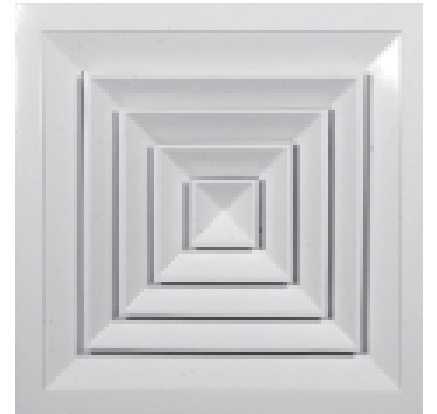


CEILING DIFFUSER



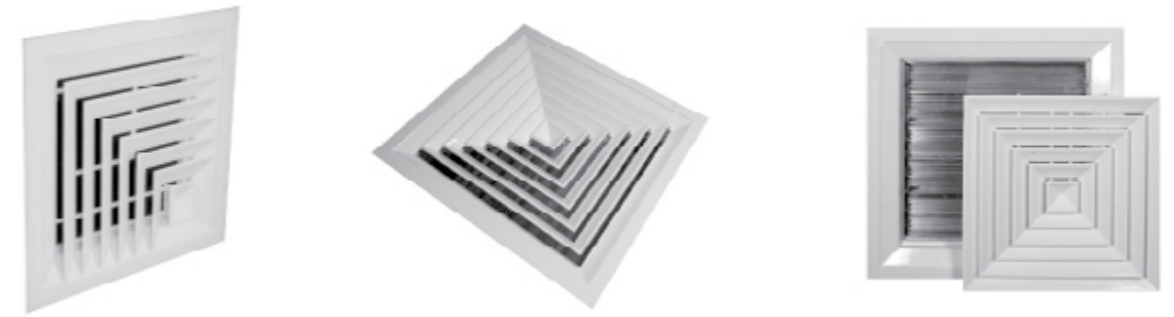
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CEILING DIFFUSERS

CONTENTS

01	Introduction, Features & Characteristics, Operating Range.
02	Pattern Selection, Selection Procedure.
03	Different Core Pattern Arrangements.
04 - 05	Square Diffusers -Model4WS, Construction & Dimensional Details.
06 - 08	Diffuser Accessories.
09	Mounting Instructions.
10	Effective Area Valves.
11	Selection Diagrams for Square Diffusers.
12	Selection Diagrams for Rectangulat Diffusers.
13 -16	Tabular Selection for Square Diffusers.
17 - 20	Tabular Selection for Rectangular Diffusers.
21	Ordeirng Data.

LOUVRED FACE, MULTI DIRECTIONAL WITH REMOVABLE CORE



➔ TFE multi directional diffusers represent an optimum solution for the diffusion of air from ceiling in modern concept areas with a high use of extruded aluminum with which thanks for their precise line they harmonize perfectly. The different shape of the cones (core) in respect of the number of the air flows (1, 2, 3 & 4 ways) can itself create an aesthetic element to be utilized.

Features & Characteristics:

- Material: Frame & inner cones (core) are made of Extruded Aluminum Profiles of 6063 Alloy by which allow the diffusers to be suitably used for both internal & external applications.
- Both frame & inner cones (core) have a general wall thickness of 1.5 mm (± 0.2 mm tolerance).
- Available in both square & rectangular shapes.
- Units are flush mounted & available with different pattern arrangements 1, 2, 3 & 4 ways (i.e. different ways of air discharge directions).
- Available in wide variety of standard neck sizes ranging from 150 x 150 up to 600 x 600 mm in 75 mm increments.
- The inner cones (core) is fully removable to provide

Easy:

- Installation.
- Adjustment of key operated OBD.
- Maintenance.
- Core exchange by different pattern in future. The core is held in place & fixed to the frame by two loaded spiral galvanized steel springs.
- The ceiling diffuser projects from the mounting surface by 5mm.
- Recommended for use in rooms with ceiling heights ranging from 2.5 m to 4.0m.
- Accessories: see page No. CD-06, 07 & 08.
- Mounting Installations: see page No. CD-09.
- Surface Finishes: see page No. CD-21.

OPERATING RANGE & QUICK SELECTION TABLE FOR SQUARE DIFFUSERS (MODEL 1,2,3 & 4WS)

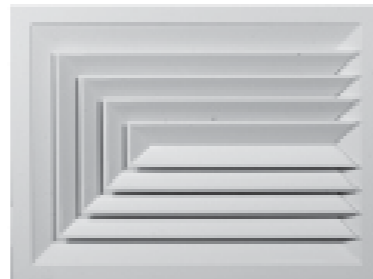
SIZE		Noise Level					
mm	Inch	Min.	<25	>25	<30	>30	40
150 x 150	6" x 6"	50	145	150	175	-	-
225 x 225	9" x 9"	110	280	285	330	-	-
300 x 300	12" x 12"	200	485	490	550	555	-
375 x 375	15" x 15"	310	615	620	715	720	954
450 x 450	18" x 18"	450	700	705	800	805	1246
525 x 525	21" x 21"	600	950	955	1070	1075	1526
600 x 600	24" x 24"	795	1090	1095	1390	1575	1992



➔ Pattern Selection:

The pattern selection is determined by the shape of the space to be conditioned, the number of diffusers in it, and the type and the location of lighting fixtures or other devices mounted on the same ceiling.

For Example: a two way square diffuser, opposed blades Model 2WS-O might be used in corridor areas. On the other hand a larger area can often be divided into squares or rectangles of nearly equal areas, if a diffuser can be located in the center of each of these areas, a pattern of Model 4WS (for square areas) or 4WR (for rectangular areas) could be used for four way discharge.



➔ Selection Procedure:

Having established the position where terminals can be sited, refer to data showing core pattern details and select the suitable core pattern required.

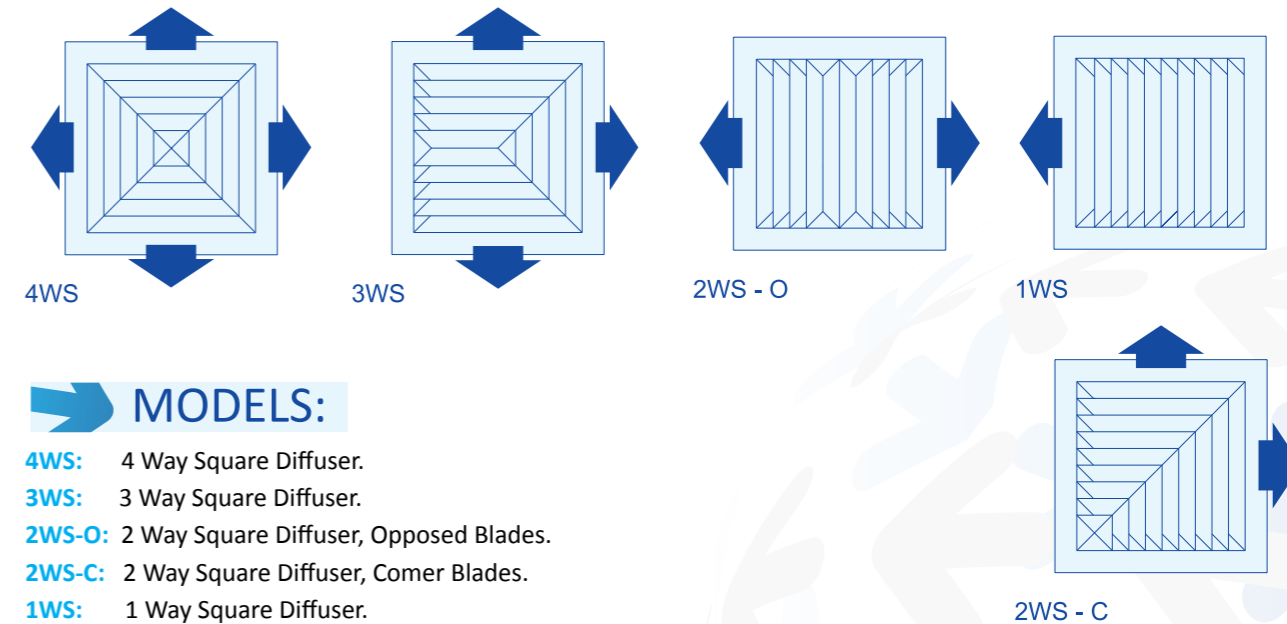
Knowing the air volume and throw for each diffuser in Question then check:

- Recommended limit of air flow rate for each diffuser direction according to ceiling height (table CD-02) with throw of air required lying between the max. and min. values.
- Note Noise Level from performance data diagrams and check the same with Noise Level recommendations table.
- Determine the total pressure drop from performance data.

Ceiling Height (m)	Max. Flow Rate For each Diffuser Direction (L/s)	Max. Cooling Differential ΔT (°C)
2.5	100	11
3.0	200	13
3.5	350	15
4.0	500	16

DIFFERENT CORE PATTERNS ARRANGEMENTS FOR BOTH SQUARE & RECTANGULAR DIFFUSERS

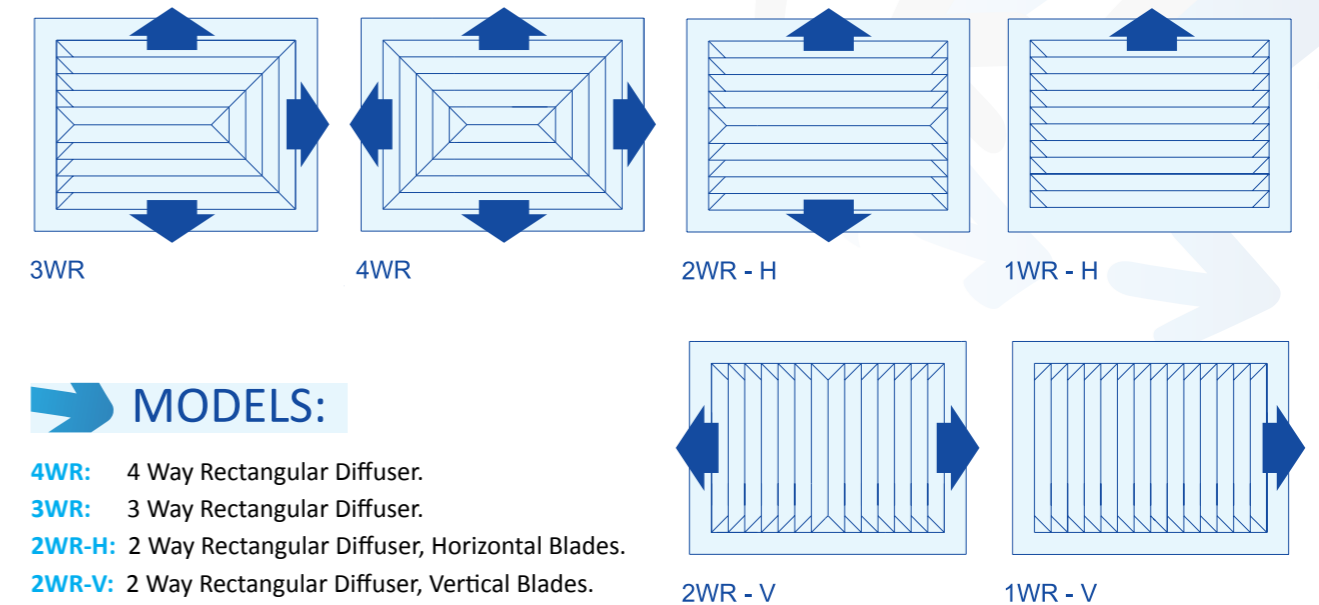
SQUARE DIFFUSERS



➔ MODELS:

- 4WS:** 4 Way Square Diffuser.
- 3WS:** 3 Way Square Diffuser.
- 2WS-O:** 2 Way Square Diffuser, Opposed Blades.
- 2WS-C:** 2 Way Square Diffuser, Comer Blades.
- 1WS:** 1 Way Square Diffuser.

RECTANGULAR DIFFUSERS



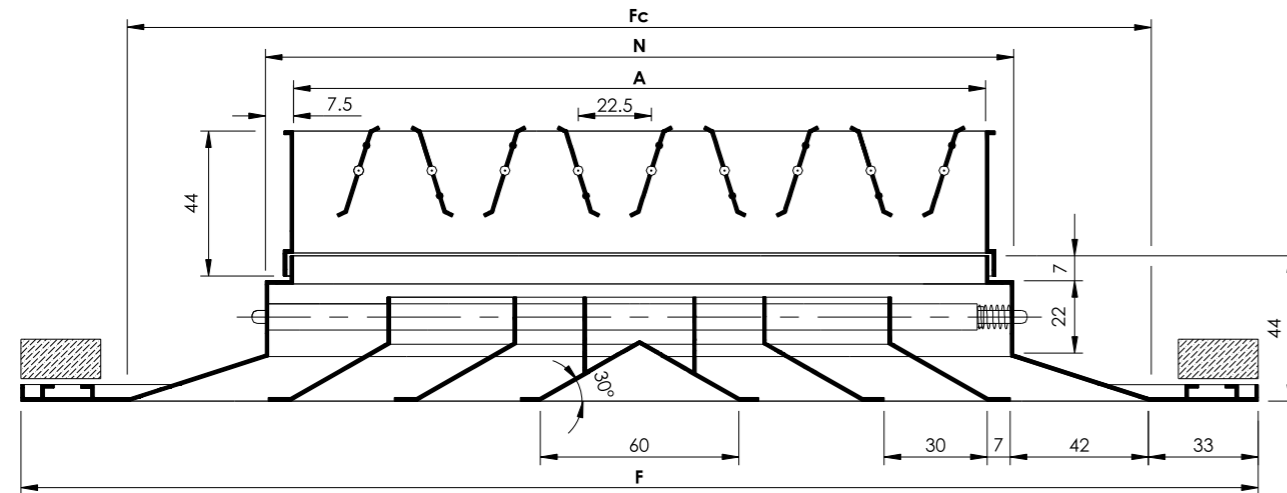
➔ MODELS:

- 4WR:** 4 Way Rectangular Diffuser.
- 3WR:** 3 Way Rectangular Diffuser.
- 2WR-H:** 2 Way Rectangular Diffuser, Horizontal Blades.
- 2WR-V:** 2 Way Rectangular Diffuser, Vertical Blades.
- 1WR-H:** 1 Way Rectangular Diffuser, Horizontal Blades.
- 1WR-V:** 1 Way Rectangular Diffuser, Vertical Blades.

Square Diffusers - Model 4WS

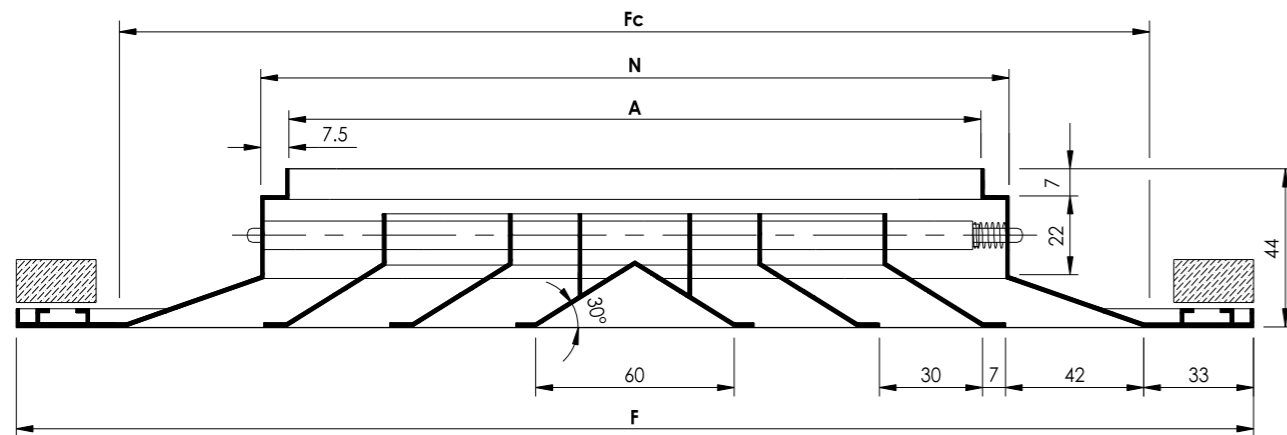
Construction and Dimensional Details

Supply Air Difuser c/w Opposed Blade Damper, Model SAD 4WS



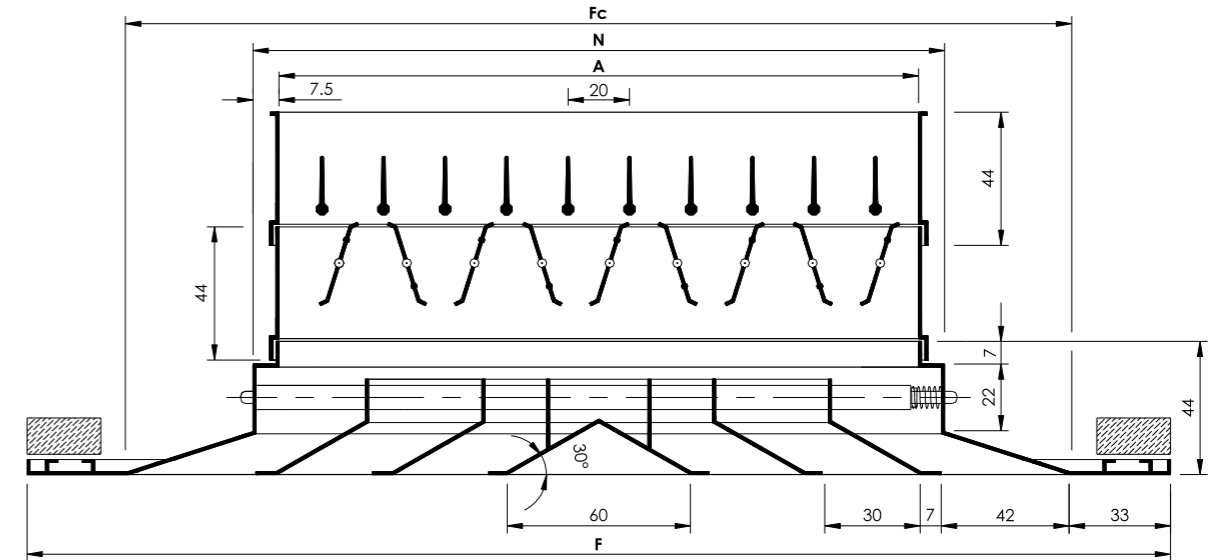
- Diffusers called Supply Air Diffuser and coded as SAD are allways equipped with Opposed Blade Damper (provided as standard).

Return, Extract or Exhaust Air DiHuser w/o Opposed Blade Damper, Model RAD or EAD 4WS



- Unless otherwise specified, Diffusers called Return, Extract or Exhaust Air Diffuser and coded as RAD or EAD are usually supplied w/o Opposed Blade Damper as a standard.
- In some cases RAD or EAD are required with Opposed Blade Damper, this will be provided as an option.
- All dimensions are in mm and subject to ± 1 mm tolerance.

Supply Air Diffuser c/w Opposed Blade Damper and Equilizing Grid , Model SAD 4WS + EG



- The Equalizing Grid is available on request as an option.
- The assembly of Equalizing Grid with diffuser provides uniform air flow and distribution over the neck of the diffuser which ensures reduction in pressure losses, noise level and turbulence.
- The blades spaced on 20 mm centres, help to control the air flow in a linear manner.
- Individually adjustable blades allow minor adjustments of air flow and additional control when required (blades can be deflected into different degrees).

NECK & OVERALL DIMENSIONS FOR SQUARE DIFFUSERS

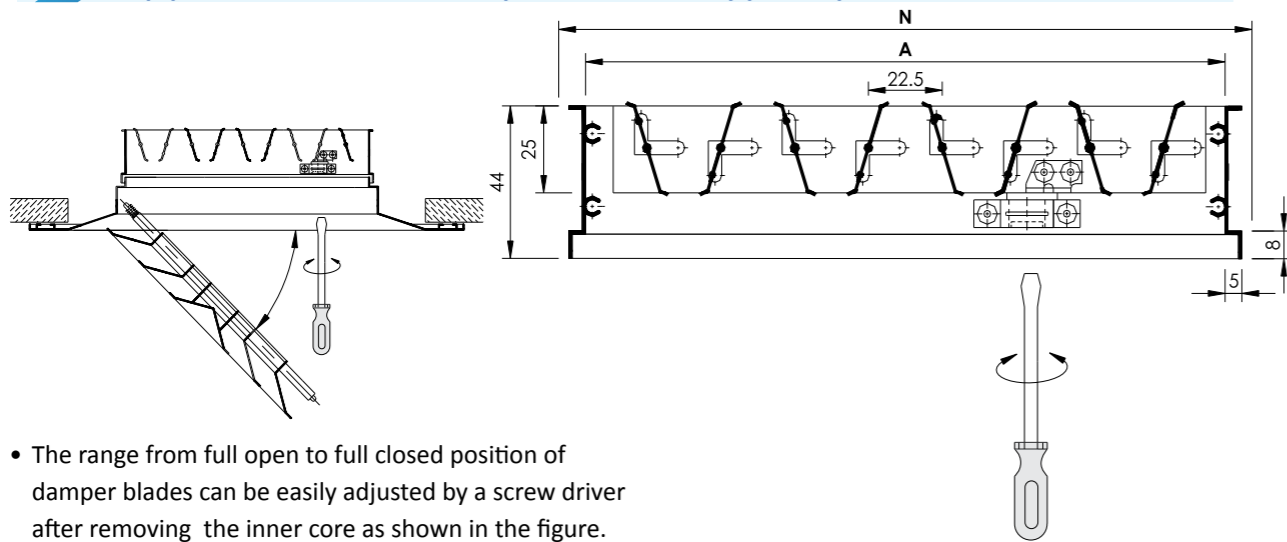
(N) NOMINAL/LISTED SIZE		(A) ACTUAL NECK SIZE		(F) OUTER FRAME SIZE		(Fc) FALSE CEILING OPENING	
mm	Inch	mm		mm		mm	
150 x 150	6" x 6"	135	x 135	297	x 297	233	x 233
200 x 200	8" x 8"	185	x 185	347	x 347	283	x 283
225 x 225	9" x 9"	210	x 210	372	x 372	308	x 308
300 x 300	12" x 12"	285	x 285	447	x 447	383	x 383
375 x 375	15" x 15"	360	x 360	522	x 522	458	x 458
450 x 450	18" x 18"	435	x 435	597	x 597	533	x 533
500 x 500	20" x 20"	485	x 485	647	x 647	583	x 583
525 x 525	21" x 21"	510	x 510	672	x 672	608	x 608
600 x 600	24" x 24"	585	x 585	747	x 747	683	x 683

- The 18" x 18" diffuser can be replaced on false ceiling with modules of 600 x 600 mm panel.
- Other sizes are available on request.
- All dimensions are in mm and subject to ± 1 mm tolerance.

A. Opposed Blade Damper

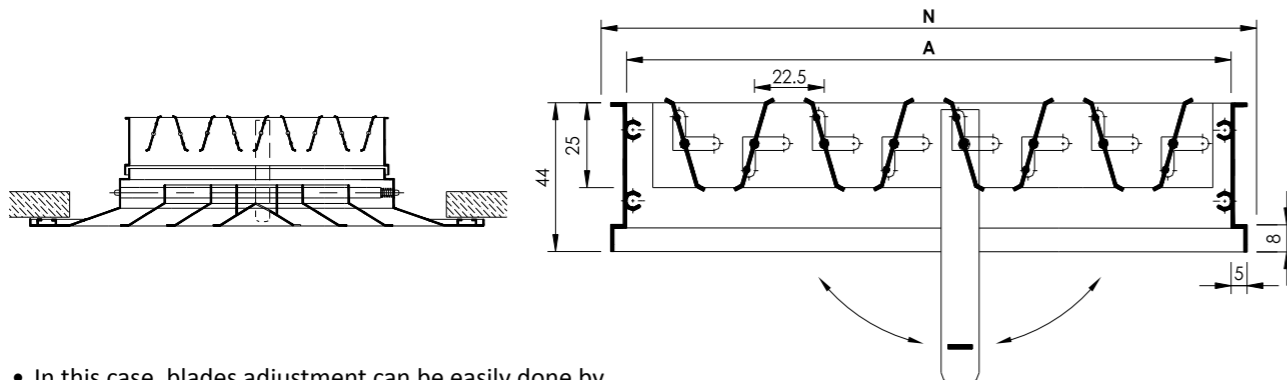
- Frame and Blades are of high quality Extruded Aluminium Profiles construction.
- Blades are designed to rotate opposite to each other.
- The specially designed blades have an overlapping lip which assures a tight closure.
- Generally, the opposed blade damper is attached to the diffuser and fixed to it by means of II S II clips.
- Blades are separated from its frame by nylon bushes. This method of assembly provides maximum rattle-free performance and eliminates corrosion.
- Usually damper standard surface finish is Aluminium in Mill Finish. Matt black powder coating color is also available on request (as an option).

Opposed Blade Damper-Screw Type Operation (Standard)



- The range from full open to full closed position of damper blades can be easily adjusted by a screw driver after removing the inner core as shown in the figure.

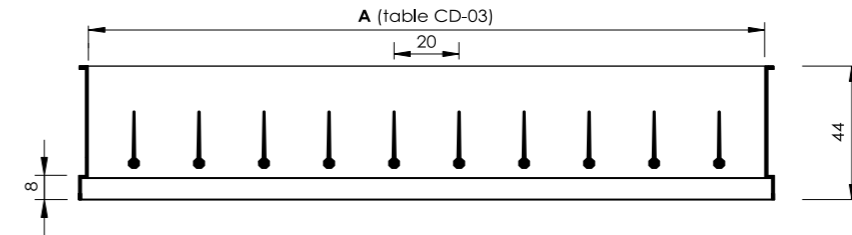
Opposed Blade Damper - Lever Type Operation (Optional)



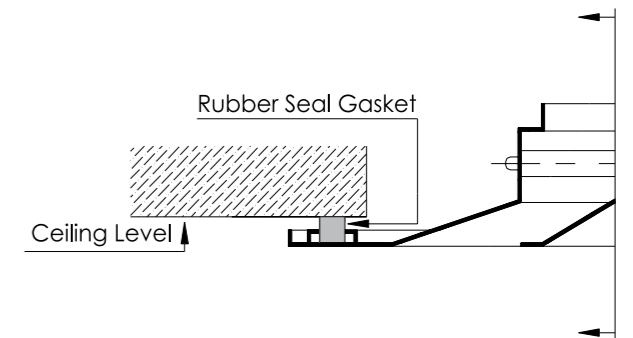
- In this case, blades adjustment can be easily done by lever accessible through the face of diffuser without removing inner core as shown in the figure.
- All dimensions are in mm and subject to $\pm 1\text{mm}$ tolerance.

B. Equalizing Grid (Optional)

- Frame and Blades are of high quality Extruded Aluminum Profiles construction.
- The aero foil blades are separated from its frame by nylon bushes.
- Usually standard surface finish is Aluminium in Mill Finish. Matt black powder coating color is also available on request (as an option).
- For further details, refer to page no. CD-05.



C. Foam Type Rubber Gasket (Optional)

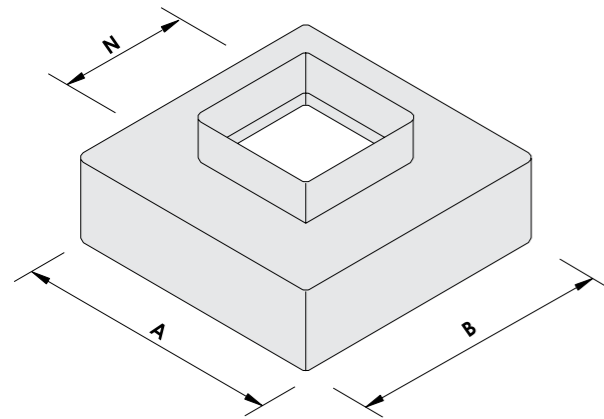


- Gasket Type** : Single Sided Self-Adhesive Foam.
Gasket Function : Sealing.
Gasket Benefits :
- Stops diffuser rattling.
 - Minimize air infiltration.
 - Stops leaks and pressure losses.
 - Takes up unevenness of ceiling.
 - Easy to apply on site or in factory.

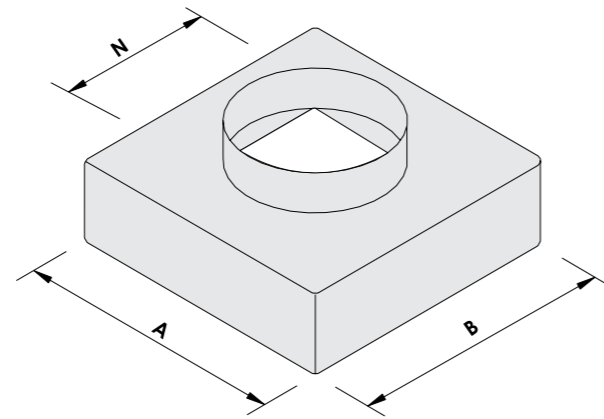
- To be applied around the perimeter of the back side of the diffuser to act as an air seal to prevent pressurised air from escaping from the sides of the diffuser when fixed to the ceiling.

D. Neck Adaptor (Optional)

Neck Adaptors that are field installed to allow either easy connection to Square duct, or easy connection to Flexible or Round rigid duct.



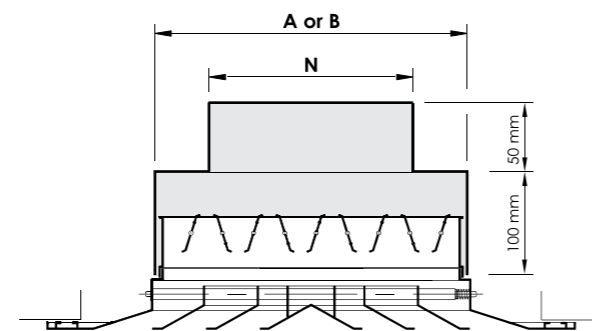
Square to Square Neck Adaptor



Square to Round Neck Adaptor

• Applications :

For those projects using square duct connections to the air outlets, the Square to Square Neck Adaptors are available for all square diffuser sizes. Adaptor design provides suitable and easy Neck to Duct connection. On the other hand, those projects using flexible or round rigid duct connections to the air outlets, the Square to Round Neck Adaptors are available for all square diffuser sizes. Adaptor design provides suitable and easy Neck to Duct connection.



Diffuser Fixed with Neck Adaptor

• Material:

24 Gauge Galvanized steel construction.

• Surface Finishes:

Mill galvanized as a standard or matt black coated from inside only as an option.

• Fixing Method:

Adaptor fixed to the back side of the diffuser by rivets.

• Design and Sizes:

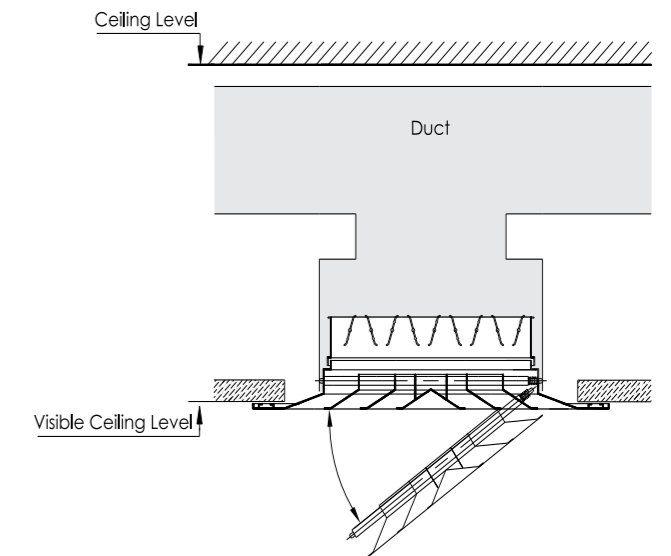
Refer to illustrative sketches and table No. CD-04 below for dimensional data:

AVAILABLE SIZES FOR SQUARE NECK ADAPTORS			
Diffuser Sizes		Adaptor Sizes	
mm	Inch	A (mm)	B (mm)
150 x 150	6" x 6"	142	142
225 x 225	9" x 9"	217	217
300 x 300	12" x 12"	292	292
375 x 375	15" x 15"	367	367
450 x 450	18" x 18"	442	442
525 x 525	21" x 21"	517	517
600 x 600	24" x 24"	592	592

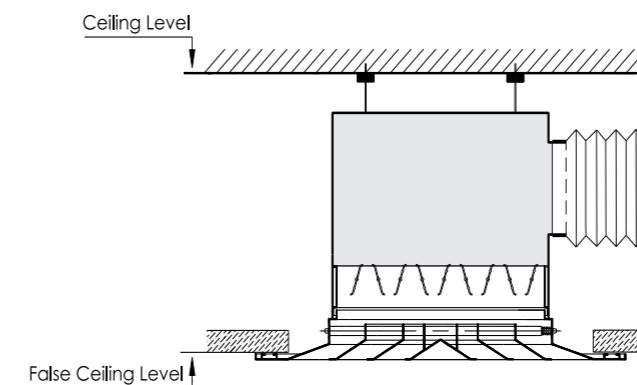
- The Adaptor neck size "N" to be specified by customer.

Mounting Instructions Installation With Connectin To Duct

Extract the inner core of the diffuser by pushing laterally with respect to the pressure spring until the opposite side emerges from the external frame. Fix the neck of the diffuser to the duct using screws or rivets. Re-mount the inner core inside the frame inserting the pressure springs in their seats and pushing laterally until the opposite parts fix home align the central cones to the frame.



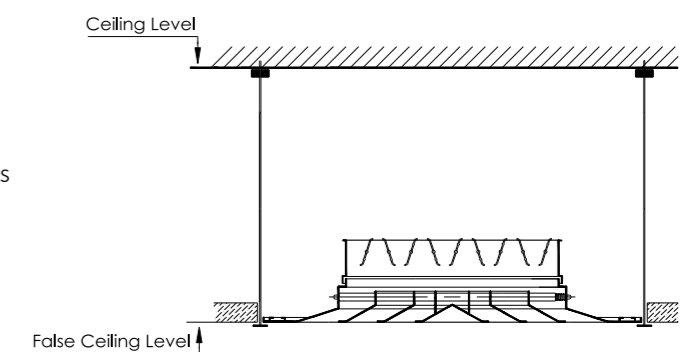
Installation With Suspended Supply Plenum Box



The use of the supply plenum is optimum with any type of false ceilings. It is possible to fix the supply plenum in the desired position by anchoring it to the system with wires. Make connections to the air distribution systems using spiral or flexible duct ensuring the seal and then allowing for ceiling diffuser installation and architectural finalities prior to install and regulate the damper.

Installation With Diffuser Resting In False Ceiling

In this case it is sufficient to rest the diffuser in the space reserved for the ceiling panel and connect it to the ducting. The internal parts of the diffuser will remain approachable by extracting the central core as explained previously.



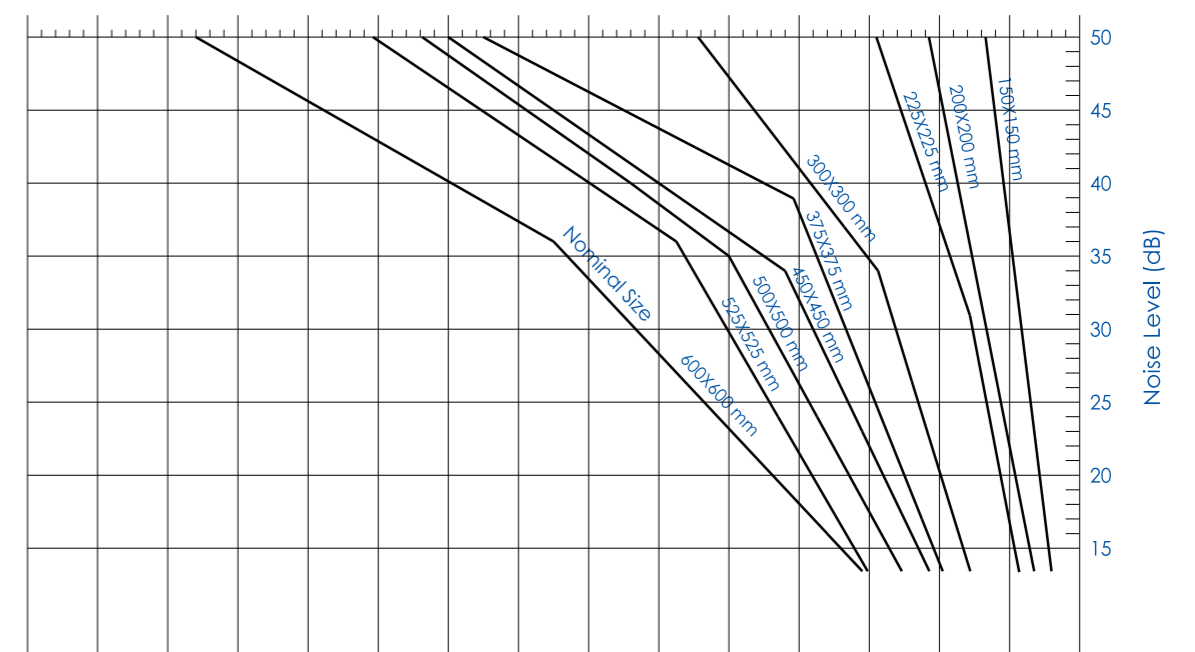
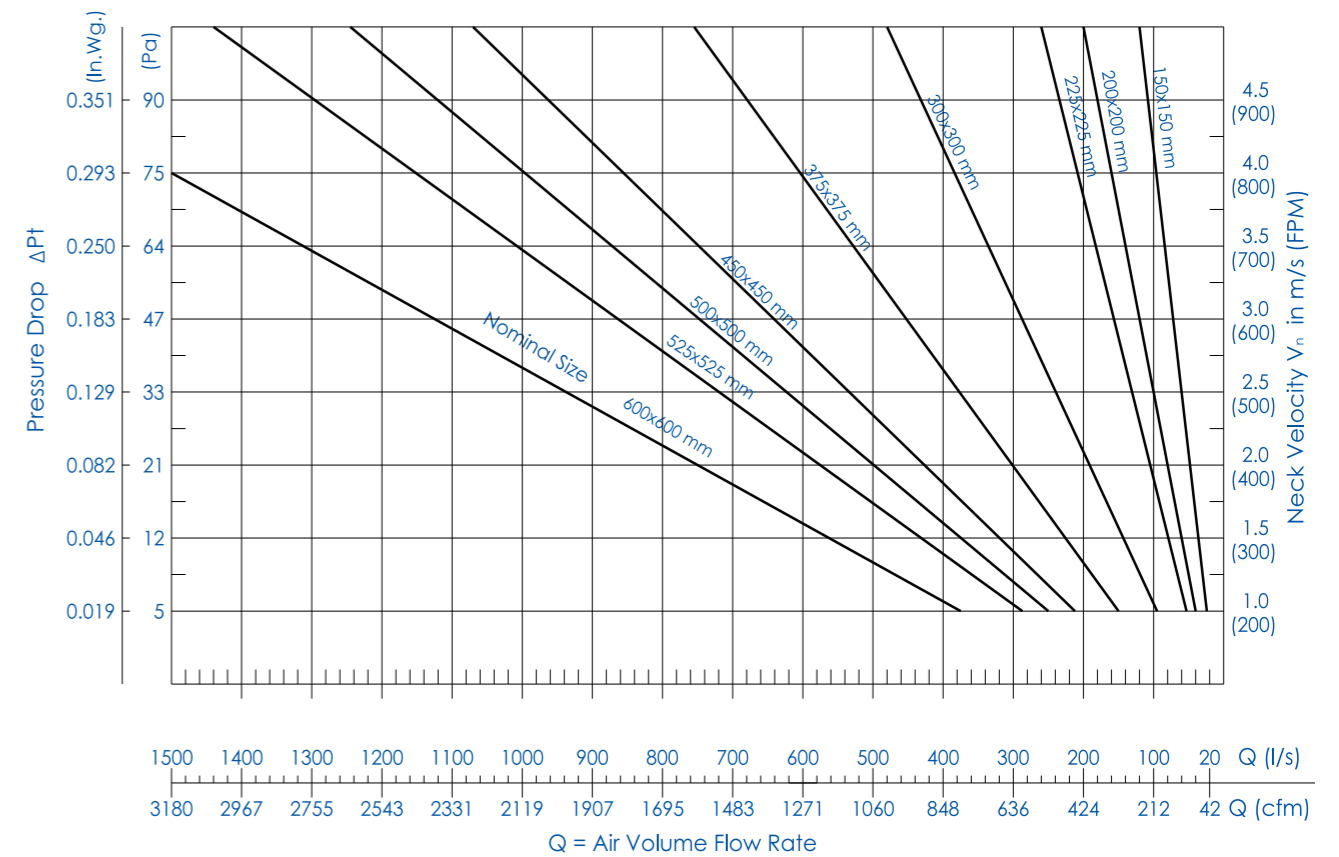
Effective Area Values for Square Ceiling Diffusers in (m²)

SIZE		1 Way-Discharge		2 Way-Discharge		3 Way-Discharge		4 Way-Discharge	
mm	Inch	Supply	Return	Supply	Return	Supply	Return	Supply	Return
150 X 150	6" x 6"	0.007	0.007	0.006	0.006	0.006	0.006	0.007	0.007
200 X 200	8" x 8"	-	-	-	-	0.011	0.010	0.013	0.011
225 X 225	9" x 9"	0.017	0.015	0.015	0.013	0.015	0.013	0.017	0.015
300 X 300	12" x 12"	0.032	0.026	0.030	0.024	0.030	0.024	0.032	0.026
375 X 375	15" x 15"	0.050	0.039	0.048	0.037	0.048	0.037	0.050	0.039
450 X 450	18" x 18"	0.074	0.055	0.071	0.053	0.071	0.053	0.074	0.055
500 X 500	20" x 20"	-	-	-	-	0.079	0.068	0.089	0.070
525 X 525	21" x 21"	0.102	0.074	0.099	0.072	0.099	0.072	0.102	0.074
600 X 600	24" x 24"	0.135	0.095	0.131	0.092	0.131	0.092	0.135	0.095

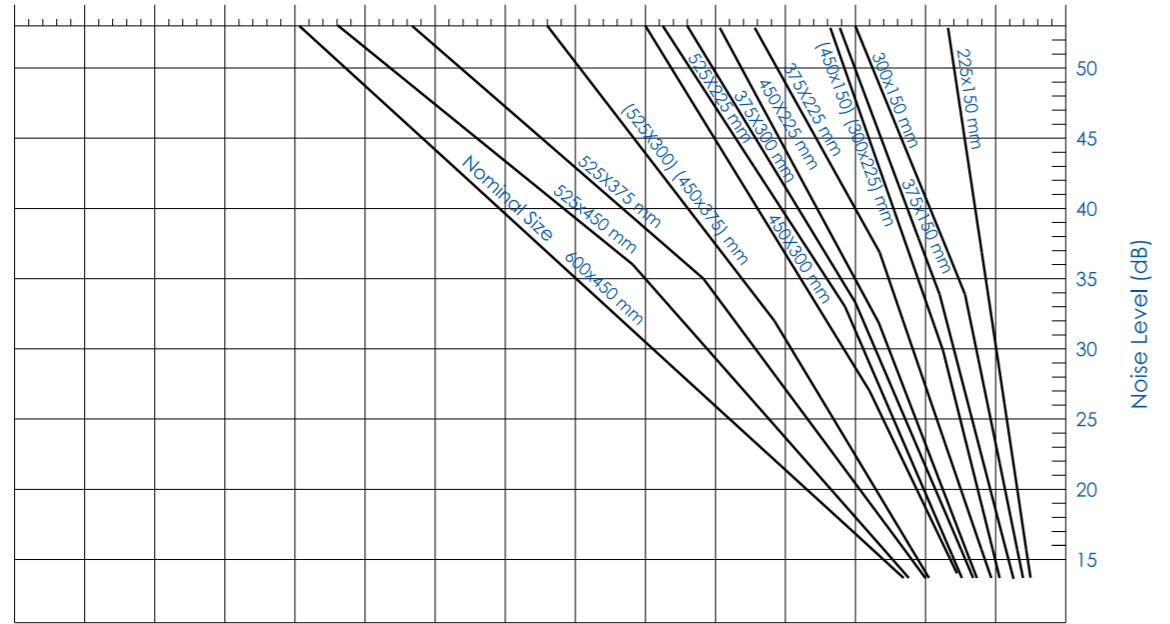
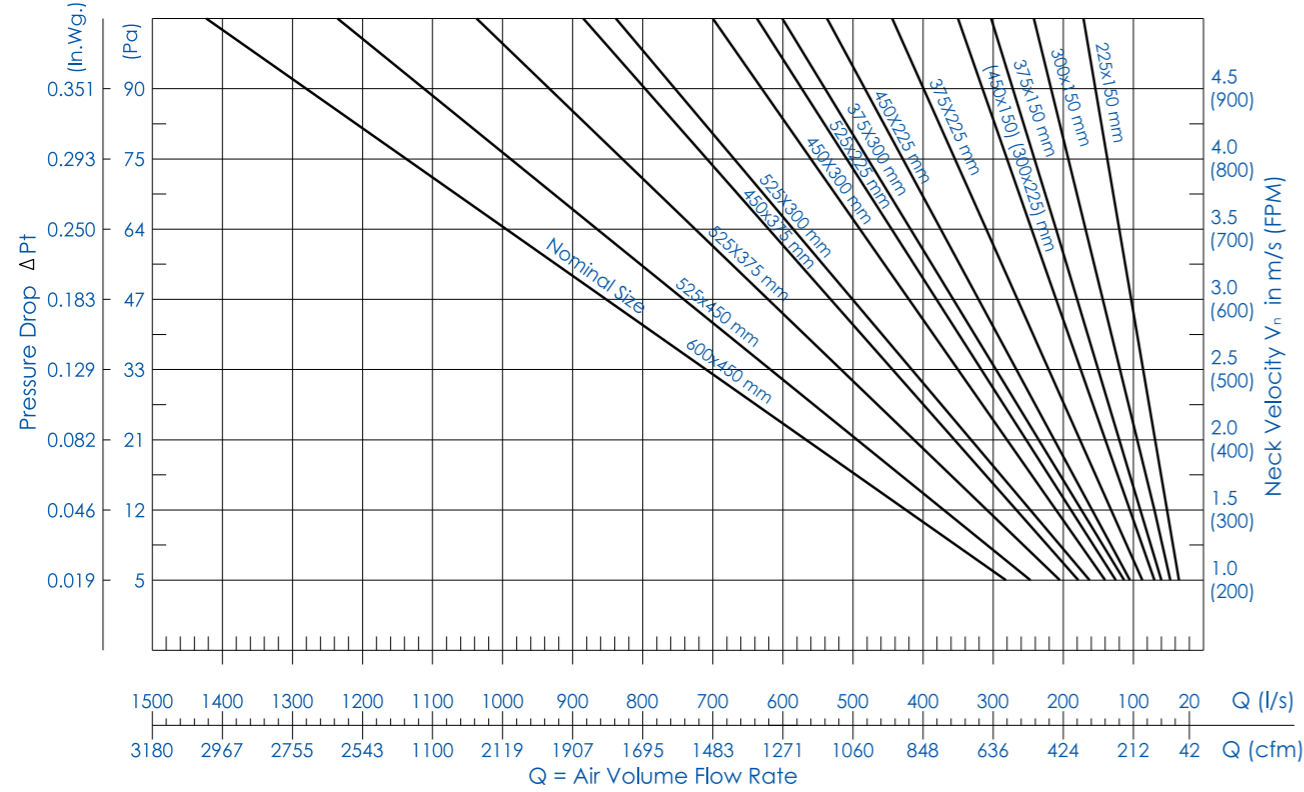
Effective Area Values for Rectangular Ceiling Diffusers (m²)

SIZE		1 Way-Discharge		2 Way-Discharge		3 Way-Discharge		4 Way-Discharge	
mm	Inch	Supply	Return	Supply	Return	Supply	Return	Supply	Return
225 X 150	9" x 6"	0.010	0.009	0.010	0.009	0.009	0.008	0.009	0.008
300 X 150	12" x 6"	0.014	0.010	0.014	0.010	0.011	0.010	0.011	0.010
300 X 225	12" x 9"	0.022	0.019	0.022	0.019	0.012	0.011	0.020	0.017
375 X 150	15" x 6"	0.018	0.015	0.018	0.015	-	-	0.016	0.014
375 X 225	15" x 9"	0.028	0.023	0.028	0.023	0.026	0.021	0.026	0.021
375 X 300	15" x 12"	0.039	0.030	0.039	0.030	0.037	0.029	-	-
450 X 150	18" x 6"	0.022	0.019	0.022	0.019	-	-	0.020	0.017
450 X 225	18" x 9"	0.034	0.026	0.034	0.026	0.031	0.025	0.031	0.025
450 X 300	18" x 12"	0.047	0.037	0.047	0.037	0.044	0.035	-	-
450 X 375	18" x 15"	-	-	-	-	0.058	0.044	0.058	0.044
525 X 225	21" x 9"	0.040	0.032	0.040	0.032	0.037	0.030	-	-
525 X 300	21" x 12"	0.056	0.043	0.056	0.043	-	-	0.052	0.040
525 X 375	21" x 15"	-	-	-	-	0.068	0.051	0.068	0.051
525 X 450	21" x 18"	-	-	-	-	0.083	0.061	0.083	0.061
600 X 450	24" x 18"	-	-	-	-	0.096	0.070	0.096	0.070

Selection Diagrams for 1,2,3 & 4 Way Rectangular Ceiling Diffuser



Selection Diagrams for 1,2,3 & 4 Way Rectangular Ceiling Diffuser



Correction Values for Noise Level :

SIZE (mm)	V _n (m/s)	NC
450 x 375	1.0 - 2.75	+ 2
450 x 375	3.0 - 3.50	+ 1

Availability of Rectangular Diffuser Sizes with respect to it's discharge directions :

SIZE Pattern	225 X 150	300 X 150	375 X 150	450 X 150	300 X 225	375 X 225	450 X 225	525 X 300	450 X 375	525 X 375	525 X 450	600 X 450	525 X 225	375 X 300	450 X 300
4WR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3WR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2WR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1WR	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

CEILING DIFFUSERS SADRAD PERFORMANCE DATA - SUPPLY

SIZE	A _n	A _k	V _n	1.016	1.270	1.524	1.778	2.032	2.540	3.048	3.556	4.064	
375x225	L/S	89	111	133	155	177	199	221	266	310	354	406	
	Pt	0.395	0.616	0.914	1.205	1.651	2.151	2.515	3.658	4.978	6.502	8.122	
	Th	1.8-2.7-4.5	2.4-3.0-5.7	2.7-3.9-6.9	3.3-4.5-7.2	3.6-5.1-7.8	4.2-5.7-8.7	4.8-6.3-9.6	5.1-6.3-9.6	5.7-6.9-10.5	6.6-7.8-11.4	7.5-8.7-12.9	8.4-9.6-14.4
	NC	<15	15	17	20	24	30	34	38	42	46	50	
300x300	L/S	94	118	142	165	189	212	236	283	330	378	426	
	Pt	0.356	0.533	0.787	1.067	1.397	1.751	2.159	3.150	4.242	5.563	7.124	
	Th	1.8-2.7-5.4	2.1-3.3-6.3	2.7-3.9-7.2	3.3-4.8-7.8	3.6-5.4-8.1	4.2-6.0-9.0	4.5-6.3-9.0	5.4-7.2-9.9	6.3-7.8-10.8	7.2-8.4-11.4	8.1-9.6-14.4	9.0-10.8-16.4
	NC	<15	15	16	19	25	32	36	40	44	48	52	
600x150	L/S	94	118	142	165	189	212	236	283	330	378	426	
	Pt	0.395	0.616	0.914	1.205	1.651	2.151	2.515	3.658	4.978	6.502	8.122	
	Th	1.7-2.8-5.5	2.7-3.6-6.6	3.0-4.2-7.5	3.6-4.8-8.1	3.9-5.7-8.4	4.8-6.6-9.3	5.7-7.5-10.2	6.6-8.1-11.1	7.2-8.4-11.7	8.1-9.6-14.4	9.0-10.8-16.4	10.0-12.0-18.0
	NC	<15	15	15	17	19	24	30	34	38	42	46	
450x225	L/S	106	133	159	186	212	236	265	319	372	425	478	
	Pt	0.395	0.616	0.914	1.205	1.651	2.151	2.515	3.658	4.978	6.502	8.122	
	Th	2.4-3.3-6.0	2.7-3.6-6.9	3.0-4.2-7.5	3.6-5.1-7.8	4.2-6.0-9.0	5.1-6.9-9.6	6.0-7.5-10.5	6.6-8.1-11.1	7.2-8.7-12.9	8.1-9.6-14.4	9.0-10.8-16.4	10.0-12.0-18.0
	NC	<15	15	15	18	21	25	31	35	39	43	47	
375x300	L/S	118	147	177	206	236	265	295	354	413	472	531	
	Pt	0.395	0.616	0.914	1.205	1.651	2.151	2.515	3.658	4.978	6.502	8.122	
	Th	2.4-3.3-6.6	2.7-3.9-6.9	3.0-4.5-7.5	3.6-5.4-8.1	4.5-6.0-9.0	5.4-6.9-9.9	6.3-7.8-10.5	6.9-8.4-11.1	7.5-9.3-12.6	8.4-9.6-14.4	9.0-10.8-16.4	10.0-12.0-18.0
	NC	<15	15	15	19	23	28	32	36	40	44	48	
525x225	L/S	124	155	186	217	248	283	310	372	434	496	558	
	Pt	0.395	0.616	0.914	1.205	1.651	2.151	2.515	3.658	4.978	6.502	8.122	
	Th	2.4-3.0-6.0	2.7-3.6-6.6	3.0-4.8-7.5	3.6-5.7-8.1	4.2-6.0-8.7	5.1-6.9-9.3	6.0-7.5-9.9	6.9-8.4-11.1	7.2-8.7-12.9	8.1-9.6-14.4	9.0-10.8-16.4	10.0-12.0-18.0
	NC	<15	15	15	18	21	25	31	35	39	43	47	
600x225	L/S	142	177	212	248	283	310	354	425	496	566	636	
	Pt	0.395	0.616	0.914	1.205	1.651	2.151	2.515	3.658	4.978	6.502	8.122	
	Th	2.4-3.0-6.0	2.7-4.2-6.9	3.3-5.1-7.5	3.9-5.7-8.1	4.5-6.0-8.7	5.4-6.9-9.3	6.3-7.5-10.2	6.9-8.7-11.1	7.5-9.0-12.9	8.1-9.6-14.4	9.0-10.8-16.4	10.0-12.0-18.0
	NC	<15	15	15	19	23	28	32	36	40	44	48	
450x300	L/S	142	177	212	248	283	310	354	425	496	566	636	
	Pt	0.395	0.616	0.914	1.205	1.651	2.151	2.515	3.658	4.978	6.502	8.122	
	Th	2.4-3.0-6.0	2.7-3.9-6.6	3.3-4.8-7.2	3.6-5.4-7.8	4.2-5.7-8.4	5.1-6.6-9.0	6.0-7.2-9.9	6.9-8.4-10.8	7.2-8.7-12.3	8.1-9.6-14.4	9.0-10.8-16.4	10.0-12.0-18.0
	NC	<15	15	15	18	20	27	33	37	41	45	49	

CEILING DIFFUSERS SAD,RAD
PERFORMANCE DATA - SUPPLY

SIZE	An	Ak	Vn	*SI UNITS									
				1.016	1.270	1.524	1.778	2.032	2.540	3.048	3.556	4.064	
375x375	L/S		148	184	221	258	295	369	443	516	590		
	Pt	0.054	0.356	0.559	0.813	1.092	1.422	2.210	3.200	4.369	5.715		
	Th		2.4-3.6-6.9	3.0-4.2-8.1	3.6-5.1-9.0	3.9-5.7-9.9	4.8-6.9-10.2	5.7-8.1-11.4	6.9-9.0-12.9	7.8-9.6-13.8	8.4-10.2-15.4		
525x300	NC		<15	<15	17	23	28	35	41	45	49		
	L/S	0.060	165	206	248	289	330	413	496	578	661		
	Pt		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
450x375	Th		2.4-3.6-7.5	3.0-4.5-8.4	3.6-5.4-9.3	4.5-6.6-9.6	5.1-7.5-10.5	6.3-8.4-12.3	7.5-9.3-13.2	8.1-9.9-14.4	9.0-10.8-15.6		
	NC		<15	<15	<15	15	20	27	33	37	41		
	L/S	0.064	177	221	265	310	354	442	531	619	708		
600x300	Pt		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
	Th		2.4-3.3-7.2	3.0-4.8-8.7	3.9-5.7-9.3	4.5-6.9-9.9	5.1-7.2-10.2	6.6-8.7-12.6	7.5-9.3-13.5	8.4-10.2-15.4	9.3-11.1-16.2		
	NC		<15	<15	<15	17	21	28	34	38	42		
525x375	L/S	0.074	207	258	310	361	413	516	620	723	826		
	Pt		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
	Th		2.7-3.9-7.8	3.3-5.1-8.7	3.9-6.3-9.3	4.8-7.2-10.5	6.0-8.1-12.0	7.2-9.0-13.2	7.8-9.9-14.4	8.4-10.8-15.9	9.2-11.7-17.7		
450x450	NC		<15	<15	<15	17	21	28	34	38	42		
	L/S	0.073	212	265	319	372	425	531	637	743	849		
	Pt		0.381	0.584	0.838	1.143	1.473	2.311	3.353	4.521	5.969		
600x375	Th		2.7-4.2-8.1	3.3-5.1-9.6	4.2-6.0-10.5	4.8-6.9-11.7	5.7-8.1-12.3	6.6-9.6-13.5	8.1-10.5-15.3	9.3-11.4-16.2	12.3-16.2-17.7		
	NC		<15	<15	<15	22	34	39	44	48	53		
	L/S	0.084	236	295	354	413	472	590	708	826	944		
525x450	Pt		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
	Th		2.7-4.5-8.7	3.6-5.4-9.9	4.2-6.3-10.8	5.4-7.8-11.7	6.0-8.7-12.6	7.2-9.9-14.1	9.0-11.1-15.9	12.0-15.6-17.1	12.9-16.5-18.3		
	NC		<15	<15	<15	18	22	29	35	39	43		
600x600	L/S	0.088	248	310	372	434	496	619	743	867	991		
	Pt		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
	Th		2.4-4.2-7.8	3.6-5.4-9.9	4.2-6.0-10.5	5.4-8.1-12.0	5.7-8.4-12.6	6.9-9.3-13.5	8.7-10.8-15.0	12.0-15.3-17.1	13.5-16.8-18.9		
NC		<15	<15	<15	18	22	29	36	39	43			

CEILING DIFFUSERS SAD,RAD
PERFORMANCE DATA - SUPPLY

SIZE	An	Ak	Vn	*SI UNITS									
				1.016	1.270	1.524	1.778	2.032	2.540	3.048	3.556	4.064	
600x450	L/S		283	354	425	496	566	708	849	991	1133		
	Pt	0.101	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
	Th		3.3-4.8-9.3	3.9-6.0-10.8	4.8-7.2-12.3	5.7-8.1-13.5	6.6-9.6-14.1	8.4-11.1-15.6	9.9-12.6-17.7	11.4-13.8-18.3	12.3-14.7-20.4		
525x525	NC		<15	<15	<15	19	23	30	36	40	44		
	L/S	0.099	289	361	434	506	578	723	867	1012	1156		
	Pt		0.381	0.610	0.864	1.168	1.524	2.413	3.454	4.724	6.121		
600x525	Th		3.3-4.6-9.3	3.9-6.0-11.1	4.8-7.2-12.3	5.7-8.1-13.5	6.6-9.6-14.1	7.8-11.1-15.9	9.6-12.3-17.7	10.8-13.2-18.9	11.7-14.1-20.7		
	NC		16	20	25	31	37	42	47	51	55		
	L/S	0.117	330	413	496	578	661	826	991	1156	1321		
600x600	Pt		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
	Th		3.3-5.1-9.9	4.2-6.6-11.7	5.4-7.8-12.6	6.3-9.0-13.5	6.9-10.2-14.7	8.7-11.7-16.8	10.5-12.6-18.0	11.4-13.5-19.8	12.3-14.7-21.6		
	NC		<15	<15	15	18	24	31	37	41	45		
600x600	L/S	0.130	378	472	566	661	755	944	1133	1321	1510		
	Pt		0.381	0.610	0.889	1.194	1.549	2.413	3.505	4.775	6.223		
	Th		3.6-5.7-10.8	4.5-6.9-12.9	5.4-8.1-14.1	6.3-9.3-15.6	7.5-11.1-16.2	9.0-12.9-18.0	11.1-14.1-20.1	12.3-15.3-21.6	13.5-16.2-23.7		
NC		18	23	29	34	40	45	50	53	57			

SYMBOLS

L/S Air volume in litre per second
Ak Effective area in square meter
An Neck area in square meter
Vn Neck velocity in meter per second
Pt Total pressure in mm water gauge
Th Throw in meter
NC Noise Criteria

CONDITIONS

* S supply.
* Damper is fully open.
* Noise Criteria values are based on (10 dB) room attenuation

NOTES

* The large throw values are based on the minimum terminal velocity of 0.25 m/sec.
* The middle throw values are based on the middle terminal velocity of 0.5 m/sec.
* The small throw values are based on the maximum terminal velocity of 0.75 m/sec.
* For Rectangular Diffusers- throw values mentioned are for the longer side of the diffuser- for shorter sides throw values are 0.7-0.75 of the mentioned ones.

CORRECTION FOR 1-2 AND 3 WAY

* Noise Criteria : No correction required.
* Pressure : No correction required.
* Throw : 3 way - increase from 10 - 20%
 2 way - increase from 20 - 30%
 1 way - increase from 40 - 50%
* Drop : No correction required.

CEILING DIFFUSERS SAD,RAD

PERFORMANCE DATA - RETURN

SIZE	An	Vn	1.5	2	2.5	3	3.6	4.1	*SI UNITS
150 X 150	0.023	L/S	35	47	59	71	83	94	83
		P _s	1,270	2,032	3,302	4,572	6,350	8,128	10,922
		NC	<15	17	25	31	36	41	46
225 X 150	0.035	L/S	53	71	88	106	124	142	165
		P _s	1,524	2,540	3,810	5,588	7,620	9,906	13,110
		NC	<15	19	28	33	38	44	49
300 X 150	0.046	L/S	71	94	118	142	165	189	211
		P _s	1,524	2,540	3,810	5,588	7,620	9,906	13,110
		NC	<15	21	29	34	40	45	50
225 X 225	0.052	L/S	79	106	132	159	185	211	236
		P _s	1,524	2,540	3,810	5,588	7,620	9,906	13,110
		NC	<15	22	30	36	41	46	51
375 X 150	0.058	L/S	88	118	147	177	206	236	266
		P _s	1,524	2,540	3,810	5,588	7,620	9,906	13,110
		NC	<15	23	31	36	42	46	51
450 X 150	0.070	L/S	106	142	177	212	248	283	318
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	15	24	32	37	43	47	52
300 X 225	0.070	L/S	106	142	177	212	248	283	318
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	15	24	32	37	43	47	52
525 X 150	0.081	L/S	124	165	206	248	289	330	371
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	16	25	33	38	44	48	53
375 X 225	0.087	L/S	133	177	221	266	310	354	398
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	16	26	33	38	45	48	53
300 X 300	0.093	L/S	142	189	236	283	330	378	425
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	16	26	33	39	45	49	54
600 X 150	0.093	L/S	142	189	236	283	330	378	425
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	16	26	33	39	45	49	54
450 X 225	0.105	L/S	159	212	265	319	372	425	478
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	17	27	34	40	46	50	55
375 X 300	0.116	L/S	177	236	295	354	413	472	531
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	17	27	34	40	46	50	55
525 X 225	0.122	L/S	186	248	310	372	434	496	558
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	18	27	35	41	46	51	56
600 X 225	0.139	L/S	212	283	354	425	495	566	637
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	19	28	36	42	47	52	57
450 X 300	0.139	L/S	212	283	354	425	495	566	637
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	19	28	36	42	47	52	57
375 X 375	0.145	L/S	221	294	368	442	515	589	662
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	19	28	36	42	47	52	57

CEILING DIFFUSERS SAD,RAD

PERFORMANCE DATA - RETURN

SIZE	An	Vn	1.5	2	2.5	3	3.6	4.1	*SI UNITS
525 X 300	0.163	NC	19	28	36	42	47	52	47
		L/S	248	330	413	495	578	661	744
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
450 X 375	0.174	L/S	265	354	442	531	619	708	797
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	20	29	37	43	49	53	58
600 X 300	0.186	L/S	283	378	472	566	661	755	849
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	21	30	37	43	49	53	58
525 X 375	0.203	L/S	310	413	516	620	723	826	929
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	21	31	38	44	50	54	59
450 X 450	0.209	L/S	319	425	531	637	743	849	955
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	21	31	38	44	50	54	59
600 X 375	0.232	L/S	354	472	590	708	826	944	1,062
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	22	32	39	45	51	55	60
525 X 450	0.244	L/S	372	495	619	743	867	991	1,115
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	22	32	39	45	51	55	60
600 X 450	0.279	L/S	425	566	708	849	991	1,133	1,274
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	23	33	40	46	52	56	62
525 X 525	0.285	L/S	433	578	722	866	1,011	1,155	1,300
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	23	33	40	46	52	56	62
600 X 525	0.325	L/S	495	661	826	991	1,156	1,321	1,486
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	24	34	41	47	53	57	63
600 X 600	0.372	L/S	566	755	944	1,133	1,321	1,510	1,700
		P _s	1,524	2,794	4,318	6,096	8,382	10,922	14,508
		NC	24	34	42	48	53	58	64

SYMBOLS

L/S : Air volume in litre per second
 *An : Neck area in meter square
 *Vn : Neck velocity in meter per second
 *Ps : Negative static pressure in mm water gauge
 *NC : Noise Criteria

CONDITIONS

* Return
 * Damper is fully open.
 * Noise Criteria is based on (10dB) room attenuation.

CEILING DIFFUSERS SAD,RAD

PERFORMANCE DATA - SUPPLY

*IMPERIAL UNITS

SIZE	An	Ak	Vn	200	250	300	350	400	500	600	700	800
6 X 6	0.250	0.096	CFM	50	63	75	88	100	125	150	175	200
			Pt	0.013	0.020	0.028	0.039	0.051	0.079	0.144	0.156	0.198
			Th	3-4-8	4-6-11	4-7-12	5-8-13	6-9-14	7-11-16	9-12-17	10-13-18	11-14-19
9 X 6	0.375	0.146	NC	<15	<15	<15	<15	<15	19	24	29	33
			CFM	75	93	112	131	150	187	225	262	300
			Pt	0.013	0.020	0.028	0.039	0.051	0.080	0.144	0.196	0.256
12 X 6	0.500	0.192	Th	4-6-11	5-7-13	6-8-14	7-10-16	8-11-17	10-13-20	12-15-22	14-17-24	15-18-25
			NC	<15	<15	<15	<15	<15	20	26	30	34
			CFM	100	125	150	175	200	250	300	350	400
9 X 9	0.563	0.210	Pt	0.013	0.020	0.029	0.040	0.052	0.081	0.144	0.196	0.256
			Th	5-7-14	6-9-15	7-10-16	8-11-18	9-12-19	11-14-22	13-16-24	15-18-26	17-20-28
			NC	<15	<15	<15	<15	<15	21	27	31	35
15 X 6	0.625	0.239	CFM	110	140	170	195	225	280	335	395	450
			Pt	0.013	0.020	0.029	0.040	0.052	0.081	0.117	0.160	0.208
			Th	5-7-14	6-9-16	7-11-18	8-12-20	10-14-21	11-16-23	14-18-26	16-20-28	17-21-31
15 X 6	0.625	0.239	NC	<15	<15	<15	<15	<15	22	28	33	37
			CFM	125	156	188	219	250	312	375	438	500
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
15 X 6	0.625	0.239	Th	5-8-14	6-9-16	7-11-19	9-13-21	11-15-23	13-17-25	15-19-27	17-21-29	20-24-33
			NC	<15	<15	<15	<15	15	22	28	32	36

CEILING DIFFUSERS SAD,RAD

PERFORMANCE DATA - SUPPLY

*IMPERIAL UNITS

SIZE	An	Ak	Vn	200	250	300	350	400	500	600	700	800
18 X 6	0.750	0.284	CFM	150	188	225	263	300	375	450	525	600
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	6-9-15	7-11-19	8-12-20	10-14-22	12-16-25	14-18-27	16-20-30	18-23-33	21-26-37
12 X 9	0.750	0.284	NC	<15	<15	<15	<15	16	23	29	33	37
			CFM	150	188	225	263	300	375	450	525	600
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
21 X 6	0.875	0.330	Th	6-9-15	7-11-20	10-13-23	11-15-25	12-16-27	14-18-29	17-20-31	19-23-34	21-26-37
			NC	<15	<15	<15	<15	16	23	29	33	37
			CFM	188	235	281	328	375	469	563	657	750
15 X 9	0.938	0.353	Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	6-9-15	8-10-19	9-13-23	11-15-24	12-17-26	14-19-29	17-21-32	19-23-35	22-26-38
			NC	<15	15	17	20	24	30	34	38	42
12 X 12	1.000	0.353	CFM	200	250	300	350	400	500	600	700	800
			Pt	0.014	0.021	0.031	0.042	0.055	0.085	0.124	0.167	0.219
			Th	6-9-18	7-11-21	9-13-24	11-16-26	12-18-27	15-21-30	18-24-33	21-26-36	23-27-38
12 X 12	1.000	0.353	NC	<15	<15	<15	16	19	25	32	36	40

CEILING DIIF UERS SAD,RAD
PERFORMANCE DATA = SUPPLY

*IMPERIAL UNITS

SIZE	An	Ak	Vn	200	250	300	350	400	500	600	700	800
18 X 12	1.500	0.555	CFM	305	380	458	530	600	750	900	1050	1200
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-10-20	9-13-22	11-16-24	12-18-26	14-19-28	17-22-30	20-24-33	23-28-36	24-29-41
			NC	<15	<15	15	20	27	33	37	41	
15 X 15	1.563	0.577	CFM	310	390	470	545	625	780	940	1090	1250
			Pt	0.014	0.022	0.032	0.043	0.056	0.087	0.126	0.172	0.225
			Th	8-12-23	10-14-27	12.17-30	13-19-33	16-23-34	19-27-38	23-30-43	26-32-46	28-34-50
			NC	<15	<15	17	23	28	35	41	45	49
21 X 12	1.750	0.644	CFM	350	438	525	613	700	875	1050	1225	1400
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-12-25	10-15-28	12-18-31	15-22-32	17-25-35	21-28-41	25-31-44	27-33-48	30-36-52
			NC	<15	<15	15	20	27	33	37	41	
18 X 15	1.875	0.688	CFM	375	468	562	656	750	937	1125	1312	1500
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-11-24	10-16-29	13-19-31	15-23-33	17-24-34	22-29-42	25-31-45	28-34-50	31-37-54
			NC	<15	<15	17	21	28	34	38	42	
24 X 12	2.000	0.732	CFM	400	500	600	700	800	1000	1200	1400	1600
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-11-24	11-16-29	13-20-31	15-23-33	19-26-38	23-29-43	26-32-47	28-35-51	30-38-56
			NC	<15	<15	17	21	28	34	38	42	

CEILING DIIF UERS SAD,RAD
PERFORMANCE DATA = SUPPLY

*IMPERIAL UNITS

SIZE	An	Ak	Vn	200	250	300	350	400	500	600	700	800
18 X 12	1.500	0.555	CFM	305	380	458	530	600	750	900	1050	1200
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-10-20	9-13-22	11-16-24	12-18-26	14-19-28	17-22-30	20-24-33	23-28-36	24-29-41
			NC	<15	<15	15	20	27	33	37	41	
15 X 15	1.563	0.577	CFM	310	390	470	545	625	780	940	1090	1250
			Pt	0.014	0.022	0.032	0.043	0.056	0.087	0.126	0.172	0.225
			Th	8-12-23	10-14-27	12.17-30	13-19-33	16-23-34	19-27-38	23-30-43	26-32-46	28-34-50
			NC	<15	<15	17	23	28	35	41	45	49
21 X 12	1.750	0.644	CFM	350	438	525	613	700	875	1050	1225	1400
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-12-25	10-15-28	12-18-31	15-22-32	17-25-35	21-28-41	25-31-44	27-33-48	30-36-52
			NC	<15	<15	15	20	27	33	37	41	
18 X 15	1.875	0.688	CFM	375	468	562	656	750	937	1125	1312	1500
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-11-24	10-16-29	13-19-31	15-23-33	17-24-34	22-29-42	25-31-45	28-34-50	31-37-54
			NC	<15	<15	17	21	28	34	38	42	
24 X 12	2.000	0.732	CFM	400	500	600	700	800	1000	1200	1400	1600
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-11-24	11-16-29	13-20-31	15-23-33	19-26-38	23-29-43	26-32-47	28-35-51	30-38-56
			NC	<15	<15	17	21	28	34	38	42	

CEILING DIFFUSERS PERFORMANCE DATA - RETURN

SAD,RAD

SIZE	An	Vn	300	400	500	600	700	800
6 x 6	0.250	CFM	75	100	125	150	175	200
		Ps	0.050	0.080	0.130	0.180	0.250	0.320
9 x 6	0.375	CFM	<15	17	25	31	36	41
		Ps	113	150	188	225	263	300
12 x 6	0.500	CFM	<15	19	28	33	38	44
		Ps	150	200	250	300	350	400
9 x 9	0.563	CFM	<15	21	29	34	40	45
		Ps	168	224	280	336	392	448
15 x 6	0.625	CFM	<15	22	30	36	41	46
		Ps	188	250	313	375	438	500
18 x 6	0.750	CFM	<15	23	31	36	42	46
		Ps	225	300	375	450	525	600
12 x 9	0.750	CFM	15	24	32	37	43	47
		Ps	225	300	375	450	525	600
21 x 6	0.875	CFM	15	24	32	37	43	47
		Ps	263	350	438	525	613	700
15 x 9	0.938	CFM	16	25	33	38	44	48
		Ps	281	375	469	563	657	750
12 x 12	1.000	CFM	16	26	33	38	45	48
		Ps	300	400	500	600	700	800
24 x 6	1.000	CFM	16	26	33	39	45	49
		Ps	300	400	500	600	700	800
18 x 9	1.125	CFM	16	26	33	39	45	49
		Ps	338	450	563	675	788	900
15 x 12	1.250	CFM	17	27	34	40	46	50
		Ps	375	500	625	750	875	1000
21 x 9	1.313	CFM	17	27	34	40	46	50
		Ps	394	525	657	788	919	1050
24 x 9	1.500	CFM	18	27	35	41	46	51
		Ps	450	600	750	900	1050	1200
18 x 12	1.500	CFM	19	28	36	42	47	52
		Ps	450	600	750	900	1050	1200
15 x 15	1.563	CFM	19	28	36	42	47	52
		Ps	468	624	780	936	1092	1248
		NC	19	28	36	42	47	52

CEILING DIFFUSERS PERFORMANCE DATA - RETURN

SAD,RAD

SIZE	An	Vn	300	400	500	600	700	800
21 x 12	1.750	NC	19	28	36	42	47	52
		CFM	525	700	875	1050	1225	1400
18 x 15	1.875	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	20	29	37	42	48	53
24 x 12	2.000	CFM	563	750	938	1125	1313	1500
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
21 x 15	2.188	NC	21	30	37	43	49	53
		CFM	656	875	1094	1313	1532	1750
18 x 18	2.250	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	21	31	38	44	50	54
24 x 15	2.500	CFM	675	900	1125	1350	1575	1800
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
21 x 18	2.625	NC	22	32	39	45	51	55
		CFM	788	1050	1313	1575	1838	2100
24 x 18	3.000	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	23	33	40	46	52	56
21 x 21	3.063	CFM	918	1224	1530	1836	2142	2448
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
24 x 21	3.500	NC	23	33	40	46	52	56
		CFM	1050	1400	1750	2100	2450	2800
24 x 24	4.000	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	24	34	40	47	53	57
		CFM	1200	1600	2000	2400	2800	3200
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	24	34	42	48	53	58

SYMBOLS

- *CFM: Air volume in cubic feet per minute
- *An: Neck area in foot squared
- *Vn: Neck velocity in foot per minute
- *Ps: Negative static pressure in inch water gauge
- *NC: Noise Criteria

CONDITIONS

- *Return
- *Damper is fully open.
- *Noise Criteria is based on (10dB) room attenuation

CEILING DIFFUSERS SAD,RAD
PERFORMANCE DATA - SUPPLY

SIZE	An	Ak	Vn	1.016	1.270	1.524	1.778	2.032	2.540	3.048	3.556	4.064
150 X 150	L/S	0.009	24	29	35	41	47	59	71	83	94	
	Pt	0.330	0.508	0.711	0.991	1.295	1.829	2.007	2.007	3.658	3.962	5.029
	Th	0.9-1.2-2.4	1.2-1.8-3.3	1.2-2.1-3.6	1.5-2.4-3.9	1.8-2.7-4.2	2.1-3.3-4.8	2.7-3.6-5.1	3.0-3.9-5.4	3.3-4.2-5.7	3.3-4.2-5.7	3.3-4.2-5.7
225 X 150	NC	<15	<15	<15	<15	<15	<15	<15	19	24	29	33
	L/S	0.014	0.014	35	44	53	62	71	88	106	124	142
	Pt	0.330	0.508	0.711	0.991	1.295	1.829	2.032	2.032	3.658	4.978	6.502
300 X 150	Th	1.2-1.8-3.3	1.5-2.1-3.9	1.8-2.4-4.2	2.1-3.0-4.8	2.4-3.3-5.1	3.0-3.9-6.0	3.6-4.5-6.6	4.2-5.1-7.2	4.5-5.4-7.8	5.1-6.0-8.4	5.1-6.0-8.4
	NC	<15	<15	<15	<15	<15	<15	<15	20	26	30	34
	L/S	0.018	0.018	47	59	71	83	94	118	142	165	189
225 X 225	Pt	0.330	0.508	0.737	1.013	1.321	1.829	2.057	2.057	3.658	4.978	6.502
	Th	1.5-2.1-4.2	1.8-2.7-4.5	2.1-3.0-4.8	2.4-3.3-5.4	2.7-3.6-5.7	3.3-4.2-6.6	3.9-4.8-7.2	4.5-5.4-7.8	5.1-6.0-8.4	5.1-6.0-8.4	5.1-6.0-8.4
	NC	<15	<15	<15	<15	<15	<15	<15	21	27	31	35
375 X 150	L/S	0.020	0.020	53	66	80	93	106	133	159	186	213
	Pt	0.330	0.508	0.737	1.016	1.321	1.829	2.057	2.057	3.658	4.978	6.502
	Th	1.5-2.1-4.2	1.8-2.7-4.8	2.1-3.3-5.4	2.4-3.6-6.0	3.0-4.2-6.3	3.3-4.8-6.9	4.2-5.4-7.8	4.8-6.0-8.4	5.1-6.3-9.3	5.1-6.3-9.3	5.1-6.3-9.3
450 X 150	NC	<15	<15	<15	<15	<15	<15	<15	22	28	33	37
	L/S	0.026	0.026	59	74	88	103	118	147	177	206	236
	Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502	8.502	11.1
300 X 225	Th	1.5-2.1-4.2	1.8-2.7-4.8	2.1-3.3-5.7	2.7-3.9-6.3	3.3-4.5-6.9	3.9-5.1-7.5	4.5-5.7-8.1	5.1-6.3-8.7	6.0-7.2-9.9	6.0-7.2-9.9	6.0-7.2-9.9
	NC	<15	<15	<15	<15	<15	<15	<15	22	28	32	36
	L/S	0.070	0.070	71	88	106	124	142	177	212	248	283
525 X 150	Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502	8.502	11.1
	Th	1.8-2.7-4.5	2.1-3.3-5.7	2.4-3.6-6.0	3.0-4.2-6.6	3.6-4.8-7.5	4.2-5.4-8.1	4.8-6.0-9.0	5.4-6.9-9.9	6.3-7.8-11.1	6.3-7.8-11.1	6.3-7.8-11.1
	NC	<15	<15	<15	<15	<15	<15	<15	23	29	33	37
525 X 150	L/S	0.031	0.031	83	103	124	145	165	206	248	289	330
	Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502	8.502	11.1
	Th	1.8-2.7-4.8	2.1-3.3-6.0	3.0-3.9-6.9	3.3-4.5-7.5	3.6-4.8-8.1	4.2-5.4-8.7	5.1-6.0-9.3	5.7-6.9-10.2	6.3-7.8-11.1	6.3-7.8-11.1	6.3-7.8-11.1
NC	<15	<15	<15	<15	<15	<15	<15	23	29	33	37	

Example 1:

1	2	3	4	5	6	7	8	9
SAD	4W	S	BD	12" x 12" 300 x 300 (mm)	10	Powder Coating	9016	With Rubber Gasket

Example 2:

1	2	3	4	5	6	7	8	9
SAD	3W	R	-	18" x 9" 450 x 225 (mm)	5	Silver Anodized	-	-

Example 3:

1	2	3	4	5	6	7	8	9
RAD	4W	S	-	18" x 18" 450 x 450 (mm)	15	Powder Coating	7045 (Optional)	-



PERFORATE CEILING DIFFUSERS

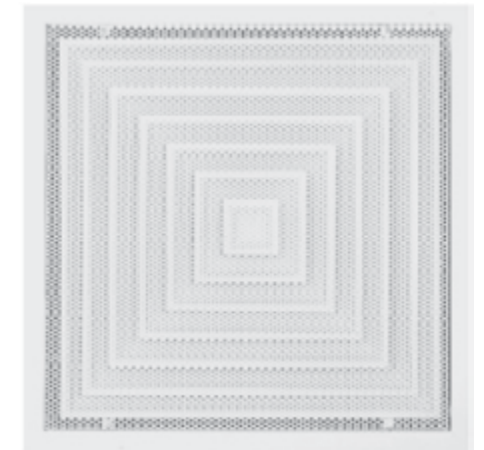
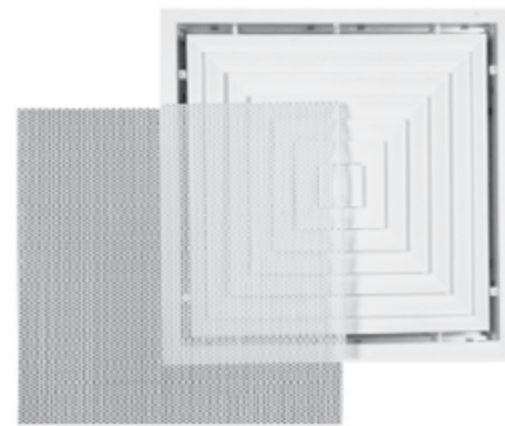
CONTENTS

- 01 Introduction, Features & Characteristics.
- 02 Models, Perforated Ceiling Diffusers.
- 03 Diffuser Accessories, Profiles used in Perforated Diffusers.
- 04 Tabular Selection for Perforated Ceiling Diffusers.
- 05 Ordering Data.

Engineering Notes:

→ The TFE Perforated Diffusers provide a modern silent and draft-free range of diffusers designed to blend effectively with modern ceiling styles and profiles. Offering excellent uniform air distribution patterns the unit comprises of an extruded aluminum frame with a perforated steel sheet face, 50% free area, and square cones (core) concealed behind the perforated face positioned to give 4, 3, 2 or 1 way discharge as required for the supply units. While return, extract or

exhaust units are normally supplied without this feature for straight forward extract application. These diffusers have high diffusion induction rates, resulting in rapid temperature and velocity equalization of the mixed air mass before the supply air enters the occupied space. As an alternative use also, the perforated diffusers have been designed to meet architectural requirements as to appearance, module size or other aesthetic considerations.

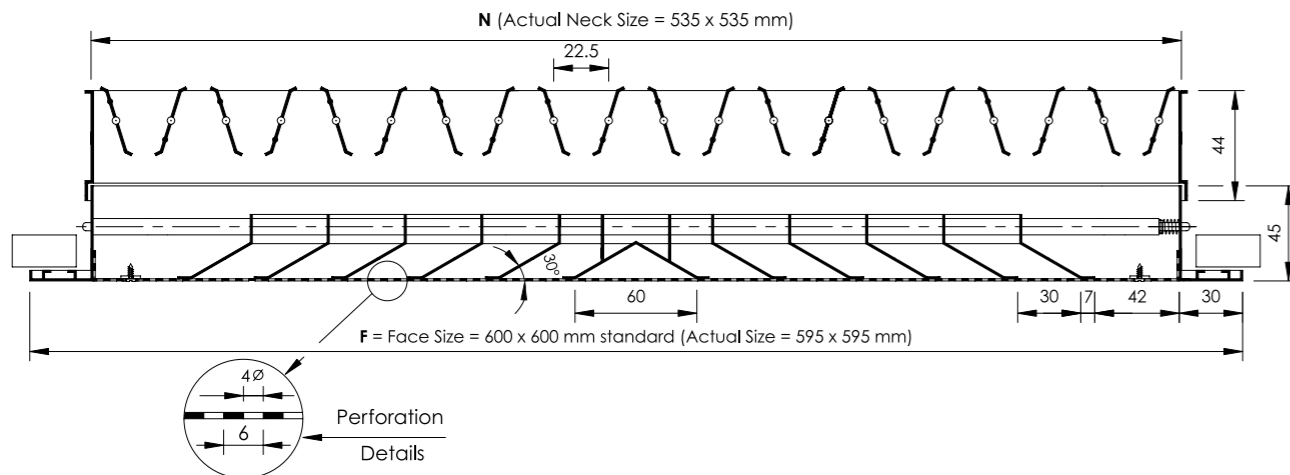


Features & Characteristics:

- Construction: Frame & inner cones (core) are made of high quality Extruded Aluminum Profiles of 6063 Alloy.
- Frame Flange width: 30 mm.
- Perforated Face: made of G.I. Perforated sheet of 0.8 mm thickness with 4 mm Ø perforation at a pitch of 6 mm to produce 50% free area.
- Units are flush mounted available with different pattern arrangements 4, 3, 2 & 1 way (i.e. different ways of air discharge directions).
- Available in wide variety of square neck sizes ranging up to the most popular used 600 x 600 mm module with 595 x 595 mm outer frame size making it suitable for standard false ceiling panel replacement.
- The perforated screen shall be removable from the diffuser face and fitted with screws to facilitate the removal of face screen to provide easy access to:
 - Installation.
 - Adjustment of key operated OBD.
 - Maintenance and cleaning.
 - Core exchange by different pattern in future.
- The core is held in place and fixed to the frame by two loaded spiral galvanized steel springs.
- For a better supply air mixing, increase of throw and induction, more sound containing and easy connection to duct system, G.I. Neck. Adaptor is available as an option.
- Perforated diffusers project from the mounting surface by 5 mm.
- Accessories: see page No.PD-03.
- Mounting Instructions: refer to page No.CD-09, Chapter (1).
- Surface Finishes: see page No.PD-05.

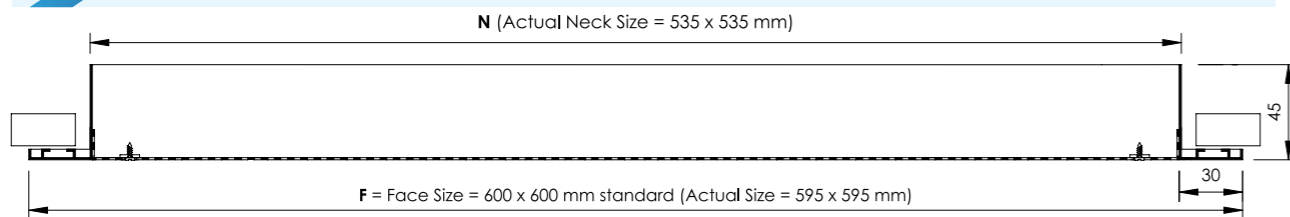
Models Construction and Dimensional Details

Model PSCD4WS, Standard Module 600 X 600 mm Face Size



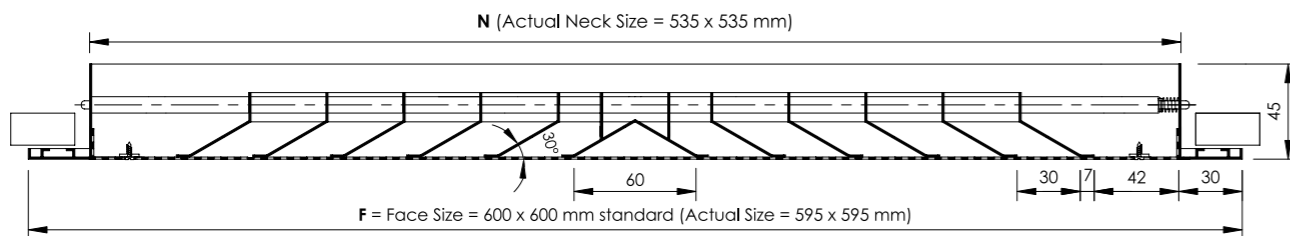
- Diffusers called Perforated Supply Ceiling Diffuser and coded as PSCD 4WS are always equipped with 4- Way Square
- Pattern and Opposed Blade Damper (provided as standard).

Model PSCD4WS, Standard Module 600 X 600 mm Face Size



- Unless otherwise specified, Diffusers called Perforated Return, Extract or Exhaust Ceiling Diffuser and coded as PRCD W/O CORE are normally supplied w/o inner core
- and Opposed Blade Damper as standard to ensure straight forward extract application.

Model PSCD4WS, Standard Module 600 X 600 mm Face Size



- In some cases, Return, Extract or Exhaust Perforated Ceiling Diffusers are required with inner core (4 way pattern), this will be supplied on request only as an option and coded as PRCD 4WS.
- Other sizes and models are available on request.
- All Dimensions are in mm and subject to ± 1 mm tolerance.

Diffuser Accessories

A. Opposed Blade Damper

Refer to page No. CD-06, Chapter (1).

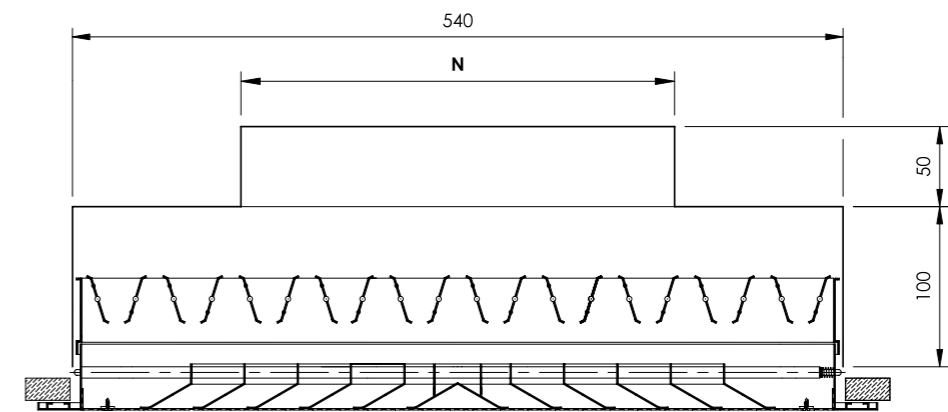
C. Foam Type Rubber Gasket (Optional)

Refer to page No. CD-07, Chapter (1).

B. Equalizing Grid (Optional)

Refer to page No. CD-07, Chapter (1).

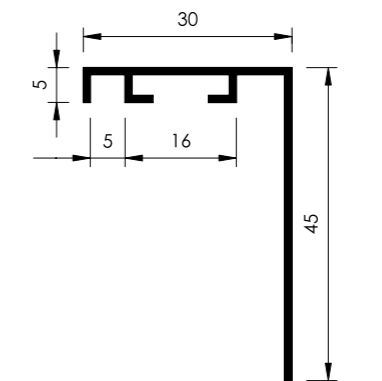
D. Neck Adaptor (Optional)



Perforated Diffuser Fixed with Neck: Adaptor

- For more details, refer to page No. CD-08, Chapter (1).
- The adaptor neck size 'N' to be specified by customer according to ducting system.
- Data listed in table No. CD-04, page No. CD-08, Chapter (1) is not valid for Perforated Diffuser.

Cross Sectional Drawing for Frame Profile used in Perforated Diffusers



Frame Profile Section

Perforated Ceiling Diffusers

- All Dimensions are in mm and subject to ± 0.2 mm tolerance.

**Tabular Selection for Square Perforated Ceiling Diffusers with Neck Adaptor, Model PSCD 4WS
Module 600 x 600 mm (Face Size)**

No.	Adaptor Neck Size		Vn m/s FPM	1.5	2.0	2.5	3.0	3.5	4.0	4.5
	Inch	mm		300	400	500	600	700	800	900
1	6" x 6"	150 x 150	L/S (CFM)	34 (73)	46 (97)	57 (121)	69 (145)	80 (170)	91 (194)	103 (218)
			ΔPt (Pa)	5	9	14	19	27	35	44
			Th. (m)	0.3-0.9-2.1	0.6-1.5-2.7	1.2-1.8-3.0	1.5-2.1-3.4	1.6-2.4-3.7	1.8-2.7-4.0	2.1-3.0-4.3
			Noise Level	<15	<15	17	23	28	33	37
2	8" x 8"	200 x 200	L/S (CFM)	61 (129)	81 (172)	102 (215)	122 (258)	142 (301)	163 (344)	183 (388)
			ΔPt (Pa)	6	10	16	21	30	39	49
			Th. (m)	0.6-1.2-2.4	0.9-1.6-3.0	1.3-2.1-3.7	1.6-2.4-4.0	1.8-2.7-4.3	2.1-3.0-4.6	2.4-3.7-4.0
			Noise Level	<15	<15	21	27	33	36	41
3	10"x10"	250 x 250	L/S (CFM)	95 (202)	127 (269)	159 (336)	191 (404)	222 (471)	254 (538)	286 (606)
			ΔPt (Pa)	7	11	17	23	33	42	53
			Th. (m)	0.7-1.3-2.7	1.0-1.8-3.7	1.5-2.2-4.3	1.8-2.7-4.6	2.1-3.0-4.9	2.4-3.7-5.5	2.7-4.0-5.8
			Noise Level	<15	17	24	31	35	39	43
4	12"x12"	300 x 300	L/S (CFM)	137 (291)	183 (388)	229 (484)	274 (581)	320 (678)	366 (775)	411 (872)
			ΔPt (Pa)	8	12	18	25	35	45	56
			Th. (m)	0.8-1.5-3.0	1.2-1.9-4.0	1.6-2.4-4.6	1.9-3.0-5.2	2.3-3.4-5.5	2.7-4.0-6.1	3.0-4.3-6.4
			Noise Level	<15	19	27	33	38	42	47
5	15"x15"	375 x 375	L/S (CFM)	214 (454)	286 (605)	357 (757)	429 (908)	500 (1059)	571 (1211)	643 (1362)
			ΔPt (Pa)	9	13	19	28	38	48	59
			Th. (m)	0.9-1.7-3.3	1.3-2.1-4.2	1.7-2.6-4.9	2.1-3.3-5.6	2.5-3.7-5.8	3.0-4.3-6.4	3.3-4.6-6.7
			Noise Level	16	21	30	35	40	44	50
6	18"x18"	450 x 450	L/S (CFM)	309 (654)	411 (872)	504 (1090)	617 (1308)	720 (1526)	823 (1744)	926 (1962)
			ΔPt (Pa)	10	14	20	30	42	52	62
			Th. (m)	1.0-1.9-3.6	1.4-2.2-4.5	1.9-2.8-5.2	2.4-3.6-5.9	2.7-4.0-6.1	3.3-4.6-6.7	3.6-4.9-7.0
			Noise Level	17	23	33	37	43	55	65
7	6" Ø	150 Ø	L/S (CFM)	27 (57)	36 (76)	45 (95)	54 (114)	63 (133)	72 (152)	80 (171)
			ΔPt (Pa)	5	8	13	18	26	34	42
			Th. (m)	0.3-0.9-2.1	0.6-1.2-2.7	1.2-1.8-3.0	1.3-2.1-3.1	1.5-2.4-3.4	1.8-2.7-3.7	2.1-2.8-4.0
			Noise Level	<15	<15	<15	20	27	31	35
8	8" Ø	200 Ø	L/S (CFM)	48 (101)	64 (135)	80 (169)	96 (203)	112 (237)	128 (270)	144 (304)
			ΔPt (Pa)	6	9	15	20	29	37	47
			Th. (m)	0.4-1.0-2.2	0.9-1.5-3.0	1.2-1.8-3.4	1.5-2.1-3.7	1.8-2.7-4.0	2.1-3.0-4.3	2.2-3.4-4.6
			Noise Level	<15	<15	19	26	31	34	38
9	10" Ø	250 Ø	L/S (CFM)	75 (158)	100 (211)	124 (264)	149 (316)	174 (369)	199 (422)	224 (475)
			ΔPt (Pa)	7	10	16	22	31	40	50
			Th. (m)	0.6-1.2-2.4	0.9-1.5-3.4	1.5-2.1-4.0	1.6-2.4-4.3	1.8-3.0-4.6	2.1-3.4-4.9	2.4-3.7-5.2
			Noise Level	<15	<15	22	28	33	38	41
10	12" Ø	300 Ø	L/S (CFM)	108 (228)	143 (304)	179 (380)	215 (456)	251 (532)	287 (608)	323 (684)
			ΔPt (Pa)	8	11	17	24	33	43	54
			Th. (m)	0.7-1.3-2.7	1.1-1.8-3.7	1.5-2.4-4.2	1.8-2.7-4.9	2.1-3.4-5.2	2.4-3.7-4.3	2.7-4.3-5.8
			Noise Level	<15	17	25	31	36	40	44
11	14" Ø	350 Ø	L/S (CFM)	146 (310)	195 (413)	244 (517)	293 (620)	341 (723)	390 (827)	439 (930)
			ΔPt (Pa)	9	12	18	25	35	46	57
			Th. (m)	0.8-1.5-3.0	1.2-2.1-4.0	1.6-2.5-4.9	2.1-3.0-5.2	2.4-3.5-5.8	2.7-4.0-6.1	3.0-4.6-6.4
			Noise Level	<15	19	27	33	38	42	46
12	16" Ø	400 Ø	L/S (CFM)	191 (406)	255 (541)	319 (676)	383 (811)	447 (946)	510 (1082)	574 (1217)
			ΔPt (Pa)	10	13	19	26	37	48	60
			Th. (m)	0.9-1.6-3.1	1.5-2.1-4.3	1.8-2.7-5.2	2.1-3.2-5.8	2.4-3.7-6.1	2.8-4.3-6.7	3.3-4.9-7.0
			Noise Level	<15	21	29	35	40	44	48
13	-	535 x 535 (without Adaptor)	L/S (CFM)	436 (924)	581 (1232)	726 (1539)	872 (1847)	1017 (2155)	1162 (2463)	1308 (2771)
			ΔPt (Pa)	15	17	23	35	47	57	68
			Th. (m)	1.9-2.8-5.2	2.4-3.6-5.9	2.7-4.0-6.1	3.3-4.6-6.7	3.6-4.9-7.0	3.7-5.1-7.1	4.0-5.3-7.3
			Noise Level	22	28	38	44	51	62	73

- Damper at full open position
- Noise Level values are based on 10 dB attenuation.
- All listed sizes as above except No. (13) are equipped with Neck Adaptor giving the listed neck size.

ORDERING DATA

Available Surface Finishes for Perforated Ceiling Diffusers:

- Powder Coating (Standard Colors are white RAL 9010/9016, other optional colors if required to be provided in RAL- No. only and charged extra).
- Aluminium in Mill Finish.
- Other Special finishes (on request if available).

Available Surface Finishes for Opposed Blade Damper:

- Aluminium in Mill Finish (standard).
- Matt Black Powder Coating (optional).

Ordering Specifications:

Specify:

1. Perforated Ceiling Diffuser Description I Model (Supply or Return).
2. Inner Core Arrangement if any (4, 3, 2 or 1 Way).
3. Inner Core shape (Square or Rectangular).
4. Opposed Blade Damper Surface Finish (only mention if required in Black color).
5. Face Size (F) for the 600 x 600 mm Standard Module

- (other non-standard sizes are available on request and to be ordered also by face size).
6. Neck Adaptor Size if any.
 7. Quantity.
 8. Perforated Diffuser Surface Finish.
 9. RAL- No. (only mention if powder coating surface finish is required).
 10. Optional Accessories (Equalizing Grid, Gasket, Adaptor ...or others).

Example 1:

1	2	3	4	5	6	7	8	9	10
PSCD	4W	S	-	24" x 24" 600 x 600 (mm)	-	3	Powder Coating	9016	-

Example 2:

1	2	3	4	5	6	7	8	9	10
PSCD	4W	S	BD	24" x 24" 600 x 600 (mm)	10" Ø 250 mm Ø	10	Powder Coating	9010	With Neck Adaptor

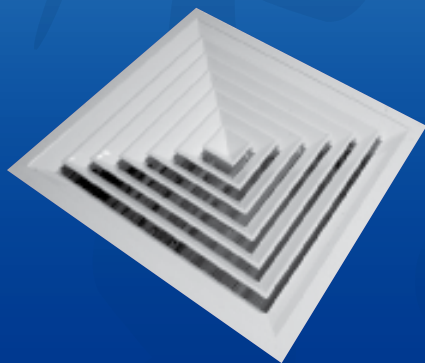
Example 3:

1	2	3	4	5	6	7	8	9	10
PRCD	-	-	-	24" x 24" 600 x 600 (mm)	-	5	Powder Coating	7045 (Optional)	-

Example 4:

1	2	3	4	5	6	7	8	9	10
PRCD	4W	S	-	12" x 12" 300 x 300 (mm)	-	15	Mill Finish	-	With Rubber Gasket

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