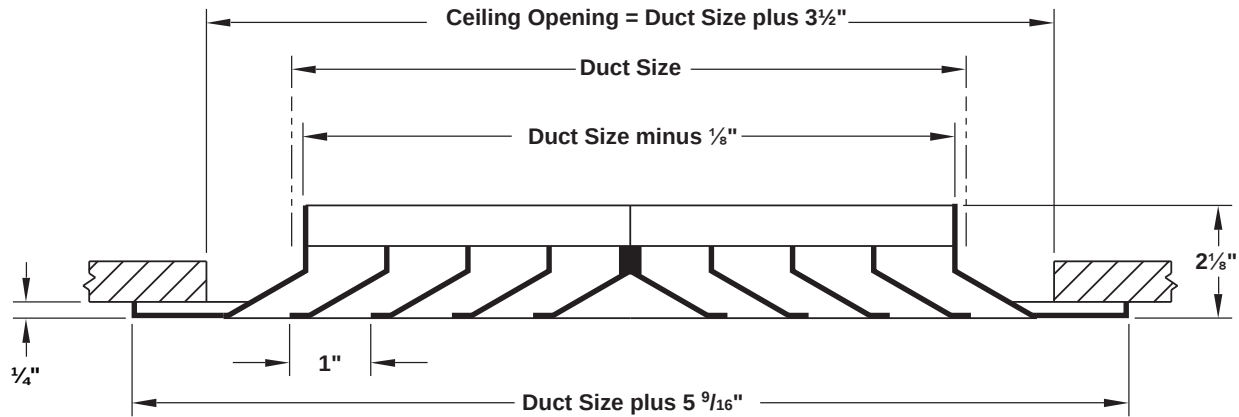
See website for Specifications



MCD diffuser installed in the ceiling of a library

MCD / MCD-AA DIMENSIONS

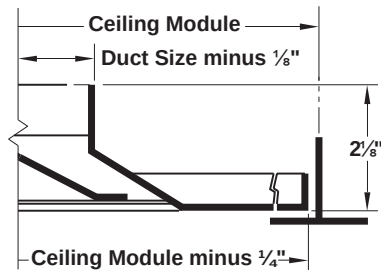
Border Type 1
(Surface Mount)



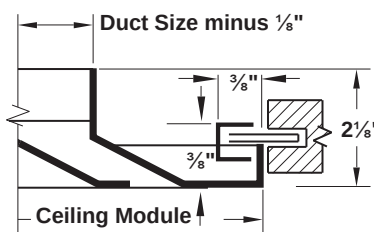
Note: Two-way opposite pattern shown.

AVAILABLE BORDER TYPES

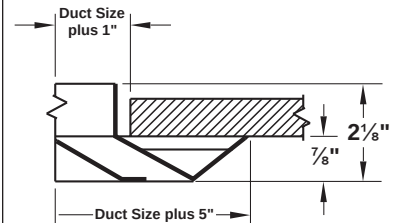
Border Type 3
(Lay-In)



Border Type 4
(Spline)



Border Type 6
(Beveled Drop Face)



F

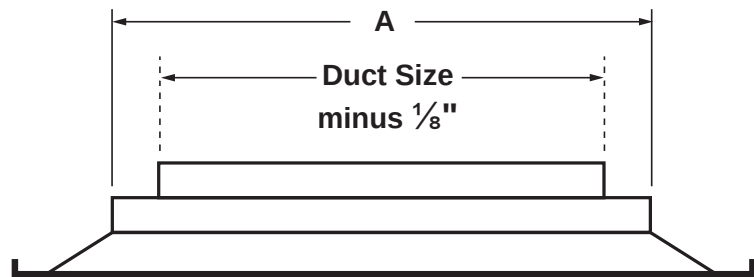
AVAILABLE DUCT SIZES

Border Types 1, 6			Border Types 3, 4		
Duct Sizes (inches)			Available Module Size		
6 x 6	14 x 14	22 x 22	6 x 6	14 x 14	24 x 24
8 x 8	16 x 16	24 x 24	8 x 8	16 x 16	
10 x 10	18 x 18		10 x 10	18 x 18	
12 x 12	20 x 20		12 x 12		

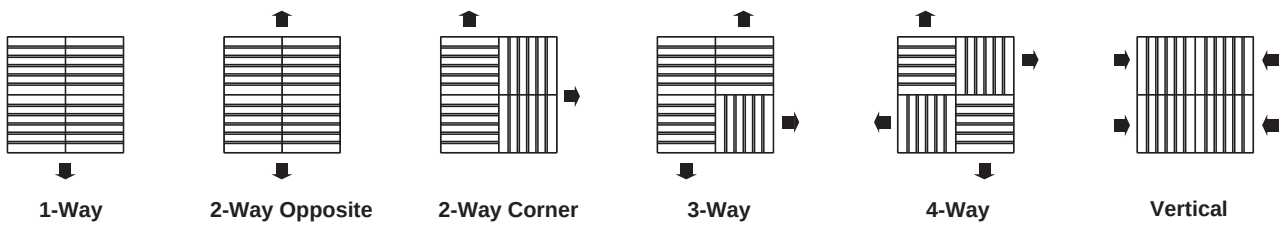
ROUND DUCT SIZES

Border Type 3		
Available Module Size	Minimum A	Available Round Duct Size
24 x 24	6 x 6	6
	12 x 12	6, 8, 10, 12

Note: Round duct sizes are available only
in sizes shown.adjustable cores



MODULAR CORE ADJUSTMENTS



MCD / MCD-AA / SQUARE CEILING / MODULAR CORE / 1-, 2-, 3- OR 4-WAY BLOW PATTERN

	Neck Velocity	300	400	500	600	700	800	900	1000	1100
	Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
6 x 6 Neck	Airflow, cfm	75	100	125	150	175	200	225	250	275
	Total Pressure	0.011	0.019	0.030	0.043	0.059	0.077	0.097	0.120	0.145
	NC (Noise Criteria)	-	-	-	11	15	19	22	25	28
	1-Way - Horizontal Throw	8-11-16	10-13-18	12-15-21	13-16-23	14-17-24	15-18-26	16-20-28	17-21-29	18-22-30
	2-Way - Horizontal Throw	6-9-12	8-10-14	9-11-16	10-12-17	11-13-19	12-14-20	12-15-21	13-16-22	14-17-23
	3-Way - Horizontal Throw	5-8-12	7-10-13	9-11-15	10-12-16	10-13-18	11-13-19	12-14-20	12-15-21	13-16-22
	4-Way - Horizontal Throw	4-5-8	5-6-9	6-7-10	6-8-11	7-8-12	7-9-13	8-9-13	8-10-14	9-10-15
8 x 8 Neck	Airflow, cfm	133	178	222	267	311	356	400	444	489
	Total Pressure	0.013	0.023	0.036	0.053	0.071	0.093	0.118	0.146	0.177
	NC (Noise Criteria)	-	-	12	17	21	25	28	31	33
	1-Way - Horizontal Throw	10-15-21	14-17-25	16-19-27	17-21-30	19-23-32	20-25-35	21-26-37	22-27-39	23-29-41
	2-Way - Horizontal Throw	8-12-16	11-13-19	12-15-21	13-16-23	14-18-25	15-19-27	16-20-28	17-21-30	18-22-31
	3-Way - Horizontal Throw	7-11-16	10-13-18	12-14-20	13-16-22	14-17-24	15-18-25	16-19-27	16-20-28	17-21-30
	4-Way - Horizontal Throw	5-7-10	6-8-12	8-9-13	8-10-15	9-11-16	10-12-17	10-13-18	11-13-19	11-14-20
10 x 10 Neck	Airflow, cfm	208	278	347	417	486	556	625	694	764
	Total Pressure	0.016	0.029	0.045	0.065	0.088	0.115	0.145	0.179	0.217
	NC (Noise Criteria)	-	-	17	21	26	29	32	35	38
	1-Way - Horizontal Throw	13-19-27	17-22-31	20-24-34	22-27-38	23-29-41	25-31-43	27-33-46	28-34-48	29-36-51
	2-Way - Horizontal Throw	10-14-20	13-17-24	15-19-26	17-20-29	18-22-31	19-24-33	20-25-35	22-26-37	23-28-39
	3-Way - Horizontal Throw	9-14-19	12-16-22	14-18-25	16-19-27	17-21-30	18-22-32	19-24-34	20-25-35	21-26-37
	4-Way - Horizontal Throw	6-9-13	8-11-15	10-12-17	11-13-18	11-14-20	12-15-21	13-16-22	14-17-23	14-17-25
12 x 12 Neck	Airflow, cfm	300	400	500	600	700	800	900	1000	1100
	Total Pressure	0.020	0.035	0.055	0.079	0.108	0.141	0.178	0.220	0.266
	NC (Noise Criteria)	-	14	20	25	29	33	36	39	41
	1-Way - Horizontal Throw	16-23-32	21-26-37	24-29-41	26-32-45	28-34-49	30-37-52	32-39-55	34-41-58	35-43-61
	2-Way - Horizontal Throw	12-17-24	16-20-28	18-22-32	20-24-35	22-26-37	23-28-40	24-30-42	26-32-45	27-33-47
	3-Way - Horizontal Throw	11-16-23	14-19-27	17-21-30	19-23-33	21-25-36	22-27-38	23-29-40	25-30-42	26-32-45
	4-Way - Horizontal Throw	7-11-15	10-13-18	12-14-20	13-15-22	14-17-24	15-18-25	15-19-27	16-20-28	17-21-30
14 X 14 Neck	Airflow, cfm	408	544	681	817	953	1089	1225	1361	1497
	Total Pressure	0.024	0.043	0.067	0.097	0.132	0.172	0.217	0.268	0.325
	NC (Noise Criteria)	-	17	23	28	32	36	39	42	44
	1-Way - Horizontal Throw	18-26-37	24-30-43	28-34-48	30-37-53	33-40-57	35-43-61	37-46-64	39-48-68	41-50-71
	2-Way - Horizontal Throw	14-20-29	19-23-33	21-26-37	23-29-40	25-31-44	27-33-47	29-35-49	30-37-52	32-39-55
	3-Way - Horizontal Throw	13-19-27	17-22-31	20-25-35	22-27-38	24-29-41	26-31-44	27-33-47	29-35-50	30-37-52
	4-Way - Horizontal Throw	8-13-18	11-15-21	13-16-23	15-18-25	16-19-28	17-21-29	18-22-31	19-23-33	20-24-34
16 X 16 Neck	Airflow, cfm	533	711	889	1067	1244	1422	1600	1778	1956
	Total Pressure	0.029	0.052	0.081	0.117	0.159	0.207	0.263	0.324	0.392
	NC (Noise Criteria)	12	20	26	31	35	39	42	45	47
	1-Way - Horizontal Throw	21-30-42	28-35-49	32-39-55	35-42-60	37-46-65	40-49-69	42-52-74	45-55-78	47-57-81
	2-Way - Horizontal Throw	16-23-33	21-27-38	24-30-42	27-33-46	29-35-50	31-38-53	33-40-57	34-42-60	36-44-63
	3-Way - Horizontal Throw	14-22-31	19-25-36	23-28-40	25-31-44	27-34-47	29-36-51	31-38-54	33-40-57	34-42-59
	4-Way - Horizontal Throw	10-14-21	13-17-24	15-19-27	17-21-29	18-22-31	19-24-34	21-25-36	22-27-38	23-28-39
18 X18 Neck	Airflow, cfm	675	900	1125	1350	1575	1800	2025	2250	2475
	Total Pressure	0.035	0.062	0.097	0.139	0.190	0.248	0.314	0.387	0.469
	NC (Noise Criteria)	15	22	28	33	37	41	44	47	49
	1-Way - Horizontal Throw	28-34-48	32-39-55	36-44-62	39-48-68	42-52-73	45-55-78	48-59-83	50-62-87	53-65-91
	2-Way - Horizontal Throw	21-26-37	24-30-42	27-34-47	30-37-52	32-40-56	35-42-60	37-45-64	39-47-67	41-50-70
	3-Way - Horizontal Throw	20-25-35	23-29-40	26-32-45	29-35-49	31-38-53	33-40-57	35-43-60	37-45-64	39-47-67
	4-Way - Horizontal Throw	13-16-23	15-19-27	17-21-30	19-23-33	20-25-35	22-27-38	23-28-40	24-30-42	26-31-44
20 X 20 Neck	Airflow, cfm	833	1111	1389	1667	1944	2222	2500	2778	3056
	Total Pressure	0.041	0.073	0.114	0.165	0.224	0.293	0.371	0.458	0.554
	NC (Noise Criteria)	17	24	30	35	39	43	46	49	52
	1-Way - Horizontal Throw	31-38-53	35-43-61	40-48-69	43-53-75	47-57-81	50-61-87	53-65-92	56-69-97	59-72-102
	2-Way - Horizontal Throw	24-29-41	27-33-47	30-37-53	33-41-58	36-44-62	38-47-67	41-50-71	43-53-75	45-55-78
	3-Way - Horizontal Throw	22-27-39	26-32-45	29-35-50	32-39-55	34-42-59	37-45-63	39-48-67	41-50-71	43-53-74
	4-Way - Horizontal Throw	15-18-26	17-21-30	19-23-33	21-26-36	23-28-39	24-30-42	26-32-45	27-33-47	28-35-49

MCD / MCD-AA / SQUARE CEILING / MODULAR CORE / 1-, 2-, 3- OR 4-WAY BLOW PATTERN

22 X 22 Neck	Neck Velocity	300	400	500	600	700	800	900	1000	1100
	Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
	Airflow, cfm	1008	1344	1681	2017	2353	2689	3025	3361	3697
	Total Pressure	0.048	0.086	0.134	0.193	0.263	0.343	0.434	0.536	0.648
	NC (Noise Criteria)	19	26	32	37	41	45	48	51	53
	1-Way - Horizontal Throw	34-41-58	39-48-67	44-53-75	48-58-83	51-63-89	55-67-95	58-72-101	62-75-107	65-79-112
	2-Way - Horizontal Throw	26-32-45	30-37-52	33-41-58	37-45-64	40-49-69	42-52-73	45-55-78	47-58-82	50-61-86
	3-Way - Horizontal Throw	25-30-43	28-35-49	32-39-55	35-43-60	38-46-65	40-49-70	43-52-74	45-55-78	47-58-82
	4-Way - Horizontal Throw	16-20-28	19-23-33	21-26-37	23-28-40	25-31-43	27-33-46	28-35-49	30-37-52	31-38-54
24 X 24 Neck	Airflow, cfm	1200	1600	2000	2400	2800	3200	3600	4000	4400
	Total Pressure	0.056	0.099	0.155	0.224	0.304	0.398	0.503	0.621	0.752
	NC (Noise Criteria)	20	28	34	39	43	47	50	53	55
	1-Way - Horizontal Throw	37-45-64	42-52-74	47-58-82	52-64-90	56-69-97	60-74-104	64-78-110	67-82-116	70-86-122
	2-Way - Horizontal Throw	28-35-49	33-40-57	37-45-63	40-49-69	43-53-75	46-57-80	49-60-85	52-63-89	54-66-94
	3-Way - Horizontal Throw	27-33-47	31-38-54	35-42-60	38-47-66	41-50-71	44-54-76	47-57-81	49-60-85	51-63-89
	4-Way - Horizontal Throw	18-22-31	21-25-36	23-28-40	25-31-44	27-33-47	29-36-50	31-38-53	33-40-56	34-42-59
6" Round in 6 x 6 Square Neck	Air Flow, cfm	60	80	100	120	140	160	180	200	220
	Total Pressure	0.016	0.029	0.046	0.066	0.089	0.117	0.148	0.182	0.221
	NC (Noise Criteria)	-	15	19	23	26	28	30	33	34
	1-way Throw	3-5-10	5-7-14	6-9-15	7-10-17	8-12-18	9-14-20	10-15-21	12-15-22	13-16-23
	2-way Throw	3-5-10	4-7-11	6-8-12	7-10-14	8-10-15	9-11-16	10-12-17	10-12-18	11-13-18
	3-way Throw	2-3-7	3-5-9	4-6-11	5-7-12	5-8-13	6-9-14	7-10-14	8-11-15	9-11-16
	4-way Throw	1-2-4	1-3-5	2-3-7	3-4-8	3-5-9	3-5-10	4-6-10	4-7-11	5-7-11
6" Round in 12 x 12 Square Neck	Air Flow, cfm	60	80	100	120	140	160	180	200	220
	Total Pressure	0.007	0.012	0.019	0.027	0.037	0.048	0.061	0.075	0.091
	NC (Noise Criteria)	15	22	26	30	33	36	39	41	43
	1-way Throw	1-3-9	3-6-12	4-7-13	6-9-15	7-10-16	8-12-17	9-13-18	10-13-19	11-14-20
	2-way Throw	1-2-7	2-4-9	3-6-10	4-7-11	5-8-12	6-9-13	7-10-14	8-10-14	8-11-15
	3-way Throw	1-2-6	2-4-8	3-5-9	4-6-10	5-7-11	5-8-12	6-9-12	7-9-13	7-10-14
	4-way Throw	1-2-4	1-2-5	2-3-6	2-4-7	3-4-8	3-5-8	4-5-9	4-6-9	4-7-9
8" Round in 12 x 12 Square Neck	Air Flow, cfm	105	140	175	209	244	279	314	349	384
	Total Pressure	0.008	0.014	0.022	0.032	0.043	0.056	0.071	0.088	0.106
	NC (Noise Criteria)	-	-	15	19	22	25	27	29	31
	1-way Throw	3-6-13	5-9-17	7-11-19	9-13-21	10-15-23	12-17-24	13-18-26	15-19-27	16-20-28
	2-way Throw	3-6-12	5-8-15	7-10-17	8-12-18	9-14-20	10-15-21	12-16-22	13-17-24	14-18-25
	3-way Throw	2-5-9	4-6-12	5-8-15	6-9-17	7-11-18	8-12-19	9-14-20	10-15-22	11-16-23
	4-way Throw	2-4-7	3-5-9	4-6-10	5-7-11	5-8-12	6-9-12	7-9-13	8-10-14	8-10-15
10" Round in 12 x 12 Square Neck	Air Flow, cfm	164	218	273	327	382	436	491	545	600
	Total Pressure	0.010	0.019	0.029	0.042	0.057	0.074	0.094	0.116	0.140
	NC (Noise Criteria)	-	-	14	18	22	25	28	31	33
	1-way Throw	5-10-18	8-13-20	11-16-23	13-18-25	15-19-27	17-20-29	18-22-31	19-23-32	19-24-34
	2-way Throw	3-7-15	5-10-18	8-12-20	10-15-22	11-17-24	13-18-26	15-19-27	16-20-29	17-21-30
	3-way Throw	2-4-10	4-7-13	6-8-15	7-10-16	8-12-18	9-13-19	10-14-20	11-15-21	12-16-22
	4-way Throw	2-4-8	3-5-10	4-7-11	5-8-12	6-9-13	7-10-14	8-10-14	9-11-15	9-11-16
12" Round in 12 x 12 Square Neck	Air Flow, cfm	236	314	393	471	550	628	707	785	864
	Total Pressure	0.014	0.025	0.040	0.057	0.078	0.101	0.128	0.158	0.192
	NC (Noise Criteria)	-	12	18	23	26	30	33	35	38
	1-way Throw	13-17-24	16-19-28	18-22-31	19-24-34	21-26-36	22-28-39	24-29-41	25-31-44	26-32-46
	2-way Throw	8-12-18	10-15-21	13-16-23	15-18-26	16-20-28	17-21-29	18-22-31	19-23-33	20-24-35
	3-way Throw	7-11-19	9-14-22	12-17-25	14-19-27	16-21-29	18-22-31	19-23-33	20-25-35	21-26-37
	4-way Throw	2-5-12	4-8-15	6-10-17	8-12-18	10-14-20	11-15-21	12-16-22	14-17-23	14-17-25

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the section, Engineering Guidelines of this catalog for additional information.
- Dash (-) in space denotes an NC value of less than 10
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines for the catalog throw data information.

- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure

Architectural Ceiling Diffusers

diffusers

OMNI / OMNI-AA

- The Titus OMNI diffuser satisfies architectural as well as engineering criteria. Its strong, clean, unobtrusive lines harmonize with the ceiling system, without sacrificing performance.
- The curvature of the OMNI backpan works with the formed edges of the face panel to deliver a uniform 360° horizontal air pattern, without excessive noise or pressure drop
- The OMNI diffuser is an excellent choice for variable air volume systems. The air pattern remains tight and horizontal for effective room air distribution, even when the volume varies over a wide range.
- The face panel is constructed from 22-gauge steel or heavy gauge aluminum. The edges of the face panel are formed to a radius for a solid, crisp appearance. The formed edges also stiffen the face panel and assure a straight and level surface.



OMNI / OMNI-AA



retrofit

MRI compatible

wood grains

metric sizes

MODELS:

OMNI / Steel

OMNI-AA / Aluminum

FINISHES:

Standard Finish - #26 White

Optional Finish - Wood grains (See Wood grains Brochure for Finishes)

OVERVIEW

Square Plaque

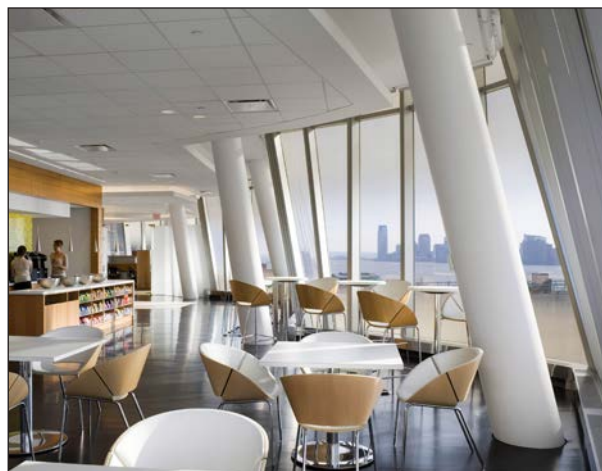
The Titus OMNI (steel plaque) & OMNI-AA (all-aluminum plaque) face diffusers that satisfy architectural and engineering criteria. Their strong, clean, unobtrusive lines harmonize with ceiling systems without sacrificing performance. The curvature of the OMNI & OMNI-AA backpans work with the formed edges of the face panel to deliver a uniform 360 degree horizontal air pattern, without excessive noise or pressure drop. They are an excellent selection for variable air volume systems.

ADDITIONAL FEATURES

- The formed edges of the face panel capture another 22-gauge steel or heavy gauge aluminum panel that the hanger brackets are mechanically fastened to. This process provides the OMNI face with a smooth finish under any lighting conditions.
- The OMNI-AA is entirely constructed of aluminum, perfect for MRI applications



See website for Specifications



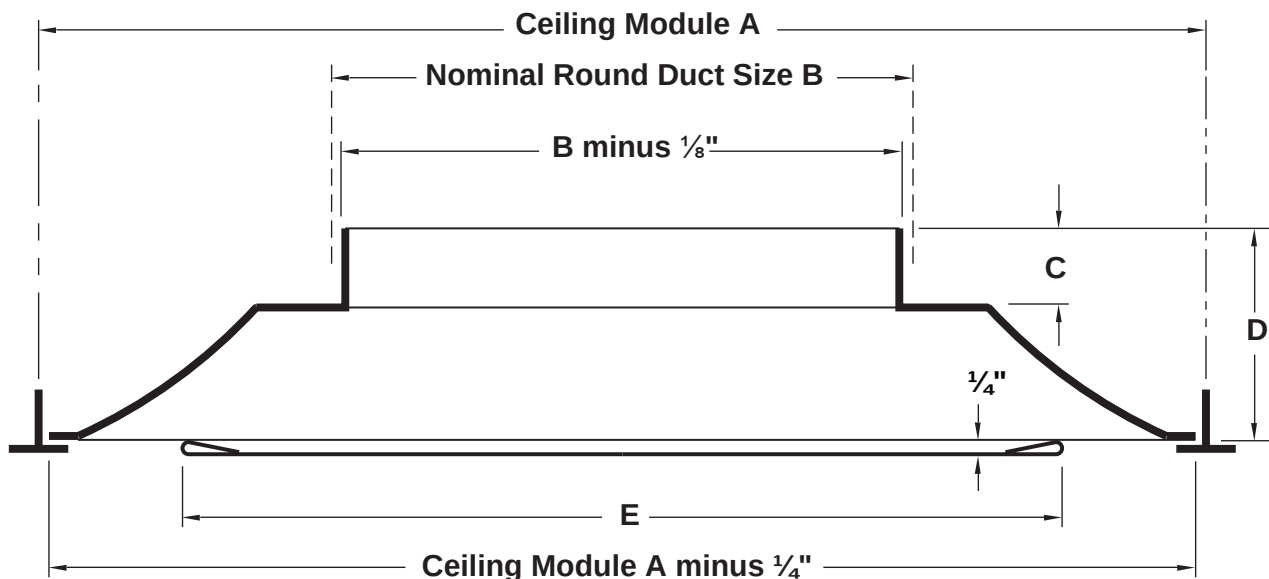
Several OMNI diffusers installed in the breakroom of a corporate office

- The face panel is held in place by four hook brackets that positively engage into slots in the backpan. The panel can be removed from the backpan for easy installation of the diffuser or for access to the optional damper.
- Optional factory-insulated R-6 foil-backed insulation available for 24 x 24" full face models, neck sizes 6-15

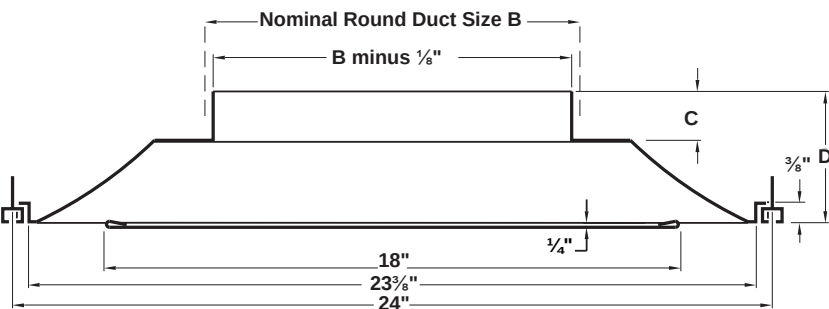
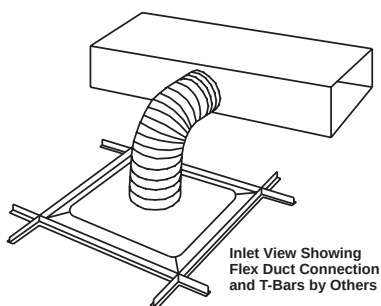
DIMENSIONS

OMNI / OMNI-AA DIMENSIONS

Frame Type 3
(Lay-In) Full Face



Inlet View

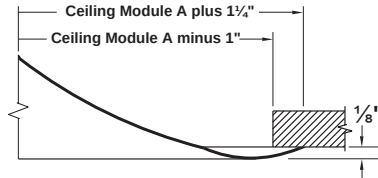


Ceiling Module A	Nominal Round Duct Size B	C	D	E
12 x 12 (note 2)	4, 5 (note 1)	2 ⁷ / ₈	4	9
	6, 7	1 ¹ / ₈	2 ¹ / ₄	
	8	1 ¹ / ₄	2 ³ / ₈	
20 x 20	4, 5 (note 1)	2 ³ / ₄	5 ¹ / ₄	13 ⁵ / ₈
	6, 8, 10	3 ³ / ₄	3 ¹ / ₄	
24 x 24	6, 8	1 ¹ / ₄	3 ³ / ₄	18
	10, 12, 14, 15	1 ³ / ₈	3 ⁷ / ₈	

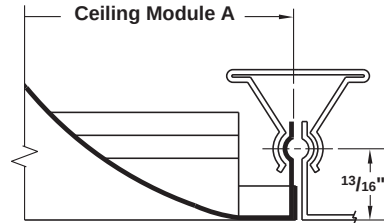
Note 1: Adapter is provided for sizes 4 and 5

ADDITIONAL FRAME TYPES

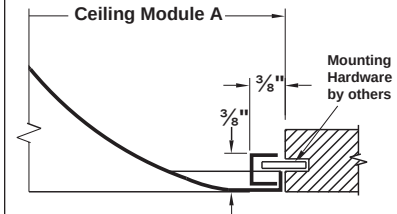
Frame Type 1
(Surface Mount) Full Face



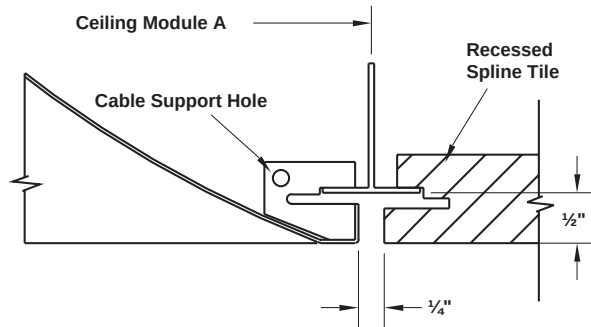
Frame Type 2
(Snap-In) Full Face or Panel Mounted
OMNI Only



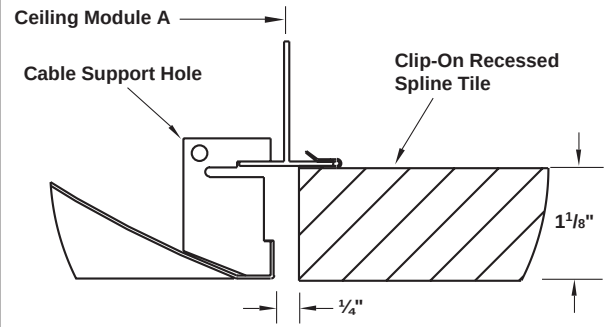
Frame Type 4
(Spline) Full Face or Panel Mounted
OMNI Only



Frame Type 4V - (Recessed Spline) - Full Face OMNI Only



Frame Type 4T - (Clip-On Recessed Spline) - Full Face OMNI Only



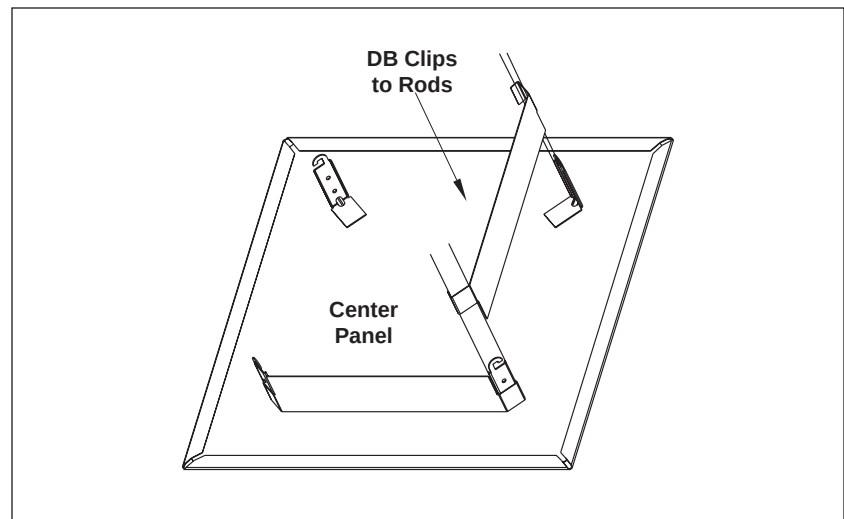
Note: If Border 4V is adjacent to a light fixture a gap will be visible above the backpan. A T-bar extender is available to fill this void, available from the ceiling manufacturer.

Borders 4V and 4T have four mounting clips. Two clips on opposed sides with holes to attach mounting wire from above.

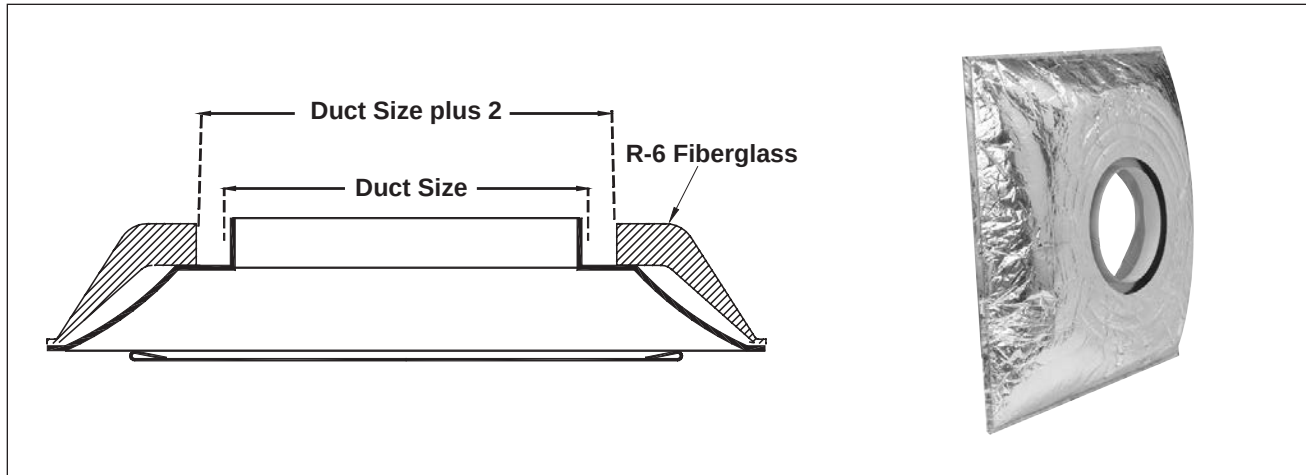
OPTIONAL DIRECTIONAL BLOW CLIPS

Available Model:
DB

- Converts OMNI diffuser from standard 4-way blow to 1-, 2- or 3-way
- Clips attach to hanger brackets on upper face of center panel

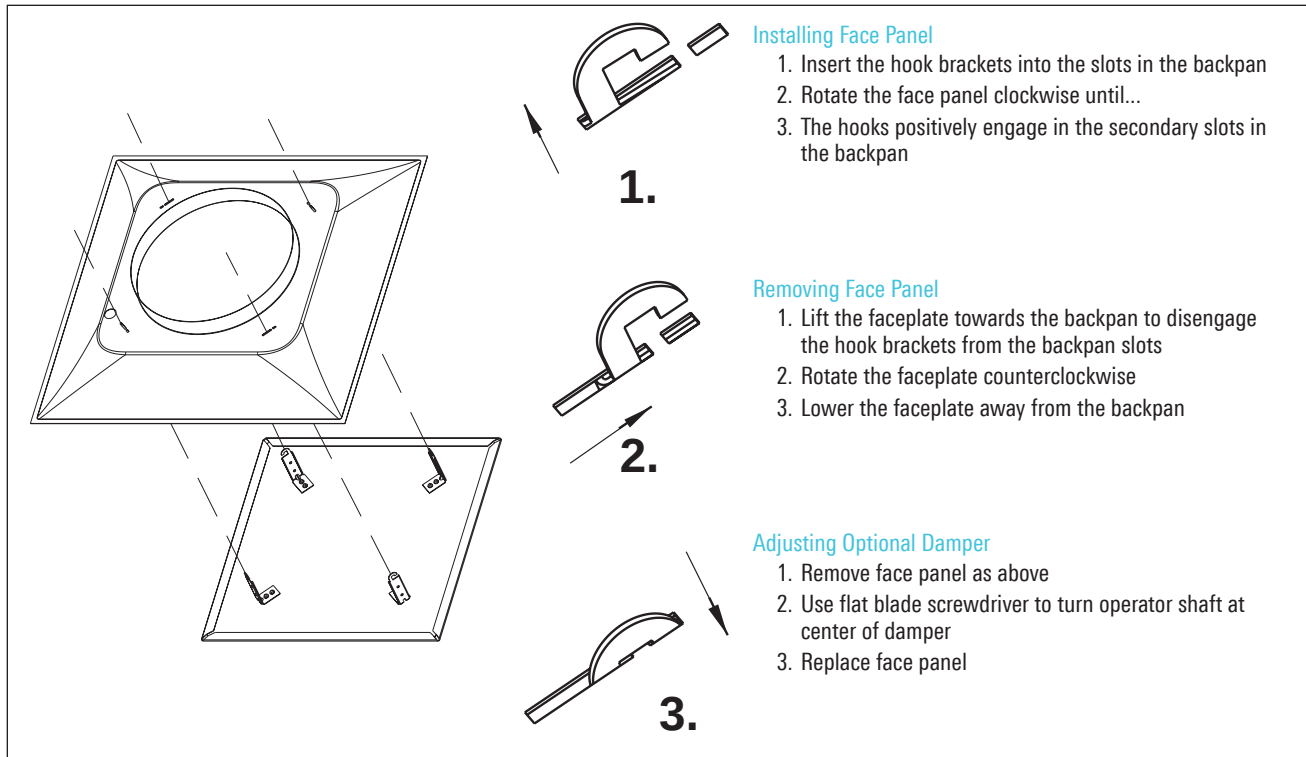


OPTIONAL MOLDED INSULATION BLANKET



Insulation is R-6 where blanket has the most depth. One inch clearance on each side of neck is left for insulated duct connection. 24 x 24" full face models only.

REMOVING AND REPLACING FACE PANEL - ADJUSTING OPTIONAL DAMPER



OMNI / OMNI-AA - ARCHITECTURAL CEILING / SQUARE PLAQUE

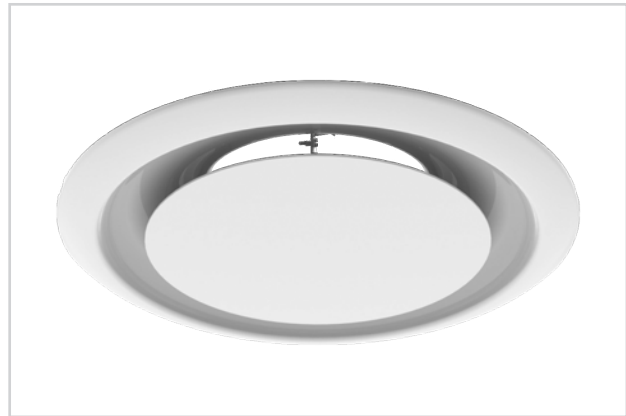
		Neck Velocity	400	500	600	700	800	900	1000	1200	1400
		Velocity Pressure	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.090	0.122
12" x 12" Module Size	4" Round Neck	Airflow, cfm	35	44	52	61	70	79	87	105	122
		Total Pressure, Inches WG	0.034	0.053	0.076	0.103	0.134	0.170	0.210	0.303	0.412
		Throw Feet	1-2-3	1-2-4	2-2-5	2-3-6	2-3-6	2-4-7	3-4-8	3-5-10	4-6-11
		NC (Noise Criteria)	-	-	12	17	21	24	27	33	38
		Airflow, cfm	55	68	82	95	109	123	136	164	191
	5" Round Neck	Total Pressure, Inches WG	0.040	0.063	0.091	0.124	0.161	0.204	0.252	0.363	0.494
		Throw Feet	2-2-5	2-3-6	2-3-7	3-4-8	3-5-9	3-5-10	4-6-12	5-7-14	5-8-15
		NC (Noise Criteria)	-	-	12	17	21	24	28	33	38
		Airflow, cfm	78	98	118	137	157	176	196	235	274
	6" Round Neck	Total Pressure, Inches WG	0.049	0.076	0.109	0.149	0.194	0.246	0.303	0.437	0.594
		Throw Feet	2-3-6	3-4-8	3-5-9	4-5-11	4-6-12	5-7-14	5-8-15	6-9-17	7-11-18
		NC (Noise Criteria)	-	-	12	17	21	24	28	33	38
		Airflow, cfm	107	134	160	187	214	240	267	320	374
	7" Round Neck	Total Pressure, Inches WG	0.058	0.091	0.131	0.178	0.233	0.295	0.364	0.524	0.714
		Throw Feet	3-4-8	3-5-9	4-6-11	4-7-13	5-8-15	6-9-17	6-9-18	8-11-20	9-13-21
		NC (Noise Criteria)	-	-	12	17	21	24	28	33	38
		Airflow, cfm	140	175	209	244	279	314	349	419	489
	8" Round Neck	Total Pressure, Inches WG	0.070	0.109	0.156	0.213	0.278	0.352	0.434	0.626	0.852
		Throw Feet	3-5-9	4-6-11	5-7-14	5-8-16	6-9-18	7-10-19	8-11-20	9-14-22	11-16-24
		NC (Noise Criteria)	-	-	12	17	21	24	28	33	38
		Airflow, cfm	78	98	118	137	157	173	196	235	274
20" x 20" Module Size	6" Dia.	Total Pressure	0.016	0.025	0.036	0.049	0.063	0.080	0.100	0.142	0.193
		NC (Noise Criteria)	-	-	-	16	20	24	28	34	39
		Throw feet	1-1-3	1-1-4	1-2-4	1-3-5	1-3-6	2-3-6	2-4-7	3-5-8	3-5-8
		Airflow, cfm	140	175	209	244	279	314	349	419	489
	8" Dia.	Total Pressure	0.019	0.030	0.043	0.058	0.075	0.096	0.118	0.169	0.229
		NC (Noise Criteria)	-	-	-	18	22	26	30	36	41
		Throw feet	1-2-4	2-3-6	2-4-6	3-4-7	3-5-7	3-5-8	4-6-8	5-6-9	5-7-10
		Airflow, cfm	218	273	327	382	436	491	545	654	763
	10" Dia.	Total Pressure	0.024	0.038	0.055	0.074	0.096	0.123	0.151	0.215	0.292
		NC (Noise Criteria)	-	-	-	18	23	27	31	37	42
		Throw feet	3-4-6	3-4-7	4-5-8	4-6-8	5-6-9	5-7-9	6-7-10	6-8-11	7-9-12
		Airflow, cfm	78	98	118	137	157	176	196	235	274
	6" Round Neck	Total Pressure, Inches WG	0.011	0.017	0.025	0.034	0.044	0.056	0.069	0.099	0.135
		Throw Feet	1-1-4	1-2-4	1-3-5	2-3-6	2-4-7	3-4-8	3-4-9	4-5-11	4-6-11
		NC (Noise Criteria)	-	-	-	-	13	17	21	28	34
		Airflow, cfm	140	175	209	244	279	314	349	419	489
	8" Round Neck	Total Pressure, Inches WG	0.018	0.028	0.040	0.055	0.072	0.091	0.112	0.162	0.220
		Throw Feet	2-3-6	2-4-7	3-4-9	3-5-10	4-6-12	4-6-12	5-7-13	6-9-14	7-10-15
		NC (Noise Criteria)	-	-	-	12	17	21	25	32	38
		Airflow, cfm	218	273	327	382	436	491	545	654	763
24" x 24" Module Size	10" Round Neck	Total Pressure, Inches WG	0.027	0.042	0.060	0.082	0.107	0.136	0.168	0.241	0.329
		Throw Feet	3-4-8	3-5-10	4-6-12	5-7-13	5-8-14	6-9-15	7-10-16	8-12-18	10-13-19
		NC (Noise Criteria)	-	-	-	15	20	24	28	35	41
		Airflow, cfm	314	393	471	550	628	707	785	942	1099
	12" Round Neck	Total Pressure, Inches WG	0.038	0.059	0.085	0.115	0.151	0.191	0.235	0.339	0.461
		Throw Feet	4-5-11	5-7-14	5-8-15	6-9-16	7-11-17	8-12-18	9-14-19	11-15-21	13-16-23
		NC (Noise Criteria)	-	-	12	18	23	27	31	38	43
		Airflow, cfm	428	535	641	748	855	962	1069	1283	1497
	14" Round Neck	Total Pressure, Inches WG	0.051	0.079	0.114	0.155	0.202	0.256	0.316	0.455	0.619
		Throw Feet	4-7-13	6-8-16	7-10-17	8-12-19	9-13-20	10-15-21	11-16-23	13-17-25	15-19-27
		NC (Noise Criteria)	-	-	14	20	25	29	33	40	45
		Airflow, cfm	491	614	736	859	982	1104	1227	1472	1718
	15" Round Neck	Total Pressure, Inches WG	0.058	0.090	0.130	0.177	0.231	0.292	0.360	0.519	0.706
		Throw Feet	5-7-15	6-9-17	7-11-19	9-13-20	10-15-22	11-16-23	12-17-24	15-19-26	17-20-29
		NC (Noise Criteria)	-	-	15	21	26	30	34	41	46
		Airflow, cfm	491	614	736	859	982	1104	1227	1472	1718

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- If the diffuser is mounted on an exposed duct, the throw values are 70% of those listed in the table
- Throw values are given for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines for catalog throw data information.
- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value of less than 10
- Each NC value represents the noise criteria curve which will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10^{-12} watts.
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure



R-OMNI

- The Titus R-OMNI - a great look in circular diffusers designed for architectural ceilings and facilities with exposed ductwork
- R-OMNI's completely smooth face is adjustable in three positions for horizontal or vertical flow. Can be used effectively in heating or cooling applications.
- Uniform 360° discharge pattern
- Excellent performance in variable air volume systems
- Optional Type B outer cone for reducing ceiling smudging
- Spring lock allows easy removal and replacement of the plaque assembly
- Material is heavy gauge steel



R-OMNI



energy solutions



open ceiling

MODEL:

R-OMNI / Steel

FINISH:

Standard Finish - #26 White

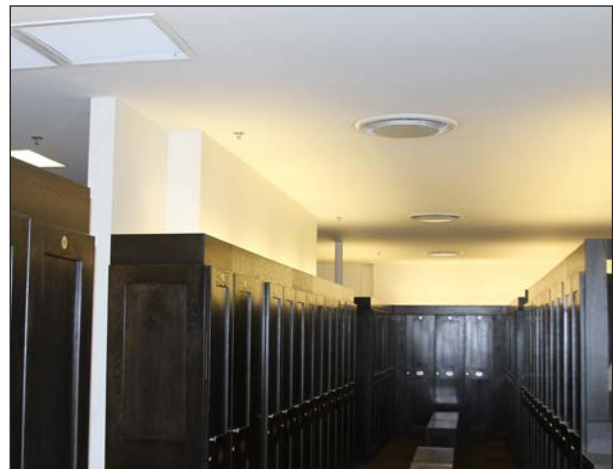
OVERVIEW

Round Plaque / Steel

The appearance of the R-OMNI diffuser is designed for architectural ceilings and facilities with exposed ductwork. The smooth face is adjustable in three positions for horizontal or vertical flow. The R-OMNI can be used effectively in heating or cooling applications and is an excellent choice in Variable Air Volume Systems.



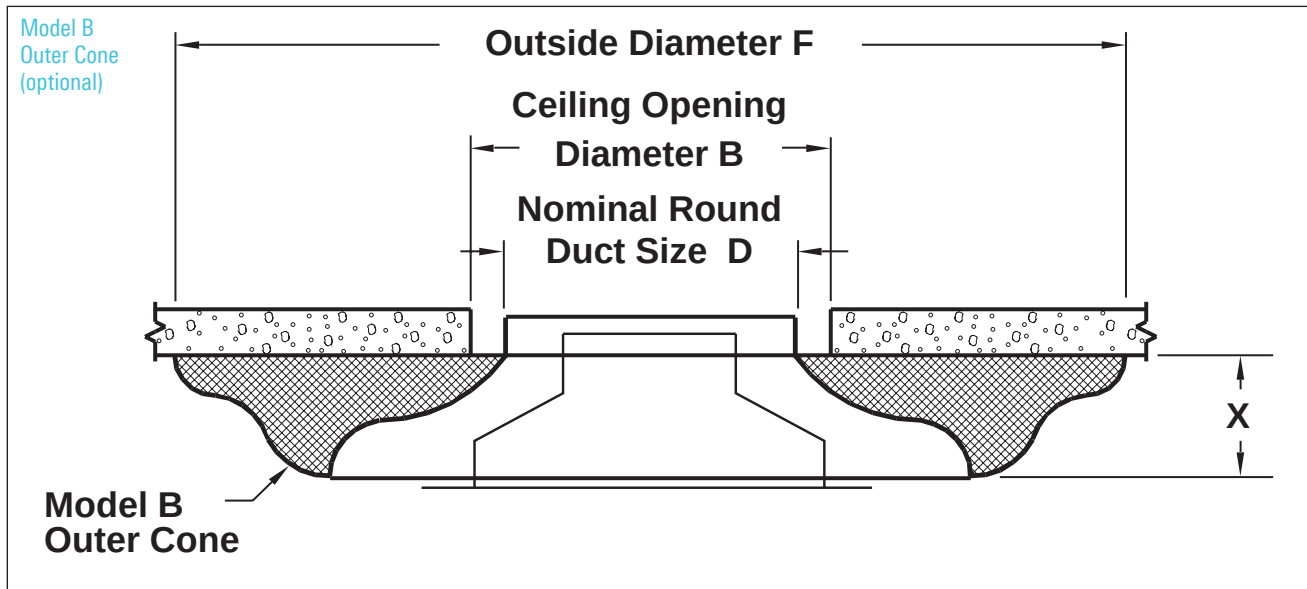
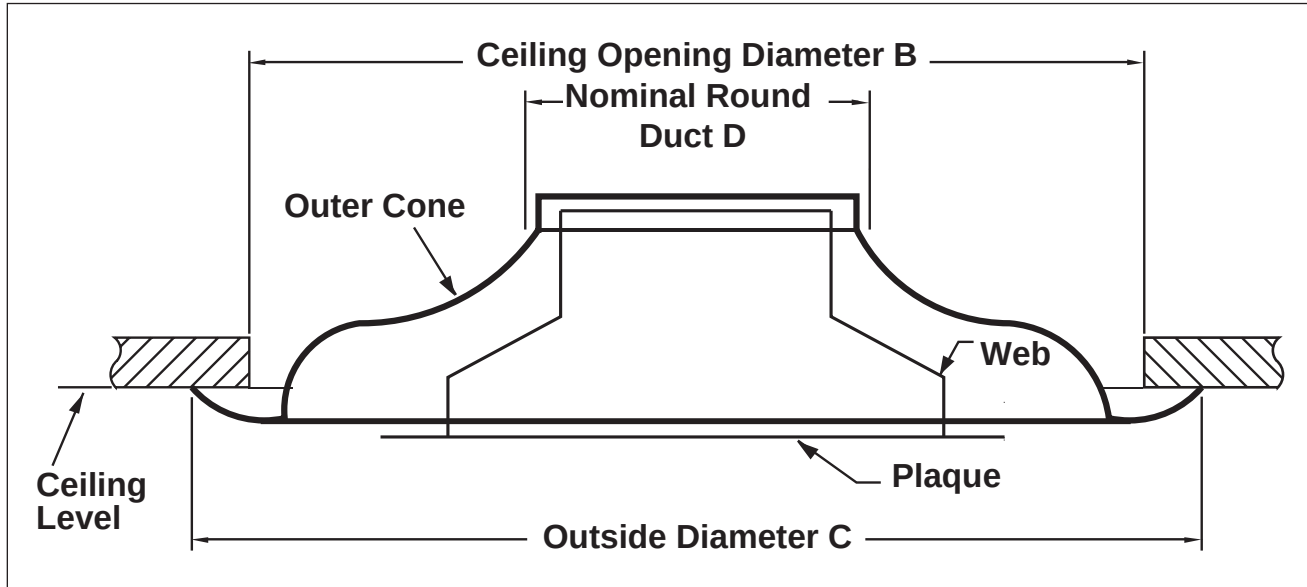
See website for Specifications



Several R-OMNI diffusers installed in a locker room

DIMENSIONS

R-OMNI UNIT DIMENSIONS



Nominal Round Duct Size D	B	C	P*	X	Type B Cone	
					BB	BC
6	12	13½	½	1 ¹⁵ / ₁₆	7	17¾
8	16	18	½	2 ⁵ / ₈	9	23¼
10	20	22½	½	3¼	11	29
12	24	27	1 ¹ / ₁₆	3 ⁷ / ₈	13	34 ⁷ / ₈
14	28	31 ¹ / ₈	1 ³ / ₁₆	4 ⁹ / ₁₆	14	40 ⁵ / ₈

Note: The plaque frame on model R-OMNI projects above the neck of the diffuser. The maximum projection is Dimension P.

R-OMNI / ARCHITECTURAL CEILING / ROUND PLAQUE

		Neck Velocity, fpm	400	500	600	700	800	900	1000	1200	1400
		Velocity Pressure, In WG	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.090	0.122
6"	Positions	Air Flow, cfm	79	98	118	137	157	177	196	236	275
	Center	Total Pressure, In WG	0.017	0.027	0.039	0.053	0.070	0.088	0.109	0.156	0.213
		NC (Noise Criteria)	-	-	-	13	17	21	24	30	34
		Horizontal Throw, Ft	2-4-8	2-5-9	3-6-10	5-7-10	5-8-11	6-8-12	6-9-12	8-10-14	8-10-15
	Down	Total Pressure, In WG	0.012	0.018	0.026	0.036	0.047	0.049	0.073	0.105	0.143
		NC (Noise Criteria)	-	-	-	-	12	17	20	27	33
		Horizontal Throw, Ft	1-3-6	2-4-7	3-5-8	4-6-9	5-7-10	5-7-10	6-8-11	7-9-12	7-9-12
	Up	Total Pressure	0.026	0.041	0.059	0.080	0.105	0.132	0.164	0.235	0.321
		NC (Noise Criteria)	-	-	10	15	19	22	25	31	35
		50 fpm Vert. Proj., Ft @ 10° F Heating	2	3	4	5	6	7	8	10	12
		50 fpm Vert. Proj., Ft @ 20° F Heating	2	3	4	5	6	7	8	9	11
		50 fpm Vert. Proj., Ft @ 30° F Heating	1	2	3	4	5	6	7	8	10
		50 fpm Vert. Proj., Ft @ 40° F Heating	1	2	2	3	4	5	6	7	9
8"	Positions	Air Flow, cfm	140	175	209	244	279	314	349	419	489
	Center	Total Pressure, In WG	0.019	0.029	0.042	0.057	0.075	0.095	0.117	0.168	0.229
		NC (Noise Criteria)	-	-	-	12	16	20	24	30	35
		Horizontal Throw, Ft	2-3-6	3-4-8	3-5-9	4-5-10	4-6-11	5-7-12	5-8-12	6-9-13	7-10-15
	Down	Total Pressure, In WG	0.014	0.021	0.031	0.042	0.055	0.070	0.086	0.124	0.168
		NC (Noise Criteria)	-	-	-	-	13	17	21	27	33
		Horizontal Throw, Ft	2-3-5	3-4-8	3-5-9	4-5-10	4-6-11	5-7-12	5-8-12	6-9-13	7-10-15
	Up	Total Pressure	0.040	0.062	0.089	0.121	0.158	0.200	0.247	0.355	0.484
		NC (Noise Criteria)	-	-	10	15	20	25	28	35	41
		50 fpm Vert. Proj., Ft @ 10° F Heating	6	7	8	9	10	11	12	14	16
		50 fpm Vert. Proj., Ft @ 20° F Heating	5	6	7	8	9	10	11	13	15
		50 fpm Vert. Proj., Ft @ 30° F Heating	5	6	7	8	9	10	11	12	14
		50 fpm Vert. Proj., Ft @ 40° F Heating	4	5	6	7	8	9	10	12	14
10"	Positions	Air Flow, cfm	218	273	327	382	436	491	545	654	764
	Center	Total Pressure, In WG	0.019	0.030	0.043	0.059	0.077	0.098	0.121	0.174	0.237
		NC (Noise Criteria)	-	-	14	19	23	27	30	35	40
		Horizontal Throw, Ft	3-4-8	3-5-10	4-6-11	5-7-12	5-8-13	6-9-13	6-10-14	8-11-16	9-12-17
	Down	Total Pressure, In WG	0.015	0.024	0.034	0.046	0.060	0.076	0.094	0.136	0.185
		NC (Noise Criteria)	-	-	-	13	18	23	27	34	39
		Horizontal Throw, Ft	3-4-8	3-5-10	4-6-11	5-7-12	5-8-13	6-9-13	6-10-14	8-11-16	9-12-17
	Up	Total Pressure	0.028	0.044	0.064	0.087	0.114	0.144	0.178	0.256	0.348
		NC (Noise Criteria)	-	-	-	16	21	27	31	39	46
		50 fpm Vert. Proj., Ft @ 10° F Heating	7	8	9	10	11	12	13	15	17
		50 fpm Vert. Proj., Ft @ 20° F Heating	7	8	9	9	10	11	12	14	16
		50 fpm Vert. Proj., Ft @ 30° F Heating	6	7	8	9	10	10	11	13	15
		50 fpm Vert. Proj., Ft @ 40° F Heating	5	6	7	8	9	10	11	13	15
12"	Positions	Air Flow, cfm	314	393	471	550	628	707	785	942	1100
	Center	Total Pressure, In WG	0.022	0.034	0.048	0.066	0.086	0.109	0.134	0.194	0.263
		NC (Noise Criteria)	15	19	22	25	27	30	32	35	38
		Horizontal Throw, Ft	5-7-14	6-9-16	7-10-17	8-12-18	9-14-20	10-15-21	11-16-22	14-17-24	15-18-26
	Down	Total Pressure, In WG	0.016	0.025	0.036	0.049	0.064	0.081	0.100	0.144	0.196
		NC (Noise Criteria)	10	15	19	22	25	28	30	34	37
		Horizontal Throw, Ft	4-6-11	5-7-14	6-8-16	6-10-17	7-11-18	8-13-19	9-14-20	11-16-22	13-17-24
	Up	Total Pressure	0.033	0.052	0.074	0.101	0.132	0.167	0.206	0.297	0.404
		NC (Noise Criteria)	10	15	20	23	27	29	32	36	40
		50 fpm Vert. Proj., Ft @ 10° F Heating	8	9	11	12	13	15	16	18	21
		50 fpm Vert. Proj., Ft @ 20° F Heating	8	9	10	11	13	14	15	17	20
		50 fpm Vert. Proj., Ft @ 30° F Heating	7	8	9	10	12	13	14	17	20
		50 fpm Vert. Proj., Ft @ 40° F Heating	7	8	9	10	12	13	14	16	19
14"	Positions	Air Flow, cfm	428	535	641	748	855	962	1069	1283	1497
	Center	Total Pressure, In WG	0.015	0.024	0.034	0.046	0.061	0.077	0.095	0.137	0.186
		NC (Noise Criteria)	-	13	18	23	26	30	33	38	42
		Horizontal Throw, Ft	4-6-12	5-8-14	6-9-15	7-11-16	8-12-17	9-13-18	10-14-19	12-15-21	13-16-23
	Down	Total Pressure, In WG	0.011	0.016	0.024	0.032	0.042	0.053	0.066	0.094	0.129
		NC (Noise Criteria)	-	12	17	21	25	28	31	36	40
		Horizontal Throw, Ft	3-6-12	5-8-14	6-9-16	7-11-17	8-12-18	9-14-19	10-14-20	9-13-19	14-17-24
	Up	Total Pressure	0.022	0.034	0.050	0.067	0.088	0.112	0.138	0.198	0.270
		NC (Noise Criteria)	-	15	20	24	28	31	34	39	43
		50 fpm Vert. Proj., Ft @ 10° F Heating	10	12	14	15	17	19	21	24	28
		50 fpm Vert. Proj., Ft @ 20° F Heating	10	12	13	15	17	19	20	24	28
		50 fpm Vert. Proj., Ft @ 30° F Heating	9	11	13	14	16	18	20	24	28
		50 fpm Vert. Proj., Ft @ 40° F Heating	9	11	12	14	16	18	19	23	27

Performance notes appear at end of performance data

- All data, except vertical projection, was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Vertical projection data was calculated from computational fluid dynamics models
- All data based upon supply performance
- All pressures are in inches of water
- Diffusers are shipped in center position
- To obtain static pressure, subtract the velocity pressure from the total pressure
- The negative static pressure for return performance is equal to the total pressure of supply at the same cfm
- Return NC is 2 NC higher than supply NC at the same cfm
- Horizontal throw values are for terminal velocities of 150, 100 and 50 fpm under isothermal conditions
- If mounted on an exposed duct, the throw values are 70% of those listed in the table
- Vertical projections are for terminal velocity of 50 fpm in heating mode
- NC values based on a room absorption of 10 dB
- Dash (-) in space indicates NC value less than 10



OMNI-RS

- The OMNI-RS diffuser is designed for an architectural look and engineered performance. Its clean, unobtrusive lines harmonize with ceiling systems without sacrificing performance.
- The unique round plaque face/square panel combination delivers a 360° tight horizontal air pattern without excessive noise or pressure drop
- The OMNI-RS provides excellent performance in variable air volume systems
- The OMNI-RS is constructed of heavy gauge steel



OMNI-RS



retrofit

metric sizes

wood grains

open ceiling

MODEL:

OMNI-RS / Steel

FINISH:

Standard Finish - #26 White

OVERVIEW

Square Backpan / Round Plaque / Steel

The OMNI-RS diffuser is designed for an architectural look and engineered performance. The unique round plaque face/square panel combination delivers a 360° tight horizontal air pattern without excessive noise or pressure drop. It provides excellent performance in variable air volume systems.

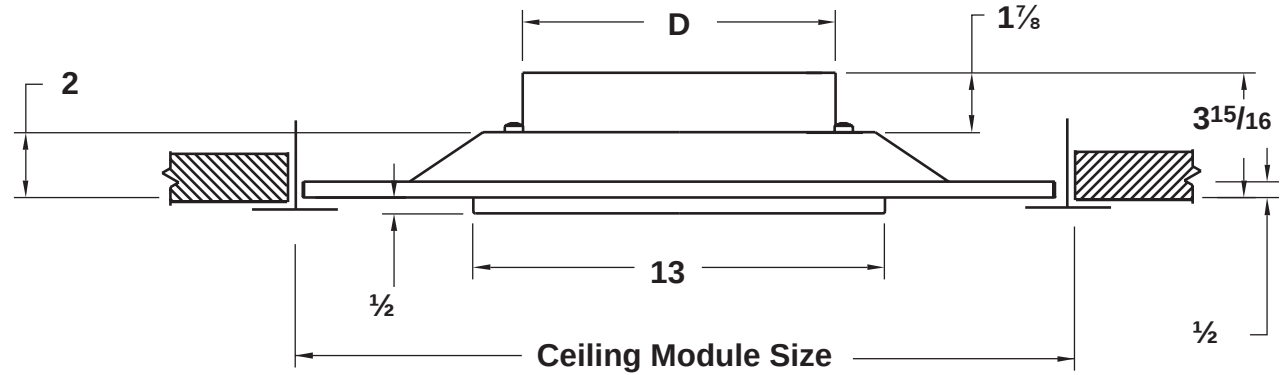


See website for Specifications

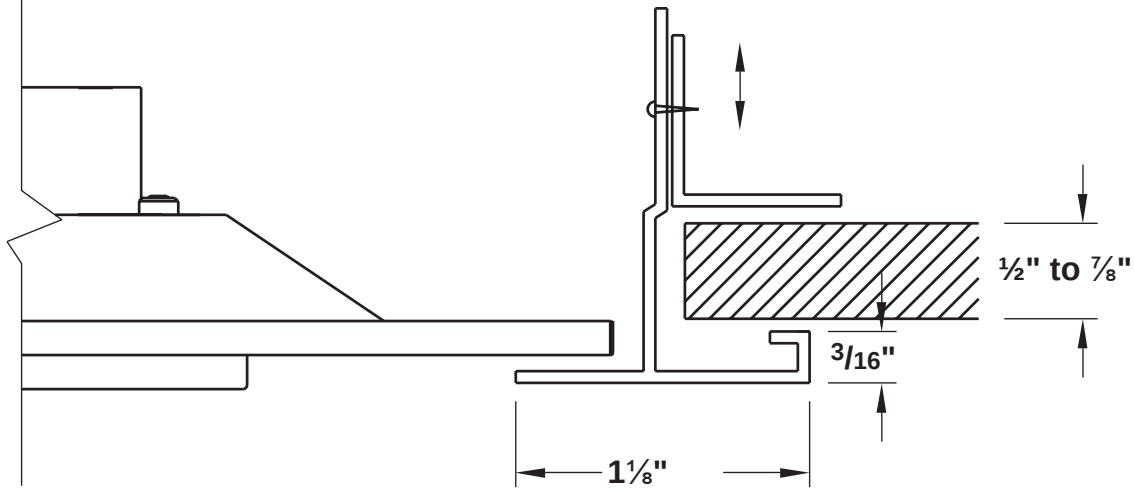
DIMENSIONS

OMNI-RS UNIT DIMENSIONS

Border Type 3 (Lay-in)



Border Type 1 (Surface Mount)



Note: Diffuser will be shipped with Border 3. A TRM frame will be provided for surface mounting.

Module Size	Nominal Duct Size	D
24 x 24	6	5 7/8
	8	7 7/8
	10	9 7/8
	12	11 1/2

OMNI-RS / ARCHITECTURAL CEILING / SQUARE BACKPAN / ROUND PLAQUE

		Neck Velocity	300	400	500	600	700	800	1000
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.062
24 x 24 Module	6" Dia.	Airflow, cfm	59	80	98	118	137	157	196
		Total Pressure	0.017	0.031	0.048	0.070	0.095	0.124	0.194
		NC (Noise Criteria)	-	-	-	12	16	21	31
		Throw	1-2-5	1-3-6	2-4-7	2-4-7	3-5-8	4-6-9	5-7-10
	8" Dia.	Airflow, cfm	105	140	175	209	244	279	349
		Total Pressure	0.025	0.045	0.07	0.101	0.138	0.180	0.279
		NC (Noise Criteria)	-	-	-	12	16	21	31
		Throw	2-4-8	2-5-9	3-6-10	4-7-10	5-8-11	6-9-12	7-10-14
	10" Dia.	Airflow, cfm	164	218	273	327	382	436	545
		Total Pressure	0.035	0.062	0.096	0.139	0.189	0.247	0.375
		NC (Noise Criteria)	-	-	-	12	16	21	32
		Throw	2-6-10	3-7-11	4-8-12	5-9-13	6-10-14	7-12-15	9-13-17
	12" Dia.	Airflow, cfm	216	289	361	433	505	577	721
		Total Pressure	0.037	0.066	0.104	0.149	0.203	0.265	0.423
		NC (Noise Criteria)	-	-	-	13	17	22	32
		Throw	3-5-10	5-7-12	6-8-13	7-10-14	8-11-15	10-12-17	12-15-19

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the section, Engineering Guidelines of this catalog for additional information.
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines for the catalog throw data information.
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure

DAT

- The Titus DAT ceiling diffuser satisfies architectural as well as engineering criteria. Its smooth plaque face allows the diffuser to harmonize with the ceiling system, without sacrificing performance.
- The deep backpan of the DAT was designed to ensure optimum performance without excessive noise or pressure drop
- The DAT diffuser is an excellent choice for variable air volume systems. The air pattern remains tight and horizontal for effective room air distribution, even when the volume varies over a wide range.
- Fits 24 x 24" ceiling grids
- Choice of one, two or three slots. Slot width is 1½".
- Diffuser has a round neck with a deep collar for easy connection to flexible duct
- Core is easily removable from face of the diffuser
- Material is heavy gauge steel



DAT

MODEL:

DAT / Supply

FINISH:

Standard Finish - #26 White

OVERVIEW

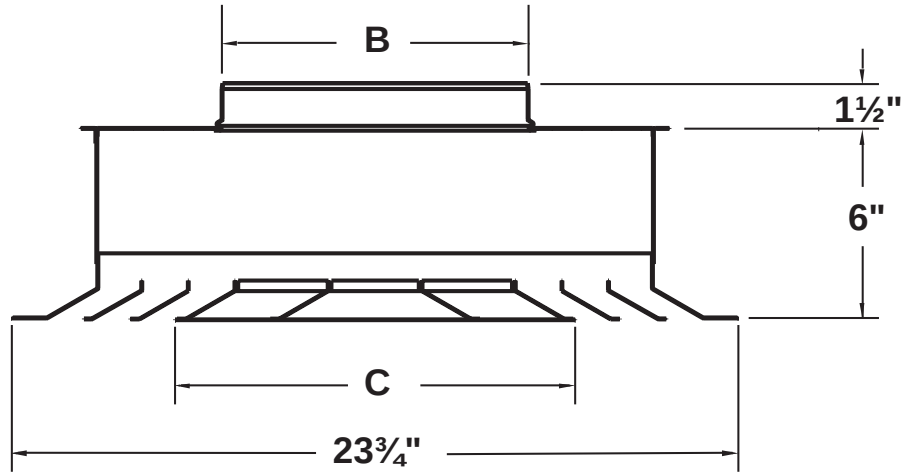
Louvered Plaque / Steel

The DAT ceiling diffuser satisfies architectural as well as engineering criteria. Its smooth plaque face allows the diffuser to harmonize with the ceiling system, without sacrificing performance. The deep backpan is designed for optimum performance without excessive noise or pressure drop, and is great for variable air volume applications.


[See website for Specifications](#)

DAT UNIT DIMENSIONS

Border Type 3 (Lay-in)



Ceiling Module	Number of Slots	Nominal Round Duct Size B	Plaque Face C
24 x 24	1	6, 8, 10	19
	2	6, 8, 10, 12	16
	3	8, 10, 12, 14	13

DAT / ARCHITECTURAL CEILING / LOUVERED PLAQUE

24 X 24, 1-slot	6" Round Neck	Air Flow, cfm	79	99	118	138	158	177	197	236	276
		Neck Velocity	400	500	600	700	800	900	1000	1200	1400
		Velocity Pressure, in. WG	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.090	0.122
		Total Pressure, in. WG	0.022	0.035	0.051	0.069	0.090	0.114	0.140	0.202	0.275
		Throw Feet	2-3-5	2-3-7	3-4-8	3-5-9	4-5-11	4-6-12	4-7-13	5-8-14	6-9-15
	8" Round Neck	NC (Noise Criteria)	-	13	18	22	26	29	32	36	41
		Air Flow, cfm	140	166	192	218	244	270	297	323	349
		Neck Velocity	400	475	550	625	700	775	850	925	1000
		Velocity Pressure, in. WG	0.010	0.014	0.019	0.024	0.031	0.037	0.045	0.053	0.062
		Total Pressure, in. WG	0.027	0.038	0.051	0.066	0.083	0.102	0.123	0.146	0.170
	10" Round Neck	Throw Feet	3-5-9	4-6-11	4-7-13	5-7-14	6-8-14	6-9-15	7-10-16	7-11-17	8-12-17
		NC (Noise Criteria)	15	19	23	26	29	32	34	37	39
		Air Flow, cfm	109	150	191	232	273	313	354	395	436
		Neck Velocity	200	275	350	425	500	575	650	725	800
		Velocity Pressure, in. WG	0.003	0.005	0.008	0.011	0.016	0.021	0.026	0.033	0.040
24 X 24, 2-slot	6" Round Neck	Total Pressure, in. WG	0.008	0.015	0.024	0.036	0.049	0.065	0.084	0.104	0.127
		Throw Feet	2-4-7	3-5-10	4-6-13	5-8-14	6-9-15	7-11-16	8-12-17	9-13-18	10-14-19
		NC (Noise Criteria)	-	-	17	22	26	30	33	36	38
		Air Flow, cfm	59	94	128	163	197	231	266	300	335
		Neck Velocity	300	475	650	825	1000	1175	1350	1525	1700
	8" Round Neck	Velocity Pressure, in. WG	0.006	0.014	0.026	0.042	0.062	0.086	0.114	0.145	0.180
		Total Pressure, in. WG	0.010	0.025	0.047	0.076	0.111	0.154	0.203	0.259	0.321
		Throw Feet	0-1-3	1-2-4	2-3-6	2-4-8	3-5-9	4-6-11	4-6-13	5-7-14	5-8-16
		NC (Noise Criteria)	-	-	12	18	23	27	31	34	37
		Air Flow, cfm	140	192	244	297	349	401	454	506	558
	10" Round Neck	Neck Velocity	400	550	700	850	1000	1150	1300	1450	1600
		Velocity Pressure, in. WG	0.010	0.019	0.031	0.045	0.062	0.082	0.105	0.131	0.160
		Total Pressure, in. WG	0.022	0.041	0.066	0.097	0.135	0.178	0.228	0.283	0.345
		Throw Feet	2-3-7	3-5-9	4-6-12	5-7-14	6-8-17	6-10-18	7-11-20	8-12-21	9-13-22
		NC (Noise Criteria)	-	14	21	26	30	34	37	40	43
	12" Round Neck	Air Flow, cfm	218	273	327	382	436	491	545	600	654
		Neck Velocity	400	500	600	700	800	900	1000	1100	1200
		Velocity Pressure, in. WG	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075	0.090
		Total Pressure, in. WG	0.025	0.039	0.056	0.077	0.100	0.127	0.157	0.189	0.225
		Throw Feet	3-5-10	4-7-13	5-8-16	6-9-18	7-10-19	8-12-20	9-13-21	10-14-23	10-16-24
24 X 24, 3-slot	8" Round Neck	NC (Noise Criteria)	12	17	22	26	30	33	36	38	41
		Air Flow, cfm	236	314	393	471	550	628	707	785	864
		Neck Velocity	300	400	500	600	700	800	900	1000	1100
		Velocity Pressure, in. WG	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
		Total Pressure, in. WG	0.016	0.028	0.044	0.064	0.087	0.113	0.143	0.177	0.214
	10" Round Neck	Throw Feet	4-6-11	5-8-15	6-9-18	8-11-20	9-13-22	10-15-23	11-17-24	13-18-26	14-19-27
		NC (Noise Criteria)	-	16	22	27	31	34	37	40	43
		Air Flow, cfm	140	192	244	297	349	401	454	506	558
		Neck Velocity	400	550	700	850	1000	1150	1300	1450	1600
		Velocity Pressure, in. WG	0.010	0.019	0.031	0.045	0.062	0.082	0.105	0.131	0.160
	12" Round Neck	Total Pressure, in. WG	0.019	0.036	0.058	0.085	0.118	0.156	0.199	0.247	0.301
		Throw Feet	1-2-5	2-4-8	3-5-10	4-6-12	5-7-14	5-8-16	6-9-18	7-10-20	7-11-22
		NC (Noise Criteria)	-	-	16	21	25	29	32	35	37
		Air Flow, cfm	164	232	300	368	436	504	572	640	709
		Neck Velocity	300	425	550	675	800	925	1050	1175	1300
24 X 24, 3-slot	14" Round Neck	Velocity Pressure, in. WG	0.006	0.011	0.019	0.028	0.040	0.053	0.069	0.086	0.105
		Total Pressure, in. WG	0.012	0.025	0.041	0.062	0.087	0.117	0.151	0.189	0.231
		Throw Feet	1-3-6	3-5-9	4-6-12	5-7-14	6-9-17	7-10-20	7-11-22	8-13-23	9-14-24
		NC (Noise Criteria)	-	-	15	20	25	29	32	35	38
		Air Flow, cfm	236	314	393	471	550	628	707	785	864
	12" Round Neck	Neck Velocity	300	400	500	600	700	800	900	1000	1100
		Velocity Pressure, in. WG	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
		Total Pressure, in. WG	0.014	0.025	0.039	0.056	0.076	0.099	0.125	0.154	0.187
		Throw Feet	3-5-9	4-6-12	5-8-15	6-9-18	7-11-22	8-12-23	9-14-24	10-15-26	11-17-27
		NC (Noise Criteria)	-	11	17	22	26	29	32	35	38
	14" Round Neck	Air Flow, cfm	321	428	535	641	748	855	962	1069	1176
		Neck Velocity	300	400	500	600	700	800	900	1000	1100
		Velocity Pressure, in. WG	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
		Total Pressure, in. WG	0.015	0.027	0.043	0.062	0.084	0.110	0.139	0.171	0.207
		Throw Feet	4-6-13	6-8-17	7-10-21	8-13-23	10-15-25	11-17-27	13-19-29	14-21-30	15-22-32
		NC (Noise Criteria)	-	15	21	26	30	33	36	39	42

- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines for throw calculation data.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB

- Dash (-) in space indicates NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006

DAT-NT

- The Titus DAT-NT ceiling diffuser satisfies architectural as well as engineering criteria. Its smooth plaque face allows the diffuser to harmonize with the ceiling system, without sacrificing performance.
- The deep backpan of the DAT-NT was designed to ensure optimum performance without excessive noise or pressure drop
- The DAT-NT diffuser is an excellent choice for variable air volume systems. The air pattern remains tight and horizontal for effective room air distribution, even when the volume varies over a wide range.
- Compatible with 24 x 24" modules for regressed narrow tee ceiling systems
- Choice of one, two or three slots. Slot width is 1½".
- Diffuser has a round neck with a deep collar for easy connection to flexible duct
- Core is easily removable from face of the diffuser
- Material is heavy gauge steel



DAT-NT

MODEL:

DAT-NT / Supply

FINISH:

Standard Finish - #26 White

OVERVIEW

Louvered Plaque / Narrow Tee / Steel

The DAT-NT ceiling diffuser satisfies architectural as well as engineering criteria. Its smooth plaque face allows the diffuser to harmonize with the ceiling system, without sacrificing performance. The deep backpan is designed for optimum performance without excessive noise or pressure drop, and is great for variable air volume applications.

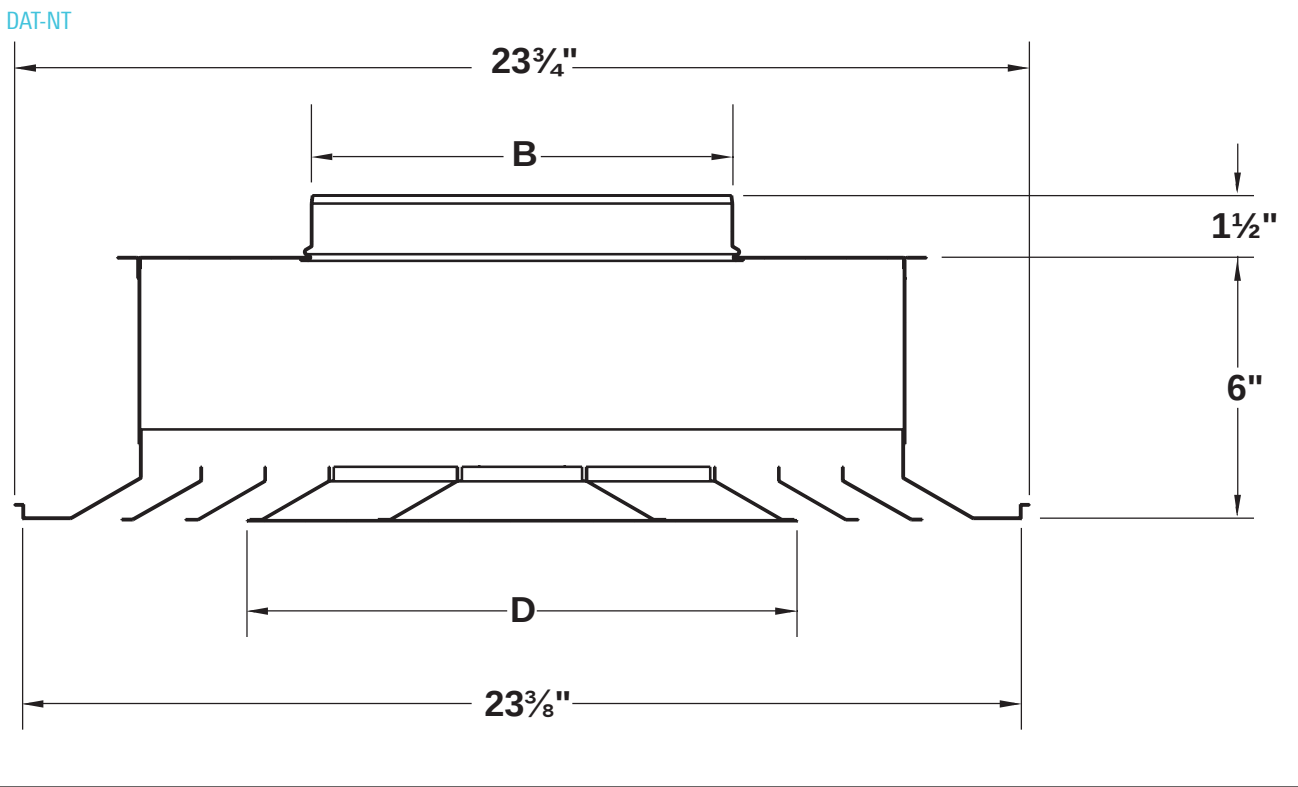
Performance notes appear at end of performance data



See website for Specifications

DIMENSIONS

DAT-NT UNIT DIMENSIONS



Ceiling Module	Number of Slots	Nominal Round Duct Size B	Plaque Face C
24 x 24	1	6, 8, 10	19
	2	6, 8, 10, 12	16
	3	8, 10, 12, 14	13

MB-30 / MBR-30

- Titus Modu-Bloc diffusers, Models MB-30 and MBR-30, are designed to be visually pleasing while providing superior performance
- Designed so that a ceiling tile (by others) can be field cut and inserted in the face of the diffuser. The center panel of Model MB-30 matches the surrounding ceiling tiles. This results in a smooth, clean appearance that blends with the ceiling.
- Supply diffuser delivers a one-, two-, three- or four-way horizontal throw or a vertical throw. With horizontal throw, the blanket of air is held tight against the ceiling even with varying volumes of air, making the MB-30 an excellent choice for VAV systems.
- Uniform, unbroken flow pattern guards against ceiling smudging
- Discharge patterns are individually adjustable for each slot, resulting in combinations that fit the distribution requirements of the room
- Fits 24 x 24" ceiling grid



MB-30 / MBR-30



energy solutions open ceiling



See website for Specifications

MODELS:

MB-30 / Supply
MBR-30 / Return
MBI-30 / Supply / Internal Insulation

FINISH:

Standard Finish - #26 White

OVERVIEW

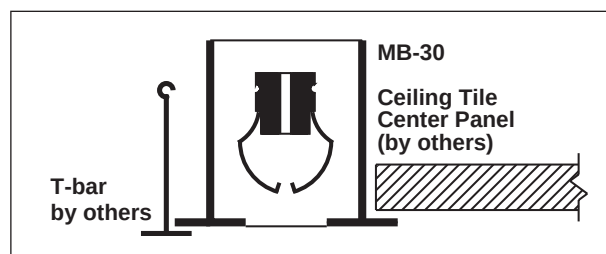
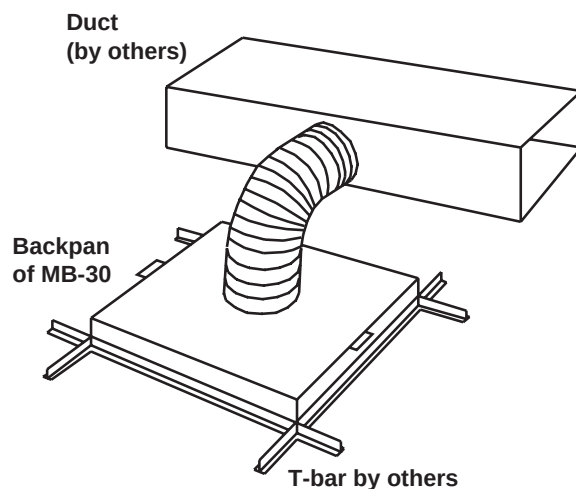
ModuBloc Series

Titus Modu-Bloc diffusers are designed to be visually pleasing while providing superior performance. The Modu-Bloc is constructed so that a ceiling tile can be field cut and inserted in the face of the diffuser. This results in a smooth, clean appearance that blends with the ceiling.

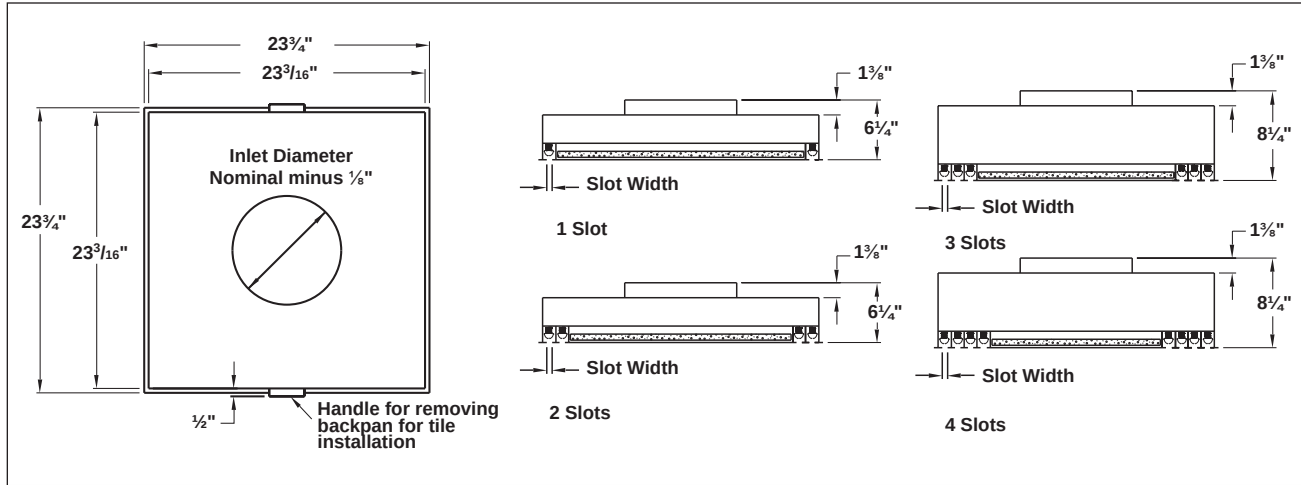
ADDITIONAL FEATURES

- Discharge directions are adjustable through 180°. Titus Modulinear pattern controllers in each slot controls not only the direction of airflow, but also the volume of air.
- Choice of one, two, three or four slots
- Choice of ¾- or 1" slots
- Supply diffuser has a round neck with a deep collar for easy connection to flexible duct
- Optional external insulation on the supply diffuser (Model MBI-30)
- Model MBR-30 return is similar to the supply diffuser in appearance, but is built without the pattern controllers and backpan. Designed for plenum return, the MBR-30 has a light shield to prevent see-through and to block stray light from fixtures in the plenum.
- Material is extruded aluminum face. Steel backpan or light shield, steel pattern controllers.

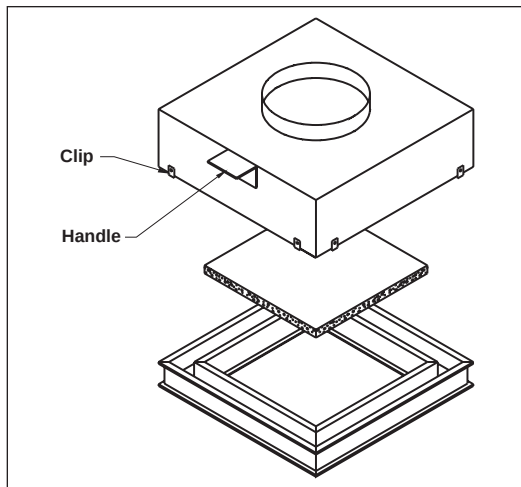
Inlet View



MODU-BLOC MB-30 DIMENSIONS



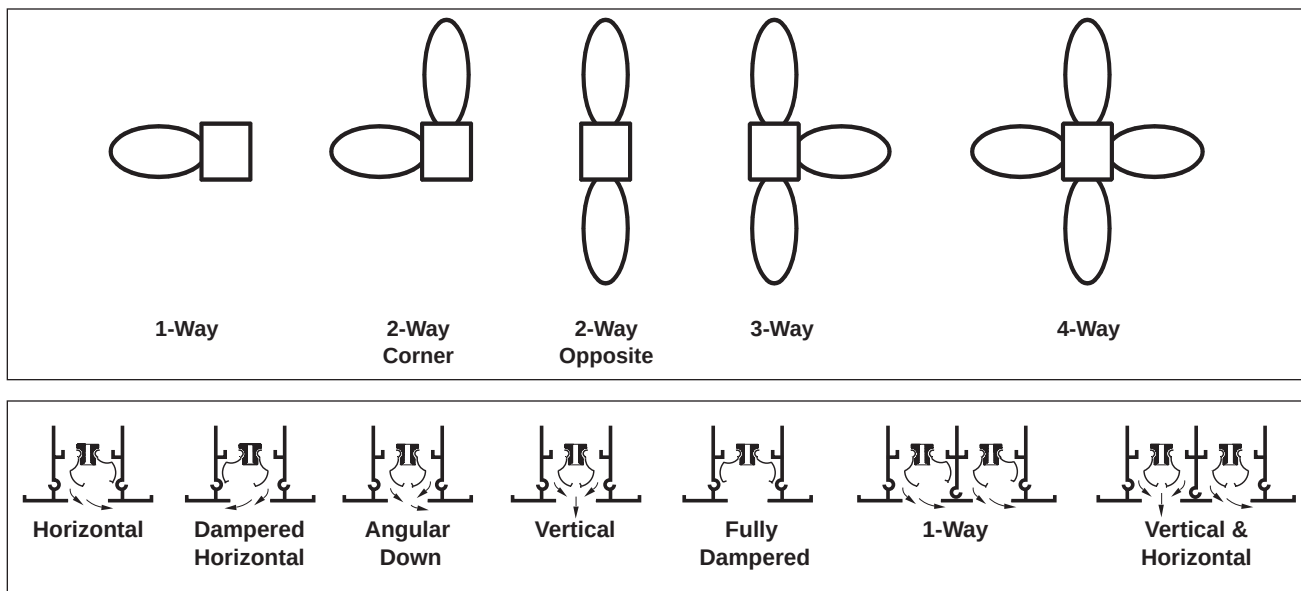
FIELD INSTALLATION OF CENTER TILE



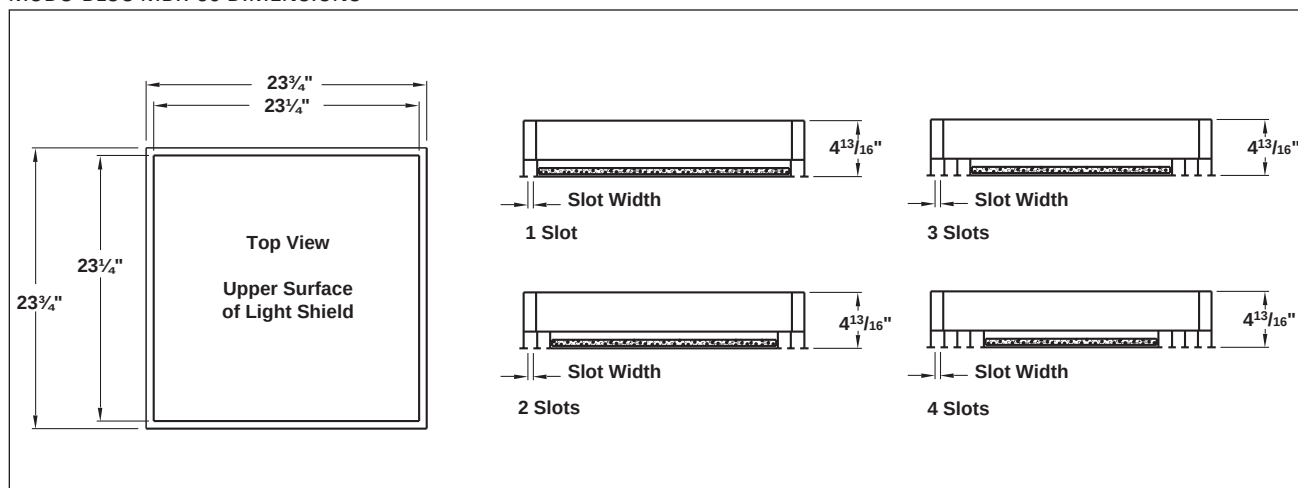
CENTER PANEL CEILING TILE - CUTTING DIMENSIONS

Number of Slots	Slot Width		Available Inlet Sizes
	$\frac{3}{4}"$	1"	
1	$19\frac{7}{8} \times 19\frac{7}{8}$	$19\frac{3}{8} \times 19\frac{3}{8}$	8"
2	$16\frac{7}{8} \times 16\frac{7}{8}$	$15\frac{7}{8} \times 15\frac{7}{8}$	10"
3	$13\frac{7}{8} \times 13\frac{7}{8}$	$12\frac{3}{8} \times 12\frac{3}{8}$	12"
4	$10\frac{7}{8} \times 10\frac{7}{8}$	$8\frac{7}{8} \times 8\frac{7}{8}$	14"

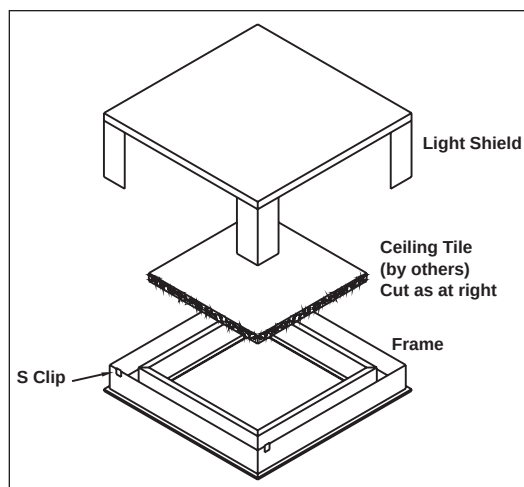
DISCHARGE PATTERNS - FIELD ADJUSTABLE



MODU-BLOC MBR-30 DIMENSIONS

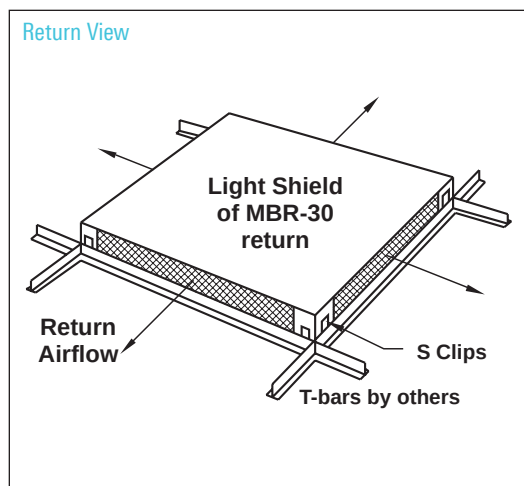


FIELD INSTALLATION OF CENTER TILE



CENTER PANEL CEILING TILE - CUTTING DIMENSIONS

Number of Slots	Slot Width	
	3/4"	1"
1	19 7/8 x 19 7/8	19 3/8 x 19 3/8
2	16 7/8 x 16 7/8	15 7/8 x 15 7/8
3	13 7/8 x 13 7/8	12 3/8 x 12 3/8
4	10 7/8 x 10 7/8	8 7/8 x 8 7/8



MB-30 ¾" SLOT WIDTH SUPPLY - 1-, 2-, 3-, OR 4-WAY BLOW PATTERN

		Neck Velocity	300	400	500	600	700	800	900	1000	1100
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
1-Slot	8" Dia.	Airflow,cfm	105	140	175	209	244	279	314	349	384
		Total Pressure	0.047	0.084	0.131	0.188	0.257	0.335	0.424	0.524	0.633
		NC (Noise Criteria)	19	25	30	34	37	40	43	45	47
		Throw	4-6-12	5-8-16	7-10-20	8-12-24	9-14-28	11-16-32	12-18-35	13-20-37	15-22-39
2-Slot	8" Dia.	Airflow,cfm	105	140	175	209	244	279	314	349	384
		Total Pressure	0.018	0.032	0.049	0.071	0.097	0.126	0.160	0.197	0.238
		NC (Noise Criteria)	-	14	19	23	27	29	32	34	36
		Throw	2-4-9	3-6-12	5-7-15	6-9-18	7-10-21	8-12-24	9-13-26	10-15-29	11-16-32
2-Slot	10" Dia.	Airflow,cfm	164	218	273	327	382	436	491	545	600
		Total Pressure	0.035	0.063	0.098	0.141	0.192	0.250	0.317	0.391	0.474
		NC (Noise Criteria)	16	22	27	31	34	37	40	42	44
		Throw	4-7-14	6-9-18	8-11-23	9-14-28	11-16-32	12-18-37	14-21-41	15-23-46	17-25-48
3-Slot	8" Dia.	Airflow,cfm	105	140	175	209	244	279	314	349	384
		Total Pressure	0.011	0.019	0.030	0.043	0.058	0.076	0.096	0.118	0.143
		NC (Noise Criteria)	-	15	20	24	27	30	33	35	37
		Throw	1-2-7	2-4-10	3-6-12	4-7-15	6-9-17	7-10-20	7-11-22	8-12-25	9-14-27
3-Slot	10" Dia.	Airflow,cfm	164	218	273	327	382	436	491	545	600
		Total Pressure	0.018	0.032	0.050	0.071	0.097	0.127	0.161	0.198	0.240
		NC (Noise Criteria)	17	23	28	32	35	38	40	43	45
		Throw	3-6-12	5-8-16	7-10-20	8-12-23	9-14-27	10-16-31	12-18-35	13-20-39	14-21-43
3-Slot	12" Dia.	Airflow,cfm	236	314	393	471	550	628	707	785	864
		Total Pressure	0.031	0.055	0.086	0.124	0.169	0.221	0.279	0.345	0.417
		NC (Noise Criteria)	23	29	34	38	41	44	47	49	51
		Throw	5-8-17	7-11-22	9-14-28	11-17-34	13-20-39	15-22-45	17-25-51	19-28-55	21-31-58
4-Slot	8" Dia.	Airflow,cfm	105	140	175	209	244	279	314	349	384
		Total Pressure	0.009	0.016	0.025	0.036	0.049	0.064	0.081	0.100	0.121
		NC (Noise Criteria)	-	12	17	21	24	27	29	32	34
		Throw	1-2-7	1-3-9	2-5-11	3-7-14	4-8-16	6-9-18	7-10-20	8-11-23	8-12-25
4-Slot	10" Dia.	Airflow,cfm	164	218	273	327	382	436	491	545	600
		Total Pressure	0.014	0.025	0.038	0.055	0.075	0.098	0.125	0.154	0.186
		NC (Noise Criteria)	13	20	24	28	32	35	37	39	41
		Throw	2-4-11	3-7-14	5-9-18	7-11-21	8-12-25	9-14-28	11-16-32	12-18-35	13-19-39
4-Slot	12" Dia.	Airflow,cfm	236	314	393	471	550	628	707	785	864
		Total Pressure	0.023	0.040	0.063	0.091	0.124	0.161	0.204	0.252	0.305
		NC (Noise Criteria)	20	26	31	35	38	41	43	46	48
		Throw	4-8-15	7-10-20	8-13-25	10-15-31	12-18-36	14-20-41	15-23-46	17-25-51	19-28-56
4-Slot	14" Dia.	Airflow,cfm	321	428	535	641	748	855	962	1069	1176
		Total Pressure	0.037	0.066	0.104	0.149	0.203	0.265	0.335	0.414	0.501
		NC (Noise Criteria)	25	31	36	40	43	46	49	51	53
		Throw	7-10-21	9-14-28	12-17-35	14-21-42	16-24-49	18-28-55	21-31-61	23-35-65	25-38-68

MB-30 1" SLOT WIDTH SUPPLY - 1-, 2-, 3-, OR 4-WAY BLOW PATTERN

		Neck Velocity	300	400	500	600	700	800	900	1000	1100
		Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
1-Slot	8" Dia.	Airflow,cfm	105	140	175	209	244	279	314	349	384
		Total Pressure	0.033	0.058	0.091	0.131	0.178	0.233	0.295	0.364	0.441
		NC (Noise Criteria)	15	21	26	30	33	36	38	41	43
		Throw	3-5-10	5-7-14	6-9-17	7-10-21	8-12-24	9-14-28	10-16-31	12-17-35	13-19-38
2-Slot	8" Dia.	Airflow,cfm	105	140	175	209	244	279	314	349	384
		Total Pressure	0.014	0.025	0.039	0.056	0.076	0.100	0.126	0.155	0.188
		NC (Noise Criteria)	-	-	16	20	23	26	28	30	33
		Throw	1-3-8	2-5-10	3-6-13	5-8-15	6-9-18	7-10-21	8-12-23	9-13-26	9-14-28
2-Slot	10" Dia.	Airflow,cfm	164	218	273	327	382	436	491	545	600
		Total Pressure	0.026	0.046	0.072	0.104	0.142	0.185	0.235	0.290	0.351
		NC (Noise Criteria)	12	19	23	27	31	33	36	38	40
		Throw	3-6-12	5-8-16	7-10-20	8-12-24	9-14-28	11-16-32	12-18-36	13-20-40	15-22-44
3-Slot	8" Dia.	Airflow,cfm	105	140	175	209	244	279	314	349	384
		Total Pressure	0.009	0.017	0.026	0.037	0.051	0.066	0.084	0.103	0.125
		NC (Noise Criteria)	-	12	17	21	24	27	30	32	34
		Throw	1-2-7	1-3-9	2-5-11	3-7-13	4-8-16	5-9-18	7-10-20	7-11-22	8-12-24
3-Slot	10" Dia.	Airflow,cfm	164	218	273	327	382	436	491	545	600
		Total Pressure	0.015	0.026	0.040	0.058	0.079	0.104	0.131	0.162	0.196
		NC (Noise Criteria)	14	20	25	29	32	35	37	40	42
		Throw	2-4-10	3-7-14	5-9-17	7-10-21	8-12-24	9-14-28	10-16-31	12-17-35	13-19-38
3-Slot	12" Dia.	Airflow,cfm	236	314	393	471	550	628	707	785	864
		Total Pressure	0.024	0.043	0.067	0.097	0.132	0.172	0.218	0.269	0.325
		NC (Noise Criteria)	20	26	31	35	38	41	44	46	48
		Throw	4-8-15	7-10-20	8-13-25	10-15-30	12-18-35	13-20-40	15-23-45	17-25-50	18-28-55
4-Slot	8" Dia.	Airflow,cfm	105	140	175	209	244	279	314	349	384
		Total Pressure	0.008	0.015	0.023	0.033	0.045	0.058	0.074	0.091	0.110
		NC (Noise Criteria)	-	-	14	18	21	24	26	29	31
		Throw	1-1-5	1-2-8	2-4-10	2-5-12	3-7-14	4-8-16	5-9-18	6-10-20	7-11-22
4-Slot	10" Dia.	Airflow,cfm	164	218	273	327	382	436	491	545	600
		Total Pressure	0.012	0.021	0.033	0.048	0.065	0.085	0.107	0.132	0.160
		NC (Noise Criteria)	-	17	22	26	29	32	34	36	39
		Throw	1-3-10	2-6-13	4-8-16	6-10-19	7-11-22	8-13-25	10-14-29	11-16-32	12-18-35
4-Slot	12" Dia.	Airflow,cfm	236	314	393	471	550	628	707	785	864
		Total Pressure	0.019	0.033	0.052	0.075	0.102	0.133	0.168	0.208	0.251
		NC (Noise Criteria)	17	23	28	32	35	38	41	43	45
		Throw	3-7-14	5-9-18	8-11-23	9-14-28	11-16-32	12-18-37	14-21-41	15-23-46	17-25-50
4-Slot	14" Dia.	Airflow,cfm	321	428	535	641	748	855	962	1069	1176
		Total Pressure	0.030	0.053	0.083	0.119	0.163	0.212	0.269	0.332	0.401
		NC (Noise Criteria)	22	28	33	37	41	43	46	48	50
		Throw	5-9-19	8-12-25	10-16-31	12-19-37	15-22-44	17-25-50	19-28-56	21-31-62	23-34-68

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the section Engineering Guidelines for additional information.
- If the diffuser is mounted on an exposed duct, the throw values are 70% of those listed in the table
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section Engineering Guidelines for the catalog throw data information.
- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure

MBR-30 RETURN WITH LIGHT SHIELD

3/4" Wide Slot	Size	Negative Static Pressure	0.007	0.028	0.063	0.108	0.17	0.25	0.345	0.45
	1 Slot	Airflow, cfm	75	150	225	300	375	450	525	600
		NC (Noise Criteria)	-	-	16	24	30	35	39	43
	2 Slot	Airflow, cfm	145	290	435	580	725	870	1015	1160
		NC (Noise Criteria)	-	12	20	28	34	39	43	47
	3 Slot	Airflow, cfm	210	420	630	840	1050	1260	1470	1680
		NC (Noise Criteria)	-	15	21	29	35	40	44	48
	4 Slot	Airflow, cfm	270	540	810	1080	1350	1620	1890	2160
		NC (Noise Criteria)	-	17	22	30	36	40	45	49
1" Wide Slot	Size	Negative Static Pressure	0.018	0.04	0.07	0.108	0.16	0.215	0.28	0.45
	1 Slot	Airflow, cfm	147	220	293	367	440	513	586	733
		NC (Noise Criteria)	-	-	17	23	28	32	36	42
	2 Slot	Airflow, cfm	280	420	560	700	840	980	1120	1400
		NC (Noise Criteria)	-	16	24	30	35	39	43	49
	3 Slot	Airflow, cfm	400	600	800	1000	1200	1400	1600	2000
		NC (Noise Criteria)	-	19	27	33	38	42	46	52
	4 Slot	Airflow, cfm	507	760	1013	1267	1520	1773	2026	2533
		NC (Noise Criteria)	-	21	29	35	40	44	48	54

- Static pressures are in negative inches of water
- NC based on room absorption of 10 dB re 10⁻¹² watts
- Data obtained per ANSI/ASHRAE Standard 70-2006

MB-30-NT / MBR-30-NT

- The MB-30-NT and MBR-30-NT Modu-Bloc diffusers are visually pleasing while providing superior performance
- The MB-30-NT and MBR-30-NT are designed to allow an existing ceiling tile to be field cut and inserted into the face of the diffuser. This results in a smooth, clean appearance that blends with the ceiling.
- Pattern controllers adjust volume and discharge direction of the MB-30-NT
- Available in one, two, three, or four slots
- Face is aluminum, backpan is steel
- Optional internal insulation



MB-30-NT / MBR-30-NT



energy solutions



open ceiling

MODELS:

MB-30-NT / Supply / ¾" or 1" Slot

MBR-30-NT / Return

FINISH:

Standard Finish - #26 White

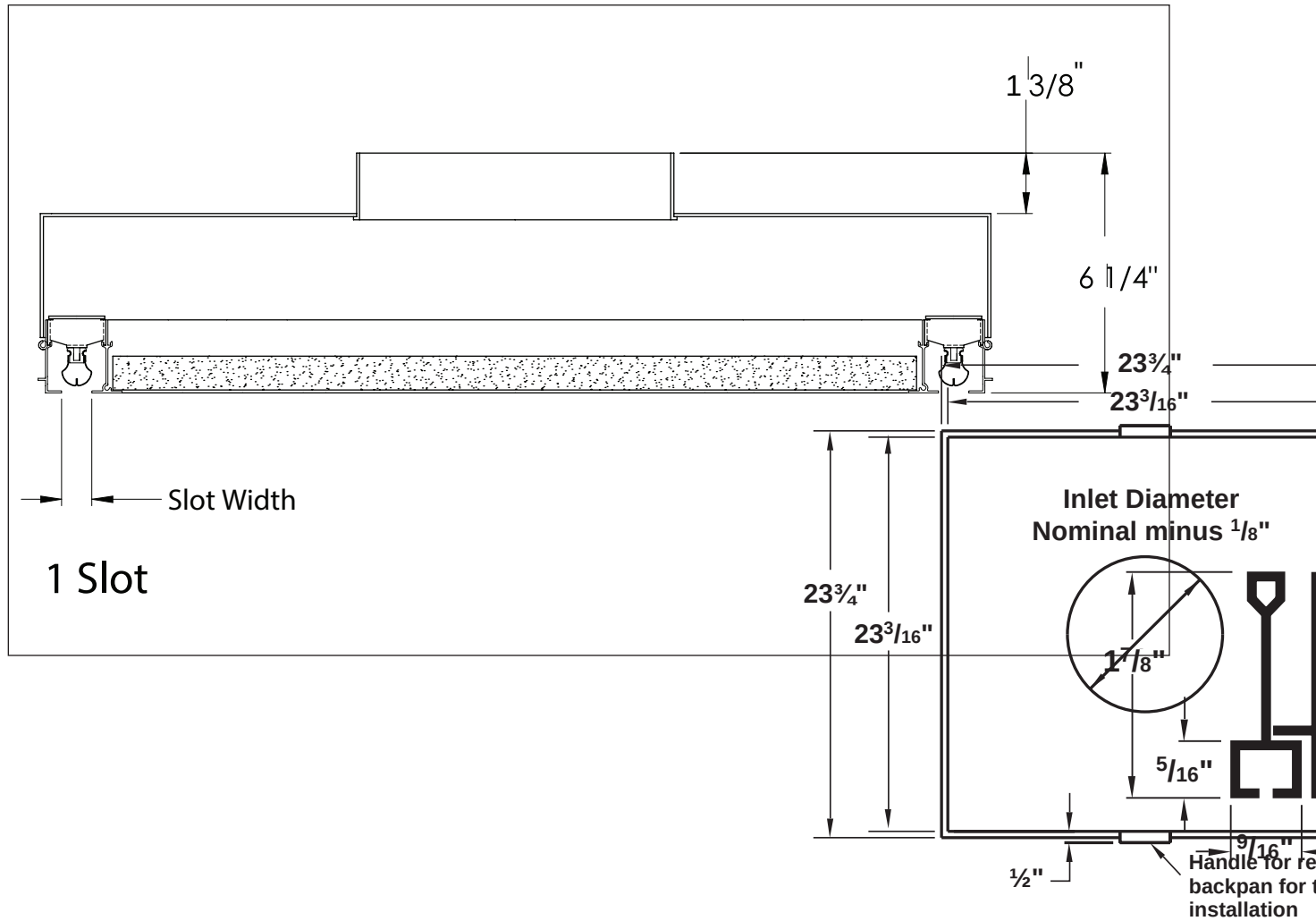
OVERVIEW

ModuBloc Series / Narrow Tee

Titus Modu-Bloc diffusers are designed to be visually pleasing while providing superior performance. The Modu-Bloc is constructed so that a ceiling tile can be field cut and inserted in the face of the diffuser. This results in a smooth, clean appearance that blends with the ceiling.

For Performance Data and Notes, please refer to pages [F142-F144](#).

MB-30-NT / MBR-30-NT DIMENSIONS

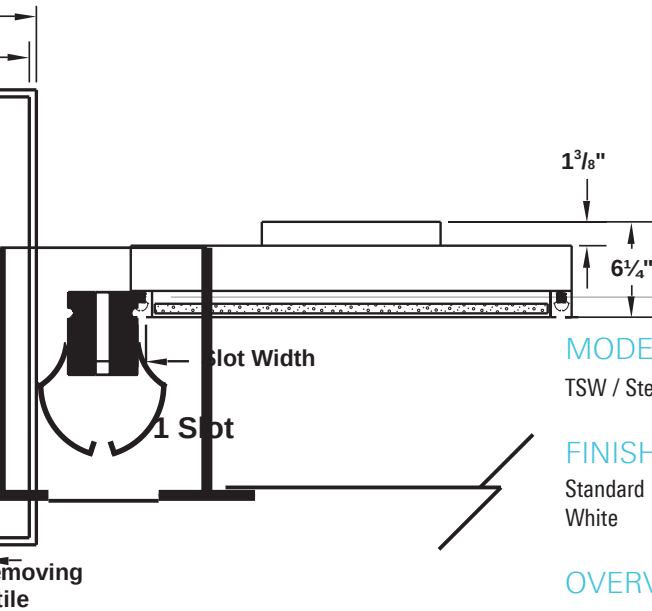


TSW

- Model TSW 'Swirl' ceiling diffuser is designed to provide a tight 360° circular pattern
- The TSW provides excellent performance in variable air volume systems
- The Inlet collar is 1³/₈ inches deep to allow for easy duct connection
- Optional damper can be adjusted with screwdriver through center hole in diffuser without removing face
- The TSW is constructed of heavy gauge steel



TSW



MODEL:
TSW / Steel

FINISH:
Standard Finish - #26
White

OVERVIEW

Swirl Face / Steel

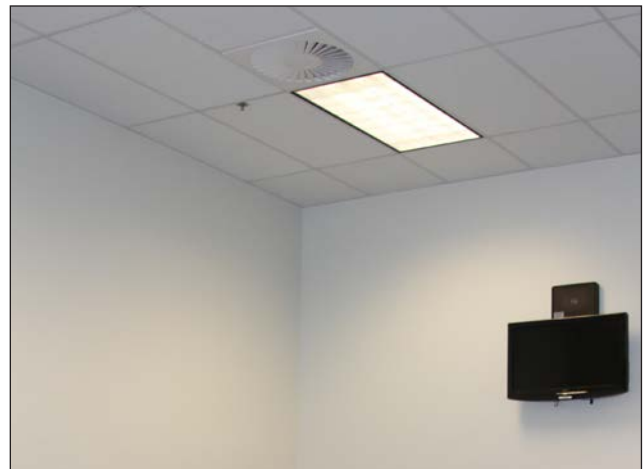
Titus model TSW, 'Swirl', ceiling diffuser is designed to provide a tight 360° circular pattern. It is constructed of heavy gauge steel and provides excellent performance in variable air volume systems.



retrofit



See website for Specifications

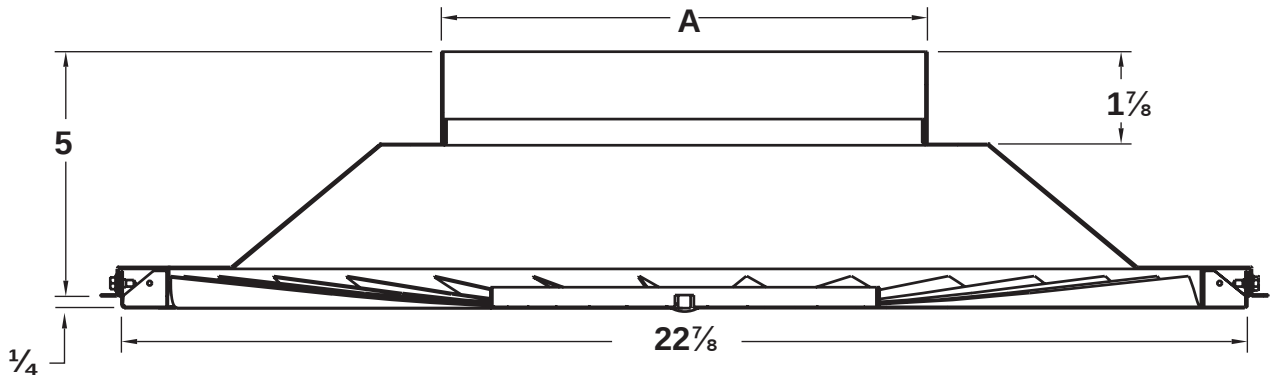


TSW diffuser installed in the ceiling of a gym

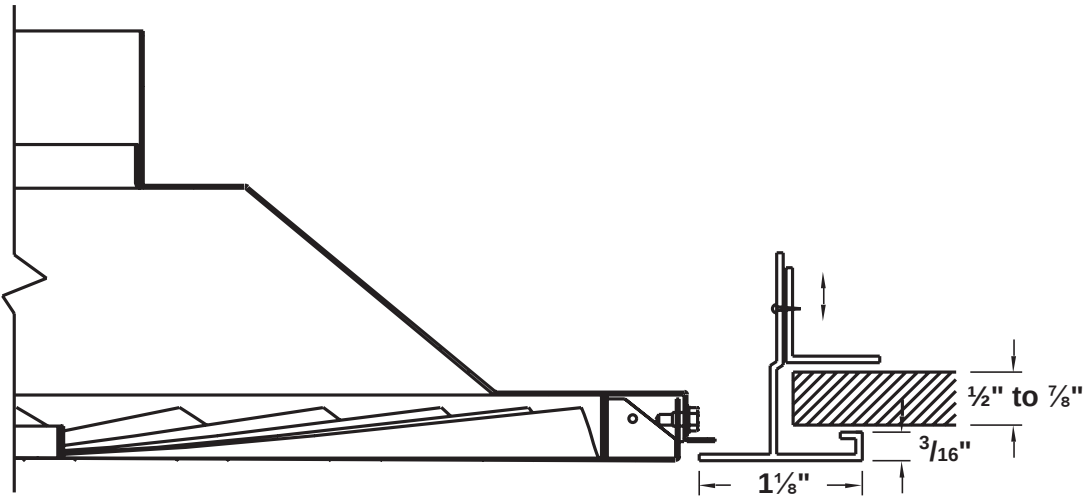
DIMENSIONS

TSW DIMENSIONS

Border Type 3 (Lay-in)



Border Type 1 (Surface Mount)



Note: Diffuser will be shipped with Border 3. A TRM frame will be provided for surface mounting.

Available Sizes for Borders 1, 3				
Module Size	Nominal Duct Size D			
	6" Dia.	8" Dia.	10" Dia.	12" Dia.
24 x 24	•	•	•	•

• Indicates available combination

Nominal Inlet	A
6"	5 7/8
8"	7 7/8
10"	9 7/8
12"	11 1/2

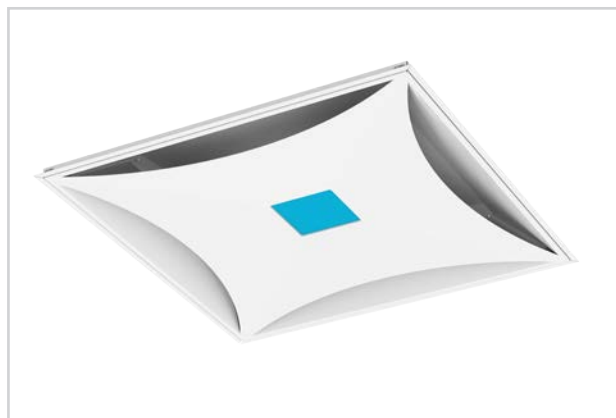
TSW / SWIRL FACE

		Neck Velocity	200	300	400	500	600	700	800	900	1000	1100	1200	1300
		Velocity Pressure	0.002	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075	0.090	0.105
24 x 24 Module	6" Dia.	Airflow, cfm	34	59	79	98	118	138	157	177	197	216	236	256
		Total Pressure	0.004	0.012	0.022	0.034	0.049	0.067	0.087	0.106	0.126	0.155	0.188	0.219
		NC (Noise Criteria)	--	--	4	9	13	16	19	23	26	30	33	35
		Throw	0-1-3	1-2-4	2-3-5	2-3-6	3-4-6	3-5-7	3-5-7	4-5-8	4-6-8	5-6-9	5-6-9	5-7-9
	8" Dia.	Airflow, cfm	70	105	139	174	209	245	279	314	349	384	419	454
		Total Pressure	0.008	0.017	0.030	0.047	0.067	0.094	0.117	0.145	0.189	0.218	0.259	0.304
		NC (Noise Criteria)	--	6	12	17	21	27	31	35	38	40	41	43
		Throw	1-2-3	1-2-4	2-3-5	2-3-7	3-4-7	3-5-8	4-5-9	4-6-9	5-7-10	5-7-10	5-7-11	6-8-11
	10" Dia.	Airflow, cfm	109	164	218	273	328	382	436	491	546	601	655	
		Total Pressure	0.011	0.024	0.043	0.068	0.114	0.152	0.191	0.240	0.297	0.359	0.427	
		NC (Noise Criteria)	--	10	16	21	28	34	36	40	42	44	46	
		Throw	1-2-4	2-3-6	3-4-8	4-5-9	4-6-10	5-7-11	6-8-12	6-9-13	8-9-13	8-10-14	8-10-14	
	12" Dia.	Airflow, cfm	157	239	319	393	471	550	628	707	785	864		
		Total Pressure	0.023	0.053	0.094	0.138	0.199	0.271	0.354	0.448	0.554	0.670		
		NC (Noise Criteria)	9	18	24	30	38	41	44	47	49	51		
		Throw	2-3-5	3-4-8	4-5-10	5-6-11	5-8-13	6-9-14	7-10-15	8-11-15	9-12-16	9-12-17		

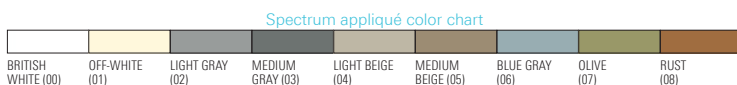
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the section, Engineering Guidelines of this catalog for additional information.
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines for the catalog throw data information.
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure

Spectrum

- Unique architectural face design with center appliqué (nine standard colors)
- Customer color matches and company logos available
- Appliqué sold separately for field application & retrofit
- Hinged removable faceplate is sold separately for retrofit of existing Titus perforated diffusers without removal of backpan or ductwork
- Excellent choice for VAV systems. The 4-way air pattern remains tight and horizontal even when the air volume varies over a wide range
- 24" x 24" module size with square or round inlets
- Border type 1 ships as border type 3 with separate TRM frame for easy mounting in surface mount applications
- Heavy gauge steel construction
- Woodgrain options available



SPECTRUM



MODEL:

Spectrum / Steel

FINISHES:

Standard Finish - #26 White

Optional Finishes - Special colors and woodgrain finish options

OVERVIEW

Square Panel / Architectural Plaque Face

The Titus Spectrum diffuser offers a unique alternative when considering ceiling mounted air outlets for architectural building applications. The Spectrum design includes a special arcuate face with center appliqué. The appliqué is available in nine standard colors, as well as custom color matches or company logo. The versatility of these different color schemes provides the architect with a multitude of design options to compliment and enhance a building's décor. The Spectrum also provides excellent performance by delivering a tight 4-way horizontal air discharge pattern which make it a great choice for variable air volume applications. In addition to its architectural features, the Spectrum can also be used for retrofit applications with existing Titus perforated diffusers (PCS model). The removable arcuate face can be ordered separately to retrofit existing PCS diffusers in the field by removing the pattern controllers and replacing the face.

APPLIQUÉ INFORMATION

The Spectrum applique is constructed of matte substrate material with adhesive backing. Each appliqué is individually die cut for consistency and fitted to the pre-formed square embossment in the center of the Spectrum faceplate after the diffuser is painted. Appliqué specifications

 See website for Specifications



Spectrum diffuser with logo inset installed in an upscale country club

include a 0.017" polycarbonate substrate with opacity film, 0.002" adhesive with peel-off backing, and total thickness of 0.019".

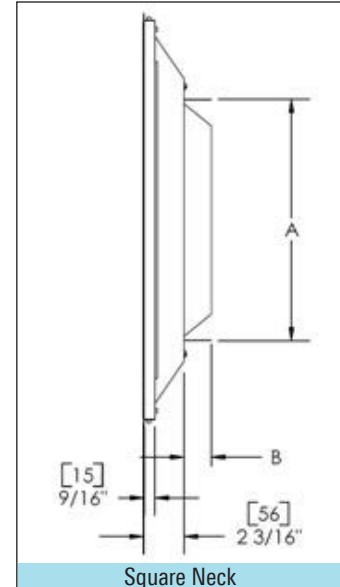
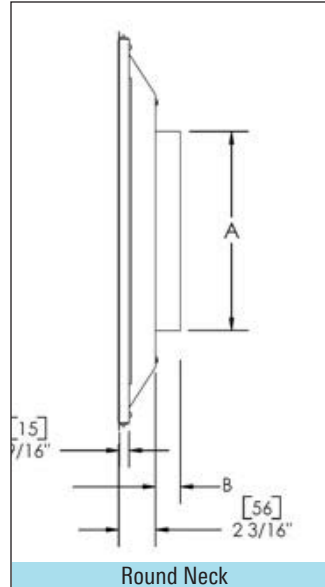
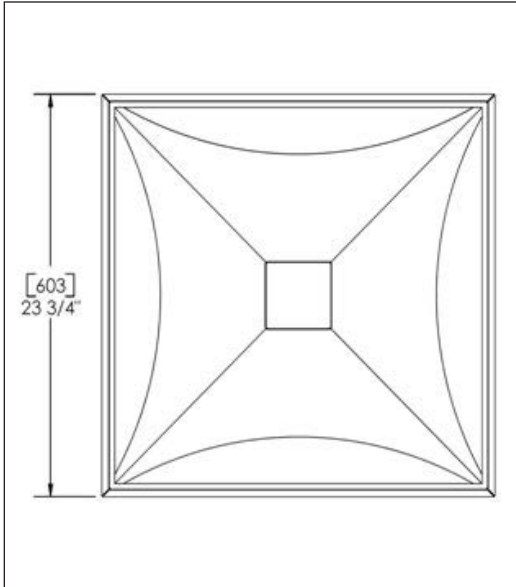
COLOR OPTIONS

Titus offers nine standard appliqué colors for the Spectrum diffuser as well as custom colors or custom logo's. For the custom color matching process, two color chips (2" x 2") must be sent to Titus. For the custom logo process, a high resolution digital image must be supplied to Titus in a 3.96" x 3.96" viewing size.

DIMENSIONS

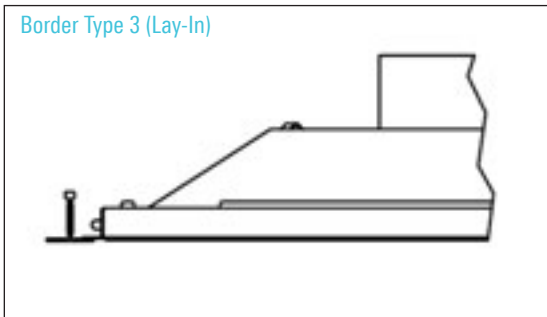
diffusers

SPECTRUM UNIT DIMENSIONS



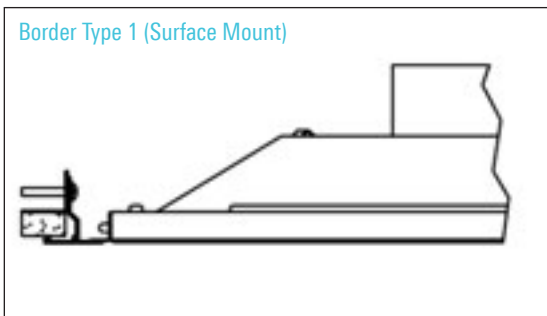
BORDER DETAILS

Border Type 3 (Lay-In)



Duct Size (Inches)	Round Neck	
	A	B
6	5 ⁷ / ₈	1
8	7 ⁷ / ₈	
10	9 ⁷ / ₈	1½
12	11 ⁷ / ₈	
14	13 ⁷ / ₈	
16	15 ⁷ / ₈	

Border Type 1 (Surface Mount)



Duct Size (Inches)	Square Neck	
	A	B
6 x 6	5 ⁷ / ₈ x 5 ⁷ / ₈	1½
8 x 8	7 ⁷ / ₈ x 7 ⁷ / ₈	
10 x 10	9 ⁷ / ₈ x 9 ⁷ / ₈	
12 x 12	11 ⁷ / ₈ x 11 ⁷ / ₈	
14 x 14	13 ⁷ / ₈ x 13 ⁷ / ₈	

Frame type 1 is shipped as a frame 3 lay-in with a separate TRM frame

SPECTRUM / ROUND INLET / ARCHITECTURAL DIFFUSER

Inlet Size	Neck Velocity (fpm)	200	300	400	500	600	700	800	900	1000	1100
	Velocity Pressure	0.002	0.006	0.010	0.016	0.023	0.030	0.040	0.051	0.063	0.076
6" Dia.	Airflow, cfm	39	59	78	98	118	137	157	177	196	216
	Total Pressure	0.004	0.010	?	0.027	0.039	0.053	0.069	0.088	0.108	0.131
	NC (Noise Criteria)	-	-	-	-	-	14	19	22	26	29
	Throw	1-1-3	1-2-3	2-3-5	3-4-8	3-5-9	4-6-9	4-7-10	5-8-11	6-8-11	6-8-12
8" Dia.	Airflow, cfm	70	105	140	175	209	244	279	314	349	384
	Total Pressure	0.007	0.016	0.029	0.043	0.062	0.085	0.111	0.140	0.173	0.209
	NC (Noise Criteria)	-	-	-	-	12	17	22	25	29	32
	Throw	1-1-4	1-3-7	2-4-9	3-6-11	4-7-12	5-8-13	6-9-13	7-10-14	7-11-15	8-11-16
10" Dia.	Airflow, cfm	109	164	218	273	327	382	436	491	545	600
	Total Pressure	0.008	0.017	0.031	0.048	0.070	0.095	0.124	0.157	0.193	0.234
	NC (Noise Criteria)	-	-	-	-	15	20	24	28	31	34
	Throw	1-2-6	2-3-8	3-5-10	4-7-13	6-8-14	7-10-16	7-11-17	8-13-18	9-14-19	10-14-20
12" Dia.	Airflow, cfm	157	236	316	393	470	550	630	710	785	865
	Total Pressure	0.014	0.032	0.057	0.089	0.128	0.175	0.230	0.290	0.357	0.433
	NC (Noise Criteria)	-	-	-	11	17	21	26	29	33	36
	Throw	1-2-7	2-4-10	3-6-13	5-8-16	7-10-17	8-12-19	9-13-20	10-15-21	11-16-22	12-17-24
14" Dia.	Airflow, cfm	214	321	427	535	641	748	855	962	1070	1175
	Total Pressure	0.019	0.043	0.076	0.119	0.172	0.234	0.305	0.386	0.477	0.576
	NC (Noise Criteria)	-	-	-	12	18	23	27	31	34	37
	Throw	1-2-8	2-5-12	4-7-16	6-10-19	8-12-20	9-14-22	10-16-23	12-18-25	13-19-26	14-19-27
16" Dia.	Airflow, cfm	279	419	557	698	838	977	1117	1257	1395	1535
	Total Pressure	0.025	0.055	0.098	0.154	0.222	0.302	0.394	0.498	0.615	0.745
	NC (Noise Criteria)	-	-	11	14	20	24	29	32	36	39
	Throw	1-2-9	2-5-13	5-8-17	7-11-21	9-13-23	10-16-25	12-18-27	13-20-28	15-21-30	16-22-31

PERFORMANCE NOTES

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values are in feet at terminal velocities of 150, 100 and 50 fpm at isothermal conditions
- For an explanation of catalog throw data, see the Engineering Guidelines section of this catalog
- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract velocity pressure from the total pressure

SPECTRUM / SQUARE INLET / ARCHITECTURAL DIFFUSER

24" x 24" Module Size	Inlet Size	Neck Velocity (fpm)	200	300	400	500	600	700	800	900	1000	1100
		Velocity Pressure	0.002	0.006	0.010	0.016	0.023	0.030	0.040	0.051	0.063	0.076
	6 x 6	Airflow, cfm	50	75	100	125	150	175	200	225	250	275
		Total Pressure	0.005	0.012	0.022	0.033	0.047	0.064	0.084	0.106	0.131	0.158
		NC (Noise Criteria)	-	-	-	-	11	16	20	23	27	30
		Throw	1-1-4	1-2-4	2-4-6	3-5-9	4-6-10	4-7-11	5-8-11	6-9-12	6-9-13	7-9-14
	8 x 8	Airflow, cfm	89	133	177	222	267	311	356	400	444	489
		Total Pressure	0.009	0.019	0.034	0.053	0.077	0.104	0.136	0.173	0.213	0.258
		NC (Noise Criteria)	-	-	-	-	14	19	23	26	30	33
		Throw	1-2-5	1-3-8	2-4-10	4-6-12	5-8-13	6-9-14	7-10-15	8-11-16	8-12-17	9-13-18
	10 x 10	Airflow, cfm	139	208	277	347	417	485	555	625	695	765
		Total Pressure	0.013	0.029	0.052	0.080	0.115	0.156	0.204	0.258	0.319	0.386
		NC (Noise Criteria)	-	-	-	-	16	21	26	29	32	35
		Throw	1-2-6	2-4-9	3-6-12	5-8-15	6-9-16	7-11-18	8-13-19	9-14-20	10-15-21	12-16-22
	12 x 12	Airflow, cfm	200	300	400	500	600	700	800	900	1000	1100
		Total Pressure	0.018	0.040	0.071	0.112	0.161	0.219	0.287	0.363	0.448	0.542
		NC (Noise Criteria)	-	-	-	12	18	23	27	31	34	37
		Throw	1-2-8	2-5-11	4-7-14	6-9-18	8-11-20	9-13-21	10-15-23	11-17-24	13-18-25	14-19-27
	14 x 14	Airflow, cfm	272	408	541	681	817	953	1090	1225	1360	1495
		Total Pressure	0.024	0.054	0.097	0.150	0.216	0.294	0.385	0.485	0.600	0.727
NC (Noise Criteria)		-	-	-	14	19	24	29	32	36	39	
Throw		1-2-9	2-5-13	5-8-17	7-11-21	9-13-23	10-15-25	12-18-26	13-20-28	15-21-30	16-22-31	

PERFORMANCE NOTES

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values are in feet at terminal velocities of 150, 100 and 50 fpm at isothermal conditions
- For an explanation of catalog throw data, see the Engineering Guidelines section of this catalog
- NC values based on octave band 2 to 7 sound power levels minus a room absorption of 10 dB
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- To obtain static pressure, subtract velocity pressure from the total pressure

Square and Rectangular Diffusers

TDC / TDCA

- Titus Series TDC diffusers handle an unusually large amount of air for a given pressure drop and noise level
- Pleasing appearance harmonizes with various architectural details - especially modular ceiling systems
- Maintains an unbroken horizontal flow pattern from maximum cfm down to minimum. Excellent performance in variable air volume systems.
- In the TDCA and TDCA-AA models, movable vanes, accessible from the face, adjust the discharge pattern from horizontal to vertical
- Core is easily removable from the face of the diffuser
- Lever operator on the optional Model AG-95 damper allows easy volume adjustment from the face of the diffuser
- Extremely flexible, with cores available for 1-, 2-, 3- or 4-way horizontal flow
- Material is 22-gauge steel or aluminum with miscellaneous steel components



TDC / TDCA

- For a uniform face appearance on all neck sizes, specify an 18 x 18" dimension A size and the desired round neck size. This is available in 24 x 24" lay-in module size only.

MODELS:

Steel Models:
TDC / with fixed discharge
TDCA / with adjustable discharge

Aluminum Models:
TDC-AA / with fixed discharge
TDCA-AA / with adjustable discharge

FINISH:

Standard Finish - #26 White

OVERVIEW

Louvered Face / High Capacity

Titus Series TDC diffusers handle an unusually large amount of air for a given pressure drop and noise level. Their pleasing appearance harmonizes with various architectural details, especially in modular ceiling systems.



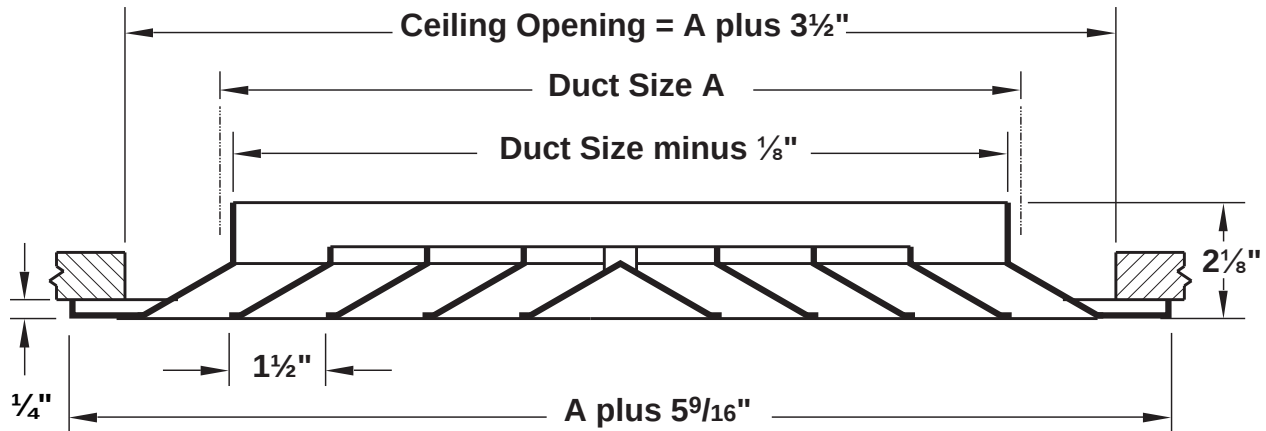
See website for Specifications



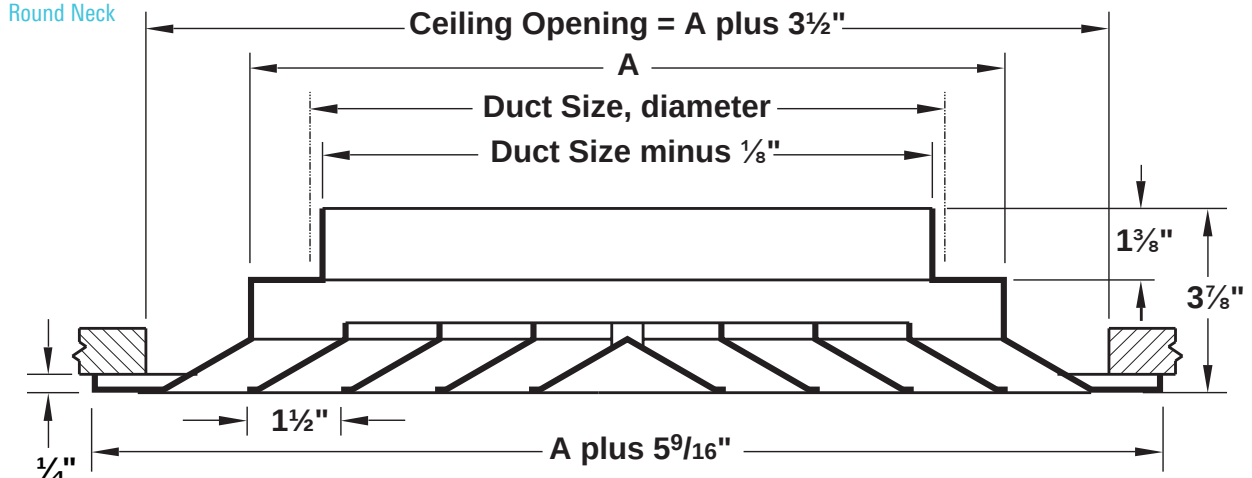
Cutaway view of the TDC with an insulated blanket

TDC / TDCA UNIT DIMENSIONS

Border Type 1 (Surface Mount)
Square or Rectangular Neck

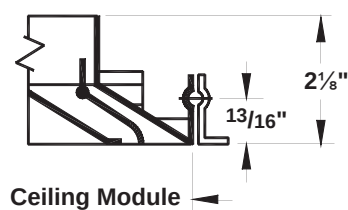


Border Type 1 (Surface Mount)
Round Neck

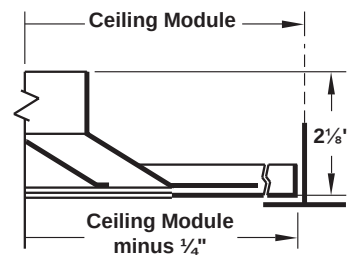


BORDER TYPES

Border Type 2
(Snap-In)

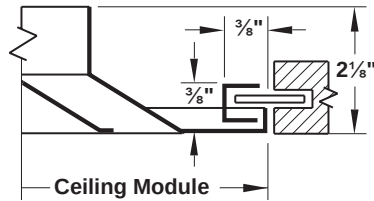


Border Type 3
(Lay-In)

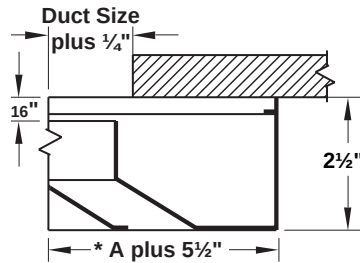


BORDER TYPES (continued)

**Border Type 4
(Spline)**

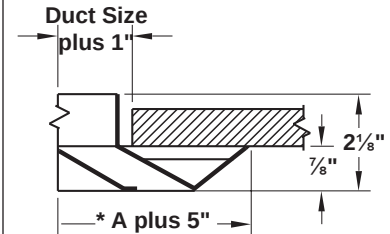


**Border Type 5
(Dropped Face)**

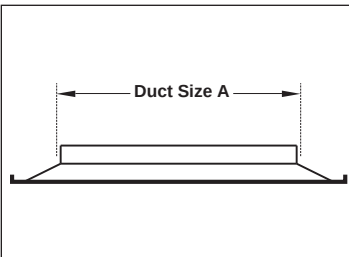


Available in Steel Only
Note: Std. diffuser is 2½\" deep
Optional 4\" deep diffuser is available

**Border Type 6
(Beveled Drop Face)**



AVAILABLE DUCT SIZES - SQUARE AND RECTANGULAR NECKS



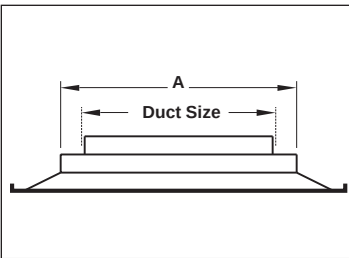
Border Types 1, 5, 6	
Minimum Duct Size A	Maximum Duct Size A
6 x 6	48 x 48

Note: Duct sizes are available in 3\" increments only. Maximum duct size for border 5 is 36\" x 36\".

Border Types 2, 3*, 4					
Available Module Size	Min. Duct Size A	Max. Duct Size A TDC (Steel)	Max. Duct Size A TDC-AA (Alum.)	Max. Duct Size A TDCA (Steel, Adj.)	Max. Duct Size A TDCA-AA (Alum., Adj.)
12 x 12	6 x 6	9 x 9*	9 x 9*	6 x 6	6 x 6
24 x 24	6 x 6	21 x 21*	21 x 21*	18 x 18	18 x 18
48 x 24	12 x 12	45 x 21*	42 x 21*	18 x 18	18 x 18

* Frame 3 maximum duct size available in 4-way blow only

AVAILABLE DUCT SIZES - ROUND NECKS

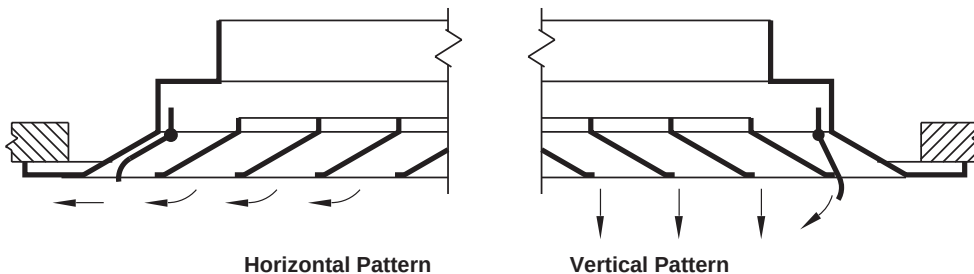


Border Types 1, 5, 6	
Dimension A	Available Round Duct Size
6 x 6	6
9 x 9	6, 8
12 x 12	6, 8, 10, 12
15 x 15	6, 8, 10, 12, 14
18 x 18	6, 8, 10, 12, 14, 16

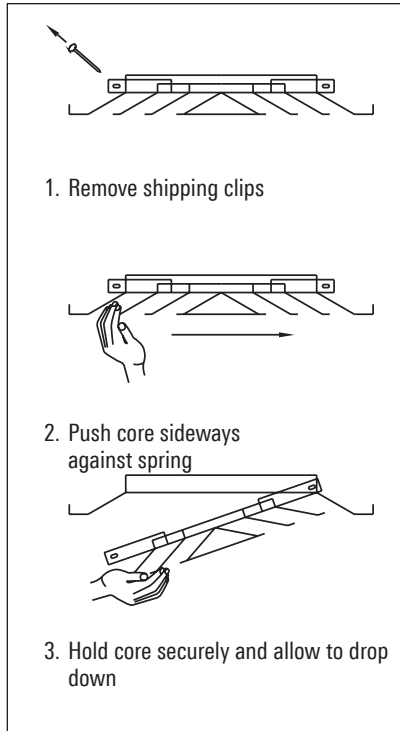
Note: Round duct sizes are available only in sizes shown. Border type 5 is only available in steel.

Border Types 2, 3, 4		
Available Module Size	Dimension A	Available Round Duct Size
12 x 12	6 x 6	6
	9 x 9	6, 8
24 x 24	6 x 6	6
	9 x 9	6, 8
	12 x 12	6, 8, 10, 12
	15 x 15	6, 8, 10, 12, 14
	18 x 18	6, 8, 10, 12, 14, 16

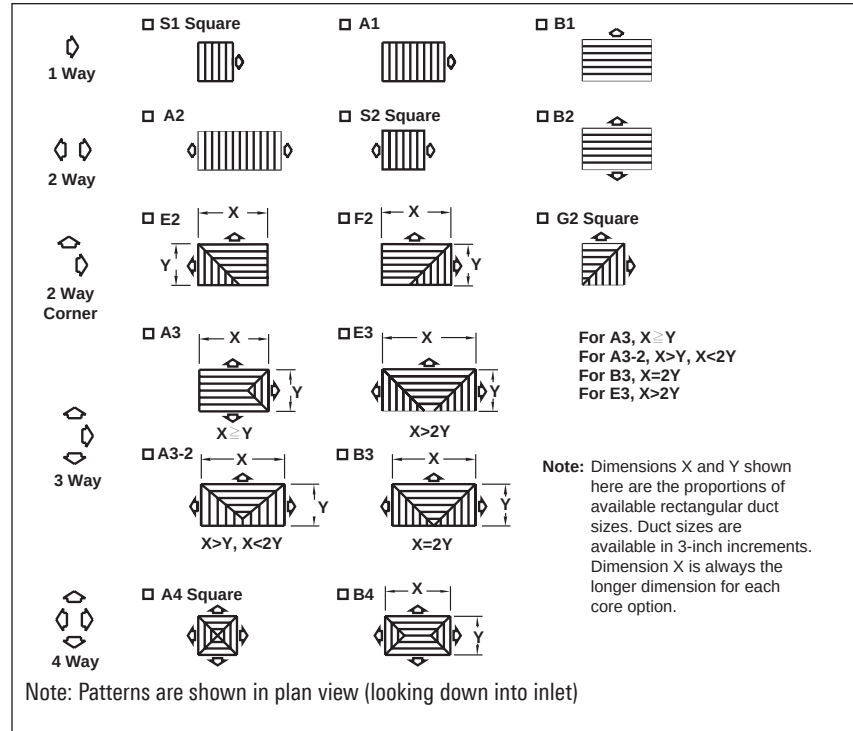
ADJUSTING HORIZONTAL-TO-VERTICAL DISCHARGE PATTERN - TDCA, TDCA-AA



REMOVING CENTER CORE



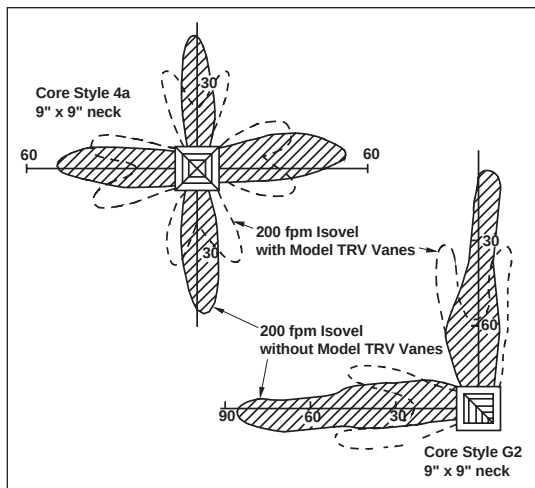
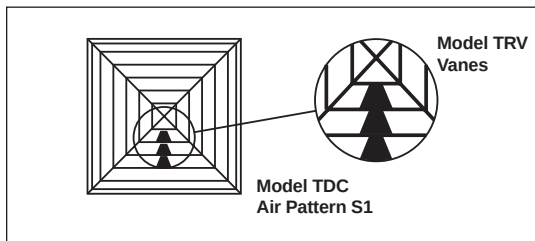
OPTIONAL PATTERNS

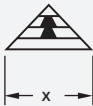
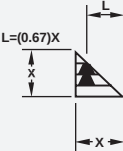
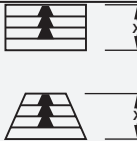


Optional Patterns (continued)

PERFORMANCE

- The table below shows the quantity and location of Model TRV vanes required per side of the diffuser
- Throw reduction will be shown in the isovel diagrams
- Total pressure will be 1.40 times that listed in the diffuser performance table
- Sound level will be 4 NC higher than that listed in the diffuser performance table



Dimension X Inches	Quantity of Model TRV Vanes Required (per Side)											
	3	6	9	12	15	18	21	24	27	30	36	48
	-	1	1½	2½	3	4	5	5	6	7	8	11
	-	2	2	3	4	4	5	7	7	8	10	14
	1½	3	4	5	7	8	9	11	12	13	16	22

TDC - SQUARE NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

		Neck Vel. Vel. Pressure Total Pressure	300 0.006 0.042	400 0.010 0.075	500 0.016 0.117	600 0.022 0.169	700 0.031 0.229	800 0.040 0.300	900 0.050 0.379
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	75 -	100 13	125 16	150 23	175 27	200 31	225 34
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
6 x 6 0.25 ft²	S1	X	75 8-10-14	100 9-11-16	125 10-13-18	150 11-14-20	175 12-15-21	200 13-16-23	225 14-17-24
	S2&G2	X & Y	38 4-6-10	50 5-8-12	63 6-10-14	75 8-10-15	88 9-11-16	100 10-12-17	113 10-13-18
	A3	X	28 4-6-9	38 5-7-11	47 6-8-12	56 7-9-13	66 8-10-14	75 9-11-15	84 9-11-16
	A4	X & Y	19 3-5-8	25 4-7-9	31 6-7-10	38 7-8-11	44 7-9-12	50 8-9-13	56 8-10-14
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	169 -	225 15	281 21	338 26	394 30	450 34	506 37
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
9 x 9 0.56 ft²	S1	X	169 11-15-21	225 14-17-24	281 16-19-27	338 17-21-30	394 18-23-32	450 20-24-34	506 21-26-36
	S2&G2	X & Y	84 6-9-16	113 8-11-18	141 10-14-20	169 11-16-22	197 13-17-24	225 15-18-26	253 16-19-27
	A3	X	63 8-10-14	84 9-11-16	105 10-13-18	127 11-14-20	148 12-15-21	169 13-16-23	190 14-17-24
	A4	X & Y	42 4-7-12	56 7-10-14	70 8-11-16	84 10-12-17	98 11-13-18	113 12-14-20	127 12-15-21
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	300 -	400 17	500 23	600 28	700 32	800 35	900 38
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
12 x 12 1.00 ft²	S1	X	300 15-20-28	400 19-23-32	500 21-25-36	600 23-28-39	700 25-30-43	800 26-32-46	900 28-34-48
	S2&G2	X & Y	150 8-11-21	200 10-15-24	250 13-19-27	300 15-21-30	350 18-23-32	400 20-24-34	450 21-26-36
	A3	X	113 11-13-18	150 12-15-21	188 14-17-24	225 15-18-26	263 16-20-28	300 17-21-30	338 18-23-32
	A4	X & Y	75 6-10-16	100 9-13-19	125 11-15-21	150 13-16-23	175 14-17-25	200 15-19-26	225 16-20-28
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	469 11	625 19	781 25	938 29	1094 33	1250 37	1406 40
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
15 x 15 1.56 ft²	S1	X	469 19-25-35	625 23-29-40	781 26-32-45	938 29-35-49	1094 31-38-53	1250 33-40-57	1406 35-43-60
	S2&G2	X & Y	234 10-14-26	313 13-19-30	391 16-24-34	469 19-26-37	547 22-28-40	625 25-30-43	703 28-32-45
	A3	X	176 13-16-23	234 15-19-27	293 17-21-30	352 19-23-33	410 20-25-35	469 22-27-38	527 23-28-40
	A4	X & Y	117 7-12-20	156 11-16-23	195 14-18-26	234 16-20-28	273 18-22-31	313 19-23-33	352 20-25-35
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	675 12	900 20	1125 26	1350 31	1575 35	1800 38	2025 41
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
18 x 18 2.25 ft²	S1	X	675 23-30-42	900 28-34-48	1125 31-38-54	1350 34-42-59	1575 37-45-64	1800 39-48-68	2025 42-51-73
	S2&G2	X & Y	338 11-17-31	450 15-23-36	563 19-29-41	675 23-31-44	788 27-34-48	900 30-36-51	1013 31-38-54
	A3	X	253 16-20-28	338 18-23-32	422 21-25-36	506 23-28-39	591 26-32-45	675 28-34-48	759 30-36-51
	A4	X & Y	169 9-15-24	225 13-20-28	281 17-22-31	338 20-24-34	394 21-26-37	450 23-28-39	506 24-30-42
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	919 13	1225 21	1531 27	1838 32	2144 36	2450 39	2756 42
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
21 x 21 3.06 ft²	S1	X	919 27-35-49	1225 33-40-56	1531 36-45-63	1838 40-49-69	2144 43-53-75	2450 46-56-80	2756 49-60-85
	S2&G2	X & Y	459 13-20-37	613 18-27-42	766 22-33-47	919 27-37-52	1072 31-40-56	1225 35-42-60	1378 37-45-63
	A3	X	345 19-23-32	459 22-26-37	574 24-30-42	689 26-32-46	804 29-35-49	919 31-37-53	1034 32-40-56
	A4	X & Y	230 10-17-28	306 16-23-32	383 19-26-36	459 23-28-40	536 25-30-43	613 27-32-46	689 28-34-49
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1200 14	1600 22	2000 28	2400 32	2800 36	3200 40	3600 43
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
24 x 24 4.00 ft²	S1	X	1200 31-39-56	1600 37-46-64	2000 42-51-72	2400 46-56-79	2800 49-60-85	3200 53-64-91	3600 56-68-97
	S2&G2	X & Y	600 15-23-42	800 20-30-48	1000 25-38-54	1200 30-42-59	1400 35-45-64	1600 39-48-68	1800 42-51-72
	A3	X	450 21-26-37	600 25-30-43	750 28-34-48	900 30-37-52	1050 33-40-56	1200 35-43-60	1350 37-45-64
	A4	X & Y	300 12-20-32	400 18-26-37	500 22-29-41	600 26-32-45	700 28-35-49	800 30-37-52	900 32-39-56
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1875 16	2500 23	3125 29	3750 34	4375 38	5000 41	5625 45
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
30 x 30 6.25 ft²	S1	X	1875 38-49-70	2500 47-57-81	3125 52-64-90	3750 57-70-99	4375 62-75-107	5000 66-81-114	5625 70-86-121
	S2&G2	X & Y	938 19-29-52	1250 25-38-60	1563 32-48-68	1875 38-52-74	2188 44-56-80	2500 49-60-85	2813 52-64-91
	A3	X	703 27-33-46	938 31-38-53	1172 34-42-60	1406 38-46-65	1641 41-50-71	1875 44-53-76	2109 46-57-80
	A4	X & Y	469 15-25-40	625 22-33-46	781 28-37-52	938 33-40-57	1094 35-43-61	1250 38-46-66	1406 40-49-70
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	2700 17	3600 24	4500 30	5400 35	6300 39	7200 43	8100 46
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
36 x 36 9.00 ft²	S1	X	2700 46-59-84	3600 56-68-97	4500 62-76-108	5400 68-84-118	6300 74-90-128	7200 79-97-137	8100 84-103-145
	S2&G2	X & Y	1350 23-34-63	1800 30-46-72	2250 38-57-81	2700 46-63-89	3150 53-68-96	3600 59-72-102	4050 63-77-109
	A3	X	1013 32-39-55	1350 37-45-64	1688 41-51-72	2025 45-55-78	2363 49-60-85	2700 52-64-91	3038 55-68-96
	A4	X & Y	675 18-30-48	900 27-39-56	1125 33-44-62	1350 39-48-68	1575 43-52-74	1800 45-56-79	2025 48-59-83
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	4800 19	6400 26	8000 32	9600 37	11200 41	12800 45	14400 48
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
48 x 48 16.00 ft²	S1	X	4800 61-79-112	6400 74-91-129	8000 83-102-144	9600 91-112-158	11200 99-121-171	12800 105-129-182	14400 112-137-193
	S2&G2	X & Y	2400 30-46-84	3200 41-61-97	4000 51-76-108	4800 61-84-118	5600 71-90-128	6400 79-97-137	7200 84-102-145
	A3	X	1800 43-52-74	2400 49-60-85	3000 55-68-96	3600 60-74-105	4200 65-80-113	4800 70-85-121	5400 74-91-128
	A4	X & Y	1200 24-40-64	1600 36-52-74	2000 44-59-83	2400 52-64-91	2800 57-69-98	3200 61-74-105	3600 64-79-111

Performance notes appear at end of performance data

TDC - RECTANGULAR NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

		Neck Vel. Vel. Pressure Total Pressure	300 0.006 0.042	400 0.010 0.075	500 0.016 0.117	600 0.022 0.169	700 0.031 0.229	800 0.040 0.300	900 0.050 0.379
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	113 - cfm Throw	150 14 cfm Throw	188 20 cfm Throw	225 25 cfm Throw	263 29 cfm Throw	300 32 cfm Throw	338 35 cfm Throw
6 x 9 0.38 ft²	A1&B1	X	113 11-13-18	150 12-15-21	188 14-17-24	225 15-18-26	263 16-20-28	300 17-21-30	338 18-22-32
	A2&B2	X & Y	56 6-9-15	75 8-12-17	94 10-14-19	113 10-14-19	131 13-16-23	150 14-17-25	169 15-18-26
	E2&F2	X	75 7-10-14	100 9-12-16	125 11-13-18	150 12-14-20	175 13-15-22	200 13-16-23	225 14-17-25
		Y	38 4-7-12	50 6-9-14	63 7-11-15	75 9-12-17	88 10-13-18	100 11-14-19	113 12-14-20
	A3	X	47 6-10-14	63 9-11-16	78 10-12-18	94 11-14-19	109 12-15-21	125 13-16-22	141 14-17-23
		Y	19 4-7-11	25 6-9-12	31 7-10-14	38 9-11-15	44 9-11-16	50 10-12-17	56 11-13-18
	A3-2	X	42 6-9-15	56 8-12-17	70 10-14-19	84 12-15-21	98 13-16-23	113 14-17-24	127 15-18-26
		Y	35 4-7-12	47 6-9-14	59 7-11-15	70 9-12-17	82 10-13-18	94 11-14-19	105 12-14-20
	B4	X	38 6-10-14	50 9-11-16	63 10-12-18	75 11-14-19	88 12-15-21	100 13-16-22	113 14-17-23
		Y	19 4-7-11	25 6-9-12	31 7-10-14	38 9-11-15	44 9-11-16	50 10-12-17	56 11-13-18
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	150 - cfm Throw	200 15 cfm Throw	250 21 cfm Throw	300 26 cfm Throw	350 30 cfm Throw	400 33 cfm Throw	450 36 cfm Throw
6 x 12 0.50 ft²	A1&B1	X	150 12-15-21	200 14-17-24	250 16-19-27	300 17-21-30	350 19-23-32	400 20-24-34	450 21-26-36
	A2&B2	X & Y	75 7-10-17	100 9-13-20	125 11-16-22	150 13-17-25	175 15-19-27	200 16-20-28	225 17-21-30
	E2&F2	X	113 8-12-16	150 11-13-19	188 12-15-21	225 13-16-23	263 14-18-25	300 15-19-27	338 16-20-28
		Y	38 5-8-14	50 7-10-16	63 9-12-18	75 10-14-19	88 12-15-21	100 13-16-22	113 14-17-23
	A3	X	66 7-11-16	88 10-13-18	109 12-14-20	131 13-16-22	153 14-17-24	175 15-18-26	197 16-19-27
		Y	19 5-8-12	25 7-10-14	31 8-11-16	38 10-12-17	44 11-13-19	50 11-14-20	56 12-15-21
	B3	X	75 10-13-19	100 12-15-22	125 14-17-24	150 15-19-26	175 16-20-28	200 18-22-30	225 19-23-32
		Y	38 5-8-14	50 7-10-16	63 9-12-18	75 10-14-19	88 12-15-21	100 13-16-22	113 14-17-23
	B4	X	56 7-11-16	75 10-13-18	94 12-14-20	113 13-16-22	131 14-17-24	150 15-18-26	169 16-19-27
		Y	19 5-8-12	25 7-10-14	31 8-11-16	38 10-12-17	44 11-13-19	50 11-14-20	56 12-15-21
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	188 - cfm Throw	250 16 cfm Throw	313 22 cfm Throw	375 26 cfm Throw	438 30 cfm Throw	500 34 cfm Throw	563 37 cfm Throw
6 x 15 0.63 ft²	A1&B1	X	188 14-17-24	250 16-19-27	313 18-21-30	375 19-24-33	438 21-25-36	500 22-27-38	563 24-29-41
	A2&B2	X & Y	94 7-11-19	125 10-15-22	156 12-18-25	188 15-19-27	219 17-21-30	250 18-22-32	281 19-24-34
	E2&F2	X	150 9-13-18	200 12-15-21	250 14-17-24	300 15-18-26	350 16-20-28	400 17-21-30	450 18-23-32
		Y	38 6-9-15	50 8-11-18	63 10-14-20	75 11-15-21	88 13-16-23	100 14-18-25	113 15-19-26
	A3	X	84 8-12-18	113 11-14-20	141 13-16-23	169 14-18-25	197 15-19-27	225 17-20-29	253 18-21-30
		Y	19 6-8-14	25 8-11-16	31 9-12-18	38 11-14-19	44 12-15-21	50 13-16-22	56 14-17-24
	E3	X	113 12-15-21	150 14-17-24	188 16-19-27	225 17-21-30	263 19-23-32	300 20-24-34	338 21-26-36
		Y	38 6-9-15	50 8-11-18	63 10-14-20	75 11-15-21	88 13-16-23	100 14-18-25	113 15-19-26
	B4	X	75 8-12-18	100 11-14-20	125 13-16-23	150 14-18-25	175 15-19-27	200 17-20-29	225 18-21-30
		Y	19 6-8-14	25 8-11-16	31 9-12-18	38 11-14-19	44 12-15-21	50 13-16-22	56 14-17-24
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	225 - cfm Throw	300 16 cfm Throw	375 22 cfm Throw	450 27 cfm Throw	525 31 cfm Throw	600 34 cfm Throw	675 38 cfm Throw
6 x 18 0.75 ft²	A1&B1	X	225 15-18-26	300 17-21-30	375 19-24-33	450 21-26-36	525 23-28-39	600 24-30-42	675 26-32-45
	A2&B2	X & Y	113 8-12-21	150 11-16-25	188 14-19-27	225 16-21-30	263 19-23-32	300 20-25-35	338 21-26-37
	E2&F2	X	188 10-14-20	250 13-16-23	313 15-18-26	375 16-20-28	438 18-22-31	500 19-23-33	563 20-25-35
		Y	38 6-9-17	50 8-13-19	63 10-15-21	75 13-17-23	88 15-18-25	100 16-19-27	113 17-20-29
	A3	X	103 9-14-19	138 12-16-22	172 14-18-25	206 16-19-27	241 17-21-29	275 18-22-31	309 19-23-33
		Y	19 6-9-15	25 8-12-17	31 10-14-19	38 12-15-21	44 13-16-23	50 14-17-24	56 15-18-26
	E3	X	150 13-16-23	200 15-19-27	250 17-21-30	300 19-23-33	350 20-25-35	400 22-27-38	450 23-28-40
		Y	38 6-9-17	50 8-13-19	63 10-15-21	75 13-17-23	88 15-18-25	100 16-19-27	113 17-20-29
	B4	X	94 9-14-19	125 12-16-22	156 14-18-25	188 16-19-27	219 17-21-29	250 18-22-31	281 19-23-33
		Y	19 6-9-15	25 8-12-17	31 10-14-19	38 12-15-21	44 13-16-23	50 14-17-24	56 15-18-26
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	263 - cfm Throw	350 17 cfm Throw	438 23 cfm Throw	525 27 cfm Throw	613 31 cfm Throw	700 35 cfm Throw	788 38 cfm Throw
6 x 21 0.88 ft²	A1&B1	X	263 16-20-28	350 19-23-32	438 21-25-36	525 23-28-39	613 25-30-43	700 26-32-45	788 28-34-48
	A2&B2	X & Y	131 9-13-23	175 12-18-27	219 15-21-30	263 18-23-32	306 20-25-35	350 22-27-37	394 23-28-40
	E2&F2	X	225 11-15-22	300 14-18-25	375 16-20-28	450 18-22-31	525 19-23-33	600 21-25-36	675 22-27-38
		Y	38 7-10-18	50 9-14-21	63 11-16-23	75 14-18-25	88 16-19-27	100 17-21-29	113 18-22-31
	A3	X	122 10-15-21	163 13-17-24	203 15-19-27	244 17-21-29	284 18-22-32	325 20-24-34	366 21-25-36
		Y	19 7-10-16	25 9-13-19	31 11-15-21	38 13-16-23	44 14-17-25	50 15-19-26	56 16-20-28
	E3	X	188 14-18-25	250 17-20-29	313 19-23-32	375 20-25-35	438 22-27-38	500 23-29-41	563 25-30-43
		Y	38 7-10-18	50 9-14-21	63 11-16-23	75 14-18-25	88 16-19-27	100 17-21-29	113 18-22-31
	B4	X	113 10-15-21	150 13-17-24	188 15-19-27	225 17-21-29	263 18-22-32	300 20-24-34	338 21-25-36
		Y	19 7-10-16	25 9-13-19	31 11-15-21	38 13-16-23	44 14-17-25	50 15-19-26	56 16-20-28

TDC - RECTANGULAR NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

		Neck Vel. Vel. Pressure Total Pressure	300 0.006 0.042	400 0.010 0.075	500 0.016 0.117	600 0.022 0.169	700 0.031 0.229	800 0.040 0.300	900 0.050 0.379
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	300 - -	400 17 -	500 23 -	600 28 -	700 32 -	800 35 -	900 38 -
6 x 24 1.00 ft²	A1&B1	X	300 17-21-30	400 20-24-34	500 22-27-38	600 24-30-42	700 26-32-45	800 28-34-49	900 30-36-52
	A2&B2	X & Y	150 9-14-25	200 13-19-28	250 16-22-32	300 19-25-35	350 22-27-37	400 23-28-40	450 25-30-43
	E2&F2	X	263 12-16-23	350 15-19-27	438 17-21-30	525 19-23-33	613 21-25-36	700 22-27-38	788 23-28-40
		Y	38 7-11-19	50 10-15-22	63 12-18-25	75 15-19-27	88 17-21-29	100 18-22-31	113 19-23-33
	A3	X	141 11-16-22	188 14-18-26	234 17-20-29	281 18-22-31	328 20-24-34	375 21-26-36	422 22-27-38
		Y	19 7-11-17	25 10-14-20	31 12-16-22	38 14-17-24	44 15-19-26	50 16-20-28	56 17-21-30
	E3	X	225 15-19-27	300 18-22-31	375 20-24-34	450 22-27-38	525 23-29-41	600 25-31-43	675 27-33-46
		Y	38 7-11-19	50 10-15-22	63 12-18-25	75 15-19-27	88 17-21-29	100 18-22-31	113 19-23-33
	B4	X	131 11-16-22	175 14-18-26	219 17-20-29	263 18-22-31	306 20-24-34	350 21-26-36	394 22-27-38
		Y	19 7-11-17	25 10-14-20	31 12-16-22	38 14-17-24	44 15-19-26	50 16-20-28	56 17-21-30
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	375 - -	500 18 -	625 24 -	750 29 -	875 33 -	1000 36 -	1125 39 -
6 x 30 1.25 ft²	A1&B1	X	375 19-24-33	500 22-27-38	625 25-30-43	750 27-33-47	875 29-36-51	1000 31-38-54	1125 33-41-58
	A2&B2	X & Y	188 11-16-27	250 14-21-32	313 18-25-35	375 21-27-39	438 24-30-42	500 26-32-45	563 27-34-48
	E2&F2	X	338 13-18-26	450 17-21-30	563 19-24-34	675 21-26-37	788 23-28-40	900 25-30-42	1013 26-32-45
		Y	38 8-12-21	50 11-16-25	63 14-20-28	75 16-21-30	88 19-23-33	100 20-25-35	113 21-26-37
	A3	X	178 12-18-25	238 16-20-29	297 18-23-32	356 20-25-35	416 22-27-38	475 23-29-40	534 25-30-43
		Y	19 8-12-19	25 11-16-22	31 13-18-25	38 16-19-27	44 17-21-29	50 18-22-31	56 19-24-33
	E3	X	300 17-21-30	400 20-24-34	500 22-27-38	600 24-30-42	700 26-32-45	800 28-34-49	900 30-36-51
		Y	38 8-12-21	50 11-16-25	63 14-20-28	75 16-21-30	88 19-23-33	100 20-25-35	113 21-26-37
	B4	X	169 12-18-25	225 16-20-29	281 18-23-32	338 20-25-35	394 22-27-38	450 23-29-40	506 25-30-43
		Y	19 8-12-19	25 11-16-22	31 13-18-25	38 16-19-27	44 17-21-29	50 18-22-31	56 19-24-33
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	225 - -	300 16 -	375 22 -	450 27 -	525 31 -	600 34 -	675 38 -
9 x 12 0.75 ft²	A1&B1	X	225 15-18-26	300 17-21-30	375 19-24-33	450 21-26-36	525 23-28-39	600 24-30-42	675 26-32-45
	A2&B2	X & Y	113 8-12-21	150 11-16-25	188 14-19-27	225 16-21-30	263 18-23-32	300 20-25-35	338 21-26-37
	E2&F2	X	141 10-14-20	188 13-16-23	234 15-18-26	281 16-20-28	328 18-22-31	375 19-23-33	422 20-25-35
		Y	84 6-9-17	113 8-13-19	141 10-15-21	169 13-17-23	197 15-18-25	225 16-19-27	253 17-20-29
	A3	X	91 9-14-19	122 12-16-22	152 14-18-25	183 16-19-27	213 17-21-29	244 18-22-31	274 19-23-33
		Y	42 6-9-15	56 8-12-17	70 10-14-19	84 12-15-21	98 13-16-23	113 14-17-24	127 15-18-26
	A3-2	X	75 9-13-21	100 12-17-24	125 15-19-27	150 17-21-30	175 19-23-32	200 20-24-34	225 21-26-37
		Y	75 6-9-17	100 8-13-19	125 10-15-21	150 13-17-23	175 15-18-25	200 16-19-27	225 17-20-29
	B4	X	70 9-14-19	94 12-16-22	117 14-18-25	141 16-19-27	164 17-21-29	188 18-22-31	211 19-23-33
		Y	42 6-9-15	56 8-12-17	70 10-14-19	84 12-15-21	98 13-16-23	113 14-17-24	127 15-18-26
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	281 - -	375 17 -	469 23 -	563 28 -	656 32 -	750 35 -	844 38 -
9 x 15 0.94 ft²	A1&B1	X	281 17-20-29	375 19-24-33	469 21-26-37	563 24-29-41	656 25-31-44	750 27-33-47	844 29-35-50
	A2&B2	X & Y	141 9-14-24	188 12-16-23	234 15-22-31	281 18-24-34	328 21-26-36	375 22-27-39	422 24-29-41
	E2&F2	X	197 12-16-23	263 15-18-26	328 17-21-29	394 18-23-32	459 20-24-34	525 21-26-37	591 23-28-39
		Y	84 7-11-19	113 9-14-21	141 12-17-24	169 14-19-26	197 16-20-28	225 18-21-30	253 19-23-32
	A3	X	120 10-15-21	159 14-18-25	199 16-20-28	239 18-21-30	279 19-23-33	319 20-25-35	359 21-26-37
		Y	42 7-10-17	56 9-14-19	70 12-15-21	84 14-17-24	98 15-18-25	113 16-19-27	127 17-20-29
	A3-2	X	117 10-15-24	156 13-19-27	195 16-22-30	234 19-24-33	273 21-25-36	313 22-27-38	352 24-29-41
		Y	82 7-11-19	109 9-14-21	137 12-17-24	164 14-19-26	191 16-20-28	219 18-21-30	246 19-23-32
	B4	X	98 10-15-21	131 14-18-25	164 16-20-28	197 18-21-30	230 19-23-33	263 20-25-35	295 21-26-37
		Y	42 7-10-17	56 9-14-19	70 12-15-21	84 14-17-24	98 15-18-25	113 16-19-27	127 17-20-29
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	338 - -	450 18 -	563 24 -	675 28 -	788 32 -	900 36 -	1013 39 -
9 x 18 1.13 ft²	A1&B1	X	338 18-22-32	450 21-26-36	563 24-29-41	675 26-32-45	788 28-34-48	900 30-36-52	1013 32-39-55
	A2&B2	X & Y	169 10-15-26	225 13-20-30	281 17-24-34	338 20-26-37	394 23-28-40	450 25-30-43	506 26-32-45
	E2&F2	X	253 13-17-25	338 16-20-28	422 18-23-32	506 20-25-35	591 22-27-38	675 23-28-40	759 25-30-43
		Y	84 8-12-20	113 10-15-23	141 13-19-26	169 15-20-29	197 18-22-31	225 19-23-33	253 20-25-35
	A3	X	148 11-17-23	197 15-19-27	246 18-21-30	295 19-23-33	345 21-25-36	394 22-27-38	443 23-29-41
		Y	42 8-11-18	56 10-15-21	70 13-17-24	84 15-18-26	98 16-20-28	113 17-21-30	127 18-22-32
	B3	X	169 14-20-28	225 19-23-32	281 21-25-36	338 23-28-39	394 25-30-43	450 26-32-46	506 28-34-48
		Y	84 8-12-20	113 10-15-23	141 13-19-26	169 15-20-29	197 18-22-31	225 19-23-33	253 20-25-35
	B4	X	127 11-17-23	169 15-19-27	211 18-21-30	253 19-23-33	295 21-25-36	338 22-27-38	380 23-29-41
		Y	42 8-11-18	56 10-15-21	70 13-17-24	84 15-18-26	98 16-20-28	113 17-21-30	127 18-22-32

TDC - RECTANGULAR NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

		Neck Vel. Vel. Pressure Total Pressure	300 0.006 0.042	400 0.010 0.075	500 0.016 0.117	600 0.022 0.169	700 0.031 0.229	800 0.040 0.300	900 0.050 0.379
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	394 11	525 18	656 24	788 29	919 33	1050 36	1181 39
9 x 21 1.31 ft²	A1&B1	X	394	525	656	788	919	1050	1181
	A2&B2	X & Y	197	263	328	394	459	525	591
	E2&F2	X	309	413	516	619	722	825	928
		Y	84	113	141	169	197	225	253
	A3	X	176	234	293	352	410	469	527
		Y	42	56	70	84	98	113	127
	E3	X	225	300	375	450	525	600	675
		Y	84	113	141	169	197	225	253
	B4	X	155	206	258	309	361	413	464
		Y	42	56	70	84	98	113	127
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	450 11	600 19	750 24	900 29	1050 33	1200 37	1350 40
9 x 24 1.50 ft²	A1&B1	X	450	600	750	900	1050	1200	1350
	A2&B2	X & Y	225	300	375	450	525	600	675
	E2&F2	X	366	488	609	731	853	975	1097
		Y	84	113	141	169	197	225	253
	A3	X	204	272	340	408	476	544	612
		Y	42	56	70	84	98	113	127
	E3	X	281	375	469	563	656	750	844
		Y	84	113	141	169	197	225	253
	B4	X	183	244	305	366	427	488	548
		Y	42	56	70	84	98	113	127
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	563 12	750 19	938 25	1125 30	1313 34	1500 37	1688 41
9 x 30 1.88 ft²	A1&B1	X	563	750	938	1125	1313	1500	1688
	A2&B2	X & Y	281	375	469	563	656	750	844
	E2&F2	X	478	638	797	956	1116	1275	1434
		Y	84	113	141	169	197	225	253
	A3	X	260	347	434	520	607	694	780
		Y	42	56	70	84	98	113	127
	E3	X	394	525	656	788	919	1050	1181
		Y	84	113	141	169	197	225	253
	B4	X	239	319	398	478	558	638	717
		Y	42	56	70	84	98	113	127
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	675 12	900 20	1125 26	1350 31	1575 35	1800 38	2025 41
9 x 36 2.25 ft²	A1&B1	X	675	900	1125	1350	1575	1800	2025
	A2&B2	X & Y	338	450	563	675	788	900	1013
	E2&F2	X	591	788	984	1181	1378	1575	1772
		Y	84	113	141	169	197	225	253
	A3	X	316	422	527	633	738	844	949
		Y	42	56	70	84	98	113	127
	E3	X	506	675	844	1013	1181	1350	1519
		Y	84	113	141	169	197	225	253
	B4	X	295	394	492	591	689	788	886
		Y	42	56	70	84	98	113	127
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	375 18	500 24	625 29	750 33	875 36	1000 39	1125 41
12 x 15 1.25 ft²	A1&B1	X	375	500	625	750	875	1000	1125
	A2&B2	X & Y	188	250	313	375	438	500	563
	E2&F2	X	225	300	375	450	525	600	675
		Y	150	200	250	300	350	400	450
	A3	X	150	200	250	300	350	400	450
		Y	75	100	125	150	175	200	225
	A3-2	X	117	156	195	234	273	313	352
		Y	129	172	215	258	301	344	387
	B4	X	113	150	188	225	263	300	338
		Y	75	100	125	150	175	200	225

TDC - RECTANGULAR NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

		Neck Vel. Vel. Pressure Total Pressure	300 0.006 0.042	400 0.010 0.075	500 0.016 0.117	600 0.022 0.169	700 0.031 0.229	800 0.040 0.300	900 0.050 0.379
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	450 11	600 19	750 24	900 29	1050 33	1200 37	1350 40
12 x 18 ft²	A18B1	X	450 21-26-36	600 24-30-42	750 27-33-47	900 30-36-52	1050 32-39-56	1200 34-42-60	1350 36-45-63
	A28B2	X & Y	225 12-17-30	300 15-23-35	375 19-27-39	450 23-30-43	525 27-32-46	600 28-35-49	675 30-37-52
	E28F2	X	300 15-20-28	400 19-23-33	500 21-26-37	600 23-28-40	700 25-31-43	800 27-33-46	900 28-35-49
		Y	150 9-13-23	200 12-18-27	250 15-21-30	300 18-23-33	350 21-25-36	400 22-27-38	450 23-29-41
	A3	X	188 13-19-27	250 17-22-31	313 20-25-35	375 22-27-38	438 24-29-41	500 26-31-44	563 27-33-47
		Y	75 9-13-21	100 12-17-24	125 15-19-27	150 17-21-30	175 19-23-32	200 20-24-34	225 21-26-36
	A3-2	X	169 12-19-30	225 17-24-34	281 21-27-38	338 24-30-42	394 26-32-46	450 28-34-49	506 30-37-52
		Y	141 9-13-23	188 12-18-27	234 15-21-30	281 18-23-33	328 21-25-36	375 22-27-38	422 23-29-41
	B4	X	150 13-19-27	200 17-22-31	250 20-25-35	300 22-27-38	350 24-29-41	400 26-31-44	450 27-33-47
		Y	75 9-13-21	100 12-17-24	125 15-19-27	150 17-21-30	175 19-23-32	200 20-24-34	225 21-26-36
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	525 12	700 19	875 25	1050 30	1225 34	1400 37	1575 40
12 x 21 ft²	A18B1	X	525 23-28-39	700 26-32-45	875 29-36-51	1050 32-39-56	1225 35-43-60	1400 37-45-64	1575 39-48-68
	A28B2	X & Y	263 12-19-32	350 17-25-37	438 21-30-42	525 25-32-46	613 29-35-50	700 31-37-53	788 32-40-56
	E28F2	X	375 16-22-31	500 21-25-36	625 23-28-40	750 25-31-43	875 27-33-47	1000 29-36-50	1125 31-38-53
		Y	150 10-14-25	200 13-19-29	250 16-23-33	300 19-25-36	350 22-27-39	400 24-29-41	450 25-31-44
	A3	X	225 14-21-29	300 19-24-34	375 22-27-38	450 24-29-41	525 26-32-45	600 28-34-48	675 29-36-51
		Y	75 9-14-23	100 13-19-26	125 16-21-29	150 19-23-32	175 20-25-35	200 21-26-37	225 23-28-39
	A3-2	X	230 13-20-32	306 18-26-37	383 22-29-42	459 26-32-46	536 28-35-49	613 30-37-53	689 32-39-56
		Y	148 10-14-25	197 13-19-29	246 16-23-33	295 19-25-36	345 22-27-39	394 24-29-41	443 25-31-44
	B4	X	188 14-21-29	250 19-24-34	313 22-27-38	375 24-29-41	438 26-32-45	500 28-34-48	563 29-36-51
		Y	75 9-14-23	100 13-19-26	125 16-21-29	150 19-23-32	175 20-25-35	200 21-26-37	225 23-28-39
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	600 12	800 20	1000 25	1200 30	1400 34	1600 38	1800 41
12 x 24 ft²	A18B1	X	600 24-30-42	800 28-34-49	1000 31-38-54	1200 34-42-60	1400 37-45-64	1600 40-49-69	1800 42-52-73
	A28B2	X & Y	300 13-20-35	400 18-27-40	500 22-32-45	600 27-35-49	700 31-37-53	800 33-40-57	900 35-43-60
	E28F2	X	450 17-23-33	600 22-27-38	750 25-30-42	900 27-33-46	1050 29-36-50	1200 31-38-54	1350 33-40-57
		Y	150 10-15-27	200 14-21-31	250 17-25-35	300 21-27-38	350 24-29-41	400 26-31-44	450 27-33-47
	A3	X	263 15-22-31	350 20-26-36	438 23-29-40	525 26-31-44	613 28-34-48	700 30-36-51	788 31-38-54
		Y	75 10-15-24	100 14-20-28	125 17-22-31	150 20-24-34	175 21-26-37	200 23-28-40	225 24-30-42
	B3	X	300 19-26-37	400 25-30-43	500 28-34-48	600 30-37-53	700 33-40-57	800 35-43-61	900 37-46-65
		Y	150 10-15-27	200 14-21-31	250 17-25-35	300 21-27-38	350 24-29-41	400 26-31-44	450 27-33-47
	B4	X	225 15-22-31	300 20-26-36	375 23-29-40	450 26-31-44	525 28-34-48	600 30-36-51	675 31-38-54
		Y	75 10-15-24	100 14-20-28	125 17-22-31	150 20-24-34	175 21-26-37	200 23-28-40	225 24-30-42
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	750 13	1000 20	1250 26	1500 31	1750 35	2000 38	2250 41
12 x 30 ft²	A18B1	X	750 27-33-47	1000 31-38-54	1250 35-43-61	1500 38-47-67	1750 42-51-72	2000 44-54-77	2250 47-58-82
	A28B2	X & Y	375 15-22-39	500 20-30-45	625 25-35-50	750 30-39-55	875 34-42-59	1000 37-45-63	1125 39-48-67
	E28F2	X	600 19-26-37	800 25-30-42	1000 27-34-47	1200 30-37-52	1400 32-40-56	1600 35-42-60	1800 37-45-64
		Y	150 11-17-30	200 15-23-35	250 19-28-39	300 23-30-43	350 27-33-46	400 29-35-50	450 30-37-53
	A3	X	338 17-25-35	450 22-29-40	563 26-32-45	675 29-35-50	788 31-38-53	900 33-40-57	1013 35-43-61
		Y	75 11-17-27	100 15-22-31	125 19-25-35	150 22-27-38	175 24-29-41	200 26-31-44	225 27-33-47
	E3	X	450 24-30-42	600 28-34-49	750 31-38-54	900 34-42-59	1050 37-45-64	1200 40-49-69	1350 42-51-73
		Y	150 11-17-30	200 15-23-35	250 19-28-39	300 23-30-43	350 27-33-46	400 29-35-50	450 30-37-53
	B4	X	300 17-25-35	400 22-29-40	500 26-32-45	600 29-35-50	700 31-38-53	800 33-40-57	900 35-43-61
		Y	75 11-17-27	100 15-22-31	125 19-25-35	150 22-27-38	175 24-29-41	200 26-31-44	225 27-33-47
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	900 13	1200 21	1500 27	1800 31	2100 36	2400 39	2700 42
12 x 36 ft²	A18B1	X	900 30-36-52	1200 34-42-60	1500 38-47-67	1800 42-52-73	2100 45-56-79	2400 49-60-84	2700 52-63-89
	A28B2	X & Y	450 16-24-43	600 22-33-49	750 27-39-55	900 33-43-60	1050 37-46-65	1200 40-49-69	1350 43-52-74
	E28F2	X	750 21-28-40	1000 27-33-46	1250 30-37-52	1500 33-40-57	1750 36-43-62	2000 38-46-66	2250 40-49-70
		Y	150 13-19-33	200 17-25-38	250 21-30-43	300 25-33-47	350 29-36-51	400 31-38-54	450 33-41-58
	A3	X	413 18-27-38	550 24-31-44	688 29-35-50	825 31-38-54	963 34-41-59	1100 36-44-63	1238 38-47-66
		Y	75 12-19-30	100 17-24-34	125 21-27-38	150 24-30-42	175 26-32-45	200 28-34-49	225 30-36-52
	E3	X	600 26-33-46	800 31-38-53	1000 34-42-59	1200 38-46-65	1400 41-50-70	1600 43-53-75	1800 46-56-80
		Y	150 13-19-33	200 17-25-38	250 21-30-43	300 25-33-47	350 29-36-51	400 31-38-54	450 33-41-58
	B4	X	375 18-27-38	500 24-31-44	625 29-35-50	750 31-38-54	875 34-41-59	1000 36-44-63	1125 38-47-66
		Y	75 12-19-30	100 17-24-34	125 21-27-38	150 24-30-42	175 26-32-45	200 28-34-49	225 30-36-52

TDC - RECTANGULAR NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

		Neck Vel. Vel. Pressure Total Pressure	300 0.006 0.042	400 0.010 0.075	500 0.016 0.117	600 0.022 0.169	700 0.031 0.229	800 0.040 0.300	900 0.050 0.379
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1200 14	1600 22	2000 28	2400 32	2800 36	3200 40	3600 43
12 x 48 ft²	A1&B1	X	1200 34-42-60	1600 40-49-69	2000 44-54-77	2400 49-60-84	2800 53-64-91	3200 56-69-97	3600 60-73-103
	A2&B2	X & Y	600 19-28-49	800 25-38-57	1000 31-45-63	1200 38-49-69	1400 43-53-75	1600 46-57-80	1800 49-60-85
	E2&F2	X	1050 24-33-46	1400 31-38-54	1750 35-42-60	2100 38-46-66	2450 41-50-71	2800 44-54-76	3150 46-57-81
		Y	150 15-22-38	200 19-29-44	250 24-35-50	300 29-38-54	350 34-41-59	400 36-44-63	450 38-47-66
	A3	X	563 21-31-44	750 28-36-51	938 33-40-57	1125 36-44-63	1313 39-48-68	1500 42-51-72	1688 44-54-77
		Y	75 14-21-34	100 19-28-40	125 24-31-44	150 28-34-49	175 30-37-52	200 32-40-56	225 34-42-59
	E3	X	900 30-38-53	1200 35-43-61	1500 40-49-69	1800 43-53-75	2100 47-57-81	2400 50-61-87	2700 53-65-92
		Y	150 15-22-38	200 19-29-44	250 24-35-50	300 29-38-54	350 34-41-59	400 36-44-63	450 38-47-66
	B4	X	525 21-31-44	700 28-36-51	875 33-40-57	1050 36-44-63	1225 39-48-68	1400 42-51-72	1575 44-54-77
		Y	75 14-21-34	100 19-28-40	125 24-31-44	150 28-34-49	175 30-37-52	200 32-40-56	225 34-42-59
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	563 12	750 19	938 25	1125 30	1313 34	1500 37	1688 41
15 x 18 ft²	A1&B1	X	563 24-29-41	750 27-33-47	938 30-37-53	1125 33-41-58	1313 36-44-62	1500 38-47-67	1688 41-50-71
	A2&B2	X & Y	281 13-19-34	375 17-26-39	469 21-31-43	563 26-34-48	656 30-36-51	750 32-39-55	844 34-41-58
	E2&F2	X	328 16-23-32	438 21-26-37	547 24-29-41	656 26-32-45	766 28-34-49	875 30-37-52	984 32-39-55
		Y	234 10-15-26	313 13-20-30	391 17-24-34	469 20-26-37	547 23-28-40	625 25-30-43	703 26-32-45
	A3	X	223 14-21-30	297 19-25-35	371 23-28-39	445 25-30-43	520 27-33-46	594 29-35-50	668 30-37-53
		Y	117 10-15-24	156 13-19-27	195 16-21-30	234 19-24-33	273 21-25-36	313 22-27-38	352 24-29-41
	A3-2	X	169 14-21-33	225 19-27-38	281 23-30-43	338 27-33-47	394 29-36-51	450 31-38-54	506 33-41-58
		Y	197 10-15-26	263 13-20-30	328 17-24-34	394 20-26-37	459 23-28-40	525 25-30-43	591 26-32-45
	B4	X	164 14-21-30	219 19-25-35	273 23-28-39	328 25-30-43	383 27-33-46	438 29-35-50	492 30-37-53
		Y	117 10-15-24	156 13-19-27	195 16-21-30	234 19-24-33	273 21-25-36	313 22-27-38	352 24-29-41
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	656 12	875 20	1094 26	1313 30	1531 34	1750 38	1969 41
15 x 21 ft²	A1&B1	X	656 25-31-44	875 29-36-51	1094 33-40-57	1313 36-44-62	1531 39-48-67	1750 42-51-72	1969 44-54-76
	A2&B2	X & Y	328 14-21-36	438 19-28-42	547 23-33-47	656 28-36-51	766 32-39-55	875 34-42-59	984 36-44-63
	E2&F2	X	422 18-24-34	563 23-28-40	703 26-31-44	844 28-34-49	984 30-37-53	1125 32-40-56	1266 34-42-60
		Y	234 11-16-28	313 14-21-33	391 18-26-37	469 21-28-40	547 25-31-43	625 27-33-46	703 28-35-49
	A3	X	270 16-23-33	359 21-27-38	449 24-30-42	539 27-33-46	629 29-35-50	719 31-38-53	809 33-40-57
		Y	117 11-16-25	156 14-21-29	195 18-23-33	234 21-25-36	273 22-27-39	313 24-29-41	352 25-31-44
	A3-2	X	230 15-22-36	306 20-29-42	383 25-33-46	459 29-36-51	536 32-39-55	613 34-42-59	689 36-44-62
		Y	213 11-16-28	284 14-21-33	355 18-26-37	427 21-28-40	498 25-31-43	569 27-33-46	640 28-35-49
	B4	X	211 16-23-33	281 21-27-38	352 24-30-42	422 27-33-46	492 29-35-50	563 31-38-53	633 33-40-57
		Y	117 11-16-25	156 14-21-29	195 18-23-33	234 21-25-36	273 22-27-39	313 24-29-41	352 25-31-44
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	750 13	1000 20	1250 26	1500 31	1750 35	2000 38	2250 41
15 x 24 ft²	A1&B1	X	750 27-33-47	1000 31-38-54	1250 35-43-61	1500 38-47-67	1750 42-51-72	2000 44-54-77	2250 47-58-82
	A2&B2	X & Y	375 15-22-39	500 20-30-45	625 25-35-50	750 30-39-55	875 34-42-59	1000 37-45-63	1125 39-48-67
	E2&F2	X	516 19-26-37	688 25-30-42	859 27-34-47	1031 30-37-52	1203 32-40-56	1375 35-42-60	1547 37-45-64
		Y	234 11-17-30	313 15-23-35	391 19-28-39	469 23-30-43	547 27-33-46	625 29-35-50	703 30-37-53
	A3	X	316 17-25-35	422 22-29-40	527 26-32-45	633 29-35-50	738 31-38-53	844 33-40-57	949 35-43-61
		Y	117 11-17-27	156 15-22-31	195 19-25-35	234 22-27-38	273 24-29-41	313 26-31-44	352 27-33-47
	A3-2	X	300 16-24-38	400 21-31-44	500 27-35-50	600 31-38-54	700 34-42-59	800 36-44-63	900 38-47-67
		Y	225 11-17-30	300 15-23-35	375 19-28-39	450 23-30-43	525 27-33-46	600 29-35-50	675 30-37-53
	B4	X	258 17-25-35	344 22-29-40	430 26-32-45	516 29-35-50	602 31-38-53	688 33-40-57	773 35-43-61
		Y	117 11-17-27	156 15-22-31	195 19-25-35	234 22-27-38	273 24-29-41	313 26-31-44	352 27-33-47
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	938 13	1250 21	1563 27	1875 32	2188 36	2500 39	2813 42
15 x 30 ft²	A1&B1	X	938 30-37-53	1250 35-43-61	1563 39-48-68	1875 43-53-74	2188 46-57-80	2500 50-61-86	2813 53-64-91
	A2&B2	X & Y	469 17-25-43	625 22-33-50	781 28-40-56	938 33-43-61	1094 38-47-66	1250 41-50-71	1406 43-53-75
	E2&F2	X	703 21-29-41	938 27-34-47	1172 31-38-53	1406 34-41-58	1641 36-44-63	1875 39-47-67	2109 41-50-71
		Y	234 13-19-34	313 17-26-39	391 21-31-44	469 26-34-48	547 30-37-52	625 32-39-55	703 34-42-59
	A3	X	410 19-28-39	547 25-32-45	684 29-36-51	820 32-39-55	957 35-42-60	1094 37-45-64	1230 39-48-68
		Y	117 13-19-30	156 17-25-35	195 21-28-39	234 25-30-43	273 27-33-46	313 29-35-50	352 30-37-53
	B3	X	469 24-33-47	625 31-38-54	781 35-42-60	938 38-47-66	1094 41-50-71	1250 44-54-76	1406 47-57-81
		Y	234 13-19-34	313 17-26-39	391 21-31-44	469 26-34-48	547 30-37-52	625 32-39-55	703 34-42-59
	B4	X	352 19-28-39	469 25-32-45	586 29-36-51	703 32-39-55	820 35-42-60	938 37-45-64	1055 39-48-68
		Y	117 13-19-30	156 17-25-35	195 21-28-39	234 25-30-43	273 27-33-46	313 29-35-50	352 30-37-53

TDC - RECTANGULAR NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

		Neck Vel. Vel. Pressure Total Pressure	300 0.006 0.042	400 0.010 0.075	500 0.016 0.117	600 0.022 0.169	700 0.031 0.229	800 0.040 0.300	900 0.050 0.379
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1125 14	1500 22	1875 27	2250 32	2625 36	3000 40	3375 43
15 x 36 3.75 ft²	A1&B1	X	1125 33-41-58	1500 38-47-67	1875 43-53-74	2250 47-58-82	2625 51-62-88	3000 54-67-94	3375 58-71-100
	A2&B2	X & Y	563 18-27-48	750 24-36-55	938 30-43-61	1125 36-48-67	1313 42-51-73	1500 45-55-78	1688 48-58-82
	E2&F2	X	891 23-32-45	1188 30-37-52	1484 34-41-58	1781 37-45-64	2078 40-49-69	2375 42-52-74	2672 45-55-78
		Y	234 14-21-37	313 19-28-43	391 23-34-48	469 28-37-53	547 33-40-57	625 35-43-61	703 37-45-64
	A3	X	504 20-30-43	672 27-35-50	840 32-39-55	1008 35-43-61	1176 38-46-66	1344 40-50-70	1512 43-53-74
		Y	117 14-21-33	156 18-27-38	195 23-30-43	234 27-33-47	273 29-36-51	313 31-38-54	352 33-41-58
	E3	X	656 29-36-51	875 34-42-59	1094 38-47-66	1313 42-51-73	1531 45-56-79	1750 49-59-84	1969 51-63-89
		Y	234 14-21-37	313 19-28-43	391 23-34-48	469 28-37-53	547 33-40-57	625 35-43-61	703 37-45-64
	B4	X	445 20-30-43	594 27-35-50	742 32-39-55	891 35-43-61	1039 38-46-66	1188 40-50-70	1336 43-53-74
		Y	117 14-21-33	156 18-27-38	195 23-30-43	234 27-33-47	273 29-36-51	313 31-38-54	352 33-41-58
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1500 15	2000 23	2500 28	3000 33	3500 37	4000 41	4500 44
15 x 48 5.00 ft²	A1&B1	X	1500 38-47-67	2000 44-54-77	2500 50-61-86	3000 54-67-94	3500 59-72-102	4000 63-77-109	4500 67-82-115
	A2&B2	X & Y	750 21-32-55	1000 28-42-63	1250 35-50-71	1500 42-55-78	1750 48-59-84	2000 52-63-90	2250 55-67-95
	E2&F2	X	1266 27-37-52	1688 35-42-60	2109 39-47-67	2531 42-52-74	2953 46-56-79	3375 49-60-85	3797 52-64-90
		Y	234 16-24-43	313 22-32-50	391 27-39-55	469 32-43-61	547 38-46-66	625 40-50-70	703 43-53-74
	A3	X	691 24-35-50	922 31-40-57	1152 37-45-64	1383 40-50-70	1613 44-53-76	1844 47-57-81	2074 50-61-86
		Y	117 16-24-38	156 21-31-44	195 27-35-50	234 31-38-54	273 34-41-59	313 36-44-63	352 38-47-67
	E3	X	1031 34-42-59	1375 40-49-69	1719 44-54-77	2063 49-59-84	2406 52-64-91	2750 56-69-97	3094 59-73-103
		Y	234 16-24-43	313 22-32-50	391 27-39-55	469 32-43-61	547 38-46-66	625 40-50-70	703 43-53-74
	B4	X	633 24-35-50	844 31-40-57	1055 37-45-64	1266 40-50-70	1477 44-53-76	1688 47-57-81	1898 50-61-86
		Y	117 16-24-38	156 21-31-44	195 27-35-50	234 31-38-54	273 34-41-59	313 36-44-63	352 38-47-67
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	788 13	1050 20	1313 26	1575 31	1838 35	2100 39	2363 42
18 x 21 2.63 ft²	A1&B1	X	788 28-34-48	1050 32-39-56	1313 36-44-62	1575 39-48-68	1838 43-52-74	2100 45-56-79	2363 48-59-84
	A2&B2	X & Y	394 15-23-40	525 20-30-46	656 25-36-51	788 30-40-56	919 35-43-61	1050 37-46-65	1181 40-49-69
	E2&F2	X	450 19-27-38	600 25-31-43	750 28-34-49	900 31-38-53	1050 33-41-58	1200 36-43-62	1350 38-46-65
		Y	338 12-18-31	450 16-24-36	563 20-28-40	675 24-31-44	788 27-34-47	900 29-36-51	1013 31-38-54
	A3	X	309 17-25-36	413 23-29-41	516 27-33-46	619 29-36-51	722 32-39-55	825 34-41-59	928 36-44-62
		Y	169 12-17-28	225 15-23-32	281 19-25-36	338 23-28-39	394 25-30-42	450 26-32-45	506 28-34-48
	A3-2	X	230 16-25-39	306 22-32-46	383 27-36-51	459 32-39-56	536 35-43-60	613 37-46-64	689 39-48-68
		Y	279 12-18-31	372 16-24-36	465 20-28-40	558 24-31-44	651 27-34-47	744 29-36-51	837 31-38-54
	B4	X	225 17-25-36	300 23-29-41	375 27-33-46	450 29-36-51	525 32-39-55	600 34-41-59	675 36-44-62
		Y	169 12-17-28	225 15-23-32	281 19-25-36	338 23-28-39	394 25-30-42	450 26-32-45	506 28-34-48
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	900 13	1200 21	1500 27	1800 31	2100 36	2400 39	2700 42
18 x 24 3.00 ft²	A1&B1	X	900 30-36-52	1200 34-42-60	1500 38-47-67	1800 42-52-73	2100 45-56-79	2400 49-60-84	2700 52-63-89
	A2&B2	X & Y	450 16-24-43	600 22-33-49	750 27-39-55	900 33-43-60	1050 37-46-65	1200 40-49-69	1350 43-52-74
	E2&F2	X	563 21-28-40	750 27-33-46	938 30-43-61	1125 33-40-57	1313 36-43-62	1500 38-46-66	1688 40-49-70
		Y	338 13-19-33	450 17-25-38	563 21-30-43	675 25-33-47	788 29-36-51	900 31-38-54	1013 33-41-58
	A3	X	366 18-27-38	488 24-31-44	609 29-35-50	731 31-38-54	853 34-41-59	975 36-44-63	1097 38-47-66
		Y	169 12-19-30	225 17-24-34	281 21-27-38	338 24-30-42	394 26-32-45	450 28-34-49	506 30-36-52
	A3-2	X	300 18-26-42	400 23-34-49	500 29-38-54	600 34-42-60	700 37-46-64	800 40-49-69	900 42-52-73
		Y	300 13-19-33	400 17-25-38	500 21-30-43	600 25-33-47	700 29-36-51	800 31-38-54	900 33-41-58
	B4	X	281 18-27-38	375 24-31-44	469 29-35-50	563 31-38-54	656 34-41-59	750 36-44-63	844 38-47-66
		Y	169 12-19-30	225 17-24-34	281 21-27-38	338 24-30-42	394 26-32-45	450 28-34-49	506 30-36-52
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1125 14	1500 22	1875 27	2250 32	2625 36	3000 40	3375 43
18 x 30 3.75 ft²	A1&B1	X	1125 33-41-58	1500 38-47-67	1875 43-53-74	2250 47-58-82	2625 51-62-88	3000 54-67-94	3375 58-71-100
	A2&B2	X & Y	563 18-27-48	750 24-36-55	938 30-43-61	1125 36-48-67	1313 42-51-73	1500 45-55-78	1688 48-58-82
	E2&F2	X	788 23-32-45	1050 30-37-52	1313 34-41-58	1575 37-45-64	1838 40-49-69	2100 42-52-74	2363 45-55-78
		Y	338 14-21-37	450 19-28-43	563 23-34-48	675 28-37-53	788 33-40-57	900 35-43-61	1013 37-45-64
	A3	X	478 20-30-43	638 27-35-50	797 32-39-55	956 35-43-61	1116 38-46-66	1275 40-50-70	1434 43-53-74
		Y	169 14-21-33	225 18-27-38	281 23-30-43	338 27-33-47	394 29-36-51	450 31-38-54	506 33-41-58
	A3-2	X	469 20-29-47	625 26-38-54	781 33-43-61	938 38-47-67	1094 42-51-72	1250 44-54-77	1406 47-58-82
		Y	328 14-21-37	438 19-28-43	547 23-34-48	656 28-37-53	766 33-40-57	875 35-43-61	984 37-45-64
	B4	X	394 20-30-43	525 27-35-50	656 32-39-55	788 35-43-61	919 38-46-66	1050 40-50-70	1181 43-53-74
		Y	169 14-21-33	225 18-27-38	281 23-30-43	338 27-33-47	394 29-36-51	450 31-38-54	506 33-41-58

TDC - RECTANGULAR NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

		Neck Vel. Vel. Pressure Total Pressure	300 0.006 0.042	400 0.010 0.075	500 0.016 0.117	600 0.022 0.169	700 0.031 0.229	800 0.040 0.300	900 0.050 0.379
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1350 15	1800 22	2250 28	2700 33	3150 37	3600 40	4050 43
18 x 36 4.50 ft²	A18B1	X	1350	1800	2250	2700	3150	3600	4050
	A28B2	X & Y	675	900	1125	1350	1575	1800	2025
	E28F2	X	1013	1350	1688	2025	2363	2700	3038
		Y	338	450	563	675	788	900	1013
	A3	X	591	788	984	1181	1378	1575	1772
		Y	169	225	281	338	394	450	506
	B3	X	675	900	1125	1350	1575	1800	2025
		Y	338	450	563	675	788	900	1013
	B4	X	506	675	844	1013	1181	1350	1519
		Y	169	225	281	338	394	450	506
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1800 16	2400 23	3000 29	3600 34	4200 38	4800 41	5400 44
18 x 48 6.00 ft²	A18B1	X	1800	2400	3000	3600	4200	4800	5400
	A28B2	X & Y	900	1200	1500	1800	2100	2400	2700
	E28F2	X	1463	1950	2438	2925	3413	3900	4388
		Y	338	450	563	675	788	900	1013
	A3	X	816	1088	1359	1631	1903	2175	2447
		Y	169	225	281	338	394	450	506
	E3	X	1125	1500	1875	2250	2625	3000	3375
		Y	338	450	563	675	788	900	1013
	B4	X	731	975	1219	1463	1706	1950	2194
		Y	169	225	281	338	394	450	506
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1050 14	1400 21	1750 27	2100 32	2450 36	2800 40	3150 43
21 x 24 3.50 ft²	A18B1	X	1050	1400	1750	2100	2450	2800	3150
	A28B2	X & Y	525	700	875	1050	1225	1400	1575
	E28F2	X	591	788	984	1181	1378	1575	1772
		Y	459	613	766	919	1072	1225	1378
	A3	X	410	547	684	820	957	1094	1230
		Y	230	306	383	459	536	613	689
	A3-2	X	300	400	500	600	700	800	900
		Y	375	500	625	750	875	1000	1125
	B4	X	295	394	492	591	689	788	886
		Y	230	306	383	459	536	613	689
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1313 15	1750 22	2188 28	2625 33	3063 37	3500 40	3938 43
21 x 30 4.38 ft²	A18B1	X	1313	1750	2188	2625	3063	3500	3938
	A28B2	X & Y	656	875	1094	1313	1531	1750	1969
	E28F2	X	853	1138	1422	1706	1991	2275	2559
		Y	459	613	766	919	1072	1225	1378
	A3	X	541	722	902	1083	1263	1444	1624
		Y	230	306	383	459	536	613	689
	A3-2	X	469	625	781	938	1094	1250	1406
		Y	422	563	703	844	984	1125	1266
	B4	X	427	569	711	853	995	1138	1280
		Y	230	306	383	459	536	613	689
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1575 15	2100 23	2625 29	3150 33	3675 37	4200 41	4725 44
21 x 36 5.25 ft²	A18B1	X	1575	2100	2625	3150	3675	4200	4725
	A28B2	X & Y	788	1050	1313	1575	1838	2100	2363
	E28F2	X	1116	1488	1859	2231	2603	2975	3347
		Y	459	613	766	919	1072	1225	1378
	A3	X	673	897	1121	1345	1570	1794	2018
		Y	230	306	383	459	536	613	689
	A3-2	X	675	900	1125	1350	1575	1800	2025
		Y	450	600	750	900	1050	1200	1350
	B4	X	558	744	930	1116	1302	1488	1673
		Y	230	306	383	459	536	613	689

TDC - RECTANGULAR NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

		Neck Vel. Vel. Pressure Total Pressure	300 0.006 0.042	400 0.010 0.075	500 0.016 0.117	600 0.022 0.169	700 0.031 0.229	800 0.040 0.300	900 0.050 0.379
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	2100 16	2800 24	3500 29	4200 34	4900 38	5600 42	6300 45
21 x 48 7.00 ft²	A1&B1	X	2100 45-56-79	2800 53-64-91	3500 59-72-102	4200 64-79-111	4900 70-85-120	5600 74-91-129	6300 79-97-136
	A2&B2	X & Y	1050 25-37-65	1400 33-50-75	1750 41-59-84	2100 50-65-92	2450 57-70-99	2800 61-75-106	3150 65-80-112
	E2&F2	X	1641 32-43-62	2188 41-50-71	2734 46-56-79	3281 50-62-87	3828 54-66-94	4375 58-71-100	4922 62-75-107
		Y	459 19-29-51	613 26-38-59	766 32-46-66	919 38-51-72	1072 45-55-78	1225 48-59-83	1378 51-62-88
	A3	X	935 28-41-59	1247 37-48-68	1559 44-53-76	1870 48-59-83	2182 52-63-89	2494 55-68-96	2805 59-72-101
		Y	230 19-28-45	306 25-37-52	383 32-41-59	459 37-45-64	536 40-49-69	613 43-52-74	689 45-56-79
	E3	X	1181 40-50-70	1575 47-57-81	1969 52-64-91	2363 57-70-99	2756 62-76-107	3150 66-81-115	3544 70-86-122
		Y	459 19-29-51	613 26-38-59	766 32-46-66	919 38-51-72	1072 45-55-78	1225 48-59-83	1378 51-62-88
	B4	X	820 28-41-59	1094 37-48-68	1367 44-53-76	1641 48-59-83	1914 52-63-89	2188 55-68-96	2461 59-72-101
		Y	230 19-28-45	306 25-37-52	383 32-41-59	459 37-45-64	536 40-49-69	613 43-52-74	689 45-56-79
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1500 15	2000 23	2500 28	3000 33	3500 37	4000 41	4500 44
24 x 30 5.00 ft²	A1&B1	X	1500 38-47-67	2000 44-54-77	2500 50-61-86	3000 54-67-94	3500 59-72-102	4000 63-77-109	4500 67-82-115
	A2&B2	X & Y	750 21-32-55	1000 28-42-63	1250 35-50-71	1500 42-55-78	1750 48-59-84	2000 52-63-90	2250 55-67-95
	E2&F2	X	900 27-37-52	1200 35-42-60	1500 39-47-67	1800 42-52-74	2100 46-56-79	2400 49-60-85	2700 52-64-90
		Y	600 16-24-43	800 22-32-50	1000 27-39-55	1200 32-43-61	1400 38-46-66	1600 40-50-70	1800 43-53-74
	A3	X	600 24-35-50	800 31-40-57	1000 37-45-64	1200 40-50-70	1400 44-53-76	1600 47-57-81	1800 50-61-86
		Y	300 16-24-38	400 21-31-44	500 27-35-50	600 31-38-54	700 34-41-59	800 36-44-63	900 38-47-67
	A3-2	X	469 23-34-54	625 30-44-63	781 38-50-70	938 44-54-77	1094 48-59-83	1250 51-63-89	1406 54-67-94
		Y	516 16-24-43	688 22-32-50	859 27-39-55	1031 32-43-61	1203 38-46-66	1375 40-50-70	1547 43-53-74
	B4	X	450 24-35-50	600 31-40-57	750 37-45-64	900 40-50-70	1050 44-53-76	1200 47-57-81	1350 50-61-86
		Y	300 16-24-38	400 21-31-44	500 27-35-50	600 31-38-54	700 34-41-59	800 36-44-63	900 38-47-67
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	1800 16	2400 23	3000 29	3600 34	4200 38	4800 41	5400 44
24 x 36 6.00 ft²	A1&B1	X	1800 42-52-73	2400 49-60-84	3000 54-67-94	3600 60-73-103	4200 64-79-111	4800 69-84-119	5400 73-89-126
	A2&B2	X & Y	900 23-35-60	1200 31-46-69	1500 38-55-78	1800 46-60-85	2100 53-65-92	2400 57-69-98	2700 60-74-104
	E2&F2	X	1200 29-40-57	1600 38-46-66	2000 42-52-74	2400 46-57-81	2800 50-62-87	3200 54-66-93	3600 57-70-99
		Y	600 18-27-47	800 24-36-54	1000 30-43-61	1200 36-47-66	1400 41-51-72	1600 44-54-77	1800 47-58-81
	A3	X	750 26-38-54	1000 34-44-63	1250 40-50-70	1500 44-54-77	1750 48-59-83	2000 51-63-89	2250 54-66-94
		Y	300 18-26-42	400 23-34-49	500 29-38-54	600 34-42-59	700 37-45-64	800 40-49-69	900 42-52-73
	A3-2	X	675 25-37-60	900 33-49-69	1125 41-54-77	1350 49-60-84	1575 53-64-91	1800 56-69-97	2025 60-73-103
		Y	563 18-27-47	750 24-36-54	938 30-43-61	1125 36-47-66	1313 41-51-72	1500 44-54-77	1688 47-58-81
	B4	X	600 26-38-54	800 34-44-63	1000 40-50-70	1200 44-54-77	1400 48-59-83	1600 51-63-89	1800 54-66-94
		Y	300 18-26-42	400 23-34-49	500 29-38-54	600 34-42-59	700 37-45-64	800 40-49-69	900 42-52-73
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	2400 17	3200 24	4000 30	4800 35	5600 39	6400 42	7200 45
24 x 48 8.00 ft²	A1&B1	X	2400 49-60-84	3200 56-69-97	4000 63-77-109	4800 69-84-119	5600 74-91-129	6400 79-97-138	7200 84-103-146
	A2&B2	X & Y	1200 27-40-69	1600 35-53-80	2000 44-63-90	2400 53-69-98	2800 61-75-106	3200 65-80-113	3600 69-85-120
	E2&F2	X	1800 34-46-66	2400 44-54-76	3000 49-60-85	3600 54-66-93	4200 58-71-100	4800 62-76-107	5400 66-81-114
		Y	600 21-31-54	800 27-41-63	1000 34-50-70	1200 41-54-77	1400 48-59-83	1600 51-63-89	1800 54-66-94
	A3	X	1050 30-44-63	1400 40-51-72	1750 47-57-81	2100 51-63-89	2450 55-68-96	2800 59-72-102	3150 63-77-108
		Y	300 20-30-49	400 27-40-56	500 34-44-63	600 40-49-69	700 43-52-74	800 46-56-79	900 49-59-84
	B3	X	1200 38-53-74	1600 50-61-86	2000 56-68-96	2400 61-74-105	2800 66-80-114	3200 70-86-122	3600 74-91-129
		Y	600 21-31-54	800 27-41-63	1000 34-50-70	1200 41-54-77	1400 48-59-83	1600 51-63-89	1800 54-66-94
	B4	X	900 30-44-63	1200 40-51-72	1500 47-57-81	1800 51-63-89	2100 55-68-96	2400 59-72-102	2700 63-77-108
		Y	300 20-30-49	400 27-40-56	500 34-44-63	600 40-49-69	700 43-52-74	800 46-56-79	900 49-59-84
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	2250 16	3000 24	3750 30	4500 34	5250 39	6000 42	6750 45
30 x 36 7.50 ft²	A1&B1	X	2250 47-58-82	3000 54-67-94	3750 61-74-105	4500 67-82-115	5250 72-88-125	6000 77-94-133	6750 82-100-141
	A2&B2	X & Y	1125 26-39-67	1500 34-51-78	1875 43-61-87	2250 51-67-95	2625 59-73-103	3000 63-78-110	3375 67-82-116
	E2&F2	X	1313 33-45-64	1750 42-52-74	2188 47-58-82	2625 52-64-90	3063 56-69-97	3500 60-74-104	3938 64-78-110
		Y	938 20-30-53	1250 27-40-61	1563 33-48-68	1875 40-53-74	2188 46-57-80	2500 50-61-86	2813 53-64-91
	A3	X	891 29-43-61	1188 38-50-70	1484 45-55-78	1781 50-61-86	2078 53-66-93	2375 57-70-99	2672 61-74-105
		Y	469 20-29-47	625 26-38-54	781 33-43-61	938 38-47-67	1094 41-51-72	1250 44-54-77	1406 47-58-81
	A3-2	X	675 28-42-67	900 37-54-77	1125 46-61-86	1350 54-67-94	1575 59-72-102	1800 63-77-109	2025 67-82-115
		Y	788 20-30-53	1050 27-40-61	1313 33-48-68	1575 40-53-74	1838 46-57-80	2100 50-61-86	2363 53-64-91
	B4	X	656 29-43-61	875 38-50-70	1094 45-55-78	1313 50-61-86	1531 53-66-93	1750 57-70-99	1969 61-74-105
		Y	469 20-29-47	625 26-38-54	781 33-43-61	938 38-47-67	1094 41-51-72	1250 44-54-77	1406 47-58-81

PERFORMANCE DATA

diffusers

TDC - RECTANGULAR NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

		Neck Vel. Vel. Pres. Total Pres.	300 0.006 0.042	400 0.010 0.075	500 0.016 0.117	600 0.022 0.169	700 0.031 0.229	800 0.040 0.300	900 0.050 0.379
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	3000 17	4000 25	5000 31	6000 35	7000 39	8000 43	9000 46
30 x 48 10.00 ft²	A1&B1	X	3000 54-67-94	4000 63-77-109	5000 70-86-122	6000 77-94-133	7000 83-102-144	8000 89-109-154	9000 94-115-163
	A2&B2	X & Y	1500 30-45-78	2000 40-59-90	2500 50-71-100	3000 59-78-110	3500 68-84-119	4000 73-90-127	4500 78-95-134
	E2&F2	X	2063 38-52-74	2750 49-60-85	3438 55-67-95	4125 60-74-104	4813 65-79-112	5500 69-85-120	6188 74-90-127
		Y	938 23-34-61	1250 31-46-70	1563 38-55-78	1875 46-61-86	2188 53-66-93	2500 57-70-99	2813 61-74-105
	A3	X	1266 33-50-70	1688 44-57-81	2109 52-64-90	2531 57-70-99	2953 62-76-107	3375 66-81-114	3797 70-86-121
		Y	469 23-34-54	625 30-44-63	781 38-50-70	938 44-54-77	1094 48-59-83	1250 51-63-89	1406 54-67-94
	A3-2	X	1200 32-48-77	1600 43-63-89	2000 53-70-99	2400 63-77-109	2800 68-83-118	3200 73-89-126	3600 77-94-133
		Y	900 23-34-61	1200 31-46-70	1500 38-55-78	1800 46-61-86	2100 53-66-93	2400 57-70-99	2700 61-74-105
	B4	X	1031 33-50-70	1375 44-57-81	1719 52-64-90	2063 57-70-99	2406 62-76-107	2750 66-81-114	3094 70-86-121
		Y	469 23-34-54	625 30-44-63	781 38-50-70	938 44-54-77	1094 48-59-83	1250 51-63-89	1406 54-67-94
Return Factors -SP = 1.1 TP NC + 1		Total cfm NC Side	3600 18	4800 25	6000 31	7200 36	8400 40	9600 44	10800 47
36 x 48 12.00 ft²	A1&B1	X	3600 60-73-103	4800 69-84-119	6000 77-94-133	7200 84-103-146	8400 91-111-158	9600 97-119-168	10800 103-126-179
	A2&B2	X & Y	1800 33-49-85	2400 43-65-98	3000 54-78-110	3600 65-85-120	4200 75-92-130	4800 80-98-139	5400 85-104-147
	E2&F2	X	2250 42-57-81	3000 54-66-93	3750 60-74-104	4500 66-81-114	5250 71-87-123	6000 76-93-131	6750 81-99-139
		Y	1350 25-38-66	1800 34-50-77	2250 42-61-86	2700 50-66-94	3150 59-72-101	3600 63-77-108	4050 66-81-115
	A3	X	1463 37-54-77	1950 49-63-89	2438 57-70-99	2925 63-77-108	3413 68-83-117	3900 72-89-125	4388 77-94-133
		Y	675 25-37-59	900 33-49-69	1125 41-54-77	1350 49-59-84	1575 52-64-91	1800 56-69-97	2025 59-73-103
	A3-2	X	1200 35-53-84	1600 47-69-97	2000 59-77-109	2400 69-84-119	2800 74-91-129	3200 80-97-138	3600 84-103-146
		Y	1200 25-38-66	1600 34-50-77	2000 42-61-86	2400 50-66-94	2800 59-72-101	3200 63-77-108	3600 66-81-115
	B4	X	1125 37-54-77	1500 49-63-89	1875 57-70-99	2250 63-77-108	2625 68-83-117	3000 72-89-125	3375 77-94-133
		Y	675 25-37-59	900 33-49-69	1125 41-54-77	1350 49-59-84	1575 52-64-91	1800 56-69-97	2025 59-73-103

TDC - ROUND NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	78 0.058 10 cfm Throw	98 0.092 16 cfm Throw	117 0.131 21 cfm Throw	137 0.179 25 cfm Throw	156 0.223 28 cfm Throw	176 0.296 31 cfm Throw	215 0.442 36 cfm Throw
6"	S1	X	75 5-7-15	98 6-9-18	117 7-11-20	137 9-13-22	156 10-15-25	176 11-17-28	215 14-19-27
x	S2&G2	X & Y	38 3-5-10	50 4-6-13	59 5-7-14	69 6-9-16	78 7-10-17	88 7-11-18	108 9-14-20
6"	A3	X	29 3-4-8	37 3-5-9	44 4-6-10	51 5-7-10	59 6-8-11	66 6-8-12	81 7-9-13
6"		Y	20 2-4-7	25 3-5-8	29 4-6-9	34 4-7-9	39 5-7-10	44 6-7-12	54 7-8-12
Round	A4	X & Y	20 2-4-7	25 3-5-8	29 4-6-9	34 4-7-9	39 5-7-10	44 6-7-12	54 7-8-12
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	98 0.041 10 cfm Throw	117 0.058 14 cfm Throw	137 0.079 18 cfm Throw	156 0.103 21 cfm Throw	176 0.131 25 cfm Throw	215 0.196 30 cfm Throw	254 0.273 34 cfm Throw
9"	S1	X	98 6-9-18	117 7-11-20	137 9-15-22	156 10-15-23	176 11-17-25	215 20-24-34	254 17-21-30
x	S2&G2	X & Y	49 4-6-13	59 5-7-14	69 6-9-16	78 7-10-17	88 7-11-18	108 9-14-20	127 11-15-21
9"	A3	X	37 3-5-9	44 4-6-10	51 5-7-10	59 6-8-11	66 6-8-12	81 7-9-13	95 8-10-14
6"		Y	25 3-5-8	29 4-6-9	34 4-7-9	39 5-7-10	44 6-7-11	54 7-8-12	64 7-9-13
Round	A4	X & Y	25 3-5-8	29 4-6-9	34 4-7-9	39 5-7-10	44 6-7-11	54 7-8-12	64 7-9-13
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	139 0.046 10 cfm Throw	174 0.072 16 cfm Throw	209 0.104 20 cfm Throw	244 0.142 24 cfm Throw	279 0.186 27 cfm Throw	314 0.235 32 cfm Throw	383 0.350 36 cfm Throw
9"	S1	X	139 7-10-21	174 8-13-24	209 10-15-27	244 12-18-29	279 14-21-31	314 15-23-33	383 19-26-37
x	S2&G2	X & Y	70 4-7-14	87 5-8-17	105 7-10-19	122 8-12-21	140 9-14-22	157 10-15-24	192 12-19-26
9"	A3	X	52 4-6-11	66 5-7-12	79 6-9-13	92 7-10-14	105 8-10-14	119 9-11-16	145 10-12-18
8"		Y	35 3-5-9	44 4-7-11	52 5-8-12	61 6-9-13	70 7-9-14	79 8-10-14	96 9-11-16
Round	A4	X & Y	35 3-5-9	44 4-7-11	52 5-8-12	61 6-9-13	70 7-9-14	79 8-10-14	96 9-11-16
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	174 0.041 11 cfm Throw	209 0.059 16 cfm Throw	244 0.080 21 cfm Throw	279 0.104 25 cfm Throw	314 0.132 28 cfm Throw	383 0.197 31 cfm Throw	453 0.275 36 cfm Throw
12"	S1	X	174 8-13-24	209 10-15-27	244 12-18-29	279 14-21-31	314 15-23-33	383 19-26-37	453 22-28-40
x	S2&G2	X & Y	87 5-8-17	105 7-10-19	122 8-12-21	140 9-14-22	157 10-15-24	192 12-19-26	227 15-20-29
12"	A3	X	66 5-7-12	79 6-9-13	92 7-10-14	105 8-11-15	119 9-11-16	145 10-12-18	171 11-14-19
8"		Y	44 4-7-11	52 5-8-12	61 6-9-13	70 7-9-14	79 8-10-14	96 9-11-16	113 10-12-18
Round	A4	X & Y	44 4-7-11	52 5-8-12	61 6-9-13	70 7-9-14	79 8-10-14	96 9-11-16	113 10-12-18
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	218 0.041 10 cfm Throw	272 0.064 16 cfm Throw	327 0.092 21 cfm Throw	381 0.125 25 cfm Throw	436 0.163 28 cfm Throw	490 0.206 31 cfm Throw	599 0.308 36 cfm Throw
12"	S1	X	218 8-13-24	272 11-16-31	327 13-19-34	381 15-23-36	436 17-26-39	490 19-29-41	599 24-32-46
x	S2&G2	X & Y	109 5-8-17	136 7-11-22	164 8-12-24	191 10-15-26	218 11-17-28	245 13-19-30	300 16-23-33
12"	A3	X	82 5-7-12	103 6-9-13	123 7-11-16	144 8-12-18	165 10-13-29	185 11-14-20	226 13-16-22
10"		Y	55 4-7-11	68 5-8-12	82 7-10-15	95 8-11-16	109 9-12-17	123 10-13-18	150 11-14-20
Round	A4	X & Y	55 4-7-11	68 5-8-12	82 7-10-15	95 8-11-16	109 9-12-17	123 10-13-18	150 11-14-20
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	235 0.033 5 cfm Throw	314 0.059 13 cfm Throw	392 0.092 19 cfm Throw	471 0.132 24 cfm Throw	549 0.130 28 cfm Throw	628 0.235 32 cfm Throw	706 0.298 35 cfm Throw
12"	S1	X	235 7-11-23	314 10-15-31	392 13-19-34	471 15-23-36	549 18-27-44	628 21-31-47	706 23-35-40
x	S2&G2	X & Y	118 5-7-15	157 7-10-21	196 8-12-24	236 10-15-26	275 12-18-32	314 13-19-30	353 16-23-33
12"	A3	X	89 4-6-13	119 6-10-20	148 7-11-16	178 8-12-18	207 10-15-21	237 11-14-20	267 13-16-24
12"		Y	59 4-6-12	79 5-8-12	98 7-10-15	118 8-11-16	137 9-12-17	157 11-14-21	177 12-15-22
Round	A4	X & Y	59 4-6-12	79 5-8-12	98 7-10-15	118 8-11-16	137 9-12-17	157 11-14-21	177 12-15-22
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	314 0.038 10 cfm Throw	392 0.059 17 cfm Throw	471 0.085 22 cfm Throw	549 0.115 26 cfm Throw	623 0.150 29 cfm Throw	706 0.190 32 cfm Throw	863 0.284 37 cfm Throw
15"	S1	X	314 10-15-31	392 13-19-37	471 15-23-41	549 18-27-44	623 21-31-47	706 23-35-50	863 29-39-55
x	S2&G2	X & Y	157 7-10-21	196 8-13-26	236 10-15-29	275 12-18-32	312 14-21-34	353 15-23-36	432 19-28-40
15"	A3	X	119 6-9-16	148 7-11-18	178 9-13-20	207 10-15-21	235 12-16-23	267 13-17-24	326 15-19-27
12"		Y	79 5-8-14	98 7-10-16	118 8-12-18	137 9-14-21	156 11-14-21	177 12-15-22	216 14-17-24
Round	A4	X & Y	79 5-8-14	98 7-10-16	118 8-12-18	137 9-14-21	156 11-14-21	177 12-15-22	216 14-17-24
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	320 0.029 - cfm Throw	427 0.051 14 cfm Throw	534 0.080 20 cfm Throw	641 0.115 25 cfm Throw	748 0.157 29 cfm Throw	855 0.205 33 cfm Throw	863 0.260 36 cfm Throw
15"	S1	X	320 9-13-27	427 12-18-37	534 15-23-43	641 18-27-47	748 21-32-52	855 24-37-55	863 24-32-46
x	S2&G2	X & Y	160 6-9-18	214 8-12-24	267 10-15-31	321 12-18-34	374 14-27-37	428 16-24-40	432 16-23-39
15"	A3	X	121 5-8-16	161 7-10-19	202 9-14-21	242 10-16-23	282 12-18-25	323 14-19-27	326 13-16-22
14"		Y	80 4-7-14	107 6-9-17	134 8-12-19	160 9-14-23	187 11-16-23	214 13-17-24	216 14-18-26
Round	A4	X & Y	80 4-7-14	107 6-9-17	134 8-12-19	160 9-14-23	187 11-16-23	214 13-17-24	216 14-18-26

TDC - ROUND NECK / LOUVERED FACE / SUPPLY / HORIZONTAL BLOW PATTERN

Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	98 0.041 -	117 0.058 14	137 0.079 18	156 0.103 21	176 0.131 25	215 0.196 30	254 0.273 34
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
18 x 18 6"	S1	X	98 6-9-18	117 7-11-20	137 9-15-22	156 10-15-23	176 11-17-25	215 20-24-34	254 17-21-30
	S28G2	X & Y	49 4-6-13	59 5-7-14	69 6-9-16	78 7-10-17	88 7-11-18	108 9-14-20	127 11-15-21
	A3	X	37 3-5-9	44 4-6-10	51 5-7-10	59 6-8-11	66 6-8-12	81 7-9-13	95 8-10-14
	Y	25 3-5-8	29 4-6-9	34 4-7-9	39 5-7-10	44 6-7-11	54 7-8-12	64 7-9-13	
Round		A4	25 3-5-8	29 4-6-9	34 4-7-9	39 5-7-10	44 6-7-11	54 7-8-12	64 7-9-13
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	174 0.041 11	209 0.059 16	244 0.080 20	279 0.104 24	314 0.132 27	383 0.197 32	453 0.275 36
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
18 x 18 8"	S1	X	174 8-13-24	209 10-15-27	244 12-18-29	279 14-21-31	314 15-23-33	383 19-26-37	453 22-28-40
	S28G2	X & Y	87 5-8-17	105 7-10-19	122 8-12-24	140 9-14-22	157 10-15-24	192 12-19-26	227 15-20-29
	A3	X	66 5-7-12	79 6-9-13	92 7-10-14	105 8-11-15	119 9-11-16	145 10-12-18	171 11-14-19
	Y	44 4-7-11	52 5-8-12	61 6-9-13	70 7-9-14	79 8-10-14	96 9-11-16	113 10-12-18	
Round		A4	44 4-7-11	52 5-8-12	61 6-9-13	70 7-9-14	79 8-10-14	96 9-11-16	113 10-12-18
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	218 0.041 10	272 0.064 16	327 0.092 21	381 0.125 25	436 0.163 28	490 0.206 31	599 0.308 36
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
18 x 18 10"	S1	X	218 8-13-24	272 11-16-31	327 13-19-34	381 15-23-36	436 17-26-39	490 19-29-41	599 24-32-46
	S28G2	X & Y	109 5-8-17	136 7-11-22	164 8-12-24	191 10-15-26	218 11-17-28	245 13-19-30	300 16-23-33
	A3	X	82 5-7-12	103 6-9-13	123 7-11-16	144 8-12-18	165 10-13-29	185 11-14-20	226 13-16-22
	Y	55 4-7-11	68 5-8-12	82 7-10-15	95 8-11-16	109 9-12-17	123 10-13-18	150 11-14-20	
Round		A4	55 4-7-11	68 5-8-12	82 7-10-15	95 8-11-16	109 9-12-17	123 10-13-18	150 11-14-20
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	314 0.038 10	392 0.059 17	471 0.085 22	549 0.115 26	623 0.150 29	706 0.190 32	863 0.284 37
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
18 x 18 12"	S1	X	314 10-15-31	392 13-19-37	471 15-23-41	549 18-27-44	623 21-31-47	706 23-35-50	863 29-39-55
	S28G2	X & Y	157 7-10-21	196 8-13-26	236 10-15-29	275 12-18-32	312 14-21-34	353 15-23-36	432 19-28-40
	A3	X	119 6-9-16	148 7-11-18	178 9-13-20	207 10-15-21	235 12-16-23	267 13-17-24	326 15-19-27
	Y	79 5-8-14	98 7-10-16	118 8-12-18	137 9-14-21	156 11-14-21	177 12-15-22	216 14-17-24	
Round		A4	79 5-8-14	98 7-10-16	118 8-12-18	137 9-14-21	156 11-14-21	177 12-15-22	216 14-17-24
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	427 0.036 12	534 0.056 17	641 0.080 22	748 0.109 26	855 0.142 30	962 0.180 33	1175 0.269 38
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
18 x 18 14"	S1	X	427 12-18-27	534 15-23-43	641 18-27-47	748 21-32-47	855 27-37-55	962 27-41-58	1175 33-45-64
	S28G2	X & Y	214 8-12-24	267 10-15-31	321 12-18-34	374 14-27-37	428 16-24-40	481 18-27-42	588 22-33-47
	A3	X	161 7-10-19	202 8-13-21	242 10-16-23	282 12-18-25	323 14-19-27	363 16-20-29	444 18-22-32
	Y	107 6-9-17	134 8-12-19	160 9-14-21	187 11-16-23	214 13-17-24	241 14-18-26	294 16-20-29	
Round		A4	107 6-9-17	134 8-12-19	160 9-14-21	187 11-16-23	214 13-17-24	241 14-18-26	294 16-20-29
Return Factors -SP = 1.1 TP NC + 1		Total cfm Total Pressure NC Side	418 0.020 -	558 0.036 12	698 0.056 17	837 0.080 21	977 0.109 29	1116 0.142 34	1256 0.180 38
			cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw	cfm Throw
18 x 18 16"	S1	X	418 10-15-31	558 14-21-42	698 17-26-49	837 21-31-54	977 24-37-59	1116 28-42-63	1256 31-47-67
	S28G2	X & Y	209 7-10-21	279 9-14-28	349 11-17-35	419 14-21-39	489 16-24-42	558 18-28-45	628 21-31-48
	A3	X	158 6-10-20	211 8-12-22	264 10-15-24	316 12-18-27	369 14-20-29	421 16-22-31	474 18-23-33
	Y	105 5-8-17	140 7-11-19	175 9-14-22	209 11-17-24	244 13-18-26	279 15-19-28	314 17-21-29	
Round		A4	105 5-8-17	140 7-11-19	175 9-14-22	209 11-17-24	244 13-18-26	279 15-19-28	314 17-21-29

PERFORMANCE NOTES

Available Models: TDC, TDC-AA, TDCA, TDCA-AA, TDV, TDV-AA

- All pressures are in inches of water. TP is total pressure, - SP is negative static pressure for return units.
- Throw values are given for terminal velocities of 150, 100, and 50 fpm. For an explanation of catalog throw data, see the section, Engineering Guidelines for catalog throw data.
- NC values are based on a room absorption of 10 dB, re 10⁻¹² watts, with one diffuser operating.
- If the diffuser is used as a return inlet, the following corrections apply:

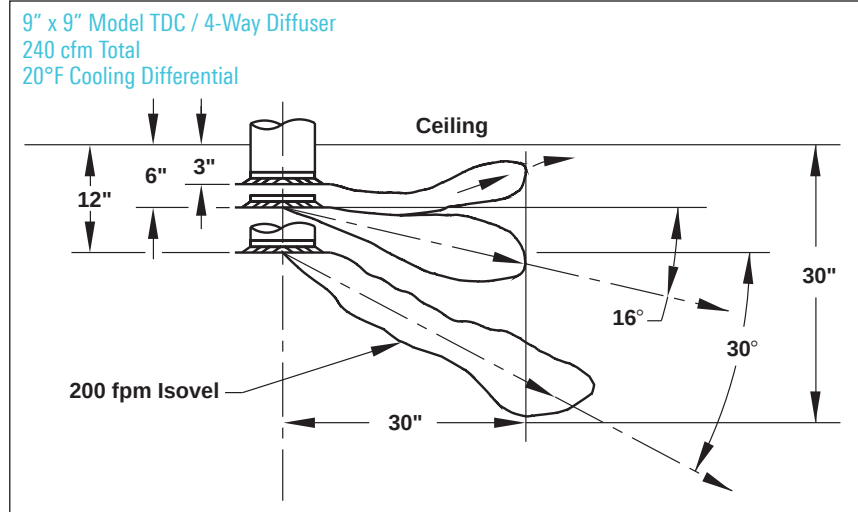
- Negative static pressure: Multiply the factor at the upper left corner of the performance table by the total pressure listed in the table
- Sound: Add the NC correction at the upper left corner of the performance table to the NC value listed in the table
- Return Performance Example: 6 x 6 Model TDC handling:
150 cfm of return air
-SP = 1.1(-TP).
Return negative SP = 1.1 x (0.169)
= -0.1859 inches wg.
Return NC = NC Table + 1
Return NC = 23 + 1 = 24

- These products have been tested per ANSI/ASHRAE 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the section, Engineering Guidelines for additional information.
- Data in the tables apply when the diffuser is mounted nearly flush with the ceiling for maximum ceiling effect. When no ceiling effect is present, the horizontal throw will be about 25% less than shown in the tables. The mounting distance below the ceiling will also affect the downward projection angle as indicated in the diagram at upper right.

MODEL TDCA PERFORMANCE

- For Model TDCA diffusers (adjustable pattern controllers) apply the corrections from the table at the right to the TDC data for square neck, 4-way core styles, as follows:
 - TP = Listed value x correction
 - NC = Listed value + correction
 - Throw = Listed value x correction

Apply the throw factor to the 50 fpm terminal velocity throw only.



RECOMMENDED MAXIMUM AIRFLOW

Ceiling Height, ft.	8	9	10	12	15	20
Airflow, cfm, per Side	200	350	550	900	1500	4000

Note: Although this data is based on a 20°F temperature differential during cooling, it also applies to any differential between 15°F and 25°F

CORRECTIONS FOR MODEL TDCA (ADJUSTABLE PATTERN CONTROLLERS)

Nominal Neck Size	NC (add)		Total Pressure (Multiply)		Vertical Throw (Multiply)		
					Cooling 20 F	Heating, ΔT	
	H	V	H	V		0 F	20 F
6 x 6	3	7	1.3	1.6	1.3	1.1	0.8
9 x 9	3	7	1.5	2.3	1.4	1.2	0.72
12 x 12	3	7	1.5	2.3	1.5	1.25	0.65
15 x 15	3	7	1.5	2.3	1.55	1.27	0.62
18 x 18	3	7	1.5	2.3	1.6	1.3	0.59
21 x 21	3	7	1.5	2.3	1.65	1.35	0.57
24 x 24	3	7	1.5	2.3	1.1	1.1	0.55

Note: TDC and TDV Performance Data were obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006

- Vertical adjustments are most effective with the above sizes, using an A4 pattern
- Vertical throw will not work with round inlets

TDC-NT / TDC-AA-NT

- The TDC-NT is an extremely flexible, high capacity ceiling diffuser that can meet a wide range of applications. It is an excellent choice for variable volume applications because it maintains a horizontal air pattern from maximum to minimum cfm.
- Choose from 1-, 2-, 3- or 4-way cores
- Available in sizes from 6 x 6 inches up to 18 x 18 inches, in 3" increments
- Material is heavy gauge steel



TDC-NT / TDC-AA-NT

MODELS:

TDC-NT / Steel
 TDC-NT-AA / Aluminum

FINISH:

Standard Finish - #26 White

OVERVIEW

Louvered Face / Narrow Tee

Titus Series TDC diffusers handle an unusually large amount of air for a given pressure drop and noise level. Their pleasing appearance harmonizes with various architectural details, especially in modular ceiling systems.

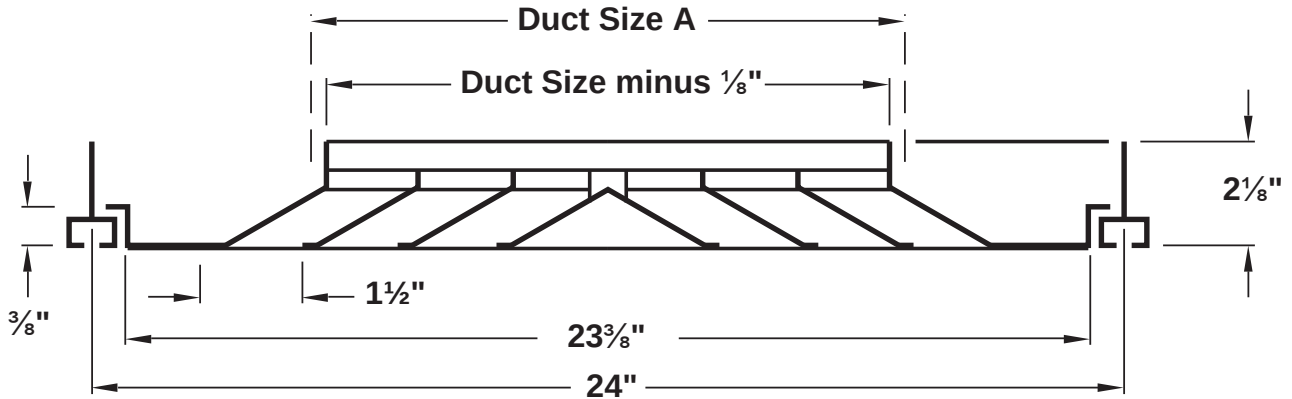


See website for Specifications

DIMENSIONS

TDC-NT / TDC-AA-NT UNIT DIMENSIONS

Border Type NT
Square Neck



TDV / TDV-AA

- Titus Model TDV and TDV-AA are high capacity ceiling diffusers. These diffusers maintain an unbroken horizontal flow pattern from maximum cfm down to minimum, it is an excellent choice for variable air volume application.
- The Titus TDV and TDV-AA have louvered faces with integrated induction vanes for exceptional air mixing
- Slot operator on the optional Model AG-95 damper allows easy volume adjustment. (Rectangular necks only)
- Core is easily removable from the face of the diffuser
- Model TDV is extremely flexible, with cores available for 1-, 2-, 3- or 4-way horizontal flow
- Material heavy gauge steel or aluminum
- For a uniform face appearance on all neck sizes, specify an 18 x 18" dimension A size and the desired round neck size. This is available in 24 x 24" lay-in module size only.



TDV / TDV-AA

MODELS:

TDV / Steel
 TDV-AA / Aluminum

FINISH:

Standard Finish - #26 White

OVERVIEW

Louvered Face / Induction Vanes

Titus Model TDV and TDV-AA are high capacity ceiling diffusers with louvered faces and integrated induction vanes for exceptional air mixing. They maintain an unbroken horizontal flow pattern from maximum cfm down to minimum and are an excellent choices for variable air volume applications.

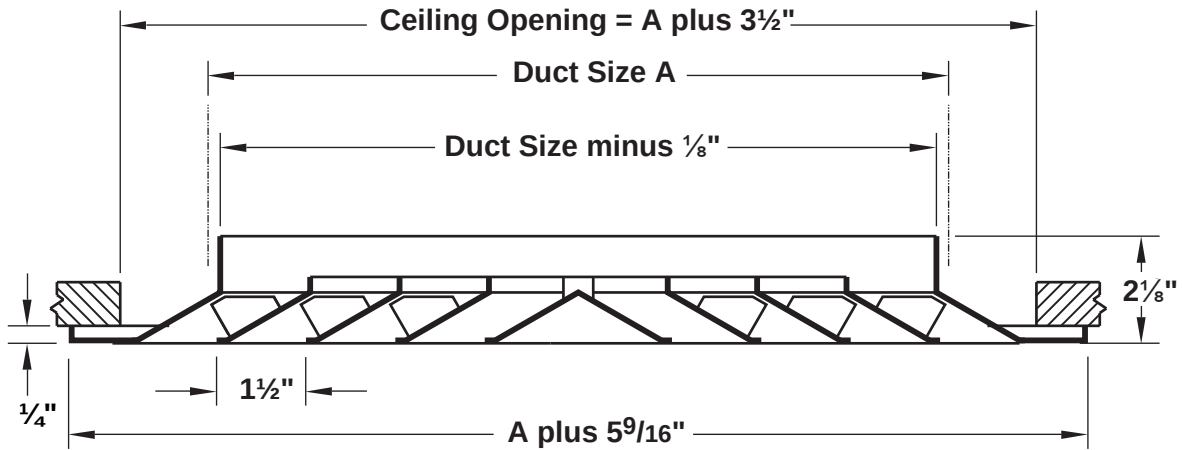


See website for Specifications

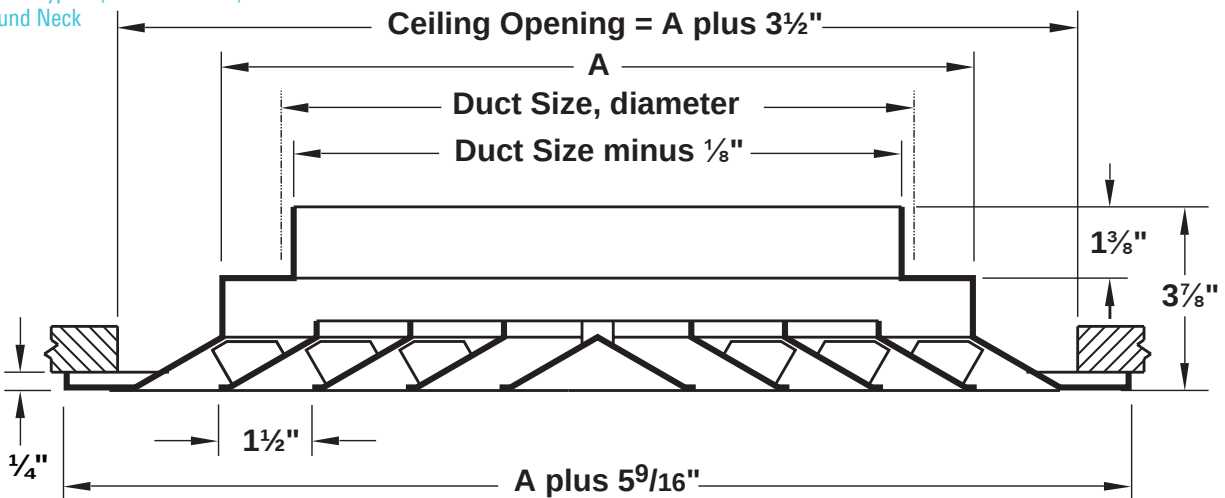
DIMENSIONS

TDV / TDV-AA-NT UNIT DIMENSIONS

Border Type 1 (Surface Mount)
Square or Rectangular Neck

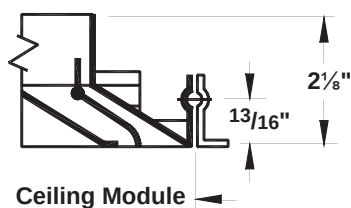


Border Type 1 (Surface Mount)
Round Neck

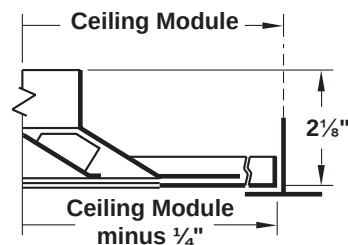


BORDER TYPES

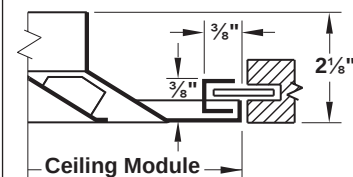
Border Type 2
(Snap-In)



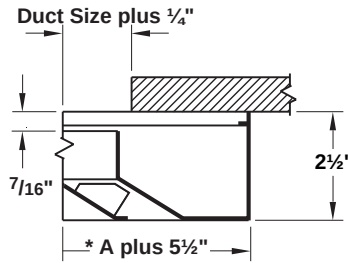
Border Type 3
(Lay-In)



Border Type 4
(Spline)

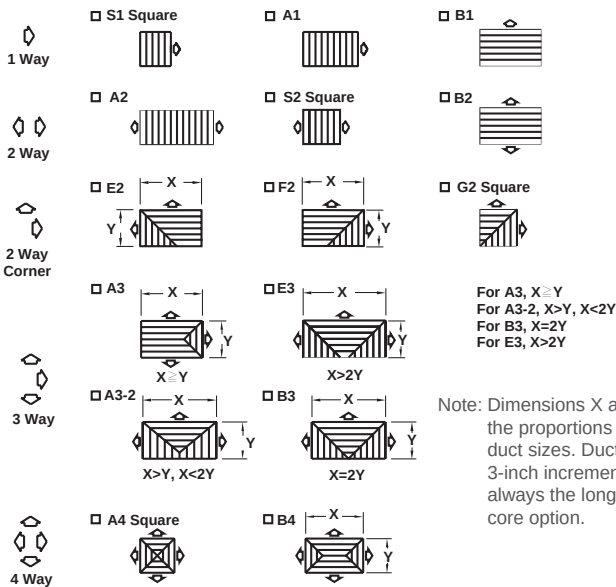
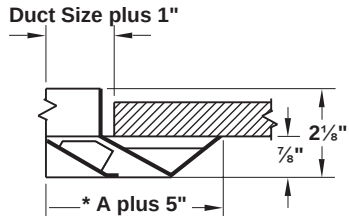


Border Type 5 (Dropped Face)



Note: Standard diffuser is 2 1/2 inches deep
Optional 4" deep diffuser is available

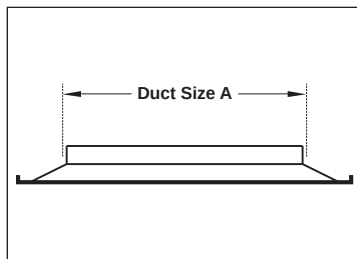
Border Type 6 (Bevel Drop Face)



Note: Dimensions X and Y shown here are the proportions of available rectangular duct sizes. Duct sizes are available in 3-inch increments. Dimension X is always the longer dimension for each core option.

Note: Patterns are shown in plan view (looking down into inlet).

AVAILABLE DUCT SIZES - SQUARE AND RECTANGULAR NECKS

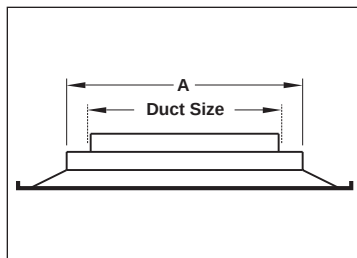


Border Types 1, 5, 6	
Minimum Duct Size A	Maximum Duct Size A
6 x 6	48 x 48 (note 2)

Border Types 2, 3, 4		
Available Module Size	Minimum Duct Size A	Maximum Duct Size A
12 x 12	6 x 6	6 x 6
24 x 24	6 x 6	18 x 18
48 x 24	12 x 12	42 x 18 (note 3)

Note 1: Duct sizes are available in 3" increments only
Note 2: Maximum duct size for border 5 is 36" x 36". Maximum duct size for TDV-AA is 36" x 36".
Note 3: Maximum duct size for TDV-AA is 36" x 18"

AVAILABLE DUCT SIZES - ROUND NECKS



Border Types 1, 5, 6	
Dimension A	Available Round Duct Size
6 x 6	6
9 x 9	6, 8
12 x 12	6, 8, 10, 12
15 x 15	6, 8, 10, 12, 14
18 x 18	6, 8, 10, 12, 14, 16

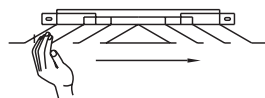
Border Types 2, 3, 4		
Available Module Size	Dimension A	Available Round Duct Size
12 x 12	6 x 6	6
24 x 24	6 x 6	6
	9 x 9	6, 8
	12 x 12	6, 8, 10, 12
	15 x 15	6, 8, 10, 12, 14
	18 x 18	6, 8, 10, 12, 14, 16

Note: Round duct sizes are available only in sizes shown

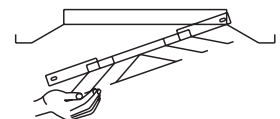
REMOVING CENTER CORE



1. Remove shipping clips



2. Push core sideways against spring



3. Hold core securely and allow to drop down

TDV / SQUARE NECK / LOUVERED FACE, INDUCTION VANES / HORIZONTAL DISCHARGE PATTERN

6" x 6"	Neck Velocity	300	400	500	600	700	800	900
	Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.051
	Total Pressure	0.042	0.075	0.117	0.169	0.229	0.300	0.379
	Total cfm	75	100	125	150	175	200	225
	NC	11	19	25	29	33	37	40
	S1-Pattern Throw ft.	8-10-14	9-11-16	10-13-18	11-14-20	12-15-21	13-16-23	14-17-24
	S2 & G2- Pattern Throw ft.	4-6-10	5-8-12	6-10-14	8-10-15	9-11-16	10-12-17	10-13-18
	cfm Side A	19	25	31	38	44	50	56
	A3-Pattern Side A Throw ft.	3-5-8	4-7-9	6-7-10	7-8-11	7-9-12	8-9-13	8-10-14
9" x 9"	cfm Side B	28	38	47	56	66	75	84
	A3-Pattern Side B Throw ft.	4-6-9	5-7-11	6-8-12	7-9-13	8-10-14	9-11-15	9-11-16
	A4-Pattern Throw ft.	3-5-8	4-7-9	6-7-10	7-8-11	7-9-12	8-9-13	8-10-14
	Total cfm	169	225	281	338	394	450	506
	NC	14	21	27	32	36	40	43
	S1-Pattern Throw ft.	11-15-21	14-17-24	16-19-27	17-21-30	18-23-32	20-24-34	21-26-36
	S2 & G2- Pattern Throw ft.	6-9-16	8-11-18	10-14-20	11-16-22	13-17-24	15-18-26	16-19-27
	cfm Side A	42	56	70	84	98	113	127
	A3-Pattern Side A Throw ft.	4-7-12	7-10-14	8-11-16	10-12-17	11-13-18	11-14-20	12-15-21
12" x 12"	cfm Side B	63	84	105	127	148	169	190
	A3-Pattern Side B Throw ft.	8-10-14	9-11-16	10-13-18	11-14-20	12-15-21	13-16-23	14-17-24
	A4-Pattern Throw ft.	4-7-12	7-10-14	8-11-16	10-12-17	11-13-18	11-14-20	12-15-21
	Total cfm	300	400	500	600	700	800	900
	NC	16	23	29	34	38	41	44
	S1-Pattern Throw ft.	15-20-28	19-23-32	21-25-36	23-28-39	25-30-43	26-32-46	28-34-48
	S2 & G2- Pattern Throw ft.	10-14-26	13-19-30	16-24-34	19-26-37	22-28-40	25-30-43	26-32-45
	cfm Side A	75	100	125	150	175	200	225
	A3-Pattern Side A Throw ft.	6-10-16	9-13-19	11-15-21	13-16-23	14-17-25	15-19-26	16-20-28
15" x 15"	cfm Side B	113	150	188	225	263	300	338
	A3-Pattern Side B Throw ft.	11-13-18	12-15-21	14-17-24	15-18-26	16-20-28	17-21-30	18-23-32
	A4-Pattern Throw ft.	6-10-16	9-13-19	11-15-21	13-16-23	14-17-25	15-19-26	16-20-28
	Total cfm	469	625	781	938	1094	1250	1406
	NC	17	25	31	35	39	43	46
	S1-Pattern Throw ft.	19-25-35	23-29-40	26-32-45	29-35-49	31-38-53	33-40-57	35-43-60
	S2 & G2- Pattern Throw ft.	11-17-31	15-23-36	19-29-41	23-31-44	27-34-48	30-36-51	31-38-54
	cfm Side A	117	156	195	234	273	313	352
	A3-Pattern Side A Throw ft.	7-12-20	11-16-23	14-18-26	16-20-28	18-22-31	19-23-33	20-25-35
18" x 18"	cfm Side B	176	234	293	352	410	469	527
	A3-Pattern Side B Throw ft.	13-16-23	15-19-27	17-21-30	19-23-33	20-25-35	22-27-38	23-28-40
	A4-Pattern Throw ft.	7-12-20	11-16-23	14-18-26	16-20-28	18-22-31	19-23-33	20-25-35
	Total cfm	675	900	1125	1350	1575	1800	2025
	NC	18	26	32	37	41	44	47
	S1-Pattern Throw ft.	23-30-42	28-34-48	31-38-54	34-42-59	37-45-64	39-48-68	42-51-73
	S2 & G2- Pattern Throw ft.	11-17-31	15-23-36	19-29-41	23-31-44	27-34-48	30-36-51	31-38-54
	cfm Side A	169	225	281	338	394	450	506
	A3-Pattern Side A Throw ft.	9-15-24	13-20-28	17-22-31	20-24-34	21-26-37	23-28-39	24-30-42
18" x 18"	cfm Side B	253	338	422	506	591	675	759
	A3-Pattern Side B Throw ft.	16-20-28	18-23-32	21-25-36	23-28-39	24-30-42	26-32-45	28-34-48
	A4-Pattern Throw ft.	9-15-24	13-20-28	17-22-31	20-24-34	21-26-37	23-28-39	24-30-42

- All pressures are in inches of water
- Throw velocities given are for isothermal terminal velocities of 150, 100 and 50 fpm. See the section, Engineering Guidelines for additional information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values given are for isothermal conditions

TDV / SQUARE NECK / LOUVERED FACE, INDUCTION VANES / HORIZONTAL DISCHARGE PATTERN

21" x 21"	Neck Velocity	300	400	500	600	700	800	900
	Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.051
	Total Pressure	0.042	0.075	0.117	0.169	0.229	0.300	0.379
	Total cfm	919	1225	1531	1838	2144	2450	2756
	NC	19	27	33	38	42	45	48
	S1-Pattern Throw ft.	27-35-49	33-40-56	36-45-63	40-49-69	43-53-75	46-56-80	49-60-85
	S2 & G2- Pattern Throw ft.	13-20-37	18-27-42	22-33-47	27-37-52	31-40-56	35-42-60	37-45-63
	cfm Side A	230	306	383	459	536	613	689
	A3-Pattern Side A Throw ft.	10-17-28	16-23-32	19-26-36	23-28-40	25-30-43	27-32-46	28-34-49
	cfm Side B	345	459	574	689	804	919	1034
24" x 24"	A3-Pattern Side B Throw ft.	19-23-32	22-26-37	24-30-42	26-32-46	29-35-49	31-37-53	32-40-56
	A4-Pattern Throw ft.	13-20-37	18-27-42	22-33-47	27-37-52	31-40-56	35-42-60	37-45-63
	Total cfm	1200	1600	2000	2400	2800	3200	3600
	NC	20	28	34	38	42	46	49
	S1-Pattern Throw ft.	31-39-56	37-46-64	42-51-72	46-56-79	49-60-85	53-64-91	56-68-97
	S2 & G2- Pattern Throw ft.	15-23-42	20-30-48	25-38-54	30-42-59	35-45-64	39-48-68	42-51-72
	cfm Side A	300	400	500	600	700	800	900
	A3-Pattern Side A Throw ft.	12-20-32	18-26-37	22-29-41	26-32-45	28-35-49	30-37-52	32-39-56
	cfm Side B	450	600	750	900	1050	1200	1350
	A3-Pattern Side B Throw ft.	21-26-37	25-30-43	28-34-48	30-37-52	33-40-56	35-43-60	37-45-64
30" x 30"	A4-Pattern Throw ft.	15-23-42	20-30-48	25-38-54	30-42-59	35-45-64	39-48-68	42-51-72
	Total cfm	1875	2500	3125	3750	4375	5000	5625
	NC	22	29	35	40	44	47	51
	S1-Pattern Throw ft.	38-49-70	47-57-81	52-64-90	57-70-99	62-75-107	66-81-114	70-86-121
	S2 & G2- Pattern Throw ft.	19-29-52	25-38-60	32-48-68	38-52-74	44-56-80	49-60-85	52-64-91
	cfm Side A	469	625	781	938	1094	1250	1406
	A3-Pattern Side A Throw ft.	15-25-40	22-33-46	28-37-52	33-40-57	35-43-61	38-46-66	40-49-70
	cfm Side B	703	938	1172	1406	1641	1875	2109
	A3-Pattern Side B Throw ft.	27-33-46	31-38-53	34-42-60	38-46-65	41-50-71	44-53-76	46-57-80
	A4-Pattern Throw ft.	19-29-52	25-38-60	32-48-68	38-52-74	44-56-80	49-60-85	52-64-91
36" x 36"	Total cfm	2700	3600	4500	5400	6300	7200	8100
	NC	23	30	36	41	45	49	52
	S1-Pattern Throw ft.	46-59-84	56-68-97	62-76-108	68-84-118	74-90-128	79-97-137	84-103-145
	S2 & G2- Pattern Throw ft.	23-34-63	30-46-72	38-57-81	46-63-89	53-68-96	59-72-102	63-77-109
	cfm Side A	675	900	1125	1350	1575	1800	2025
	A3-Pattern Side A Throw ft.	18-30-48	27-39-56	33-44-62	39-48-68	43-52-74	45-56-79	48-59-83
	cfm Side B	1013	1350	1688	2025	2363	2700	3038
	A3-Pattern Side B Throw ft.	32-39-55	37-45-64	41-51-72	45-55-78	49-60-85	52-64-91	55-68-96
	A4-Pattern Throw ft.	23-34-63	30-46-72	38-57-81	46-63-89	53-68-96	59-72-102	63-77-109
	Total cfm	4800	6400	8000	9600	11200	12800	14400
48" x 48"	NC	25	32	38	43	47	51	54
	S1-Pattern Throw ft.	61-79-112	74-91-129	83-102-144	91-112-158	99-121-171	105-129-182	112-137-193
	S2 & G2- Pattern Throw ft.	30-46-84	41-61-97	51-76-108	61-84-118	71-90-128	79-97-137	84-102-145
	cfm Side A	1200	1600	2000	2400	2800	3200	3600
	A3-Pattern Side A Throw ft.	24-40-64	36-52-74	44-59-83	52-64-91	57-69-98	61-74-105	64-79-111
	cfm Side B	1800	2400	3000	3600	4200	4800	5400
	A3-Pattern Side B Throw ft.	43-52-74	49-60-85	55-68-96	60-74-105	65-80-113	70-85-121	74-91-128
	A4-Pattern Throw ft.	30-46-84	41-61-97	51-76-108	61-84-118	71-90-128	79-97-137	84-102-145

- All pressures are in inches of water
- Throw velocities given are for isothermal terminal velocities of 150, 100 and 50 fpm. See the section, Engineering Guidelines for additional information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values given are for isothermal conditions

TDV / ROUND NECK / LOUVERED FACE, INDUCTION VANES / HORIZONTAL DISCHARGE PATTERN

Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	78 0.031 9	98 0.050 15	117 0.071 20	137 0.097 24	156 0.126 28	176 0.160 31	215 0.239 37	
			cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
6 x 6 6"	S1	X	78	6-9-17	98	7-11-20	117	9-13-21	137	10-15-23
	S2&G2	X & Y	39	3-5-10	49	4-6-12	59	5-7-15	69	6-9-16
	A3	X	28	3-4-8	37	3-5-9	44	4-6-9	52	5-7-10
	Y	Y	19	2-3-6	25	3-4-8	29	3-5-9	34	4-5-10
Round	A4	X & Y	19	2-3-6	29	3-4-8	34	3-5-9	39	4-5-10
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	98 0.050 15	117 0.071 20	137 0.097 24	156 0.126 28	176 0.160 31	215 0.239 37	254 0.334 41	
			cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
9 x 9 6"	S1	X	98	7-11-20	117	9-13-21	137	10-15-23	156	12-17-25
	S2&G2	X & Y	49	4-6-12	59	5-7-15	69	6-9-16	78	6-10-17
	A3	X	37	3-5-9	44	4-6-9	52	5-7-10	59	5-8-11
	Y	Y	25	3-4-8	29	3-5-9	34	4-5-10	39	4-6-11
Round	A4	X & Y	25	3-4-8	29	3-5-9	34	4-5-10	39	4-6-11
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	139 0.032 10	174 0.049 16	209 0.071 21	244 0.097 25	279 0.127 29	314 0.161 32	383 0.239 38	
			cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
9 x 9 8"	S1	X	139	8-12-23	174	10-15-26	209	12-18-29	244	14-21-31
	S2&G2	X & Y	70	4-6-13	87	5-8-16	105	6-10-19	122	8-11-22
	A3	X	52	4-5-10	66	4-7-11	79	5-8-13	92	6-9-14
	Y	Y	35	3-4-8	44	3-5-10	52	4-6-12	61	5-7-14
Round	A4	X & Y	35	3-4-8	44	3-5-10	52	4-6-12	61	5-7-14
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	174 0.049 16	209 0.071 21	244 0.097 25	279 0.127 29	314 0.161 32	383 0.239 38	453 0.335 42	
			cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
12 x 12 8"	S1	X	174	10-15-26	209	12-18-29	244	14-21-31	279	16-23-33
	S2&G2	X & Y	87	5-8-16	105	6-10-19	122	8-11-22	140	9-13-23
	A3	X	66	4-7-11	79	5-8-13	92	6-9-14	105	7-10-15
	Y	Y	44	3-5-10	52	4-6-12	61	5-7-14	70	6-8-15
Round	A4	X & Y	44	3-5-10	52	4-6-12	61	5-7-14	70	6-8-15
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	218 0.032 11	272 0.049 17	327 0.072 22	381 0.097 26	447 0.127 30	490 0.161 33	599 0.240 38	
			cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
12 x 12 10"	S1	X	218	10-15-29	272	12-18-33	327	15-22-36	381	17-26-39
	S2&G2	X & Y	109	5-8-16	136	7-10-20	164	8-12-24	191	9-14-27
	A3	X	82	4-7-13	103	6-8-14	123	7-10-16	144	8-12-17
	Y	Y	55	3-5-10	68	4-6-13	82	5-8-16	95	6-9-17
Round	A4	X & Y	55	3-5-10	68	4-6-13	82	5-8-16	95	6-9-17
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	235 0.020 -	314 0.035 15	392 0.055 20	471 0.079 25	549 0.107 29	628 0.140 33	706 0.177 36	
			cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
12 x 12 12"	S1	X	235	9-14-27	314	12-18-35	392	15-23-39	471	18-27-43
	S2&G2	X & Y	118	5-7-15	157	7-10-20	196	8-12-25	236	10-15-30
	A3	X	89	4-6-12	119	5-8-15	148	7-10-17	178	8-12-19
	Y	Y	59	2-5-10	79	4-6-13	98	5-8-16	118	6-10-19
Round	A4	X & Y	59	2-5-10	79	4-6-13	98	5-8-16	118	6-10-19
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	314 0.035 13	392 0.055 19	471 0.079 24	549 0.107 28	623 0.138 32	706 0.177 35	863 0.264 40	
			cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
15 x 15 12"	S1	X	314	12-18-35	392	15-23-39	471	18-27-43	549	21-32-46
	S2&G2	X & Y	157	7-10-20	196	8-12-25	236	10-15-30	275	12-17-33
	A3	X	119	5-8-15	148	7-10-17	178	8-12-19	207	10-14-20
	Y	Y	79	4-6-13	98	5-8-16	118	6-10-19	137	7-11-21
Round	A4	X & Y	79	4-6-13	98	5-8-16	118	6-10-19	137	7-11-21

- All pressures are in inches of water
- Throw velocities given are for isothermal terminal velocities of 150, 100 and 50 fpm. See the section, Engineering Guidelines for additional information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values given are for isothermal conditions

TDV / ROUND NECK / LOUVERED FACE, INDUCTION VANES / HORIZONTAL DISCHARGE PATTERN

Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	320 0.018 5	427 0.032 12	534 0.050 18	641 0.072 23	748 0.097 27	855 0.127 31	863 0.130 31	
			cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
15 x 15 14"	S1	X	320	10-15-31	427	14-21-41	534	17-26-46	641	21-31-50
	S2&G2	X & Y	160	6-9-17	214	8-11-23	267	9-14-28	321	11-17-34
	A3	X	121	4-7-14	161	6-9-18	202	8-12-20	242	9-14-22
	Y	Y	80	3-5-11	107	5-7-14	134	6-9-18	160	7-11-22
Round	A4	X & Y	80	3-5-11	107	5-7-14	134	6-9-18	160	7-11-22
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	98 0.048 15	117 0.069 20	137 0.094 24	156 0.122 28	176 0.155 31	215 0.232 37	254 0.324 41	
			cfm <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th>	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18 x 18 6"	S1	X	98	7-11-20	117	9-13-21	137	10-15-23	156	12-17-25
	S2&G2	X & Y	49	4-6-12	59	5-7-15	69	6-9-16	78	6-10-17
	A3	X	37	3-5-9	44	4-6-9	52	5-7-10	59	5-8-11
	Y	Y	25	3-4-8	29	3-5-9	34	4-5-10	39	4-6-11
Round	A4	X & Y	25	3-4-8	29	3-5-9	34	4-5-10	39	4-6-11
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	174 0.047 16	209 0.067 21	244 0.092 25	279 0.120 29	314 0.152 32	383 0.226 38	453 0.317 42	
			cfm <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th>	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18 x 18 8"	S1	X	174	10-15-26	209	12-18-29	244	14-21-31	279	16-23-33
	S2&G2	X & Y	87	5-8-16	105	6-10-19	122	8-11-22	140	9-13-23
	A3	X	66	4-7-11	79	5-8-13	92	6-9-14	105	7-10-15
	Y	Y	44	3-5-10	52	4-6-12	61	5-7-14	70	6-8-15
Round	A4	X & Y	44	3-5-10	52	4-6-12	61	5-7-14	70	6-8-15
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	218 0.029 11	272 0.045 17	327 0.066 22	381 0.089 26	436 0.117 30	490 0.147 33	599 0.220 38	
			cfm <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th>	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18 x 18 10"	S1	X	218	10-15-29	272	12-18-33	327	15-22-36	381	17-26-39
	S2&G2	X & Y	109	5-8-16	136	7-10-20	164	8-12-24	191	9-14-27
	A3	X	82	4-7-13	103	6-8-14	123	7-10-16	144	8-12-17
	Y	Y	55	3-5-10	68	4-6-13	82	5-8-16	95	6-9-17
Round	A4	X & Y	55	3-5-10	68	4-6-13	82	5-8-16	95	6-9-17
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	314 0.031 13	392 0.048 19	471 0.070 24	549 0.095 28	623 0.122 32	706 0.157 35	863 0.234 40	
			cfm <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th>	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18 x 18 12"	S1	X	314	12-18-35	392	15-23-39	471	18-27-43	549	21-32-46
	S2&G2	X & Y	157	7-10-20	196	8-12-25	236	10-15-30	275	12-17-33
	A3	X	119	5-8-15	148	7-10-17	178	8-12-19	207	10-14-20
	Y	Y	79	4-6-13	98	5-8-16	118	6-10-19	137	7-11-21
Round	A4	X & Y	79	4-6-13	98	5-8-16	118	6-10-19	137	7-11-21
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	427 0.027 12	534 0.042 18	641 0.060 23	748 0.081 27	855 0.106 31	962 0.135 34	1175 0.201 40	
			cfm <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th>	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18 x 18 14"	S1	X	427	14-21-41	534	17-26-46	641	21-31-50	748	24-36-54
	S2&G2	X & Y	214	8-11-23	267	9-14-28	321	11-17-34	374	13-20-38
	A3	X	161	6-9-18	202	8-12-20	242	9-14-22	282	11-16-24
	Y	Y	107	5-7-14	134	6-9-18	160	7-11-22	187	8-13-24
Round	A4	X & Y	107	5-7-14	134	6-9-18	160	7-11-22	187	8-13-24
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm Total Pressure NC Side	628 0.032 16	698 0.039 19	837 0.056 24	977 0.077 28	1256 0.126 35	1530 0.188 40	1808 0.262 45	
			cfm <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th> <th>cfm</th> <th>Throw</th>	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18 x 18 16"	S1	X	628	18-27-50	698	20-30-52	837	24-35-57	977	28-41-62
	S2&G2	X & Y	314	10-15-29	349	11-16-32	419	13-19-39	488	15-23-44
	A3	X	237	8-12-22	263	9-13-23	316	11-16-25	369	12-19-27
	Y	Y	157	6-9-19	174	7-10-21	209	8-12-25	244	10-14-28
Round	A4	X & Y	157	6-9-19	174	7-10-21	209	8-12-25	244	10-14-28

- All pressures are in inches of water
- Throw velocities given are for isothermal terminal velocities of 150, 100 and 50 fpm. See the section, Engineering Guidelines for additional information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values given are for isothermal conditions

TDV-NT / TDV-AA-NT

- Titus Models TDV-NT and TDV-AA-NT are high capacity ceiling diffusers for use in narrow tee regressed ceilings. These diffusers maintain an unbroken horizontal airflow pattern from maximum cfm down to minimum, which makes them excellent choices for variable air volume application.
- They have louvered faces with integrated induction vanes for exceptional air mixing
- Slot operator on the optional Model AG-95 damper allows easy volume adjustment (Rectangular necks only)
- Core is easily removable from the face of the diffuser
- Model TDV-NT is extremely flexible, with cores available for 1-, 2-, 3- or 4-way horizontal flow patterns
- Material heavy gauge steel or aluminum
- For a uniform face appearance on all neck sizes, specify an 18 x 18" dimension A size and the desired round neck size. This is available in 24" x 24" lay-in module size only.



TDV-NT / TDV-AA-NT

MODELS:

TDV-NT / Steel
TDV-AA-NT / Aluminum

FINISH:

Standard Finish - #26 White

OVERVIEW

Louvered Face / Induction Vanes / Narrow Tee

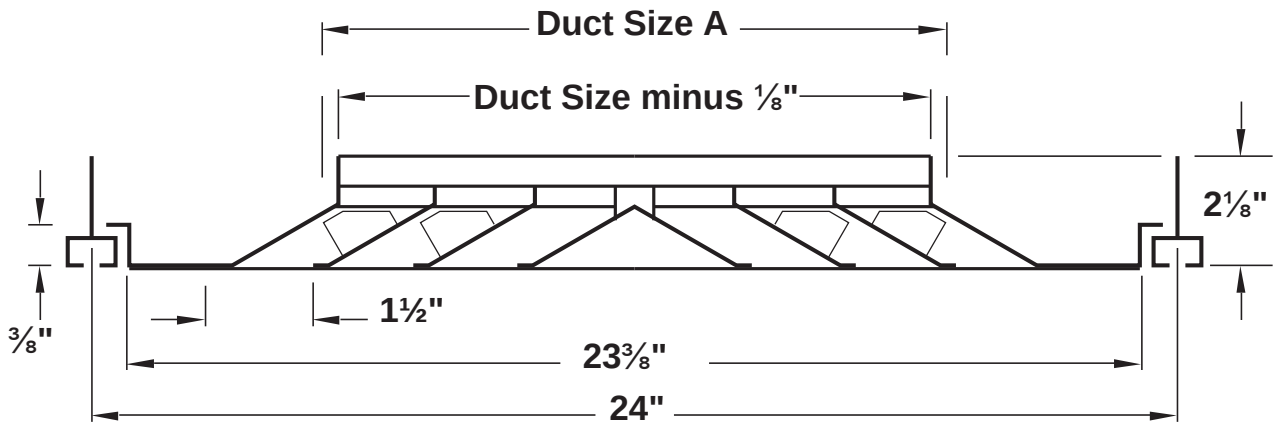
Models TDV-NT and TDV-AA-NT are high capacity ceiling diffusers that are used in narrow tee regressed ceilings. They have louvered faces and integrated induction vanes for exceptional air mixing. These models maintain an unbroken horizontal flow pattern from maximum cfm down to minimum and are an excellent choices for variable air volume applications.



See website for Specifications

TDV-NT / TDV-AA-NT UNIT DIMENSIONS

Border Type NT
Square Neck



TDX / TDX-AA

- The Titus TDX and TDX-AA have louvered faces with integrated induction nozzles for exceptional air mixing
- Model TDX is a high capacity ceiling diffuser that maintains a continuous horizontal flow from maximum cfm down to minimum cfm, making it an excellent choice for variable air volume applications
- Model TDX is extremely flexible, with cores available for 1-, 2-, 3- or 4-way horizontal flow
- Core is easily removable from the face of the diffuser
- Slot operator on the optional Model AG-95 damper allows easy volume adjustment (Square necks only)
- Material is heavy gauge steel or aluminum with miscellaneous steel components
- For a uniform face appearance on all round neck sizes, specify an 18 x 18" dimension 'A' size and the desired round neck size. This is available in 24" x 24" lay-in module size only.



TDX / TDX-AA

MODELS:

TDX / Steel
TDX-AA / Aluminum

FINISH:

Standard Finish - #26 White

OVERVIEW

Louvered Face / Induction Nozzles

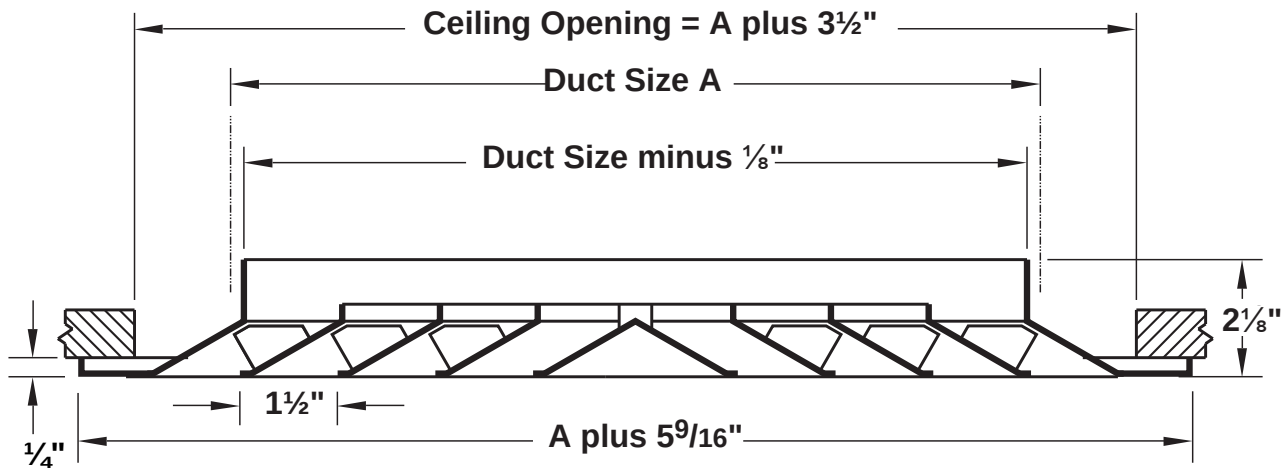
The Titus TDX and TDX-AA have louvered faces with integrated induction nozzles for exceptional air mixing. These models are high capacity ceiling diffusers that maintain a continuous horizontal flow from maximum cfm down to minimum cfm, making them an excellent choice for variable air volume applications.



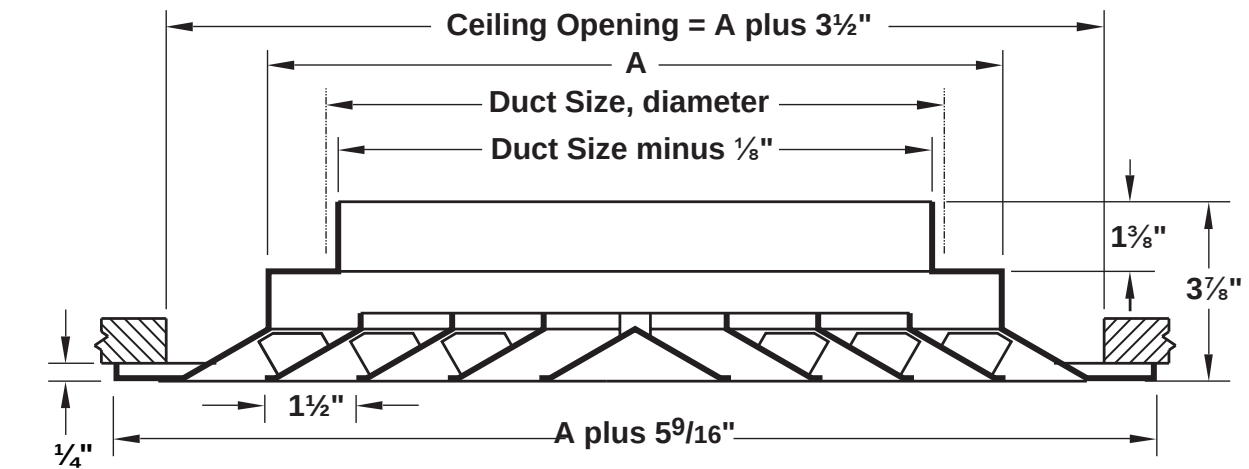
See website for Specifications

TDX / TDX-AA UNIT DIMENSIONS

Border Type 1 (Surface Mount)
Square Neck

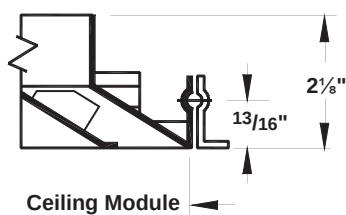


Border Type 1 (Surface Mount)
Round Neck

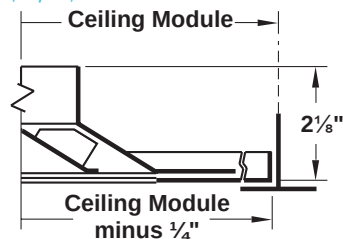


BORDER TYPES

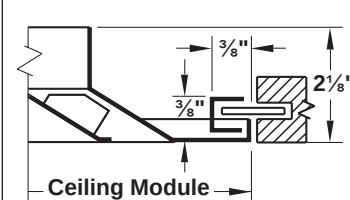
Border Type 2
(Snap-In)



Border Type 3
(Lay-In)

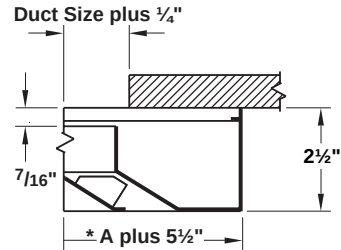


Border Type 4
(Spline)



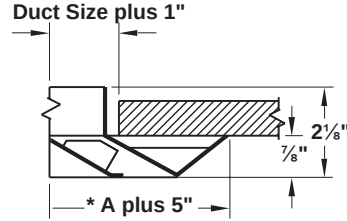
DIMENSIONS

**Border Type 5
(Dropped Face)**

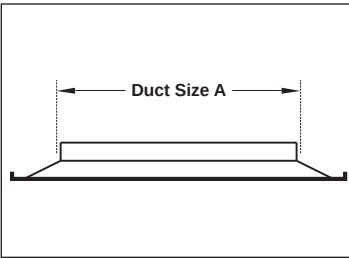


Note: Standard diffuser is 2 1/2 inches deep

**Border Type 6
(Bevel Drop Face)**



AVAILABLE DUCT SIZES - SQUARE AND RECTANGULAR NECKS

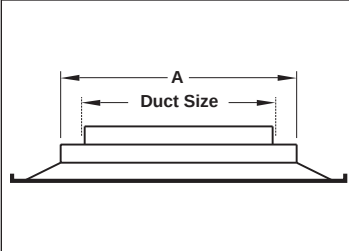


Border Types 1, 5, 6	
Minimum Duct Size A	Maximum Duct Size A
9 x 9	18 x 18

Border Types 2, 3, 4		
Available Module Size	Minimum Duct Size A	Maximum Duct Size A
24 x 24	6 x 6	18 x 18
48 x 24	12 x 12	

Note 1: Duct sizes are available in 3" increments only

AVAILABLE DUCT SIZES - ROUND NECKS



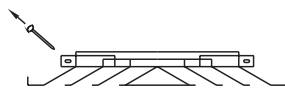
Border Types 1, 5, 6	
Dimension A	Available Round Duct Size
9 x 9	6, 8
12 x 12	8, 10, 12
15 x 15	10, 12, 14
18 x 18	12, 14, 16

Border Types 2, 3, 4		
Available Module Size	Dimension A	Available Round Duct Size
24 x 24	9 x 9	6, 8
	12 x 12	8, 10, 12
	15 x 15	10, 12, 14
	18 x 18	12, 14, 16

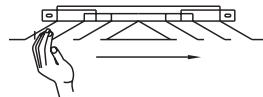
Note: Round duct sizes are available only in sizes shown

Note 1: Round duct sizes are available only in sizes shown

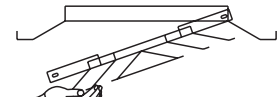
REMOVING CENTER CORE



1. Remove shipping clips



2. Push core sideways against spring



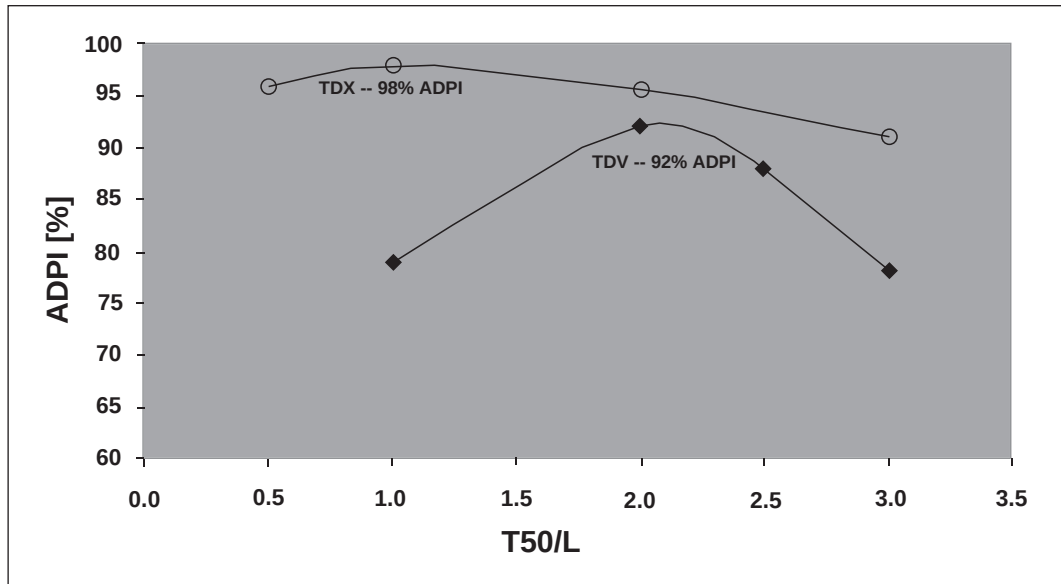
3. Hold core securely and allow to drop down

OPTIONAL PATTERNS

S1	S2	G2	A3	A4
				
1 Way	2 Way	2 Way Corner	3 Way	4 Way

TDX ADPI Comparison

TDX (High Induction-Circular Pattern) vs. TDV (Cross Pattern)
 12 x 12 Core, A4 Pattern
 (@ 20 BTU/hr. ft², Floor Heat Load)



Note: See 'ADPI - Air Diffusion Performance Index' in the Engineering Guidelines section for detailed information

TDX , TDV & TDC Comparison

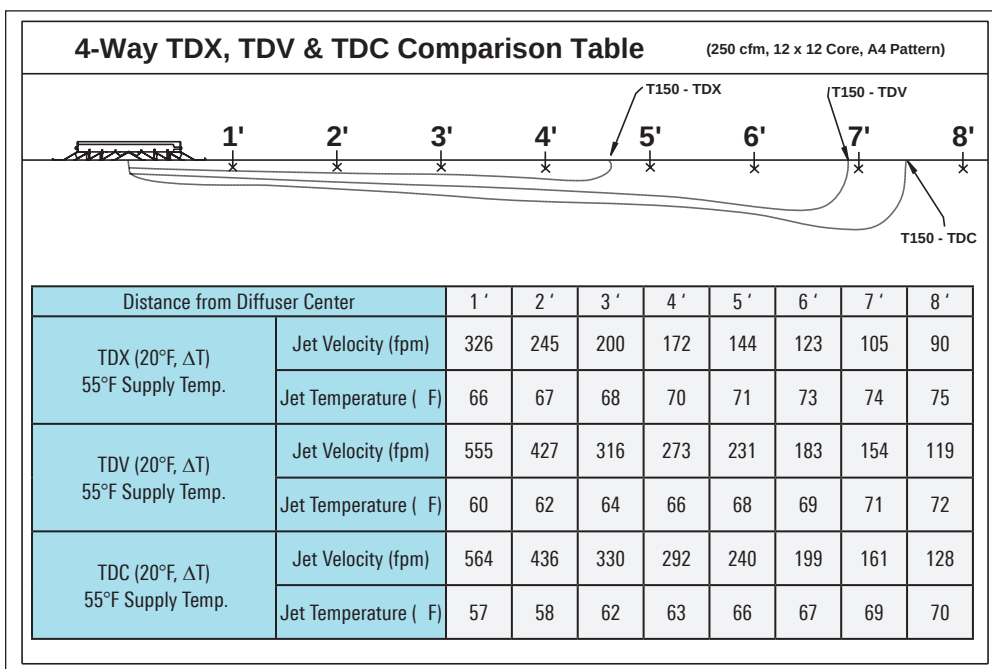
diffusers

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Model TDX Square Neck Induction Ratio Delta T = 20°F Neck Velocity = 250 fpm		Model TDV Square Neck Induction Ratio Delta T = 20°F Neck Velocity = 250 fpm		Model TDC Square Neck Induction Ratio Delta T = 20°F Neck Velocity = 250 fpm	
Throw [Feet]	Induction Ratio [non-DIM]	Throw [Feet]	Induction Ratio [non-DIM]	Throw [Feet]	Induction Ratio [non-DIM]
1	1.2	1	0.4	1	0.1
2	1.4	2	0.5	2	0.2
3	1.9	3	0.9	3	0.5
4	2.7	4	1.2	4	0.7
5	3.9	5	1.9	5	1.2
6	5.5	6	2.4	6	1.4
7	8.0	7	3.6	7	2.1
8	11.8	8	5.4	8	3.2
9	17.7	9	8.6	9	5.6
10	26.4	10	21.6	10	20.0
11	39.0	11	30.7	11	27.9
12	56.6	12	38.2	12	32.0
13	80.5	13	54.0	13	45.2
14	112.0	14	65.8	14	50.3
15	153.0	15	80.8	15	56.8

Troom = 75°F
Tsupply = 55°F

Induction Ratio = $\left[\frac{(Troom - Tsupply)}{(Troom - Tthrow)} \right] - 1$
(250 cfm, 12 x 12, A4 Pattern)



Notes:

'x' Data taken 1" below ceiling.

Temperature: Room 75°F, Supply 55°F.

At 55°F supply air, jet temperature from the TDX increases more rapidly than from the TDC and TDV, illustrating the effect of induction performance with this diffuser.

Elevation views shown above demonstrate the ability of the TDX to provide greater temperature equalization in the occupied space. This provides for an extremely high ADPI lever which translates into an exceptional comfort for occupants.

ISOTHERMAL TDX / LOUVERED FACE, INDUCTION NOZZLES / SQUARE NECK

Inlet Duct Size	Neck Velocity, fpm	200	250	300	350	400	500	600
	Velocity Pressure, in. wg.	0.003	0.004	0.006	0.008	0.010	0.016	0.022
	Total Pressure, in. wg. (max)	0.027	0.043	0.062	0.084	0.110	0.171	0.247
9" x 9"	Total cfm	113	141	169	197	225	281	338
	NC	-	-	13	19	23	31	37
	S1-Pattern Throw, ft.	5-7-13	6-8-14	7-10-16	8-12-17	9-13-18	11-14-20	13-16-22
	S2 & G2-Pattern Throw, ft.	3-5-10	4-6-11	5-8-12	6-9-13	7-10-14	9-11-15	10-12-17
	cfm Side A	28	35	42	49	56	70	84
	A3- Pattern-Side A, Throw, ft.	3-5-8	4-6-8	5-7-9	5-7-10	6-8-11	7-8-12	8-9-13
	cfm Side B	42	53	63	74	84	105	127
	A3- Pattern-Side B, Throw, ft.	4-6-10	5-7-11	6-8-12	7-9-13	8-10-13	9-11-15	10-12-17
	A4-Pattern Throw, ft.	3-5-7	4-6-8	5-6-9	6-7-10	6-7-11	7-8-12	7-9-13
12" x 12"	Total cfm	200	250	300	350	400	500	600
	NC	-	11	17	22	27	35	41
	S1-Pattern Throw, ft.	6-9-15	7-11-17	9-13-19	10-14-20	11-15-21	14-17-24	15-19-26
	S2 & G2-Pattern Throw, ft.	4-6-13	5-8-15	6-10-16	8-11-18	9-13-19	11-15-21	13-16-23
	cfm Side A	50	63	75	88	100	125	150
	A3- Pattern-Side A, Throw, ft.	3-6-9	5-7-10	6-8-11	7-8-12	7-9-13	8-10-14	9-11-15
	cfm Side B	75	94	113	131	150	188	225
	A3- Pattern-Side B, Throw, ft.	4-8-11	6-9-13	8-10-14	9-11-15	9-11-16	10-13-18	11-14-20
	A4-Pattern Throw, ft.	3-6-9	5-7-10	6-8-11	7-8-12	7-9-12	8-10-14	9-11-15
15" x 15"	Total cfm	313	391	469	547	625	781	938
	NC	-	15	21	26	30	38	44
	S1-Pattern Throw, ft.	9-12-18	11-14-20	12-15-22	13-16-23	14-18-25	16-20-28	18-22-30
	S2 & G2-Pattern Throw, ft.	5-8-13	6-10-15	8-11-17	9-13-18	10-13-19	12-15-21	13-17-23
	cfm Side A	78	98	117	137	156	195	234
	A3- Pattern-Side A, Throw, ft.	4-7-11	5-8-12	7-9-13	8-10-14	9-11-15	10-12-17	11-13-18
	cfm Side B	117	146	176	205	234	293	352
	A3- Pattern-Side B, Throw, ft.	6-9-13	8-11-15	9-12-16	10-13-18	11-13-19	12-15-21	13-16-23
	A4-Pattern Throw, ft.	4-7-11	6-8-12	7-9-13	8-10-14	9-11-15	10-12-17	11-13-19
18" x 18"	Total cfm	450	563	675	788	900	1125	1350
	NC	-	17	23	28	33	40	47
	S1-Pattern Throw, ft.	10-15-22	13-17-24	15-19-27	17-20-29	18-22-31	20-24-35	22-27-38
	S2 & G2-Pattern Throw, ft.	8-11-20	9-14-22	11-17-24	13-18-26	15-20-28	18-22-31	20-24-34
	cfm Side A	113	141	169	197	225	281	338
	A3- Pattern-Side A, Throw, ft.	5-7-13	6-9-14	7-11-15	9-12-17	10-13-18	11-14-20	13-15-22
	cfm Side B	169	211	253	295	338	422	506
	A3- Pattern-Side B, Throw, ft.	7-10-15	8-12-17	10-13-19	12-14-20	13-15-22	14-17-24	15-19-27
	A4-Pattern Throw, ft.	5-7-13	6-9-14	7-11-15	9-12-17	10-13-18	11-14-20	13-15-22

- All pressures are in inches of water
- Throw velocities given are for isothermal terminal velocities of 150, 100 and 50 fpm. See the section, Engineering Guidelines for additional information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values given are for isothermal conditions

ISOTHERMAL
TDX / LOUVERED FACE, INDUCTION NOZZLES / ROUND NECK

Backpan Size	Inlet Duct Size	Neck Velocity, fpm	200	250	300	350	400	450	500
		Velocity Pressure, in. wg.	0.003	0.004	0.006	0.008	0.010	0.013	0.016
		Total Pressure, in. wg. (max)	0.015	0.024	0.034	0.046	0.061	0.077	0.095
9" x 9"	6" Round	Total cfm	39	49	59	69	79	88	98
		NC	-	-	-	-	-	12	16
		S1-Pattern Throw, ft.	1-2-4	1-2-5	2-3-6	2-3-7	3-4-8	3-4-9	3-5-10
		S2 & G2-Pattern Throw, ft.	1-2-4	2-2-5	2-3-6	2-3-7	3-4-8	3-4-8	3-5-9
		cfm Side A	10	12	15	17	20	22	25
		A3- Pattern-Side A, Throw, ft.	0-1-2	1-1-3	1-2-3	1-2-4	1-2-4	2-2-5	2-3-5
		cfm Side B	15	18	22	26	29	33	37
		A3- Pattern-Side B, Throw, ft.	1-2-3	1-2-4	2-2-5	2-3-5	2-3-6	2-4-6	3-4-6
		A4-Pattern Throw, ft.	0-1-2	1-1-3	1-2-3	1-2-4	1-2-4	2-3-5	2-3-6
	8" Round	Total cfm	70	87	105	122	140	157	175
		NC	-	-	13	18	23	27	30
		S1-Pattern Throw, ft.	3-5-9	4-6-10	5-7-11	5-8-12	6-9-13	7-10-14	8-10-14
		S2 & G2-Pattern Throw, ft.	3-4-8	3-5-9	4-6-11	4-7-12	5-8-12	6-8-13	6-9-14
		cfm Side A	17	22	26	31	35	39	44
		A3- Pattern-Side A, Throw, ft.	2-3-5	2-3-6	3-4-7	3-4-8	3-5-8	4-6-9	4-6-9
		cfm Side B	26	33	39	46	52	59	65
		A3- Pattern-Side B, Throw, ft.	3-4-6	3-5-7	4-5-8	5-6-8	5-6-9	5-7-9	6-7-10
		A4-Pattern Throw, ft.	2-3-5	2-3-7	3-4-7	3-5-8	3-5-9	4-6-9	4-7-10

Backpan Size	Inlet Duct Size	Neck Velocity, fpm	200	250	300	350	400	450	500
		Velocity Pressure, in. wg.	0.003	0.004	0.006	0.008	0.010	0.013	0.016
		Total Pressure, in. wg. (max)	0.021	0.033	0.047	0.065	0.084	0.107	0.132
12" x 12"	8" Round	Total cfm	70	87	105	122	140	157	175
		NC	-	-	13	18	23	27	30
		S1-Pattern Throw, ft.	2-3-7	3-4-8	3-5-10	4-6-12	4-7-13	5-8-13	6-8-14
		S2 & G2-Pattern Throw, ft.	1-3-6	2-4-7	3-4-8	3-5-10	4-6-11	4-6-13	5-7-14
		cfm Side A	17	22	26	31	35	39	44
		A3- Pattern-Side A, Throw, ft.	1-2-4	2-2-5	2-3-5	2-3-6	2-4-7	3-4-8	3-5-9
		cfm Side B	26	33	39	46	52	59	65
		A3- Pattern-Side B, Throw, ft.	2-3-6	2-4-7	3-4-7	3-5-8	4-6-9	4-6-9	5-7-10
		A4-Pattern Throw, ft.	1-2-4	1-2-5	2-3-6	2-3-7	3-4-8	3-4-9	3-5-9
	10" Round	Total cfm	109	136	164	191	218	245	273
		NC	-	-	15	20	25	29	32
		S1-Pattern Throw, ft.	2-4-9	3-5-11	4-6-13	5-8-15	6-9-17	6-10-19	7-11-21
		S2 & G2-Pattern Throw, ft.	2-4-8	3-5-11	4-6-13	5-7-14	6-8-15	6-10-16	7-11-17
		cfm Side A	27	34	41	48	55	61	68
		A3- Pattern-Side A, Throw, ft.	1-3-5	2-3-7	3-4-8	3-5-9	4-5-9	4-6-10	4-7-10
		cfm Side B	41	51	61	72	82	92	102
		A3- Pattern-Side B, Throw, ft.	2-4-7	3-4-9	4-5-11	4-6-12	5-7-12	5-8-13	6-9-14
		A4-Pattern Throw, ft.	1-3-5	2-3-7	3-4-8	3-5-9	4-5-9	4-6-10	5-7-10
	12" Round	Total cfm	157	196	236	275	314	353	393
		NC	-	-	16	21	26	30	34
		S1-Pattern Throw, ft.	2-5-10	4-7-13	5-8-16	6-9-18	7-10-21	8-12-24	9-13-26
		S2 & G2-Pattern Throw, ft.	2-4-9	3-6-12	4-7-14	5-8-16	6-9-18	7-10-21	8-12-23
		cfm Side A	39	49	59	69	79	88	98
		A3- Pattern-Side A, Throw, ft.	2-3-6	3-4-8	3-5-10	4-6-11	4-6-12	5-7-13	5-8-14
		cfm Side B	59	74	88	103	118	133	147
		A3- Pattern-Side B, Throw, ft.	3-4-9	4-6-11	4-7-12	5-8-13	6-9-14	7-10-15	7-11-16
		A4-Pattern Throw, ft.	2-3-7	3-4-8	3-5-10	4-6-11	4-7-11	5-7-12	6-8-13

- All pressures are in inches of water
- Throw velocities given are for isothermal terminal velocities of 150, 100 and 50 fpm. See the section, Engineering Guidelines for additional information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006.
- Throw values given are for isothermal conditions

ISOTHERMAL
TDX / LOUVERED FACE, INDUCTION NOZZLES / SQUARE NECK

Backpan Size	Inlet Duct Size	Neck Velocity, fpm	400	450	500	550	600	650	700
		Velocity Pressure, in. wg.	0.010	0.013	0.016	0.019	0.022	0.026	0.031
		Total Pressure, in. wg. (max)	0.082	0.104	0.129	0.156	0.186	0.218	0.252
15" x 15"	10" Round	Total cfm	218	245	273	300	327	355	382
		NC	-	12	15	19	22	24	27
		S1-Pattern Throw, ft.	5-7-15	6-8-16	6-9-17	7-10-17	7-11-18	8-12-19	9-13-20
		S2 & G2-Pattern Throw, ft.	5-7-12	5-8-12	6-9-13	6-10-14	7-10-14	8-10-15	8-11-15
		cfm Side A	55	61	68	75	82	89	95
		A3- Pattern-Side A, Throw, ft.	3-5-8	4-5-9	4-6-9	4-6-9	5-7-10	5-7-10	5-8-11
		cfm Side B	82	92	102	112	123	133	143
		A3- Pattern-Side B, Throw, ft.	4-6-11	5-7-11	5-8-12	6-9-13	6-9-13	7-10-14	7-10-14
		A4-Pattern Throw, ft.	3-5-8	4-5-8	4-6-9	4-7-9	5-7-10	5-7-10	6-7-11
		Total cfm	314	353	393	432	471	511	550
	12" Round	NC	18	22	25	28	31	34	36
		S1-Pattern Throw, ft.	6-9-18	7-10-19	7-11-20	8-12-21	9-13-22	10-15-23	10-16-23
		S2 & G2-Pattern Throw, ft.	5-8-15	6-9-17	6-10-19	7-11-20	8-12-21	8-12-22	9-13-23
		cfm Side A	79	88	98	108	118	128	137
		A3- Pattern-Side A, Throw, ft.	4-6-11	4-6-11	5-7-12	5-8-12	6-8-13	6-9-14	7-10-14
		cfm Side B	118	133	147	162	177	191	206
		A3- Pattern-Side B, Throw, ft.	5-8-12	6-9-13	7-10-14	7-10-14	8-11-15	8-11-16	9-11-16
		A4-Pattern Throw, ft.	4-6-10	4-7-11	5-7-11	5-8-12	6-9-12	6-9-13	7-9-13
		Total cfm	428	481	535	588	641	695	748
		NC	26	30	34	37	40	42	45
	14" Round	S1-Pattern Throw, ft.	8-13-21	9-14-22	10-16-24	11-17-25	13-18-26	14-19-27	15-20-28
		S2 & G2-Pattern Throw, ft.	7-11-21	8-12-22	9-13-23	10-15-24	11-16-25	12-17-26	13-19-27
		cfm Side A	107	120	134	147	160	174	187
		A3- Pattern-Side A, Throw, ft.	5-8-13	6-9-13	7-10-14	7-10-15	8-11-15	9-11-16	9-12-17
		cfm Side B	160	180	200	220	241	261	281
		A3- Pattern-Side B, Throw, ft.	7-10-15	8-11-16	9-12-16	10-12-17	10-13-18	11-13-19	11-14-19
		A4-Pattern Throw, ft.	5-8-12	6-9-13	7-9-13	8-10-14	8-10-15	9-11-15	9-11-16
		Total cfm	600	650	700	750	800	850	900
		Velocity Pressure, in. wg.	0.022	0.026	0.031	0.035	0.040	0.045	0.051
		Total Pressure, in. wg. (max)	0.209	0.245	0.284	0.326	0.371	0.419	0.470
18" x 18"	12" Round	Total cfm	471	511	550	589	628	668	707
		NC	30	32	35	37	39	41	43
		S1-Pattern Throw, ft.	7-11-15	8-11-16	9-12-17	9-12-17	10-13-18	11-13-18	11-13-18
		S2 & G2-Pattern Throw, ft.	6-9-14	7-10-15	7-11-15	8-11-16	8-12-16	9-12-17	9-12-17
		cfm Side A	118	128	137	147	157	167	177
		A3- Pattern-Side A, Throw, ft.	5-7-11	5-8-11	6-8-12	6-9-12	6-9-13	7-9-13	7-10-13
		cfm Side B	177	191	206	221	236	250	265
		A3- Pattern-Side B, Throw, ft.	7-9-13	7-9-13	8-10-14	8-10-14	8-10-15	9-11-15	9-11-15
		A4-Pattern Throw, ft.	5-7-10	5-8-11	6-8-11	6-8-12	7-8-12	7-9-12	7-9-13
		Total cfm	641	695	748	802	855	909	962
	14" Round	NC	38	41	43	45	48	50	52
		S1-Pattern Throw, ft.	10-13-18	11-14-19	12-14-20	12-15-21	12-15-21	13-16-22	13-16-23
		S2 & G2-Pattern Throw, ft.	9-12-17	9-13-18	10-13-18	11-13-19	11-14-20	12-14-20	12-15-21
		cfm Side A	160	174	187	200	214	227	241
		A3- Pattern-Side A, Throw, ft.	7-9-13	7-10-14	8-10-14	8-10-15	9-11-15	9-11-16	9-11-16
		cfm Side B	241	261	281	301	321	341	361
		A3- Pattern-Side B, Throw, ft.	9-11-15	9-11-16	9-12-16	10-12-17	10-12-18	10-13-18	11-13-19
		A4-Pattern Throw, ft.	7-9-12	7-9-13	8-9-13	8-10-14	8-10-14	8-10-15	9-11-15
		Total cfm	838	908	977	1047	1117	1187	1257
		NC	45	48	50	52	55	57	59
	16" Round	S1-Pattern Throw, ft.	13-17-24	14-18-25	15-18-26	15-19-27	16-19-27	16-20-28	17-21-29
		S2 & G2-Pattern Throw, ft.	11-15-22	11-16-23	12-17-24	13-17-24	14-18-25	15-18-26	15-19-27
		cfm Side A	209	227	244	262	279	297	314
		A3- Pattern-Side A, Throw, ft.	8-12-17	9-12-18	10-13-18	10-13-19	11-14-20	12-14-20	12-15-21
		cfm Side B	314	340	367	393	419	445	471
		A3- Pattern-Side B, Throw, ft.	11-14-20	12-14-20	12-15-21	13-15-22	13-16-23	13-16-23	14-17-24
		A4-Pattern Throw, ft.	9-11-16	9-12-16	10-12-17	10-13-18	11-13-18	11-13-19	11-14-19

- All pressures are in inches of water
- Throw velocities given are for isothermal terminal velocities of 150, 100 and 50 fpm. See the section, Engineering Guidelines for additional information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values given are for isothermal conditions

20ΔT COOLING TDX / LOUVERED FACE, INDUCTION NOZZLES / SQUARE NECK

Inlet Duct Size	Neck Velocity, fpm	200	250	300	350	400	500	600
	Velocity Pressure, in. wg.	0.003	0.004	0.006	0.008	0.010	0.016	0.022
	Total Pressure, in. wg. (max)	0.027	0.043	0.062	0.084	0.110	0.171	0.247
9" x 9"	Total cfm	113	141	169	197	225	281	338
	NC	-	-	13	19	23	31	37
	S1-Pattern Throw, ft.	4-6-10	5-7-11	6-8-12	7-9-13	8-10-14	9-11-15	10-12-17
	S2 & G2-Pattern Throw, ft.	3-4-7	4-5-8	4-6-9	5-7-10	6-7-10	7-8-11	7-9-12
	cfm Side A	28	35	42	49	56	70	84
	A3- Pattern-Side A, Throw, ft.	3-4-6	3-4-6	4-5-7	4-5-7	5-6-8	5-6-9	6-7-10
	cfm Side B	42	53	63	74	84	105	127
	A3- Pattern-Side B, Throw, ft.	3-5-7	4-6-8	5-6-9	5-7-9	6-7-10	7-8-11	7-9-12
	A4-Pattern Throw, ft.	3-4-6	3-4-6	4-5-7	4-5-7	5-6-8	5-6-9	6-7-10
12" x 12"	Total cfm	200	250	300	350	400	500	600
	NC	-	11	17	22	27	35	41
	S1-Pattern Throw, ft.	5-7-12	6-9-13	7-10-14	8-11-16	10-12-17	11-13-19	12-14-20
	S2 & G2-Pattern Throw, ft.	4-6-10	5-7-11	6-8-12	6-9-13	7-10-14	9-11-16	10-12-17
	cfm Side A	50	63	75	88	100	125	150
	A3- Pattern-Side A, Throw, ft.	3-5-7	4-6-8	5-6-9	5-7-10	6-7-10	7-8-12	7-9-13
	cfm Side B	75	94	113	131	150	188	225
	A3- Pattern-Side B, Throw, ft.	5-7-9	6-7-11	7-8-12	7-9-12	8-9-13	9-11-15	9-12-16
	A4-Pattern Throw, ft.	3-5-7	4-6-8	5-6-9	6-7-10	6-7-11	7-8-12	7-9-13
15" x 15"	Total cfm	313	391	469	547	625	781	938
	NC	-	15	21	26	30	34	38
	S1-Pattern Throw, ft.	7-9-13	9-10-15	9-11-16	10-12-17	11-13-19	12-15-21	13-16-23
	S2 & G2-Pattern Throw, ft.	4-7-10	5-8-11	7-9-12	8-9-13	8-10-14	9-11-16	10-12-18
	cfm Side A	78	98	117	137	156	195	234
	A3- Pattern-Side A, Throw, ft.	4-6-8	5-6-9	6-7-10	6-7-11	7-8-11	7-9-13	8-10-14
	cfm Side B	117	146	176	205	234	293	352
	A3- Pattern-Side B, Throw, ft.	5-7-10	7-8-11	7-9-12	8-9-13	8-10-14	9-11-16	10-12-17
	A4-Pattern Throw, ft.	4-6-9	5-7-10	6-8-11	7-9-12	7-9-13	8-10-15	9-11-16
18" x 18"	Total cfm	450	563	675	788	900	1125	1350
	NC	-	17	23	28	33	40	47
	S1-Pattern Throw, ft.	9-12-16	11-13-18	12-14-20	13-15-22	13-16-23	15-18-26	16-20-28
	S2 & G2-Pattern Throw, ft.	6-10-14	8-11-16	10-12-17	11-13-18	11-14-20	13-16-22	14-17-24
	cfm Side A	113	141	169	197	225	281	338
	A3- Pattern-Side A, Throw, ft.	4-6-9	5-7-10	6-8-11	7-9-12	8-9-13	8-10-15	9-11-16
	cfm Side B	169	211	253	295	338	422	506
	A3- Pattern-Side B, Throw, ft.	6-8-12	7-9-13	8-10-14	9-11-16	10-12-17	11-13-19	12-14-20
	A4-Pattern Throw, ft.	4-6-9	5-7-10	6-8-11	7-9-12	8-9-13	9-10-15	9-11-16

- All pressures are in inches of water
- Throw velocities given are for 20° cooling at terminal velocities of 150, 100 and 50 fpm. See the section, Engineering Guidelines for additional information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values given are for cooling conditions

20ΔT COOLING TDX / LOUVERED FACE, INDUCTION NOZZLES / ROUND NECK

Backpan Size	Inlet Duct Size	Neck Velocity, fpm	200	250	300	350	400	450	500
		Velocity Pressure, in. wg.	0.003	0.004	0.006	0.008	0.010	0.013	0.016
		Total Pressure, in. wg. (max)	0.024	0.037	0.053	0.073	0.095	0.120	0.148
9" x 9"	6" Round	Total cfm	39	49	59	69	79	88	98
		NC	-	-	-	-	-	12	16
		S1-Pattern Throw, ft.	1-2-3	1-2-4	2-2-5	2-3-6	2-3-6	2-4-7	3-4-7
		S2 & G2-Pattern Throw, ft.	1-2-3	1-2-3	2-2-4	2-3-4	2-3-4	2-3-5	3-3-5
		cfm Side A	10	12	15	17	20	22	25
		A3- Pattern-Side A, Throw, ft.	0-1-2	1-1-2	1-1-3	1-2-3	1-2-4	1-2-4	2-2-5
		cfm Side B	15	18	22	26	29	33	37
		A3- Pattern-Side B, Throw, ft.	1-1-3	1-2-3	1-2-4	2-2-4	2-3-4	2-3-5	2-3-5
		A4-Pattern Throw, ft.	0-1-2	1-1-2	1-1-3	1-2-3	1-2-4	1-2-4	2-2-5
	8" Round	Total cfm	70	87	105	122	140	157	175
		NC	-	-	13	18	23	27	30
		S1-Pattern Throw, ft.	3-4-7	3-5-8	4-6-8	5-6-9	5-7-10	6-7-10	6-8-11
		S2 & G2-Pattern Throw, ft.	2-3-6	3-4-7	3-5-8	4-6-9	4-6-9	5-7-10	5-7-10
		cfm Side A	17	22	26	31	35	39	44
		A3- Pattern-Side A, Throw, ft.	1-2-4	2-3-5	2-3-5	2-4-6	3-4-6	3-5-6	4-5-7
		cfm Side B	26	33	39	46	52	59	65
		A3- Pattern-Side B, Throw, ft.	2-3-5	3-4-5	3-4-6	4-4-6	4-5-7	4-5-7	4-5-7
		A4-Pattern Throw, ft.	1-2-4	2-3-5	2-3-6	3-4-6	3-4-6	3-5-7	4-5-7

Backpan Size	Inlet Duct Size	Neck Velocity, fpm	200	250	300	350	400	450	500
		Velocity Pressure, in. wg.	0.003	0.004	0.006	0.008	0.010	0.013	0.016
		Total Pressure, in. wg. (max)	0.024	0.037	0.053	0.073	0.095	0.120	0.148
12" x 12"	8" Round	Total cfm	70	87	105	122	140	157	175
		NC	-	-	13	18	23	27	30
		S1-Pattern Throw, ft.	2-3-6	2-4-7	3-4-8	3-5-9	4-6-9	4-6-10	5-7-11
		S2 & G2-Pattern Throw, ft.	1-2-5	2-3-6	2-4-6	3-4-7	3-5-7	4-5-8	4-6-8
		cfm Side A	17	22	26	31	35	39	44
		A3- Pattern-Side A, Throw, ft.	1-2-3	1-2-4	2-2-5	2-3-5	2-3-6	2-3-6	3-4-7
		cfm Side B	26	33	39	46	52	59	65
		A3- Pattern-Side B, Throw, ft.	2-2-5	2-3-5	2-4-6	3-4-6	3-5-6	4-5-7	4-5-7
		A4-Pattern Throw, ft.	1-2-3	1-2-4	2-2-5	2-3-6	2-3-6	2-4-7	3-4-7
	10" Round	Total cfm	109	136	164	191	218	245	273
		NC	-	-	15	20	25	29	32
		S1-Pattern Throw, ft.	2-4-7	3-5-9	4-5-10	4-6-11	5-7-12	5-8-13	6-9-13
		S2 & G2-Pattern Throw, ft.	1-3-6	2-4-8	3-5-9	4-5-9	4-6-10	5-7-11	5-8-11
		cfm Side A	27	34	41	48	55	61	68
		A3- Pattern-Side A, Throw, ft.	1-2-5	2-3-6	2-3-6	3-4-7	3-5-7	3-5-7	4-6-8
		cfm Side B	41	51	61	72	82	92	102
		A3- Pattern-Side B, Throw, ft.	2-3-6	2-4-6	3-4-7	3-5-8	4-6-8	4-6-9	5-6-9
		A4-Pattern Throw, ft.	1-2-5	2-3-5	2-3-6	3-4-6	3-5-7	3-5-7	4-5-8
	12" Round	Total cfm	157	196	236	275	314	353	393
		NC	-	-	16	21	26	30	34
		S1-Pattern Throw, ft.	2-4-9	4-6-11	4-7-13	5-8-15	6-9-16	7-10-17	7-11-18
		S2 & G2-Pattern Throw, ft.	2-4-8	3-5-10	4-6-12	5-7-13	5-8-14	6-9-15	7-10-16
		cfm Side A	39	49	59	69	79	88	98
		A3- Pattern-Side A, Throw, ft.	2-3-6	2-4-7	3-4-7	3-5-8	4-6-8	4-6-9	5-7-9
		cfm Side B	59	74	88	103	118	133	147
		A3- Pattern-Side B, Throw, ft.	3-4-7	3-5-8	4-6-9	4-7-9	5-7-10	6-7-10	6-8-11
		A4-Pattern Throw, ft.	2-3-6	2-4-6	3-4-7	3-5-8	4-6-8	4-6-9	5-6-9

- All pressures are in inches of water
- Throw velocities given are for 20° cooling at terminal velocities of 150, 100 and 50 fpm. See the section, Engineering Guidelines for additional information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values given are for cooling conditions

20ΔT COOLING TDX / LOUVERED FACE, INDUCTION NOZZLES / ROUND NECK

Backpan Size	Inlet Duct Size	Neck Velocity, fpm	400	450	500	550	600	650	700
		Velocity Pressure, in. wg.	0.010	0.013	0.016	0.019	0.022	0.026	0.031
		Total Pressure, in. wg. (max)	0.095	0.120	0.148	0.179	0.213	0.250	0.290
15" x 15"	10" Round	Total cfm	218	245	273	300	327	355	382
		NC	-	12	15	19	22	24	27
		S1-Pattern Throw, ft.	4-6-11	5-7-12	5-8-12	6-9-13	6-9-14	7-10-14	7-10-15
		S2 & G2-Pattern Throw, ft.	4-6-9	5-7-9	5-7-10	6-7-10	6-8-11	6-8-11	7-8-12
		cfm Side A	55	61	68	75	82	89	95
		A3- Pattern-Side A, Throw, ft.	3-4-6	3-5-6	3-5-7	4-5-7	4-5-7	4-5-8	5-6-8
		cfm Side B	82	92	102	112	123	133	143
		A3- Pattern-Side B, Throw, ft.	4-5-8	4-6-9	4-6-9	5-7-10	5-7-10	6-7-10	6-8-11
		A4-Pattern Throw, ft.	3-4-6	3-4-6	3-5-7	4-5-7	4-5-7	4-5-8	5-6-8
	12" Round	Total cfm	314	353	393	432	471	511	550
		NC	18	22	25	28	31	34	36
		S1-Pattern Throw, ft.	5-8-13	6-9-14	6-9-15	7-10-16	8-11-16	8-12-17	9-12-18
		S2 & G2-Pattern Throw, ft.	4-7-13	5-7-14	5-8-14	6-9-15	7-10-16	7-11-16	8-11-17
		cfm Side A	79	88	98	108	118	128	137
		A3- Pattern-Side A, Throw, ft.	3-5-8	4-5-8	4-6-9	4-7-9	5-7-10	5-7-10	6-7-11
		cfm Side B	118	133	147	162	177	191	206
		A3- Pattern-Side B, Throw, ft.	4-7-9	5-7-10	6-7-10	6-8-11	7-8-11	7-8-12	7-9-12
		A4-Pattern Throw, ft.	3-5-7	4-6-8	4-6-8	5-6-9	5-6-9	5-7-9	6-7-10
	14" Round	Total cfm	428	481	535	588	641	695	748
		NC	26	30	34	37	40	42	45
		S1-Pattern Throw, ft.	7-11-16	8-12-17	9-13-18	10-13-19	11-14-19	12-14-20	12-15-21
		S2 & G2-Pattern Throw, ft.	6-9-15	7-10-16	8-11-17	8-13-18	9-13-19	10-14-20	11-14-20
		cfm Side A	107	120	134	147	160	174	187
		A3- Pattern-Side A, Throw, ft.	4-7-9	5-7-10	6-8-11	6-8-11	7-8-12	7-9-12	7-9-13
		cfm Side B	160	180	200	220	241	261	281
		A3- Pattern-Side B, Throw, ft.	6-8-11	7-8-12	7-9-12	7-9-13	8-10-13	8-10-14	8-10-15
		A4-Pattern Throw, ft.	5-6-9	5-7-9	6-7-10	6-7-10	6-8-11	7-8-11	7-8-12

Backpan Size	Inlet Duct Size	Neck Velocity, fpm	600	650	700	750	800	850	900
		Velocity Pressure, in. wg.	0.022	0.026	0.031	0.035	0.040	0.045	0.051
		Total Pressure, in. wg. (max)	0.213	0.250	0.290	0.333	0.379	0.428	0.480
18" x 18"	12" Round	Total cfm	471	511	550	589	628	668	707
		NC	29	32	34	37	39	41	43
		S1-Pattern Throw, ft.	6-8-12	7-9-12	7-9-13	7-9-13	8-9-13	8-10-14	8-10-14
		S2 & G2-Pattern Throw, ft.	5-8-11	6-8-11	6-8-12	7-8-12	7-9-12	7-9-13	8-9-13
		cfm Side A	118	128	137	147	157	167	177
		A3- Pattern-Side A, Throw, ft.	4-6-8	4-6-9	5-6-9	5-7-9	5-7-10	6-7-10	6-7-10
		cfm Side B	177	191	206	221	236	250	265
		A3- Pattern-Side B, Throw, ft.	6-7-10	6-7-10	6-7-10	6-8-11	6-8-11	7-8-11	7-8-12
		A4-Pattern Throw, ft.	4-5-8	5-6-8	5-6-8	5-6-9	5-6-9	5-6-9	5-7-9
	14" Round	Total cfm	641	695	748	802	855	909	962
		NC	38	41	43	45	48	50	52
		S1-Pattern Throw, ft.	8-10-14	8-10-14	9-11-15	9-11-15	9-11-16	10-12-16	10-12-17
		S2 & G2-Pattern Throw, ft.	7-9-13	8-9-13	8-10-14	8-10-14	8-10-15	9-11-15	9-11-16
		cfm Side A	160	174	187	200	214	227	241
		A3- Pattern-Side A, Throw, ft.	6-7-10	6-7-10	6-8-11	6-8-11	7-8-11	7-8-12	7-9-12
		cfm Side B	241	261	281	301	321	341	361
		A3- Pattern-Side B, Throw, ft.	7-8-11	7-8-12	7-9-12	7-9-13	8-9-13	8-10-14	8-10-14
		A4-Pattern Throw, ft.	5-7-9	6-7-10	6-7-10	6-7-10	6-8-11	6-8-11	7-8-11
	16" Round	Total cfm	838	908	977	1047	1117	1187	1257
		NC	42	45	47	50	52	54	56
		S1-Pattern Throw, ft.	10-13-18	11-13-19	11-14-19	12-14-20	12-15-21	12-15-21	13-15-22
		S2 & G2-Pattern Throw, ft.	9-12-16	10-12-17	10-13-18	11-13-18	11-13-19	11-14-20	12-14-20
		cfm Side A	209	227	244	262	279	297	314
		A3- Pattern-Side A, Throw, ft.	7-9-13	8-9-13	8-10-14	8-10-14	8-10-15	9-11-15	9-11-16
		cfm Side B	314	340	367	393	419	445	471
		A3- Pattern-Side B, Throw, ft.	8-10-15	9-11-15	9-11-16	9-12-16	10-12-17	10-12-17	10-13-18
		A4-Pattern Throw, ft.	7-8-12	7-9-12	7-9-13	8-9-13	8-10-14	8-10-14	8-10-15

- All pressures are in inches of water
- Throw velocities given are for 20° cooling at terminal velocities of 150, 100 and 50 fpm. See the section, Engineering Guidelines for additional information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values given are for cooling conditions

TDX-NT / TDX-AA-NT

- The Titus TDX-NT and TDX-AA-NT have louvered faces with integrated induction nozzles for exceptional air mixing
- Models TDX-NT and TDX-AA-NT are high capacity ceiling diffusers for use in narrow tee regressed ceilings. These diffusers maintain an unbroken horizontal airflow pattern from maximum cfm down to minimum, which makes them excellent choices for variable air volume application.
- Model TDX-NT is extremely flexible, with cores available for 1-, 2-, 3- or 4-way horizontal flow
- Core is easily removable from the face of the diffuser
- Slot operator on the optional Model AG-95 damper allows easy volume adjustment (Square necks only)
- Material is heavy gauge steel or aluminum with miscellaneous steel components
- For a uniform face appearance on all round neck sizes, specify an 18 x 18" dimension 'A' size and the desired round neck size. This is available in 24" x 24" lay-in module size only.



TDX-NT / TDX-AA-NT

MODELS:

TDX-NT / Steel
TDX-AA-NT / Aluminum

FINISH:

Standard Finish - #26 White

OVERVIEW

Louvered Face / Induction Nozzles / Narrow Tee

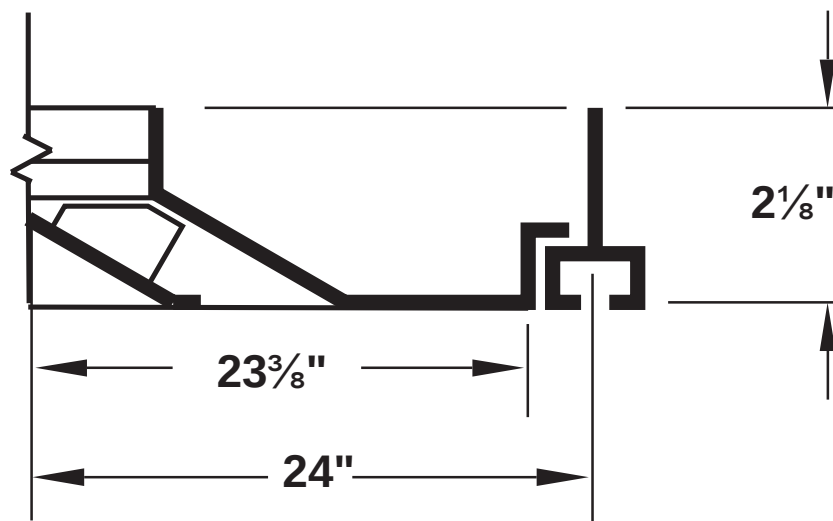
The Titus TDX-AA and TDX-AA-NT have louvered faces with integrated induction nozzles for exceptional air mixing. These models are high capacity ceiling diffusers that maintain a continuous horizontal flow from maximum cfm down to minimum cfm, making them an excellent choice for variable air volume applications.



See website for Specifications

TDX-NT / TDX-AA-NT UNIT DIMENSIONS

Border Type NT
Square Neck

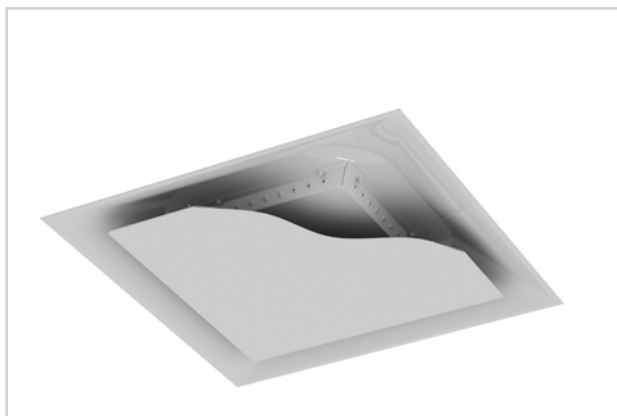


Low Flow Architectural Ceiling Diffusers

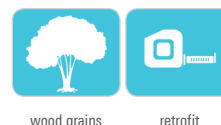
diffusers

TJD

- The Titus TJD is a diffuser designed for low flow airflow applications. It provides an air pattern at flow rates where most ceiling diffusers dump.
- The TJD diffuser satisfies architectural as well as engineering criteria. Its strong, clean, unobtrusive lines harmonize with the ceiling system, without sacrificing performance.
- The curvature of the TJD backpan works with the formed edges of the face panel to deliver a uniform 360° horizontal air pattern, without excessive noise or pressure drop
- The TJD diffuser is an excellent choice for variable air volume systems. The air pattern remains tight and horizontal for effective room air distribution, even when the volume varies over a wide range.
- The face panel is constructed from 22-gauge steel or heavy gauge aluminum. The edges of the face panel are formed to a radius for a solid, crisp appearance. The formed edges also stiffen the face panel and assure a straight and level surface.



TJD



MODEL:

TJD / Steel

FINISHES:

Standard Finish - #26 White

Optional Finish - Wood grains (See Wood grains Brochure for Finishes)

OVERVIEW

Square Plaque

The Titus TJD (steel plaque) face diffusers satisfies low flow rates and architectural criteria. Their strong, clean, unobtrusive lines harmonize with ceiling systems without sacrificing performance. The curvature of the TJD backpans work with the formed edges of the face panel to deliver a uniform 360 degree horizontal air pattern, without excessive noise or pressure drop. They are an excellent selection for variable air volume systems. **Patent No.: US 10,871,304 B2**

ADDITIONAL FEATURES

- The formed edges of the face panel capture another 22-gauge steel or heavy gauge aluminum panel that the hanger brackets are mechanically fastened to. This process provides the TJD face with a smooth finish under any lighting conditions.
- The face panel is held in place by four hook brackets that positively engage into slots in the backpan. The panel can be removed from the backpan for easy installation of the diffuser or for access to the optional damper.



See website for Specifications

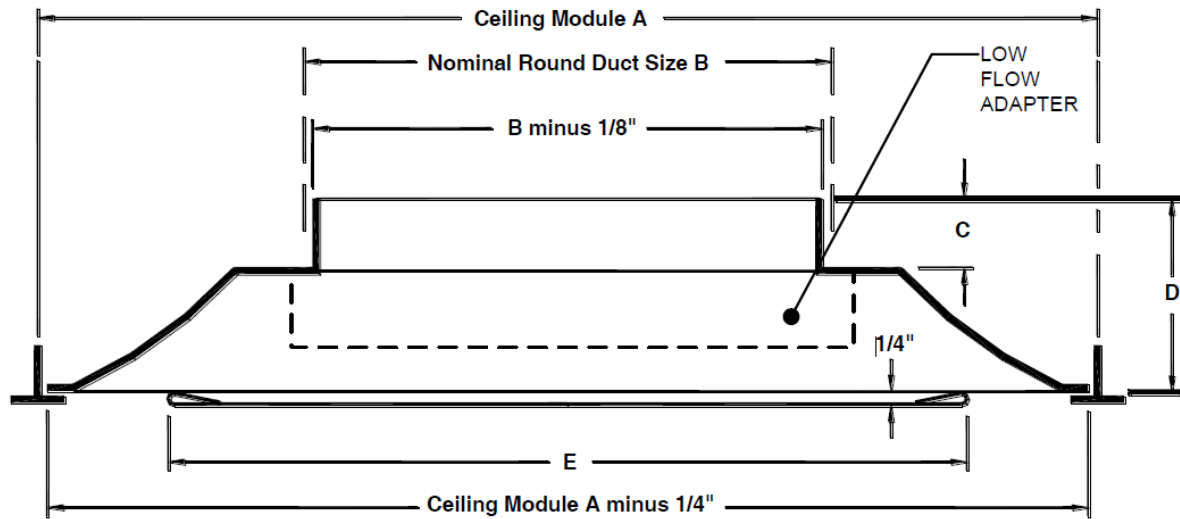


TJD diffuser installed in the ceiling of a low load space

- The new face panel construction ensures a smooth, clean appearance and easier installation and removal
- Optional factory-insulated R-6 foil-backed insulation available for 24 x 24" full face models, neck sizes 6-15, borders 1, 2, 3 and 4

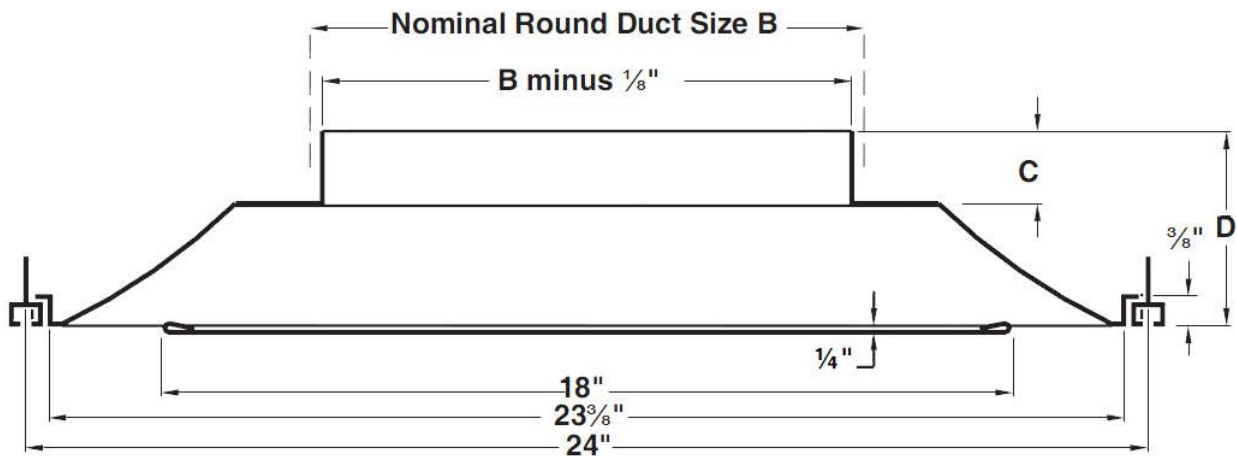
TJD DIMENSIONS

Frame Type 3
(Lay-In) Full Face



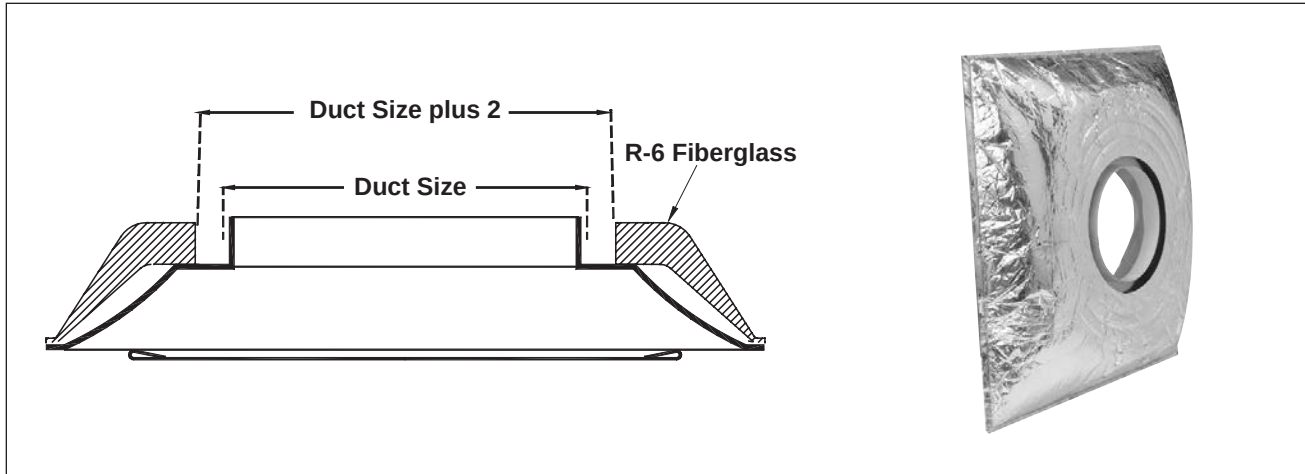
Patent No.: US 10,871,304 B2

Frame Type NT
(Narrow Tee Lay-In) Full Face



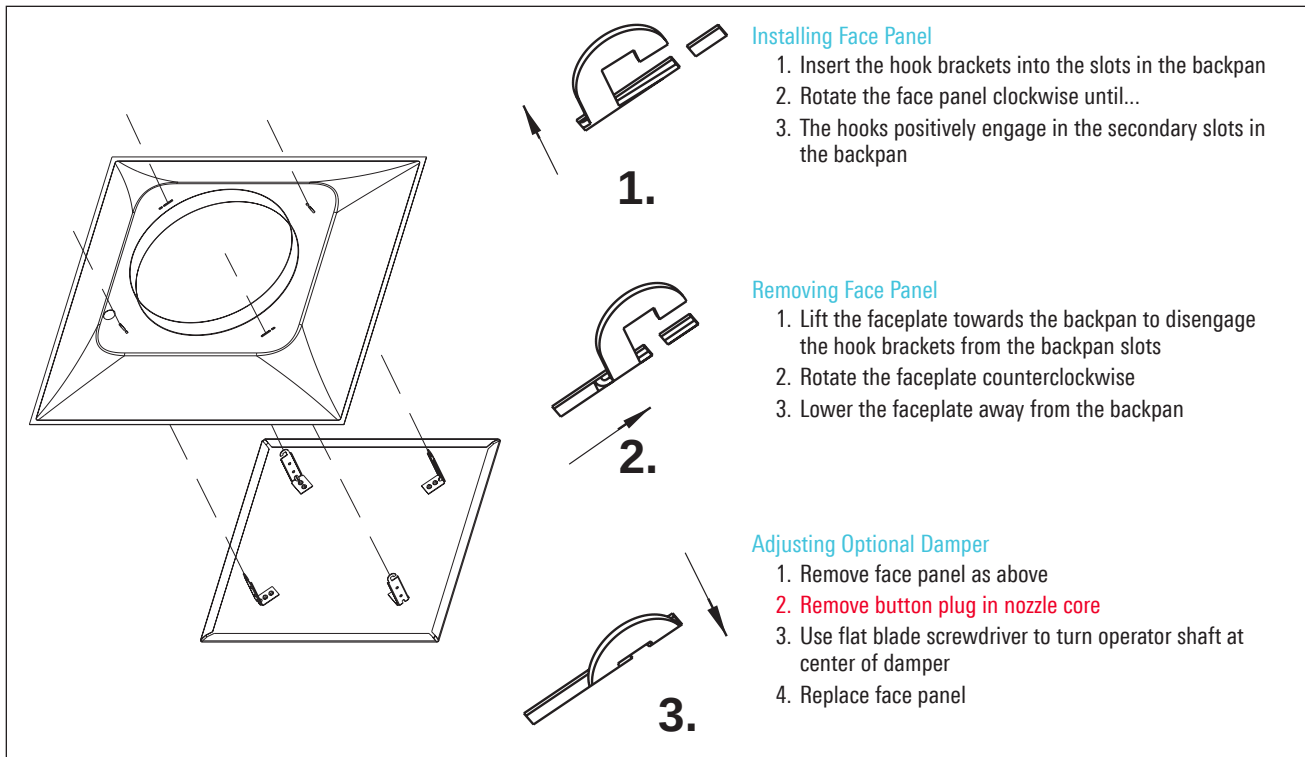
Ceiling Module A	Nominal Round Duct Size B	C	D
24 x 24	6, 8	1/4	3/4

OPTIONAL MOLDED INSULATION BLANKET



Insulation is R-6 where blanket has the most depth. One inch clearance on each side of neck is left for insulated duct connection. 24 x 24" full face models only.

REMOVING AND REPLACING FACE PANEL - ADJUSTING OPTIONAL DAMPER



PERFORMANCE DATA

TJD PERFORMANCE / 24 X 24

Nominal Duct Size	Duct Velocity, fpm	100	120	140	160	180	210	240
6"	Velocity Pressure, in wc	0.001	0.001	0.001	0.002	0.002	0.003	0.004
	Airflow, cfm	20	24	27	31	35	41	47
	Total Pressure, in wc	0.069	0.099	0.125	0.166	0.211	0.289	0.38
	Throw, ft	6-7-9	6-7-10	6-8-10	7-8-11	7-9-12	8-10-13	9-10-13
	NC	-	-	-	-	19	25	30

Nominal Duct Size	Duct Velocity, fpm	57	72	85	100	115	130	144
8"	Velocity Pressure, in wc	-	-	-	0.001	0.001	0.001	0.001
	Airflow, cfm	20	25	30	35	40	45	50
	Total Pressure, in wc	0.068	0.107	0.153	0.210	0.274	0.346	0.427
	Throw, ft	6-7-9	6-7-10	7-8-11	7-9-12	8-9-12	8-10-13	9-10-14
	NC	-	-	-	19	24	29	33

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible ductinlet, may vary in the field. See the Engineering Guidelines section of this catalog for additional information.
- Throw values are given for terminal velocities of 50, 35 and 20 fpm and for isothermal conditions. See the section, Engineering Guidelines for catalog throw data information.
- NC values based on Octave Band 2 to 7 sound power levels minus a room absorption of 10 dB
- Dash (-) in space denotes an NC value less than 15
- Each NC value represents the noise criteria curve which will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10-12 watts.
- All pressures are given in inches of water
- To obtain static pressure, subtract the velocity pressure from the total pressure

Adjustable Ceiling Diffuser

diffusers

250 / 250-AA

- Titus Models 250 and 250-AA present a clean, functional, strong appearance, along with high performance
- Designed for ceiling, high side wall, and low side wall installations
- Excellent for variable air volume applications
- For Border Type 1, the one-way discharge pattern is available in duct sizes 6" x 4" through 36" x 36". The two-, three-, and four-way patterns are available in duct sizes 6" x 6" through 36" x 36".
- Louvers are individually adjustable from the face of the diffuser. The louvers regulate the air volume as well as the angle of discharge.
- Optional Model AG-15 opposed blade damper has a screwdriver adjustment accessible through the face of the diffuser. Mounts on the neck of the diffuser.
- Optional Model AG-20 multi-louver damper has an adjusting lever at the face of the diffuser. Mounted on the diffuser at the factory. Steel, finished to match the diffuser.
- Diffuser material is steel in Model 250, aluminum with miscellaneous steel components in Model 250-AA.



250 / 250-AA

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MODELS:

250 / Steel
 250-AA / Aluminum

FINISHES:

Standard Finish - #26 White
 Optional Finish - #01 Aluminum

OVERVIEW

Adjustable 1-, 2-, 3-, or 4-way Discharge Pattern

Titus Models 250 and 250-AA present a clean, functional, strong appearance, along with high performance. They are designed for ceiling, high side wall, and low side wall installations and are available in 1, 2, 3 or 4-way configurations.



See website for Specifications

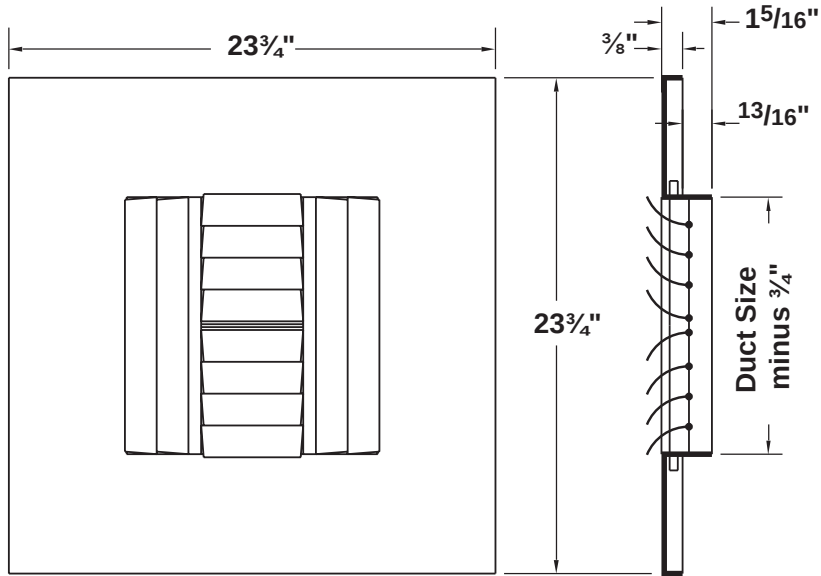
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250 / 250-AA

DIMENSIONS

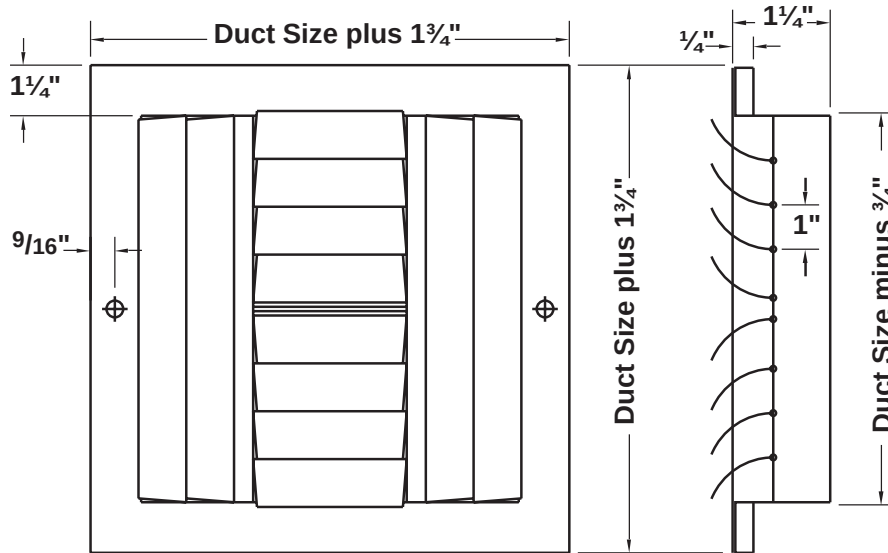
250 / 250-AA UNIT DIMENSIONS

Border Type 3 (Lay-In)
Panel Mounted (note)



Note: Maximum duct size is 36 x 36 inches for Border Type 1.

Border Type 1
(Surface Mount)
(note)

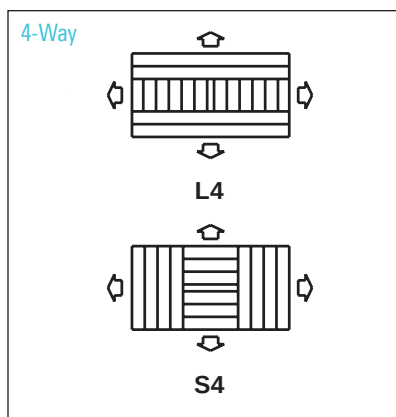
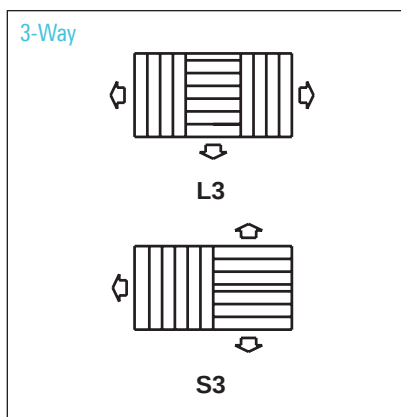
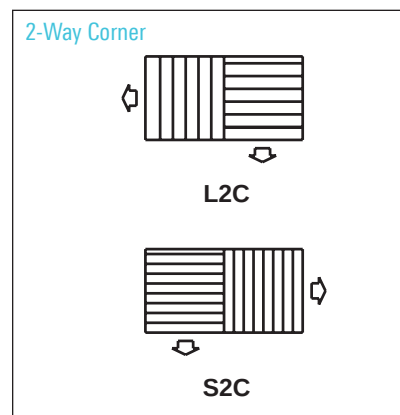
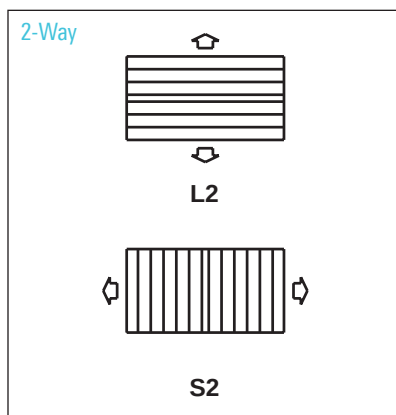
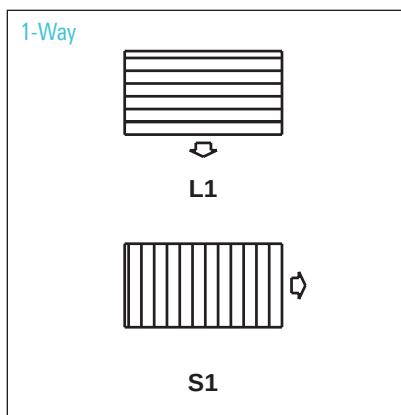


Border Type 3 - Standard
Duct Sizes

- 6 x 6
- 8 x 8
- 9 x 9
- 10 x 10
- 12 x 12
- 14 x 14
- 15 x 15
- 16 x 16
- 18 x 18
- 21 x 21

Optional Discharge Patterns

diffusers



Note: For square diffusers (height = width), specify L1, L2, L2C, L3, L4, S1, S2, S2C, S3 or S4

Patterns are shown looking at the diffuser face

- Models 250 and 250-AA diffusers can be ordered in any of the discharge patterns shown in the diagrams at the right
- Because the louvers are individually adjustable, each direction of discharge can have its own volume and angle of discharge, all from one diffuser
- The preceding performance tables show values for the various discharge patterns

250, 250-AA / ADJUSTABLE, 1-, 2-, 3- OR 4-WAY DISCHARGE PATTERN

Core Area Sq. Feet	Nominal Duct Size Inches	Core Velocity Velocity Pressure Total Pressure	NC-20					NC-30				
			100	200	300	400	500	600	700	800	900	1000
			0.001	0.002	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062
0.12	6 x 4	cfm	10	25	35	50	60	70	85	95	110	120
		NC				14	20	24	28	32	35	38
		Throw, Feet	2-Way			5-8-13	7-9-12	8-12-19	9-13-18	10-15-21	12-17-24	13-19-31
0.16	8 x 4	1-Way				7-10-16	8-11-15	10-13-19	11-16-23	12-18-26	14-21-34	15-23-37
		cfm	15	30	50	65	80	95	110	130	145	160
		NC				15	21	26	30	33	36	39
0.20	10 x 4 6 x 6	Throw, Feet	4-Way		7-6-9	5-7-12	6-9-14	7-11-17	8-12-20	9-14-22	10-15-21	12-17-24
		3-Way			4-6-10	5-8-13	6-9-15	8-12-19	9-14-22	10-14-20	11-16-23	12-18-26
		2-Way			5-7-11	6-9-14	7-11-17	9-13-21	10-14-20	11-16-23	12-18-26	14-21-33
0.26	12 x 4 8 x 6	1-Way			5-8-13	7-11-17	9-13-21	10-15-21	12-17-25	13-20-32	15-22-36	17-25-40
		cfm	20	40	60	80	100	120	140	160	180	200
		NC				16	22	27	31	34	37	40
0.30	14 x 4	Throw, Feet	4-Way		4-6-9	5-8-13	6-9-15	8-11-18	9-13-21	10-14-20	11-16-23	12-17-25
		3-Way			4-6-10	6-9-14	7-10-16	8-12-20	10-13-19	11-15-22	12-17-25	13-20-32
		2-Way			5-7-11	6-9-15	8-11-18	9-14-22	10-15-21	12-17-25	13-20-32	15-22-35
0.35	16 x 4 10 x 8	1-Way			6-9-14	8-11-18	9-14-22	11-15-22	12-18-26	14-21-34	16-24-38	18-26-42
		cfm	25	50	80	105	130	155	180	210	235	260
		NC				10	17	23	28	32	35	38
0.40	18 x 4 12 x 6	Throw, Feet	4-Way	3-4-7	4-5-6	6-9-14	7-10-16	8-12-20	10-13-19	11-15-22	12-17-25	13-20-32
		3-Way		3-4-7	5-6-7	6-9-15	8-11-18	9-13-21	10-14-20	11-16-23	13-19-31	14-21-34
		2-Way		3-5-8	5-6-8	7-9-12	8-12-20	10-14-20	11-16-23	13-19-31	14-21-34	16-24-38
0.45	20 x 4 14 x 6 10 x 8	1-Way		4-5-6	6-8-11	8-11-15	10-14-20	12-17-24	13-20-32	15-23-37	17-26-41	19-28-45
		cfm	30	60	90	120	150	180	210	240	270	300
		NC				10	18	23	28	32	36	39
0.55	24 x 4 16 x 6 12 x 8	Throw, Feet	4-Way	3-4-7	4-5-6	6-8-10	7-10-13	9-12-17	10-14-20	11-16-23	12-18-26	14-21-33
		3-Way		3-5-8	5-6-7	6-9-15	8-11-15	9-13-18	10-15-21	12-17-25	13-20-32	15-22-35
		2-Way		3-5-8	5-7-9	7-10-13	9-12-17	10-14-20	12-17-24	13-20-32	14-21-33	16-24-38
0.62	18 x 6 10 x 10	1-Way		4-5-6	6-8-11	8-11-16	10-15-21	12-17-25	14-21-34	16-24-38	18-27-43	20-29-47
		cfm	35	70	105	140	175	210	245	280	315	350
		NC				11	18	24	29	33	37	42
0.70	24 x 6 18 x 8 12 x 10	Throw, Feet	4-Way	3-4-7	5-7-11	6-9-15	8-11-18	9-13-21	10-15-21	12-17-24	13-19-31	14-21-34
		3-Way		3-5-8	5-7-12	6-9-15	8-12-19	10-13-19	11-15-22	12-17-24	13-20-32	15-23-37
		2-Way		4-6-9	5-8-13	7-10-13	9-13-21	10-15-21	12-17-25	14-21-33	15-23-37	17-26-41
0.80	24 x 8 18 x 10 12 x 12	1-Way		4-5-6	7-9-12	9-12-17	10-15-21	12-18-26	15-22-35	17-25-40	18-27-44	20-31-49
		cfm	40	80	120	160	200	240	280	320	360	400
		NC				12	19	25	30	34	37	40
0.90	30 x 4 22 x 6 16 x 10	Throw, Feet	4-Way	3-5-8	5-6-7	6-8-11	8-11-15	9-13-18	11-15-22	12-17-25	13-20-32	15-22-35
		3-Way		3-5-8	5-6-8	7-9-12	8-11-16	10-14-20	11-16-20	13-19-31	15-22-35	16-24-38
		2-Way		4-6-9	6-8-10	8-10-14	9-13-18	11-15-22	12-18-26	14-21-34	16-24-38	18-26-42
1.00	30 x 6 22 x 8 16 x 12	1-Way		5-6-7	7-9-12	9-13-18	11-15-22	13-19-31	15-22-36	17-26-41	19-29-46	21-32-51
		cfm	45	90	135	180	225	270	315	360	405	450
		NC				12	19	26	30	34	38	41
1.10	36 x 4 26 x 6 18 x 10	Throw, Feet	4-Way	3-5-8	5-6-8	6-9-15	8-12-19	10-13-19	11-15-22	12-18-26	14-21-33	15-23-37
		3-Way		3-5-8	5-7-9	7-11-17	9-13-21	10-14-20	12-17-24	13-20-32	15-22-36	16-24-39
		2-Way		4-6-9	6-8-10	8-12-19	10-13-19	11-16-23	13-19-31	15-22-35	16-24-39	18-27-44
1.20	36 x 6 26 x 8 18 x 12	1-Way		5-7-11	7-11-17	9-14-22	11-16-23	13-20-32	15-23-37	18-26-42	20-29-47	22-33-53
		cfm	55	110	165	220	275	330	385	440	495	550
		NC				13	20	26	31	35	39	44
1.30	42 x 4 30 x 6 22 x 10	Throw, Feet	4-Way	2-3-4	3-5-8	5-7-12	7-10-16	8-12-20	10-14-20	12-17-24	13-19-31	15-22-35
		3-Way		2-3-5	4-6-9	5-8-13	8-11-18	9-14-22	11-15-22	12-18-26	14-21-33	16-24-38
		2-Way		2-3-5	4-6-10	6-9-15	8-12-20	10-14-20	12-17-25	14-21-33	15-23-37	17-26-41
1.40	42 x 6 30 x 8 22 x 12	1-Way		2-4-6	5-7-12	8-11-18	10-13-19	12-17-25	14-21-34	16-24-39	18-27-44	21-31-50
		cfm	60	125	185	250	310	370	435	495	560	620
		NC				13	21	27	32	36	39	45
1.50	48 x 4 36 x 6 24 x 10	Throw, Feet	4-Way	2-3-4	4-6-9	5-8-13	7-11-17	9-13-21	10-15-21	12-17-24	13-20-32	15-22-36
		3-Way		2-3-5	4-6-9	6-9-14	8-11-18	9-14-22	11-16-23	13-19-31	14-21-34	16-24-39
		2-Way		2-3-5	4-6-10	6-9-15	8-12-20	10-16-25	12-17-25	14-21-34	16-24-38	18-27-43
1.60	48 x 6 36 x 8 24 x 12	1-Way		2-3-6	5-7-12	8-11-18	10-14-20	12-19-30	15-22-35	17-26-41	19-29-46	24-36-57

NC-40

250, 250-AA / ADJUSTABLE, 1-, 2-, 3- OR 4-WAY DISCHARGE PATTERN

				NC-20			NC-30			NC-40				
Core Area Sq. Feet	Nominal Duct Size Inches	Core Velocity		100	200	300	400	500	600	700	800	900	1000	
		Velocity Pressure		0.001	0.002	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	
		Total Pressure		0.003	0.014	0.031	0.056	0.090	0.131	0.175	0.225	0.290	0.355	
0.70	30 x 4 20 x 6 14 x 8 12 x 10		cfm	70	140	210	280	350	420	490	560	630	700	
			NC			14	21	27	32	36	40	42	45	
		Throw, Feet	4-Way	2-3-5	4-6-9	5-8-13	7-11-17	9-13-21	10-15-21	12-17-25	14-21-33	15-23-37	17-26-41	17-26-41
			3-Way	2-3-5	4-6-9	6-9-14	8-12-19	10-13-19	11-16-23	13-20-32	15-22-36	17-25-40	18-27-44	18-27-44
			2-Way	2-4-6	5-7-11	7-10-16	9-13-21	10-15-21	12-18-26	15-22-35	17-25-40	18-27-44	20-31-49	20-31-49
			1-Way	3-4-7	5-8-13	8-12-19	10-15-21	12-19-30	15-22-36	18-26-42	20-29-47	22-33-53	25-37-59	25-37-59
0.81	36 x 4 24 x 6 16 x 8 14 x 10		cfm	80	160	245	325	405	485	565	650	730	810	
			NC			15	22	28	33	37	40	43	46	
		Throw, Feet	4-Way	2-3-5	4-6-9	6-9-14	8-11-18	9-14-22	11-15-22	12-18-26	14-21-34	16-24-38	18-27-43	18-27-43
			3-Way	2-3-5	4-6-10	6-9-15	8-12-20	11-15-22	12-17-24	14-21-33	15-23-37	17-26-41	19-29-46	19-29-46
			2-Way	2-4-6	5-7-11	7-10-16	9-14-22	11-15-22	13-19-31	15-22-36	17-26-41	19-29-46	21-32-51	21-32-51
			1-Way	3-4-7	5-8-13	8-12-20	11-15-22	13-20-32	16-24-38	18-27-44	20-31-49	23-34-55	26-39-62	26-39-62
0.87	18 x 8 12 x 12		cfm	85	175	260	350	435	520	610	695	785	870	
			NC			15	22	28	33	37	40	43	46	
		Throw, Feet	4-Way	2-3-5	4-6-9	6-9-14	8-12-19	10-13-19	11-16-23	13-19-31	15-22-35	16-24-39	18-27-43	18-27-43
			3-Way	2-3-5	4-6-10	6-9-15	8-12-20	10-15-21	12-17-25	14-21-33	16-24-38	18-26-42	20-29-47	20-29-47
			2-Way	2-4-6	5-7-11	7-11-17	9-14-22	11-16-23	13-20-32	15-23-37	18-26-42	20-29-47	22-32-52	22-32-52
			1-Way	3-4-7	6-9-14	8-12-20	11-15-22	13-20-32	16-24-39	19-28-45	21-31-50	23-35-56	26-39-63	26-39-63
1.02	30 x 6 20 x 8 16 x 10 14 x 12		cfm	100	205	305	410	510	610	715	815	920	1020	
			NC			16	23	29	34	38	41	44	47	
		Throw, Feet	4-Way	2-3-5	4-6-10	6-9-15	8-12-19	10-14-20	12-17-24	13-20-32	15-22-36	17-26-41	19-28-45	19-28-45
			3-Way	2-4-6	4-6-10	7-10-16	9-13-21	10-16-25	12-18-26	15-22-35	16-24-39	18-27-44	20-30-48	20-30-48
			2-Way	2-4-6	5-7-12	7-11-17	10-13-19	12-17-24	14-21-33	16-24-39	18-27-43	20-31-49	23-34-55	23-34-55
			1-Way	3-4-7	6-9-14	9-13-21	11-17-27	14-21-34	17-25-40	19-29-46	22-32-52	25-37-59	27-41-65	27-41-65
1.15	24 x 8 18 x 10 16 x 12		cfm	115	230	345	460	575	690	805	920	1040	1150	
			NC			16	24	30	34	38	42	45	48	
		Throw, Feet	4-Way	2-3-5	4-6-10	6-9-15	8-12-20	10-15-21	12-17-25	14-21-33	16-24-38	18-26-42	19-29-46	19-29-46
			3-Way	2-4-6	5-7-11	7-10-16	9-13-21	11-15-22	13-19-31	15-22-36	17-26-41	19-28-45	21-31-50	21-31-50
			2-Way	2-4-6	5-7-12	8-11-18	10-13-19	12-17-25	14-21-34	17-25-40	19-28-45	21-31-50	23-35-56	23-35-56
			1-Way	3-5-8	6-9-15	9-14-22	12-17-24	15-22-35	17-26-41	20-29-47	22-34-54	25-37-60	28-42-68	28-42-68
1.25	36 x 6 20 x 10 14 x 14		cfm	125	250	375	500	625	750	875	1000	1120	1250	
			NC			16	24	30	35	39	42	45	48	
		Throw, Feet	4-Way	2-3-5	4-5-6	6-8-11	8-12-20	10-15-21	12-17-25	14-21-34	16-24-38	18-27-43	20-29-47	20-29-47
			3-Way	2-4-6	5-6-7	7-9-12	9-14-22	11-16-23	13-20-32	15-23-37	17-26-41	19-29-46	21-32-51	21-32-51
			2-Way	2-4-6	5-6-8	8-10-14	10-14-20	12-18-26	15-22-35	17-26-41	19-29-46	21-32-51	24-36-57	24-36-57
			1-Way	3-5-8	6-8-11	9-13-18	12-17-25	15-22-35	18-26-42	20-30-48	23-34-55	26-39-62	29-43-69	29-43-69
1.35	16 x 14 18 x 12		cfm	135	270	405	540	675	810	945	1080	1220	1350	
			NC			17	24	30	35	39	42	45	48	
		Throw, Feet	4-Way	2-4-6	4-5-6	7-10-16	9-13-21	10-15-21	12-18-26	15-22-35	16-24-39	18-27-43	20-30-48	20-30-48
			3-Way	2-4-6	5-6-7	7-11-17	9-14-22	11-16-23	13-20-32	15-23-37	18-26-42	20-29-47	22-32-52	22-32-52
			2-Way	3-4-7	5-7-9	8-12-19	10-15-21	12-18-26	15-22-36	18-26-42	20-29-47	22-33-53	25-37-59	25-37-59
			1-Way	3-5-8	6-8-11	10-13-19	12-17-25	15-22-36	18-27-43	21-31-50	23-35-56	26-39-63	29-44-70	29-44-70
1.53	30 x 8 24 x 10 20 x 12 18 x 14 16 x 16		cfm	155	305	460	610	765	920	1070	1220	1380	1530	
			NC			17	25	31	36	40	43	46	49	
		Throw, Feet	4-Way	2-4-6	5-6-7	7-10-16	9-13-21	11-15-22	13-19-31	15-22-36	17-25-40	19-28-45	21-31-50	21-31-50
			3-Way	2-4-6	5-6-8	7-11-17	10-13-19	12-17-24	14-21-33	16-24-39	18-27-44	20-31-49	22-34-54	22-34-54
			2-Way	3-4-7	5-7-9	8-12-19	10-15-21	13-20-32	15-23-37	18-27-43	20-30-48	23-34-55	25-37-60	25-37-60
			1-Way	3-5-8	7-9-12	10-13-19	12-18-26	15-23-37	18-27-44	21-32-51	24-36-58	27-41-65	30-46-73	30-46-73
1.82	36 x 8 30 x 10 24 x 12 20 x 14 18 x 16		cfm	182	365	545	730	910	1090	1270	1460	1640	1820	
			NC			18	26	32	36	40	44	47	50	
		Throw, Feet	4-Way	2-4-6	5-6-7	7-11-17	9-14-22	11-16-23	13-20-32	15-23-37	18-26-42	20-29-47	22-33-53	22-33-53
			3-Way	2-4-6	5-6-8	8-11-18	10-14-20	12-17-25	15-22-35	17-25-40	19-28-45	21-32-51	24-36-57	24-36-57
			2-Way	3-4-7	6-8-10	8-12-20	11-16-23	14-21-33	16-24-39	19-28-45	21-31-50	24-36-57	26-39-63	26-39-63
			1-Way	3-5-8	7-9-12	10-14-20	13-20-32	16-24-39	19-29-46	22-34-54	25-37-60	29-42-68	32-48-76	32-48-76
2.10	24 x 14 20 x 16 18 x 18		cfm	210	420	630	840	1050	1260	1470	1680	1890	2100	
			NC			19	26	32	37	41	44	47	50	
		Throw, Feet	4-Way	2-4-6	5-6-8	8-11-18	10-13-19	12-17-24	14-21-34	16-24-39	18-27-44	20-31-49	23-34-55	23-34-55
			3-Way	3-4-7	5-7-9	8-12-19	10-15-21	12-18-26	15-22-36	18-26-42	20-29-47	22-33-53	25-37-59	25-37-59
			2-Way	3-4-7	6-8-10	9-13-21	12-17-24	14-21-34	17-25-40	19-29-46	22-32-52	25-37-59	28-41-66	28-41-66
			1-Way	4-6-9	7-10-13	10-15-21	14-21-33	17-25-40	20-30-48	23-34-55	26-39-62	29-44-70	33-50-80	33-50-80

250, 250-AA / ADJUSTABLE, 1-, 2-, 3- OR 4-WAY DISCHARGE PATTERN

				NC-20				NC-30		NC-40			
Core Area Sq. Feet	Nominal Duct Size Inches	Core Velocity		100	200	300	400	500	600	700	800	900	1000
		Velocity Pressure		0.001	0.002	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062
		Total Pressure		0.003	0.014	0.031	0.056	0.090	0.131	0.175	0.225	0.290	0.355
2.35	36 x 10 30 x 12 24 x 16 20 x 18	cfm		235	470	705	940	1180	1410	1640	1880	2120	2350
		NC				19	27	33	37	41	45	48	51
		Throw, Feet	4-Way	2-4-6	5-6-8	8-11-18	10-14-20	12-17-25	15-22-35	17-25-40	19-28-45	21-31-50	24-36-57
			3-Way	3-4-7	5-7-9	8-12-20	10-15-21	13-19-31	15-23-37	18-27-43	20-31-49	23-34-55	25-37-60
			2-Way	3-5-8	6-8-11	9-14-22	12-17-24	15-22-35	18-26-42	20-30-48	22-34-54	25-38-61	28-42-68
			1-Way	4-6-9	7-10-13	11-15-22	14-21-33	18-26-42	20-31-49	24-36-57	27-40-64	30-45-72	34-51-82
2.68	36 x 12 30 x 14 24 x 18 20 x 20	cfm		270	535	805	1070	1340	1610	1880	2140	2410	2680
		NC				20	27	33	38	42	45	48	51
		Throw, Feet	4-Way	3-4-7	5-7-9	8-12-19	10-15-21	12-18-26	15-22-36	18-26-42	20-29-47	22-32-52	25-37-59
			3-Way	3-4-7	6-8-10	8-12-20	11-15-22	14-21-33	16-24-39	19-28-45	21-31-50	24-36-57	26-39-63
			2-Way	3-5-8	6-8-11	9-14-22	12-17-25	15-22-36	20-30-48	20-31-49	23-35-56	26-39-62	29-44-70
			1-Way	4-6-9	8-10-14	11-16-23	15-22-35	18-27-43	21-32-51	25-37-59	28-41-66	31-47-75	35-53-85
3.15	36 x 14 30 x 16 24 x 20	cfm		315	630	945	1260	1580	1890	2200	2520	2840	3150
		NC			10	20	28	34	39	43	46	49	52
		Throw, Feet	4-Way	3-4-7	5-7-9	8-12-19	11-15-22	13-19-31	15-23-37	18-27-43	20-31-49	23-34-55	26-39-62
			3-Way	3-4-7	6-8-10	9-13-21	11-16-23	14-21-34	17-25-40	19-29-46	22-32-52	25-37-59	28-41-66
			2-Way	3-5-8	7-9-12	10-14-20	12-18-26	16-24-38	19-28-45	21-32-51	24-36-58	27-41-65	30-46-73
			1-Way	4-5-6	8-11-15	12-17-24	15-22-36	19-28-45	22-33-53	26-39-62	29-43-69	33-49-79	37-56-89
3.65	36 x 16 30 x 18 24 x 24	cfm		365	730	1100	1460	1820	2190	2560	2920	3280	3650
		NC			11	21	29	35	39	43	47	50	53
		Throw, Feet	4-Way	3-4-7	6-9-14	8-12-20	11-16-23	14-21-33	16-24-39	19-28-45	21-31-50	24-36-57	27-40-64
			3-Way	3-5-8	6-9-15	9-14-22	12-17-24	15-22-35	18-26-42	20-30-48	23-34-55	25-38-61	28-42-68
			2-Way	3-5-8	7-9-12	10-14-20	13-20-32	16-24-39	19-29-46	22-34-54	25-37-60	28-42-68	32-48-76
			1-Way	4-5-6	8-11-16	12-17-25	15-23-37	19-29-46	23-34-55	27-40-64	30-45-72	34-51-82	38-57-92
4.05	36 x 18 30 x 20	cfm		405	810	1220	1620	2020	2430	2830	3240	3640	4050
		NC			11	22	29	35	40	44	47	50	53
		Throw, Feet	4-Way	3-4-7	6-9-14	9-13-21	11-16-23	14-21-34	17-25-40	19-29-46	22-32-52	25-37-59	28-41-66
			3-Way	3-5-8	6-9-15	9-14-22	12-17-25	15-22-36	18-27-43	20-31-49	23-35-56	26-39-63	29-44-70
			2-Way	4-6-9	7-10-13	10-15-21	13-20-32	17-25-40	20-29-47	23-34-55	26-39-62	29-44-70	33-49-79
			1-Way	4-5-6	8-11-16	12-18-26	16-24-39	20-29-47	24-36-57	28-41-66	31-46-74	35-52-84	39-59-94
4.72	36 x 20 30 x 24	cfm		470	945	1420	1890	2360	2830	3300	3780	4250	4720
		NC			12	22	30	36	40	44	48	51	54
		Throw, Feet	4-Way	3-5-8	6-9-15	9-14-22	12-17-24	15-22-35	18-26-42	20-30-48	22-34-54	25-38-61	28-42-68
			3-Way	3-5-8	7-9-12	10-13-19	12-18-26	16-24-38	19-28-45	22-32-52	24-36-58	28-41-66	31-46-74
			2-Way	4-6-9	7-10-13	11-15-22	14-21-34	18-26-42	20-31-49	24-36-57	27-40-64	30-46-73	34-51-82
			1-Way	5-6-7	9-12-17	13-19-31	17-25-40	20-31-49	25-37-59	28-42-68	32-49-78	37-55-88	41-61-98
5.82	36 x 24 30 x 30	cfm		580	1160	1750	2330	2910	3490	4070	4660	5240	5820
		NC			13	23	31	37	41	45	49	52	55
		Throw, Feet	4-Way	3-5-8	6-9-15	10-13-19	12-18-26	15-23-37	18-27-44	21-32-51	24-36-57	27-40-64	30-45-72
			3-Way	4-6-9	7-9-12	10-15-21	13-20-32	17-25-40	20-29-47	23-34-55	25-38-61	29-44-70	32-49-78
			2-Way	4-6-9	8-10-14	11-16-23	15-22-35	18-27-44	22-32-52	25-37-60	28-42-68	32-48-77	36-54-87
			1-Way	5-6-7	9-13-18	13-20-32	18-26-42	22-32-52	26-39-62	30-45-72	34-51-82	39-58-93	44-66-105
7.17	36 x 30	cfm		715	1430	2150	2870	3580	4300	5020	5740	6450	7170
		NC			14	24	31	37	42	46	50	53	56
		Throw, Feet	4-Way	3-5-8	7-9-12	10-14-20	13-20-32	16-24-39	19-29-46	22-34-54	25-37-60	28-42-68	32-48-76
			3-Way	4-6-9	7-10-13	11-15-22	14-21-34	18-26-42	21-31-50	24-36-57	27-41-65	30-46-73	34-51-82
			2-Way	4-5-6	8-11-16	12-17-25	15-23-37	19-29-46	23-34-55	27-40-64	30-45-72	34-51-82	38-57-92
			1-Way	5-6-8	10-13-19	14-21-34	18-27-44	23-34-55	28-41-66	32-48-77	36-54-87	41-61-98	46-69-110
8.63	36 x 36	cfm		865	1730	2590	3450	4320	5180	6040	6900	7700	8630
		NC			14	25	32	38	43	47	51	53	56
		Throw, Feet	4-Way	4-6-9	7-10-13	10-15-21	14-21-33	17-26-41	20-31-49	23-35-56	27-40-64	30-44-71	33-50-80
			3-Way	4-5-6	8-10-14	11-16-23	15-22-35	18-27-44	22-35-52	25-37-60	27-42-68	32-48-77	36-54-87
			2-Way	4-5-6	8-11-16	12-18-26	16-24-39	20-30-48	24-36-58	28-42-67	32-48-76	36-54-86	40-60-96
			1-Way	5-7-9	10-14-20	15-22-36	19-29-46	24-36-58	29-44-70	33-50-80	38-57-91	43-64-103	48-72-111

NC-50

- All pressures are in inches of water
- Throw values given are for terminal velocities of 150, 100 and 50 fpm along a surface. The throw may be increased or decreased as much as 20% by changing the louver setting.
- NC values based on a room absorption of 10 dB, re 10⁻¹² watts
- Blank areas denote NC values less than 10 and cfm values less than 50
- Black dividing lines denote ranges of NC values
- Performance data is based on an approximate 1/8" opening between the border and the adjacent louver, with progressively wider spacings between louvers further away from the border. This setting discharges air parallel to the diffusers face (horizontal discharge, if installed in a ceiling).
- See the section, Engineering Guidelines for additional throw information
- If all the louvers are adjusted to the full open position, the listed NC values will be reduced by 7, the total pressure will be 0.30 times those shown in the tables and the throw will be a vertical free jet
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the section, Engineering Guidelines additional information.

TBF-AA (TURBOFUSER)

- Titus TurboFuser series TBF-AA diffuser provides precise control of high capacity jets
- The TurboFuser is a versatile diffuser for demanding spot cooling and heating HVAC applications, such as industrial or large open areas
- An aesthetic alternative to conventional air distribution providing a contemporary look for sports complexes, atriums and lobbies
- Material is heavy-duty aluminum
- Deep deflection rings in each nozzle for maintaining directional control at high velocities up to 30 degrees in any direction
- Nozzle sizes are 6", 8", 10", 12" and 14", with up to four nozzles per panel
- Each ring of the nozzle assembly is 1-piece spun construction



TBF-AA



duct mounted

open ceiling

open areas



See website for Specifications

MODELS:

TBF-AA / Aluminum

TBF-AA / No Panel

FINISH:

Standard Finish - #26 White

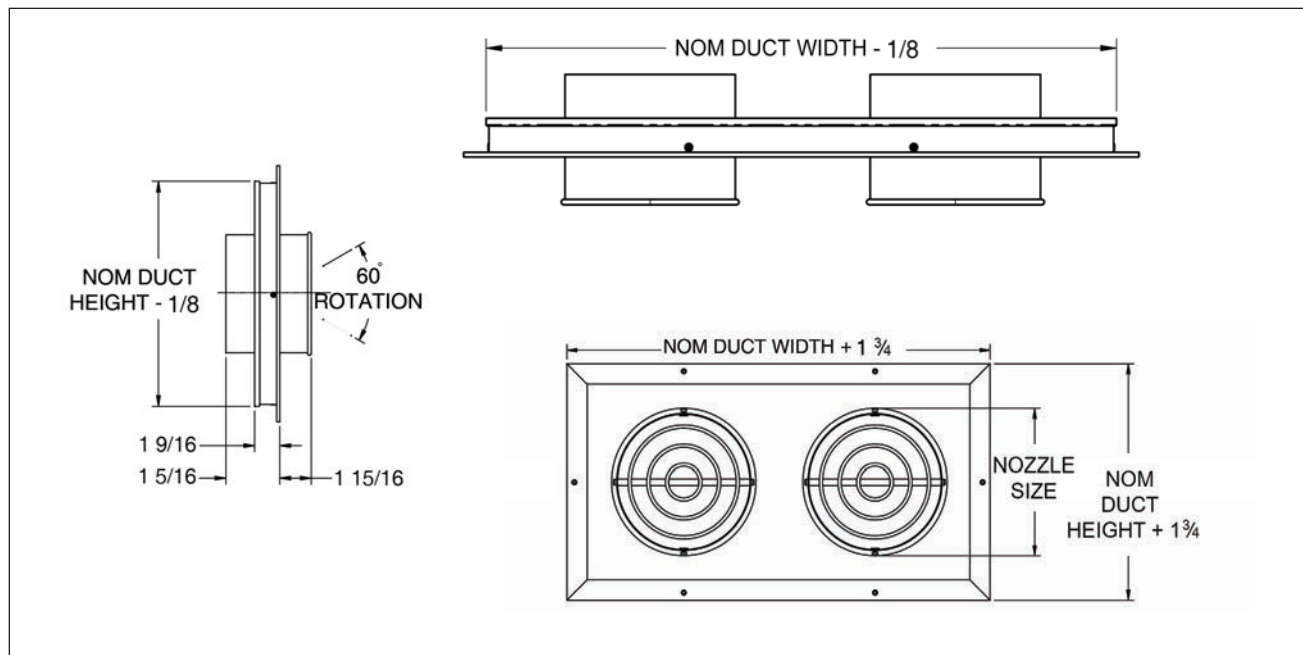
OVERVIEW

Panel-Mounted Nozzles

TurboFuser series TBF and TBF-AA diffusers provide precise control of high capacity jets. This is a versatile diffuser for demanding spot cooling and heating applications, such as industrial or large open areas. It also offers an aesthetic alternative to conventional air distributing providing a contemporary look for sports complexes, atriums and lobbies.

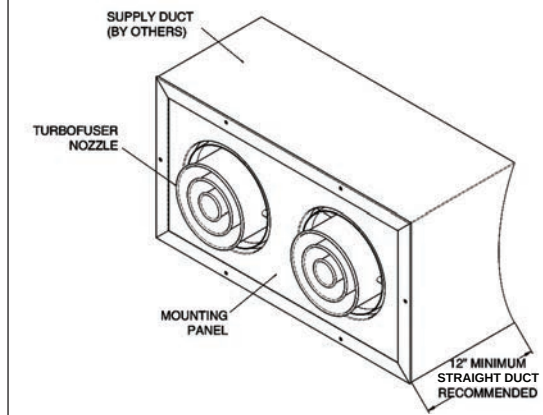
DIMENSIONS

TBF-AA UNIT DIMENSIONS



Nozzle Size (inches)	NOM Duct Height	Width by Number of Nozzles			
		1	2	3	4
6	10	10	19	28	37
8	12	12	23	34	45
10	14	14	27	40	53
12	16	16	31	46	61
14	18	18	35	52	69

Typical Installation



TBF-AA / PANEL-MOUNTED NOZZLES

	Duct Velocity, fpm	200	300	400	500	600	700	800
	Velocity Pressure, IN WG	0.002	0.006	0.010	0.016	0.022	0.031	0.040
Size 6 1 Nozzle	Airflow, cfm	135	203	271	339	406	474	542
	Total Pressure, IN WG	0.076	0.171	0.303	0.474	0.683	0.929	1.214
	NC (Noise Criteria)	-	13	24	32	38	44	50
	Throw, FT	12-15-20	14-17-25	17-20-29	19-23-33	21-25-36	22-27-39	24-29-43
Size 6 2 Nozzle	Airflow, cfm	259	388	518	647	777	906	1036
	Total Pressure, IN WG	0.070	0.158	0.281	0.440	0.633	0.862	1.125
	NC (Noise Criteria)	-	18	29	36	43	49	54
	Throw, FT	17-20-29	20-24-35	23-29-41	26-32-46	29-35-51	31-28-55	34-41-60
Size 6 3 Nozzle	Airflow, cfm	382	573	765	956	1147	1338	1529
	Total Pressure, IN WG	0.070	0.157	0.278	0.435	0.626	0.853	1.114
	NC (Noise Criteria)	-	20	30	39	43	51	56
	Throw, FT	21-25-35	25-30-44	29-35-51	33-40-57	36-44-63	38-47-67	42-51-74
Size 6 4 Nozzle	Airflow, cfm	506	759	1012	1264	1517	1770	2023
	Total Pressure, IN WG	0.070	0.157	0.278	0.435	0.626	0.853	1.114
	NC (Noise Criteria)	-	23	33	41	48	53	58
	Throw, FT	23-29-40	28-34-49	33-40-57	37-45-64	41-49-71	43-54-76	48-57-83
Size 8 1 Nozzle	Airflow, cfm	196	294	392	490	588	685	783
	Total Pressure, IN WG	0.056	0.127	0.226	0.353	0.508	0.691	0.903
	NC (Noise Criteria)	-	15	19	27	34	39	45
	Throw, FT	15-17-25	17-21-30	20-25-34	22-27-40	25-30-43	27-32-47	29-34-51
Size 8 2 Nozzle	Airflow, cfm	377	566	755	943	1132	1320	1509
	Total Pressure, IN WG	0.053	0.118	0.210	0.328	0.473	0.644	0.841
	NC (Noise Criteria)	-	16	25	34	40	46	50
	Throw, FT	21-24-34	24-30-42	28-34-48	31-38-55	34-42-60	37-45-66	40-48-71
Size 8 3 Nozzle	Airflow, cfm	559	838	1117	1397	1676	1955	2235
	Total Pressure, IN WG	0.052	0.116	0.206	0.322	0.464	0.631	0.824
	NC (Noise Criteria)	-	18	29	36	42	49	53
	Throw, FT	26-30-42	30-37-52	35-42-59	38-48-68	42-52-75	46-56-82	50-59-88
Size 8 4 Nozzle	Airflow, cfm	740	1110	1480	1850	2220	2590	2961
	Total Pressure, IN WG	0.052	0.116	0.207	0.323	0.465	0.633	0.827
	NC (Noise Criteria)	-	18	29	37	43	50	54
	Throw, FT	29-34-48	34-42-59	39-48-67	43-54-78	48-59-85	52-64-93	56-67-100
Size 10 1 Nozzle	Airflow, cfm	267	401	535	668	802	936	1070
	Total Pressure, IN WG	0.037	0.084	0.149	0.232	0.334	0.455	0.594
	NC (Noise Criteria)	-	-	20	28	34	41	45
	Throw, FT	16-20-29	20-25-35	24-29-41	26-32-46	29-35-50	31-38-55	33-41-59
Size 10 2 Nozzle	Airflow, cfm	518	777	1036	1295	1554	1813	2072
	Total Pressure, IN WG	0.035	0.079	0.140	0.219	0.315	0.429	0.560
	NC (Noise Criteria)	-	14	25	33	35	45	52
	Throw, FT	23-28-40	28-35-50	33-40-57	37-44-64	40-50-70	43-54-76	47-57-83
Size 10 3 Nozzle	Airflow, cfm	768	1153	1537	1921	2305	2689	3074
	Total Pressure, IN WG	0.032	0.071	0.127	0.198	0.285	0.388	0.506
	NC (Noise Criteria)	-	16	27	34	42	47	53
	Throw, FT	28-34-50	34-43-61	41-50-70	45-55-79	50-61-87	54-66-95	57-70-102
Size 10 4 Nozzle	Airflow, cfm	1019	1528	2038	2547	3057	3566	4076
	Total Pressure, IN WG	0.031	0.071	0.125	0.196	0.282	0.384	0.501
	NC (Noise Criteria)	-	18	29	37	43	48	54
	Throw, FT	32-39-56	39-49-69	46-56-80	51-62-90	56-69-98	61-75-107	65-80-116

TBF-AA - PANEL-MOUNTED NOZZLES

Size 12 1 Nozzle	Duct Velocity, fpm	200	300	400	500	600	700	800
	Velocity Pressure, IN WG	0.002	0.006	0.010	0.016	0.022	0.031	0.040
	Airflow, cfm	350	525	700	875	1050	1225	1400
	Total Pressure, IN WG	0.033	0.075	0.132	0.207	0.298	0.406	0.530
	NC (Noise Criteria)	-	-	18	27	33	39	47
Size 12 2 Nozzle	Throw, FT	19-23-33	23-28-40	27-33-47	30-36-52	33-40-58	35-43-62	38-47-67
	Airflow, cfm	681	1021	1362	1702	2042	2383	2723
	Total Pressure, IN WG	0.031	0.071	0.126	0.197	0.283	0.385	0.503
	NC (Noise Criteria)	-	16	27	35	42	47	53
	Throw, FT	26-32-46	32-40-56	37-46-66	42-51-73	46-56-81	50-61-87	53-66-94
Size 12 3 Nozzle	Airflow, cfm	1011	1517	2023	2529	3034	3540	4046
	Total Pressure, IN WG	0.031	0.070	0.124	0.193	0.278	0.379	0.495
	NC (Noise Criteria)	-	16	27	34	41	46	52
	Throw, FT	32-40-57	40-49-69	46-57-81	52-63-90	57-69-100	61-75-107	66-81-116
	Airflow, cfm	1324	2013	2684	3356	4027	4698	5369
Size 12 4 Nozzle	Total Pressure, IN WG	0.031	0.069	0.123	0.192	0.276	0.375	0.490
	NC (Noise Criteria)	-	16	27	35	43	49	53
	Throw, FT	36-45-64	45-56-78	52-64-92	59-71-102	64-78-113	69-85-122	75-92-132
	Airflow, cfm	444	666	888	1109	1331	1553	1775
	Total Pressure, IN WG	0.024	0.055	0.097	0.125	0.219	0.299	0.390
Size 14 1 Nozzle	NC (Noise Criteria)	-	-	18	27	33	39	44
	Throw, FT	21-26-37	26-32-45	29-37-53	34-41-59	37-45-65	40-49-70	43-53-75
	Airflow, cfm	866	1299	1732	2165	2597	3030	3463
	Total Pressure, IN WG	0.023	0.052	0.093	0.146	0.210	0.286	0.373
	NC (Noise Criteria)	-	12	23	30	37	43	47
Size 14 2 Nozzle	Throw, FT	30-36-51	36-45-64	41-51-74	47-58-83	51-64-91	56-69-98	60-74-106
	Airflow, cfm	1288	1932	2576	3220	3864	4508	5151
	Total Pressure, IN WG	0.023	0.052	0.092	0.144	0.207	0.281	0.368
	NC (Noise Criteria)	-	15	25	34	40	46	52
	Throw, FT	37-35-63	45-55-79	50-63-91	58-72-102	63-79-113	70-85-122	74-91-131
Size 14 3 Nozzle	Airflow, cfm	1710	2565	3420	4275	5130	5985	6840
	Total Pressure, IN WG	0.023	0.051	0.091	0.142	0.205	0.279	0.365
	NC (Noise Criteria)	-	16	26	36	41	47	53
	Throw, FT	42-51-72	51-63-89	57-72-103	66-81-116	72-89-128	79-96-138	84-103-148
	Airflow, cfm	444	666	888	1109	1331	1553	1775

- All pressures given are in inches of water
- Throw values given are for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines for additional throw information.
- The throw values listed are with ceiling effect
- To obtain static pressure, subtract the velocity pressure from the total pressure
- If the diffuser is mounted on an exposed duct, the throw values are 70% of those listed in the table and will project downward
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2nd through 7th, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 10
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the section, Engineering Guidelines for additional information.

TND-AA

- Designed to handle large air capacity requirements and provide concentrated long throws
- Round nozzles are adjustable within mounting ring to 38°
- Duct or hard surface mountable
- Well suited for installations where the conditioned space is large, and where it is impractical to bring the duct work close to the occupants
- Optional aperture volume damper accessible on face of nozzle
- Extruded aluminum / aluminum construction



TND-AA



duct mounted

open ceiling

open areas

MODEL:

TND-AA / Aluminum

FINISHES:

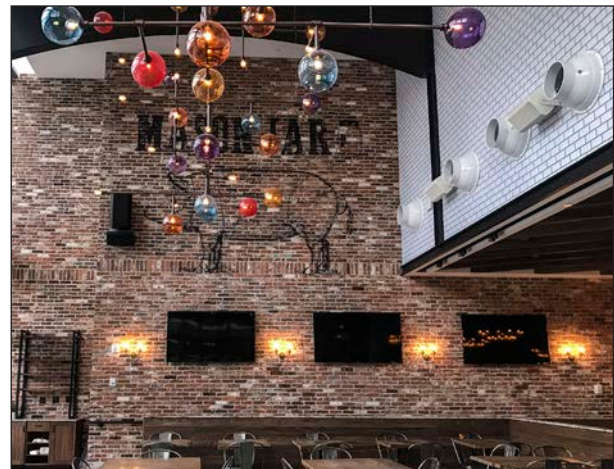
Standard Finish - #26 White

Optional Finishes - #01 Aluminum / #84Black

OVERVIEW

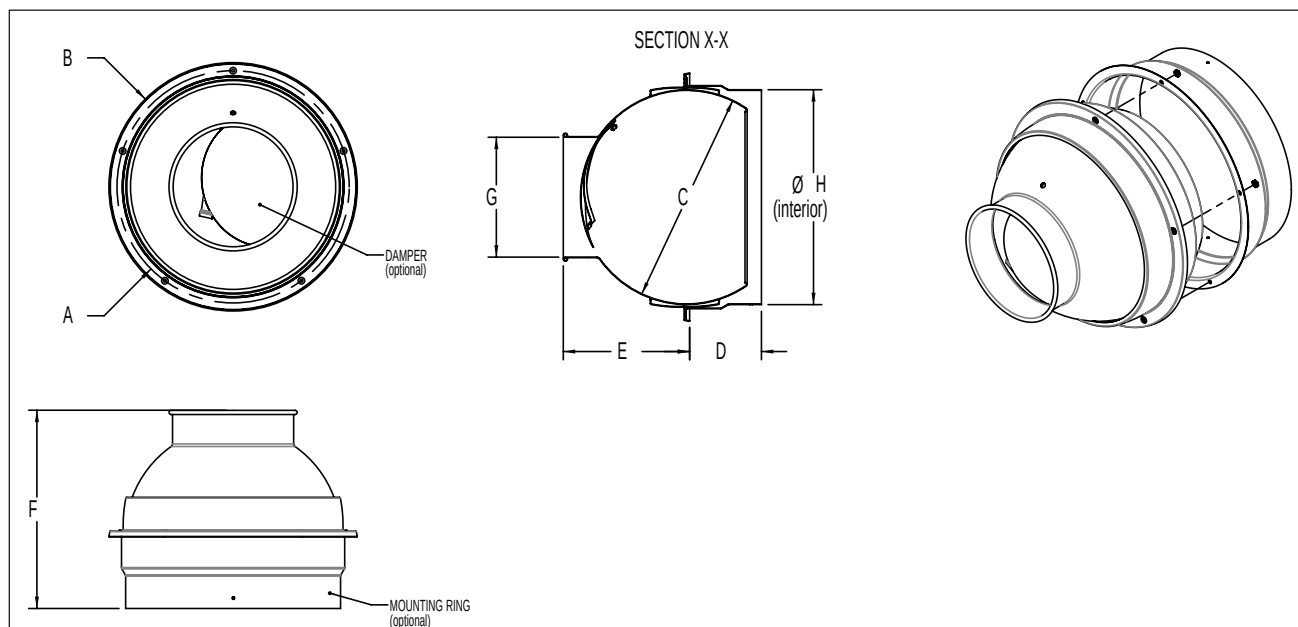
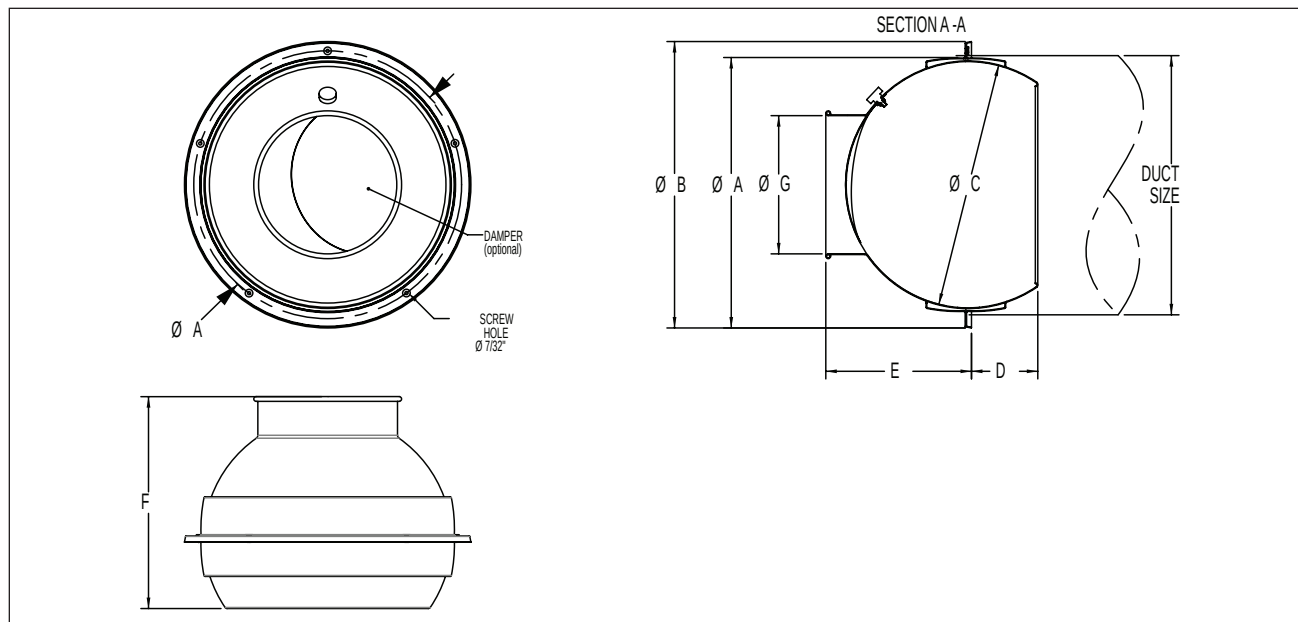
Nozzle Diffuser

The Titus TND-AA diffusers are an excellent choice for applications that require large volumes of air with either directed and/or concentrated shots. Ideally suited for theaters, shopping malls, auditoriums, gyms and industrial applications. The TND-AA provides a 0 to 38° adjustable discharge with optional aperture damper for volume control.

[See website for Specifications](#)


TND-AA diffusers installed in a restaurant application

TND-AA UNIT DIMENSIONS



Nominal Size	Duct Size or Opening	A	B	C	D	E	F	G	H
6	6½	6⅞	7⅞	6	1½	3⅛	5⅛	2⅛	6¼
8	8⅜	8⅞	9⅞	7⅞	1¾	4⅛	6⅞	3⅛	8¼
10	11⅞	11⅞	12⅞	10⅞	3¼	6¾	10½	5½	10¼
12	12⅞	13⅞	14⅞	12⅞	4⅞	7⅞	12⅞	6½	12¼
14	12⅞	13⅞	14⅞	12⅞	4⅞	7¼	9⅞	7¾	12¼
16	16⅞	17⅞	18¾	16¼	5⅞	9⅞	14⅞	9½	16¼
18	19¼	20⅞	21⅞	18⅞	5⅞	11⅞	15½	10¼	20¼
20	19¼	20⅞	21⅞	18⅞	5⅞	11⅞	17⅞	12⅞	20¼

All dimensions are in inches

TND-AA

Nominal Size (In.)	Nominal Duct Size (In.)	Nozzle Velocity, fpm	750	1000	1250	1500	1750	2000	2500	3000	3500	4000
6	6.5	Air Flow, cfm	40	50	60	70	80	90	120	140	160	190
		Static Pressure, IN WG	0.05	0.08	0.12	0.16	0.21	0.27	0.48	0.65	0.85	1.20
		Total Pressure, IN WG	0.05	0.08	0.12	0.17	0.22	0.28	0.5	0.67	0.88	1.24
		NC (Noise Criteria)	-	-	-	-	-	-	22	26	30	34
		Throw, FT	6-12-21	7-15-24	9-17-26	10-20-28	12-21-30	13-23-32	17-26-37	20-28-40	21-30-43	23-33-47
8	8.38	Air Flow, cfm	60	90	110	130	150	170	210	260	300	340
		Static Pressure, IN WG	0.04	0.08	0.13	0.18	0.23	0.30	0.46	0.70	0.93	1.20
		Total Pressure, IN WG	0.04	0.08	0.14	0.19	0.24	0.31	0.48	0.73	0.97	1.25
		NC (Noise Criteria)	-	-	-	-	20	23	28	33	37	40
		Throw, FT	6-13-26	10-19-32	12-24-36	14-27-39	16-29-42	18-31-44	23-35-49	27-39-55	29-42-59	31-44-63
10	11.13	Air Flow, cfm	120	170	210	250	290	330	410	500	580	660
		Static Pressure, IN WG	0.04	0.08	0.12	0.17	0.23	0.30	0.46	0.69	0.93	1.20
		Total Pressure, IN WG	0.04	0.08	0.13	0.18	0.24	0.31	0.48	0.72	0.98	1.26
		NC (Noise Criteria)	-	-	-	-	-	21	27	32	36	39
		Throw, FT	9-19-37	13-26-44	16-33-49	19-38-54	22-41-58	26-44-62	32-49-69	38-54-76	41-58-82	44-62-87
12	12.56	Air Flow, cfm	170	230	290	350	400	460	580	690	810	920
		Static Pressure, IN WG	0.04	0.08	0.12	0.17	0.23	0.30	0.48	0.68	0.93	1.20
		Total Pressure, IN WG	0.04	0.08	0.13	0.18	0.24	0.32	0.51	0.72	0.99	1.27
		NC (Noise Criteria)	-	-	-	-	20	23	29	33	37	40
		Throw, FT	11-22-44	15-30-51	19-38-58	23-45-63	26-48-68	30-51-73	38-58-82	45-63-89	48-68-97	51-73-103
14	12.56	Air Flow, cfm	255	340	425	510	590	720	850	1015	1190	1355
		Static Pressure, IN WG	.04	.08	.12	.17	.23	.3	.47	.67	.92	1.2
		Total Pressure, IN WG	0.05	0.09	0.14	0.19	0.26	0.34	0.53	0.76	1.04	1.35
		NC (Noise Criteria)	-	-	-	-	21	25	31	35	40	43
		Throw, FT	14-27-52	18-36-63	23-43-69	28-54-75	32-58-72	36-62-88	45-69-97	51-76-104	58-83-115	62-88-124
16	16.88	Air Flow, cfm	340	450	560	670	780	900	1120	1340	1570	1790
		Static Pressure, IN WG	0.04	0.08	0.12	0.17	0.23	0.30	0.46	0.67	0.91	1.19
		Total Pressure, IN WG	0.04	0.09	0.13	0.18	0.25	0.32	0.49	0.72	0.97	1.27
		NC (Noise Criteria)	-	-	-	20	24	27	33	38	42	45
		Throw, FT	16-32-63	21-42-72	26-53-80	32-62-88	37-67-95	42-72-102	53-80-114	62-88-124	67-95-134	72-102-144
18	19.25	Air Flow, cfm	430	570	720	860	1000	1150	1430	1720	2010	2290
		Static Pressure, IN WG	0.04	0.07	0.11	0.16	0.22	0.29	0.44	0.64	0.88	1.14
		Total Pressure, IN WG	0.04	0.07	0.12	0.17	0.24	0.31	0.47	0.69	0.94	1.22
		NC (Noise Criteria)	-	-	-	-	23	26	31	36	40	43
		Throw, FT	18-36-70	24-47-81	30-60-91	36-70-100	42-76-107	48-81-115	60-91-128	70-100-141	76-108-152	81-115-162
20	19.25	Air Flow, cfm	610	810	1020	1220	1420	1630	2040	2440	2850	3260
		Static Pressure, IN WG	0.04	0.07	0.12	0.17	0.23	0.30	0.47	0.67	0.92	1.2
		Total Pressure, IN WG	0.05	0.08	0.14	0.19	0.26	0.34	0.53	0.76	1.04	1.36
		NC (Noise Criteria)	-	-	-	21	25	28	34	39	43	46
		Throw, FT	21-43-84	28-57-97	36-71-108	43-84-119	50-90-128	57-97-137	71-108-153	84-119-168	91-128-181	97-137-194

- All pressures given are in inches of water
- Throw values given are for terminal velocities of 200, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines for additional throw information.
- The throw values listed are without ceiling effect
- For throw values with ceiling effect apply a correction factor of 1.4
- To obtain static pressure, subtract the velocity pressure from the total pressure

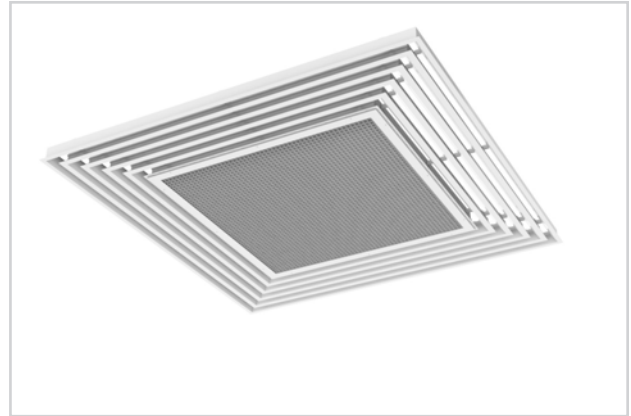
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2nd through 7th, with a room absorption of 10 dB, re 10⁻¹² watts
- Dash (-) in space denotes an NC value of less than 20
- Actual performance, with flexible duct inlet, may vary. See the section, Engineering Guidelines for additional information.

Concentric Supply / Return Diffusers

diffusers

CSR / CSR-P

- The Titus CSR Series is designed to maximize the performance of a combine supply/return diffuser
- Supply and return air is handled through one air device
- The CSR and CSR-P are compatible with unitary package equipment from 2½ to 25 tons
- The CSR-P shown in the figure is ideal for applications requiring a system that provides equal distribution on all four sides while maintaining low noise levels. It may be installed in a T-bar ceiling or plaster ceiling, or duct mounted in an open area.
- Features and benefits of the CSR and CSR-P diffusers include:
 - » Four-way horizontal airflow
 - » Low noise, low pressure performance
 - » Anti-smudging characteristics
 - » Aluminum diffuser and return air eggcrate
 - » Lightweight design
 - » Built-in hanging support for easy installation



CSR / CSR-P

- Large commercial buildings, warehouses, and retail stores will find the CSR-P the prime selection for single point air distribution systems. Titus provides the entire plenum and diffuser in one piece. The assembled CSR-P unit makes for an easy, low cost installation.

MODELS:

CSR / without Plenum
CSR-P / with Plenum

FINISH:

Standard Finish - #26 White

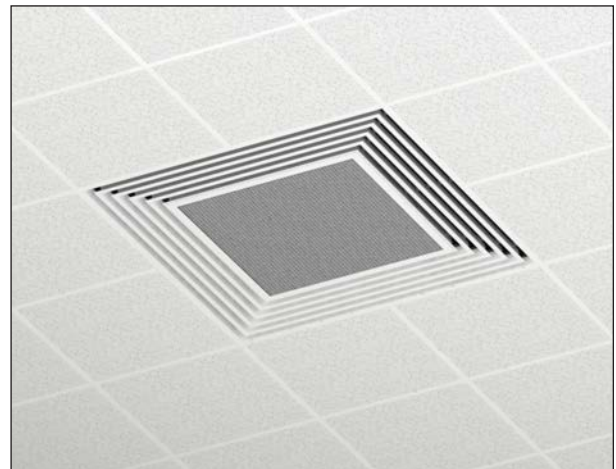
OVERVIEW

Combination Supply / Return / High Capacity

The Titus CSR Series is designed to maximize the performance of a combination supply/return diffuser. Supply and return air is handled through one air device.

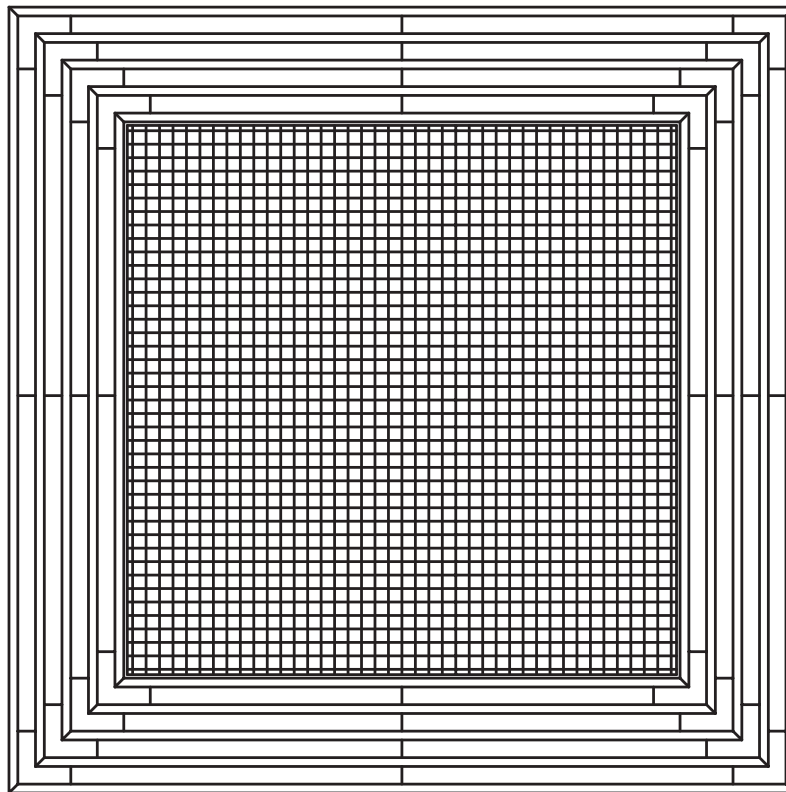
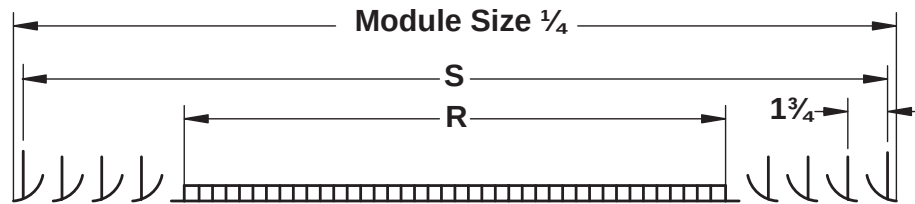


See website for Specifications



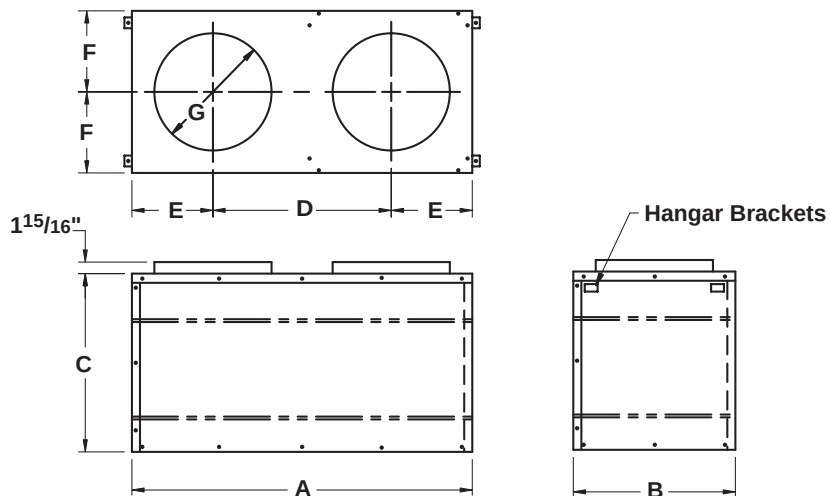
Rendering of a CSR installed in a ceiling

CSR / CSR-P UNIT DIMENSIONS

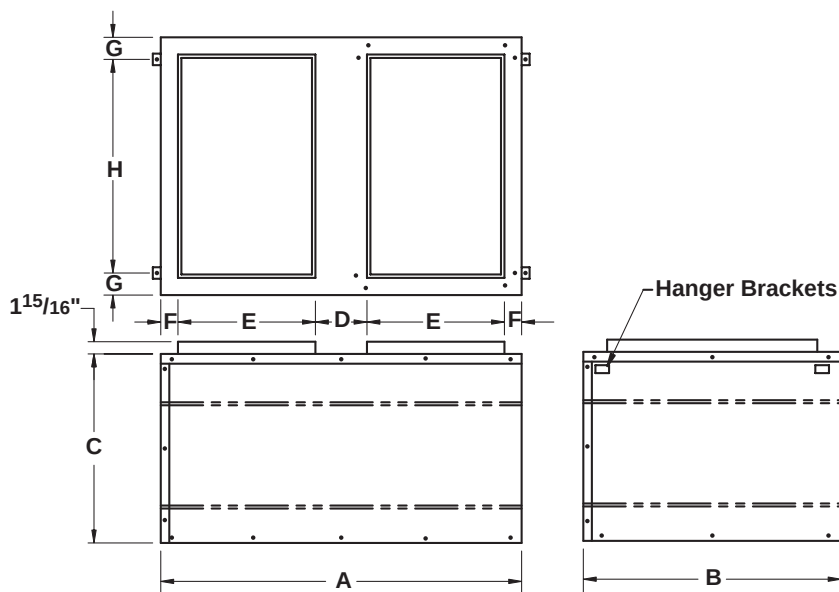


Nominal Tonnage	Module Size	Supply Duct S	Return Duct R
2½ - 5	48 x 24	46¾ x 22¾	36⅞ x 12⅞
6 - 10	48 x 36	46¾ x 34¾	32⅞ x 20⅞
10 - 15	48 x 48	46¾ x 46¾	29⅞ x 29⅞
15 - 25	60 x 60	58¾ x 58¾	37⅞ x 37⅞

CSR / CSR-P UNIT DIMENSIONS



Module Size	A	B	C	D	E	F	G
48 x 24	47	22 ¹³ / ₁₆	23 ¹⁵ / ₁₆	22 ¹ / ₂	12 ¹ / ₄	11 ¹ / ₂	17 ¹⁵ / ₁₆



Module Size	A	B	C	D	E	F	G	H
48 x 36	47	35	23 ¹⁵ / ₁₆	4 ¹⁵ / ₁₆	17 ⁷ / ₈	3 ¹ / ₈	3 ⁹ / ₁₆	27 ⁷ / ₈
48 x 48	47	47	23 ¹⁵ / ₁₆	4 ¹⁵ / ₁₆	17 ⁷ / ₈	3 ¹ / ₈	5 ⁹ / ₁₆	35 ⁷ / ₈
60 x 60	59	59	23 ¹⁵ / ₁₆	4 ¹⁵ / ₁₆	23 ⁷ / ₈	3 ¹ / ₈	5 ⁹ / ₁₆	47 ⁷ / ₈

CSR-P COMBINATION SUPPLY/RETURN

48 x 24 inches	Airflow, cfm	1000	1500	2000	2500
	Total System Static Pressure (Inches WC)	0.13	0.29	0.51	0.79
	Supply Static Pressure (Inches WC)	0.05	0.12	0.21	0.33
	Return Static Pressure (Inches WC)	-0.08	-0.17	-0.30	-0.47
	NC (Noise Criterion)	14	24	31	36
	Throw, Feet	10-14-20	14-18-25	17-20-29	19-23-32

Note: Data for 48" x 24" and 48" x 36" is for long side only, for short side performance, multiply by .7

48 x 36 inches	Airflow, cfm	1500	2000	2500	3000	3500	4000	4500	5000
	Total System Static Pressure (Inches WC)	0.07	0.13	0.20	0.29	0.40	0.52	0.65	0.81
	Supply Static Pressure (Inches WC)	0.04	0.08	0.12	0.17	0.23	0.30	0.38	0.47
	Return Static Pressure (Inches WC)	-0.03	-0.05	-0.09	-0.12	-0.17	-0.22	-0.28	-0.34
	NC (Noise Criterion)	19	25	30	34	37	40	43	45
	Throw, Feet	12-18-25	16-20-29	19-23-32	20-25-35	22-27-38	23-29-41	25-31-43	26-32-46

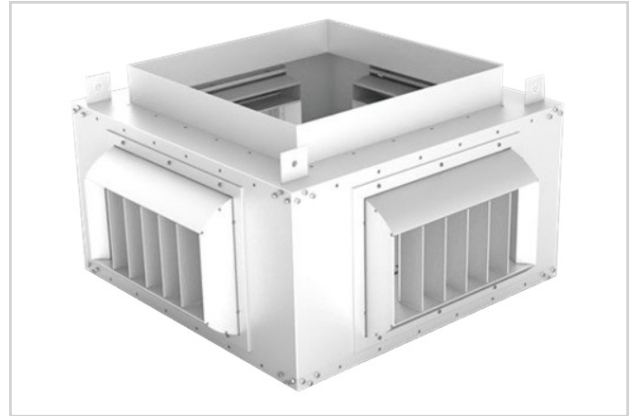
48 x 48 inches	Airflow, cfm	2000	2500	3000	3500	4000	4500	5000	5500	6000
	Total System Static Pressure (Inches WC)	0.08	0.12	0.17	0.23	0.30	0.38	0.47	0.57	0.68
	Supply Static Pressure (Inches WC)	0.04	0.06	0.08	0.11	0.15	0.19	0.23	0.28	0.33
	Return Static Pressure (Inches WC)	-0.04	-0.06	-0.09	-0.12	-0.15	-0.19	-0.24	-0.29	-0.34
	NC (Noise Criterion)	17	23	28	32	35	38	41	44	46
	Throw, Feet	13-20-29	17-23-32	20-25-35	22-27-38	23-29-41	25-31-43	26-32-46	28-34-48	29-35-50

60 x 60 inches	Airflow, cfm	3000	4000	5000	6000	7000	8000	9000	10000
	Total System Static Pressure (Inches WC)	0.07	0.12	0.19	0.28	0.38	0.49	0.63	0.77
	Supply Static Pressure (Inches WC)	0.04	0.08	0.12	0.17	0.24	0.31	0.39	0.48
	Return Static Pressure (Inches WC)	-0.03	-0.05	-0.07	-0.11	-0.14	-0.19	-0.24	-0.29
	NC (Noise Criterion)	22	31	38	43	48	52	55	59
	Throw, Feet	16-25-35	22-29-41	26-32-46	29-35-50	31-38-54	33-41-54	35-43-61	37-46-64

- NC based on a room, 68 x 80 x 14 feet with the receiver located 9 feet from the diffuser
- Total System Static Pressure is the sum of the supply static pressure and the return static pressure
- Throw is listed as the distance in feet to terminal velocities of 150, 100 and 50 fpm under isothermal conditions

TVM

- The TVM Ventilation Modules are designed for systems that require the distribution of a high volume of air from a single point through long adjustable air patterns in large facilities with high ceilings like data and distribution centers, warehouses, athletic centers and big box stores.
- The TVM plenum modules are made of steel with internal reinforcement and can handle flows from 4,000 to 25,000 CFM through multiple drum louver outlets made from extruded aluminum.
- Efficient air distribution through each outlet is achieved thanks to the interior baffle design.
- The drum louvers can be adjusted 30° vertically up or down from their center position, as well as horizontally using the individually adjustable louver blades.



TVM

MODELS:

TVM-4 / Four Outlets
TVM-6 / Six Outlets

FINISH:

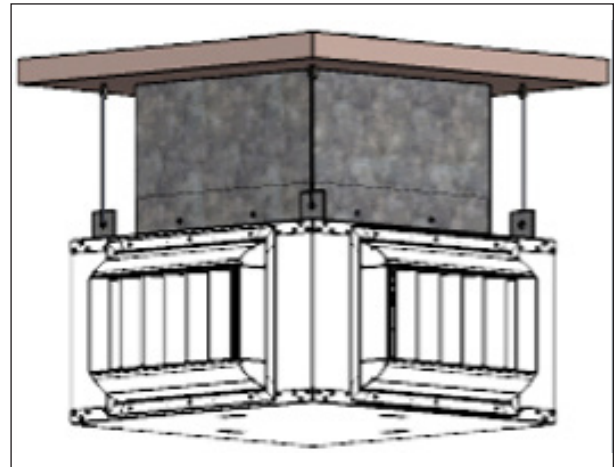
Standard Finish - #26 White

OVERVIEW

The TVM Ventilation Module is designed to be installed directly beneath a roof-mounted air handler.

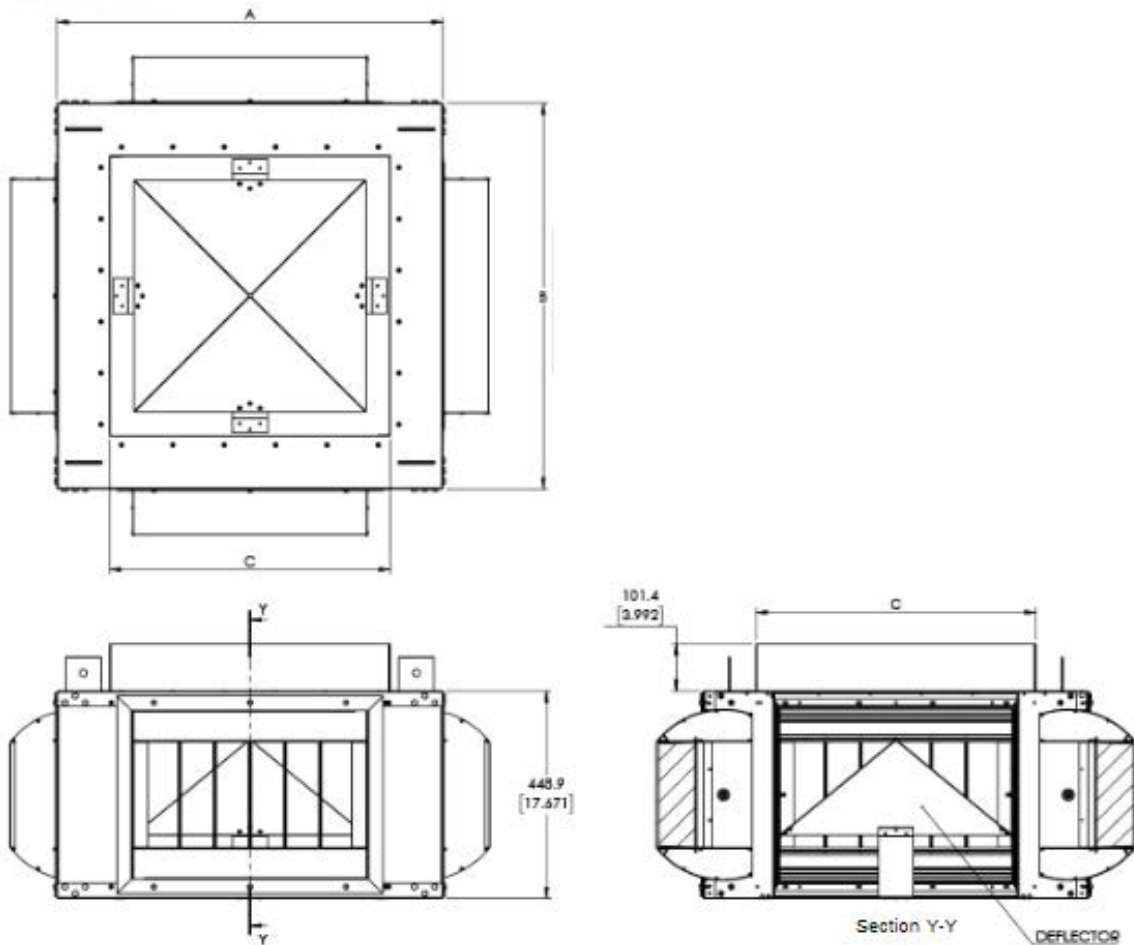


See website for Specifications



Rendering of a TVM installed in a ceiling

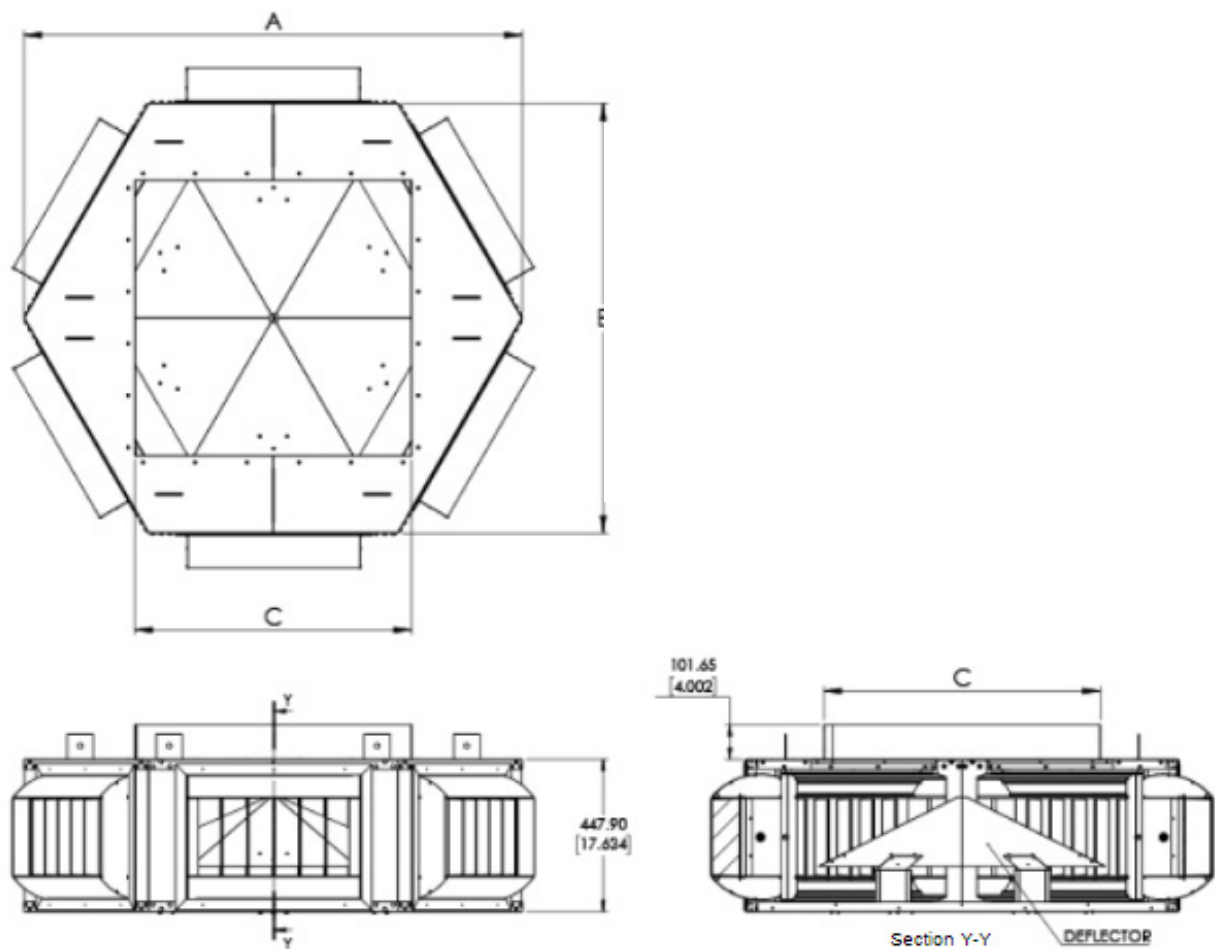
TVM-4 UNIT DIMENSIONS



Capacity (CFM)	A	B	C	Outlet Size (Inches)
4,000	32 7/8	32 7/8	23 7/8	21 x 15
5,000	32 7/8	32 7/8	23 7/8	21 x 15
7,500	36 7/8	36 7/8	27 7/8	21 x 15

DIMENSIONS

TVM-6 UNIT DIMENSIONS



Capacity (CFM)	A	B	C	Outlet Size (Inches)
10,000	57 1/2	49 3/4	31 7/8	21 x 15
12,500	59 1/2	51 4/7	35 7/8	24 x 15
15,000	75 1/2	65 1/4	37 7/8	30 x 15
17,500	75 1/2	65 1/4	39 7/8	30 x 15
20,000	87 1/2	75 3/4	39 7/8	36 x 15
22,500	99 4/9	86 1/4	41 7/8	42 x 15
25,000	99 4/9	86 1/4	43 7/8	42 x 15

TVM PERFORMANCE

Model	Capacity (CFM)	Static Pressure	Throw (Feet)	Sound (Nc)	Drum Louver Size
TVM-4	4,000	0.156	40-61-98	<45	21" x 15"
	5,000	0.263	52-78-105	<45	21" x 15"
	7,500	0.265	62-90-122	<45	21" x 15"
TVM-6	10,000	0.151	72-93-125	<45	21" x 15"
	12,500	0.206	78-101-132	<45	24" x 15"
	15,000	0.261	87-113-144	<45	30" x 15"
	17,500	0.316	95-120-161	<50	30" x 15"
	20,000	0.371	104-129-173	<50	36" x 15"
	22,500	0.427	116-137-182	<50	42" x 15"
	25,000	0.482	129-148-198	<50	42" x 15"

- All testing is in accordance with the ANSI/ASHRAE Standard 70-2006.
- Static pressure (Ps), are measured in inches of water column and airflow is given in cubic feet per minute.
- The sound level (NC) values are based on a quarter absorption of 10 dB, for a sound level power (Re: 10 -12 watts). According to Standard ASHRAE 36-72.
- Throw data provided in in feet, at 150 fpm, 100 fpm, and 50 fpm terminal velocities, in isothermal conditions.

Icons

diffusers



contributes toward energy savings by reducing operating costs of air distribution devices

energy solutions



finish options that resemble wood grains, perfect for high-profile architectural applications

wood grains



great for areas where the conditioned space is large and the ductwork is unable to be brought closer to the occupants

open areas



for use in MRI environments & will not significantly affect the diagnostic information

MRI compatible



mounts directly to ductwork

duct mounted



for use in retrofitting older products into modern designs & systems

retrofit



Diffuser module sizes are hard metric & inlets are soft. Metric linear and grille products are converted to the nearest 1/4" for ordering. Contact us for more information.

metric sizes



can be used in open ceiling environments

open ceiling



for use in factories, warehouses, shopping malls and other large open spaces where long throws are required

factories



suitable for foyers, waiting rooms and other areas with recessed lighting fixtures

recessed lighting

