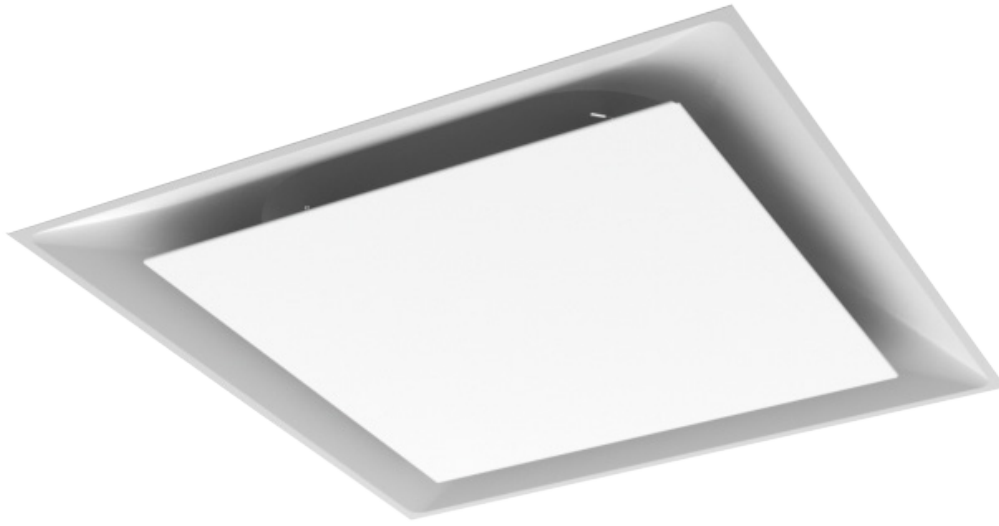
Titus
Redefine your comfort zone.™

diffusers

F



Titus
Redefine your comfort zone.™

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Diffuser Products

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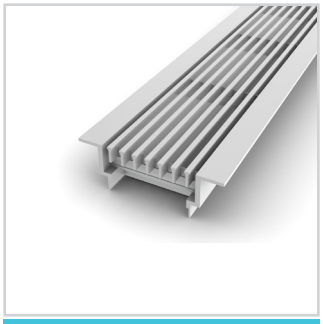
linear diffusers

ML / MLR

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



CT

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

LL

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

ML-TZ / MLR-TZ

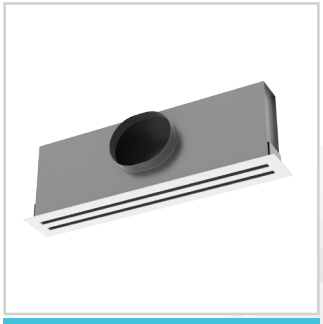
LINEAR SLOT CEILING DIFFUSER

- 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

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



MLT

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

pages: F66-F77

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 adjsusted 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: F78-F108

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

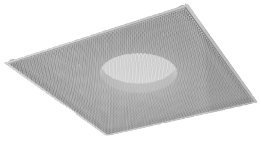
ADJUSTABLE STAR PATTERN

- 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

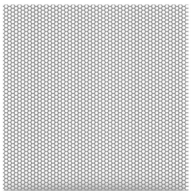
- 51% free area perforated face
- Adjustable to 1,2,3, or 4-way discharge pattern after installation
- Modular core sections are easily removable
- Provides excellent performance in variable air volume systems



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

pages: F109-F122

square ceiling diffusers

TMS / TMS-A / 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

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: F123-F157

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

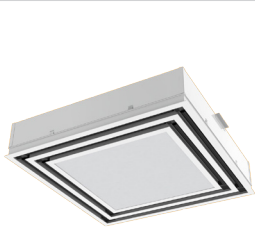
STEEL ROUND PLAQUE DIFFUSER

- 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

square & rectangular ceiling diffusers

pages: F158-F198

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

adjustable ceiling & nozzle diffusers

pages: F199-F211

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

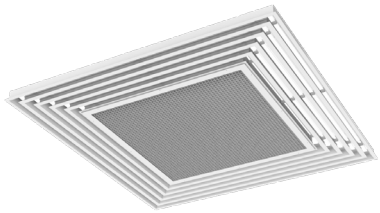
TND-AA

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

Overview

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.

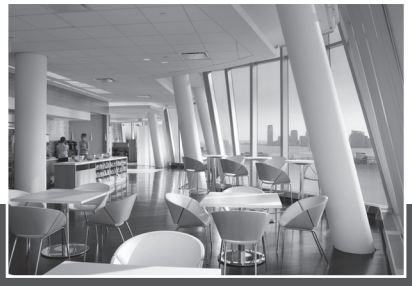
- Curved blades, adjustable discharge pattern (Model 250)
- Spot Heating and Cooling (Model TBF-AA TurboFuser)
- Spot Heating and Cooling (Model TND-AA Nozzle Diffuser)

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.



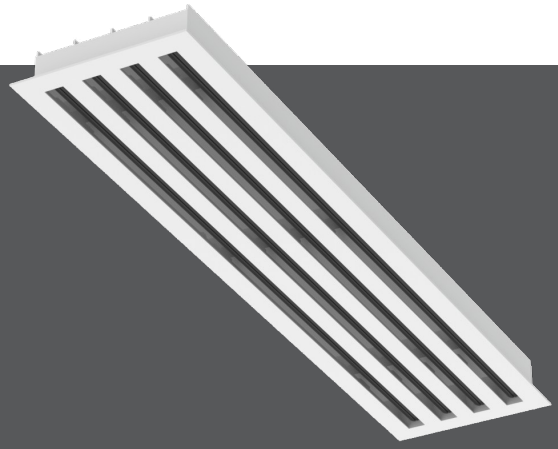
APPLICATION ICONS KEY

for use in retrofitting older products into modern designs & systems	retrofit
great for areas where the conditioned space is large and the ductwork is unable to be brought closer to the occupants	open areas
additional finish options available for HVAC products that resemble realistic woodgrains, and adds high-end detail quality to any application	woodgrains
for use in MRI environments & will not significantly affect the diagnostic information	MRI compatible
for use in factories, warehouses, shopping malls and other large open spaces where long throws are required	factories
contributes toward energy savings by reducing operating costs of air distribution devices	energy solutions
suitable for foyers, waiting rooms and other areas with recessed lighting fixtures	recessed lighting
mounts directly to ductwork	duct mounted
can be used in open ceiling environments	open ceiling
Diffuser module sizes are hard metric & inlets are soft. Metric linear and grille products are converted to the nearest ¼" for ordering. Contact us for more information.	metric sizes

Linear Slot Ceiling Diffusers

ML / MLR / ML-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

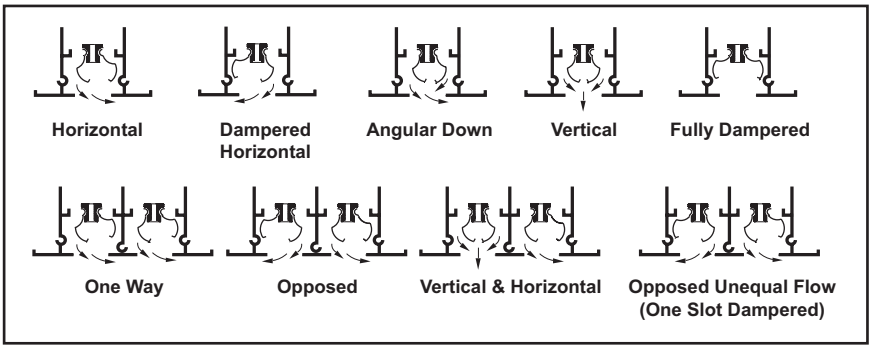
metric sizes | duct mounted | open ceiling

See website for Specifications

AVAILABLE MODELS:

Supply Models:
ML-37 / ½" Slot
ML-38 / ¾" Slot
ML-39 / 1" Slot
ML-40 / 1½" Slot
ML-TZ / ¾" Slot

Return Models:
MLR-37 / ½" Slot
MLR-38 / ¾" Slot
MLR-39 / 1" Slot
MLR-40 / 1½" Slot
MLR-TZ / ¾" Slot



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 with the exception of the ML-40, which is available in 1 through 4-slot configurations.

ADDITIONAL FEATURES

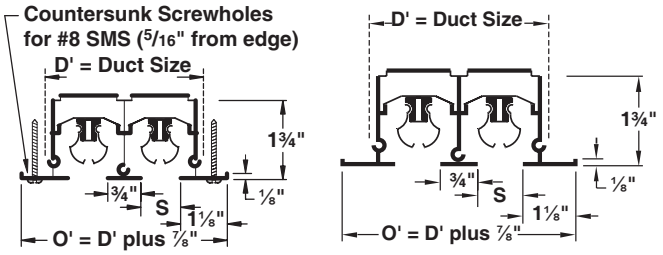
- Maximum one piece section is 6 feet. Lengths greater than 6 feet are furnished in multiple sections
- Optional Model MLF and MLRF diffusers are designed for field cutting to length and are furnished in 6-foot sections
- Maximum pattern controller length is 3 feet. Pattern controllers are furnished 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

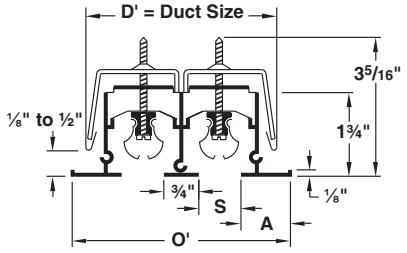


Border Type 1A | Border Type 1B

Border Types 2A, 2B both with

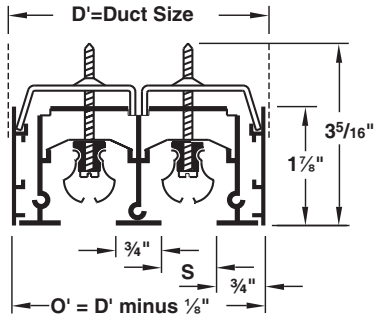
- Flange Border
- Concealed Mounting

Type	A	O'
2A	1 1/8	D' + ¾
2B	⅞	D' + ¼



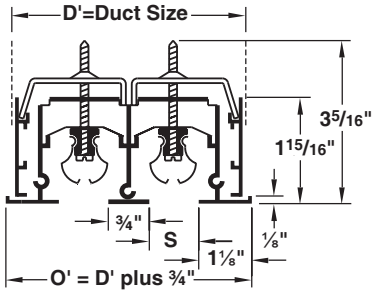
Frame & Border Type 3 with

- Flush Border
- Concealed Mounting



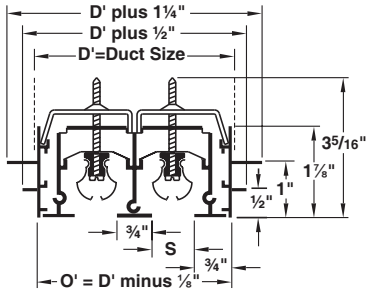
Frame & Border Type 4 with

- Flange Border
- Concealed Mounting



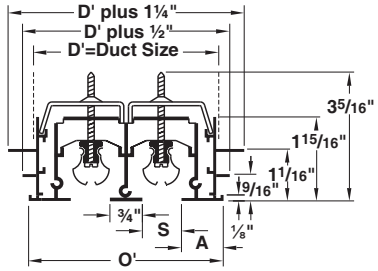
Frame & Border Type 6 with

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



Frame & Border Types 7A, 7B with

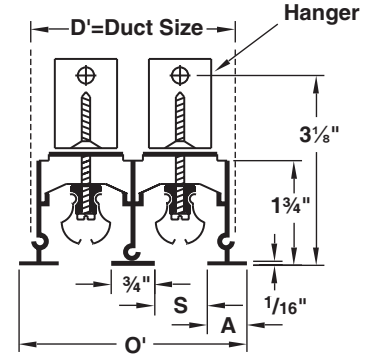
- Plaster & Tile Mounting Frame
- Flange Border
- Concealed Mounting



Type	A	O'
7A	1 1/8	D' + ¾
7B	⅞	D' + ¼

Border Types 9A, 9B with

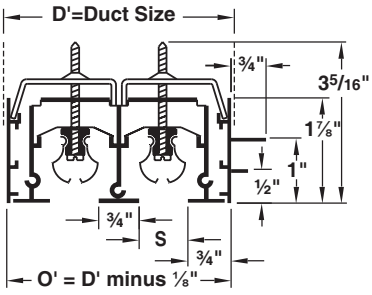
- Flange Border
- Ceiling Hangers



Type	A	O'
9A	¾	D' + 5/8
9B	1 1/8	D' + 1 3/8

Border Type 11 with

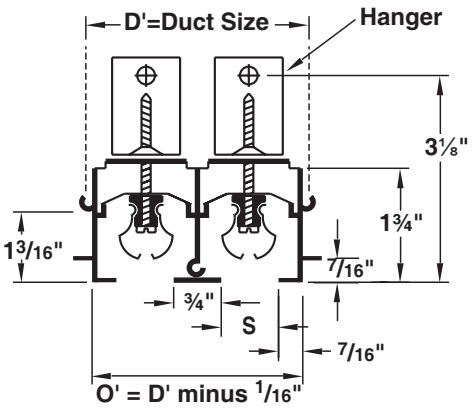
- Perimeter Plaster &
- Tile Mounting Frame
- Flush Border
- Concealed Mounting



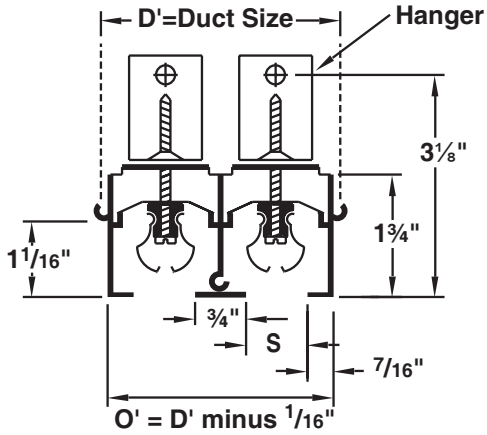
All dimensions are in inches

ML / MLR UNIT DIMENSIONS

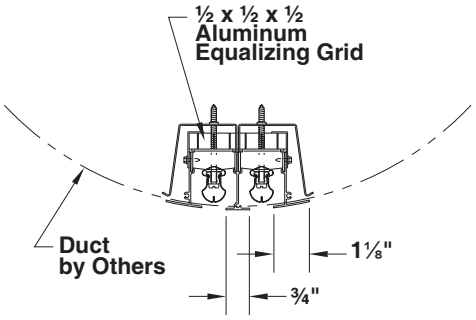
Border Type 12 with
- Spline Border
- Ceiling Hangers



Border Type 15 with
- Flush Border
- Ceiling Hangers

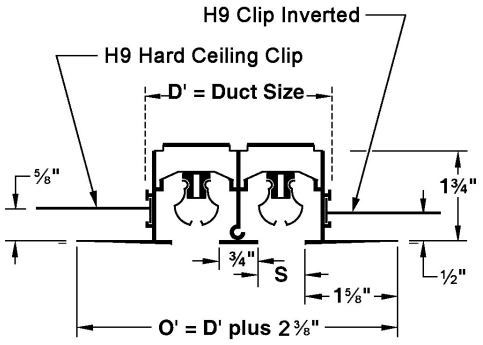


Border Type 16 with
- Curved Flange Border
- Concealed Mounting
- Equalizing Grid



Standard selections: ML-38 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

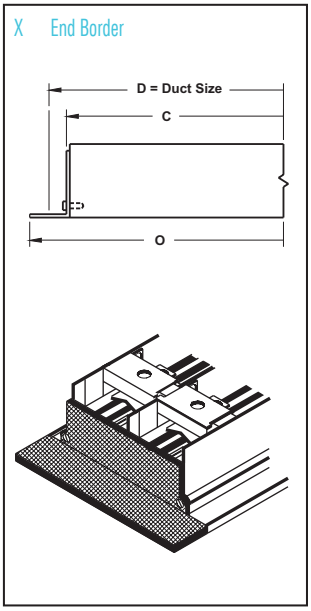


Note: ML-37 is not available for Border 22

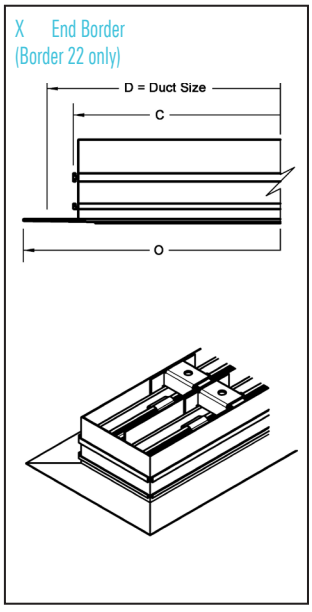
DIMENSIONS

END FABRICATION

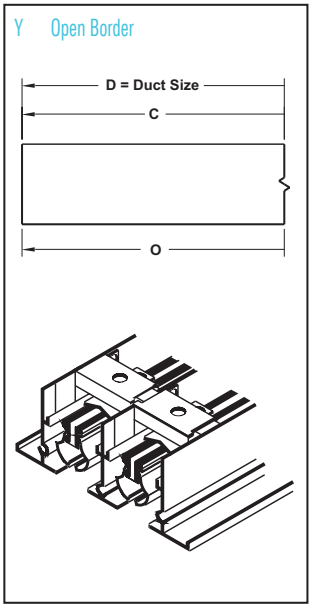
X End Border



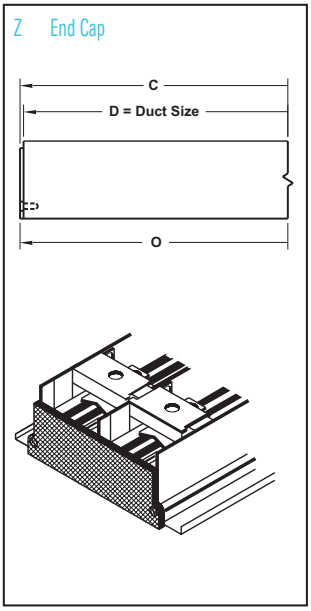
X End Border (Border 22 only)



Y Open Border



Z End Cap



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 3/8	D + 3/4	D - 11/16	D + 3/8	D - 5/8	D + 7/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
2A, 4, 7A	D - 1 3/8	D + 3/4	D - 11/16	D + 3/8	D - 5/8	D + 7/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
3, 6, 11	D - 1 3/8	D	D - 11/16	D	D - 5/8	D + 1/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
2B, 7B	D - 1 3/8	D + 1/4	D - 11/16	D + 1/8	D - 5/8	D + 3/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
9A	D - 1 3/8	D	D - 11/16	D	D - 5/8	D + 1/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
12, 15	D - 11/16	D	D - 5/16	D	D - 1/4	D + 1/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
16	D - 1 3/8	D + 3/4	D - 11/16	D + 3/8	N/A	N/A	D	D	N/A	N/A	N/A	N/A
22	D - 1 3/16	D + 1 1/16	D - 19/32	D + 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

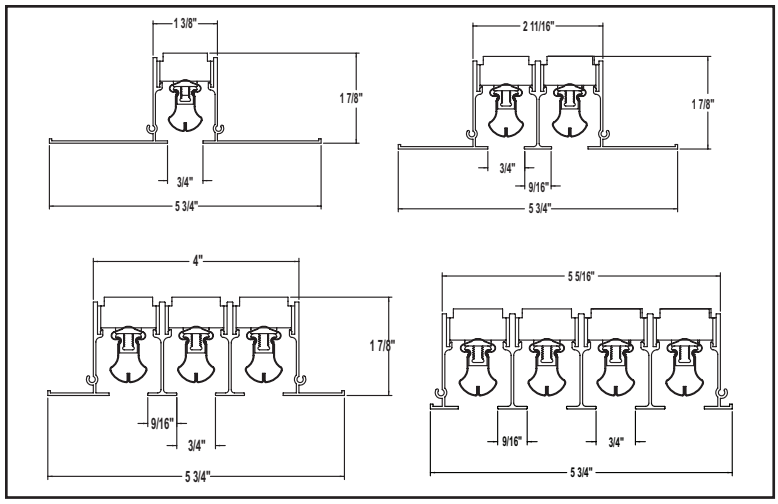
No. of Slots	Types 1A, 1B				Types 2A, 2B, 4, 7A, 7B, 16				Types 3, 6, 11				Types 9A, 9B, 12, 15, 22			
	ML/MLR 37	ML/MLR 38	ML/MLR 39	ML/MLR 40	ML/MLR 37	ML/MLR 38	ML/MLR 39	ML/MLR 40	ML/MLR 37	ML/MLR 38	ML/MLR 39	ML/MLR 40	ML/MLR 37	ML/MLR 38	ML/MLR 39	ML/MLR 40
	S = 1/2	S = 3/4	S = 1	S = 1 1/2	S = 1/2	S = 3/4	S = 1	S = 1 1/2	S = 1/2	S = 3/4	S = 1	S = 1 1/2	S = 1/2	S = 3/4	S = 1	S = 1 1/2
1	1 7/8	2 1/8	2 3/8	2 7/8	2	2 1/4	2 1/2	3	2	2 3/8	2 5/8	3 1/8	1 3/8	1 5/8	1 7/8	2 3/8
2	3 1/8	3 5/8	4 1/8	5 1/8	3 1/4	3 3/4	4 1/4	5 1/4	3 3/8	3 7/8	4 3/8	5 3/8	2 5/8	3 1/8	3 5/8	4 5/8
3	4 3/8	5 1/8	5 7/8	7 3/8	4 1/2	5 1/4	6	7 1/2	4 5/8	5 3/8	6 1/8	7 5/8	3 7/8	4 5/8	5 3/8	6 7/8
4	5 5/8	6 5/8	7 5/8	9 5/8	5 3/4	6 3/4	7 3/4	9 3/4	5 7/8	6 7/8	7 7/8	9 7/8	5 1/8	6 1/8	7 1/8	9 1/8
5	6 7/8	8 1/8	9 3/8	N/A	7	8 1/4	9 1/2	N/A	7 1/8	8 3/8	9 5/8	N/A	6 3/8	7 5/8	8 7/8	N/A
6	8 1/8	9 5/8	11 1/8	N/A	8 1/4	9 3/4	11 1/4	N/A	8 3/8	9 7/8	11 3/8	N/A	7 5/8	9 1/8	10 5/8	N/A
7	9 3/8	11 1/8	12 7/8	N/A	9 1/2	11 1/4	13	N/A	9 5/8	11 3/8	13 1/8	N/A	8 7/8	10 5/8	12 3/8	N/A
8	10 5/8	12 5/8	14 5/8	N/A	10 3/4	12 3/4	14 3/4	N/A	10 7/8	12 7/8	14 7/8	N/A	10 1/8	12 1/8	14 1/8	N/A

ML / MLR-37 Not Available in Type 22

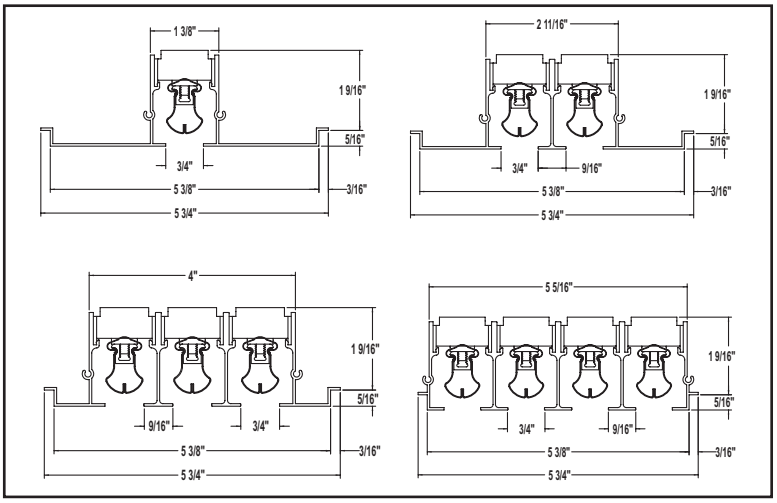
All dimensions are in inches

BORDER TYPES – ML-TZ, MLR-TZ

BORDER LT (LAY-IN T-BAR)

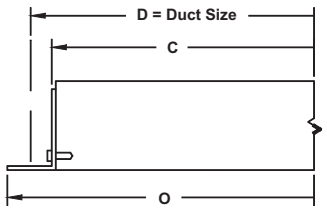


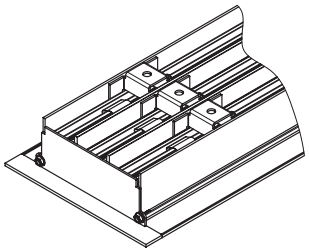
BORDER NT (NARROW TEE)



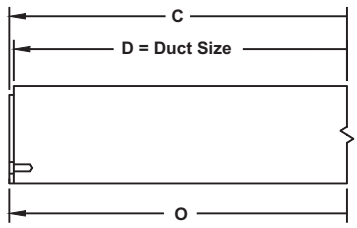
DIMENSIONS

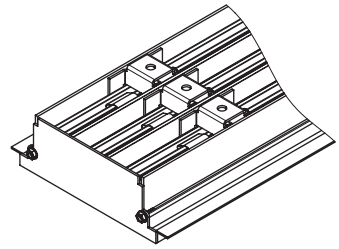
LT Border





NT Border





OVERALL LENGTH FOR LT AND NT BORDERS

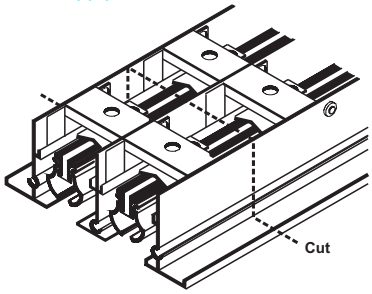
Nominal Length (inches)	Border LT		NT Border	
	C	O	C	O
24	$22\frac{5}{8}$	$23\frac{13}{16}$	$23\frac{3}{8}$	$23\frac{3}{8}$
30	$28\frac{5}{8}$	$29\frac{13}{16}$	$29\frac{3}{8}$	$29\frac{3}{8}$
36	$34\frac{5}{8}$	$35\frac{13}{16}$	$35\frac{3}{8}$	$35\frac{3}{8}$
48	$46\frac{5}{8}$	$47\frac{13}{16}$	$47\frac{3}{8}$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

FIELD CUT DIFFUSERS

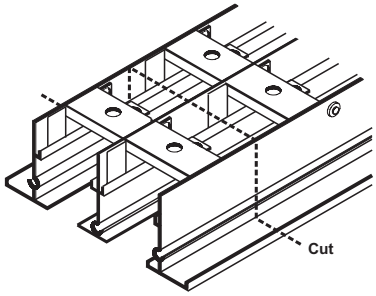
Available Supply Models:
- MLF-37 / ½" Slot
- MLF-38 / ¾" Slot
- MLF-39 / 1" Slot
- MLF-40 / 1½" Slot

Available Return Models:
- MLRF-37 / ½" Slot
- MLRF-38 / ¾" Slot
- MLRF-39 / 1" Slot
- MLRF-40 / 1½" Slot

MLF - Supply



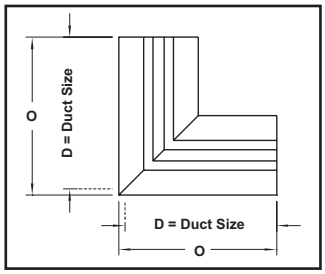
MLRF - Return



- 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 / ½" Slot
- MC-38 / ¾" Slot
- MC-39 / 1" Slot
- MC-40 / 1½" Slot



DIMENSIONS FOR 90° MIITERED CORNERS

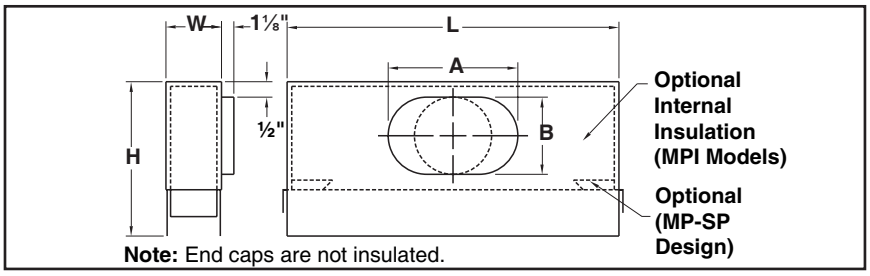
No. of Slots	1A, 1B		2A, 4, 7A		2B, 7B		3, 6, 11		9A		9B		12, 15		22	
	O	D	O	D	O	D	O	D	O	D	O	D	O	D	O	D
1, 2	12 7/16	12	12 3/8	12	12 1/8	12	11 7/8	12	12 5/16	12	12 11/16	12	12	12	13 3/16	12
3–8	24 7/16	24	24 3/8	24	24 1/8	24	23 7/8	24	24 5/16	24	24 11/16	24	24	24	25 3/16	24

Note: Dimensions shown will vary for other angles

PLENUMS

Available Uninsulated Models:
- MP-37 / ½" Slot
- MP-38 / ¾" Slot
- MP-39 / 1" Slot
- MP-40 / 1½" Slot
- MP-37-SP / ½" Slot
- MP-38-SP / ¾" Slot
- MP-39-SP / 1" Slot
- MP-40-SP / 1½" Slot

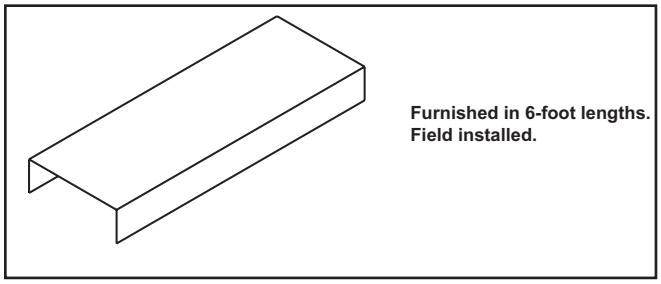
Available Insulated Models:
- MPI-37 / ½" Slot
- MPI-38 / ¾" Slot
- MPI-39 / 1" Slot
- MPI-40 / 1½" Slot
- MPI-37-SP / ½" Slot
- MPI-38-SP / ¾" Slot
- MPI-39-SP / 1" Slot
- MPI-40-SP / 1½" Slot



BLANK-OFFS

BLKS / Cold Rolled Steel
/ Fits over Neck
/ Black Finish

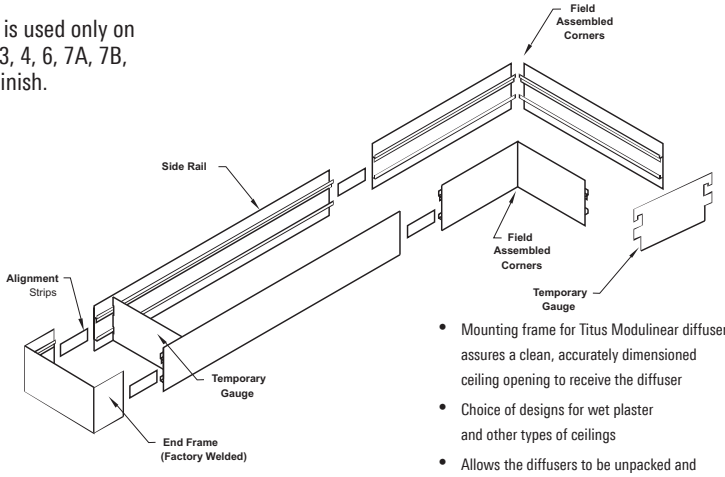
BLKV / Vinyl
/ Fits in Slot
/ Black Finish



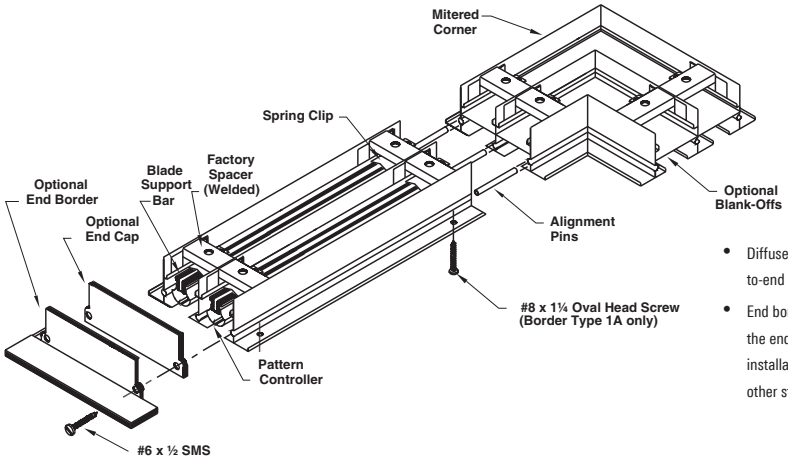
All dimensions are in inches

MOUNTING FRAME ASSEMBLY

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

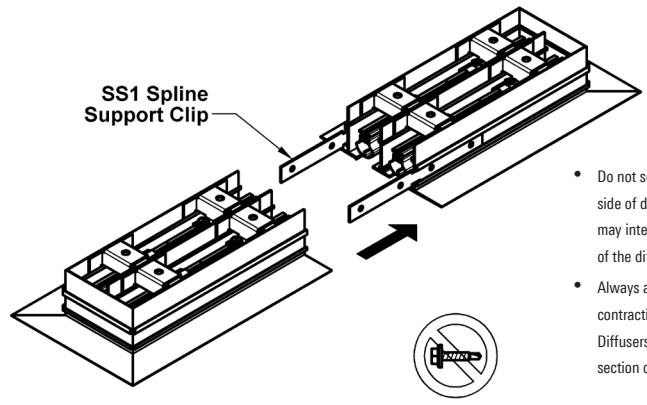


- Mounting frame for Titus Modulinear diffusers assures a clean, accurately dimensioned ceiling opening to receive the diffuser
- Choice of designs for wet plaster and other types of ceilings
- Allows the diffusers to be unpacked and installed after construction is finished
- Diffusers can be removed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



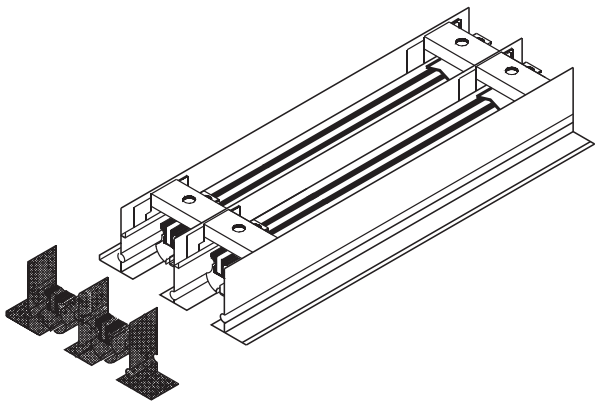
- Diffusers can be joined together end-to-end to form long, continuous slots
- End borders and end caps close off the ends of the diffusers and simplify installations ending at walls and other stopping points (see page F17)
- Factory-made mitered corners are accurately welded and carefully finished for 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



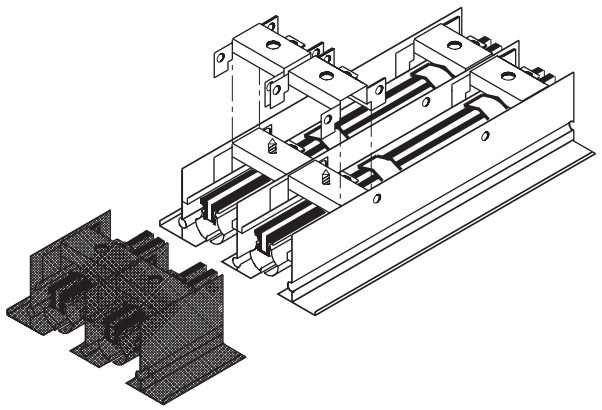
- Do not screw support clips into side of diffuser. The screws may interfere with adjustment of the diffuser blades.
- Always allow for expansion and contraction per the Grilles and Diffusers Engineering Guidelines section of the Catalog

Factory Cut Diffuser (Trimming)



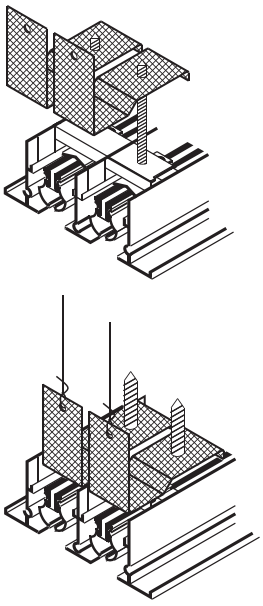
- Titus Modulinear diffusers are so simple and rugged they are routinely cut to length in the field with a fine tooth, high-speed carbon steel metal cutting blade
- Factory-cut diffuser Model ML (above) or MLR is ordered for a specified length from the factory, but can be trimmed as much as 3 inches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

Field Cut Diffuser



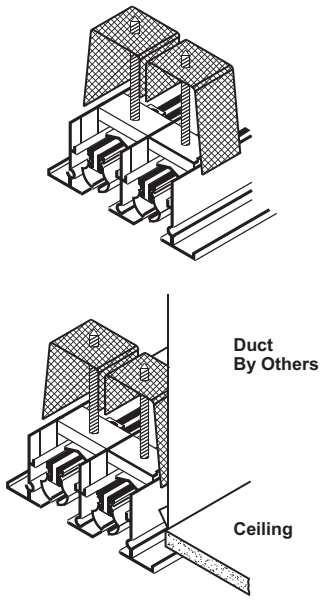
- Field-cut diffuser Model MLF (above) or MLRF is shipped in standard 6-foot lengths
- Model MLF or MLRF diffuser can be cut to any length. Field-installed spacers and other hardware are furnished with the diffuser for one field cut. Additional field cut kits are available at additional cost.
- Unit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

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



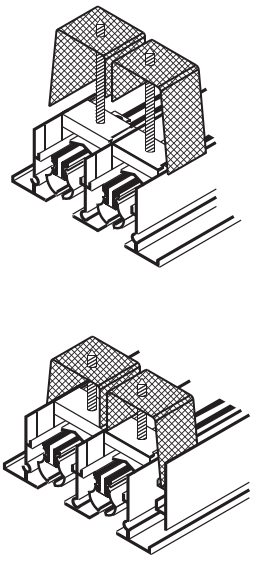
These hanger brackets are a convenient means of attaching hanger wires to support the diffuser from the structural members of the building.

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 / ½" 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

Performance notes appear at end of performance data

ML-38, -TZ / ¾" 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

Performance notes appear at end of performance data

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 pages F34-F45 for data with Titus plenums.
- For continuous lengths it is recommended that maximum active lengths are no longer than 10 feet

ML-40 / 1½" SLOT SPACING WIDTH / SUPPLY WITH CONTINUOUS PLENUM

Number of Slots	Total Pressure	0.004	0.015	0.034	0.060	0.093	0.134	0.183	0.239
1-Slot	Airflow, cfm/ft.	8	16	24	32	40	48	56	64
	NC (Noise Criteria)	-	-	16	23	29	33	37	41
	Horizontal	1-2-7	3-7-15	7-11-18	10-15-21	12-18-23	15-18-25	16-19-27	17-21-29
	Vertical	4	7	11	14	18	21	25	29
2-Slot	Airflow, cfm/ft.	16	32	48	64	80	96	112	128
	NC (Noise Criteria)	-	-	18	26	31	36	40	44
	Horizontal	1-3-10	5-10-21	10-16-25	14-21-29	17-23-33	21-25-36	22-27-39	24-29-42
	Vertical	5	10	15	20	25	30	35	39
3-Slot	Airflow, cfm/ft.	24	46	72	96	120	144	168	192
	NC (Noise Criteria)	-	-	20	28	34	38	43	45
	Horizontal	1-3-13	6-13-25	13-19-31	17-25-36	21-28-40	25-31-44	27-34-48	29-38-51
	Vertical	7	12	19	25	31	37	43	50
4-Slot	Airflow, cfm/ft.	32	64	96	128	160	192	224	256
	NC (Noise Criteria)	-	12	22	30	35	40	44	47
	Horizontal	2-4-15	7-15-29	15-22-36	20-29-42	24-33-46	29-36-51	32-39-54	34-42-59
	Vertical	8	14	21	28	35	43	49	59

Throw correction table for lengths

ML-40 length (ft)	2	4	6	8	10
Correction factor	0.40	0.83	1.00	1.15	1.29

NC correction table for lengths

ML-40 length (ft)	2	4	6	8	10
Correction factor	-6	-2	0	+2	+3

- Data obtained from tests conducted in accordance with ANSI/ ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. Refer to the engineering section of the catalog for additional information.
- Throw values given are for isothermal conditions, and are based on 6-foot active section. For other lengths, see the Throw Correction Table.
- Horizontal throw values given are for terminal velocities of 150, 100 and 50 fpm
- Vertical throw values given are for terminal velocity of 50 fpm
- Throws listed are for the 1-way pattern
- 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.
- Pressure is given in inches of water gauge (WG)
- 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 6-foot lengths. For other lengths use the NC correction table above.
- Data was obtained using plenums with duct velocities less than 800 fpm. See pages F34-F45 for data with Titus plenums.
- For continuous lengths, a one foot blankoff should be used in between every 6 foot active section. A two foot blankoff should be used in between 10 foot active sections. Active sections should not exceed 10 feet without a blankoff.
- For continuous lengths it is recommended that maximum active lengths are no longer than 10 feet

RETURN PERFORMANCE DATA FOR PLENUM 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

NC Correction for Various MLR Lengths

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

MLR-37

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

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

PERFORMANCE DATA

MLR-40

Number of Slots	Negative Static Pressure	0.007	0.028	0.063	0.108	0.17	0.250	0.345	0.450
1-Slot	Airflow, cfm/ft.	20	40	60	80	100	120	140	160
	NC (Noise Criteria)	-	10	21	29	35	40	44	48
2-Slot	Airflow, cfm/ft.	40	80	120	160	200	240	280	320
	NC (Noise Criteria)	-	13	24	32	38	43	47	51
3-Slot	Airflow, cfm/ft.	60	120	180	240	300	360	420	480
	NC (Noise Criteria)	-	15	20	34	40	45	49	53
4-Slot	Airflow, cfm/ft.	80	160	240	320	400	480	560	640
	NC (Noise Criteria)	-	16	27	35	41	46	50	54

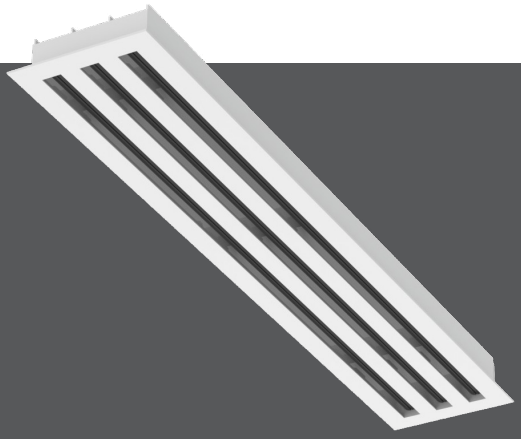
NC correction table for lengths

ML-40 length (ft)	2	4	6	8	10
Correction factor	-6	-2	0	+2	+3

- Data obtained from tests conducted in accordance with ANSI/ ASHRAE Standard 70-2006
- Pressure is given in inches of water gauge (WG)
- NC values are based on a room absorption of 10 dB, re 10^{-12} watts, with a 10-foot active diffuser section. For other lengths, refer to the NC correction table above.
- Dash (-) in space denotes an NC value of less than 10
- For continuous lengths it is recommended that maximum active lengths are no longer than 10 feet

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

See website for Specifications

AVAILABLE MODELS:

Supply Models:
ML-37-NT / ½" Slot
ML-38-NT / ¾" Slot
ML-39-NT / 1" Slot
ML-40-NT / 1½" Slot

Return Models:
MLR-37-NT / ½" Slot
MLR-38-NT / ¾" Slot
MLR-39-NT / 1" Slot
MLR-40-NT / 1½" Slot

FINISH

Standard Finish - #26 White

OVERVIEW

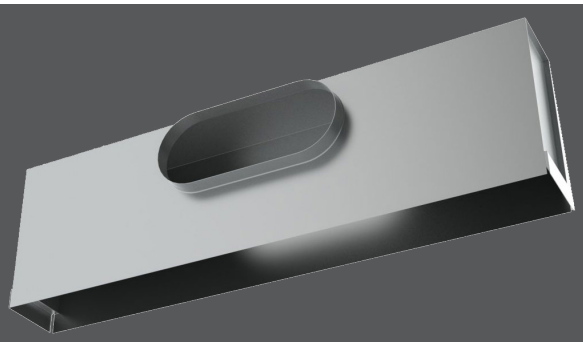
Modulinear Narrow Tee / Aluminum

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; ML-40-NT) and pages F28-F29 for models (MLR-37-NT, MLR-38-NT, MLR-39-NT, and MLR-40-NT).

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

AVAILABLE MODELS:

Models:
MP-37 / ½" Slot
MP-38 / ¾" Slot
MP-39 / 1" Slot
MP-40 / 1½" Slot

Special Performance Models:
MP-37-SP / ½" Slot
MP-38-SP / ¾" Slot
MP-39-SP / 1" Slot
MP-40-SP / 1½" Slot

MPI-37 / ½" Slot
MPI-38 / ¾" Slot
MPI-39 / 1" Slot
MPI-40 / 1½" 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.

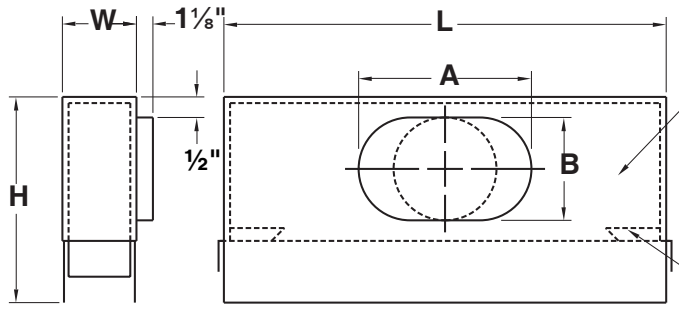
See pages F34-F46 for further explanation of the MP-SP performance

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

MP / MPI UNIT DIMENSIONS



Note: End caps are not insulated.

H (in.)	LP	HP
	7 5/8	10 5/8

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

ML/MLR End Fabrication	L
XX	N - ¼
XY	N - ¼
YY	N - ¼
ZZ	N - ¼

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 10 5/8 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	Dimensions B
6 Oval	6¼	5¼
8 Oval	9 3/8	5¼
10 Oval	12½	5¼
12 Oval	14 1/8	7 7/8

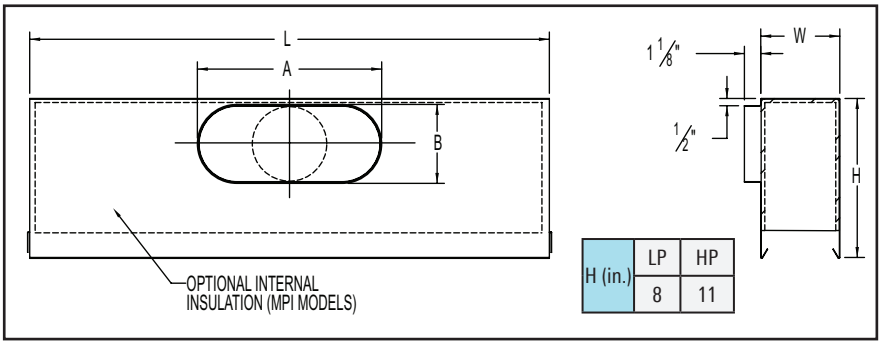
Border Types: 1A, 1B, 9A, 9B, 12 & 15 End Fabrication

ML/MLR End Fabrication	L
XX	N - 7/8
XY	N - 7/8
YY	N - ¼
ZZ	N - ¼

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
MP-40	2 7/16	4 11/16	6 15/16	9 3/16	N/A	N/A	N/A	N/A

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



H (in.)	LP	HP
	8	11

Standard Inlet Size	Dimensions A	Dimensions B
6 Oval	6¼	5¼
8 Oval	9 3/8	5¼
10 Oval	12½	5¼
12 Oval	14 1/8	7 7/8

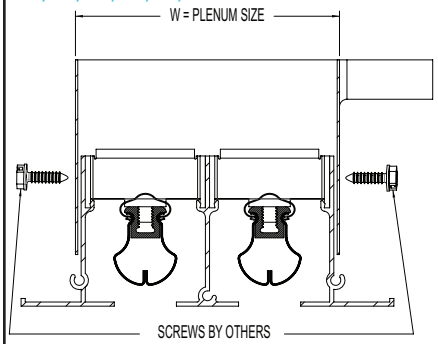
ML/MLR End Fabrication	L
XX	N - 7/8
XY	N - 7/8
YY	N - ¼
ZZ	N - ¼

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
MP-40	3 3/16	5 7/16	7 11/16	9 15/16	N/A	N/A	N/A	N/A

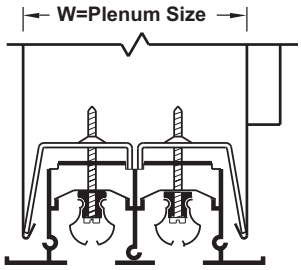
All dimensions are in inches

INSTALLATION DETAILS / TRIMMING, CUTTING, HANGING

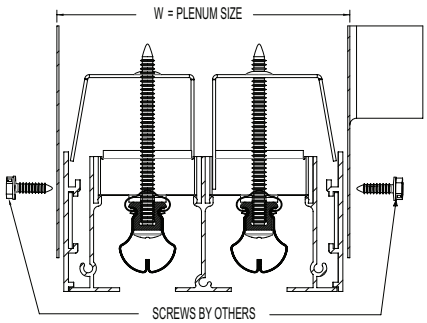
Border Types (MP-TZ)
1A, 1B, 9A, 9B, 12, 15



Border Types
2A, 2B

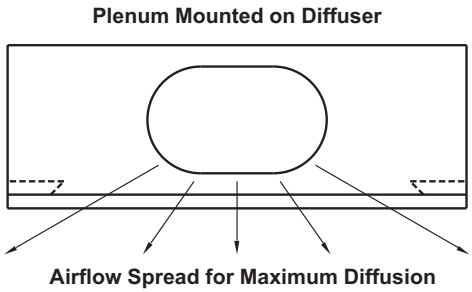


Frame & Border Types
3, 4, 6, 7A, 7B, 11



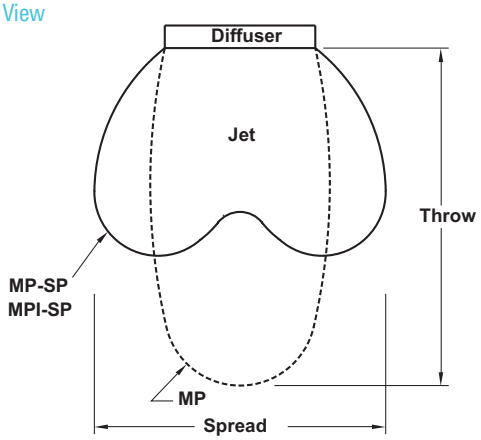
MP-SP PERFORMANCE

Elevation, MP-SP



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 comfort in short-throw applications, as in exterior zones.

Plan View



At a given cfm, the MP-SP plenum shortens the throw and widens the spread of the air leaving the diffuser (as compared with the MP plenum or standard plenum).

ML-37 / ½" 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 / ¾" 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

Performance notes appear at end of performance data

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
MP-40
MPI-37
MPI-38
MPI-39
MPI-40

- 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

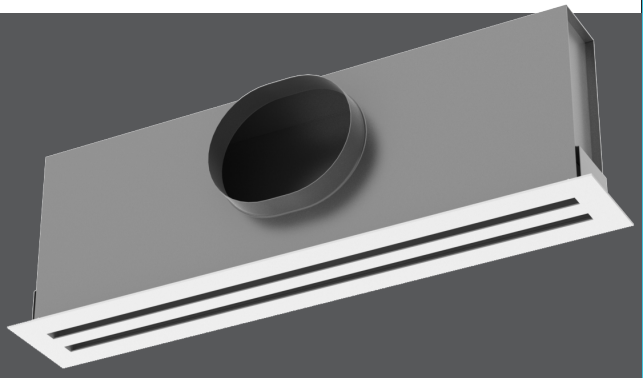
Available Models:

MP-37-SP
MP-38-SP
MP-39-SP
MP-40-SP
MPI-37-SP
MPI-38-SP
MPI-39-SP
MPI-40-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

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



MLT

AVAILABLE MODELS:

Supply Models:
MLT-37 / ½" Slot
MLT-38 / ¾" Slot
MLT-39 / 1" Slot
MLT-40 / 1½" Slot
MLTI-37 / ½" Slot
MLTI-38 / ¾" Slot
MLTI-39 / 1" Slot
MLTI-40 / 1½" Slot

Return Models:
MLTR-37 / ½" Slot
MLTR-38 / ¾" Slot
MLTR-39 / 1" Slot
MLTR-40 / 1½" Slot
MLTRI-37 / ½" Slot
MLTRI-38 / ¾" Slot
MLTRI-39 / 1" Slot
MLTRI-40 / 1½" Slot

See website for Specifications

FINISH

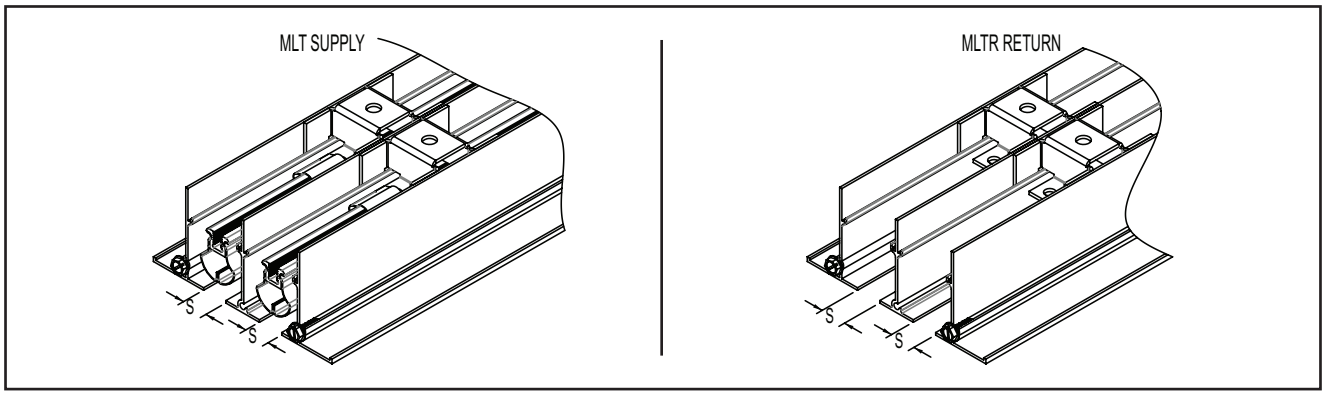
Standard Finish - #26 White border

OVERVIEW

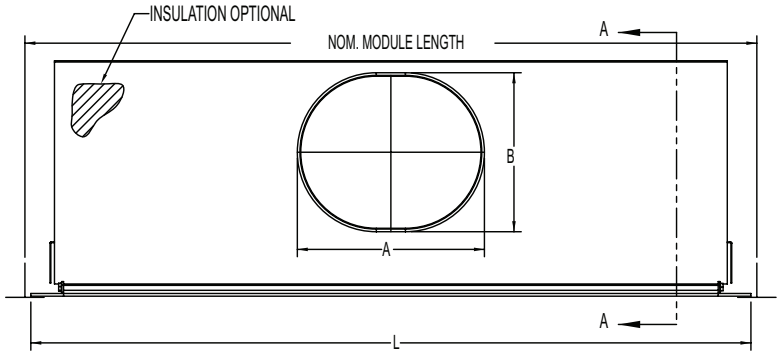
Modulinear / Lay-in

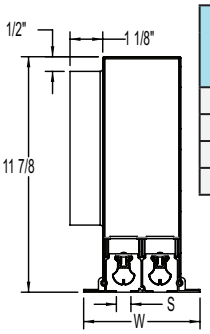
The Titus MLT supply diffuser is specifically designed for standard and narrow tee lay-in applications. The MLT is a supply diffuser and plenum, available in 24 and 48 inch nominal lengths and 1 through 4 slots. The plenums are available in nominal oval inlet sizes of 6 thought 12 inches. The MLT features 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



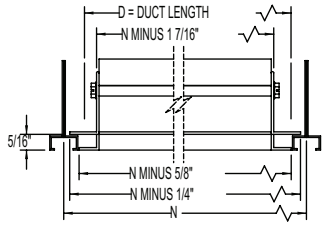


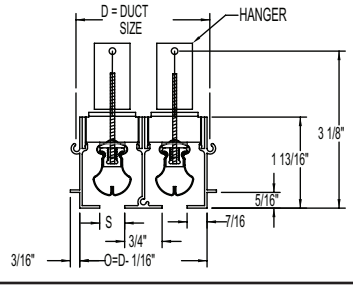
SECTION A-A

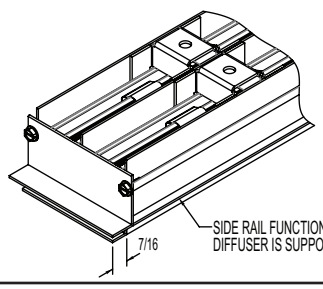
Standard Inlet Size	Dimensions	
	A Width	B Height
6 Oval	6¼	5¼
8 Oval	9⅜	5¼
10 Oval	12½	5¼
12 Oval	14⅛	7⅞

MLT Model	S Slot Width	W Width, Slots 1	W Width, Slots 2	W Width, Slots 3	W Width, Slots 4	Nominal Module Length	Available Inlets (inches) Oval	Plenum Length (inches) Standard	L Unit Length (inches) Standard
MLT, MLTI-37	½	1⅞	3⅞	4⅜	5⅝	24, 48	6, 8, 10, 12	21¾, 45¾	23¾, 47¾
MLT, MLTI-38	¾	2⅛	3⅝	5⅛	6⅝				
MLT, MLTI-39	1	2⅜	4⅛	5⅞	7⅝				
MLT, MLTI-40	1½	2⅞	5⅛	7⅜	9⅝				

BORDER NT







Linear Bar 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 woodgrains MRI compatible

See website for Specifications

AVAILABLE MODELS:

¼" Spacing
- CT-480 / 1/8" Bars / 0° Deflection
- CT-481 / 1/8" Bars / 15° Deflection

½" Spacing
- CT-580 / 1/8" Bars / 0° Deflection
- CT-581 / 1/8" Bars / 15° Deflection
- CT-540 / ¼" Bars / 0° Deflection
- CT-541 / ¼" 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

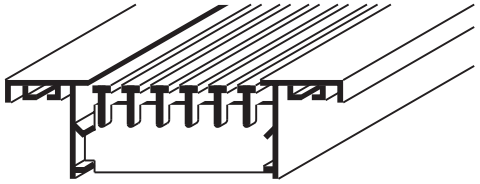
When both appearance and performance are of prime importance in an air distribution system, Titus linear bar diffusers are a logical choice. Designed for both heating and cooling applications, supply as well as return.

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
- 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

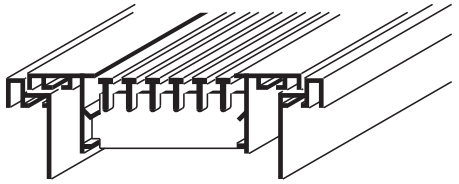
BORDERS & FRAMES - CORE COMBINATIONS

Core with Border



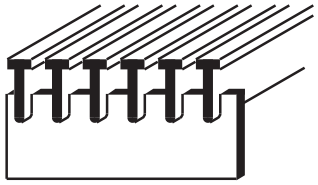
Type 13 border is shown. For other available types, please see F49.

Core with Border & Frame



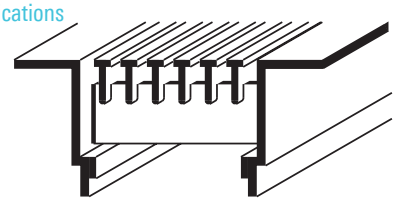
Type 1A frame & border combination is shown. For other available types, please see F50.

Core Only



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

Core with Heavy Duty Mounting Frame for Floor Applications



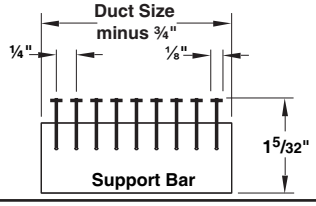
Type 5 heavy duty mounting frame is shown. For other available types, please see F50.

AVAILABLE CORES

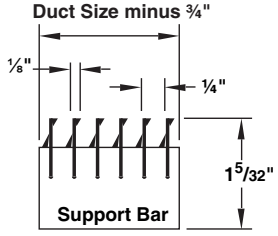
¼" Spacing

⅛" Bars

Model CT-480 - 0° Deflection



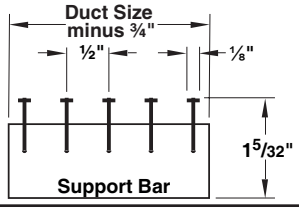
Model CT-481 - 15° Deflection



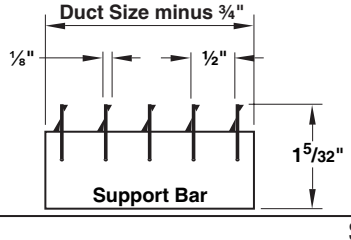
½" Spacing

⅛" Bars

Model CT-580 - 0° Deflection

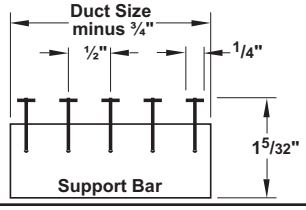


Model CT-581 - 15° Deflection

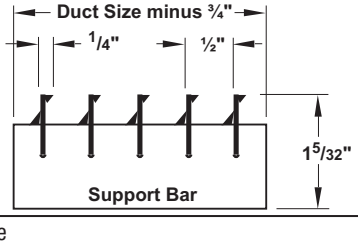


¼" Bars

Model CT-540 - 0° Deflection



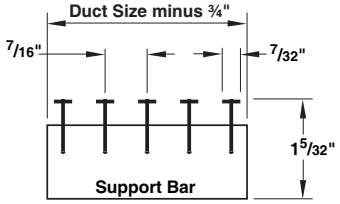
Model CT-541 - 15° Deflection



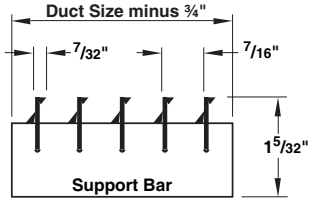
See Note

Pencil Proof

Model CT-PP-0 - 0° Deflection



Model CT-PP-3 - 30° Deflection



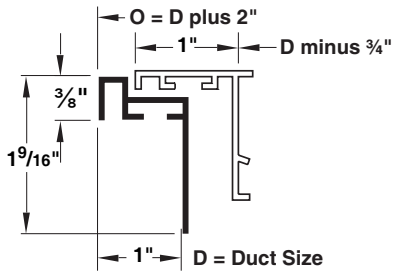
See Note

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

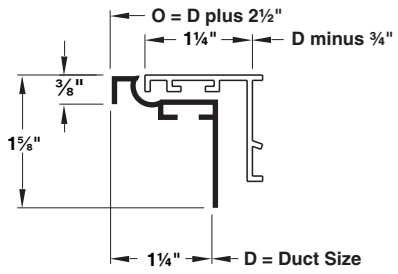
All dimensions are in inches

DIMENSIONS

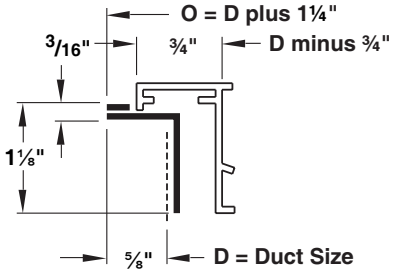
Frame & Border Type 1A with
- 1" Border



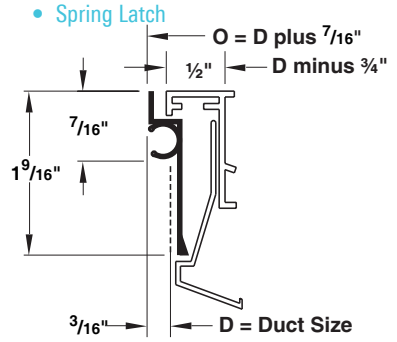
Frame & Border Type 1B with
- 1¼" Border



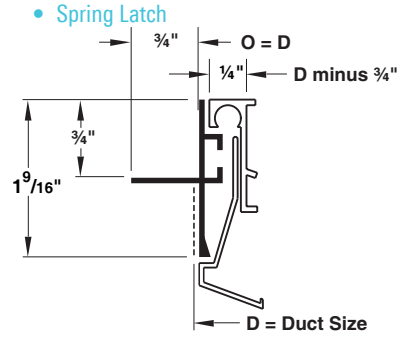
Frame & Border Type 2 with
- ¾" Border



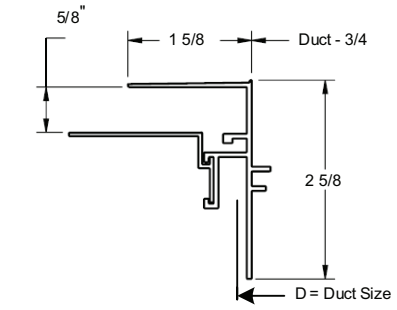
Frame & Border Type 3 with
- ½" Border
- Spring Latch



Frame & Border Type 4 with
- ¼" Border
- Spring Latch

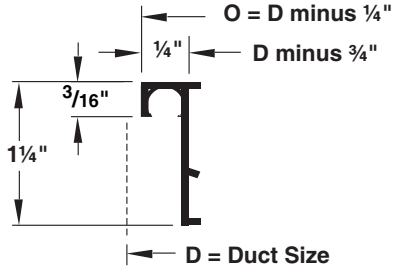


Border Type 22 Tape & Spackle

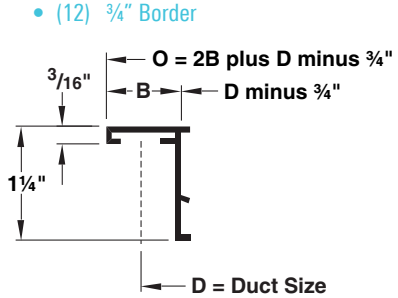


BORDER TYPES

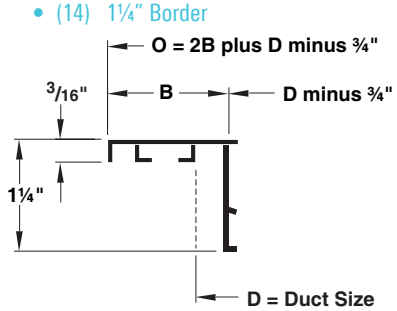
Border Type 7 with
- ¼" Border



Border Type 11 & 12
- (11) ½" Border
- (12) ¾" Border

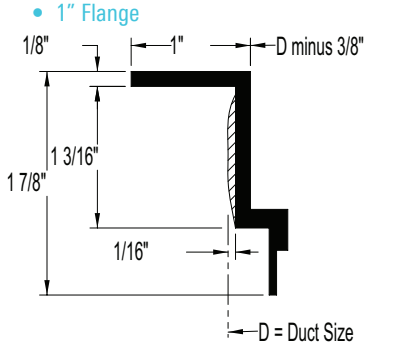


Border Type 13 & 14 with
- (13) 1" Border
- (14) 1¼" Border

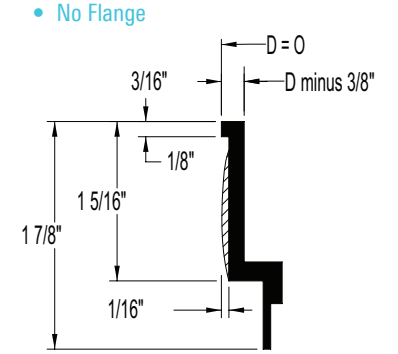


HEAVY DUTY MOUNTING FRAMES FOR FLOOR APPLICATIONS (see loading limitations Submittal D-CT-HD)

Frame Type 5
- 1" Flange

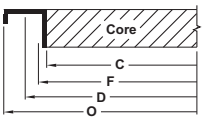


Frame Type 6
- No Flange



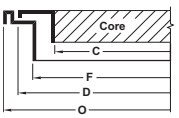
DIMENSIONS

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 3/8
6	D	D	D minus 3/8
7	D minus 5/8	D minus 1/4	D minus 3/4
11	D minus 5/8	D plus 1/4	D minus 3/4
12	D minus 5/8	D plus 3/4	D minus 3/4
13	D minus 5/8	D plus 1 1/4	D minus 3/4
14	D minus 5/8	D plus 1 3/4	D minus 3/4
22	D minus 5/8	D plus 2 1/2	D minus 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 3/4
1B	D	D plus 2 1/2	D minus 3/4
2	D	D plus 1 1/4	D minus 3/4
3	D	D plus 7/16	D minus 3/4
4	D	D	D minus 3/4

STANDARD CORE WIDTH INFORMATION

Number of Bars per Width	Border 1A, 1B, 2, 3, 4, 7, 11, 12, 13, 14			Border 5 and 6		
	CT-480, 481 1/4" spacing	CT-540, 541, CT-580, 581 1/2" spacing	CT-PPO, CT-PP3 7/16" spacing	CT-480, 481 1/4" spacing	CT-540, 541, CT-580, 581 1/2" spacing	CT-PPO, CT-PP3 7/16" spacing
2"	3	2	2	6	3	3
2 1/2"	5	3	3	8	4	4
3"	7	4	4	10	4	5
3 1/2"	9	5	5	12	6	7
4"	11	6	7	14	7	8
5"	15	8	9	18	9	10
6"	19	10	11	22	11	12

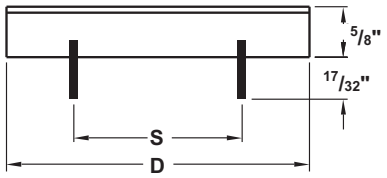
MAXIMUM FLOOR LOADING

(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

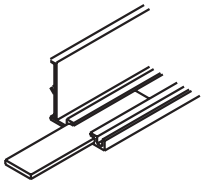
Note: If placing furniture on cores, furniture legs should be a minimum of core spacing plus two bars wide to avoid placing a horizontal load on cores. Maximum duct width available is 12".

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 3/4" smaller than the duct width.

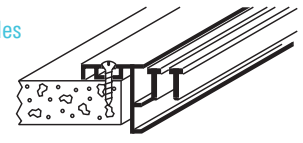
ALIGNMENT STRIPS



Used with border width 1/2" or wider. Alignment pins used with 1/4" borders.

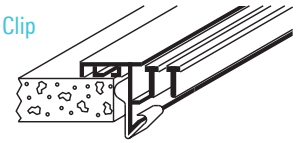
AVAILABLE FASTENINGS

Type A
- Screw Holes



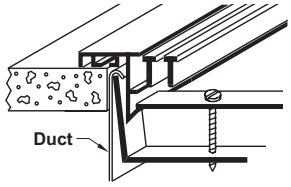
For ceiling, side wall, sill, or floor. Used with Frame & Border Types 1B, 5, 11, 12, 13, 14.

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



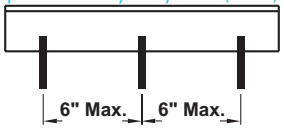
For ceiling, side wall, or sill. Used with Frame and Border Types 1A, 1B, 2, 3, 4, 7, 11, 12, 13, 14, & Border Type 22

Notes:
- Used without spring latch in Frame & Border Types 3 and 4.
- Not for use with Cores CT-480 and CT-481 (1/4" bar spacing). Screwdriver will not fit between bars.

ADDITIONAL REINFORCING (Optional)

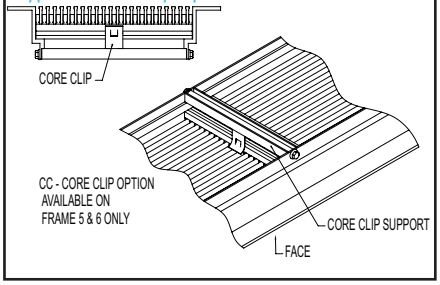
(Except frame types 5 and 6)

Type H - Optional Heavy Duty Core (Note)



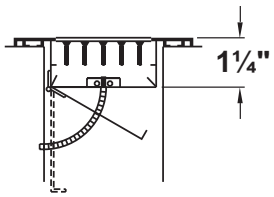
Optional Heavy Duty Core has support bars on 6" maximum centers. (Standard core has 9" maximum centers.) See maximum floor loading shown above.
Note: Frame types 5 and 6 have support bars on 6" centers as standard.

Type CC-Core Clip Option



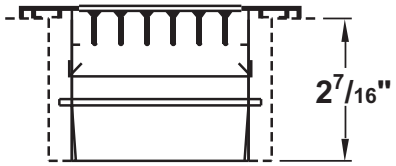
All dimensions are in inches

Model AG-30 Single Blade Damper



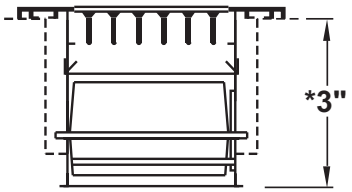
For Model CT diffuser widths 2" through 4". Friction hinge on 2" widths. Screwdriver operator on 2½" through 4". Cannot be attached to Frame and Border Types 3, 4, 5, or 6. For those types use Model AG-35B damper on diffusers 3" and wider.

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.

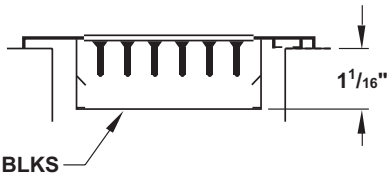
Model AG-35 Opposed Blade Damper



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.

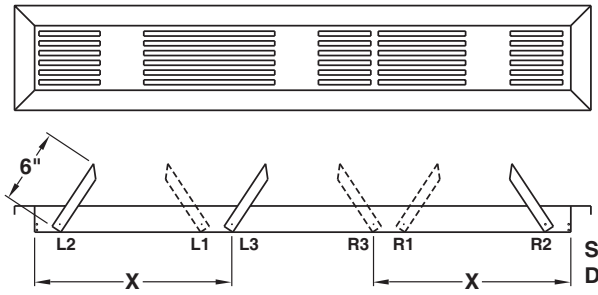
Note: Minimum duct width is 3"
*For floor models, dimension is 4"

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)



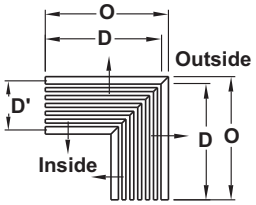
MITERED CORNERS

Available Models:

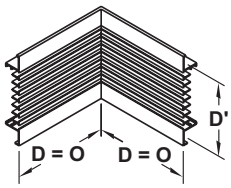
- MC-480 / ¼" Spacing / 1/8" Bars / 0° Deflection
- MC-481 / ¼" Spacing / 1/8" Bars / 15° Deflection
- MC-580 / ½" Spacing / 1/8" Bars / 0° Deflection
- MC-581 / ½" Spacing / 1/8" Bars / 15° Deflection
- MC-540 / ½" Spacing / ¼" Bars / 0° Deflection
- MC-541 / ½" Spacing / ¼" Bars / 15° Deflection

Available Pencil Proof Models:

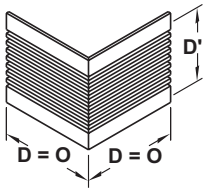
- MC-PP-0 / 7/16" Spacing / 7/32" Bars / 0° Deflection
- MC-PP-3 / 7/16" Spacing / 7/32" Bars / 30° Deflection



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



Type C / Side Wall, Inside



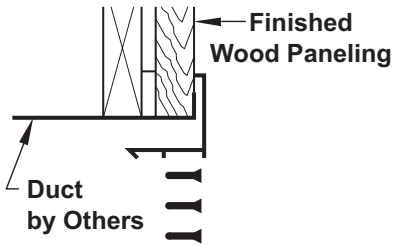
Type D / Side Wall, Outside

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	CO
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
4½-10	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
10½-12	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

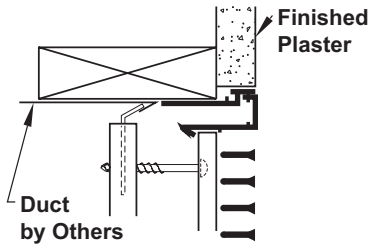
All dimensions are in inches

A1 Side Wall



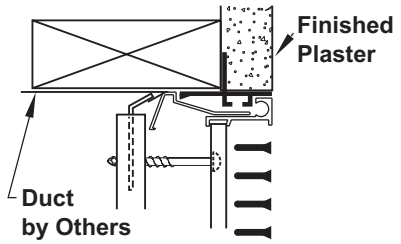
Border Type 11, 12, 13 or 14

A2 Side Wall



Frame & Border Type 3 with Concealed Fastening

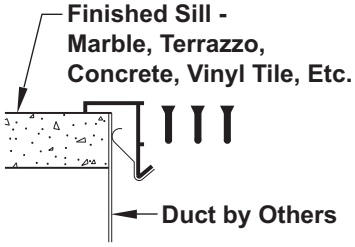
A3 Side Wall



Frame & Border Type 4 with Concealed Fastening

B1 Raised Sill

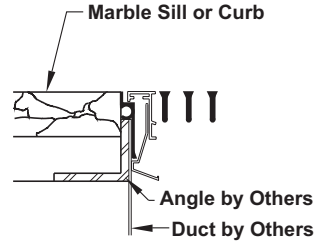
Not for Floor Installations



Border Type 11, 12, 13 or 14

B2 Raised Sill

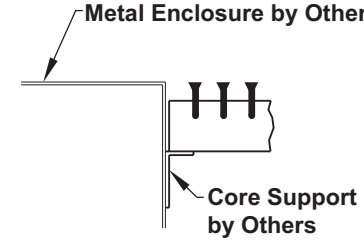
Not for Floor Installations



Frame & Border Type 3

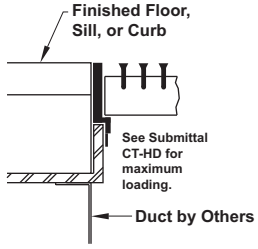
B3 Raised Sill

Not for Floor Installations



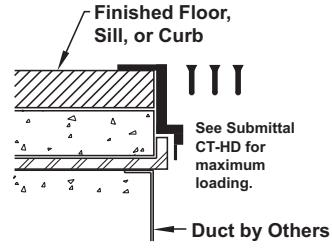
Core Only

C1 Floor or Sill



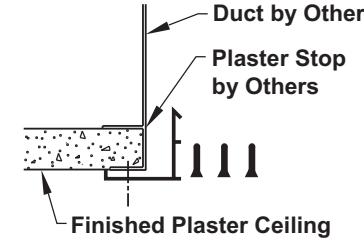
Frame Type 6 plus Heavy Duty Core

C2 Floor or Sill



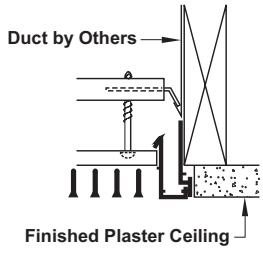
Frame Type 5 plus Heavy Duty Core

D1 Ceiling



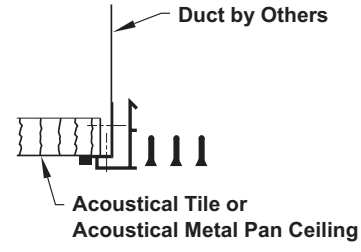
Border Type 11, 12, 13 or 14

D2 Ceiling



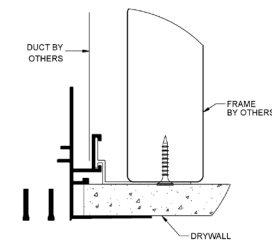
Frame and Border Type 3 with Concealed Fastening

D3 Ceiling



Frame and Border Type 2

D4 Ceiling



Frame Type 15 plus Heavy Duty Core

CT-480 / ⅛" THICK BARS / 0° DEFLECTION / ¼" 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 / ⅛" THICK BARS / 15° DEFLECTION / ¼" 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 / ⅛" THICK BARS / 0° DEFLECTION / ½" 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	3-6-3	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 / ⅛" THICK BARS / 15° DEFLECTION / ½" 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

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

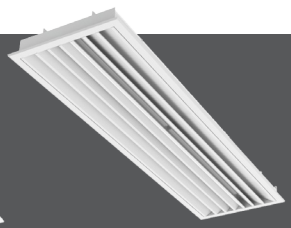
- When the diffuser is used as a return intake, the NC value is increased by 4, and the negative static pressure is 0.8 times the listed total pressure
- Dash (–) in space denotes an NC value less than 10
- For continuous lengths, the selection for NC is usually based on a 10-foot section
- These products 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, 6 and 15 (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

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 four 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

MRI compatible

See website for Specifications

AVAILABLE 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

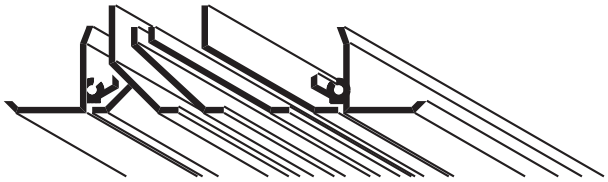
Titus architectural linear louver diffusers combine crisply sculptured styling, careful workmanship, and effective air distribution. They offer excellent performance in variable air volume systems. Ceiling mounted diffusers maintain a uniform, horizontal discharge pattern over widely varying flow rates.

ADDITIONAL FEATURES

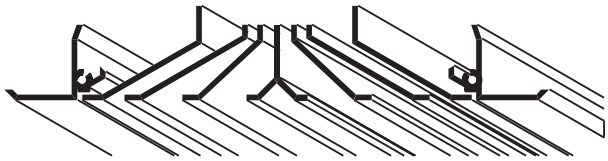
- Maximum one piece section is 6 feet. Lengths greater than 6 feet are furnished in multiple sections.
- Material is extruded aluminum

CHOICE OF FLOW PATTERN

LL-1 - One-Way Pattern

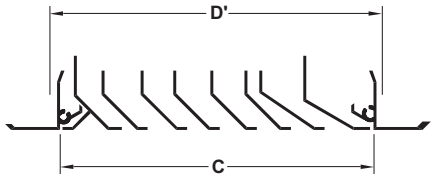


LL-2 - Two-Way Pattern



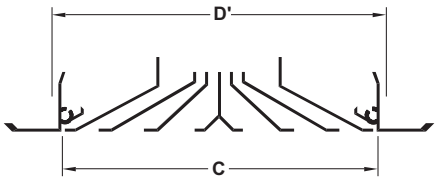
AVAILABLE WIDTHS

LL-1 - One-Way Pattern



Nominal Duct Width	3½, 4¼, 5, 5¾, 6½, 8, 9½, 11¾
Actual Duct Width D'	$3^5/_8$, $4^3/_8$, $5^1/_8$, $5^7/_8$, $6^5/_8$, $8^1/_8$, $9^5/_8$, $11^7/_8$
Face Width C	$3^3/_8$, $4^1/_8$, $4^7/_8$, $5^5/_8$, $6^3/_8$, $7^7/_8$, $9^3/_8$, $11^5/_8$

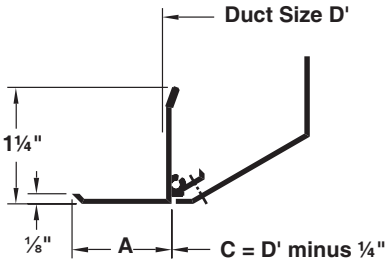
LL-2 - Two-Way Pattern



Nominal Duct Width	6¼, 7¾, 9¼, 10¾, 12¼
Actual Duct Width D'	$6^3/_8$, $7^7/_8$, $9^3/_8$, $10^7/_8$, $12^3/_8$
Face Width C	$6^1/_8$, $7^5/_8$, $9^1/_8$, $10^5/_8$, $12^1/_8$

Frame Types 1A & 1B

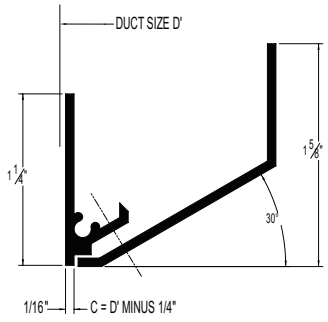
- Surface Flange, Duct Mount



Type	A
1A	½
1B	1

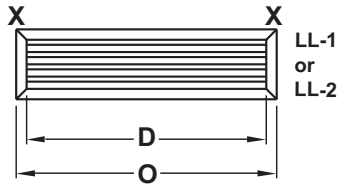
Frame Type 2

- No Flange, Duct Mount



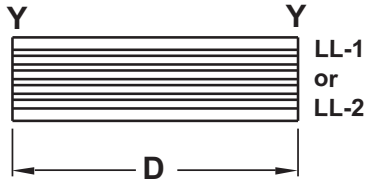
END FABRICATION

X-X End Borders

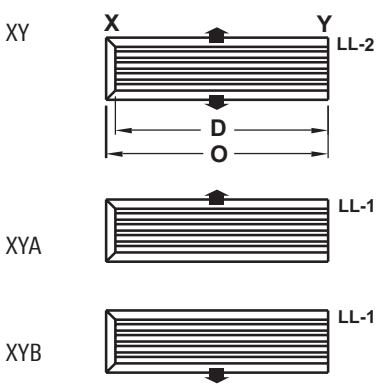


Frame	O
1A 1B	D + ¾ D + 1¾
Frame	O
2	D - ⅛

Y-Y End Borders



X-Y End Borders

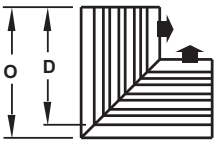


Frame	O
1A	D + ⅜

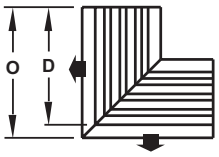
Frame	O
2	D - 1/16

All dimensions are in inches

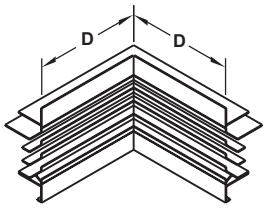
Mitered Corners



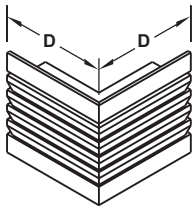
Type A Inside



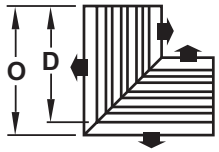
Type B Outside



Type C Inside



Type D Outside



Type A

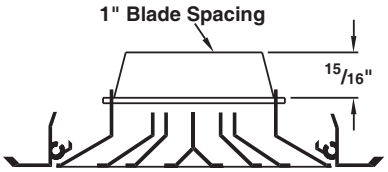
MODEL MC-1 / ONE-WAY

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	12¾	24	24¾	12	12	24	24
2	12	11 15/16	24	23 15/16	12	12	24	24
3	12	12 5/8	24	24 5/8	12	12	24	24

MODEL MC-2 / TWO-WAY

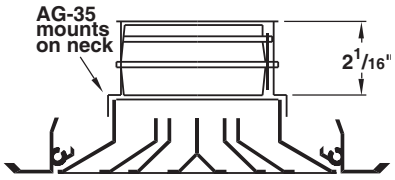
Frame Type	Corner Type A	
	Width	
	6¼ – 12¼	
	D	O
1A	24	24 3/8
1B	24	24¾
2	24	23 15/16
3	24	24 5/8

Model 07 Directional Blades



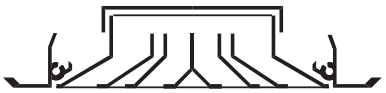
Model 07 is integral part of diffuser.

Model AG-35



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

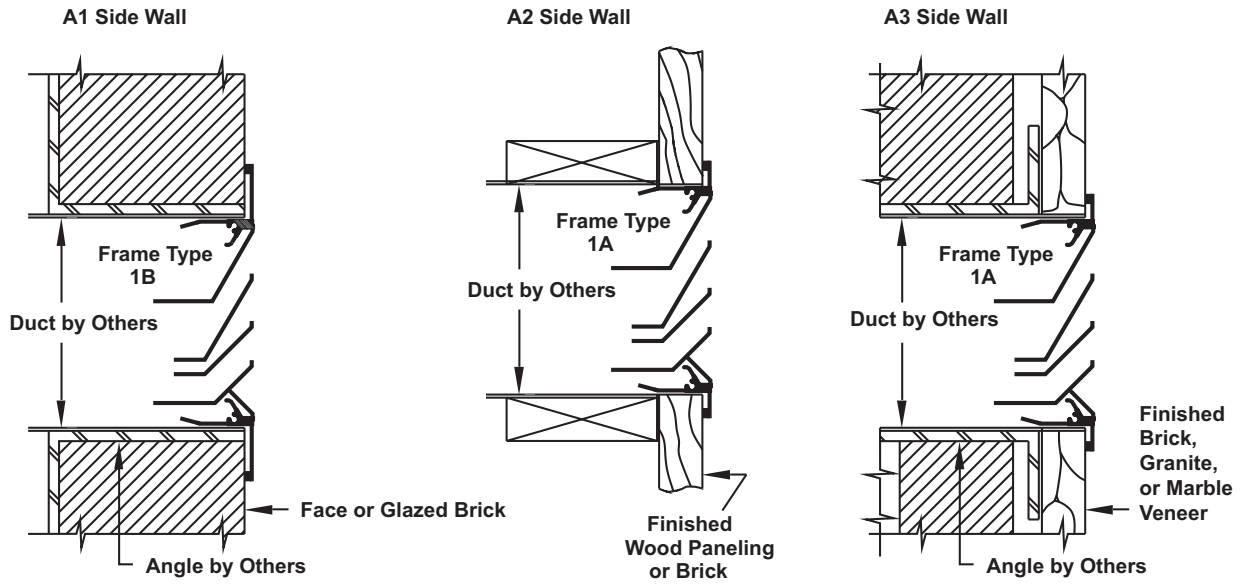
Model LL BLK - Blank-Off



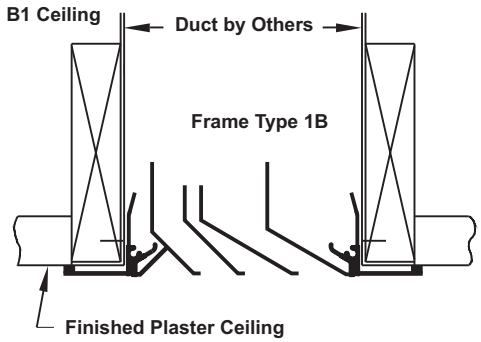
For all widths of Model LL diffusers. Furnished in 6-foot lengths for field cutting and installation. Steel, painted flat black.

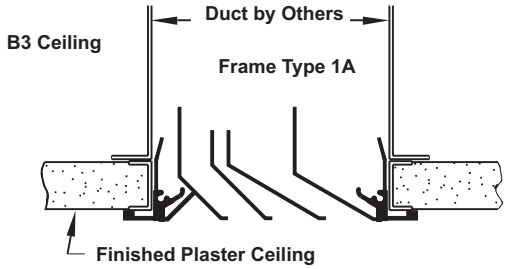
All dimensions are in inches

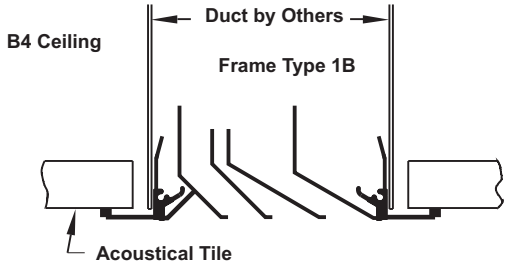
Side Wall

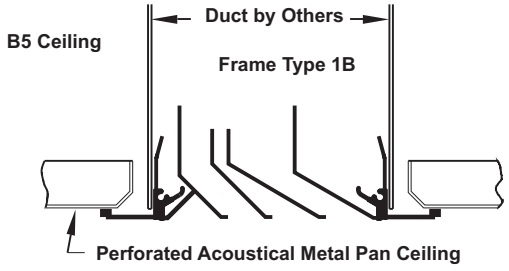


Ceiling









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
- 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

Throw Correction for Length (multiply)

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

NC Correction for Length (add)

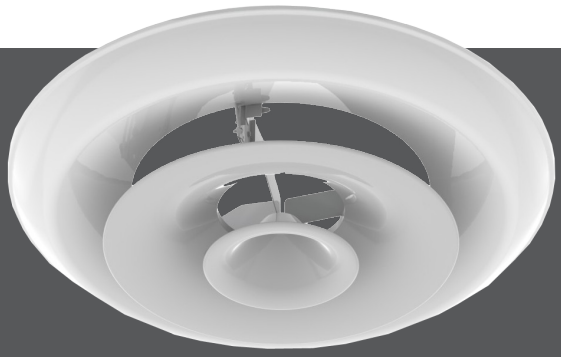
Active Length (ft)	2	4	6	8	10
NC Correction	-3	0	2	3	5

Titus
Redefine your comfort zone.™

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

open ceiling

See website for Specifications

AVAILABLE MODELS:

TMR / Steel
TMR-AA / Aluminum

FINISHES

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

OVERVIEW

Two Horizontal Discharge Patterns

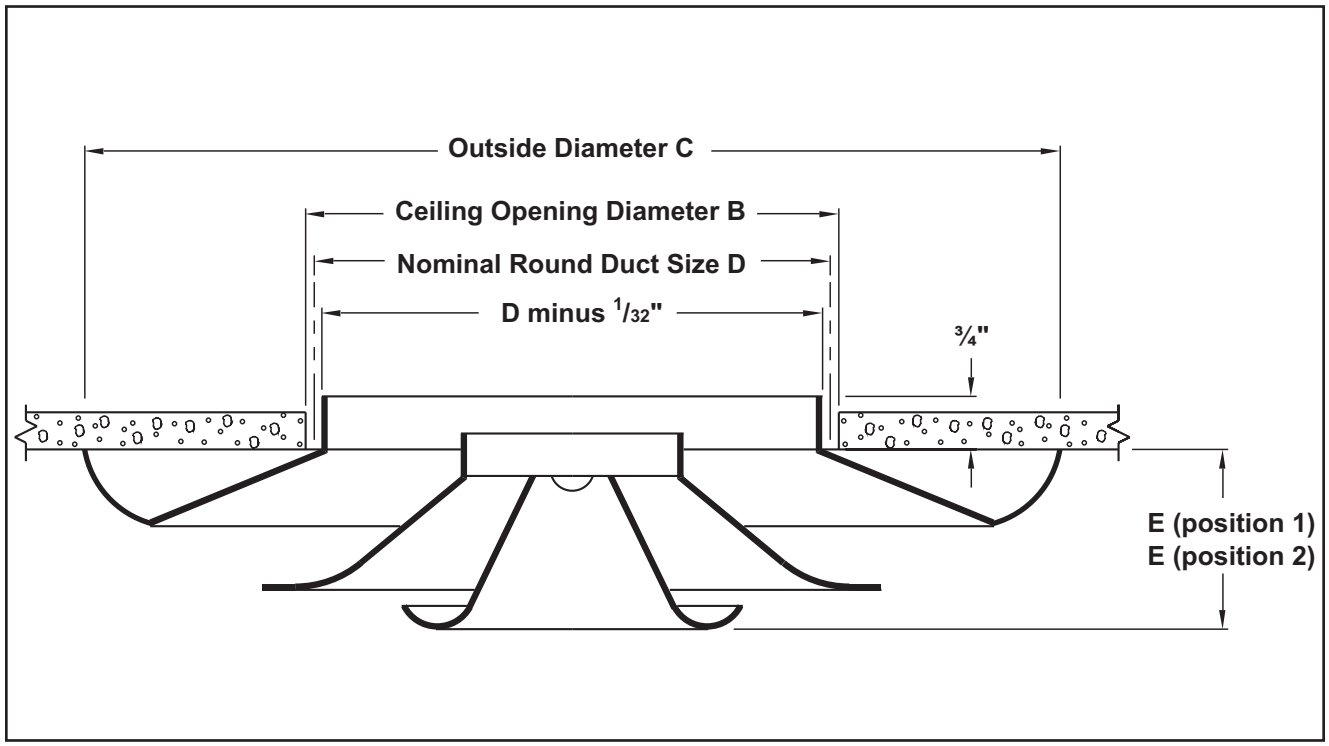
Models TMR and TMR-AA round ceiling diffusers are designed for both heating and cooling applications. All sizes have three cones, giving a uniform appearance where different sizes are used in the same area. They deliver a uniform 360° discharge pattern and exhibit excellent performance in variable air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

TMR diffusers installed in an open ceiling office environment

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	11 1/8	1¾	1 1/8
8	8½	14¾	2 1/8	1½
10	10½	18¼	2 7/8	2 1/8
12	12½	22	3 1/8	2 3/8
14	14½	26	3 3/8	2 5/8
16	16½	29	4	3¼
18	18½	32½	4¾	3 7/8
20 (Note)	20½	36	5 7/8	4 7/8
24 (Note)	24½	43¼	7¾	6 5/8
30 (Note)	30½	53¾	8 1/8	6 5/8
36 (Note)	36½	64½	10 1/8	8 3/8

Note: Sizes 20 through 36 are available in steel only

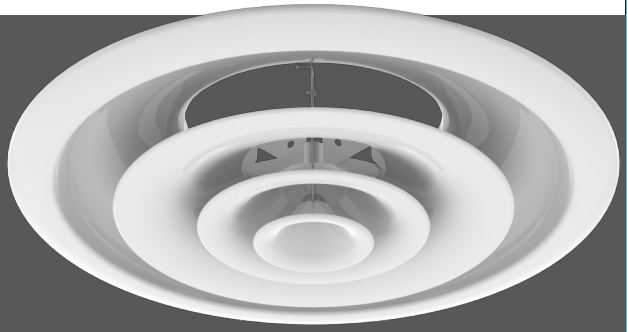
TMR / TMR-AA

	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	6-9-12	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

See website for Specifications

AVAILABLE MODELS:

TMRA / Steel
TMRA-AA / Aluminum

FINISHES

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

OVERVIEW

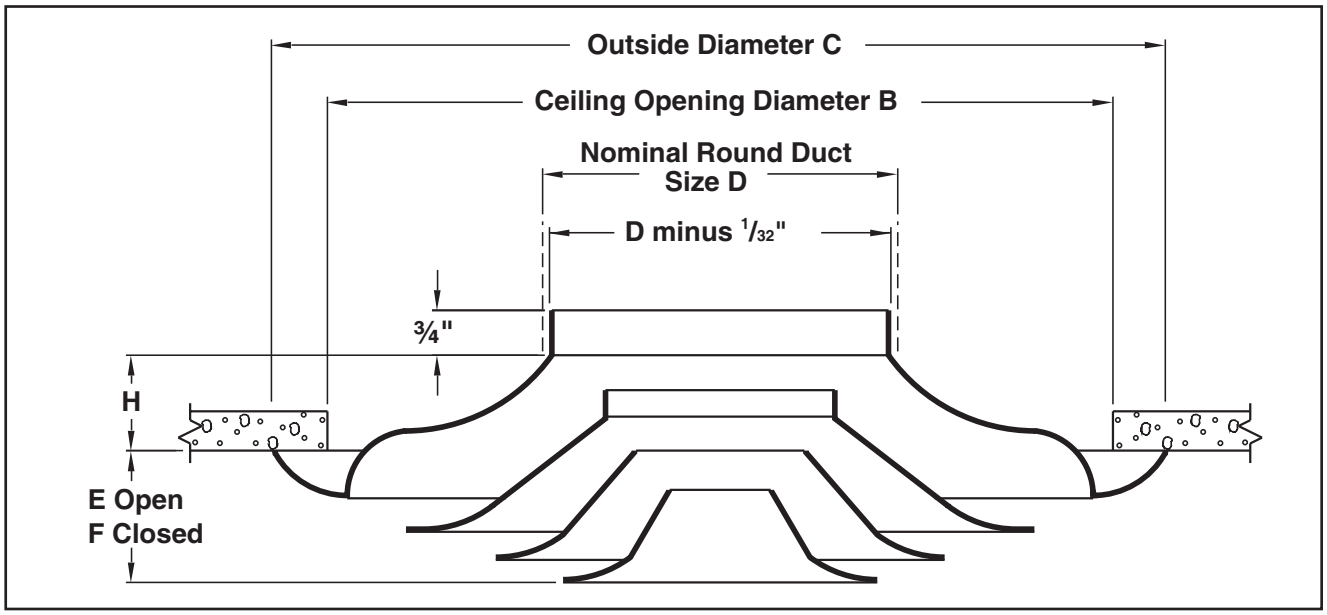
Vertical to Horizontal Discharge Patterns / Adjustable

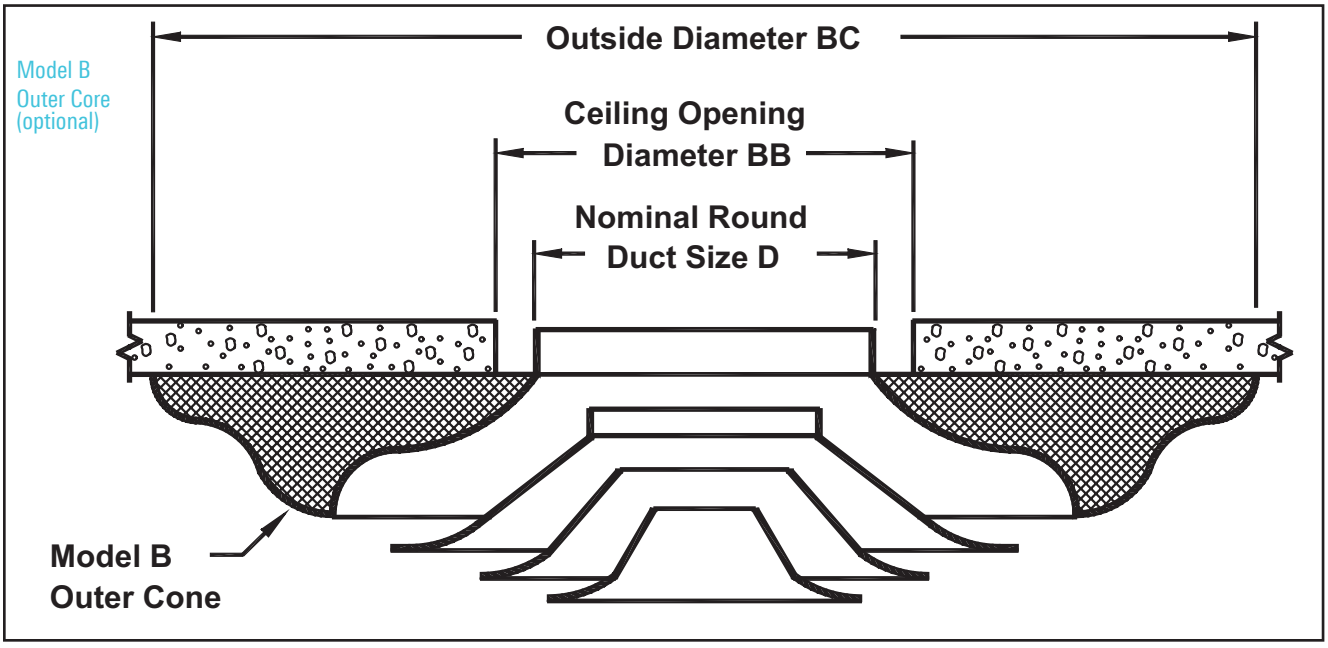
The TMRA is an adjustable round ceiling diffuser designed for both heating and cooling applications. All sizes have four cones, giving uniformity of appearance where different sizes are used in the same area. It delivers a uniform 360° discharge pattern and exhibits excellent performance in variable 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
- 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	1 7/16	11/16	1 5/8	-	7	17 3/4
8	16	18	1 13/16	7/8	2 1/8	-	9	23 1/4
10	20	22½	2¼	1 1/8	2 5/8	-	11	29
12	24	27	2 11/16	1¼	3¼	-	13	34 7/8
14	28	31½	3 1/8	1 3/16	3¾	2½	15	40 5/8
16	32	36	3 5/16	1 5/16	4¼	2 5/8	17	46¾
18	36	40½	3¾	1½	4 7/8	2¾	19	51 3/8
20[2]	40	45½	4 1/8	1 5/8	5 3/8	3½	21	56¼
24[2]	48	54½	4 7/8	1 7/8	6½	3 1/8	25	67
30[2]	60	67½	5 9/16	1 7/8	8	3 3/8	NA	NA
36[2]	60	67½	5 9/16	1 7/8	8	4 3/8	NA	NA

Note 1: An asterisk (*) indicates 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

All dimensions are in inches

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

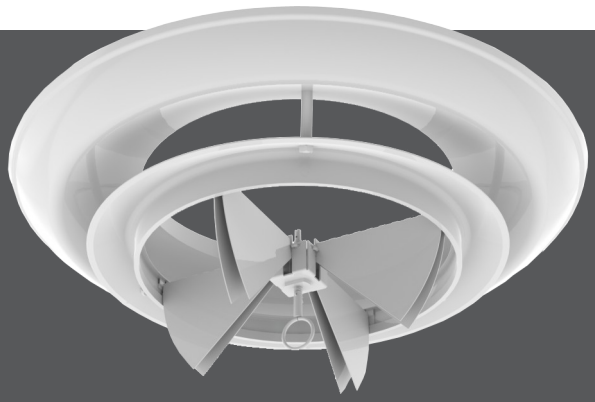
Downward Projection of Heated Air, Ft.									
Neck Velocity	400	500	600	700	800	900	1000	1200	1400
10° F Differential	6-6-3	8-8-6	10-12-11	13-15-16	15-19-24	17-23-28	19-25-33	21-32-42	25-38-52
20° F Differential	4-4-2	6-7-5	7-8-7	9-11-11	10-14-16	12-16-20	13-18-24	15-17-30	17-25-36
30° F Differential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

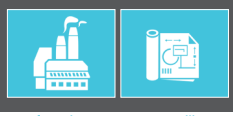
- All pressures are given in inches of water
- Throw values are given for terminal velocities of 150, 100 and 50 fpm and for isothermal conditions
- To obtain static pressure, subtract the velocity pressure from the total pressure
- If the diffuser is mounted on an exposed duct, the throw values are 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

AVAILABLE MODEL:

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

FINISH

Standard Finish - #26 White

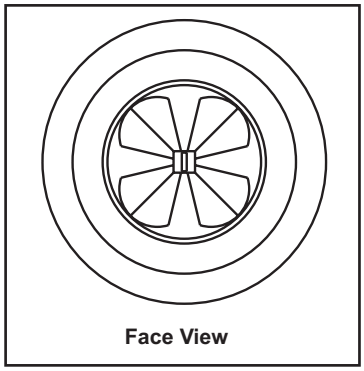
OVERVIEW

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.

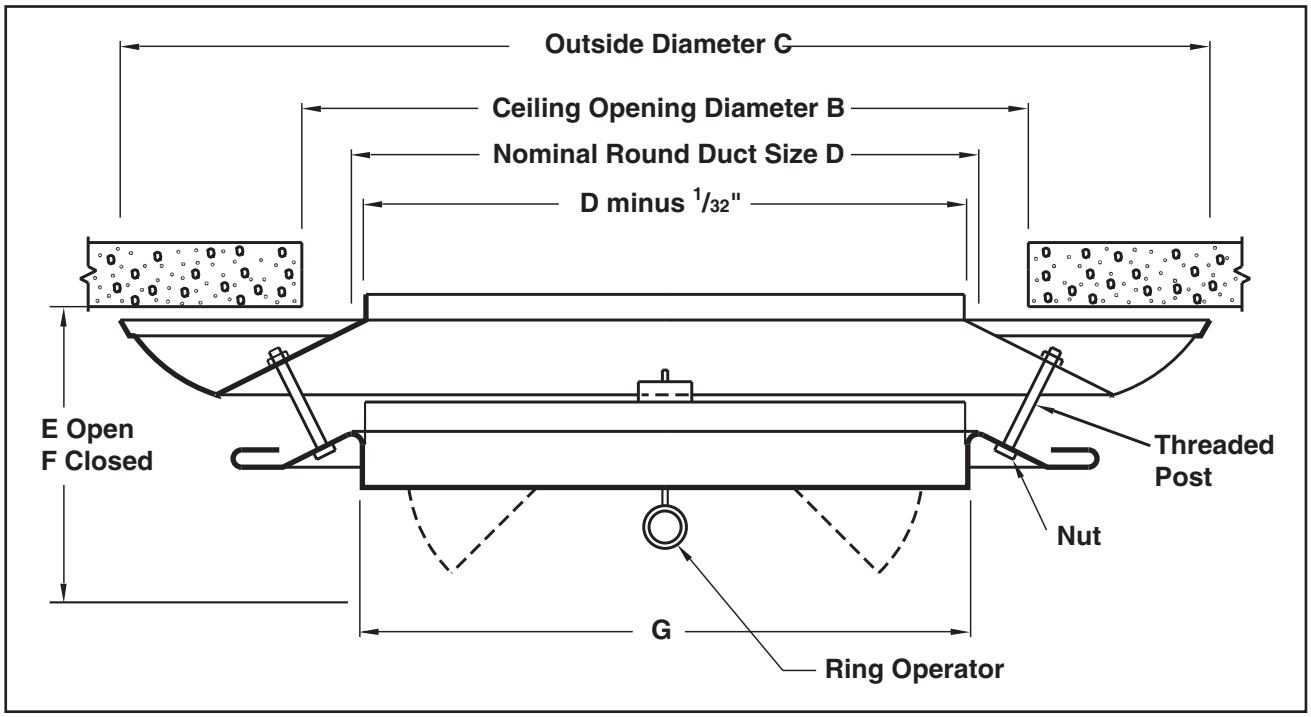
ADDITIONAL FEATURES

- 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	9 3/8	4	12
14	14½	26	6¾	4	14
16	16½	29	8½	5	16
18	18½	32½	9 1/8	5	18
20	20½	36	10 3/8	5½	20
24	24½	43¼	12¼	6 5/8	24
30	30½	53 5/8	13 7/8	8¼	30
36	36½	64 3/8	15 5/8	10	36

All dimensions are in inches

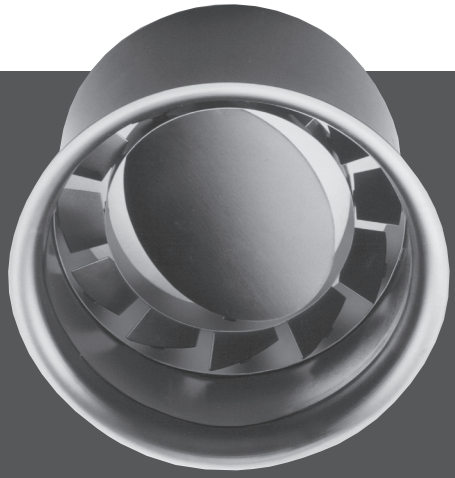
XC-310

	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
10" Dia.	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
14" Dia.	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
	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
18" Dia.	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
	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
20" Dia.	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
24" 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
30" Dia.	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
	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
36" Dia.	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
	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

See website for Specifications

AVAILABLE MODEL:

V-1 / Vortex Diffuser

FINISH

Standard Finish - #84 Black

OVERVIEW

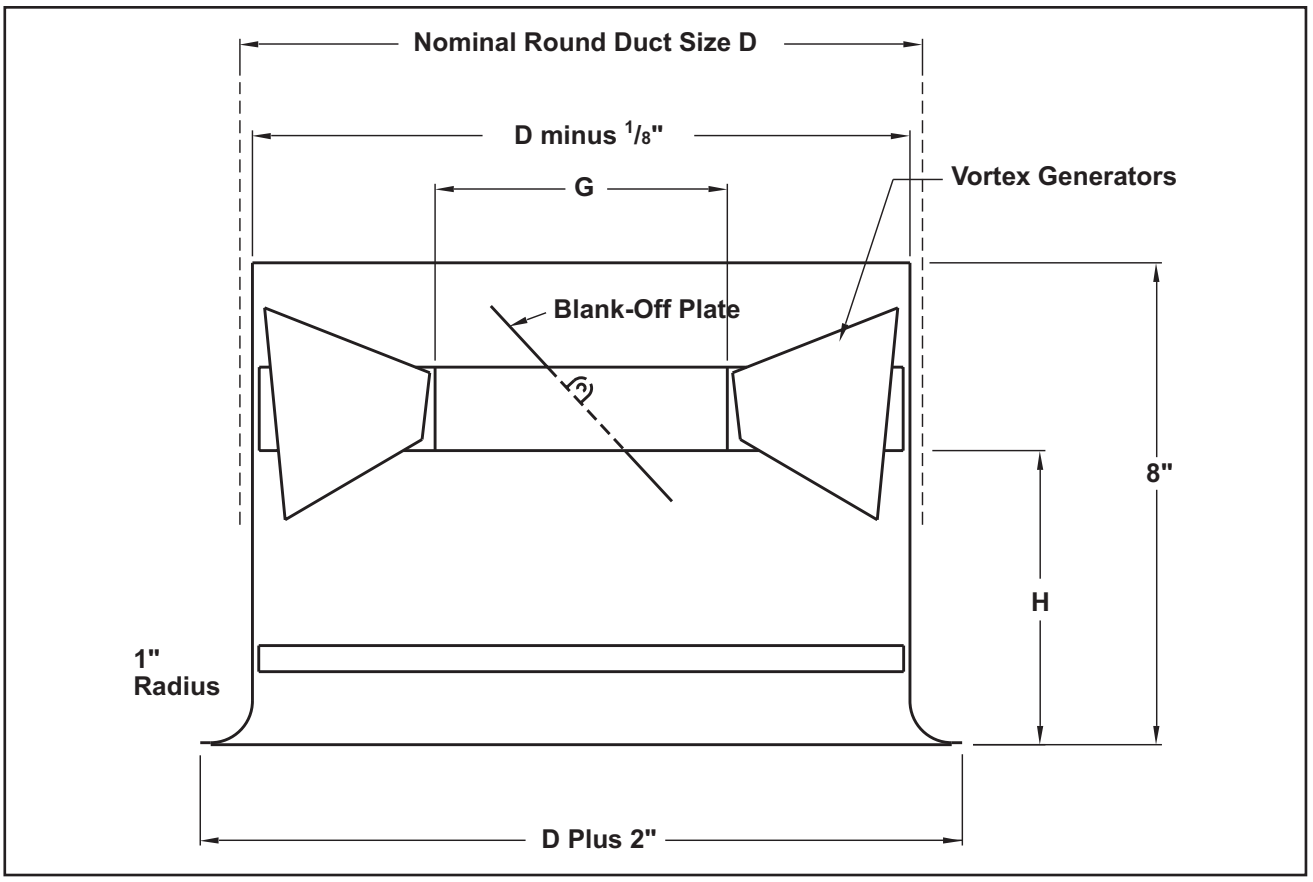
Adjustable Vortex / Steel

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

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

All dimensions are in inches

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

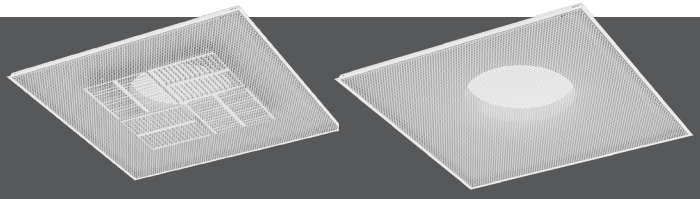
- All pressures are in inches of water
- Radius of diffusion values (feet) are given for terminal velocities of 150, 100 and 50 fpm
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006. Actual performance, with flexible duct inlet, may vary in the field. See the Engineering 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

Titus
Redefine your comfort zone.™

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

See website for Specifications

AVAILABLE 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

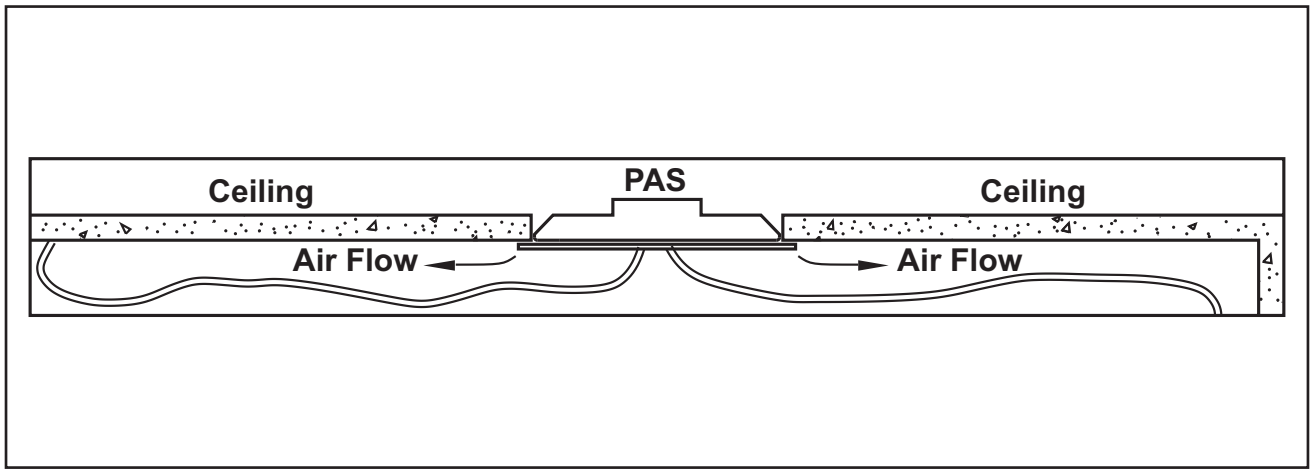
Perforated ceiling diffusers are typically selected to meet architectural demands for air outlets that blend into the ceiling plane. Titus perforated diffusers can be selected for a round pattern to maximize capacity or star pattern to maximize throw.

ADDITIONAL FEATURES

- Perforated face has $^{3}/_{16}$" diameter holes on ¼" 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

DIMENSIONS

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

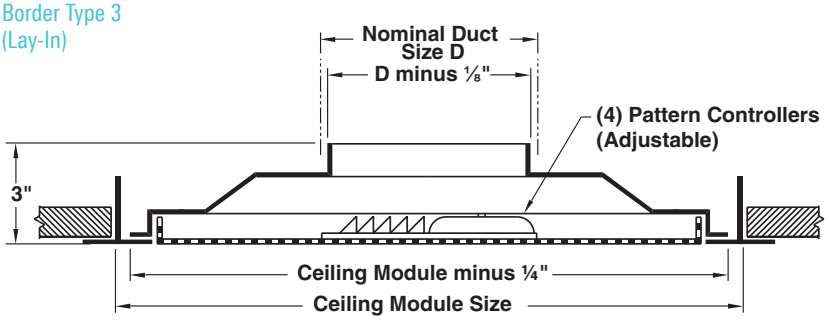
❑ Available in return models only

●/❑ Shaded areas indicate sizes available with aluminum face

All dimensions are in inches

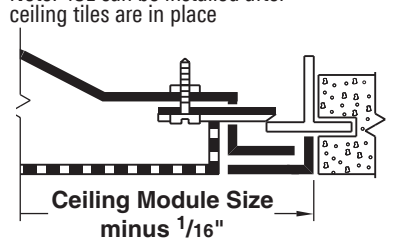
MODELS PAS / PAS-AA / SUPPLY

Border Type 3
(Lay-In)

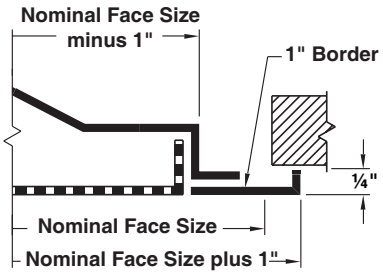


Border Type 4SL
(Spline Side Lock)

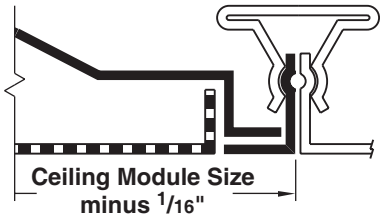
Note: 4SL can be installed after ceiling tiles are in place



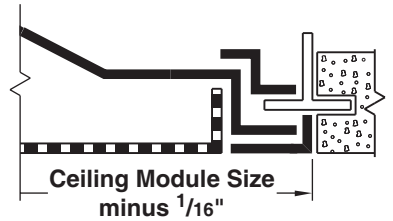
Border Type 1
(Surface Mount)



Border Type 2
(Snap-In)

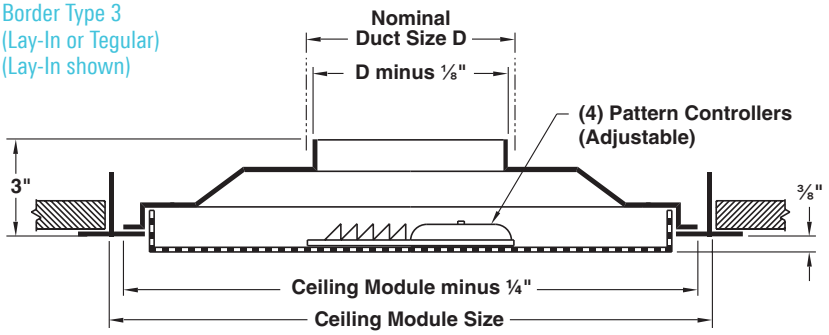


Border Type 4
(Spline)



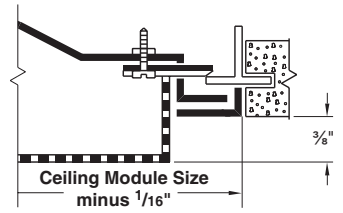
MODEL PDS - SUPPLY

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

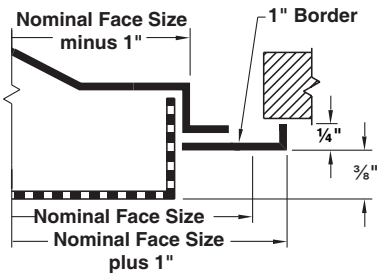


Border Type 4SL
(Spline Side Lock)

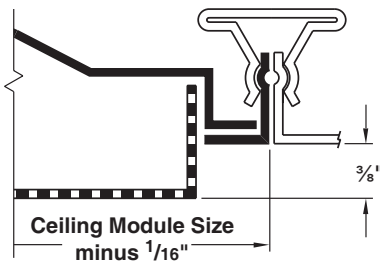
Note: 4SL can be installed after ceiling tiles are in place.



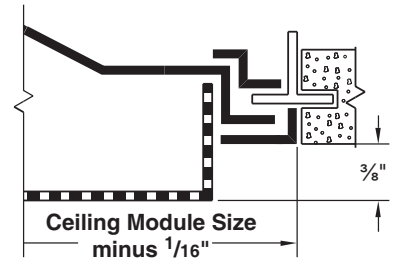
Border Type 1
(Surface Mount)



Border Type 2
(Snap-In)



Border Type 4
(Spline)



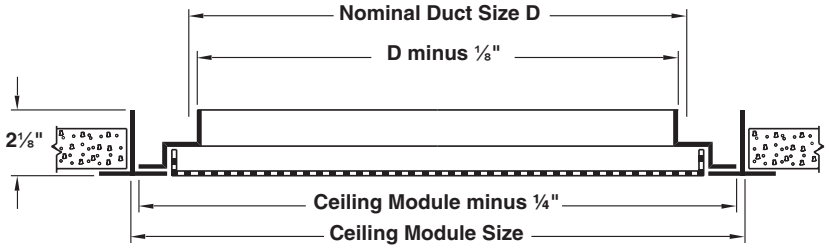
All dimensions are in inches

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.

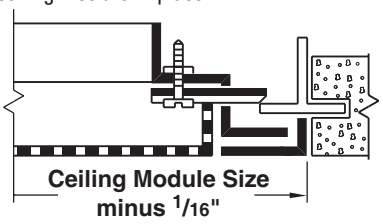
MODELS PAR, PAR-AA - RETURN

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

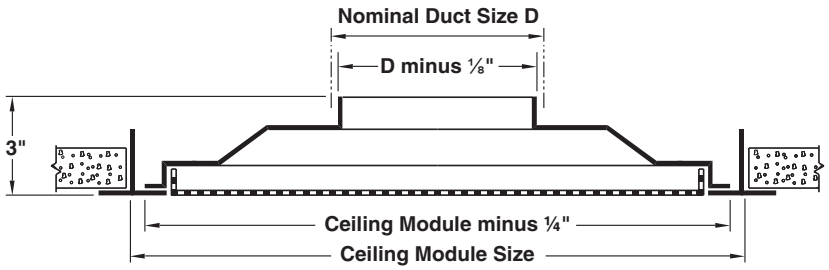


Border Type 4SL
(Spline Side Lock)

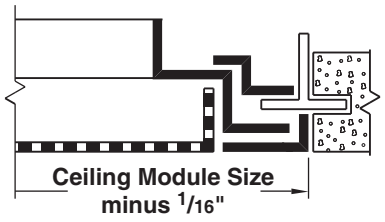
Note: 4SL can be installed after ceiling tiles are in place



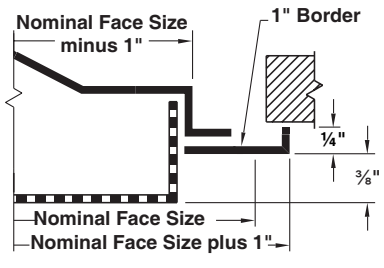
Border Type 3
(Lay-In for other standard duct sizes)



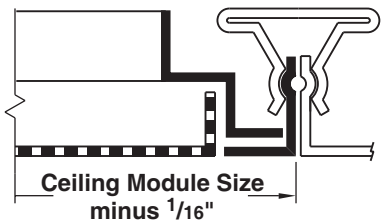
Border Type 4
(Spline)



Border Type 1
(Surface Mount)



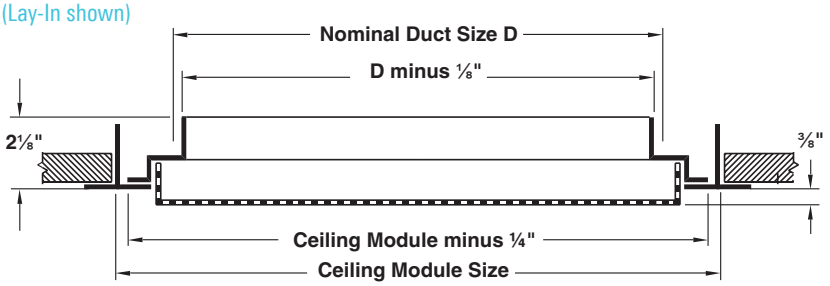
Border Type 2
(Snap-In)



All dimensions are in inches

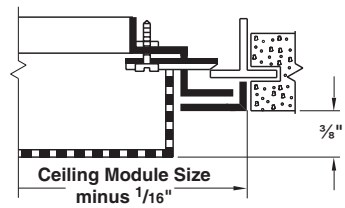
MODEL PDR - RETURN

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

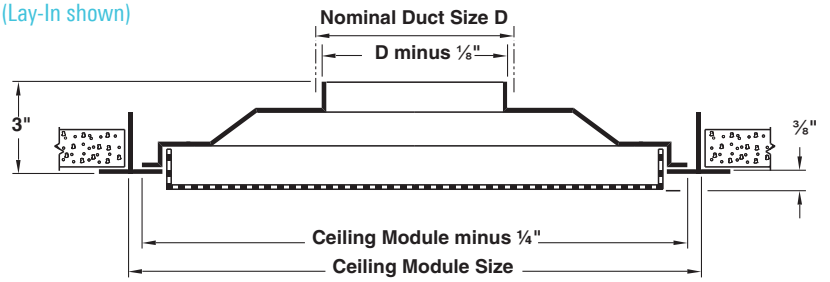


Border Type 4SL
(Spline Side Lock)

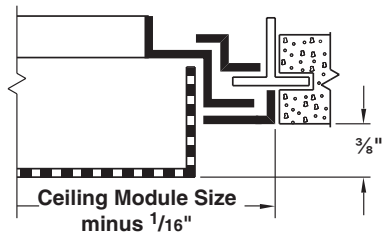
Note: 4SL can be installed after ceiling tiles are in place



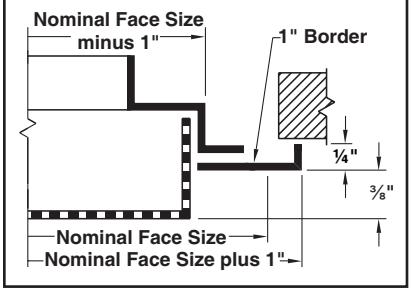
Border Type 3
(Lay-In or Tegular for other standard duct sizes)
(Lay-In shown)



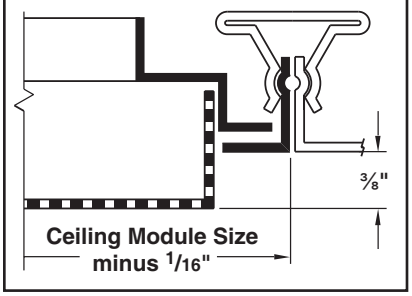
Border Type 4
(Spline)



Border Type 1
(Surface Mount)



Border Type 2
(Snap-In)



All dimensions are in inches

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
		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
	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	1-2-8	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
24 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
		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
	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	1-2-8	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
16 x 16 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

Performance notes appear at end of performance data

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

Performance notes appear at end of performance data

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
24 x 24 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
	12 x 12 Neck	Airflow, cfm	300	400	500	600	700	800	1000	1200	1400
		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
	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
	16" Dia.	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

Performance notes appear at end of performance data

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
		4-Way - Horizontal Throw	1-2-4	1-3-5	2-3-7	3-4-8	3-5-9	3-5-9	4-7-10	5-8-11	6-9-12
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
		4-Way - Horizontal Throw	1-2-4	1-3-5	2-3-7	3-4-8	3-5-9	3-5-9	4-7-10	5-8-11	6-9-12
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

Performance notes appear at end of performance data

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
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

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
24 x 24 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
	12 x 12 Neck	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
		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
	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
	16" 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

Performance notes appear at end of performance data

PERFORMANCE DATA

- 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

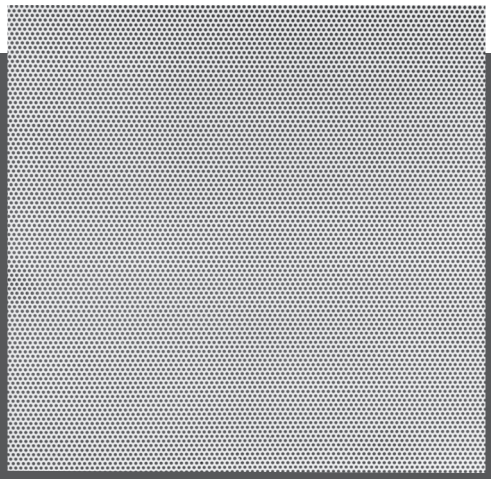
12 x 12 Face	Neck Size	Neck Vel, fpm	300	400	500	600	700	800	1000	1200	1400
		Vp, in. Wg	0.01	0.01	0.02	0.02	0.03	0.04	0.06	0.09	0.12
		Ps (-), in. Wg	0.03	0.06	0.09	0.13	0.17	0.23	0.36	0.51	0.70
	6 Dia. *	Flow Rate, cfm	59	78	98	118	137	157	196	235	275
		Room NC	-	-	-	14	18	21	27	32	36
	6 x 6 Neck *	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 3/16" diameter holes on ¼" staggered centers
- Material is heavy gauge steel or aluminum
- MRI compatible (PXP-AA)



PXP / PXP-DF / PXP-AA

MRI compatible

See website for Specifications

AVAILABLE 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

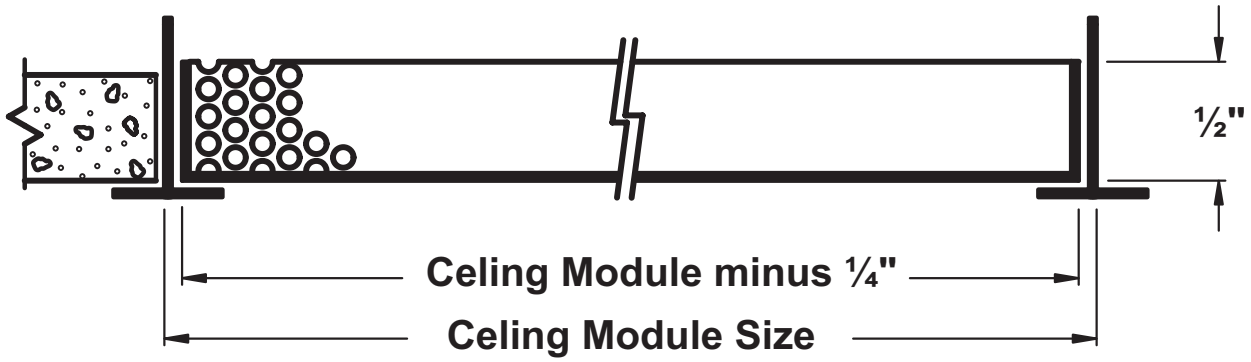
Return Panels

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.

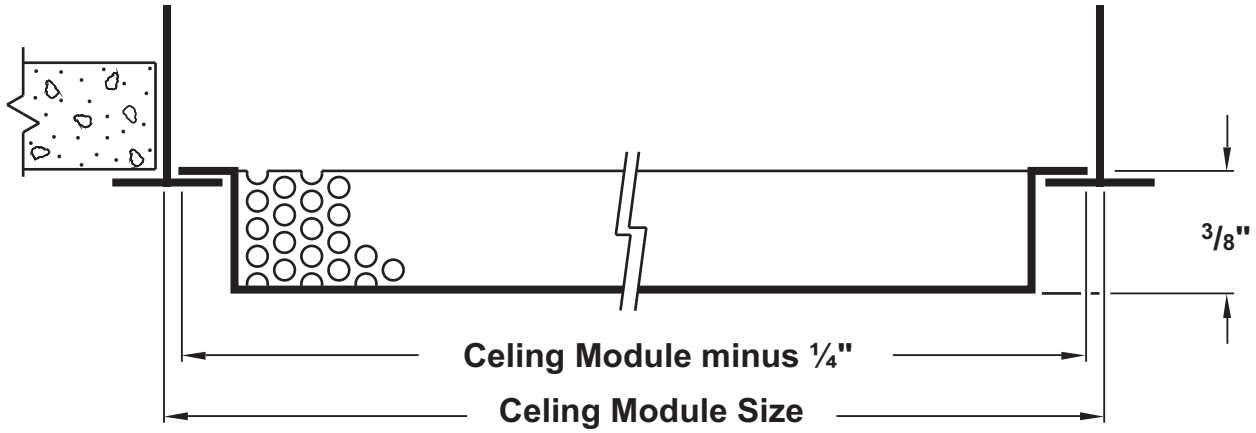
PXP / PXP-DF / PXP-AA UNIT DIMENSIONS

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)

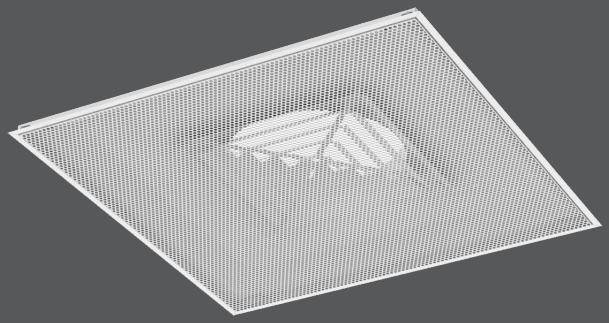


Ceiling Module Sizes Available: 12 x 12, 16 x 16, 20 x 20, 24 x 12, 24 x 24, 48 x 24

All dimensions are in inches

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

AVAILABLE 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

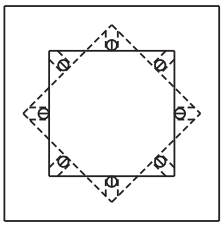
Titus Series PSS perforated star diffusers generate a high induction air pattern that maximizes throw. The deflector is mounted directly under the neck of the diffuser to generate the long-throw star pattern. As a result, pressure drop and noise levels are lower than typical curved blade perforated diffusers.

ADDITIONAL FEATURES

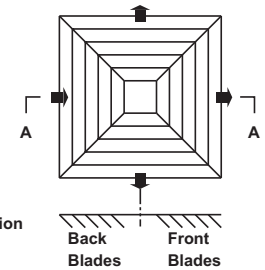
- Can be changed to either side blow or corner blow in the field
- Round neck with deep collar for easy connection to flexible duct
- Perforated face is hinged to allow access to the star deflector. The optional damper is adjustable after removal of the star deflector.
- Perforated face has $^{3}/_{16}$" holes on ¼" 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



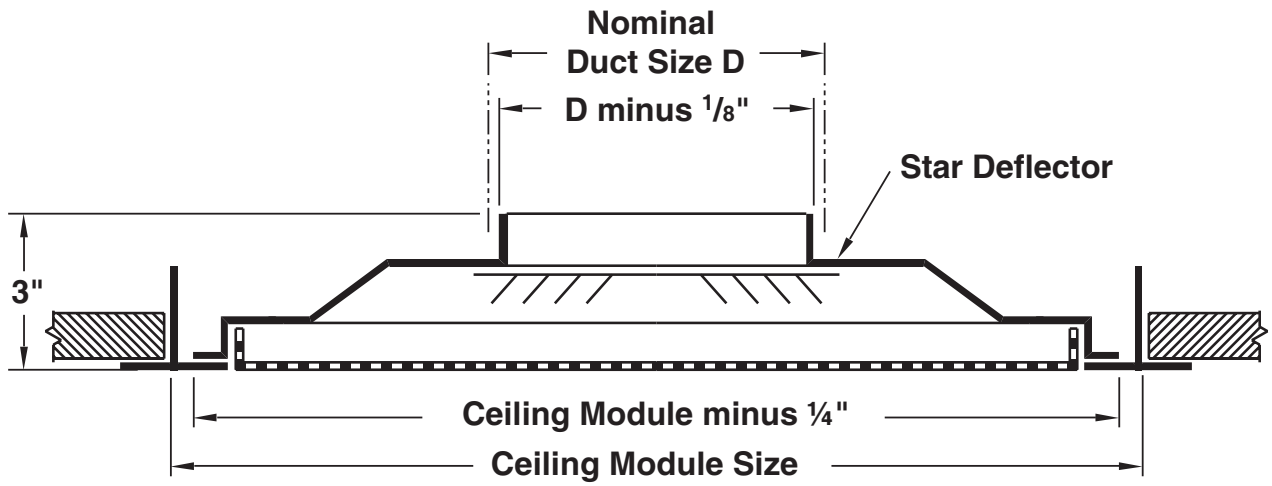
Pattern can be changed from side blow to corner blow and vice versa by removing four screws, rotating deflector 45 degrees, and replacing screws.



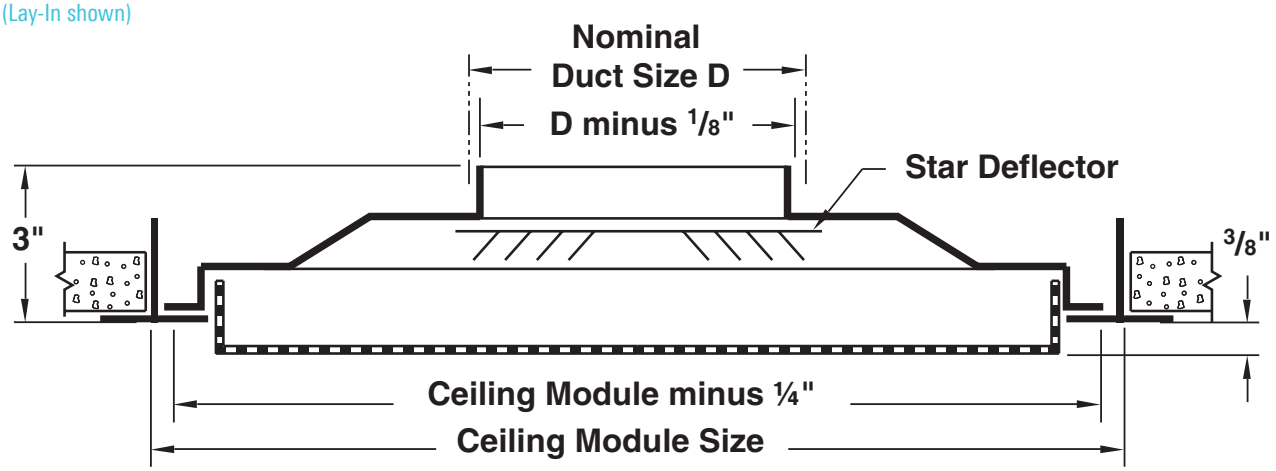
Back blades can be redirected to produce directional adjustment pattern as shown above.

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 Tegular)
(Lay-In shown)



All dimensions are in inches

BORDER TYPES

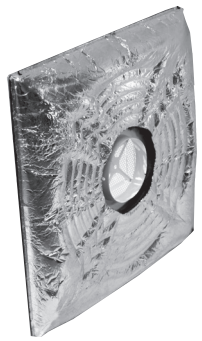
In addition to Border Type 3 (lay-in), as dimensioned on the preceding page, Series PSS diffusers are also available in border types to fit the various ceiling systems shown here.

- 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.		•

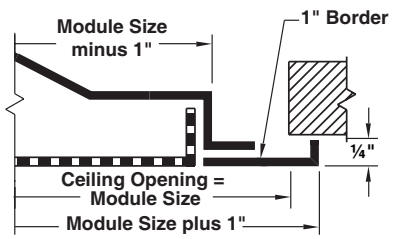
• Indicates available size. Not all sizes available in all duct sizes.



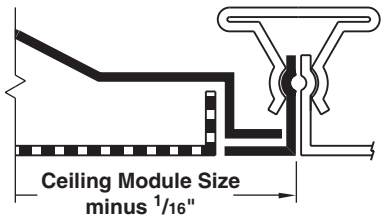
Optional Molded Insulation Blanket
Insulation is R-6 where blanket has the most depth. One" clearance on each side of neck is left for insulated duct connection. 24 x 24" fmodule size only. Blanket is factory installed.

MODELS PSS, PSS-AA

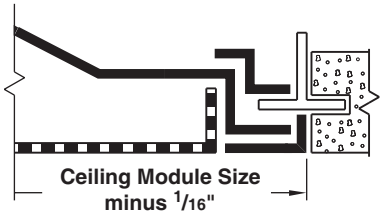
Border Type 1
(Surface Mount)



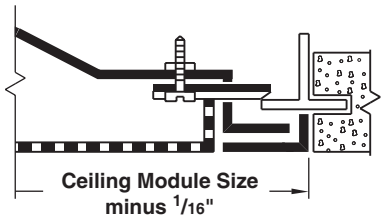
Border Type 2
(Snap-In)



Border Type 4
(Spline)



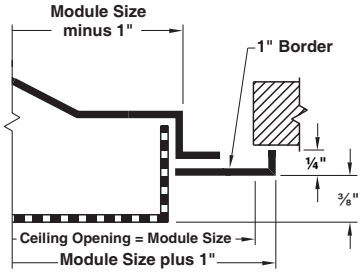
Border Type 4SL
(Spline Side Lock)



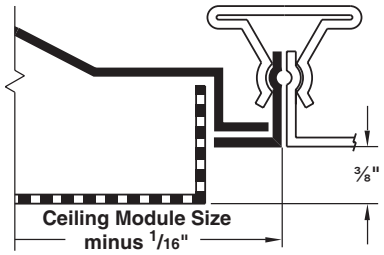
Note: 4SL can be installed after ceiling tiles are in place

MODEL PSS-DF

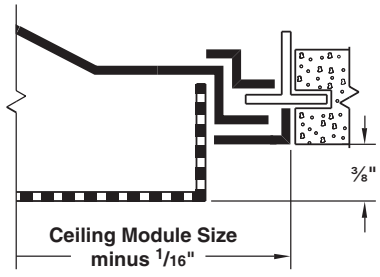
Border Type 1
(Surface Mount)



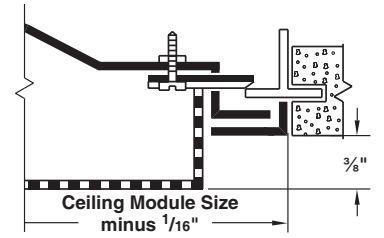
Border Type 2
(Snap-In)



Border Type 4
(Spline)



Border Type 4SL
(Spline Side Lock)



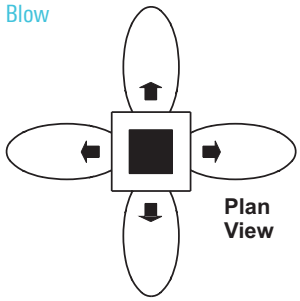
Note: 4SL can be installed after ceiling tiles are in place

All dimensions are in inches

DISCHARGE PATTERNS

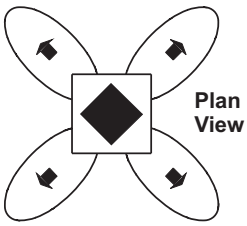
AVAILABLE DISCHARGE PATTERNS

Side Blow



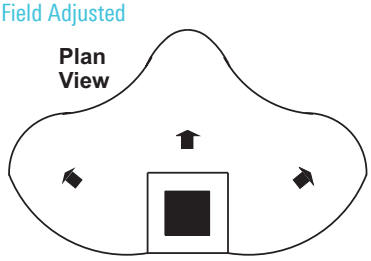
Factory Set, 4 Way

Corner Blow



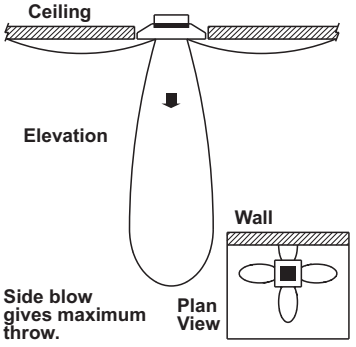
Factory Set, 4 Way
Not available with 12 x 12 neck size

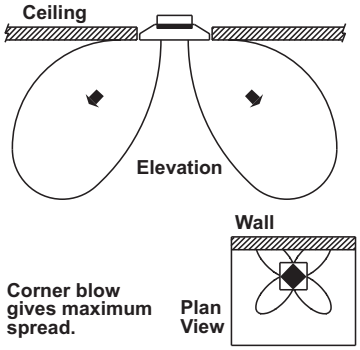
Field Adjusted

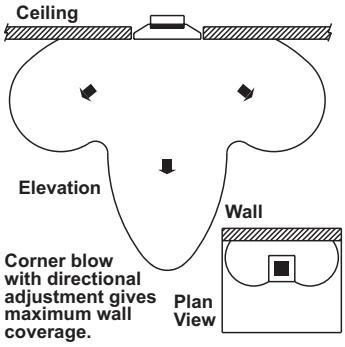


Back blades can be redirected to produce directional adjustment pattern as shown above

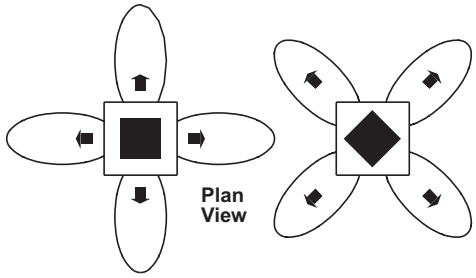
EXTERIOR ZONE APPLICATIONS ILLUSTRATING WALL EFFECT



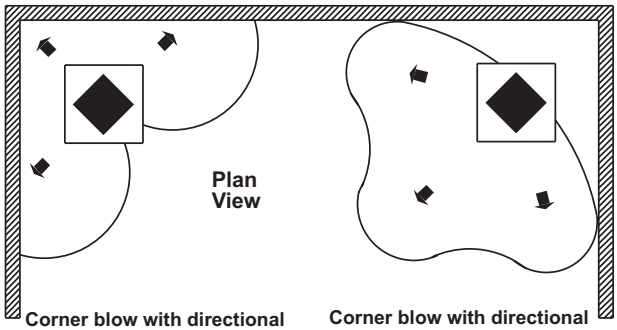




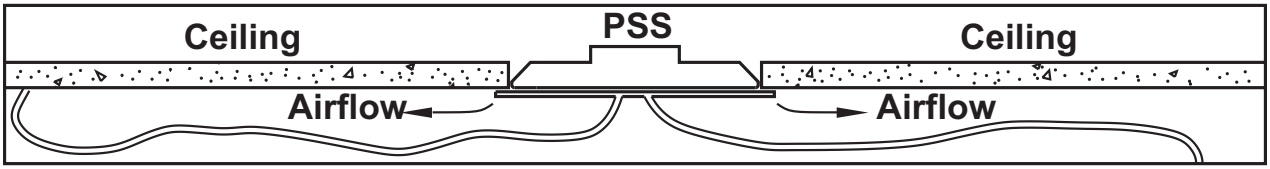
INTERIOR ZONE APPLICATIONS



Alternating side blow and corner blow settings allow diffusers to be closely spaced without creating down drafts that would otherwise result from two airstreams colliding head-on



TYPICAL DISCHARGE PATTERN - ELEVATION



PSS projects a tight blanket of air that adheres to the ceiling, even at low air volumes. Guards against smudging.
Excellent VAV performance.

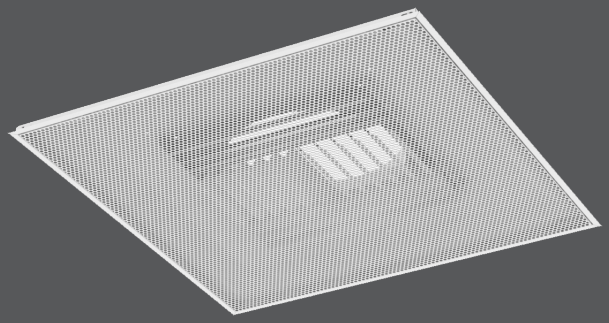
PSS / ADJUSTABLE / SIDE AND CORNER BLOW PATTERN

		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
24 x 24 Module	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
	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 3/16" diameter holes on ¼" staggered centers
- Round inlet collar is approximately 1½" 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

See website for Specifications

AVAILABLE MODELS:

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

Aluminum Model:
PCS-AA / Flush Face

FINISH

Standard Finish - #26 White

OVERVIEW

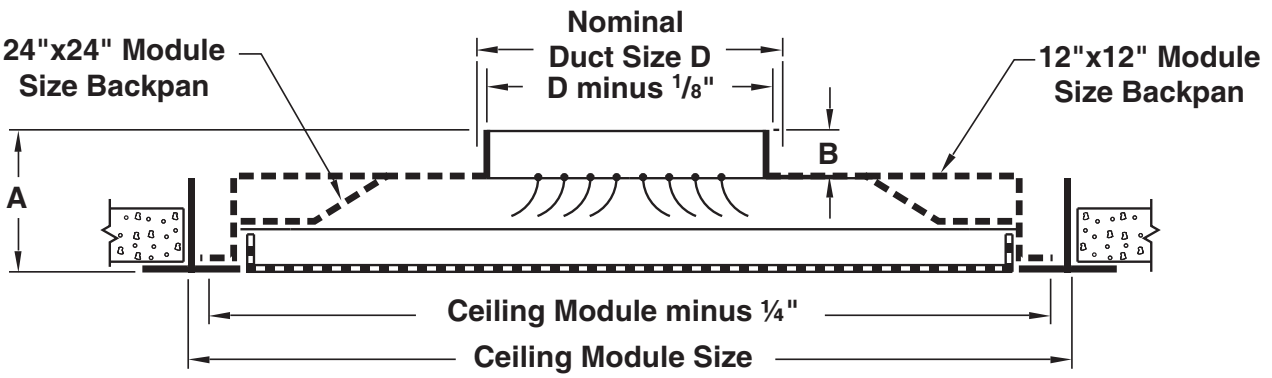
Curved Blade – 1-, 2-, 3-, or 4-Way Deflectors

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

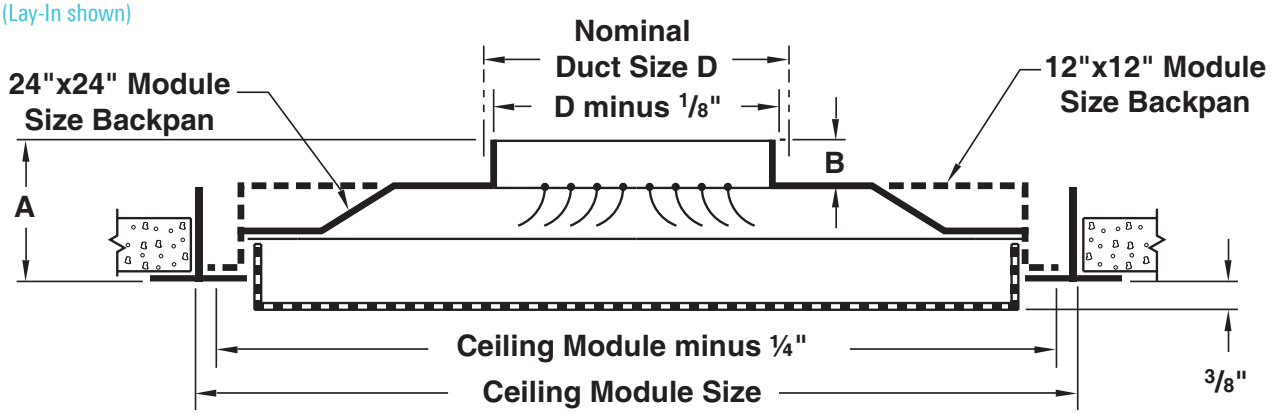
DIMENSIONS

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	3½	1½
24 X 12	6 x 6, 8 x 8, 18 x 6	3½	1½
16 x 16 (note 1)	6, 8, 10	3½	1½
16 x 16	6 x 6, 8 x 8, 10 x 10, 12 x 12	3½	1½
20 x 20 (note 1)	6, 8, 10, 12, 14	3½	1½
20 x 20	6 x 6, 8 x 8, 10 x 10, 12 x 12	3½	1½
24 x 24	6, 8	3¼	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	3¾	1½
48 x 24	6, 8, 10, 12, 14, 16, 6 x 6, 8 x 8, 10 x 10, 12 x 12, 16 x 16	3½	1½

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.

All dimensions are in inches

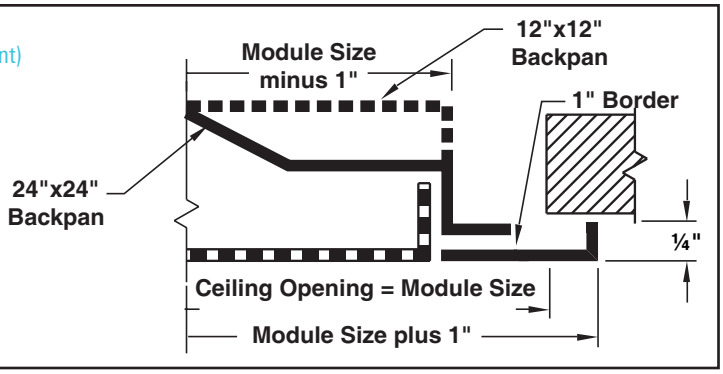
BORDER TYPES

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

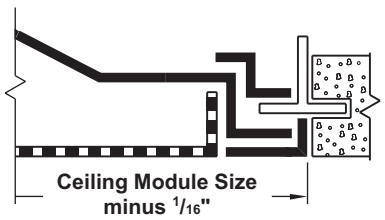
- All of these border types can be furnished with both the 12 x 12" and 24 x 24" face or ceiling module size
- The following tables indicate the round and square neck sizes that can be selected

MODELS PCS / PCS-AA

Border Type 1
(Surface Mount)

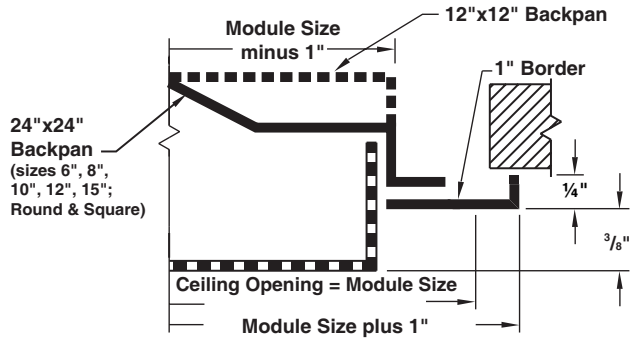


Border Type 2
(Snap-In)

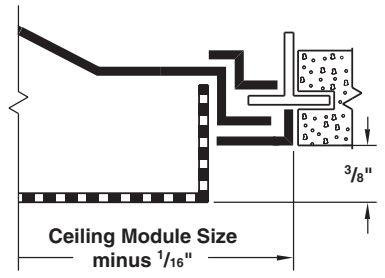


MODEL PCS-DF

Border Type 1
(Surface Mount)



Border Type 2
(Snap-In)



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		•				

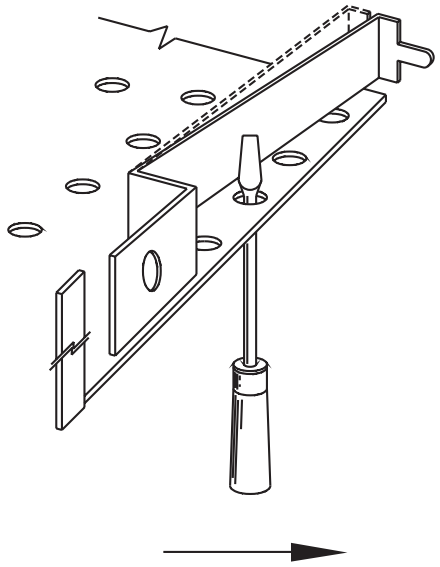
Inlet Size	PCS, PCS-DF, PCS-AA Square Backpan Module Size					
	12 x 12	24 x 12	16 x 16	20 x 20	24 x 24	48 x 24
6" Dia.	❑	•	•	•	❑	•
8" Dia.			•	•	❑	•
10" Dia.			•	•	❑	•
12" Dia.				•	❑	•
14" Dia.				•	❑	
15" Dia.					•	
16" Dia.					❑	•

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

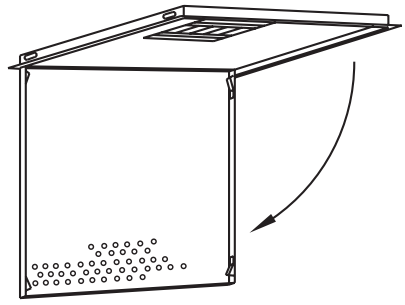
All dimensions are in inches

REMOVING PERFORATED FACE

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

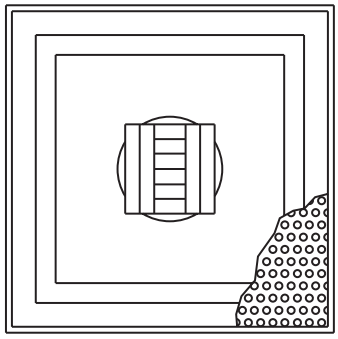


3. Face will now swing down with the other side hinging



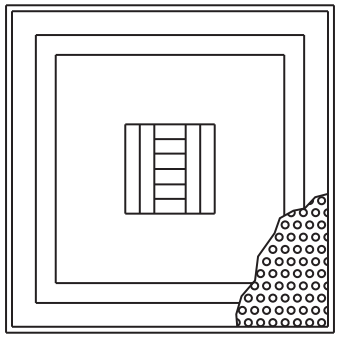
ADJUSTING PATTERN CONTROLLERS

Round Neck - 4-Way

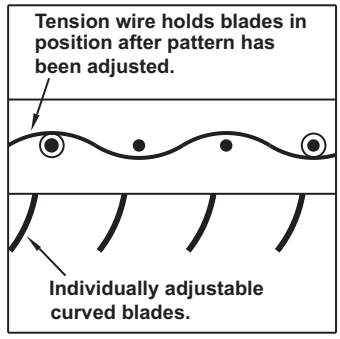


The pattern deflector in the neck of the diffuser consists of individually adjustable blades. These blades vary the discharge pattern from full horizontal to vertical and also damper the air volume.

Square Neck - 4-Way



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
		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
	8" Neck	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
		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
24" x 24" Module Size	6" Neck	Air Flow, cfm	59	79	98	118	137	157	177	196	216
		NC (Noise Criteria)	-	12	17	21	24	27	30	32	34
		Total Pressure	0.008	0.015	0.023	0.034	0.046	0.060	0.076	0.094	0.113
		4 Way - Horizontal Throw	0-1-4	1-2-7	1-3-8	2-4-9	3-6-10	3-7-11	4-7-11	5-8-12	6-9-12
		3 Way - Horizontal Throw	1-1-6	1-2-9	2-4-11	2-6-12	3-7-13	4-9-13	6-10-14	7-11-15	8-11-16
		2 Way - Horizontal Throw	1-2-8	2-4-11	2-6-12	4-8-13	5-10-14	6-11-15	8-11-16	10-12-17	10-12-17
		1 Way - Horizontal Throw	1-2-9	2-4-13	3-6-15	4-9-16	5-12-18	7-13-19	9-14-20	11-15-21	12-16-22
	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
		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
	10" Neck	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
		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
	12" 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
		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
	14" Neck	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
		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
	16" Neck	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.
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- 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

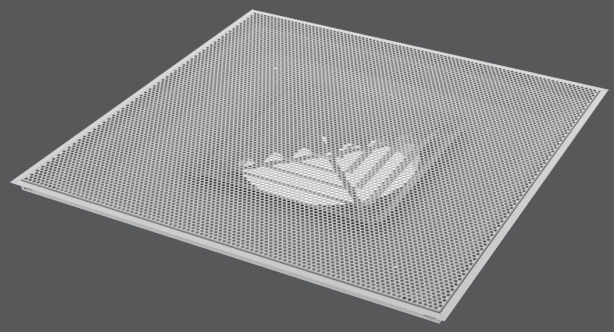
PCS / SQUARE / CURVED BLADE / ADJUSTABLE - 1-, 2-, 3- OR 4-WAY DEFLECTORS

		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
		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
	8" x 8" Neck	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
		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
24" x 24" Module Size	6" x 6" 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
		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
	8" x 8" Neck	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
		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
	10" x 10" 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
		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
	12" x 12" 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
		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
	14" x 14" 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
		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
	15" x 15" 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
		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
	16" x 16" 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
		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

Performance notes appear at end of performance data

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

See website for Specifications

AVAILABLE 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

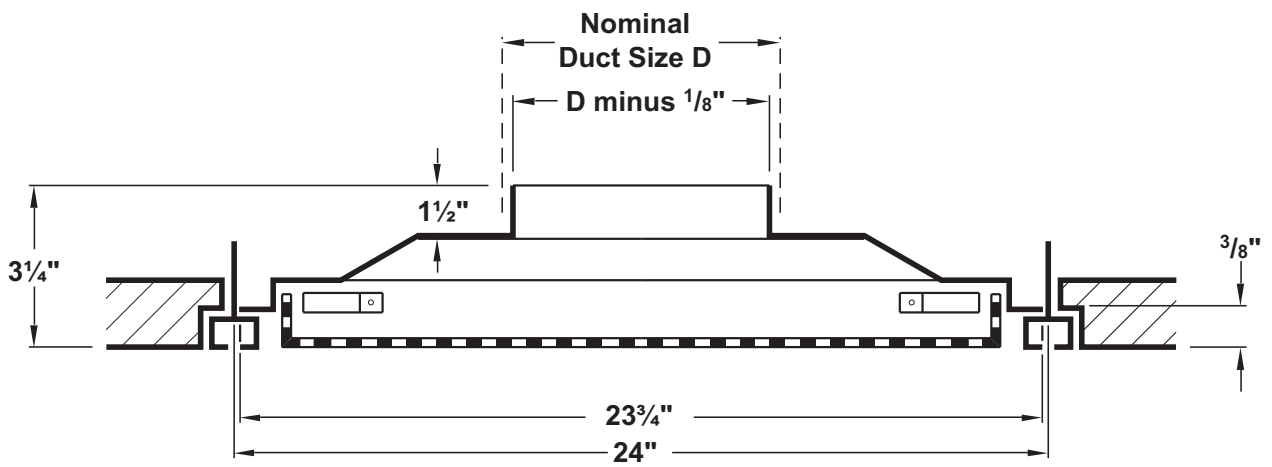
Narrow Tee / Steel

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.

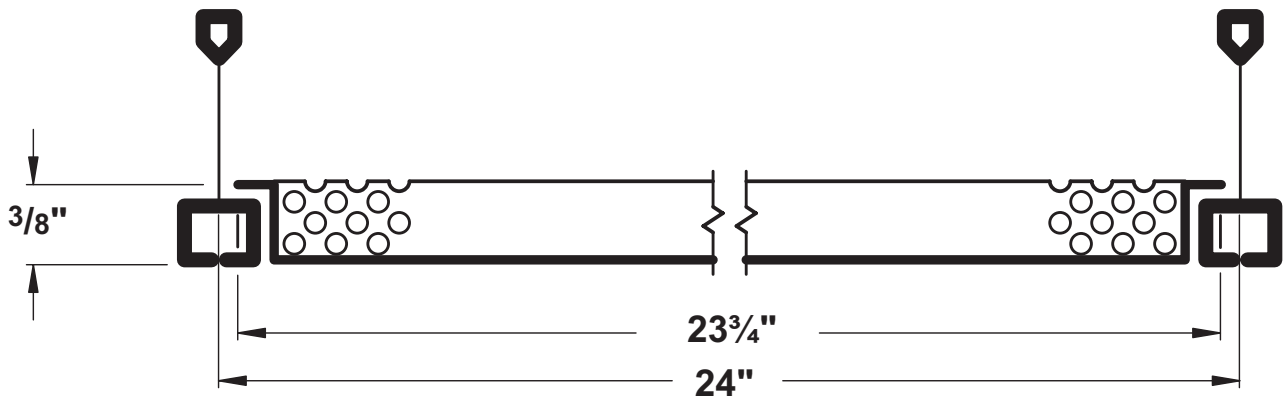
For Performance Data and Notes, please refer to page F86 for PAS-NT; page F92 for PAR-NT and PXP-NT; page F100 for PSS-NT; page F105 for PCS-NT.

NARROW TEE UNIT DIMENSIONS

PAR-NT



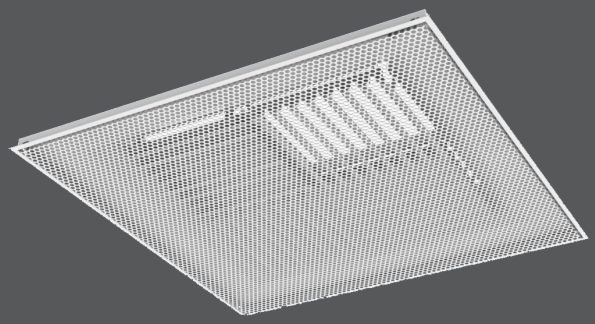
PXP-NT



All dimensions are in inches

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 3/16" diameter holes on ¼" 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

See website for Specifications

AVAILABLE 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.

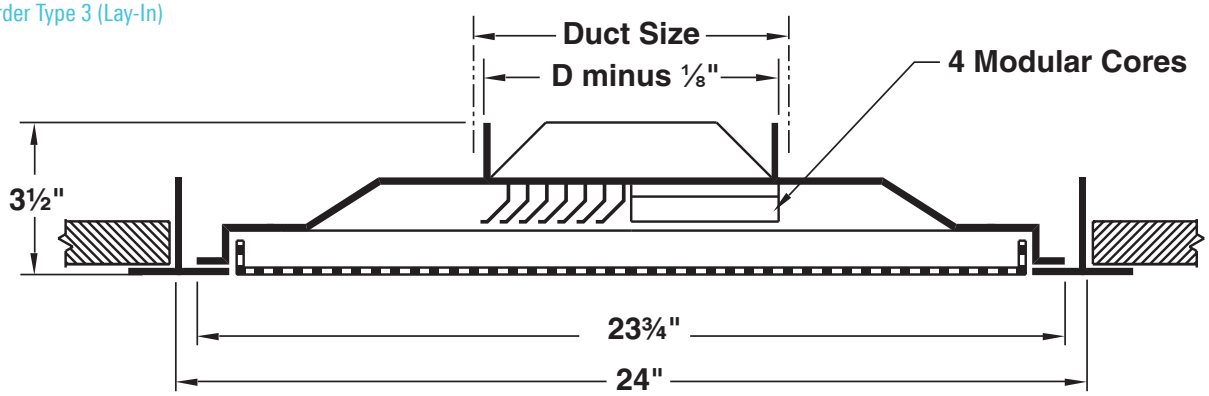
ADDITIONAL FEATURES

- 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

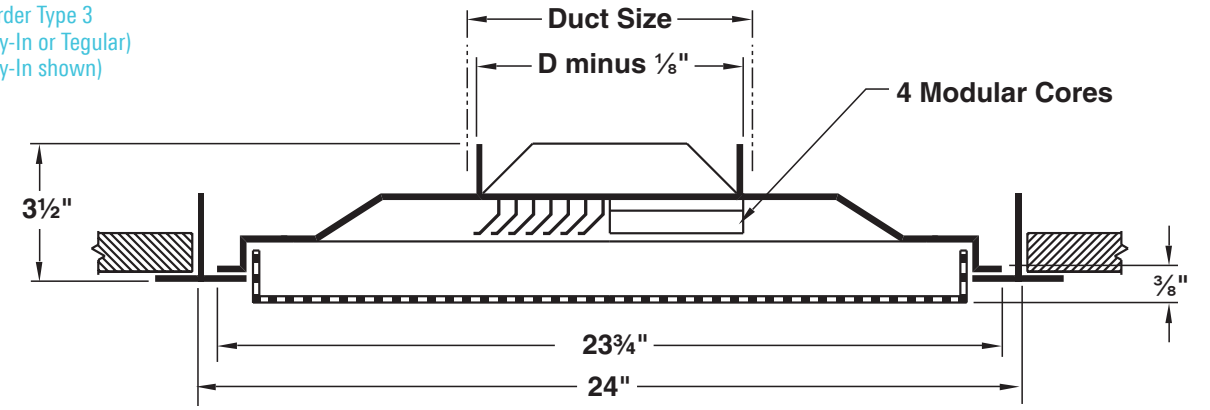
DIMENSIONS

PMC / PMC-DF / PMR UNIT DIMENSIONS

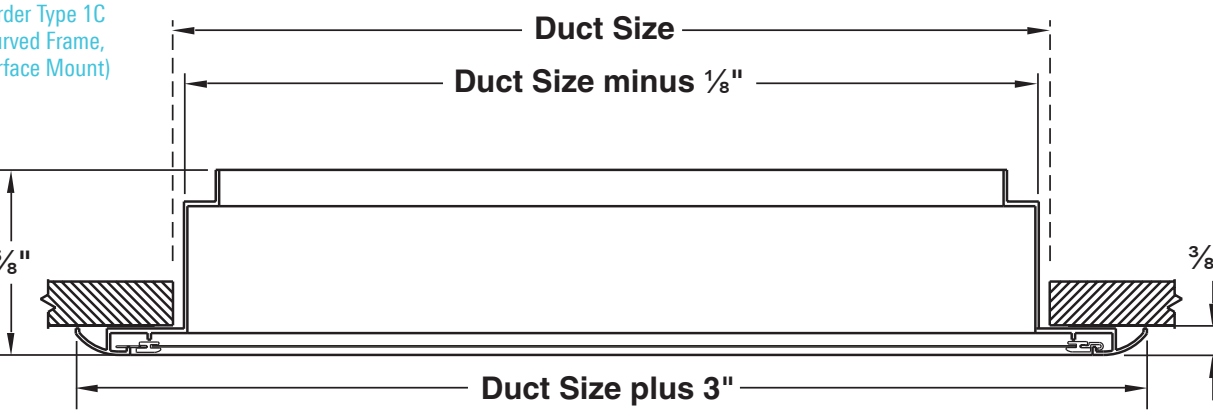
Model PMC
Border Type 3 (Lay-In)



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



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



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

All dimensions are in inches

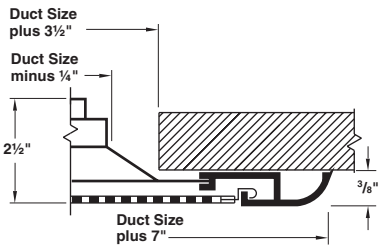
BORDER TYPES

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

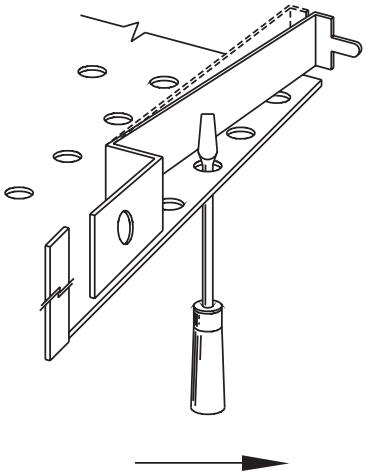
Border Types 3, 1C		PMR Module Border Type 1C		
Duct Sizes (inches)				
6 x 6	12 x 12	6 x 6	12 x 12	20 x 20
8 x 8	14 x 14	8 x 8	14 x 14	22 x 22
10 x 10	16 x 16	10 x 10	16 x 16	22 x 10
	18 x 18		18 x 18	46 x 22

Border Type 1C
(Surface Mount, Curved Frame)

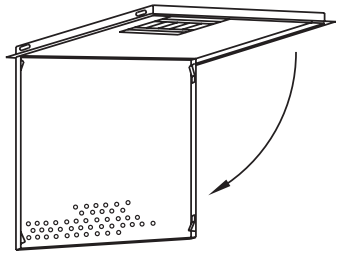


REMOVING PERFORATED FACE - BORDER TYPE 3

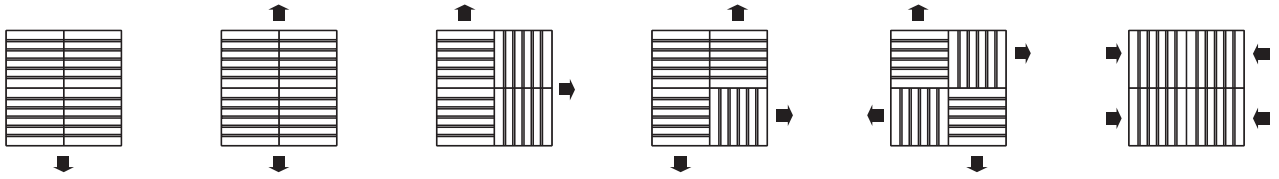
1. Insert small screwdriver or other slim instrument to push latch inward from border
2. Repeat on opposite side



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

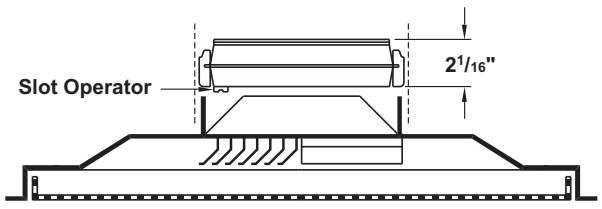


MODULAR CORE ADJUSTMENTS



Each of the PMC modular core sections can easily be removed from the frame and rotated to provide the required air pattern

OPTIONAL MODEL AG-95 - OPPOSED-BLADE DAMPER



Available in duct sizes 6 x 6 inches through 16 x 16 inches

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

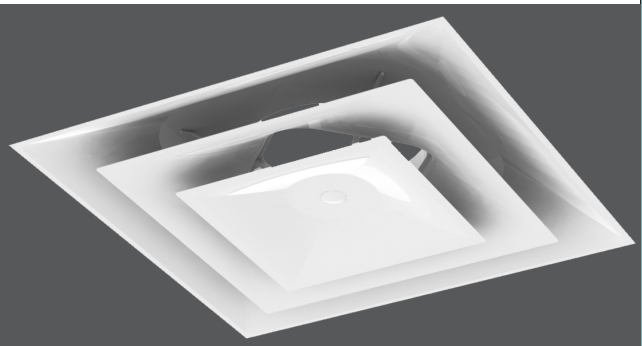
	Neck Velocity	300	400	500	600	700	800	900	1000	1100
	Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
6 x 6 Neck	Air Flow, cfm	75	100	125	150	175	200	225	250	275
	Total Pressure	0.008	0.014	0.022	0.031	0.043	0.056	0.070	0.087	0.105
	NC (Noise Criteria)	-	-	12	17	22	27	30	34	37
	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
8 x 8 Neck	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
	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
10 x 10 Neck	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
	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
12 x 12 Neck	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
	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
16 x 16 Neck	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
	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
18 x 18 Neck	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
	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

- 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

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

See website for Specifications

AVAILABLE MODELS:

TMS / Steel
TMS-AA / Aluminum

FINISH

Standard Finish - #26 White

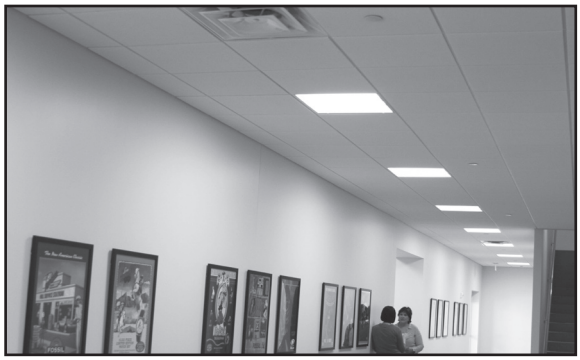
OVERVIEW

High Performance

The TMS is a square ceiling diffuser that delivers supply air in a true 360º 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).

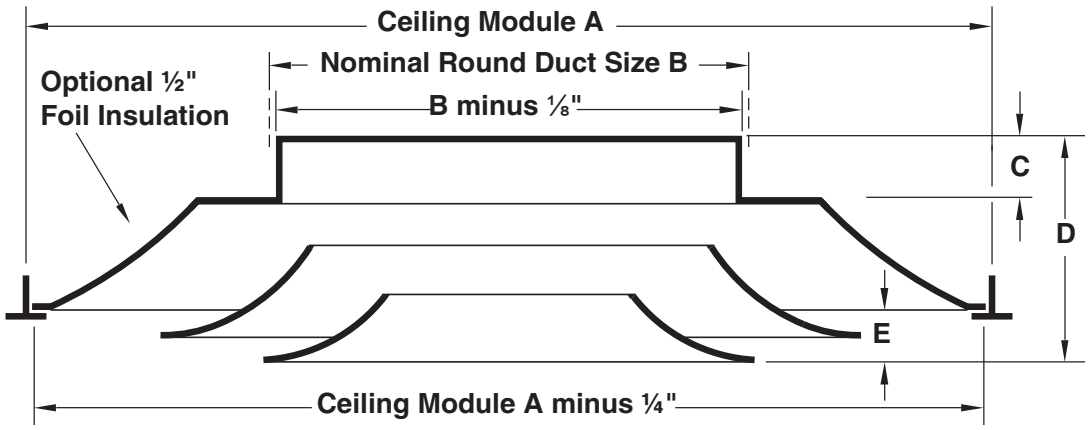


TMS diffusers installed in the ceiling of an office building

TMS / TMS-AA UNIT DIMENSIONS

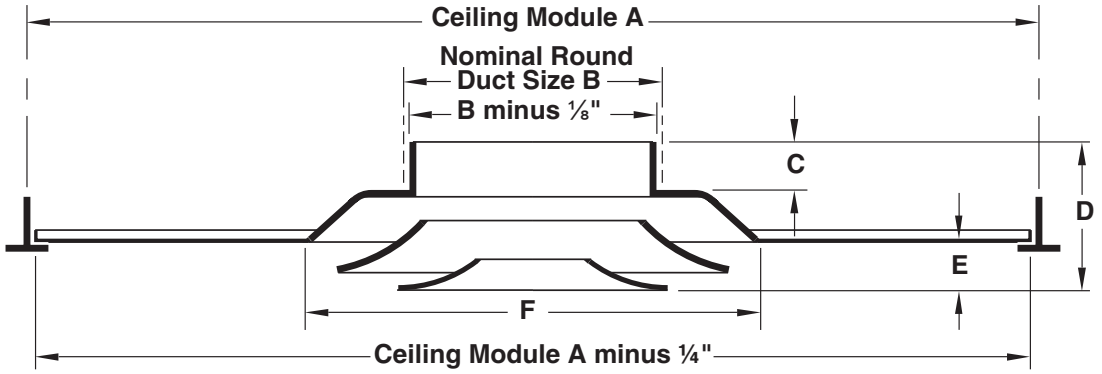
Frame Type 3
Full Face (Lay-In)

(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	1¼	3½	1 1/8
24 x 24	6, 8	1¼	5	1¼
24 x 24	10, 12, 14, 15	1 3/8	5 1/8	1¼

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	1¼	3½	1 1/8

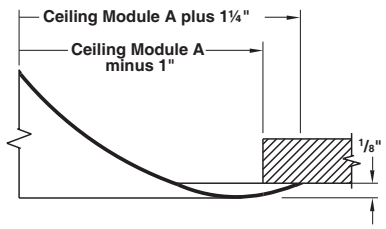
Notes:
1. Aluminum construction is available in full face 24" x 24" ceiling module only. Steel construction is available in all sizes.
2. Adapter is provided for sizes 4 and 5
3. The smallest neck size available in aluminum is 6 inches

All dimensions are in inches

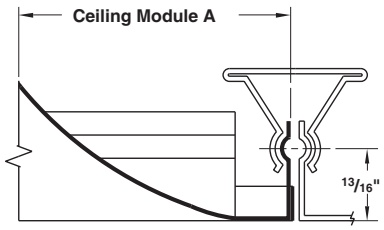
DIMENSIONS

OTHER AVAILABLE FRAME TYPES

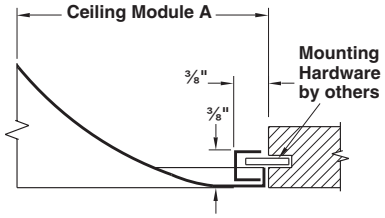
Frame Type 1
(Surface Mount) Full Face



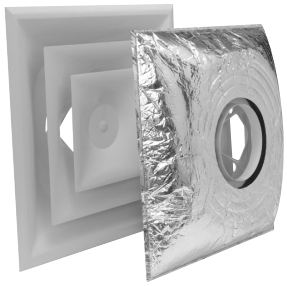
Frame Type 2
(Snap-In) Full Face or Panel Mounted



Frame Type 4
(Spline) Full Face or Panel Mounted

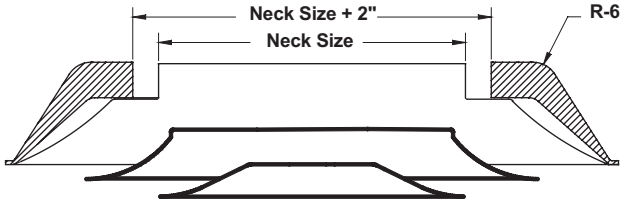


Ceiling Module	Face Size	Nominal Round Duct Sizes	Frame Types
12 x 12	12 x 12	4, 5, 6, 7, 8	1, 2, 3, 4
24 x 24	24 x 24	6, 8, 10, 12, 14, 15	1, 2, 3, 4
24 x 24 (Panel)	12 x 12	4, 5, 6, 7, 8	2, 3, 4

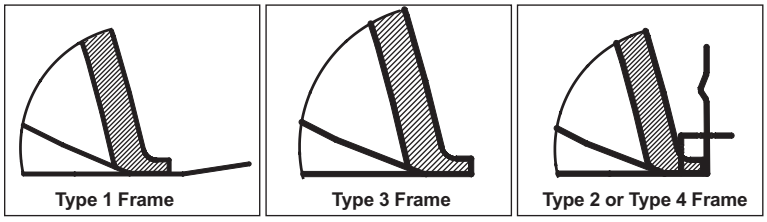


Optional Molded Insulation Blanket

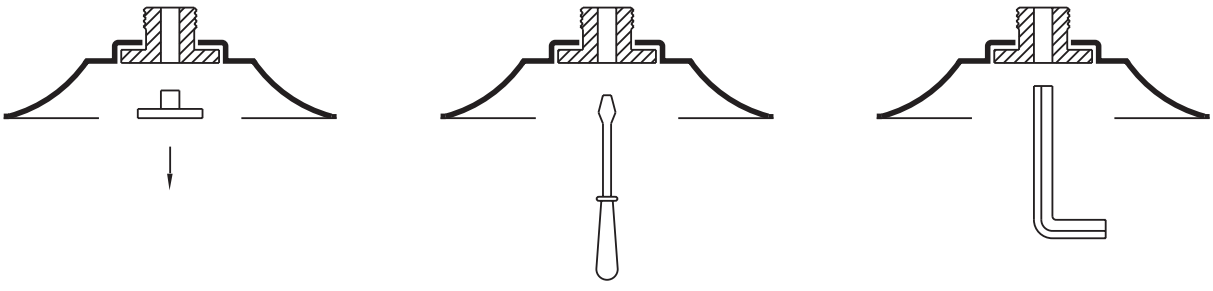
Insulation is R-6 where blanket has the most depth. One" clearance on each side of neck is left for insulated duct connection. 24 x 24" full face models only.



Type 3 Frame Shown



ADJUSTING OPTIONAL DAMPER - REMOVING CENTER CONE



1. Remove center plug

2. Insert screwdriver through hex hole to adjust optional damper

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

All dimensions are in inches

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

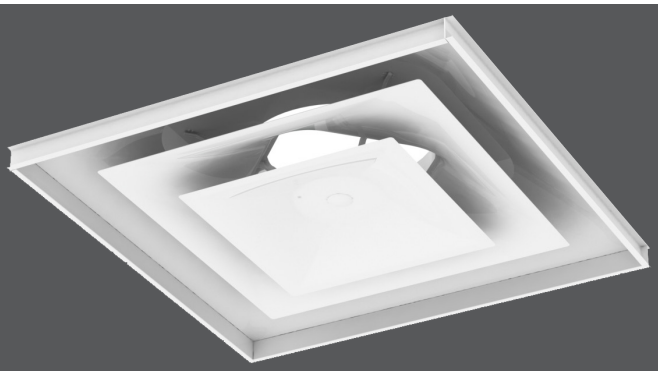
Performance notes appear at end of performance data

PERFORMANCE DATA

- 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

AVAILABLE MODELS:

TMSA / Steel
TMSA-AA / Aluminum

FINISH

Standard Finish - #26 White

OVERVIEW

High Performance / Horizontal to Vertical Discharge Pattern / Adjustable

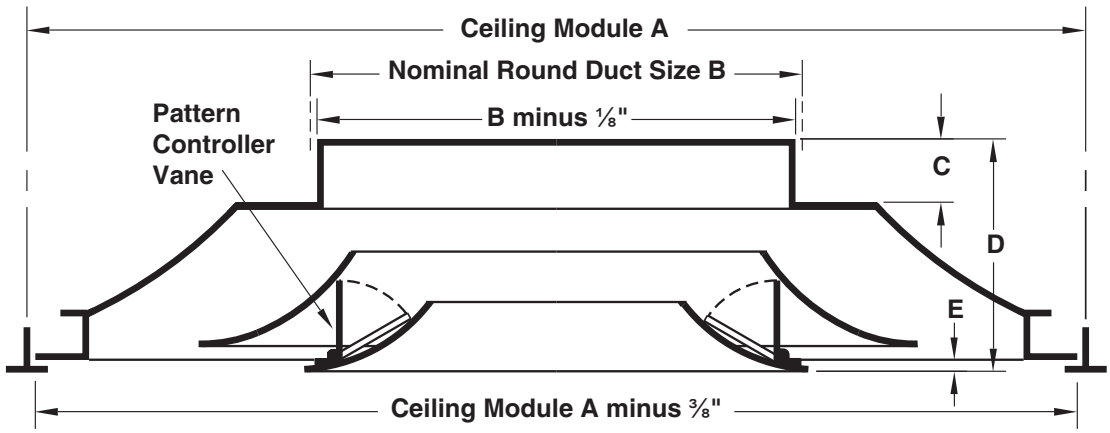
Titus Models TMSA and TMSA-AA diffusers feature adjustable vanes which vary the discharge pattern between vertical and horizontal for heating and cooling applications. These diffusers deliver supply air in 360º pattern and are designed to protect ceilings from smudging. All sizes have 3 cones providing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

ADDITIONAL FEATURES

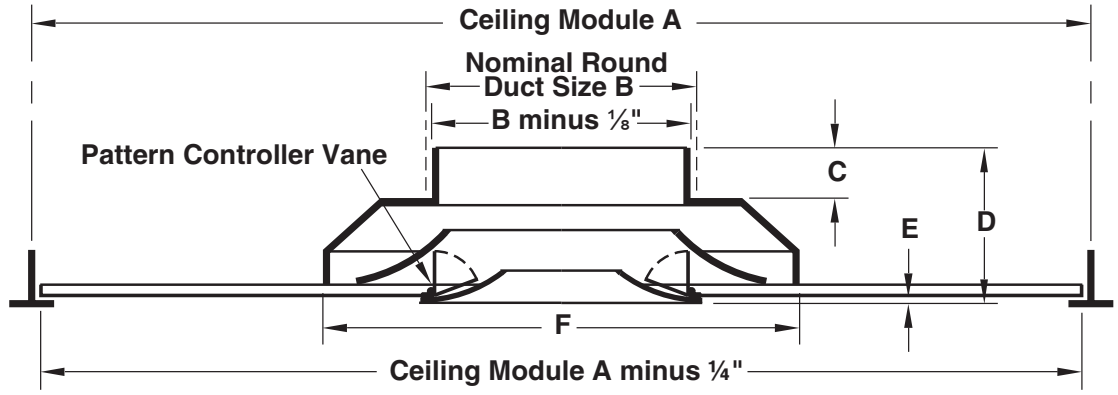
- Material: all sizes are available in steel (Model TMSA). Only the 24 x 24" ceiling module is available in aluminum with steel support bar (Model TMSA-AA).
- Delivers supply air in 360° pattern. Designed to help protect ceilings from streaking and smudging.

TMSA / TMSA-AA UNIT DIMENSIONS

Frame Type 3
Full Face (Lay-In)



Frame Type 3
Panel Mounted
(Lay-In)



Ceiling Module A	Nominal Round Duct Size B	C	D	E
12 x 12	4, 5 (note 2)	3 1/8	5 3/8	3/8
12 x 12	6, 7 (note 3)	1 1/8	3 3/8	3/8
12 x 12	8	1¼	3½	5/8
24 x 24	6, 8	1¼	5	¼
24 x 24	10, 12, 14, 15	1 3/8	5 1/8	¼

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	3/8
24 x 24	6, 7 (note 3)	12 x 12	1 1/8	3 3/8	3/8
24 x 24	8	12 x 12	1¼	3½	5/8

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

All dimensions are in 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	0.012	0.018	0.026	0.036	0.046	0.072	0.104	0.142	0.185
			Vertical	0.013	0.021	0.030	0.041	0.053	0.083	0.120	0.164	0.214
		Throw feet	Horizontal	1-1-2	1-2-3	1-2-4	1-2-4	2-2-5	2-3-6	2-4-7	3-4-8	3-5-8
			Vertical	1-1-2	1-1-2	1-1-3	1-2-3	1-2-3	1-2-3	2-3-4	2-3-4	2-3-4
		NC (Noise Criteria)	Horizontal	-	-	-	-	13	20	25	30	34
			Vertical	-	-	-	-	-	16	21	26	30
	5" Dia.	Airflow, cfm		55	68	82	95	109	136	164	191	218
		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	0.066	0.086	0.135	0.194	0.265	0.346
		Throw feet	Horizontal	1-2-3	1-2-4	2-2-5	2-3-5	2-3-6	3-4-8	3-5-9	4-5-10	4-6-10
			Vertical	1-1-2	1-1-3	1-2-3	1-2-3	1-2-4	2-3-4	2-3-5	3-3-5	3-4-5
		NC (Noise Criteria)	Horizontal	-	-	-	14	18	25	31	36	40
			Vertical	-	-	-	12	15	22	27	32	36
	6" Dia.	Airflow, cfm		78	98	118	137	157	196	235	274	314
		Total Pressure	Horizontal	0.026	0.041	0.059	0.080	0.105	0.164	0.236	0.321	0.419
			Vertical	0.032	0.049	0.071	0.097	0.126	0.198	0.284	0.387	0.506
		Throw feet	Horizontal	1-2-4	2-2-5	2-3-6	2-3-7	2-4-7	3-5-9	4-6-11	4-7-12	5-7-13
			Vertical	1-1-3	1-2-3	1-2-4	2-2-4	2-3-4	2-3-5	3-4-5	3-4-6	4-4-6
		NC (Noise Criteria)	Horizontal	-	-	14	19	23	30	36	40	45
			Vertical	-	-	12	17	21	27	32	37	41
	7" Dia.	Airflow, cfm		107	134	160	187	214	267	320	374	427
		Total Pressure	Horizontal	0.036	0.056	0.080	0.110	0.143	0.223	0.322	0.438	0.572
			Vertical	0.044	0.068	0.098	0.133	0.174	0.272	0.392	0.533	0.696
		Throw feet	Horizontal	1-2-4	2-3-5	2-3-7	3-4-8	3-4-9	4-5-11	4-7-13	5-8-14	6-9-15
			Vertical	1-2-3	1-2-4	2-2-4	2-3-5	2-3-5	3-4-6	3-4-6	4-5-7	4-5-7
		NC (Noise Criteria)	Horizontal	-	12	18	23	27	34	40	44	49
			Vertical	-	-	16	21	25	31	37	41	45
	8" Dia.	Airflow, cfm		140	175	209	244	279	349	419	489	558
		Total Pressure	Horizontal	0.047	0.073	0.105	0.143	0.187	0.292	0.421	0.573	0.748
			Vertical	0.057	0.090	0.129	0.175	0.229	0.358	0.516	0.702	0.917
		Throw feet	Horizontal	2-2-5	2-3-6	2-4-7	3-4-9	3-5-10	4-6-12	5-7-14	6-9-16	7-10-17
			Vertical	1-2-4	1-2-4	2-3-5	2-3-6	2-4-6	3-4-7	4-5-7	4-6-8	5-6-8
		NC (Noise Criteria)	Horizontal	-	16	22	26	31	37	43	48	52
			Vertical	-	15	20	25	29	35	41	45	49

- 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.
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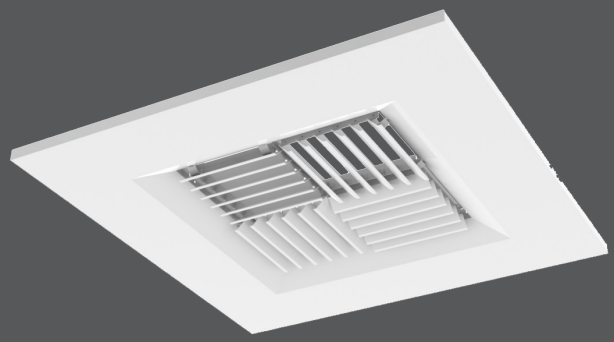
- Dash (-) in space denotes an NC value of less than 10
- All pressures are given in inches of water
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10^{-12} watts
- To obtain 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

AVAILABLE MODELS:

MCD / Steel
MCD-AA / Aluminum

FINISH

Standard Finish - #26 White

OVERVIEW

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

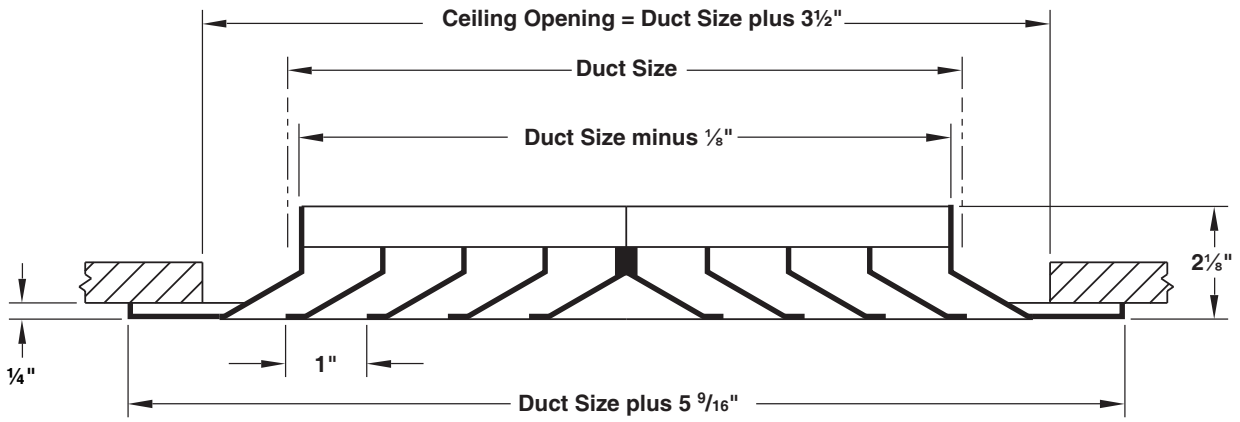
Titus Model MCD modular core diffuser is extremely flexible; it can be adjusted for a 1, 2, 3, or 4-way pattern after it has been installed. The MCD maintains a horizontal flow pattern from maximum to minimum cfm, making it an excellent choice for variable air volume systems.

See website for Specifications

MCD diffusers installed in the ceiling of a library

MCD / MCD-AA DIMENSIONS

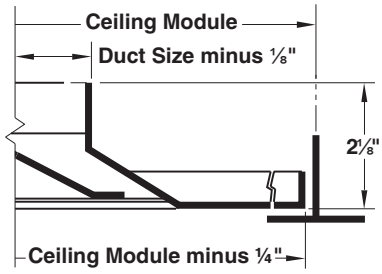
Border Type 1
(Surface Mount)



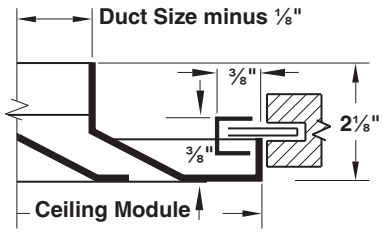
Note: Two-way opposite pattern shown.

AVAILABLE BORDER TYPES

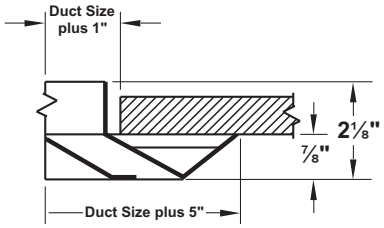
Border Type 3
(Lay-In)



Border Type 4
(Spline)



Border Type 6
(Beveled Drop Face)



All dimensions are in inches

DIMENSIONS

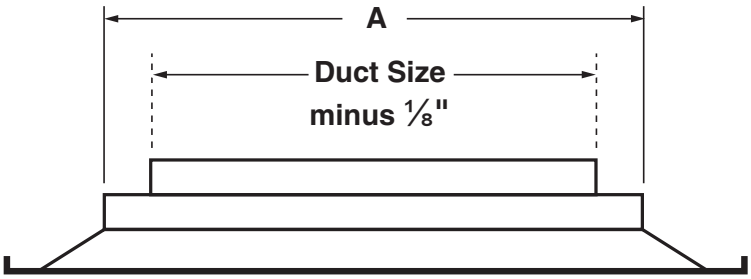
AVAILABLE DUCT SIZES

Border Types 1, 6			Border Types 3, 4		Available Module Size
Duct Sizes (inches)					
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		

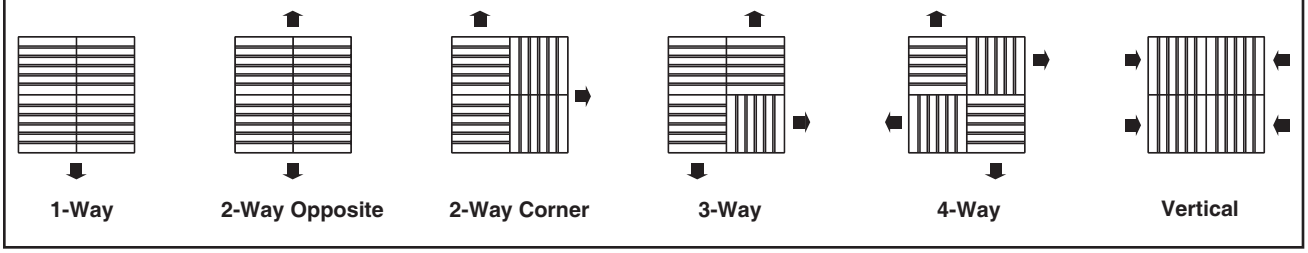
ROUND DUCT SIZES

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

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



MODULAR CORE ADJUSTMENTS



All dimensions are in inches

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

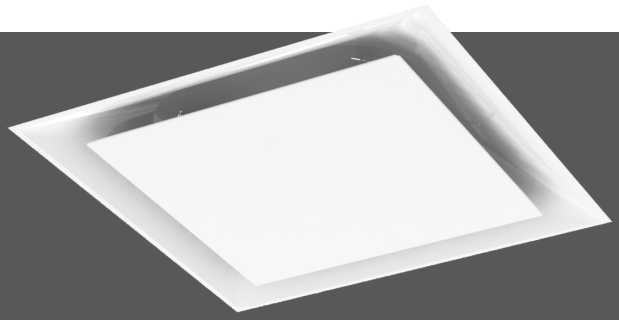
	Neck Velocity	300	400	500	600	700	800	900	1000	1100
	Velocity Pressure	0.006	0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075
22 X 22 Neck	Airflow, cfm	1008	1344	1681	2017	2353	2689	3025	3361	3697
	Total Pressure	0.048	0.086	0.134	0.193	0.263	0.343	0.434	0.536	0.648
	NC (Noise Criteria)	19	26	32	37	41	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

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

metric sizes | retrofit | MRI compatible | woodgrains | open ceiling

See website for Specifications

AVAILABLE MODELS:

OMNI / Steel
OMNI-AA / Aluminum

FINISHES

Standard Finish - #26 White
Optional Finish - Woodgrains (See Woodgrains Brochure for Finishes)

OVERVIEW

Square Plaque

The Titus OMNI (steel plaque) & OMNI-AA (all-aluminum plaque) face diffusers that satisfie 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

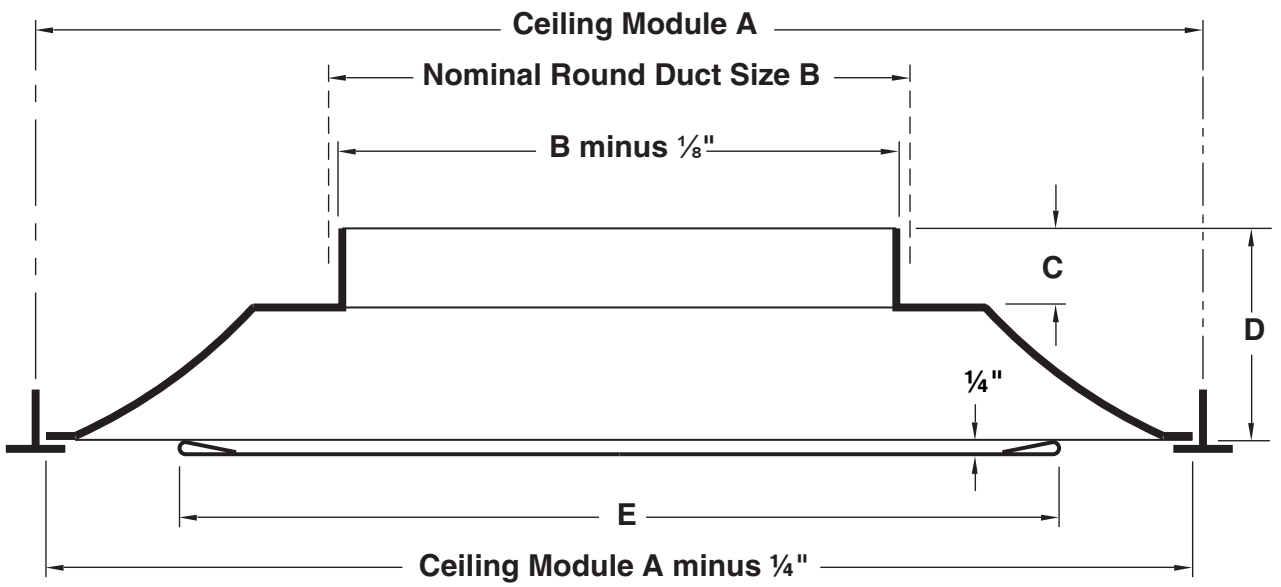
- The formed edges of the face panel capture another 22-gauge steel or heavy gauge aluminum panel that the hanger brackets are mechanically fastened to. This process provides the OMNI face with a smooth finish under any lighting conditions.
- The OMNI-AA is entirely constructed of aluminum, perfect for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

OMNI diffusers installed in the ceiling of a country club

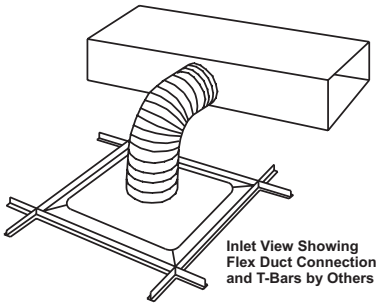
- The face panel is held in place by four hook brackets that positively engage into slots in the backpan. The panel can be removed from the backpan for easy installation of the diffuser or for access to the optional damper.
- The new face panel construction ensures a smooth, clean appearance and easier 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

OMNI / OMNI-AA DIMENSIONS

Frame Type 3
(Lay-In) Full Face



Inlet View



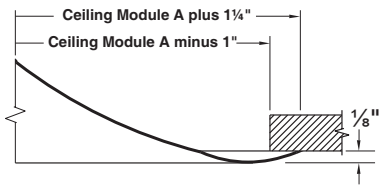
Ceiling Module A	Nominal Round Duct Size B	C	D	E
12 x 12 (note 2)	4, 5 (note 1)	2 7/8	4	9
	6, 7	1 1/8	2 1/4	
	8	1 1/4	2 3/8	
20 x 20	4, 5 (note 1)	2 3/4	5 1/4	13 5/8
	6, 8, 10	3/4	3 1/4	
24 x 24	6, 8	1 1/4	3 3/4	18
	10, 12, 14, 15	1 3/8	3 7/8	

Note 1: Adapter is provided for sizes 4 and 5
Note 2: 12 x 12" module is available in steel only

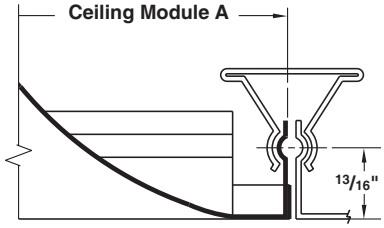
All dimensions are in inches

ADDITIONAL FRAME TYPES

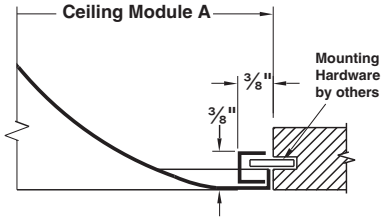
Frame Type 1
(Surface Mount) Full Face



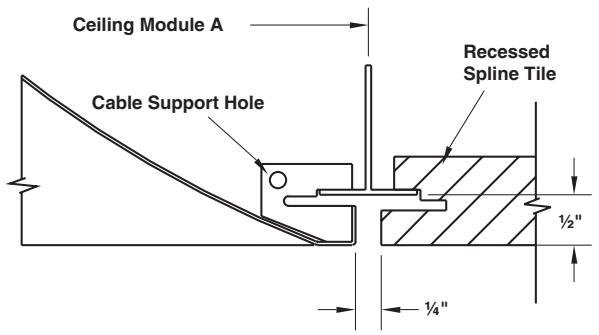
Frame Type 2
(Snap-In) Full Face or Panel Mounted
OMNI Only



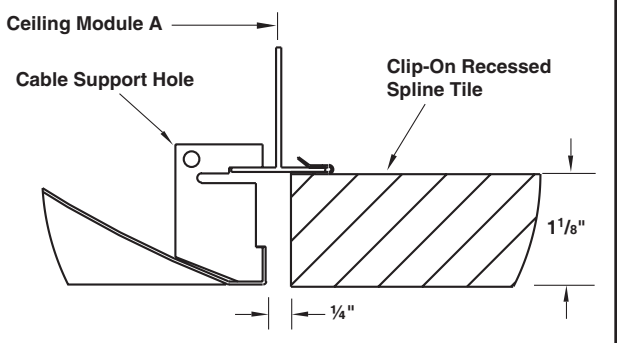
Frame Type 4
(Spline) Full Face or Panel Mounted
OMNI Only



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



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



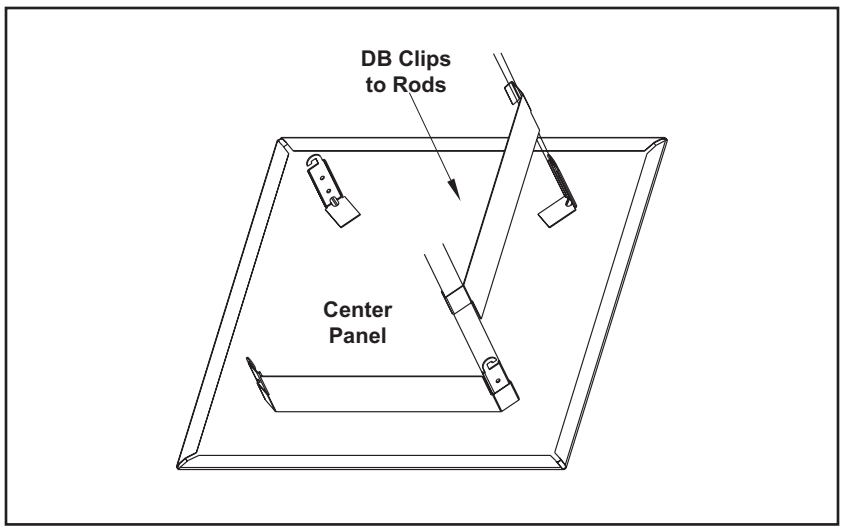
Note: If Border 4V is adjacent to a light fixture a gap will be visible above the backpan. A T-bar extender is available to fill this void, available from the ceiling manufacturer.

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

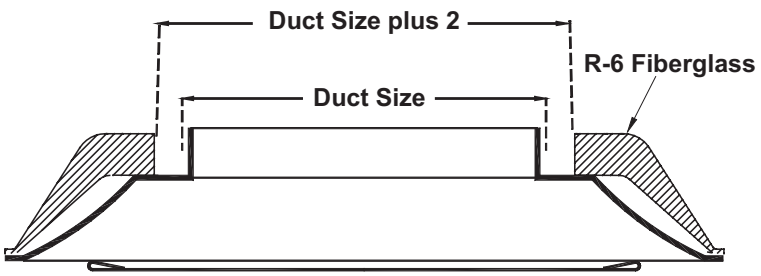
Available Model:
DB

- 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



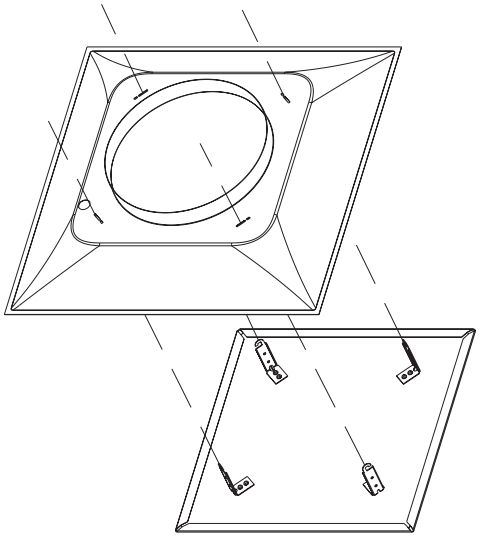
All dimensions are in inches

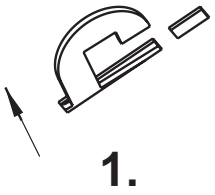
OPTIONAL MOLDED INSULATION BLANKET



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.

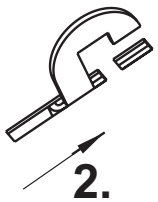
REMOVING AND REPLACING FACE PANEL - ADJUSTING OPTIONAL DAMPER





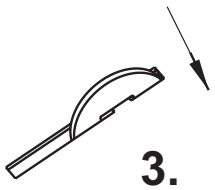
Installing Face Panel

1. Insert the hook brackets into the slots in the backpan
2. Rotate the face panel clockwise until...
3. The hooks positively engage in the secondary slots in the backpan



Removing Face Panel

1. Lift the faceplate towards the backpan to disengage the hook brackets from the backpan slots
2. Rotate the faceplate counterclockwise
3. Lower the faceplate away from the backpan



Adjusting Optional Damper

1. Remove face panel as above
2. Use flat blade screwdriver to turn operator shaft at center of damper
3. Replace face panel

All dimensions are in inches

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"x12" 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
	5" Round Neck	Airflow, cfm	55	68	82	95	109	123	136	164	191
		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
	6" Round Neck	Airflow, cfm	78	98	118	137	157	176	196	235	274
		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
	7" Round Neck	Airflow, cfm	107	134	160	187	214	240	267	320	374
		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
	8" Round Neck	Airflow, cfm	140	175	209	244	279	314	349	419	489
		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
20" x 20" Module Size	6" Dia.	Airflow, cfm	78	98	118	137	157	173	196	235	274
		Total Pressure	0.016	0.025	0.036	0.049	0.063	.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
	8" Dia.	Airflow, cfm	140	175	209	244	279	314	349	419	489
		Total Pressure	0.019	0.030	0.043	0.058	0.075	.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
	10" Dia.	Airflow, cfm	218	273	327	382	436	491	545	654	763
		Total Pressure	0.024	0.038	0.055	0.074	0.096	.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
24"x24" Module Size	6" Round Neck	Airflow, cfm	78	98	118	137	157	176	196	235	274
		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
	8" Round Neck	Airflow, cfm	140	175	209	244	279	314	349	419	489
		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
	10" Round Neck	Airflow, cfm	218	273	327	382	436	491	545	654	763
		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
	12" Round Neck	Airflow, cfm	314	393	471	550	628	707	785	942	1099
		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
	14" Round Neck	Airflow, cfm	428	535	641	748	855	962	1069	1283	1497
		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
	15" Round Neck	Airflow, cfm	491	614	736	859	982	1104	1227	1472	1718
		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

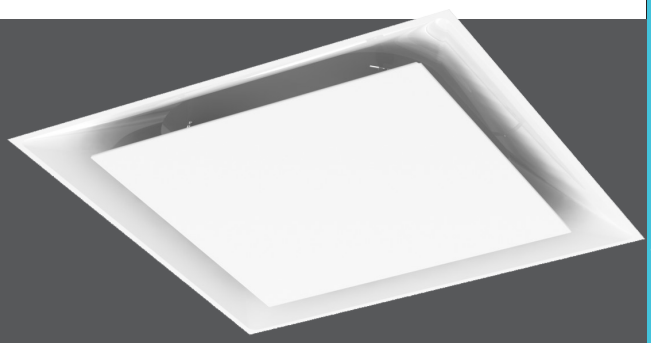
Performance notes appear at end of performance data

PERFORMANCE DATA

- 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

OMNI-NT / OMNI-AA-NT

- The OMNI-NT and OMNI-AA-NT are designed to integrate into 24 x 24 Narrow Tee regressed ceiling systems
- The OMNI-NT and OMNI-AA-NT has strong, clean lines that harmonize with the ceiling system, yet performance is not sacrificed
- The curvature of the OMNI-NT and OMNI-AA-NT backpan works with the aerodynamically formed edge of the face panel to provide a tight 360° pattern
- Meets architectural and engineering criteria
- 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-AA / OMNI-AA-NT

metric sizes | woodgrains | MRI compatible

See website for Specifications

AVAILABLE MODELS:

OMNI-NT / Steel
OMNI-AA-NT / Aluminum

FINISHES

Standard Finish - #26 White
Optional Finish - Woodgrains (See Woodgrains Brochure for Finishes)

OVERVIEW

Square Plaque Narrow Tee

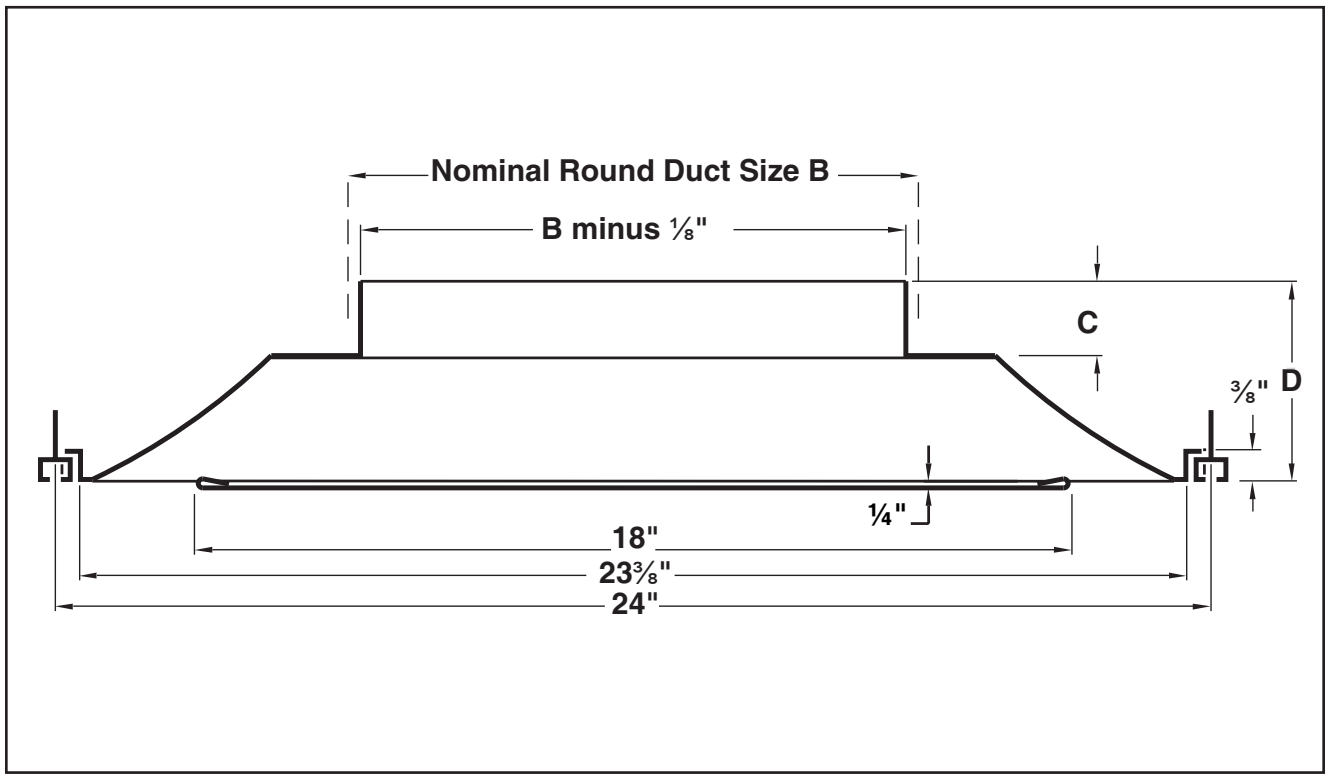
The Titus OMNI-NT (steel plaque) & OMNI-AA-NT (all-aluminum plaque) face diffusers for narrow tee installations that satisfie architectural and engineering criteria. Their strong, clean, unobtrusive lines harmonize with ceiling systems without sacrificing performance. The curvature of the OMNI-NT & OMNI-AA-NT 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 OMNI-AA-NT has optional Directional Blow Chips (DB) which allow the air pattern to be changed to three, two or one blow direction
- The OMNI-AA-NT is entirely constructed of aluminum, perfect for MRI applications
- The panel can be removed from the backpan for easy installation of the diffuser or for access to the optional damper
- The new face panel construction ensures a smooth, clean appearance and easier installation and removal

DIMENSIONS

OMNI-NT / OMNI-AA-NT UNIT DIMENSIONS



Ceiling Module A	Nominal Round Duct Size B	C	D
24 x 24	6, 8	1¼	3¾
	10, 12, 14, 15	1 3/8	3 7/8

All dimensions are in inches

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

AVAILABLE MODEL:

R-OMNI / Steel

FINISH

Standard Finish - #26 White

OVERVIEW

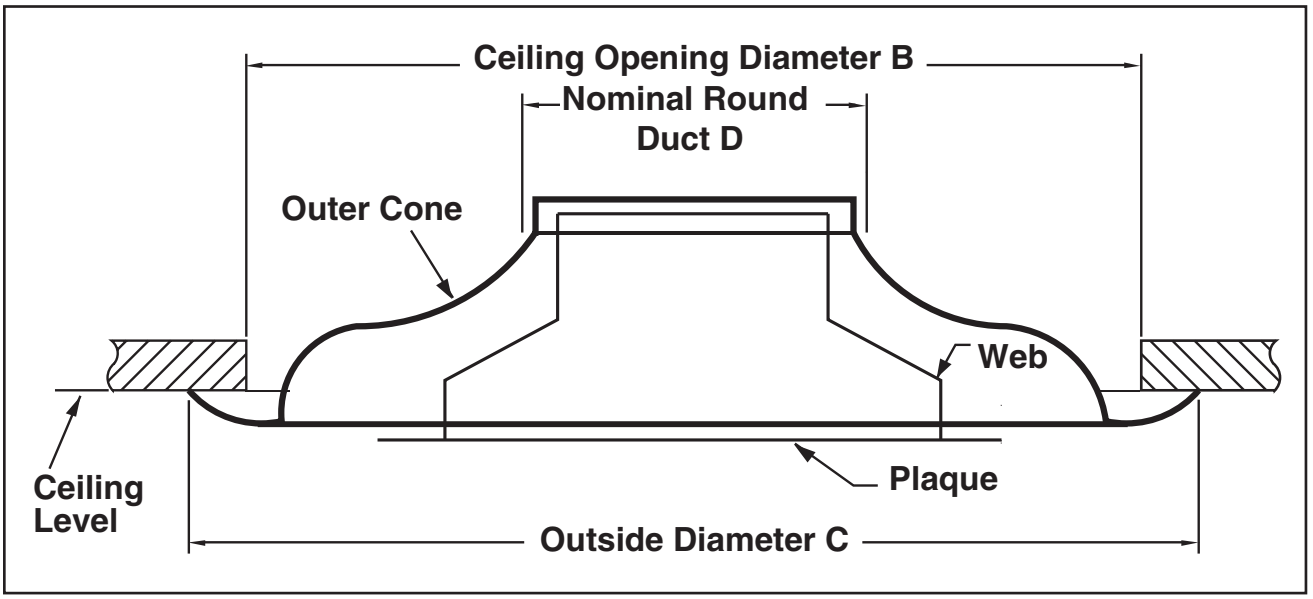
Round Plaque / Steel

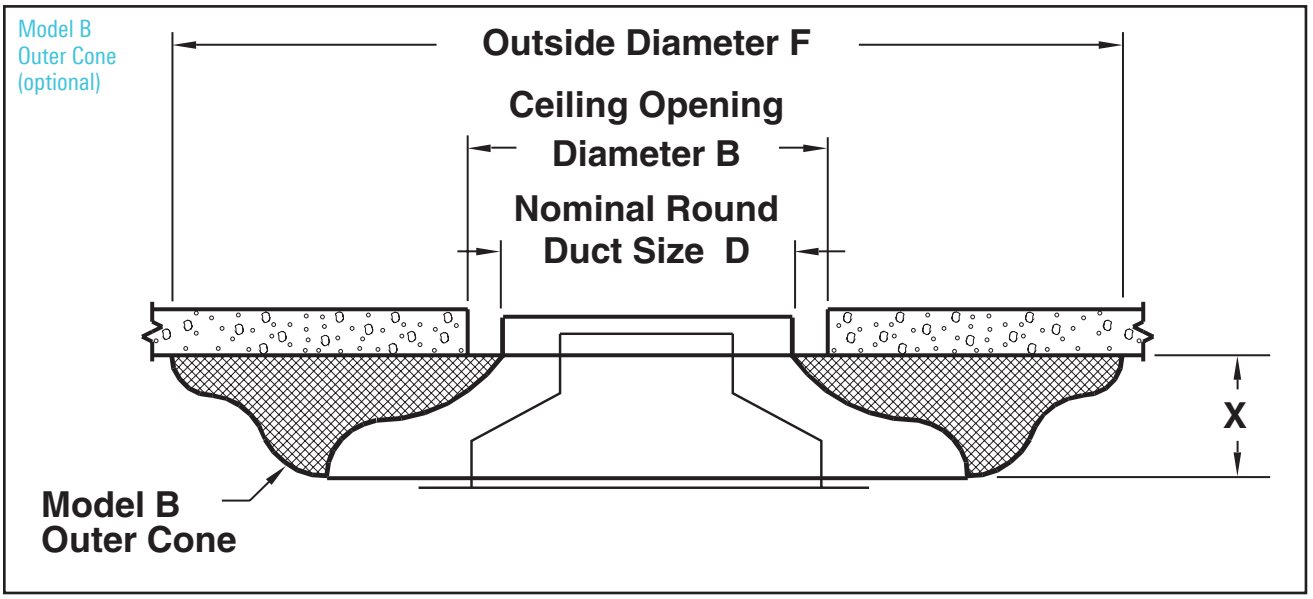
The appearance of the R-OMNI diffuser is designed for architectural ceilings and facilities with exposed ductwork. The smooth face is adjustable in three positions for horizontal or vertical flow. The R-OMNI can be used effectively in heating or cooling applications and is an excellent choice in Variable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

See website for Specifications

R-OMNI installed in ceiling of a museum

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	11/16	3 7/8	13	34 7/8
14	28	31 1/8	13/16	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.

All dimensions are in inches

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	4-6-9	5-7-10	5-7-10	6-8-11	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
	Positions	Air Flow, cfm	140	175	209	244	279	314	349	419	489
8"	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	9	10	12	14
		50 fpm Vert. Proj., Ft @ 40° F Heating	4	5	6	7	8	9	10	12	14
	Positions	Air Flow, cfm	218	273	327	382	436	491	545	654	764
10"	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
	Positions	Air Flow, cfm	314	393	471	550	628	707	785	942	1100
12"	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
	Positions	Air Flow, cfm	428	535	641	748	855	962	1069	1283	1497
14"	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

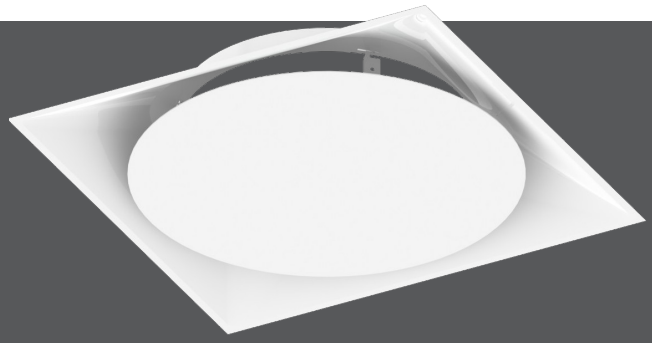
Performance notes appear at end of performance data

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

metric sizes | retrofit | MRI compatible | woodgrains | open ceiling

See website for Specifications

AVAILABLE MODEL:

OMNI-RS / Steel

FINISH

Standard Finish - #26 White

OVERVIEW

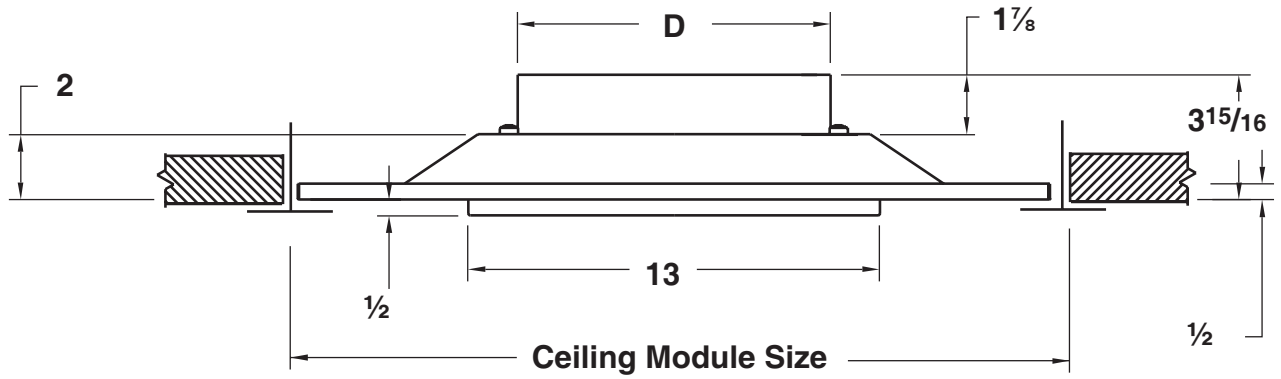
Square Backpan / Round Plaque / Steel

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.

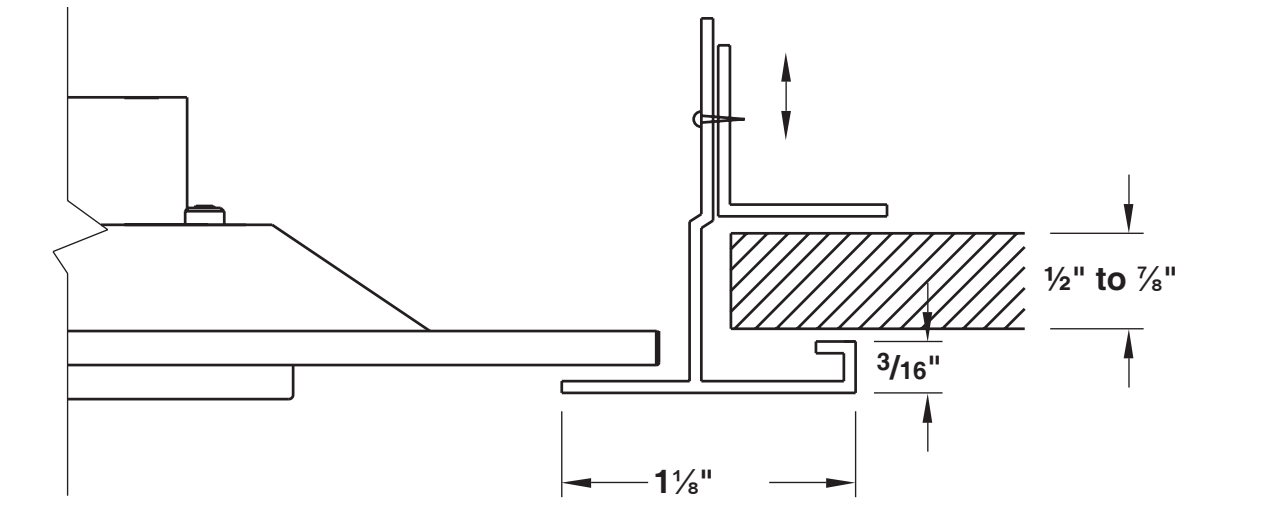
DIMENSIONS

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	5⅞
	8	7⅞
	10	9⅞
	12	11½

All dimensions are in inches

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

See website for Specifications

AVAILABLE MODEL:

DAT / Supply

FINISH

Standard Finish - #26 White

OVERVIEW

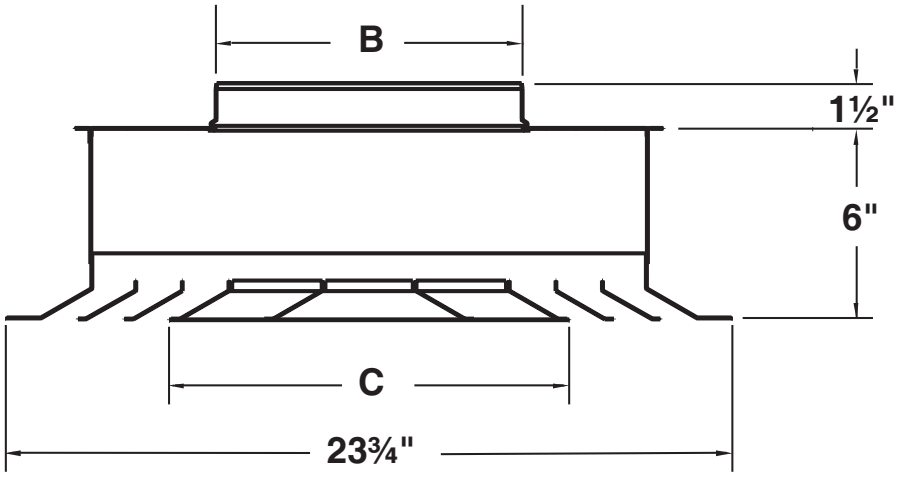
Louvered Plaque / Steel

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.

DIMENSIONS

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

All dimensions are in inches

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
		NC (Noise Criteria)	-	13	18	22	26	29	32	36	41
	8" Round Neck	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
		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
	10" Round Neck	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
		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
24 X 24, 2-slot	6" Round Neck	Air Flow, cfm	59	94	128	163	197	231	266	300	335
		Neck Velocity	300	475	650	825	1000	1175	1350	1525	1700
		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
	8" Round Neck	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
		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
	10" 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
		NC (Noise Criteria)	12	17	22	26	30	33	36	38	41
	12" Round Neck	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
		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
24 X 24, 3-slot	8" Round Neck	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
		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
	10" Round Neck	Air Flow, cfm	164	232	300	368	436	504	572	640	709
		Neck Velocity	300	425	550	675	800	925	1050	1175	1300
		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
	12" Round Neck	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	0.014	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

See website for Specifications

AVAILABLE MODEL:

DAT-NT / Supply

FINISH

Standard Finish - #26 White

OVERVIEW

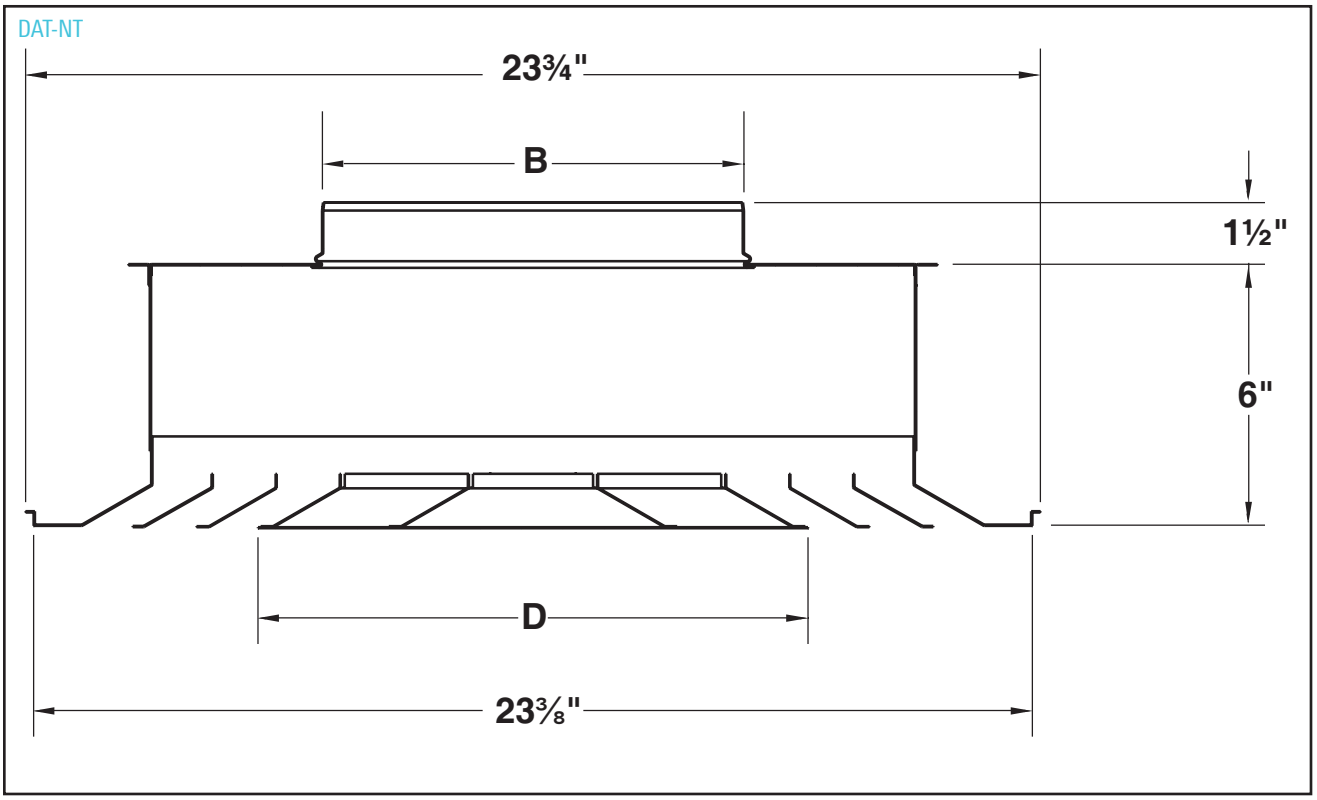
Louvered Plaque / Narrow Tee / Steel

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

DAT-NT UNIT DIMENSIONS

DAT-NT



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

All dimensions are in inches

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

AVAILABLE MODELS:

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

FINISH

Standard Finish - #26 White

OVERVIEW

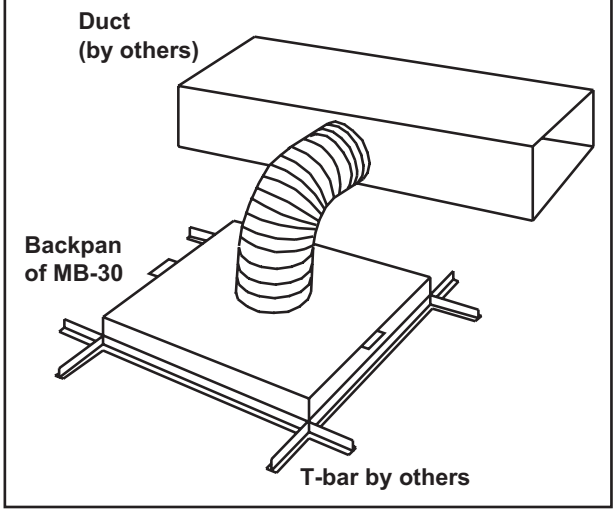
ModuBloc Series

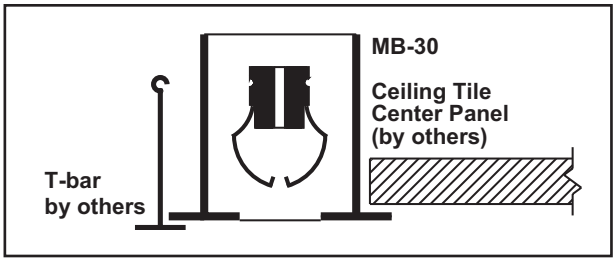
Titus Modu-Bloc diffusers are designed to be visually pleasing while providing superior performance. The Modu-Bloc is constructed so that a ceiling tile can be field cut and inserted in the face of the diffuser. This results in a smooth, clean appearance that blends with the ceiling.

ADDITIONAL FEATURES

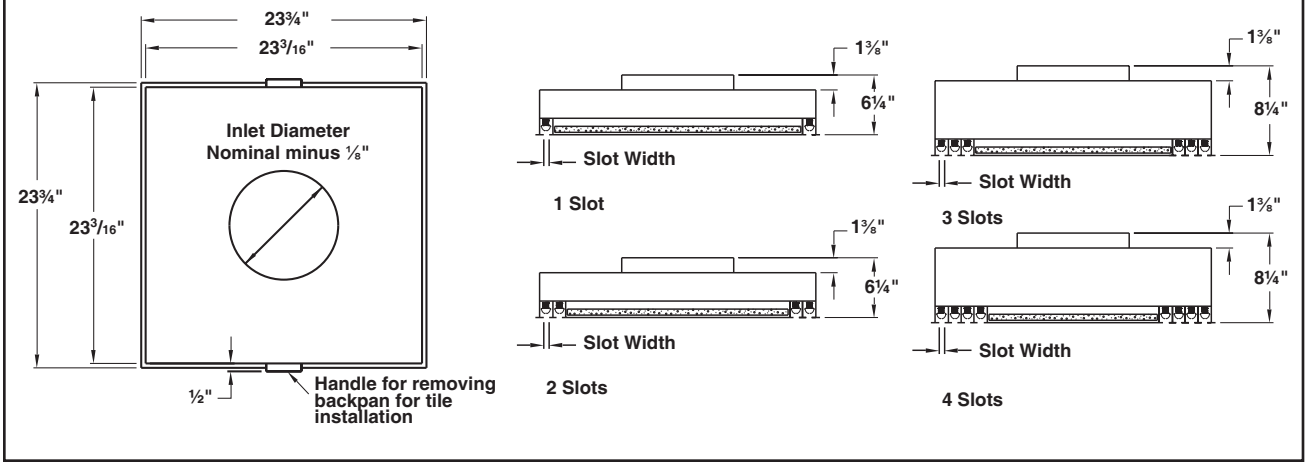
- Discharge directions are adjustable through 180°. Titus Modulinear pattern controllers in each slot controls not only the direction of airflow, but also the volume of air.
- Choice of one, two, three or four slots
- Choice of ¾- or 1" slots
- Supply diffuser has a round neck with a deep collar for 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

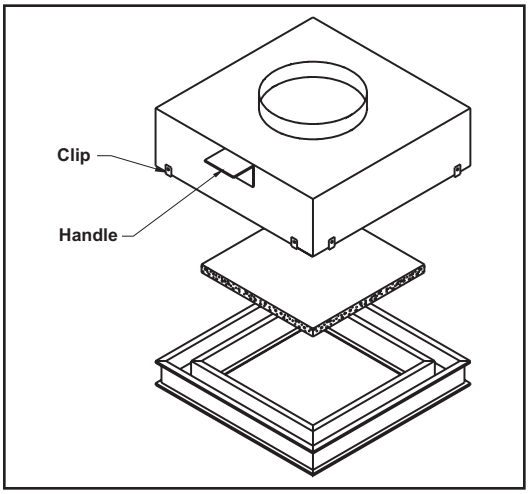




MODU-BLOC MB-30 DIMENSIONS



FIELD INSTALLATION OF CENTER TILE

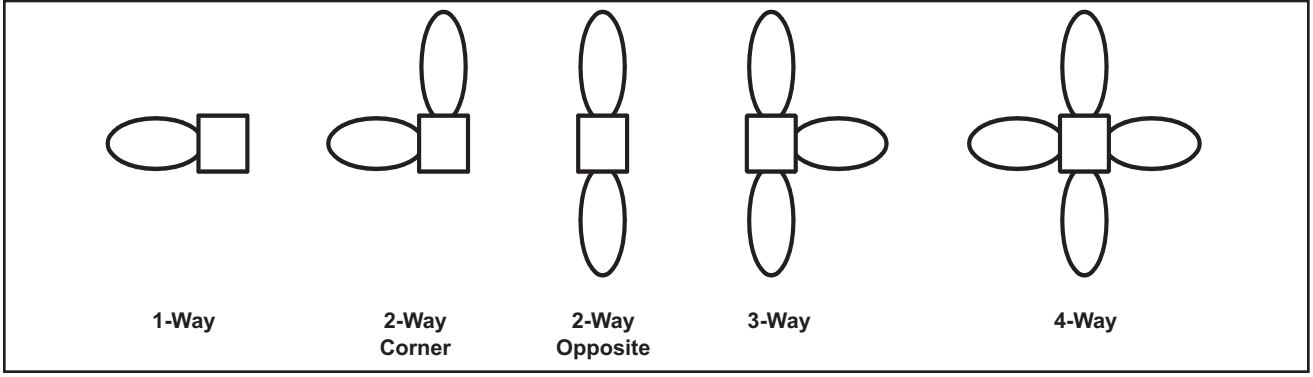


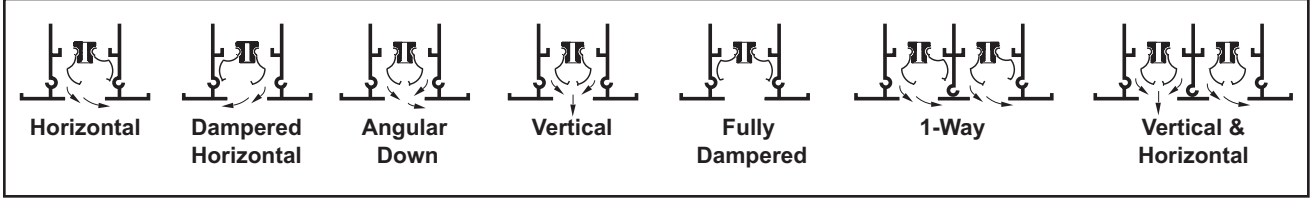
CENTER PANEL CEILING TILE - CUTTING DIMENSIONS

Number of Slots	Slot Width	
	¾"	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

Available Inlet Sizes
8"
10"
12"
14"

DISCHARGE PATTERNS - FIELD ADJUSTABLE

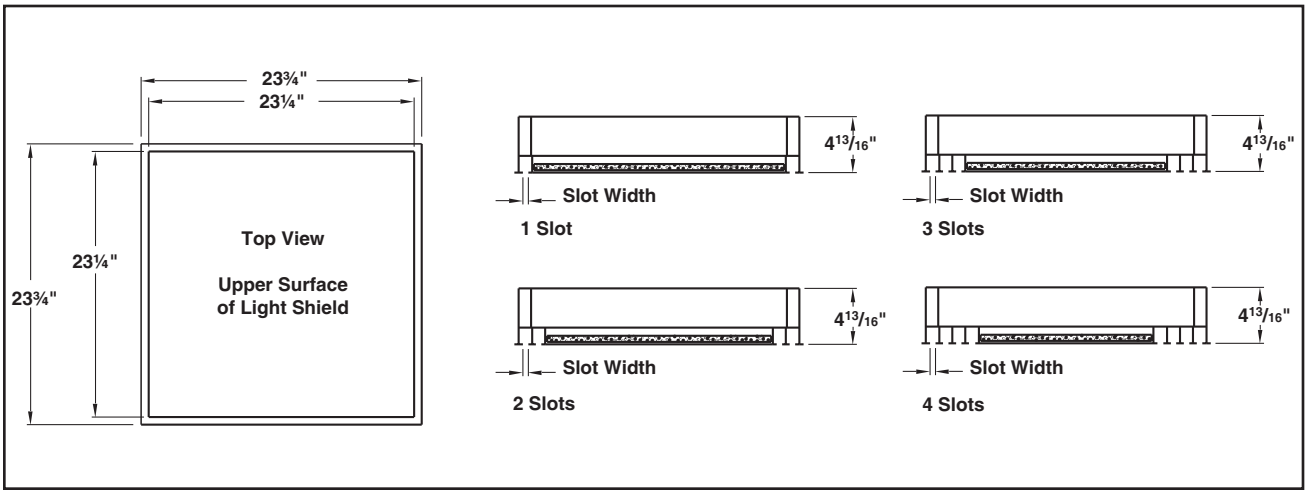




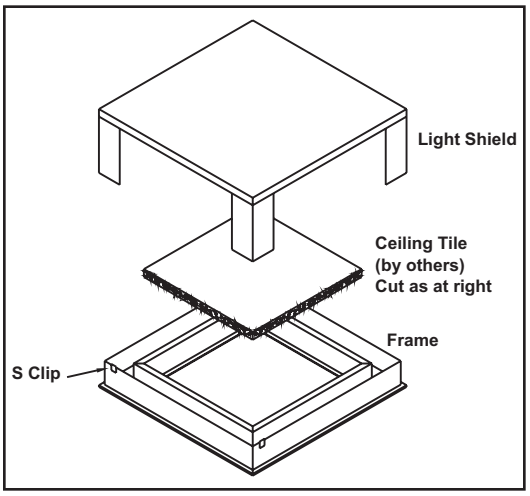
All dimensions are in inches

DIMENSIONS

MODU-BLOC MBR-30 DIMENSIONS

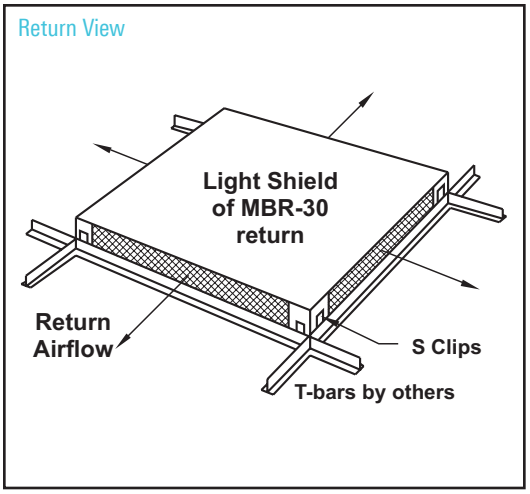


FIELD INSTALLATION OF CENTER TILE



CENTER PANEL CEILING TILE - CUTTING DIMENSIONS

Number of Slots	Slot Width	
	¾"	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



All dimensions are in inches

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

Performance notes appear at end of performance data

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

	Size	Negative Static Pressure	0.007	0.028	0.063	0.108	0.17	0.25	0.345	0.45
¾" Wide Slot	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
	Size	Negative Static Pressure	0.018	0.04	0.07	0.108	0.16	0.215	0.28	0.45
1" Wide Slot	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

See website for Specifications

AVAILABLE MODELS:

MB-30-NT / Supply / ¾" or 1" Slot
MBR-30-NT / Return

FINISH

Standard Finish - #26 White

OVERVIEW

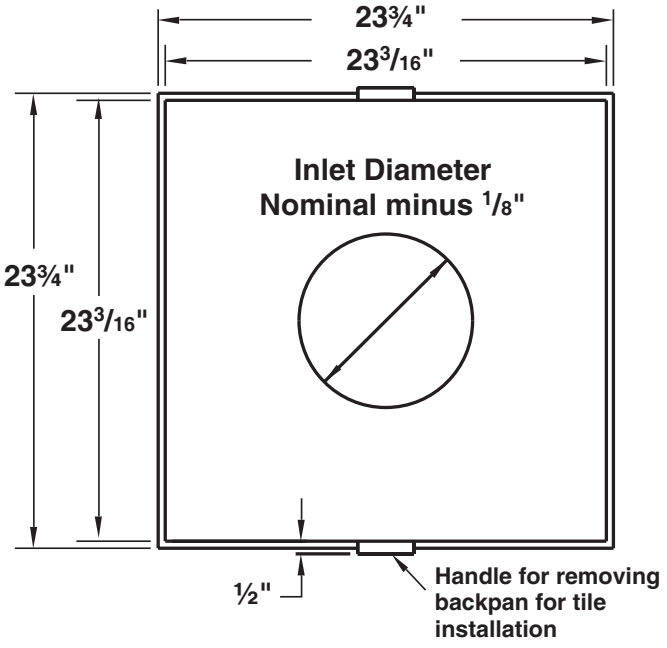
ModuBloc Series / Narrow Tee

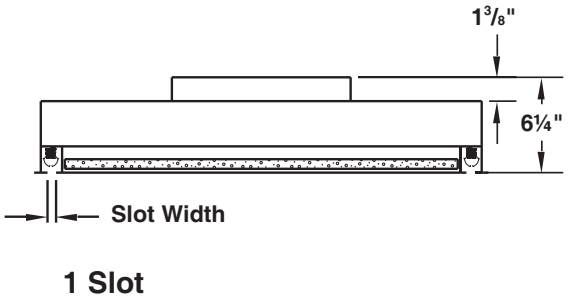
Titus Modu-Bloc diffusers are designed to be visually pleasing while providing superior performance. The Modu-Bloc is constructed so that a ceiling tile can be field cut and inserted in the face of the diffuser. This results in a smooth, clean appearance that blends with the ceiling.

For Performance Data and Notes, please refer to pages F146-F148.

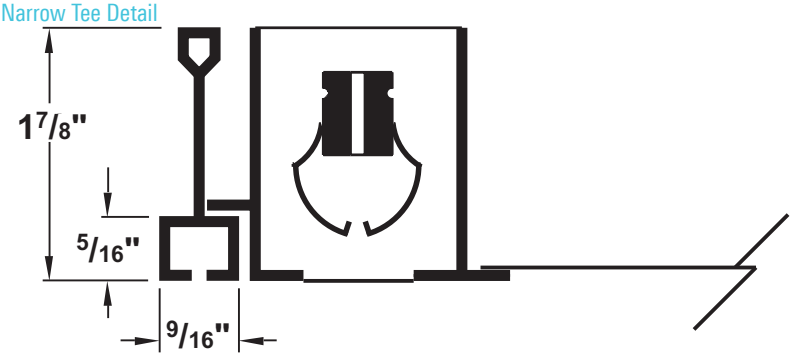
MB-30-NT / MBR-30-NT DIMENSIONS

Two-Slot Unit





Narrow Tee Detail



All dimensions are in inches

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 $1^{7}/_{8}$ 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

retrofit

AVAILABLE MODEL:

TSW / Steel

FINISH

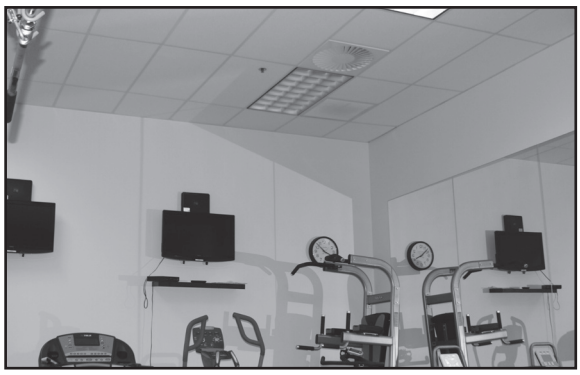
Standard Finish - #26 White

OVERVIEW

Swirl Face / Steel

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

See website for Specifications

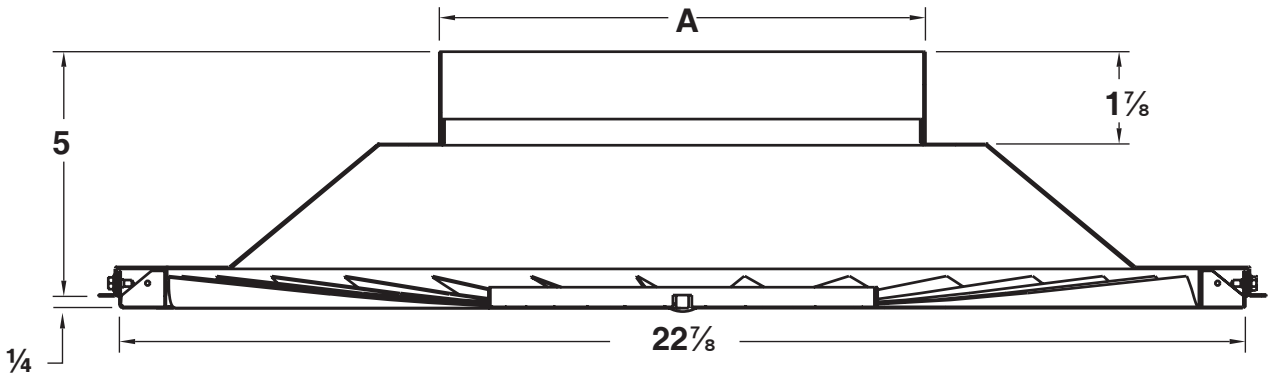


TSW installed in ceiling of a workout facility

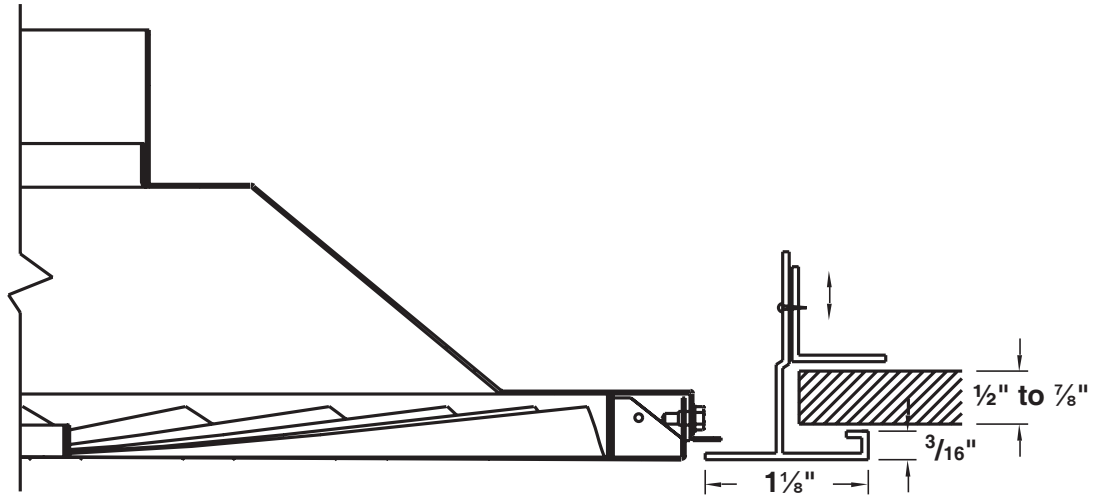
DIMENSIONS

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"	5⅞
8"	7⅞
10"	9⅞
12"	11½

All dimensions are in inches

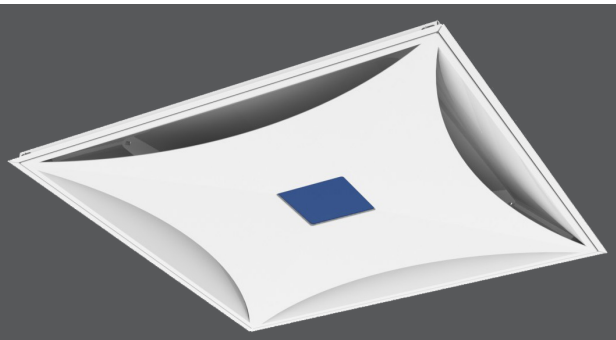
TSW / SWIRL FACE

		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



SPECTRUM

metric sizes | retrofit | woodgrains

See website for Specifications

AVAILABLE 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 is it a great choice for variable air volume applications. In additional 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 diffuser installed in the ceiling of a conference room

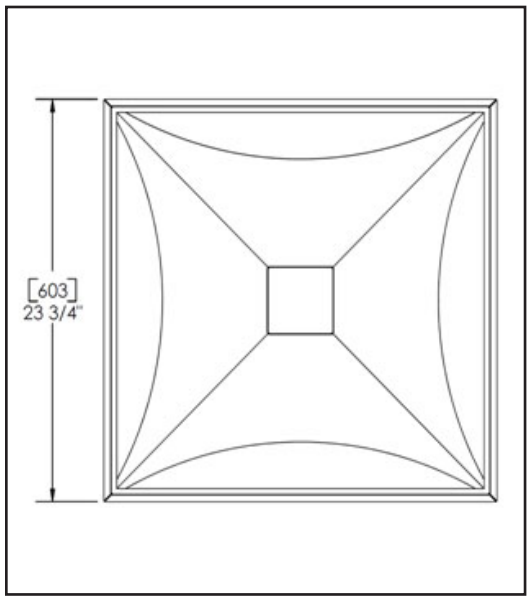
Spectrum faceplate after the diffuser is painted. Appliqué specifications include a 0.017" polycarbonate substrate with opacity film, 0.002" adhesive with peel-off backing, and total thickness of 0.019".

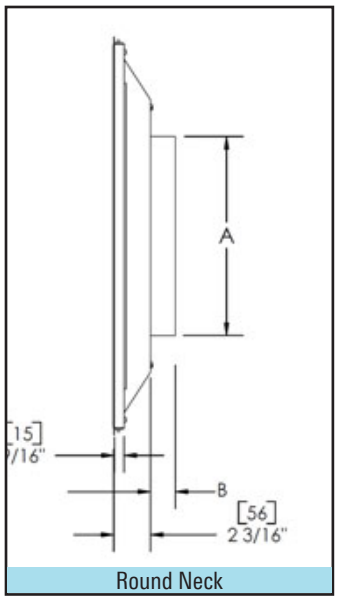
COLOR OPTIONS

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.

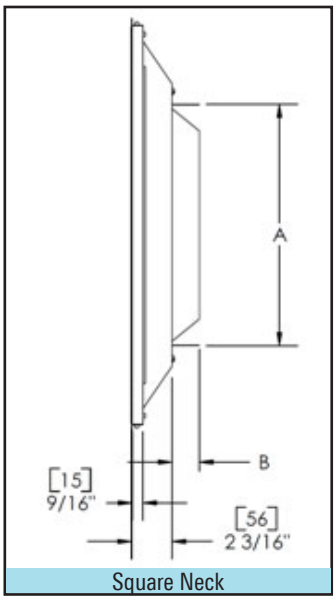
The Titus AR mobile app is available for download on most Android devices and iOS

SPECTRUM UNIT DIMENSIONS





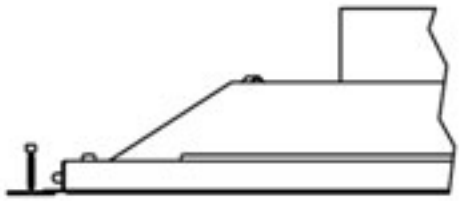
Round Neck



Square Neck

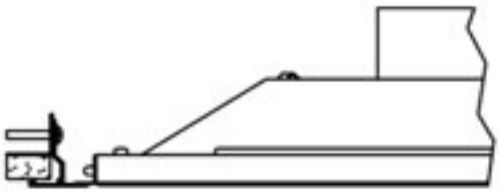
BORDER DETAILS

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

All dimensions are in inches

SPECTRUM / ROUND 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" 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 amd 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

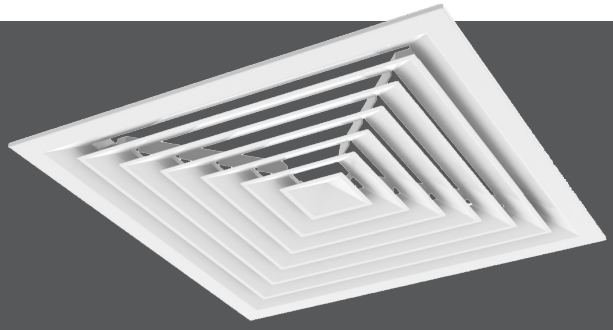
PERFORMANCE NOTES

- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- Throw values are in feet at terminal velocities of 150, 100 amd 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.

See website for Specifications

AVAILABLE 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

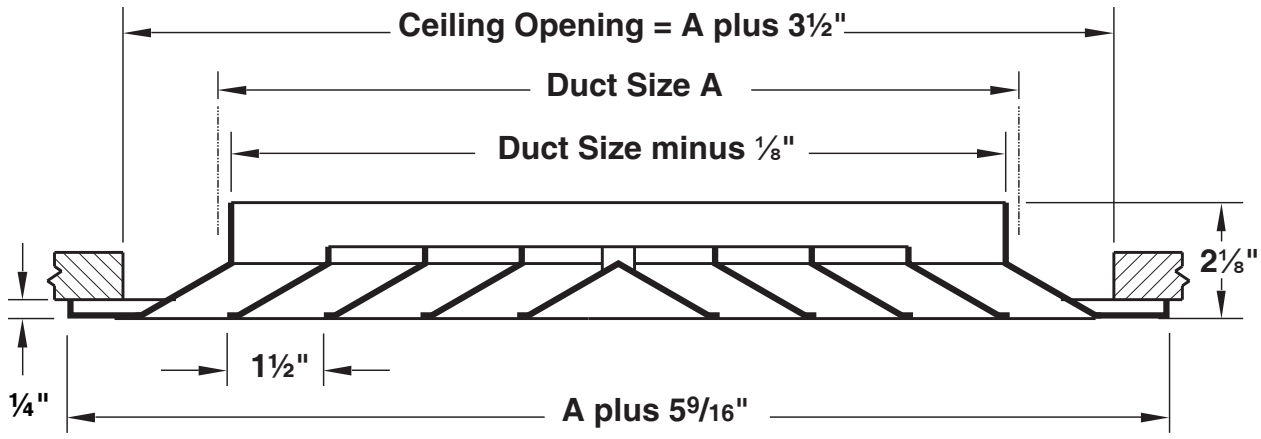
OVERVIEW

Louvered Face / High Capacity

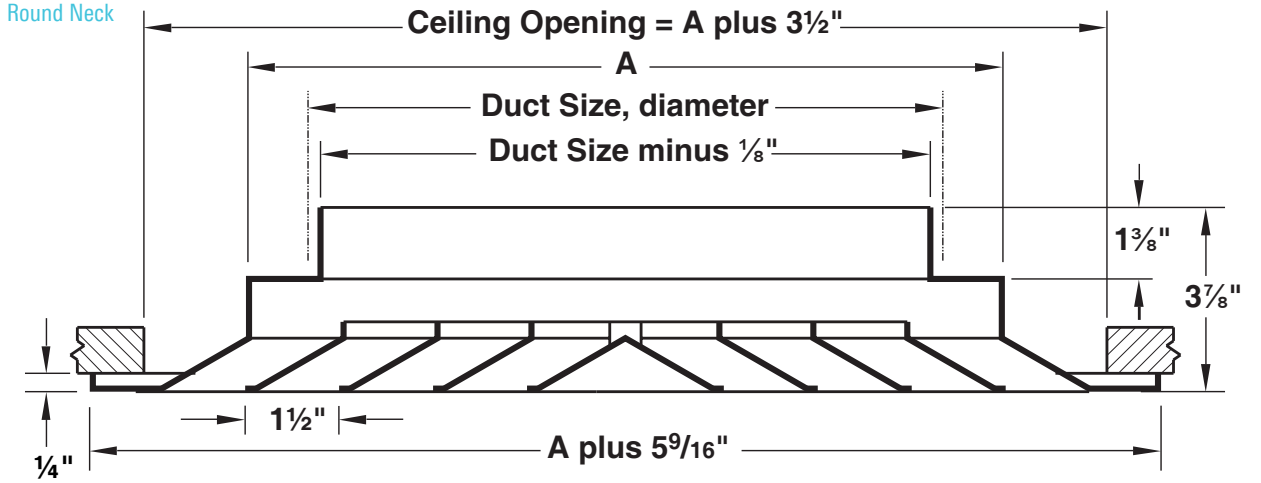
Titus Series TDC diffusers handle an unusually large amount of air for a given pressure drop and noise level. Their pleasing appearance harmonizes with various architectural details, especially in modular ceiling systems.

TDC / TDCA UNIT DIMENSIONS

Border Type 1 (Surface Mount)
Square or Rectangular Neck

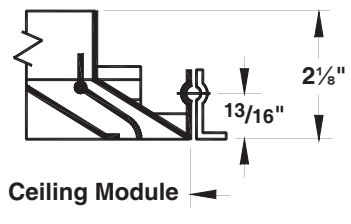


Border Type 1 (Surface Mount)
Round Neck

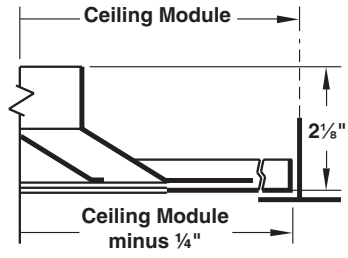


BORDER TYES

Border Type 2
(Snap-In)



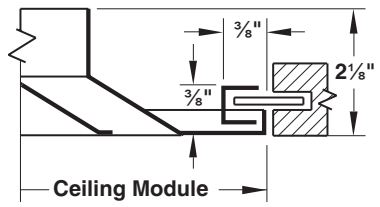
Border Type 3
(Lay-In)



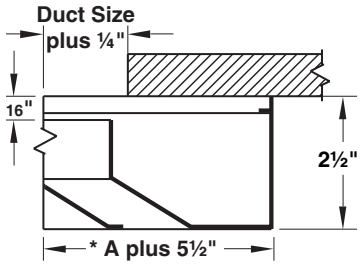
All dimensions are in inches

BORDER TYES (continued)

Border Type 4 (Spline)

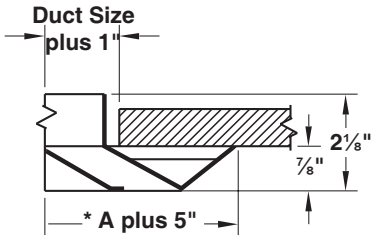


Border Type 5 (Dropped Face)

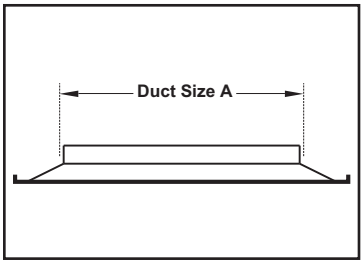


Available in Steel Only
Note: Std. diffuser is 2½" deep
Optional 4" deep diffuser is available

Border Type 6 (Beveled Drop Face)



AVAILABLE DUCT SIZES - SQUARE AND RECTANGULAR NECKS



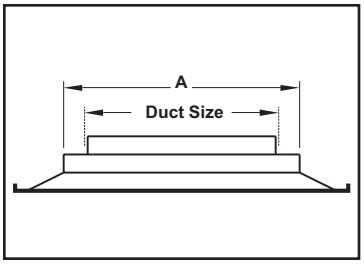
Border Types 1, 5, 6	
Minimum Duct Size A	Maximum Duct Size A
6 x 6	48 x 48

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

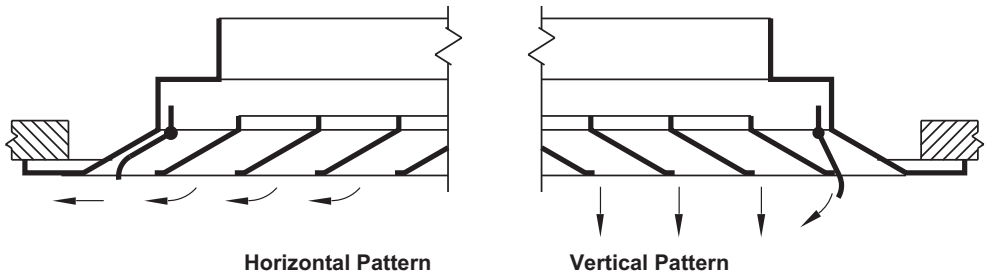


Border Types 1, 5, 6	
Dimension A	Available Round Duct Size
6 x 6	6
9 x 9	6, 8
12 x 12	6, 8, 10, 12
15 x 15	6, 8, 10, 12, 14
18 x 18	6, 8, 10, 12, 14, 16

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

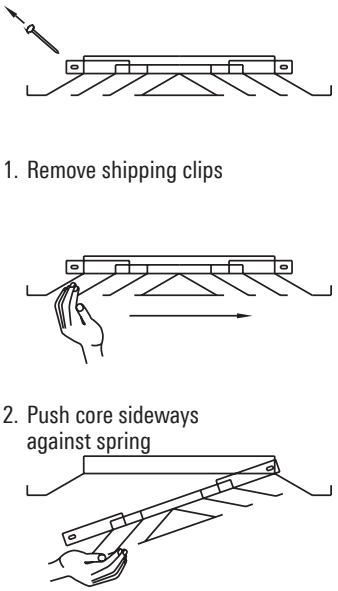
Border Types 2, 3, 4		
Available Module Size	Dimension A	Available Round Duct Size
12 x 12	6 x 6	6
	9 x 9	6, 8
24 x 24	6 x 6	6
	9 x 9	6, 8
	12 x 12	6, 8, 10, 12
	15 x 15	6, 8, 10,
		12, 14
	18 x 18	6, 8, 10,
		12, 14, 16

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



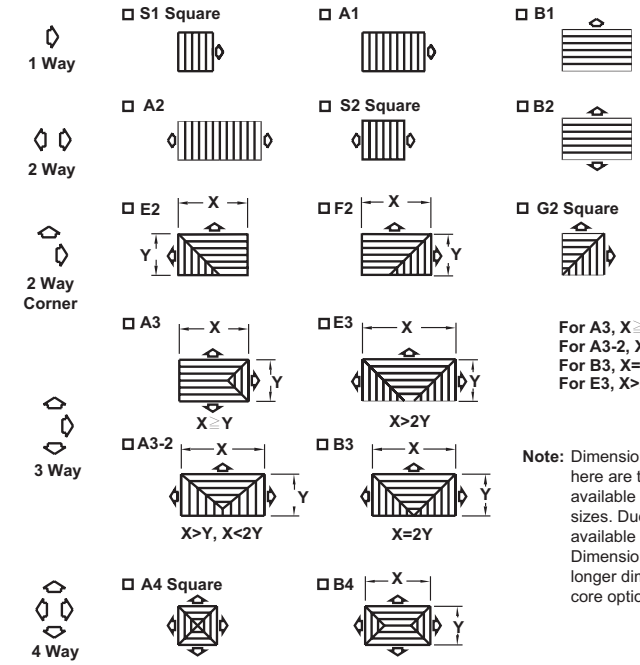
DIMENSIONS

REMOVING CENTER CORE



1. Remove shipping clips
2. Push core sideways against spring
3. Hold core securely and allow to drop down

OPTIONAL PATTERNS



For A3, X≧Y
For A3-2, X>Y, X<2Y
For B3, X=2Y
For E3, X>2Y

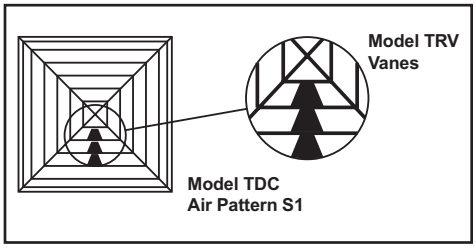
Note: Dimensions X and Y shown here are the proportions of available rectangular duct sizes. Duct sizes are available in 3-inch increments. Dimension X is always the longer dimension for each core option.

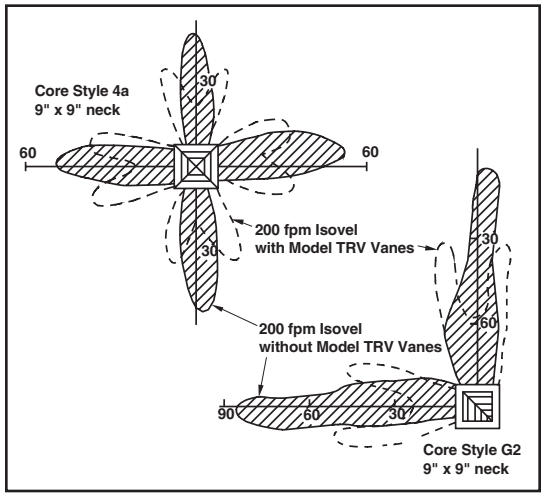
Note: Patterns are shown in plan view (looking down into inlet)

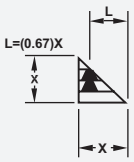
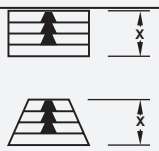
Optional Patterns (continued)

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

PERFORMANCE DATA

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

		Neck Vel.	300		400		500		600		700		800		900	
		Vel. Pressure	0.006		0.010		0.016		0.022		0.031		0.040		0.050	
		Total Pressure	0.042		0.075		0.117		0.169		0.229		0.300		0.379	
Return Factors		Total cfm	75		100		125		150		175		200		225	
-SP = 1.1 TP		NC	-		13		16		23		27		31		34	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
6	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
x	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
6	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
0.25		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
ft²	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		Total cfm	169		225		281		338		394		450		506	
-SP = 1.1 TP		NC	-		15		21		26		30		34		37	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
9	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
x	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
9	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
0.56		Y	42	4-7-12	56	7-10-14	70	8-11-16	84	10-12-17	98	11-13-18	113	11-14-20	127	12-15-21
ft²	A4	X & Y	42	4-7-12	56	7-10-14	70	8-11-16	84	10-12-17	98	11-13-18	113	11-14-20	127	12-15-21
Return Factors		Total cfm	300		400		500		600		700		800		900	
-SP = 1.1 TP		NC	-		17		23		28		32		35		38	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
12	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
x	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
12	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
1.00		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
ft²	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		Total cfm	469		625		781		938		1094		1250		1406	
-SP = 1.1 TP		NC	11		19		25		29		33		37		40	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
15	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
x	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	26-32-45
15	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
1.56		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
ft²	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		Total cfm	675		900		1125		1350		1575		1800		2025	
-SP = 1.1 TP		NC	12		20		26		31		35		38		41	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	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
x	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
18	A3	X	253	16-20-28	338	18-23-32	422	21-25-36	506	23-28-39	591	24-30-42	675	26-32-45	759	28-34-48
2.25		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
ft²	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		Total cfm	919		1225		1531		1838		2144		2450		2756	
-SP = 1.1 TP		NC	13		21		27		32		36		39		42	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
21	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
x	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
21	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
3.06		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
ft²	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		Total cfm	1200		1600		2000		2400		2800		3200		3600	
-SP = 1.1 TP		NC	14		22		28		32		36		40		43	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
24	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
x	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
24	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
4.00		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
ft²	A4	X & Y	300	12-20-23	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		Total cfm	1875		2500		3125		3750		4375		5000		5625	
-SP = 1.1 TP		NC	16		23		29		34		38		41		45	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
30	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
x	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
30	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
6.25		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
ft²	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		Total cfm	2700		3600		4500		5400		6300		7200		8100	
-SP = 1.1 TP		NC	17		24		30		35		39		43		46	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
36	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
x	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
36	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
9.00		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
ft²	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		Total cfm	4800		6400		8000		9600		11200		12800		14400	
-SP = 1.1 TP		NC	19		26		32		37		41		45		48	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
48	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
x	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
48	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
16.00		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
ft²	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.	300		400		500		600		700		800		900	
		Vel. Pressure	0.006		0.010		0.016		0.022		0.031		0.040		0.050	
		Total Pressure	0.042		0.075		0.117		0.169		0.229		0.300		0.379	
Return Factors		Total cfm	113		150		188		225		263		300		338	
-SP = 1.1 TP		NC	-		14		20		25		29		32		35	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
6		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
x	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
9		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
0.38	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
ft²		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		Total cfm	150		200		250		300		350		400		450	
-SP = 1.1 TP		NC	-		15		21		26		30		33		36	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
6		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
x	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
12		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
0.50	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
ft²		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		Total cfm	188		250		313		375		438		500		563	
-SP = 1.1 TP		NC	-		16		22		26		30		34		37	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
6		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
x	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
15		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
0.63	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
ft²		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		Total cfm	225		300		375		450		525		600		675	
-SP = 1.1 TP		NC	-		16		22		27		31		34		38	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
6		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
x	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
18		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
0.75	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
ft²		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		Total cfm	263		350		438		525		613		700		788	
-SP = 1.1 TP		NC	-		17		23		27		31		35		38	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
6		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
x	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
21		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
0.88	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
ft²		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

Performance notes appear at end of performance data

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

		Neck Vel.	300		400		500		600		700		800		900	
		Vel. Pressure	0.006		0.010		0.016		0.022		0.031		0.040		0.050	
		Total Pressure	0.042		0.075		0.117		0.169		0.229		0.300		0.379	
Return Factors		Total cfm	300		400		500		600		700		800		900	
-SP = 1.1 TP		NC	-		17		23		28		32		35		38	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
6		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
x	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
24		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
1.00	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
ft²		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		Total cfm	375		500		625		750		875		1000		1125	
-SP = 1.1 TP		NC	-		18		24		29		33		36		39	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
6		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
x	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
30		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
1.25	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
ft²		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		Total cfm	225		300		375		450		525		600		675	
-SP = 1.1 TP		NC	-		16		22		27		31		34		38	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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	45977	188	14-19-27	225	16-21-30	263	19-23-32	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
9		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
x	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
12		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
0.75	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
ft²		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		Total cfm	281		375		469		563		656		750		844	
-SP = 1.1 TP		NC	-		17		23		28		32		35		38	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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	46739	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
9		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
x	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
15		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
0.94	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
ft²		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		Total cfm	338		450		563		675		788		900		1013	
-SP = 1.1 TP		NC	-		18		24		28		32		36		39	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
9		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
x	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
18		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
1.13	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
ft²		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	10-17-23	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

Performance notes appear at end of performance data

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

		Neck Vel.	300		400		500		600		700		800		900	
		Vel. Pressure	0.006		0.010		0.016		0.022		0.031		0.040		0.050	
		Total Pressure	0.042		0.075		0.117		0.169		0.229		0.300		0.379	
Return Factors		Total cfm	394		525		656		788		919		1050		1181	
-SP = 1.1 TP		NC	11		18		24		29		33		36		39	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
9 x 21 1.31 ft²	A1&B1	X	394	20-24-34	525	23-28-39	656	25-31-44	788	28-34-48	919	30-37-52	1050	32-39-56	1181	34-42-59
	A2&B2	X & Y	197	11-16-28	263	14-22-32	328	18-26-36	394	22-28-40	459	25-30-43	525	27-32-46	591	28-34-49
	E2&F2	X	309	14-19-27	413	18-22-31	516	20-24-34	619	22-27-38	722	23-29-41	825	25-31-43	928	27-33-46
		Y	84	8-12-22	113	11-17-25	141	14-20-28	169	17-22-31	197	19-24-34	225	21-25-36	253	22-27-38
	A3	X	176	12-18-25	234	16-21-29	293	19-23-33	352	21-25-36	410	22-27-39	469	24-29-41	527	25-31-44
		Y	42	8-12-20	56	11-16-23	70	14-18-25	84	16-20-28	98	17-21-30	113	19-23-32	127	20-24-34
	E3	X	225	17-22-30	300	20-25-35	375	23-28-39	450	25-30-43	525	27-33-47	600	29-35-50	675	30-37-53
		Y	84	8-12-22	113	11-17-25	141	14-20-28	169	17-22-31	197	19-24-34	225	21-25-36	253	22-27-38
	B4	X	155	12-18-25	206	16-21-29	258	19-23-33	309	21-25-36	361	22-27-39	413	24-29-41	464	25-31-44
		Y	42	8-12-20	56	11-16-23	70	14-18-25	84	16-20-28	98	17-21-30	113	19-23-32	127	20-24-34
Return Factors		Total cfm	450		600		750		900		1050		1200		1350	
-SP = 1.1 TP		NC	11		19		24		29		33		37		40	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
9 x 24 1.50 ft²	A1&B1	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
	A2&B2	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
	E2&F2	X	366	15-20-28	488	19-23-33	609	21-26-37	731	23-28-40	853	25-31-43	975	27-33-46	1097	28-35-49
		Y	84	9-13-23	113	12-18-27	141	15-21-30	169	18-23-33	197	21-25-36	225	22-27-38	253	23-29-41
	A3	X	204	13-19-27	272	17-22-31	340	20-25-35	408	22-27-38	476	24-29-41	544	26-31-44	612	27-33-47
		Y	42	9-13-21	56	12-17-24	70	15-19-27	84	17-21-30	98	19-23-32	113	20-24-34	127	21-26-36
	E3	X	281	19-23-33	375	22-27-38	469	24-30-42	563	27-33-46	656	29-35-50	750	31-38-53	844	33-40-56
		Y	84	9-13-23	113	12-18-27	141	15-21-30	169	18-23-33	197	21-25-36	225	22-27-38	253	23-29-41
	B4	X	183	13-19-27	244	17-22-31	305	20-25-35	366	22-27-38	427	24-29-41	488	26-31-44	548	27-33-47
		Y	42	9-13-21	56	12-17-24	70	15-19-27	84	17-21-30	98	19-23-32	113	20-24-34	127	21-26-36
Return Factors		Total cfm	563		750		938		1125		1313		1500		1688	
-SP = 1.1 TP		NC	12		19		25		30		34		37		41	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
9 x 30 1.88 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	478	16-23-32	638	21-26-37	797	24-29-41	956	26-32-45	1116	28-34-49	1275	30-37-52	1434	32-39-55
		Y	84	10-15-26	113	13-20-30	141	17-24-34	169	20-26-37	197	23-28-40	225	25-30-43	253	26-32-45
	A3	X	260	14-21-30	347	19-25-35	434	23-28-39	520	25-30-43	607	27-33-46	694	29-35-50	780	30-37-53
		Y	42	10-15-24	56	13-19-27	70	16-21-30	84	19-24-33	98	21-25-36	113	22-27-38	127	24-29-41
	E3	X	394	21-26-36	525	24-30-42	656	27-33-47	788	30-36-51	919	32-39-56	1050	34-42-59	1181	36-45-63
		Y	84	10-15-26	113	13-20-30	141	17-24-34	169	20-26-37	197	23-28-40	225	25-30-43	253	26-32-45
	B4	X	239	14-21-30	319	19-25-35	398	23-28-39	478	25-30-43	558	27-33-46	638	29-35-50	717	30-37-53
		Y	42	10-15-24	56	13-19-27	70	16-21-30	84	19-24-33	98	21-25-36	113	22-27-38	127	24-29-41
Return Factors		Total cfm	675		900		1125		1350		1575		1800		2025	
-SP = 1.1 TP		NC	12		20		26		31		35		38		41	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
9 x 36 2.25 ft²	A1&B1	X	675	26-32-45	900	30-36-52	1125	33-41-58	1350	36-45-63	1575	39-48-68	1800	42-52-73	2025	45-55-77
	A2&B2	X & Y	338	14-21-37	450	19-28-43	563	24-34-48	675	28-37-52	788	32-40-56	900	35-43-60	1013	37-45-64
	E2&F2	X	591	18-25-35	788	23-28-40	984	26-32-45	1181	28-35-49	1378	31-38-53	1575	33-40-57	1772	35-43-60
		Y	84	11-16-29	113	15-22-33	141	18-26-37	169	22-29-41	197	25-31-44	225	27-33-47	253	29-35-50
	A3	X	316	16-23-33	422	21-27-38	527	25-30-43	633	27-33-47	738	29-36-51	844	31-38-54	949	33-41-58
		Y	42	11-16-26	56	14-21-30	70	18-24-33	84	21-26-36	98	23-28-39	113	24-30-42	127	26-32-45
	E3	X	506	23-28-40	675	27-33-46	844	30-36-51	1013	33-40-56	1181	35-43-61	1350	38-46-65	1519	40-49-69
		Y	84	11-16-29	113	15-22-33	141	18-26-37	169	22-29-41	197	25-31-44	225	27-33-47	253	29-35-50
	B4	X	295	16-23-33	394	21-27-38	492	25-30-43	591	27-33-47	689	29-36-51	788	31-38-54	886	33-41-58
		Y	42	11-16-26	56	14-21-30	70	18-24-33	84	21-26-36	98	23-28-39	113	24-30-42	127	26-32-45
Return Factors		Total cfm	375		500		625		750		875		1000		1125	
-SP = 1.1 TP		NC	-		18		24		29		33		36		39	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
12 x 15 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	46707	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	225	13-18-26	300	17-21-30	375	19-24-34	450	21-26-37	525	23-28-40	600	25-30-42	675	26-32-45
		Y	150	8-12-21	200	11-16-25	250	14-20-28	300	16-21-30	350	19-23-33	400	20-25-35	450	21-26-37
	A3	X	150	12-18-25	200	16-20-29	250	18-23-32	300	20-25-35	350	22-27-38	400	23-29-40	450	25-30-43
		Y	75	8-12-19	100	11-16-22	125	13-18-25	150	16-19-27	175	17-21-29	200	18-22-31	225	19-24-33
	A3-2	X	117	11-17-27	156	15-22-31	195	19-25-35	234	22-27-38	273	24-29-42	313	26-31-44	352	27-33-47
		Y	129	8-12-21	172	11-16-25	215	14-20-28	258	16-21-30	301	19-23-33	344	20-25-35	387	21-26-37
	B4	X	113	12-18-25	150	16-20-29	188	18-23-32	225	20-25-35	263	22-27-38	300	23-29-40	338	25-30-43
		Y	75	8-12-19	100	11-16-22	125	13-18-25	150	16-19-27	175	17-21-29	200	18-22-31	225	19-24-33

Performance notes appear at end of performance data

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		Neck Vel.	300		400		500		600		700		800		900	
		Vel. Pressure	0.006		0.010		0.016		0.022		0.031		0.040		0.050	
		Total Pressure	0.042		0.075		0.117		0.169		0.229		0.300		0.379	
Return Factors		Total cfm	450		600		750		900		1050		1200		1350	
-SP = 1.1 TP		NC	11		19		24		29		33		37		40	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	A1&B1	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
	A2&B2	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
	E2&F2	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
12		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
x	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
18		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
1.50	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
ft²		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		Total cfm	525		700		875		1050		1225		1400		1575	
-SP = 1.1 TP		NC	12		19		25		30		34		37		40	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	A1&B1	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
	A2&B2	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
	E2&F2	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
12		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
x	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
21		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
1.75	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
ft²		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		Total cfm	600		800		1000		1200		1400		1600		1800	
-SP = 1.1 TP		NC	12		20		25		30		34		38		41	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	A1&B1	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
	A2&B2	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
	E2&F2	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
12		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
x	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
24		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
2.00	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
ft²		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		Total cfm	750		1000		1250		1500		1750		2000		2250	
-SP = 1.1 TP		NC	13		20		26		31		35		38		41	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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	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
12		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
x	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
30		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
2.50	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
ft²		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		Total cfm	900		1200		1500		1800		2100		2400		2700	
-SP = 1.1 TP		NC	13		21		27		31		36		39		42	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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	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
12		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
x	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
36		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
3.00	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
ft²		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.	300		400		500		600		700		800		900	
		Vel. Pressure	0.006		0.010		0.016		0.022		0.031		0.040		0.050	
		Total Pressure	0.042		0.075		0.117		0.169		0.229		0.300		0.379	
Return Factors		Total cfm	1200		1600		2000		2400		2800		3200		3600	
-SP = 1.1 TP		NC	14		22		28		32		36		40		43	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
12 x 48 4.00 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		Total cfm	563		750		938		1125		1313		1500		1688	
-SP = 1.1 TP		NC	12		19		25		30		34		37		41	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
15 x 18 1.88 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		Total cfm	656		875		1094		1313		1531		1750		1969	
-SP = 1.1 TP		NC	12		20		26		30		34		38		41	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
15 x 21 2.19 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		Total cfm	750		1000		1250		1500		1750		2000		2250	
-SP = 1.1 TP		NC	13		20		26		31		35		38		41	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
15 x 24 2.50 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		Total cfm	938		1250		1563		1875		2188		2500		2813	
-SP = 1.1 TP		NC	13		21		27		32		36		39		42	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
15 x 30 3.13 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

Performance notes appear at end of performance data

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

		Neck Vel.	300		400		500		600		700		800		900	
		Vel. Pressure	0.006		0.010		0.016		0.022		0.031		0.040		0.050	
		Total Pressure	0.042		0.075		0.117		0.169		0.229		0.300		0.379	
Return Factors		Total cfm	1125		1500		1875		2250		2625		3000		3375	
-SP = 1.1 TP		NC	14		22		27		32		36		40		43	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
15		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
x	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
36		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
3.75	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
ft^2		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		Total cfm	1500		2000		2500		3000		3500		4000		4500	
-SP = 1.1 TP		NC	15		23		28		33		37		41		44	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
15		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
x	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
48		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
5.00	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
ft^2		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		Total cfm	788		1050		1313		1575		1838		2100		2363	
-SP = 1.1 TP		NC	13		20		26		31		35		39		42	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
18		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
x	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
21		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
2.63	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
ft^2		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		Total cfm	900		1200		1500		1800		2100		2400		2700	
-SP = 1.1 TP		NC	13		21		27		31		36		39		42	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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	30-37-52	1125	33-40-57	1313	36-43-62	1500	38-46-66	1688	40-49-70
18		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
x	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
24		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
3.00	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
ft^2		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		Total cfm	1125		1500		1875		2250		2625		3000		3375	
-SP = 1.1 TP		NC	14		22		27		32		36		40		43	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
18		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
x	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
30		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
3.75	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
ft^2		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

Performance notes appear at end of performance data

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

		Neck Vel.	300		400		500		600		700		800		900	
		Vel. Pressure	0.006		0.010		0.016		0.022		0.031		0.040		0.050	
		Total Pressure	0.042		0.075		0.117		0.169		0.229		0.300		0.379	
Return Factors		Total cfm	1350		1800		2250		2700		3150		3600		4050	
-SP = 1.1 TP		NC	15		22		28		33		37		40		43	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	A1&B1	X	1350	36-45-63	1800	42-52-73	2250	47-58-82	2700	52-63-89	3150	56-68-97	3600	60-73-103	4050	63-77-109
	A2&B2	X & Y	675	20-30-52	900	27-40-60	1125	33-48-67	1350	40-52-74	1575	46-56-80	1800	49-60-85	2025	52-64-90
	E2&F2	X	1013	25-35-49	1350	33-40-57	1688	37-45-64	2025	40-49-70	2363	43-53-75	2700	46-57-81	3038	49-60-85
18		Y	338	15-23-41	450	21-31-47	563	26-37-53	675	31-41-58	788	36-44-62	900	38-47-66	1013	41-50-70
x	A3	X	591	22-33-47	788	30-38-54	984	35-43-61	1181	38-47-66	1378	41-51-72	1575	44-54-77	1772	47-58-81
36		Y	169	15-23-36	225	20-30-42	281	25-33-47	338	30-36-52	394	32-39-56	450	34-42-59	506	36-45-63
4.50	B3	X	675	29-39-56	900	37-46-65	1125	42-51-72	1350	46-56-79	1575	49-60-85	1800	53-65-91	2025	56-68-97
ft²		Y	338	15-23-41	450	21-31-47	563	26-37-53	675	31-41-58	788	36-44-62	900	38-47-66	1013	41-50-70
	B4	X	506	22-33-47	675	30-38-54	844	35-43-61	1013	38-47-66	1181	41-51-72	1350	44-54-77	1519	47-58-81
		Y	169	15-23-36	225	20-30-42	281	25-33-47	338	30-36-52	394	32-39-56	450	34-42-59	506	36-45-63
Return Factors		Total cfm	1800		2400		3000		3600		4200		4800		5400	
-SP = 1.1 TP		NC	16		23		29		34		38		41		44	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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	1463	29-40-57	1950	38-46-66	2438	42-52-74	2925	46-57-81	3413	50-62-87	3900	54-66-93	4388	57-70-99
18		Y	338	18-27-47	450	24-36-54	563	30-43-61	675	36-47-66	788	41-51-72	900	44-54-77	1013	47-58-81
x	A3	X	816	26-38-54	1088	34-44-63	1359	40-50-70	1631	44-54-77	1903	48-59-83	2175	51-63-89	2447	54-66-94
48		Y	169	18-26-42	225	23-34-49	281	29-38-54	338	34-42-59	394	37-45-64	450	40-49-69	506	42-52-73
6.00	E3	X	1125	37-46-65	1500	43-53-75	1875	49-59-84	2250	53-65-92	2625	57-70-99	3000	61-75-106	3375	65-80-113
ft²		Y	338	18-27-47	450	24-36-54	563	30-43-61	675	36-47-66	788	41-51-72	900	44-54-77	1013	47-58-81
	B4	X	731	26-38-54	975	34-44-63	1219	40-50-70	1463	44-54-77	1706	48-59-83	1950	51-63-89	2194	54-66-94
		Y	169	18-26-42	225	23-34-49	281	29-38-54	338	34-42-59	394	37-45-64	450	40-49-69	506	42-52-73
Return Factors		Total cfm	1050		1400		1750		2100		2450		2800		3150	
-SP = 1.1 TP		NC	14		21		27		32		36		40		43	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	A1&B1	X	1050	32-39-56	1400	37-45-64	1750	42-51-72	2100	45-56-79	2450	49-60-85	2800	53-64-91	3150	56-68-97
	A2&B2	X & Y	525	18-26-46	700	23-35-53	875	29-42-59	1050	35-46-65	1225	40-50-70	1400	43-53-75	1575	46-56-80
	E2&F2	X	591	22-31-43	788	29-36-50	984	32-40-56	1181	36-43-62	1378	38-47-66	1575	41-50-71	1772	43-53-75
21		Y	459	14-20-36	613	18-27-41	766	23-33-46	919	27-36-51	1072	32-39-55	1225	34-41-59	1378	36-44-62
x	A3	X	410	20-29-41	547	26-34-48	684	31-38-53	820	34-41-59	957	37-45-63	1094	39-48-68	1230	41-51-72
24		Y	230	13-20-32	306	18-26-37	383	22-29-41	459	26-32-45	536	28-35-49	613	30-37-52	689	32-39-56
3.50	A3-2	X	300	19-28-46	400	25-37-53	500	32-42-59	600	37-46-64	700	40-49-70	800	43-53-74	900	46-56-79
ft²		Y	375	14-20-36	500	18-27-41	625	23-33-46	750	27-36-51	875	32-39-55	1000	34-41-59	1125	36-44-62
	B4	X	295	20-29-41	394	26-34-48	492	31-38-53	591	34-41-59	689	37-45-63	788	39-48-68	886	41-51-72
		Y	230	13-20-32	306	18-26-37	383	22-29-41	459	26-32-45	536	28-35-49	613	30-37-52	689	32-39-56
Return Factors		Total cfm	1313		1750		2188		2625		3063		3500		3938	
-SP = 1.1 TP		NC	15		22		28		33		37		40		43	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	A1&B1	X	1313	36-44-62	1750	42-51-72	2188	46-57-80	2625	51-62-88	3063	55-67-95	3500	59-72-102	3938	62-76-108
	A2&B2	X & Y	656	20-29-51	875	26-39-59	1094	33-47-66	1313	39-51-73	1531	45-55-78	1750	48-59-84	1969	51-63-89
	E2&F2	X	853	25-34-49	1138	32-40-56	1422	36-44-63	1706	40-49-69	1991	43-53-74	2275	46-56-79	2559	49-60-84
21		Y	459	15-23-40	613	20-30-46	766	25-37-52	919	30-40-57	1072	35-43-61	1225	38-46-66	1378	40-49-69
x	A3	X	541	22-33-46	722	29-38-53	902	35-42-60	1083	38-46-66	1263	41-50-71	1444	44-53-76	1624	46-57-80
30		Y	230	15-22-36	306	20-29-41	383	25-33-46	459	29-36-51	536	32-39-55	613	34-41-59	689	36-44-62
4.38	A3-2	X	469	21-32-51	625	28-42-59	781	35-46-66	938	42-51-72	1094	45-55-78	1250	48-59-83	1406	51-62-88
ft²		Y	422	15-23-40	563	20-30-46	703	25-37-52	844	30-40-57	984	35-43-61	1125	38-46-66	1266	40-49-69
	B4	X	427	22-33-46	569	29-38-53	711	35-42-60	853	38-46-66	995	41-50-71	1138	44-53-76	1280	46-57-80
		Y	230	15-22-36	306	20-29-41	383	25-33-46	459	29-36-51	536	32-39-55	613	34-41-59	689	36-44-62
Return Factors		Total cfm	1575		2100		2625		3150		3675		4200		4725	
-SP = 1.1 TP		NC	15		23		29		33		37		41		44	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	A1&B1	X	1575	39-48-68	2100	45-56-79	2625	51-62-88	3150	56-68-97	3675	60-74-104	4200	64-79-111	4725	68-84-118
	A2&B2	X & Y	788	22-32-56	1050	29-43-65	1313	36-51-73	1575	43-56-80	1838	50-61-86	2100	53-65-92	2363	56-69-97
	E2&F2	X	1116	27-38-53	1488	36-43-62	1859	40-49-69	2231	43-53-75	2603	47-58-81	2975	50-62-87	3347	53-65-92
21		Y	459	17-25-44	613	22-33-51	766	28-40-57	919	33-44-62	1072	39-47-67	1225	41-51-72	1378	44-54-76
x	A3	X	673	24-36-51	897	32-41-59	1121	38-46-66	1345	41-51-72	1570	45-55-78	1794	48-59-83	2018	51-62-88
36		Y	230	16-25-39	306	22-32-45	383	27-36-51	459	32-39-56	536	35-42-60	613	37-45-64	689	39-48-68
5.25	A3-2	X	675	23-35-56	900	31-46-64	1125	39-51-72	1350	46-56-79	1575	49-60-85	1800	53-64-91	2025	56-68-97
ft²		Y	450	17-25-44	600	22-33-51	750	28-40-57	900	33-44-62	1050	39-47-67	1200	41-51-72	1350	44-54-76
	B4	X	558	24-36-51	744	32-41-59	930	38-46-66	1116	41-51-72	1302	45-55-78	1488	48-59-83	1673	51-62-88
		Y	230	16-25-39	306	22-32-45	383	27-36-51	459	32-39-56	536	35-42-60	613	37-45-64	689	39-48-68

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

		Neck Vel.	300		400		500		600		700		800		900	
		Vel. Pressure	0.006		0.010		0.016		0.022		0.031		0.040		0.050	
		Total Pressure	0.042		0.075		0.117		0.169		0.229		0.300		0.379	
Return Factors		Total cfm	2100		2800		3500		4200		4900		5600		6300	
-SP = 1.1 TP		NC	16		24		29		34		38		42		45	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
21		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
x	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
48		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
7.00	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
ft²		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		Total cfm	1500		2000		2500		3000		3500		4000		4500	
-SP = 1.1 TP		NC	15		23		28		33		37		41		44	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
24		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
x	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
30		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
5.00	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
ft²		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		Total cfm	1800		2400		3000		3600		4200		4800		5400	
-SP = 1.1 TP		NC	16		23		29		34		38		41		44	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
24		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
x	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
36		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
6.00	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
ft²		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		Total cfm	2400		3200		4000		4800		5600		6400		7200	
-SP = 1.1 TP		NC	17		24		30		35		39		42		45	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
24		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
x	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
48		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
8.00	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
ft²		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		Total cfm	2250		3000		3750		4500		5250		6000		6750	
-SP = 1.1 TP		NC	16		24		30		34		39		42		45	
NC + 1		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
	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
30		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
x	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
36		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
7.50	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
ft²		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 notes appear at end of performance data

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

		Neck Vel.	300		400		500		600		700		800		900	
		Vel. Pres.	0.006		0.010		0.016		0.022		0.031		0.040		0.050	
		Total Pres.	0.042		0.075		0.117		0.169		0.229		0.300		0.379	
Return Factors -SP = 1.1 TP NC + 1		Total cfm	3000		4000		5000		6000		7000		8000		9000	
		NC	17		25		31		35		39		43		46	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
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	3600		4800		6000		7200		8400		9600		10800	
		NC	18		25		31		36		40		44		47	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
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

Performance notes appear at end of performance data

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

Return Factors -SP = 1.1 TP NC + 1		Total cfm	78		98		117		137		156		176		215	
		Total Pressure	0.058		0.092		0.131		0.179		0.223		0.296		0.442	
		NC	10		16		21		25		28		31		36	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	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	45978	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	98		117		137		156		176		215		254	
		Total Pressure	0.041		0.058		0.079		0.103		0.131		0.196		0.273	
		NC	10		14		18		21		25		30		34	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	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	139		174		209		244		279		314		383	
		Total Pressure	0.046		0.072		0.104		0.142		0.186		0.235		0.350	
		NC	10		16		20		24		27		32		36	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	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	174		209		244		279		314		383		453	
		Total Pressure	0.041		0.059		0.080		0.104		0.132		0.197		0.275	
		NC	11		16		21		25		28		31		36	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	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	8-12-24	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	218		272		327		381		436		490		599	
		Total Pressure	0.041		0.064		0.092		0.125		0.163		0.206		0.308	
		NC	10		16		21		25		28		31		36	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	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	235		314		392		471		549		628		706	
		Total Pressure	0.033		0.059		0.092		0.132		0.130		0.235		0.298	
		NC	5		13		19		24		28		32		35	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	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	314		392		471		549		623		706		863	
		Total Pressure	0.038		0.059		0.085		0.115		0.150		0.190		0.284	
		NC	10		17		22		26		29		32		37	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	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	320		427		534		641		748		855		863	
		Total Pressure	0.029		0.051		0.080		0.115		0.157		0.205		0.260	
		NC	-		14		20		25		29		33		36	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	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

Performance notes appear at end of performance data

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

Return Factors -SP = 1.1 TP NC + 1		Total cfm	98		117		137		156		176		215		254	
		Total Pressure	0.041		0.058		0.079		0.103		0.131		0.196		0.273	
		NC	-		14		18		21		25		30		34	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	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
18	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	174		209		244		279		314		383		453	
		Total Pressure	0.041		0.059		0.080		0.104		0.132		0.197		0.275	
		NC	11		16		20		24		27		32		36	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	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	8-12-24	140	9-14-22	157	10-15-24	192	12-19-26	227	15-20-29
18	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	218		272		327		381		436		490		599	
		Total Pressure	0.041		0.064		0.092		0.125		0.163		0.206		0.308	
		NC	10		16		21		25		28		31		36	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	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
18	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	314		392		471		549		623		706		863	
		Total Pressure	0.038		0.059		0.085		0.115		0.150		0.190		0.284	
		NC	10		17		22		26		29		32		37	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	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
18	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	427		534		641		748		855		962		1175	
		Total Pressure	0.036		0.056		0.080		0.109		0.142		0.180		0.269	
		NC	12		17		22		26		30		33		38	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	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
x	S2&G2	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
18	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
14"		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	X & 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
Return Factors -SP = 1.1 TP NC + 1		Total cfm	418		558		698		837		977		1116		1256	
		Total Pressure	0.020		0.036		0.056		0.080		0.109		0.142		0.180	
		NC	–		12		17		21		29		34		38	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	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
x	S2&G2	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
18	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
16"		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	X & 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

Performance notes appear at end of performance data

PERFORMANCE NOTES

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

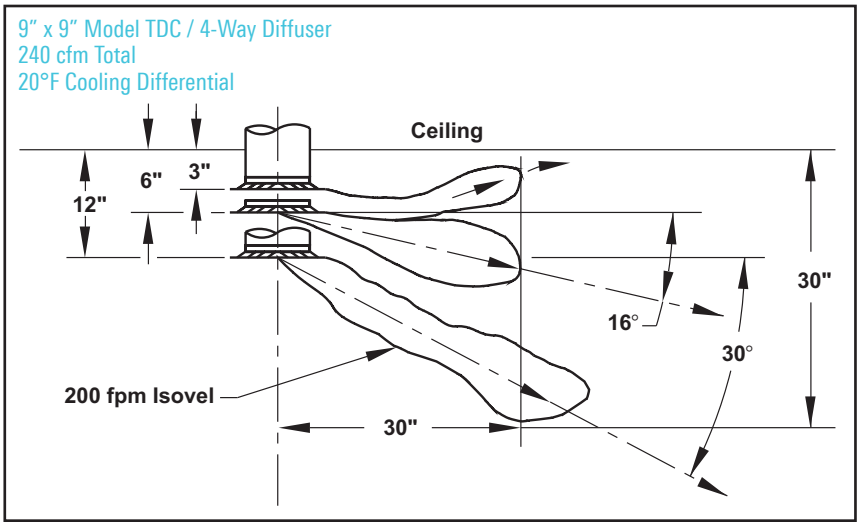
- All pressures are in inches of water. TP is total pressure, - SP is negative static pressure for return units.
- Throw values are given for terminal velocities of 150, 100, and 50 fpm. For an explanation of catalog throw data, see the section, Engineering Guidelines for catalog throw data.
- NC values 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.

9" x 9" Model TDC / 4-Way Diffuser
240 cfm Total
20°F Cooling Differential



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)

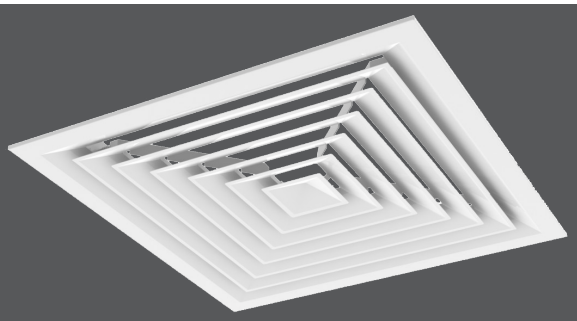
Nominal Neck Size	NC (add)		Total Pressure (Multiply)		Vertical Throw (Multiply)		
					Cooling 20 F	Heating, ΔT	
	H	V	H	V		0 F	20 F
6 x 6	3	7	1.3	1.6	1.3	1.1	0.8
9 x 9	3	7	1.5	2.3	1.4	1.2	0.72
12 x 12	3	7	1.5	2.3	1.5	1.25	0.65
15 x 15	3	7	1.5	2.3	1.55	1.27	0.62
18 x 18	3	7	1.5	2.3	1.6	1.3	0.59
21 x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

See website for Specifications

AVAILABLE MODELS:

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

FINISH

Standard Finish - #26 White

OVERVIEW

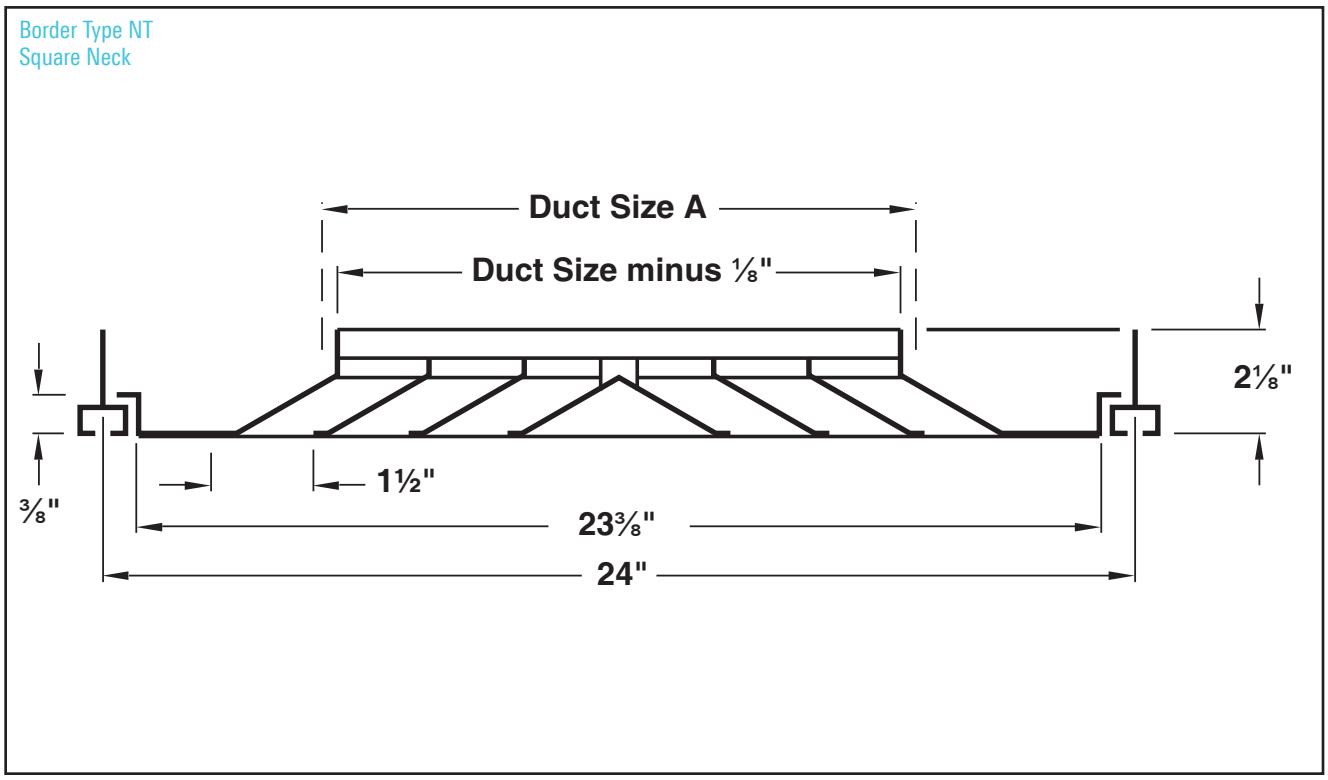
Louvered Face / Narrow Tee

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.

DIMENSIONS

TDC-NT / TDC-AA-NT UNIT DIMENSIONS

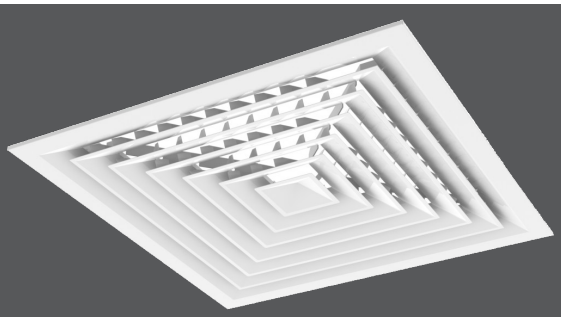
Border Type NT
Square Neck



All dimensions are in inches

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

See website for Specifications

AVAILABLE MODELS:

TDV / Steel
TDV-AA / Aluminum

FINISH

Standard Finish - #26 White

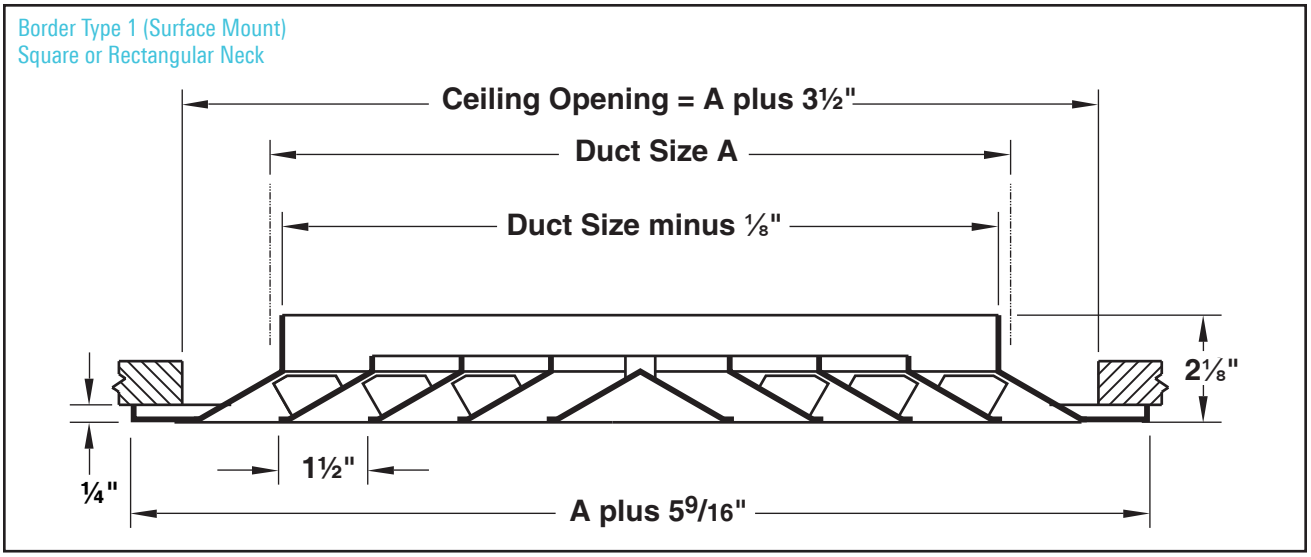
OVERVIEW

Louvered Face / Induction Vanes

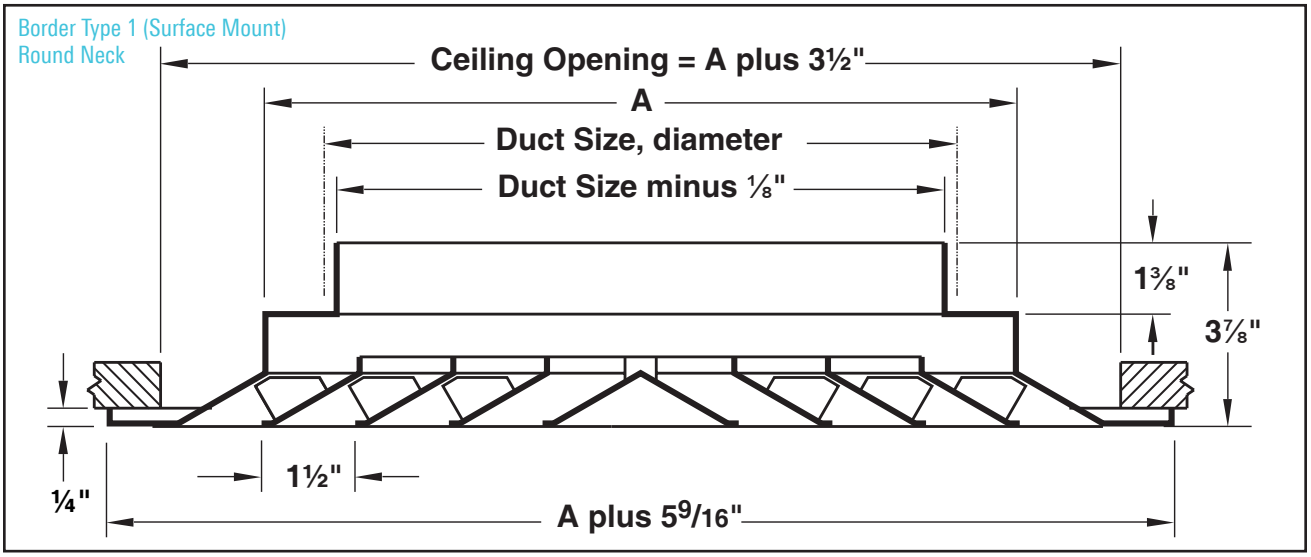
Titus Model TDV and TDV-AA are high capacity ceiling diffusers with louvered faces and integrated induction vanes for exceptional air mixing. They maintain an unbroken horizontal flow pattern from maximum cfm down to minimum and are an excellent choices for variable air volume applications.

TDV / TDV-AA-NT UNIT DIMENSIONS

Border Type 1 (Surface Mount)
Square or Rectangular Neck

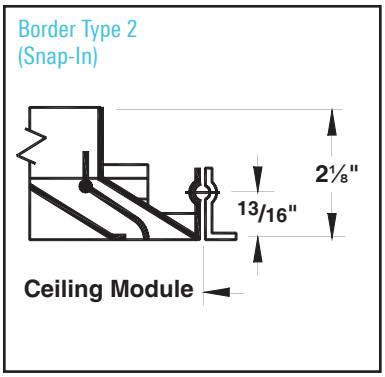


Border Type 1 (Surface Mount)
Round Neck

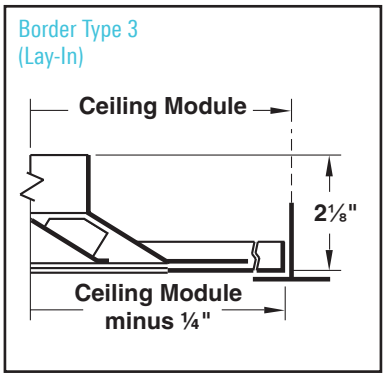


BORDER TYPES

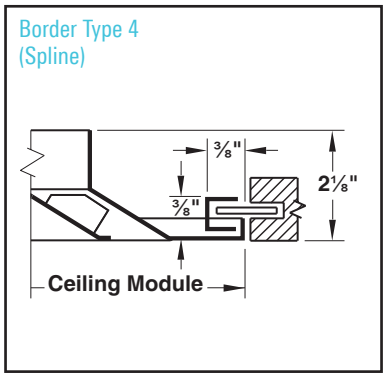
Border Type 2
(Snap-In)



Border Type 3
(Lay-In)



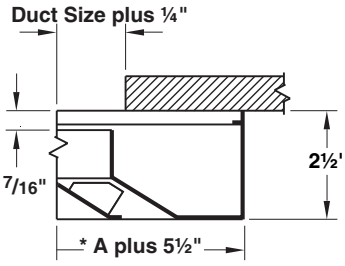
Border Type 4
(Spline)



All dimensions are in inches

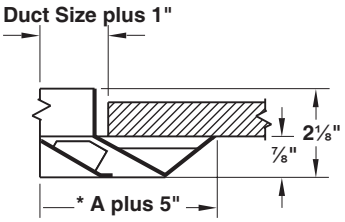
DIMENSIONS

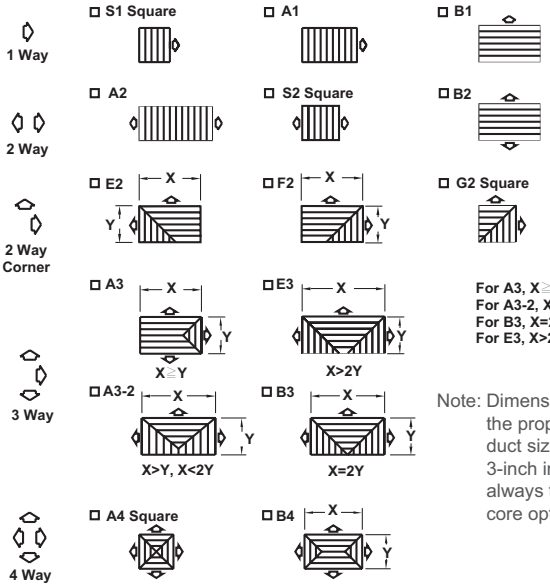
Border Type 5 (Dropped Face)



Note: Standard diffuser is 2½ inches deep
Optional 4" deep diffuser is available

Border Type 6 (Bevel Drop Face)



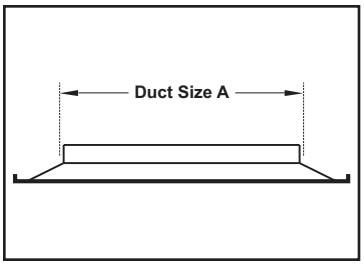


For A3, X≧Y
For A3-2, X>Y, X<2Y
For B3, X=2Y
For E3, X>2Y

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

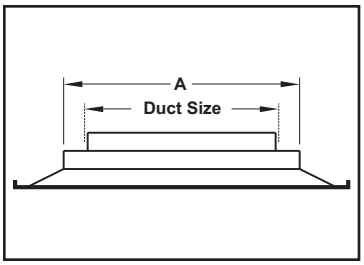


Border Types 1, 5, 6	
Minimum Duct Size A	Maximum Duct Size A
6 x 6	48 x 48 (note 2)

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

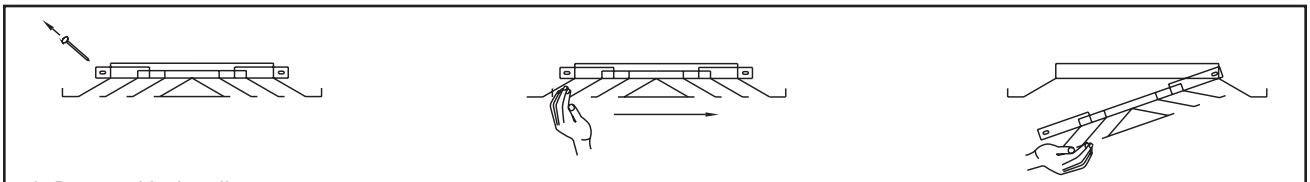


Note: Round duct sizes are available only in sizes shown

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

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

	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
6" x 6"	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
	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
9" x 9"	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
	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
12" x 12"	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
	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
15" x 15"	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
	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
18" x 18"	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
	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

Performance notes appear at end of performance data

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

	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
21" x 21"	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
	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
24" x 24"	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
	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
30" x 30"	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
48" x 48"	Total cfm	4800	6400	8000	9600	11200	12800	14400
	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

Performance notes appear at end of performance data

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

Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	78		98		117		137		156		176		215	
		Total Pressure	0.031		0.050		0.071		0.097		0.126		0.160		0.239	
		NC	9		15		20		24		28		31		37	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
6	S1	X	78	6-9-17	98	7-11-20	117	9-13-21	137	10-15-23	156	12-17-25	176	13-19-26	215	16-21-29
x	S2&G2	X & Y	39	3-5-10	49	4-6-12	59	5-7-15	69	6-9-16	78	6-10-17	88	7-11-19	108	9-13-21
6	A3	X	28	3-4-8	37	3-5-9	44	4-6-9	52	5-7-10	59	5-8-11	66	6-8-12	81	7-9-13
6"		Y	19	2-3-6	25	3-4-8	29	3-5-9	34	4-5-10	39	4-6-11	44	5-7-12	54	6-8-13
Round	A4	X & Y	19	2-3-6	29	3-4-8	34	3-5-9	39	4-5-10	44	4-6-11	54	5-7-12	64	6-8-13
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	98		117		137		156		176		215		254	
		Total Pressure	0.050		0.071		0.097		0.126		0.160		0.239		0.334	
		NC	15		20		24		28		31		37		41	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
9	S1	X	98	7-11-20	117	9-13-21	137	10-15-23	156	12-17-25	176	13-19-26	215	16-21-29	254	18-22-32
x	S2&G2	X & Y	49	4-6-12	59	5-7-15	69	6-9-16	78	6-10-17	88	7-11-19	108	9-13-21	127	11-16-22
9	A3	X	37	3-5-9	44	4-6-9	52	5-7-10	59	5-8-11	66	6-8-12	81	7-9-13	96	8-10-14
6"		Y	25	3-4-8	29	3-5-9	34	4-5-10	39	4-6-11	44	5-7-12	54	6-8-13	64	7-10-14
Round	A4	X & Y	25	3-4-8	29	3-5-9	34	4-5-10	39	4-6-11	44	5-7-12	54	6-8-13	64	7-10-14
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	139		174		209		244		279		314		383	
		Total Pressure	0.032		0.049		0.071		0.097		0.127		0.161		0.239	
		NC	10		16		21		25		29		32		38	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
9	S1	X	139	8-12-23	174	10-15-26	209	12-18-29	244	14-21-31	279	16-23-33	314	18-25-35	383	22-27-39
x	S2&G2	X & Y	70	4-6-13	87	5-8-16	105	6-10-19	122	8-11-22	140	9-13-23	157	10-15-25	192	12-18-27
9	A3	X	52	4-5-10	66	4-7-11	79	5-8-13	92	6-9-14	105	7-10-15	119	8-11-15	145	10-12-17
8"		Y	35	3-4-8	44	3-5-10	52	4-6-12	61	5-7-14	70	6-8-15	79	6-9-16	96	8-11-17
Round	A4	X & Y	35	3-4-8	44	3-5-10	52	4-6-12	61	5-7-14	70	6-8-15	79	6-9-16	96	8-11-17
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	174		209		244		279		314		383		453	
		Total Pressure	0.049		0.071		0.097		0.127		0.161		0.239		0.335	
		NC	16		21		25		29		32		38		42	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
12	S1	X	174	10-15-26	209	12-18-29	244	14-21-31	279	16-23-33	314	18-25-35	383	22-27-39	453	24-30-42
x	S2&G2	X & Y	87	5-8-16	105	6-10-19	122	8-11-22	140	9-13-23	157	10-15-25	192	12-18-27	227	14-21-30
12	A3	X	66	4-7-11	79	5-8-13	92	6-9-14	105	7-10-15	119	8-11-15	145	10-12-17	171	11-13-18
8"		Y	44	3-5-10	52	4-6-12	61	5-7-14	70	6-8-15	79	6-9-16	96	8-11-17	113	9-13-19
Round	A4	X & Y	44	3-5-10	52	4-6-12	61	5-7-14	70	6-8-15	79	6-9-16	96	8-11-17	113	9-13-19
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	218		272		327		381		447		490		599	
		Total Pressure	0.032		0.049		0.072		0.097		0.127		0.161		0.240	
		NC	11		17		22		26		30		33		38	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
12	S1	X	218	10-15-29	272	12-18-33	327	15-22-36	381	17-26-39	436	20-29-41	490	22-31-44	599	27-34-48
x	S2&G2	X & Y	109	5-8-16	136	7-10-20	164	8-12-24	191	9-14-27	218	11-16-29	245	12-18-31	300	15-22-34
12	A3	X	82	4-7-13	103	6-8-14	123	7-10-16	144	8-12-17	165	9-13-18	185	10-14-19	226	12-15-21
10"		Y	55	3-5-10	68	4-6-13	82	5-8-16	95	6-9-17	109	7-10-18	123	8-12-20	150	9-14-22
Round	A4	X & Y	55	3-5-10	68	4-6-13	82	5-8-16	95	6-9-17	109	7-10-18	123	8-12-20	150	9-14-22
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	235		314		392		471		549		628		706	
		Total Pressure	0.020		0.035		0.055		0.079		0.107		0.140		0.177	
		NC	-		15		20		25		29		33		36	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
12	S1	X	235	9-14-27	314	12-18-35	392	15-23-39	471	18-27-43	549	21-32-46	628	24-35-50	706	27-37-53
x	S2&G2	X & Y	118	5-7-15	157	7-10-20	196	8-12-25	236	10-15-30	275	12-17-33	314	13-20-35	353	15-22-37
12	A3	X	89	4-6-12	119	5-8-15	148	7-10-17	178	8-12-19	207	10-14-20	237	11-15-22	267	12-16-23
12"		Y	59	2-5-10	79	4-6-13	98	5-8-16	118	6-10-19	137	7-11-21	157	8-13-22	177	10-14-23
Round	A4	X & Y	59	2-5-10	79	4-6-13	98	5-8-16	118	6-10-19	137	7-11-21	157	8-13-22	177	10-14-23
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	314		392		471		549		623		706		863	
		Total Pressure	0.035		0.055		0.079		0.107		0.138		0.177		0.264	
		NC	13		19		24		28		32		35		40	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
15	S1	X	314	12-18-35	392	15-23-39	471	18-27-43	549	21-32-46	623	24-35-49	706	27-37-53	863	33-41-58
x	S2&G2	X & Y	157	7-10-20	196	8-12-25	236	10-15-30	275	12-17-33	312	13-20-35	353	15-22-37	432	18-27-41
15	A3	X	119	5-8-15	148	7-10-17	178	8-12-19	207	10-14-20	235	11-15-22	267	12-16-23	326	15-18-26
12"		Y	79	4-6-13	98	5-8-16	118	6-10-19	137	7-11-21	156	8-13-22	177	10-14-23	216	12-17-26
Round	A4	X & Y	79	4-6-13	98	5-8-16	118	6-10-19	137	7-11-21	156	8-13-22	177	10-14-23	216	12-17-26

- 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

Performance notes appear at end of performance data

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

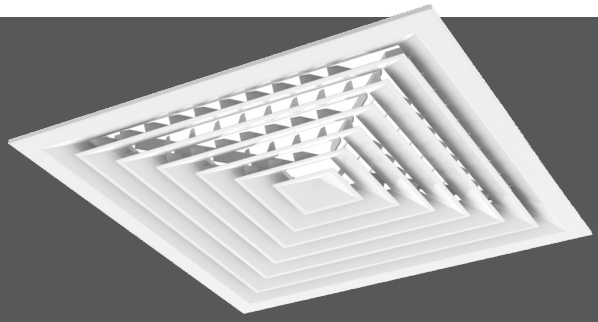
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	320		427		534		641		748		855		863	
		Total Pressure	0.018		0.032		0.050		0.072		0.097		0.127		0.130	
		NC	5		12		18		23		27		31		31	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
15	S1	X	320	10-15-31	427	14-21-41	534	17-26-46	641	21-31-50	748	24-36-54	855	28-41-58	863	28-41-58
x	S2&G2	X & Y	160	6-9-17	214	8-11-23	267	9-14-28	321	11-17-34	374	13-20-38	428	15-23-41	432	15-23-41
15	A3	X	121	4-7-14	161	6-9-18	202	8-12-20	242	9-14-22	282	11-16-24	323	12-18-25	326	13-18-26
14"		Y	80	3-5-11	107	5-7-14	134	6-9-18	160	7-11-22	187	8-13-24	214	10-14-26	216	10-15-26
Round	A4	X & Y	80	3-5-11	107	5-7-14	134	6-9-18	160	7-11-22	187	8-13-24	214	10-14-26	216	10-15-26
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	98		117		137		156		176		215		254	
		Total Pressure	0.048		0.069		0.094		0.122		0.155		0.232		0.324	
		NC	15		20		24		28		31		37		41	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	S1	X	98	7-11-20	117	9-13-21	137	10-15-23	156	12-17-25	176	13-19-26	215	16-21-29	254	18-22-32
x	S2&G2	X & Y	49	4-6-12	59	5-7-15	69	6-9-16	78	6-10-17	88	7-11-19	108	9-13-21	127	11-16-22
18	A3	X	37	3-5-9	44	4-6-9	52	5-7-10	59	5-8-11	66	6-8-12	81	7-9-13	96	8-10-14
6"		Y	25	3-4-8	29	3-5-9	34	4-5-10	39	4-6-11	44	5-7-12	54	6-8-13	64	7-10-14
Round	A4	X & Y	25	3-4-8	29	3-5-9	34	4-5-10	39	4-6-11	44	5-7-12	54	6-8-13	64	7-10-14
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	174		209		244		279		314		383		453	
		Total Pressure	0.047		0.067		0.092		0.120		0.152		0.226		0.317	
		NC	16		21		25		29		32		38		42	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	S1	X	174	10-15-26	209	12-18-29	244	14-21-31	279	16-23-33	314	18-25-35	383	22-27-39	453	24-30-42
x	S2&G2	X & Y	87	5-8-16	105	6-10-19	122	8-11-22	140	9-13-23	157	10-15-25	192	12-18-27	227	14-21-30
18	A3	X	66	4-7-11	79	5-8-13	92	6-9-14	105	7-10-15	119	8-11-15	145	10-12-17	171	11-13-18
8"		Y	44	3-5-10	52	4-6-12	61	5-7-14	70	6-8-15	79	6-9-16	96	8-11-17	113	9-13-19
Round	A4	X & Y	44	3-5-10	52	4-6-12	61	5-7-14	70	6-8-15	79	6-9-16	96	8-11-17	113	9-13-19
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	218		272		327		381		436		490		599	
		Total Pressure	0.029		0.045		0.066		0.089		0.117		0.147		0.220	
		NC	11		17		22		26		30		33		38	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	S1	X	218	10-15-29	272	12-18-33	327	15-22-36	381	17-26-39	436	20-29-41	490	22-31-44	599	27-34-48
x	S2&G2	X & Y	109	5-8-16	136	7-10-20	164	8-12-24	191	9-14-27	218	11-16-29	245	12-18-31	300	15-22-34
18	A3	X	82	4-7-13	103	6-8-14	123	7-10-16	144	8-12-17	165	9-13-18	185	10-14-19	226	12-15-21
10"		Y	55	3-5-10	68	4-6-13	82	5-8-16	95	6-9-17	109	7-10-18	123	8-12-20	150	9-14-22
Round	A4	X & Y	55	3-5-10	68	4-6-13	82	5-8-16	95	6-9-17	109	7-10-18	123	8-12-20	150	9-14-22
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	314		392		471		549		623		706		863	
		Total Pressure	0.031		0.048		0.070		0.095		0.122		0.157		0.234	
		NC	13		19		24		28		32		35		40	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	S1	X	314	12-18-35	392	15-23-39	471	18-27-43	549	21-32-46	623	24-35-49	706	27-37-53	863	33-41-58
x	S2&G2	X & Y	157	7-10-20	196	8-12-25	236	10-15-30	275	12-17-33	312	13-20-35	353	15-22-37	432	18-27-41
18	A3	X	119	5-8-15	148	7-10-17	178	8-12-19	207	10-14-20	235	11-15-22	267	12-16-23	326	15-18-26
12"		Y	79	4-6-13	98	5-8-16	118	6-10-19	137	7-11-21	156	8-13-22	177	10-14-23	216	12-17-26
Round	A4	X & Y	79	4-6-13	98	5-8-16	118	6-10-19	137	7-11-21	156	8-13-22	177	10-14-23	216	12-17-26
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	427		534		641		748		855		962		1175	
		Total Pressure	0.027		0.042		0.060		0.081		0.106		0.135		0.201	
		NC	12		18		23		27		31		34		40	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	S1	X	427	14-21-41	534	17-26-46	641	21-31-50	748	24-36-54	855	28-41-58	962	31-43-61	1175	38-48-68
x	S2&G2	X & Y	214	8-11-23	267	9-14-28	321	11-17-34	374	13-20-38	428	15-23-41	481	17-26-43	588	21-31-48
18	A3	X	161	6-9-18	202	8-12-20	242	9-14-22	282	11-16-24	323	12-18-25	363	14-19-27	444	17-21-30
14"		Y	107	5-7-14	134	6-9-18	160	7-11-22	187	8-13-24	214	10-14-26	241	11-16-27	294	13-20-30
Round	A4	X & Y	107	5-7-14	134	6-9-18	160	7-11-22	187	8-13-24	214	10-14-26	241	11-16-27	294	13-20-30
Return Factors -SP = 1.1 TP Add 1 to NC		Total cfm	628		698		837		977		1256		1530		1808	
		Total Pressure	0.032		0.039		0.056		0.077		0.126		0.188		0.262	
		NC	16		19		24		28		35		40		45	
		Side	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw	cfm	Throw
18	S1	X	628	18-27-50	698	20-30-52	837	24-35-57	977	28-41-62	1256	35-50-70	1530	43-55-77	1808	49-60-84
x	S2&G2	X & Y	314	10-15-29	349	11-16-32	419	13-19-39	488	15-23-44	628	19-29-50	765	24-36-55	904	28-42-60
18	A3	X	237	8-12-22	263	9-13-23	316	11-16-25	369	12-19-27	474	16-22-31	578	20-24-34	683	21-26-37
16"		Y	157	6-9-19	174	7-10-21	209	8-12-25	244	10-14-28	314	12-19-31	383	15-23-35	452	18-27-38
Round	A4	X & Y	157	6-9-19	174	7-10-21	209	8-12-25	244	10-14-28	314	12-19-31	383	15-23-35	452	18-27-38

- 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

Performance notes appear at end of performance data

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

See website for Specifications

AVAILABLE MODELS:

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

FINISH

Standard Finish - #26 White

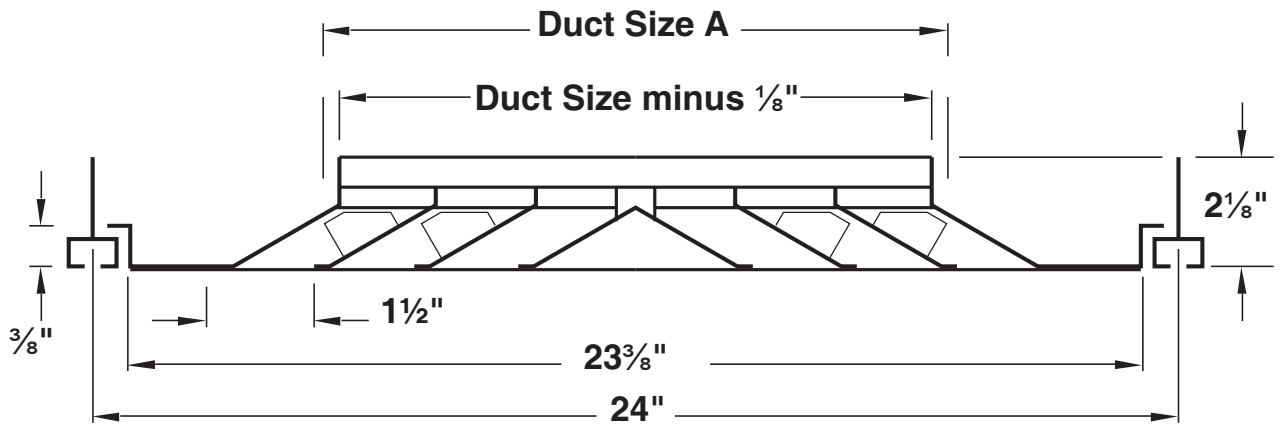
OVERVIEW

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.

TDV-NT / TDV-AA-NT UNIT DIMENSIONS

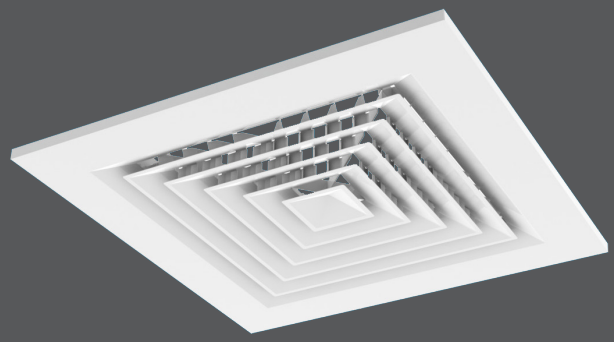
Border Type NT
Square Neck



All dimensions are in inches

TDX / TDX–AA

- The Titus TDX and TDX-AA have louvered faces with integrated induction nozzles for exceptional air mixing
- Model TDX ia 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

AVAILABLE MODELS:

TDX / Steel
TDX-AA / Aluminum

FINISH

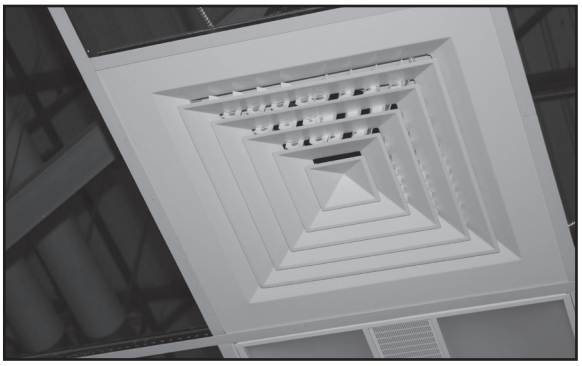
Standard Finish - #26 White

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.

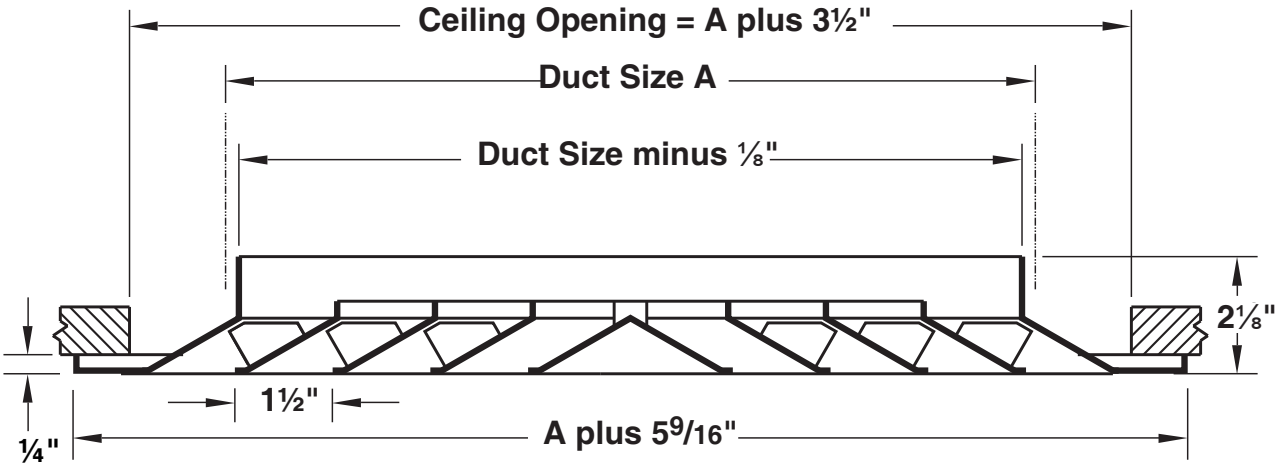
See website for Specifications



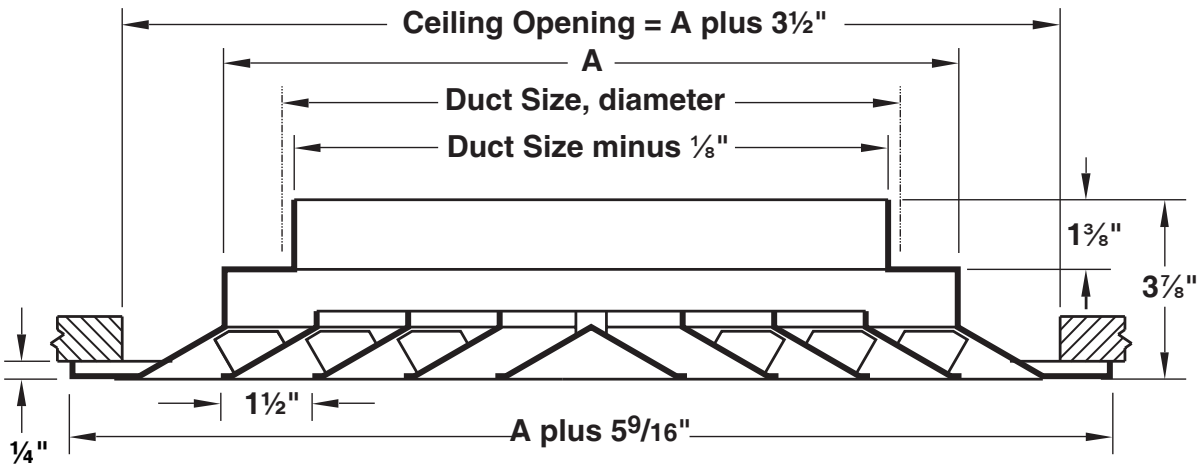
TDX diffuser installed in the ceiling of an office building

TDX / TDX-AA UNIT DIMENSIONS

Border Type 1 (Surface Mount)
Square Neck

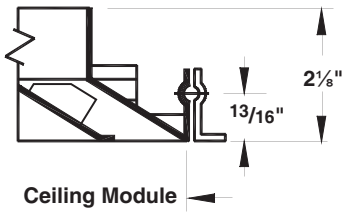


Border Type 1 (Surface Mount)
Round Neck

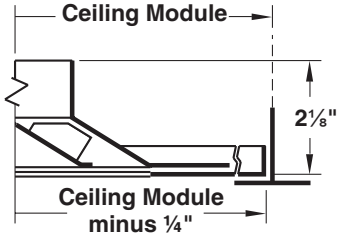


BORDER TYPES

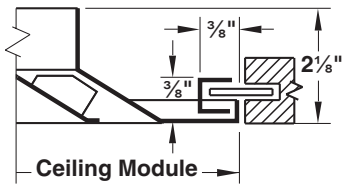
Border Type 2
(Snap-In)



Border Type 3
(Lay-In)



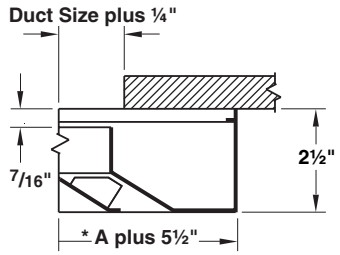
Border Type 4
(Spline)



All dimensions are in inches

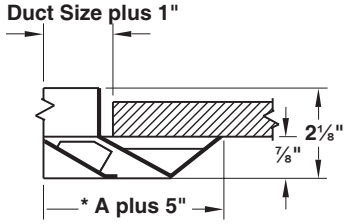
DIMENSIONS

Border Type 5
(Dropped Face)

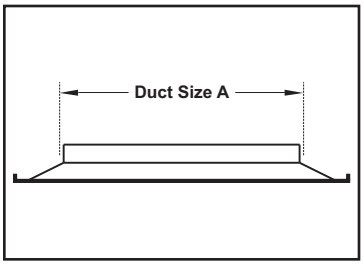


Note: Standard diffuser is 2½ inches deep

Border Type 6
(Bevel Drop Face)



AVAILABLE DUCT SIZES - SQUARE AND RECTANGULAR NECKS

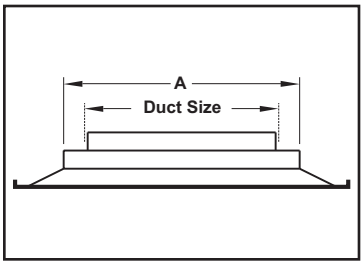


Border Types 1, 5, 6	
Minimum Duct Size A	Maximum Duct Size A
9 x 9	18 x 18

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



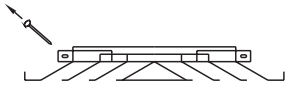
Note: Round duct sizes are available only in sizes shown

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

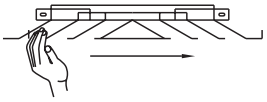
Note 1: Round duct sizes are available only in sizes shown

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

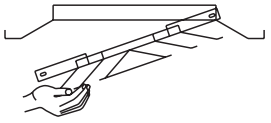
REMOVING CENTER CORE



1. Remove shipping clips



2. Push core sideways against spring



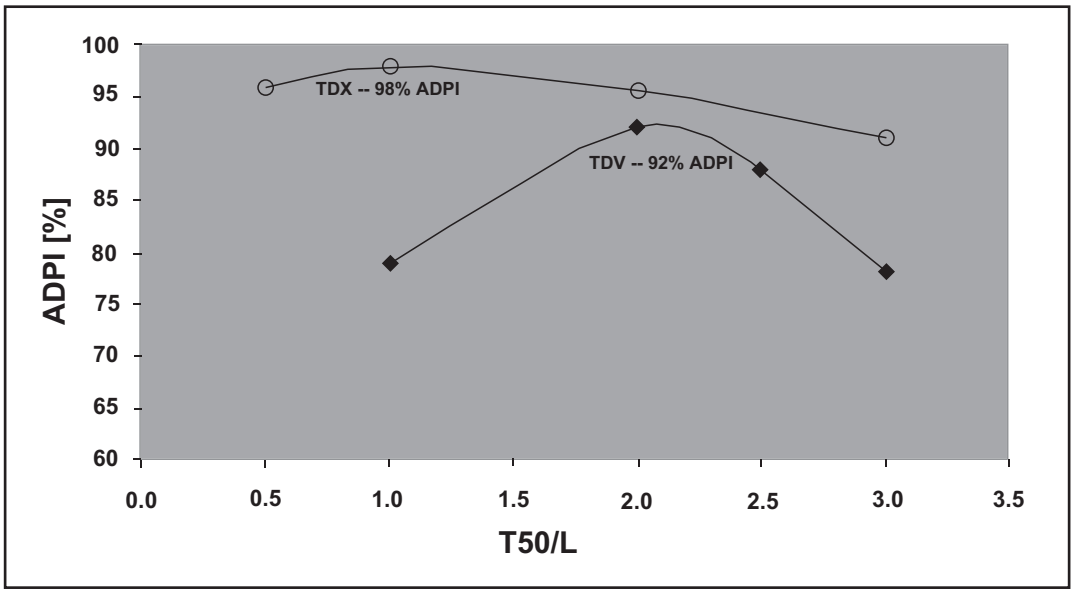
3. Hold core securely and allow to drop down

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. ft^2, Floor Heat Load)



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

TDX , TDV & TDC Comparison

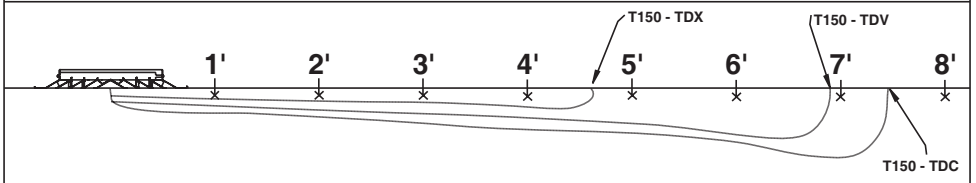
Model TDX Square Neck Induction Ratio Delta T = 20°F Neck Velocity = 250 fpm		Model TDV Square Neck Induction Ratio Delta T = 20°F Neck Velocity = 250 fpm		Model TDC Square Neck Induction Ratio Delta T = 20°F Neck Velocity = 250 fpm	
Throw [Feet]	Induction Ratio [non-DIM]	Throw [Feet]	Induction Ratio [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 = [(Troom - Tsupply)/(Troom - Tthrow)] - 1
(250 cfm, 12 x 12, A4 Pattern)

4-Way TDX, TDV & TDC Comparison Table

(250 cfm, 12 x 12 Core, A4 Pattern)



Distance from Diffuser Center		1 '	2 '	3 '	4 '	5 '	6 '	7 '	8 '
TDX (20°F, ΔT) 55°F Supply Temp.	Jet Velocity (fpm)	326	245	200	172	144	123	105	90
	Jet Temperature (F)	66	67	68	70	71	73	74	75
TDV (20°F, ΔT) 55°F Supply Temp.	Jet Velocity (fpm)	555	427	316	273	231	183	154	119
	Jet Temperature (F)	60	62	64	66	68	69	71	72
TDC (20°F, ΔT) 55°F Supply Temp.	Jet Velocity (fpm)	564	436	330	292	240	199	161	128
	Jet Temperature (F)	57	58	62	63	66	67	69	70

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
	12" Round	Total cfm	314	353	393	432	471	511	550
		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
	14" Round	Total cfm	428	481	535	588	641	695	748
		NC	26	30	34	37	40	42	45
		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

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)	0.209	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
	14" Round	Total cfm	641	695	748	802	855	909	962
		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
	16" Round	Total cfm	838	908	977	1047	1117	1187	1257
		NC	45	48	50	52	55	57	59
		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

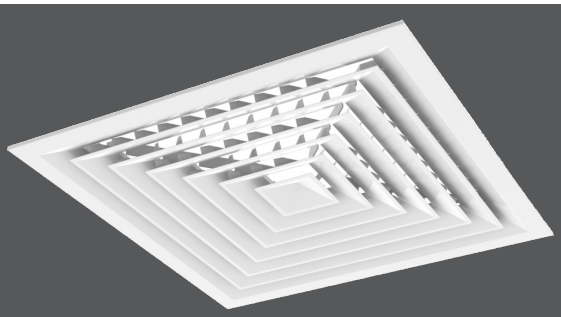
Backpan Size	Inlet Duct Size	Neck Velocity, fpm	400	450	500	550	600	650	700
		Velocity Pressure, in. wg.	0.010	0.013	0.016	0.019	0.022	0.026	0.031
		Total Pressure, in. wg. (max)	0.095	0.120	0.148	0.179	0.213	0.250	0.290
15" x 15"	10" Round	Total cfm	218	245	273	300	327	355	382
		NC	-	12	15	19	22	24	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

See website for Specifications

AVAILABLE MODELS:

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

FINISH

Standard Finish - #26 White

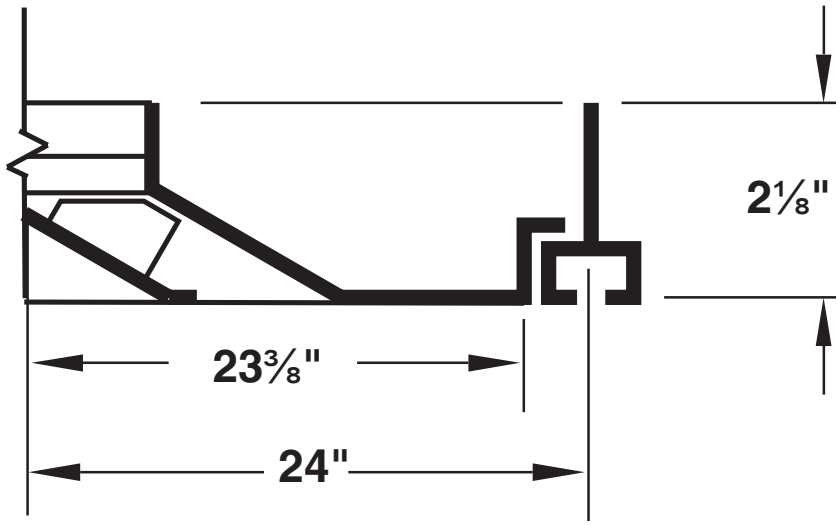
OVERVIEW

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.

TDX-NT / TDX-AA-NT UNIT DIMENSIONS

Border Type NT
Square Neck

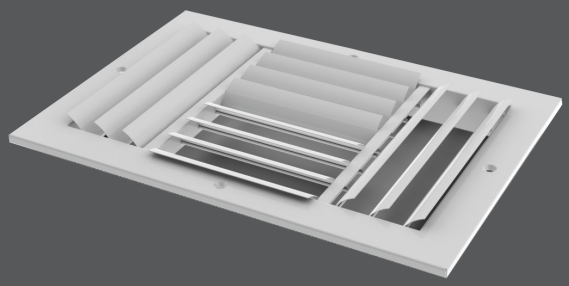


All dimensions are in inches

Adjustable Ceiling Diffuser

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

See website for Specifications

AVAILABLE MODELS:

250 / Steel
250-AA / Aluminum

FINISHES

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

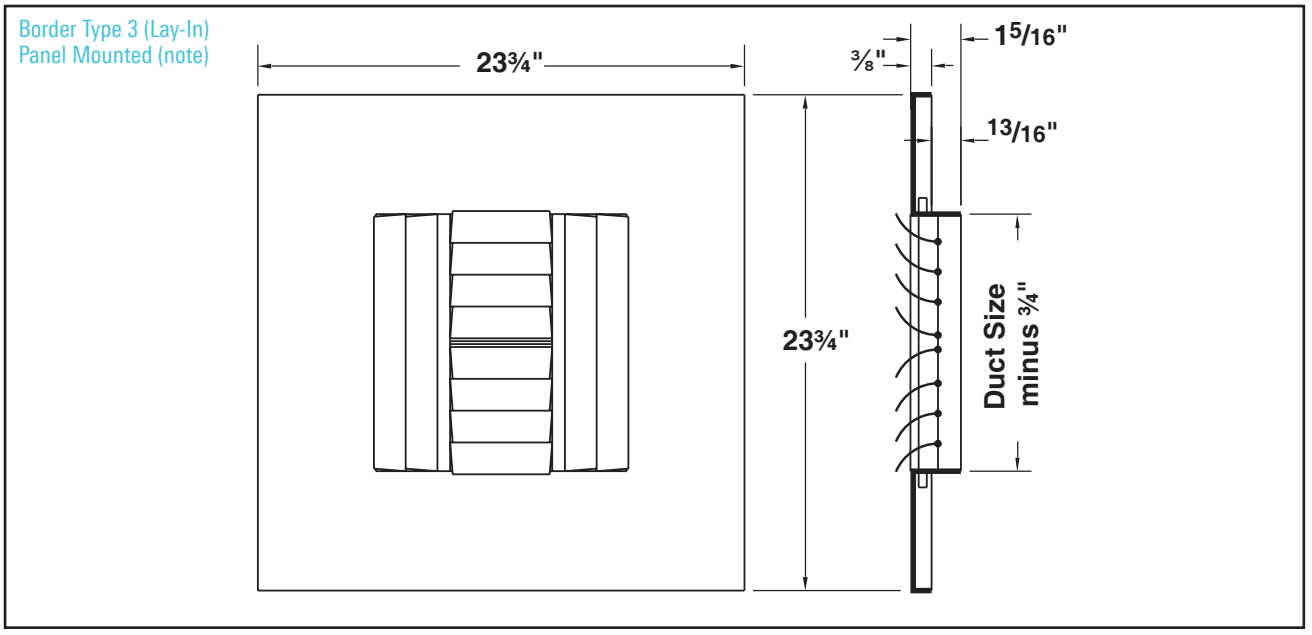
OVERVIEW

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.

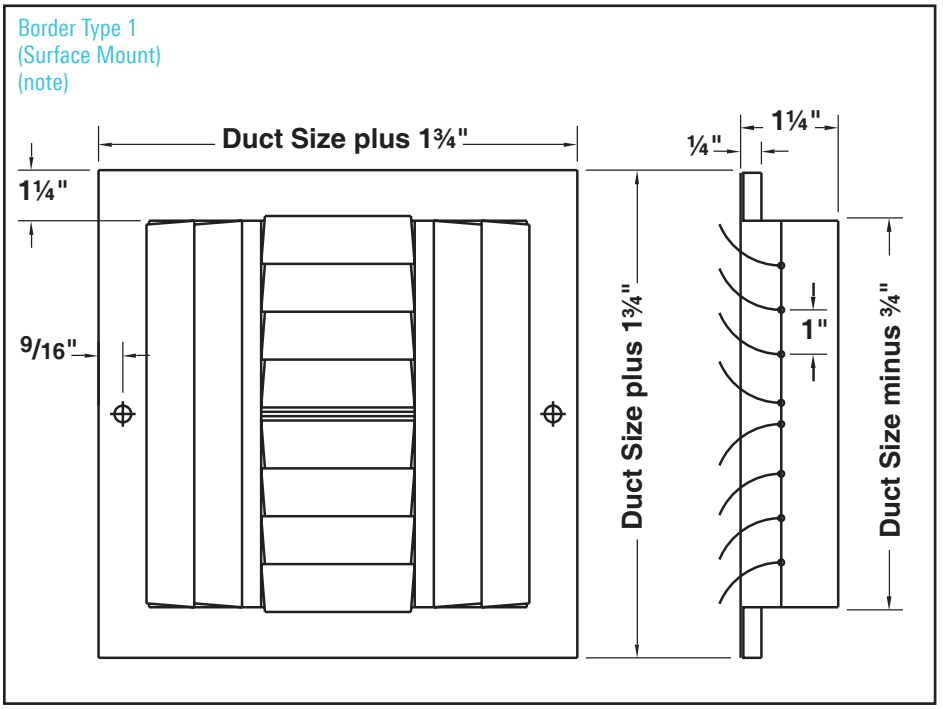
250 / 250-AA UNIT DIMENSIONS

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



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

Border Type 1
(Surface Mount)
(note)



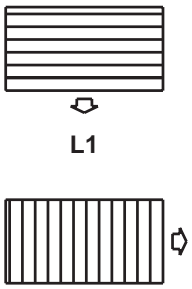
Border Type 3 - Standard
Duct Sizes

- 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

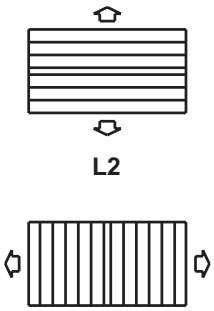
All dimensions are in inches

Optional Discharge Patterns

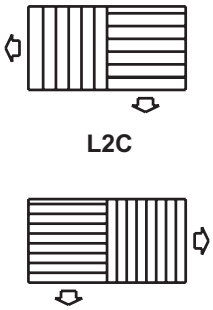
1-Way



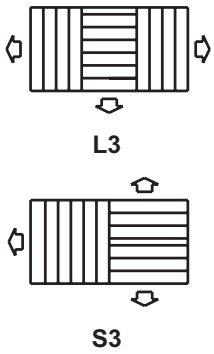
2-Way



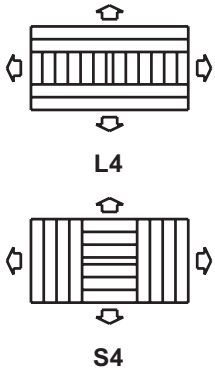
2-Way Corner



3-Way



4-Way



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 preceeding performance tables show values for the various discharge patterns

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
0.12	6 x 4		cfm	10	25	35	50	60	70	85	95	110	120
			NC				14	20	24	28	32	35	38
		Throw,	2-Way				5-8-13	7-9-12	8-12-19	9-13-18	10-15-21	12-17-24	13-19-31
		Feet	1-Way				7-10-16	8-11-15	10-13-19	11-16-23	12-18-26	14-21-34	15-23-37
0.16	8 x 4		cfm	15	30	50	65	80	95	110	130	145	160
			NC				15	21	26	30	33	36	39
		Throw,	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
		Feet	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
			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
0.20	10 x 4 6 x 6		cfm	20	40	60	80	100	120	140	160	180	200
			NC				16	22	27	31	34	37	40
		Throw,	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
		Feet	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
			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
0.26	12 x 4 8 x 6		cfm	25	50	80	105	130	155	180	210	235	260
			NC			10	17	23	28	32	35	38	41
		Throw,	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
		Feet	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
			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
0.30	14 x 4		cfm	30	60	90	120	150	180	210	240	270	300
			NC			10	18	23	28	32	36	39	42
		Throw,	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
		Feet	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	16-24-38	16-24-39
			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
0.35	16 x 4 10 x 6 8 x 8		cfm	35	70	105	140	175	210	245	280	315	350
			NC			11	18	24	29	33	37	39	42
		Throw,	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
		Feet	3-Way		3-5-8	5-7-12	6-9-15	8-12-19	10-13-19	11-15-22	14-19-30	14-21-33	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
			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
0.40	18 x 4 12 x 6		cfm	40	80	120	160	200	240	280	320	360	400
			NC			12	19	25	30	34	37	40	43
		Throw,	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
		Feet	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-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
0.45	20 x 4 14 x 6 10 x 8		cfm	45	90	135	180	225	270	315	360	405	450
			NC			12	19	26	30	34	38	41	44
		Throw,	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
		Feet	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-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
0.55	24 x 4 16 x 6 12 x 8		cfm	55	110	165	220	275	330	385	440	495	550
			NC			13	20	26	31	35	39	41	44
		Throw,	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	16-24-39
		Feet	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	17-26-41
			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	19-29-46
			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	23-35-56
0.62	18 x 6 10 x 10		cfm	60	125	185	250	310	370	435	495	560	620
			NC			13	21	27	32	36	39	42	45
		Throw,	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	17-25-40
		Feet	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	18-27-43
			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	20-29-47
			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	21-32-51	24-36-57

Performance notes appear at end of performance data

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

Core Area Sq. Feet	Nominal Duct Size Inches			Core Velocity	100	200	300	400 (NC-20)	500	600 (NC-30)	700	800 (NC-40)	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
				cfm	70	140	210	280	350	420	490	560	630	700
	30 x 4			NC			14	21	27	32	36	40	42	45
0.70	20 x 6	Throw,	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
	14 x 8	Feet	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
	12 x 10		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
			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
				cfm	80	160	245	325	405	485	565	650	730	810
	36 x 4			NC			15	22	28	33	37	40	43	46
0.81	24 x 6	Throw,	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
	16 x 8	Feet	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
	14 x 10		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
			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
				cfm	85	175	260	350	435	520	610	695	785	870
				NC			15	22	28	33	37	40	43	46
0.87	18 x 8	Throw,	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
	12 x 12	Feet	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
			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
			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
				cfm	100	205	305	410	510	610	715	815	920	1020
	30 x 6			NC			16	23	29	34	38	41	44	47
1.02	20 x 8	Throw,	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
	16 x 10	Feet	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
	14 x 12		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
			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
				cfm	115	230	345	460	575	690	805	920	1040	1150
				NC			16	24	30	34	38	42	45	48
1.15	24 x 8	Throw,	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
	18 x 10	Feet	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
	16 x 12		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
			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
				cfm	125	250	375	500	625	750	875	1000	1120	1250
				NC			16	24	30	35	39	42	45	48
1.25	36 x 6	Throw,	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 x 10	Feet	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
	14 x 14		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
			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
				cfm	135	270	405	540	675	810	945	1080	1220	1350
				NC			17	24	30	35	39	42	45	48
1.35	16 x 14	Throw,	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	18-27-434	20-30-48
	18 x 12	Feet	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
			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
			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
	30 x 8			cfm	155	305	460	610	765	920	1070	1220	1380	1530
	24 x 10			NC			17	25	31	36	40	43	46	49
1.53	20 x 12	Throw,	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
	18 x 14	Feet	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
	16 x 16		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
			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
	36 x 8			cfm	182	365	545	730	910	1090	1270	1460	1640	1820
	30 x 10			NC			18	26	32	36	40	44	47	50
1.82	24 x 12	Throw,	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
	20 x 14	Feet	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
	18 x 16		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
			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
				cfm	210	420	630	840	1050	1260	1470	1680	1890	2100
				NC			19	26	32	37	41	44	47	50
2.10	24 x 14	Throw,	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
	20 x 16	Feet	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
	18 x 18		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
			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

Performance notes appear at end of performance data

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

Core Area Sq. Feet	Nominal Duct Size Inches		Core Velocity	100	200	300 (NC-20)	400	500 (NC-30)	600	700 (NC-40)	800	900	1000 (NC-50)
			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
			cfm	235	470	705	940	1180	1410	1640	1880	2120	2350
	36 x 10		NC			19	27	33	37	41	45	48	51
2.35	30 x 12	Throw,	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
	24 x 16	Feet	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
	20 x 18		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
			cfm	270	535	805	1070	1340	1610	1880	2140	2410	2680
	36 x 12		NC			20	27	33	38	42	45	48	51
2.68	30 x 14	Throw,	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
	24 x 18	Feet	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
	20 x 20		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
			cfm	315	630	945	1260	1580	1890	2200	2520	2840	3150
			NC		10	20	28	34	39	43	46	49	52
3.15	36 x 14	Throw,	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
	30 x 16	Feet	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
	24 x 20		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
			cfm	365	730	1100	1460	1820	2190	2560	2920	3280	3650
			NC		11	21	29	35	39	43	47	50	53
3.65	36 x 16	Throw,	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
	30 x 18	Feet	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
	24 x 24		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
			cfm	405	810	1220	1620	2020	2430	2830	3240	3640	4050
			NC		11	22	29	35	40	44	47	50	53
4.05	36 x 18	Throw,	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
	30 x 20	Feet	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
			cfm	470	945	1420	1890	2360	2830	3300	3780	4250	4720
			NC		12	22	30	36	40	44	48	51	54
4.72	36 x 20	Throw,	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
	30 x 24	Feet	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
			cfm	580	1160	1750	2330	2910	3490	4070	4660	5240	5820
			NC		13	23	31	37	41	45	49	52	55
5.82	36 x 24	Throw,	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
	30 x 30	Feet	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
			cfm	715	1430	2150	2870	3580	4300	5020	5740	6450	7170
			NC		14	24	31	37	42	46	50	53	56
7.17	36 x 30	Throw,	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
		Feet	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
			cfm	865	1730	2590	3450	4320	5180	6040	6900	7700	8630
			NC		14	25	32	38	43	47	51	53	56
8.63	36 x 36	Throw,	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
		Feet	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	48-72-116

- 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.

Nozzle Diffusers

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

AVAILABLE MODEL:

TBF-AA / Aluminum

FINISH

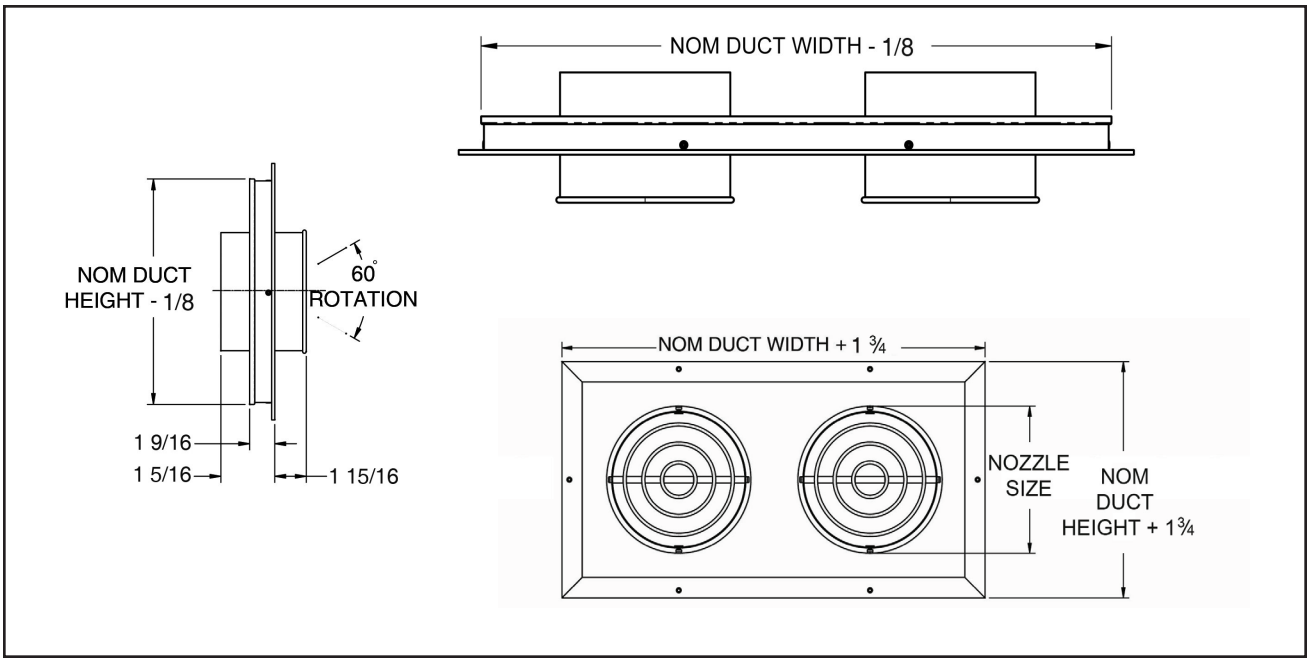
Standard Finish - #26 White

OVERVIEW

Panel-Mounted Nozzles

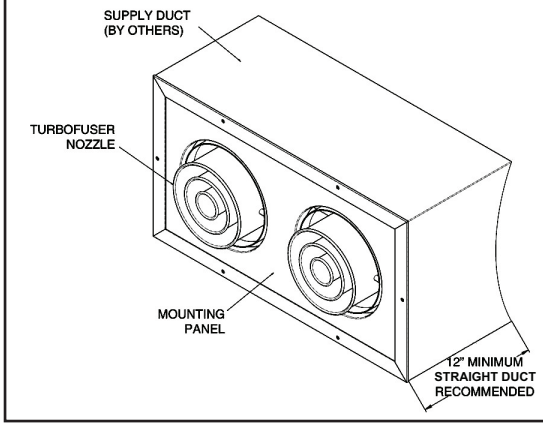
TurboFuser series TBF and TBF-AA diffusers provide precise control of high capacity jets. This is a versatile diffuser for demanding spot cooling and heating applications, such as industrial or large open areas. It also offers an aesthetic alternative to conventional air distributing providing a contemporary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

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



All dimensions are in inches

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

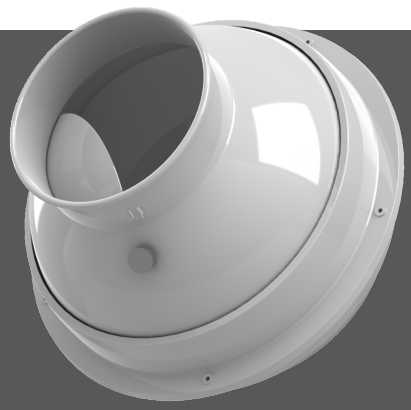
TBF-AA - PANEL-MOUNTED NOZZLES

	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 12 1 Nozzle	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
	Throw, FT	19-23-33	23-28-40	27-33-47	30-36-52	33-40-58	35-43-62	38-47-67
Size 12 2 Nozzle	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
Size 12 4 Nozzle	Airflow, cfm	1324	2013	2684	3356	4027	4698	5369
	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
Size 14 1 Nozzle	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
	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
Size 14 2 Nozzle	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
	Throw, FT	30-36-51	36-45-64	41-51-74	47-58-83	51-64-91	56-69-98	60-74-106
Size 14 3 Nozzle	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 4 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

- 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

See website for Specifications

AVAILABLE MODEL:

TND-AA / Aluminum

FINISHES

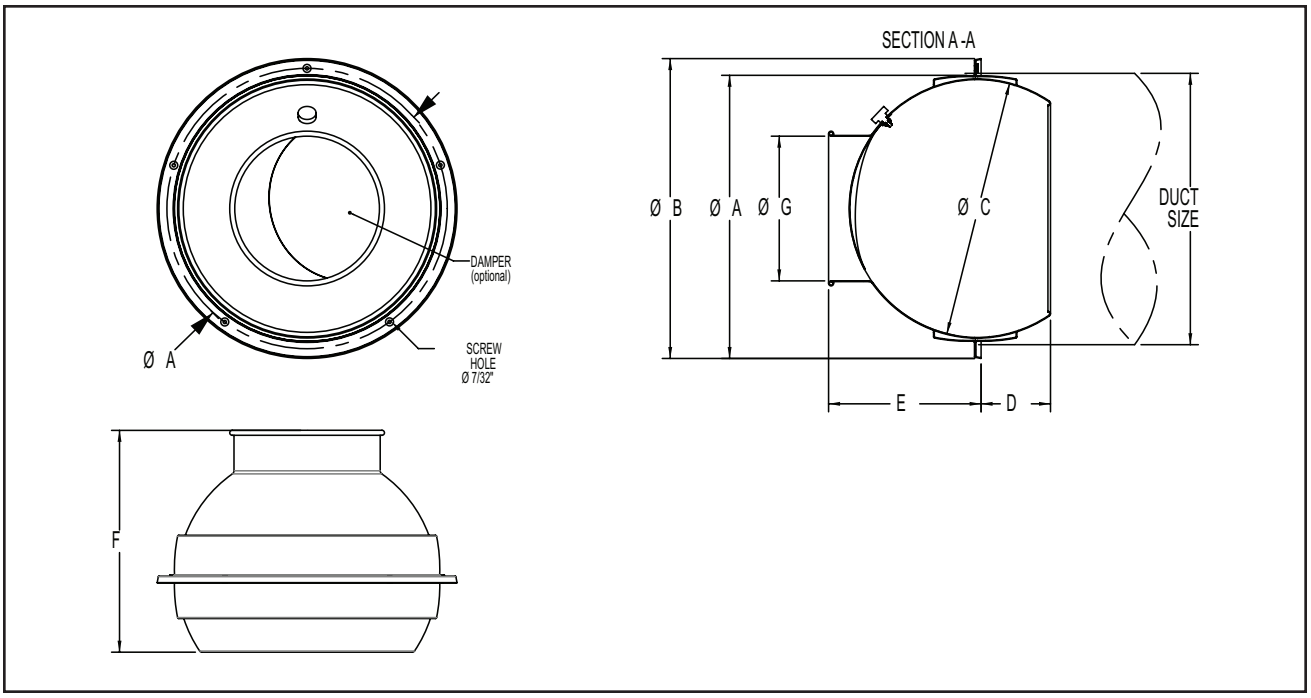
Standard Finish - #26 White
Optional Finishes - #01 Aluminum / #84Black

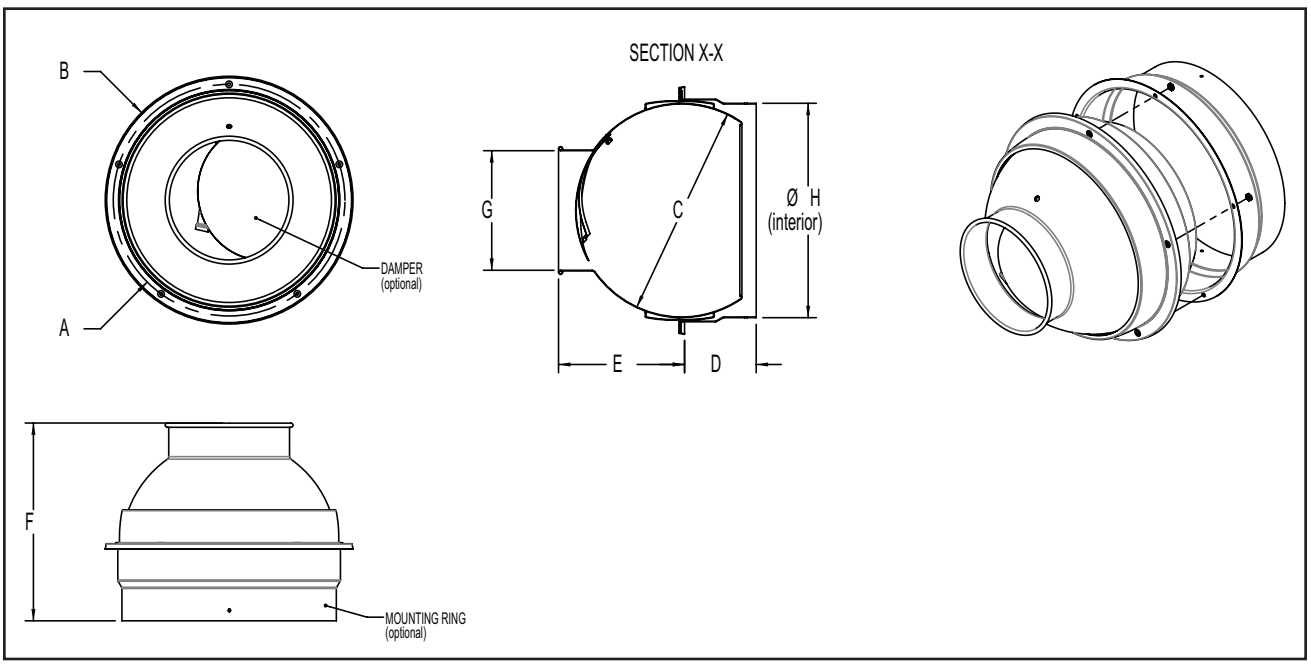
OVERVIEW

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.

TND-AA UNIT DIMENSIONS





Duct Size or Opening	A	B	C	D	E	F	G	H
6½	6 7/32	7 19/32	6	1½	3 11/16	5 3/16	2 15/16	6¼
8⅜	8 31/32	9 13/16	7 31/32	1¾	4 11/16	6 7/16	3 15/16	8¼
11⅛	11⅞	12 23/32	10 19/32	3¾	6¾	10½	5½	10¼
12 9/16	13⅜	14 3/16	12 1/16	4 15/32	7 27/32	12 5/16	6½	12¼
16⅞	17 17/32	18¾	16¼	5 13/32	9 9/16	14 31/32	9 1/32	16¼
19¼	20⅛	21 1/16	18 19/32	5 17/32	11 17/32	17 1/16	12 7/32	20¼

All dimensions are in inches

TND-AA

Nominal Size	Nozzle Velocity, fpm	750	1000	1250	1500	1750	2000	2500	3000	3500	4000
	Velocity Pressure, IN WG	0.035	0.062	0.097	0.140	0.191	0.249	0.390	0.561	0.764	0.998
6	Airflow, cfm	40	50	60	70	80	90	120	140	160	190
	Total Pressure, IN WG	0.05	0.08	0.12	0.16	0.21	0.27	0.48	0.65	0.85	1.20
	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	Airflow, cfm	60	90	110	130	150	170	210	260	300	340
	Total Pressure, IN WG	0.04	0.08	0.13	0.18	0.23	0.30	0.46	0.70	0.93	1.20
	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	Airflow, cfm	120	170	210	250	290	330	410	500	580	660
	Total Pressure, IN WG	0.04	0.08	0.12	0.17	0.23	0.30	0.46	0.69	0.93	1.20
	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	Airflow, cfm	170	230	290	350	400	460	580	690	810	920
	Total Pressure, IN WG	0.04	0.08	0.12	0.17	0.23	0.30	0.48	0.68	0.93	1.20
	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
16	Airflow, cfm	340	450	560	670	780	900	1120	1340	1570	1790
	Total Pressure, IN WG	0.04	0.08	0.12	0.17	0.23	0.30	0.46	0.67	0.91	1.19
	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
20	Airflow, cfm	610	810	1020	1220	1420	1630	2040	2440	2850	3260
	Total Pressure, IN WG	0.04	0.07	0.12	0.17	0.23	0.30	0.47	0.67	0.92	1.20
	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

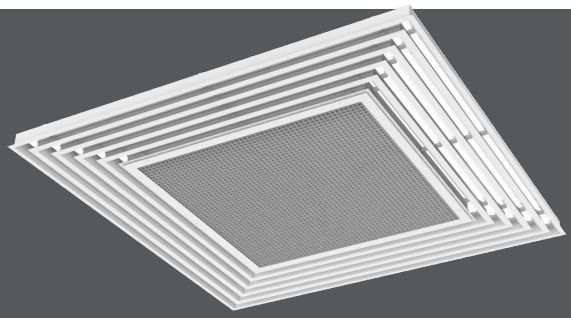
- All pressures given are in inches of water
- Throw values given are for terminal velocities of 200, 100 and 50 fpm and for isothermal conditions. See the section, Engineering Guidelines for additional throw information.
- The throw values listed are without ceiling effect
- For throw values with ceiling 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.

Titus
Redefine your comfort zone.™

Concentric Supply / Return 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.

See website for Specifications

AVAILABLE MODELS:

CSR / without Plenum
CSR-P / with Plenum

FINISH

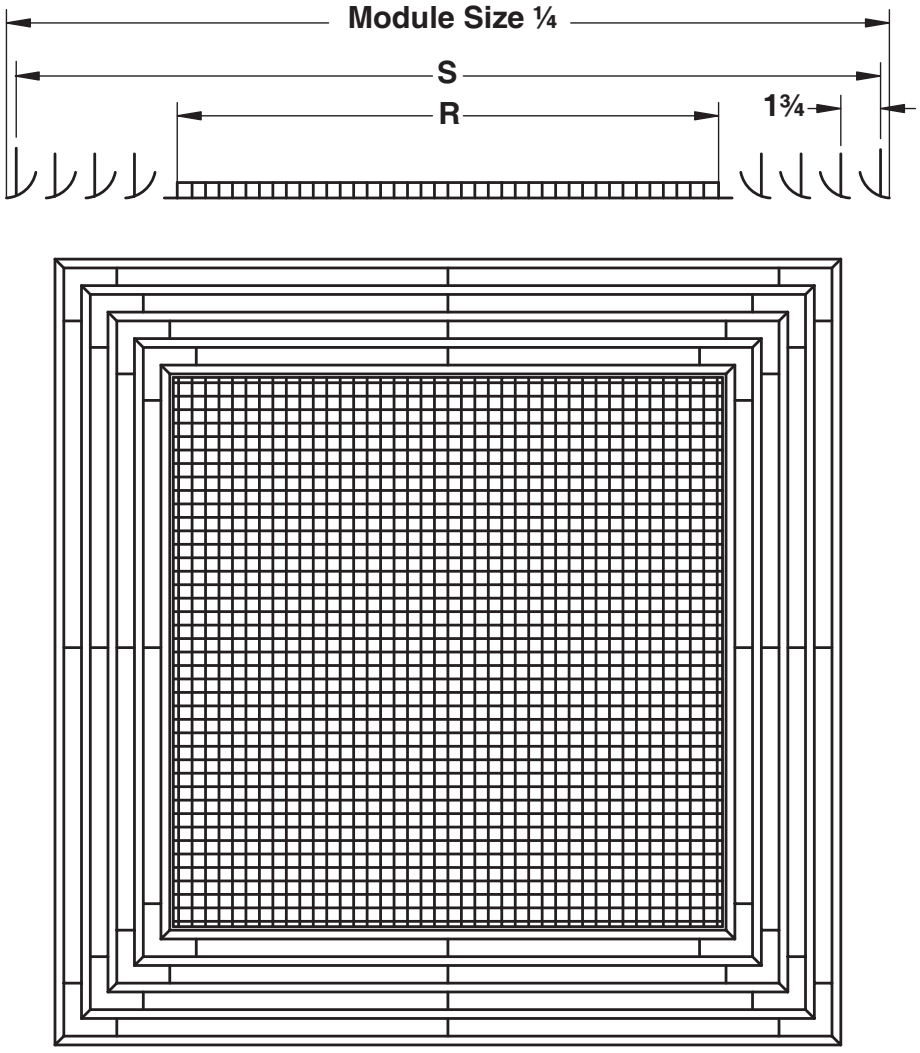
Standard Finish - #26 White

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.

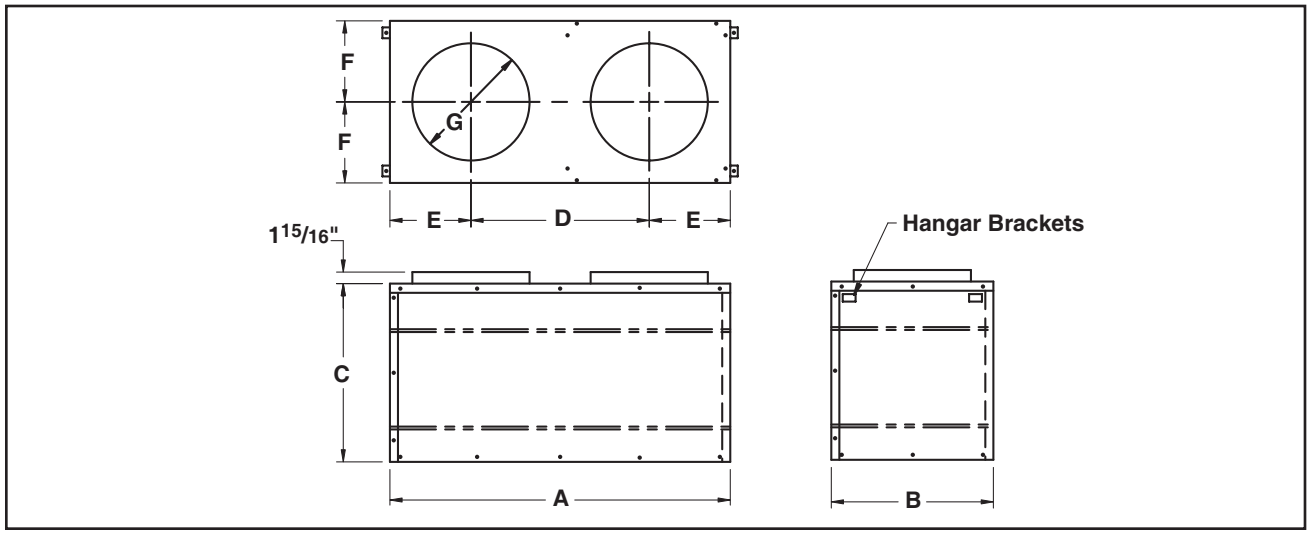
CSR / CSR-P UNIT DIMENSIONS



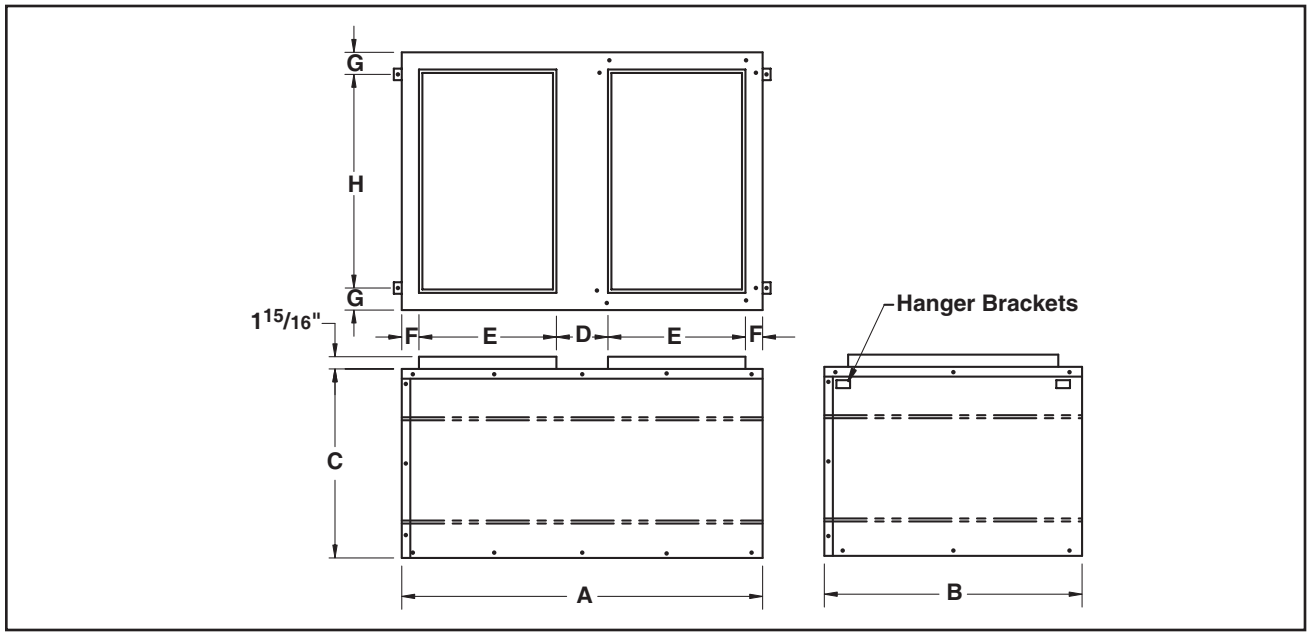
Nominal Tonage	Module Size	Supply Duct S	Return Duct R
2½ - 5	48 x 24	46¾ x 22¾	36 1/8 x 12 1/8
6 - 10	48 x 36	46¾ x 34¾	32 11/16 x 20 11/16
10 - 15	48 x 48	46¾ x 46¾	29 1/8 x 29 1/8
15 - 25	60 x 60	58¾ x 58¾	37 11/16 x 37 11/16

All dimensions are in inches

CSR / CSR-P UNIT DIMENSIONS



Module Size	A	B	C	D	E	F	G
48 x 24	47	22 13/16	23 15/16	22½	12¼	11½	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

All dimensions are in inches

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 x48 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

Notes