



Global Air



Ceiling Diffusers

CEILING DIFFUSERS

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LOUVRED FACE, MULTI DIRECTIONAL WITH REMOVABLE CORE



Global Air Aluminum 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.

* The inner cones (core) is fully removable to provide

Easy:

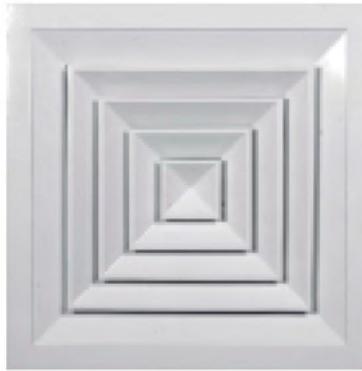
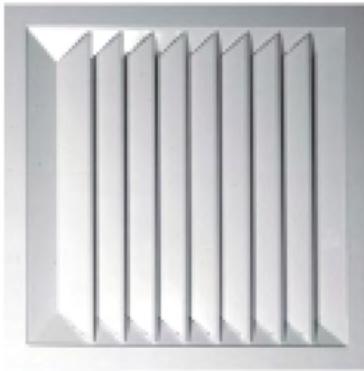
- Installation.
- Adjustment of key operated OBD.
- Maintenance.
- Core exchange by different pattern in future. The core is held in place & fixed to the frame by two loaded spiral galvanized steel springs.
- * The ceiling diffuser projects from the mounting surface by 5mm.
- * Recommended for use in 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.

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.

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

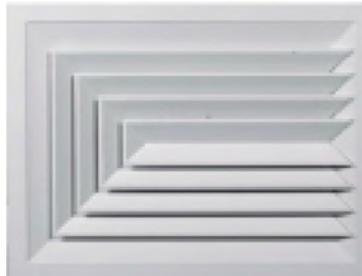
SIZE		Noise Level						
mm	Inch	Min.	<25	>25	<30	>30	40	
150 x 150	6" x 6"	50	145	150	175	—	—	
225 x 225	9" x 9"	110	280	285	330	—	—	
300 x 300	12" x 12"	200	485	490	550	555	—	
375 x 375	15" x 15"	310	615	620	715	720	954	
450 x 450	18" x 18"	450	700	705	800	805	1246	
525 x 525	21" x 21"	600	950	955	1070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

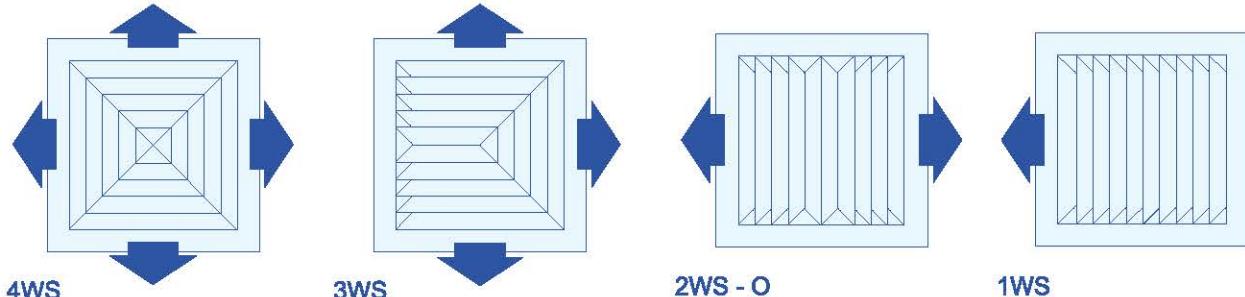
Knowing the air volume and throw for each diffuser in question then check:

- 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

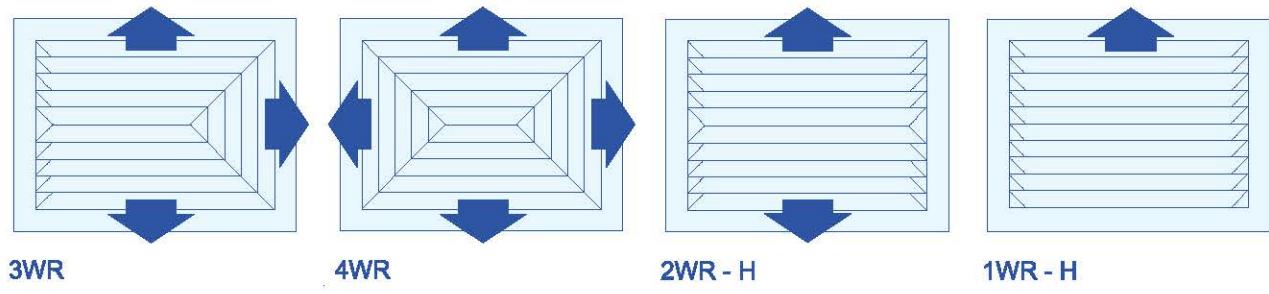
SQUARE DIFFUSERS



MODELS:

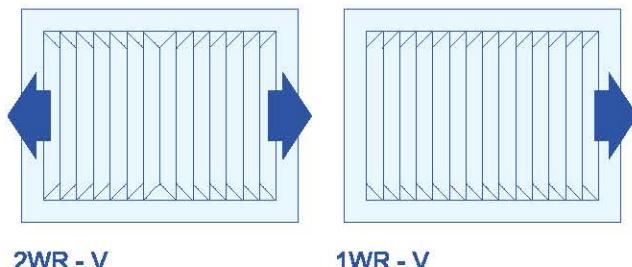
- 4WS:** 4 Way Square Diffuser.
- 3WS:** 3 Way Square Diffuser.
- 2WS-O:** 2 Way Square Diffuser, Opposed Blades.
- 2WS-C:** 2 Way Square Diffuser, Comer Blades.
- 1WS:** 1 Way Square Diffuser.

RECTANGULAR DIFFUSERS



MODELS:

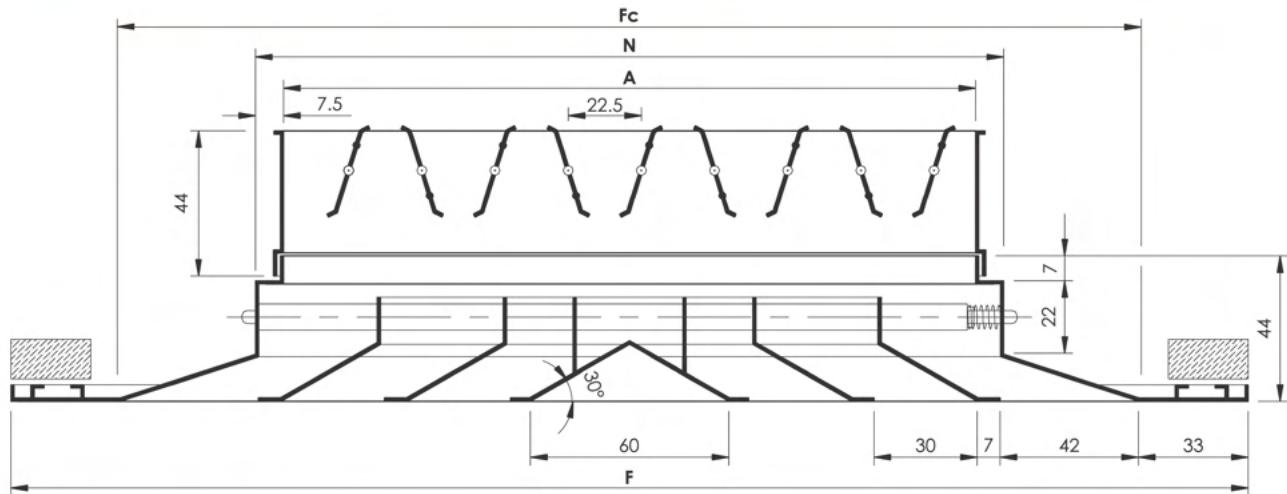
- 4WR:** 4 Way Rectangular Diffuser.
- 3WR:** 3 Way Rectangular Diffuser.
- 2WR-H:** 2 Way Rectangular Diffuser, Horizontal Blades.
- 2WR-V:** 2 Way Rectangular Diffuser, Vertical Blades.
- 1WR-H:** 1 Way Rectangular Diffuser, Horizontal Blades.
- 1WR-V:** 1 Way Rectangular Diffuser, Vertical Blades.



Square Diffusers - Model 4WS

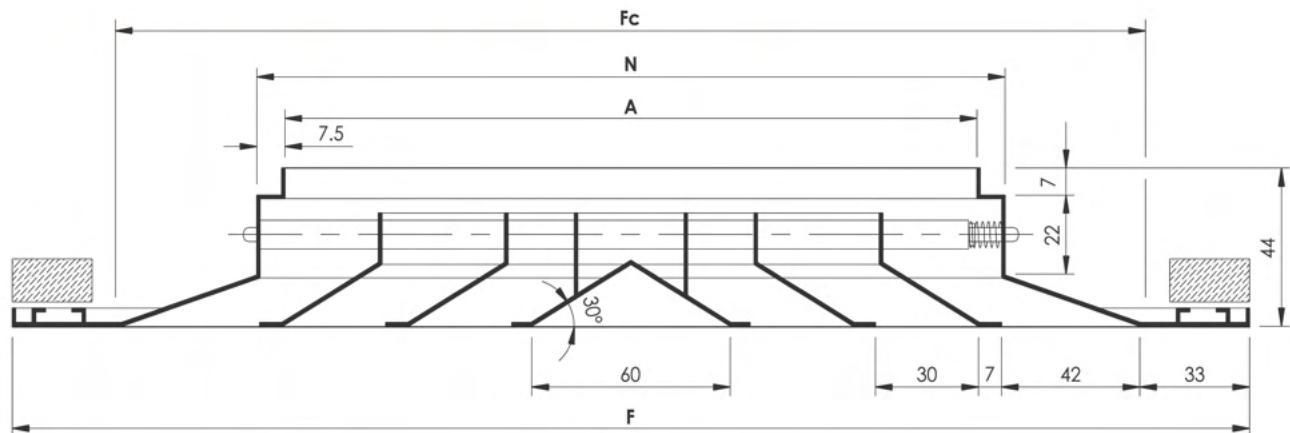
Construction and Dimensional Details

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



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

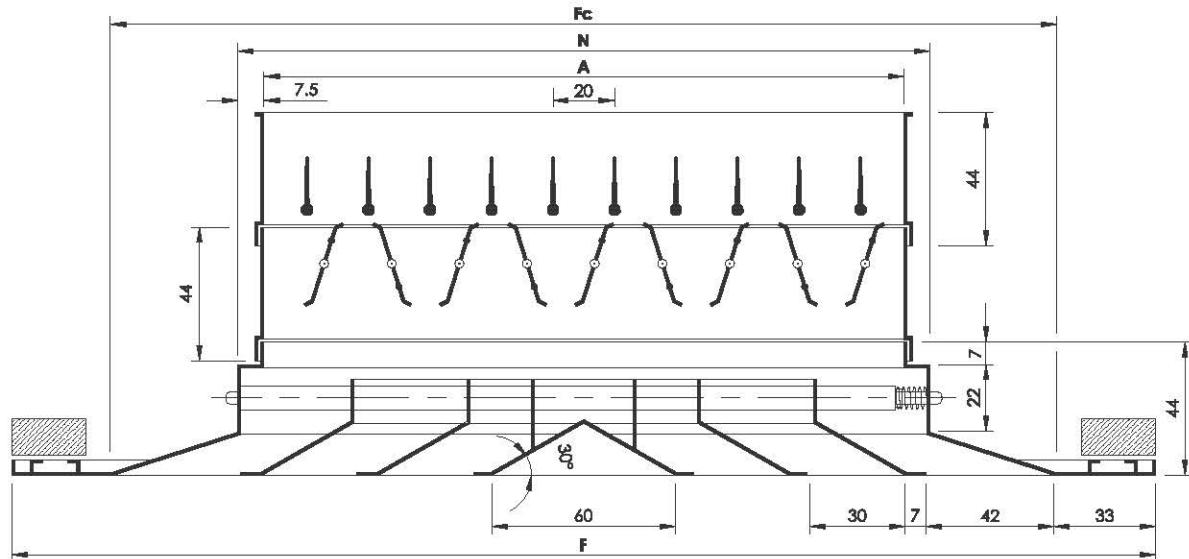
 Return, Extract or Exhaust Air DiHuser w/o Opposed Blade Damper, Model RAD or EAD 4WS



- 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 Equalizing 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

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	mm	mm	mm	mm
150 x 150	6" x 6"	135	x	135	297	x	297	233
200 x 200	8" x 8"	185	x	185	347	x	347	283
225 x 225	9" x 9"	210	x	210	372	x	372	308
300 x 300	12" x 12"	285	x	285	447	x	447	383
375 x 375	15" x 15"	360	x	360	522	x	522	458
450 x 450	18" x 18"	435	x	435	597	x	597	533
500 x 500	20" x 20"	485	x	485	647	x	647	583
525 x 525	21" x 21"	510	x	510	672	x	672	608
600 x 600	24" x 24"	585	x	585	747	x	747	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.

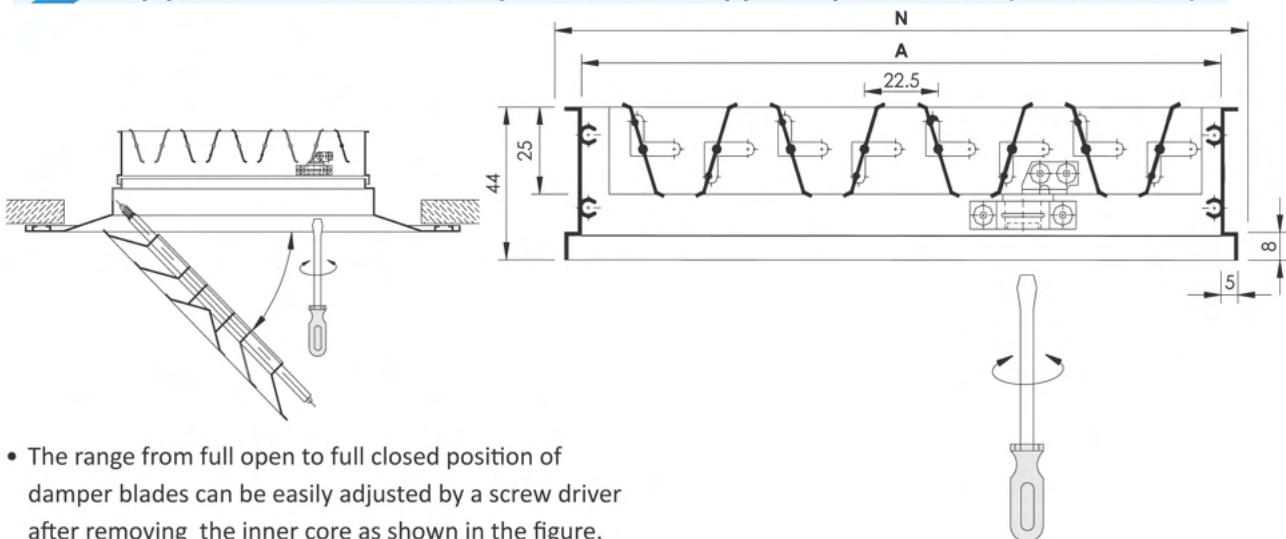
- All dimensions are in mm and subject to ±1 mm tolerance.

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

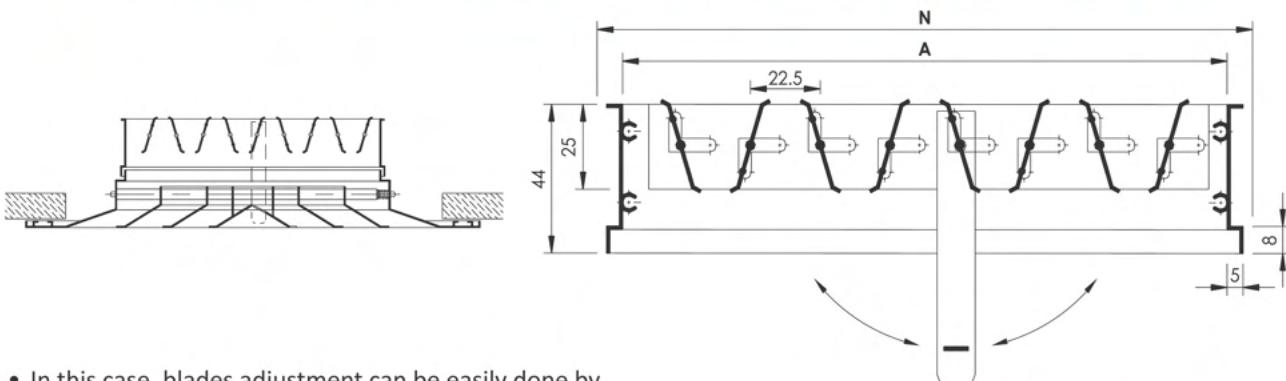
- the diffuser and fixed to it by means of II S II clips.
- Blades are separated from its frame by nylon bushes. This method of assembly provides maximum rattle-free performance and eliminates corrosion.
- Usually damper standard surface finish is Aluminium in Mill Finish. Matt black powder coating color 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)

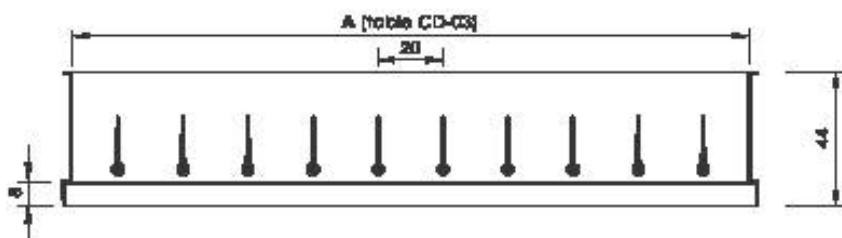


- In this case, blades adjustment can be easily done by lever accessible through the face of diffuser without removing inner core as shown in the figure.

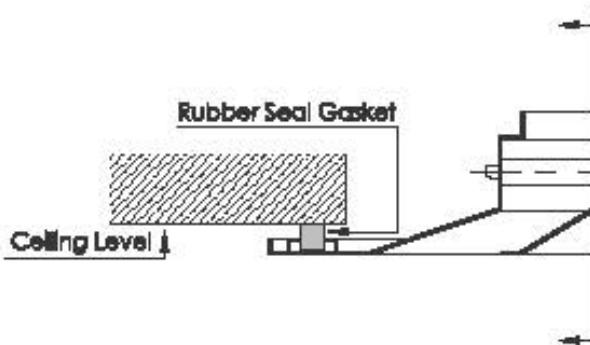
- All dimensions are in mm and subject to ±1mm tolerance.

B. Equalizing Grid (Optional)

- Frame and Blades are of high quality Extruded Aluminum Profiles construction.
- The aero foil blades are separated from it's 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.

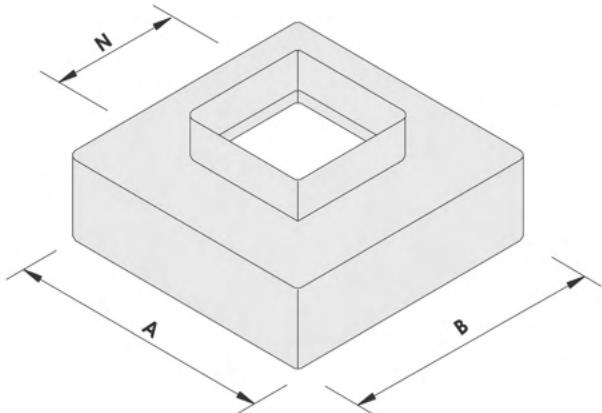
Gasket Benefits :

- Stops diffuser rattling.
- Minimize air infiltration.
- Stops leaks and pressure losses.
- Takes up unevenness of ceiling.
- Easy to apply on site or in factory.

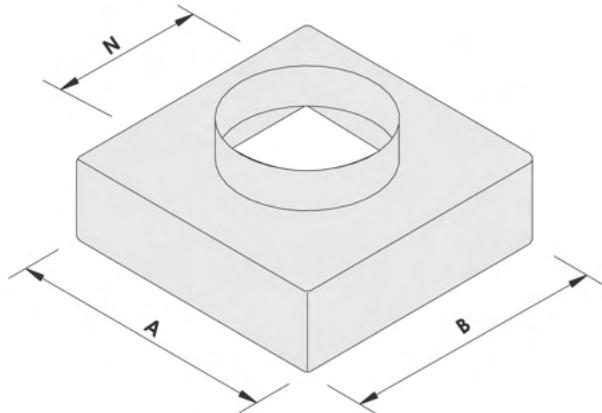
- To be applied around the perimeter of the back side of the diffuser to act as an air seal to prevent pressurised air from escaping from the sides of the diffuser when fixed to the ceiling.

D. Neck Adaptor (Optional)

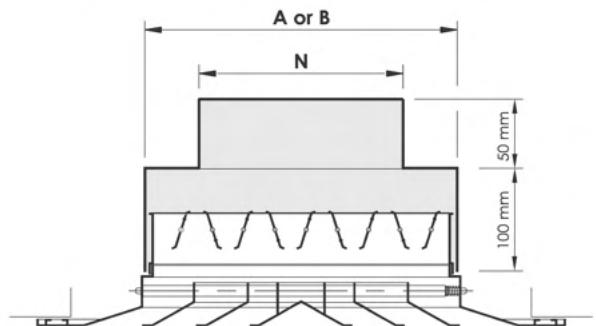
Neck Adaptors that are field installed to allow either easy connection to Square duct, or easy connection to Flexible or Round rigid duct.



Square to Square Neck Adaptor



Square to Round Neck Adaptor



Diffuser Fixed with 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.

- 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:

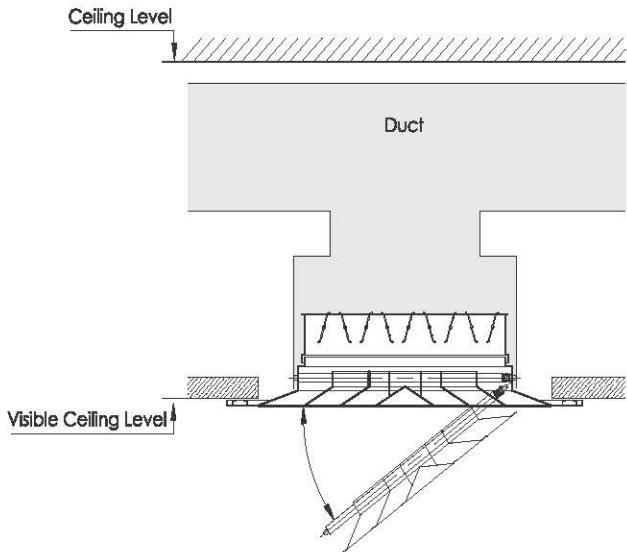
AVAILABLE SIZES FOR SQUARE NECK ADAPTORS			
Diffuser Sizes		Adaptor Sizes	
mm	Inch	A (mm)	B (mm)
150 x 150	6" x 6"	142	142
225 x 225	9" x 9"	217	217
300 x 300	12" x 12"	292	292
375 x 375	15" x 15"	367	367
450 x 450	18" x 18"	442	442
525 x 525	21" x 21"	517	517
600 x 600	24" x 24"	592	592

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

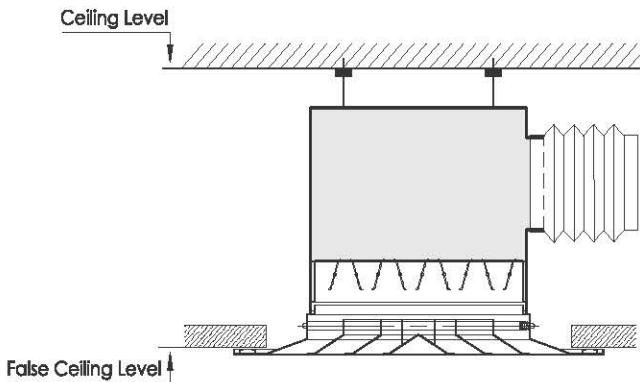
Mounting Instructions

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.



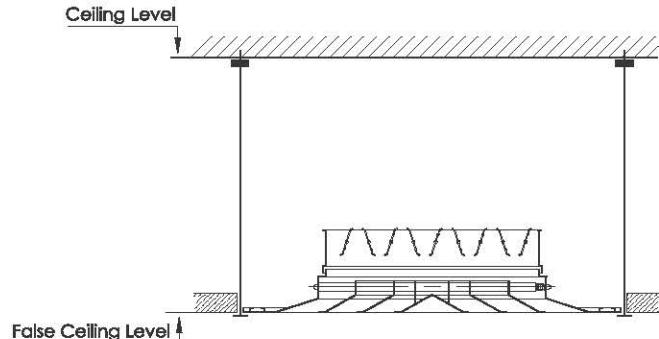
Installation With Suspended Supply Plenum Box



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.



Engineering and Performance Data

Effective Area Values for Square Ceiling Diffusers in (m²)

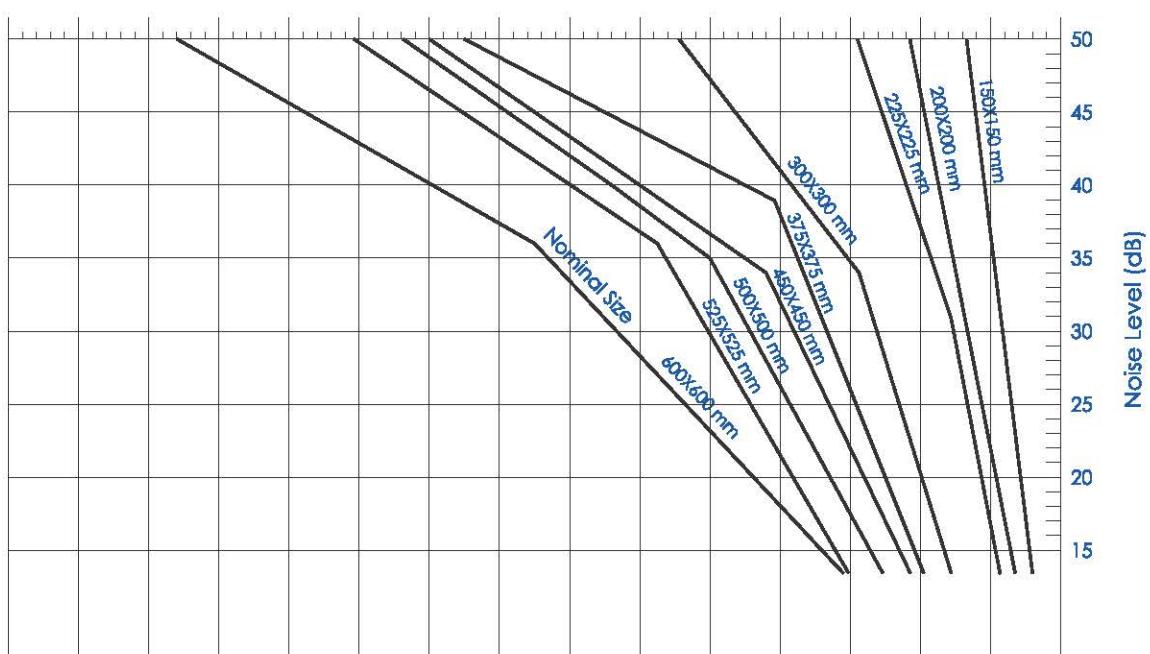
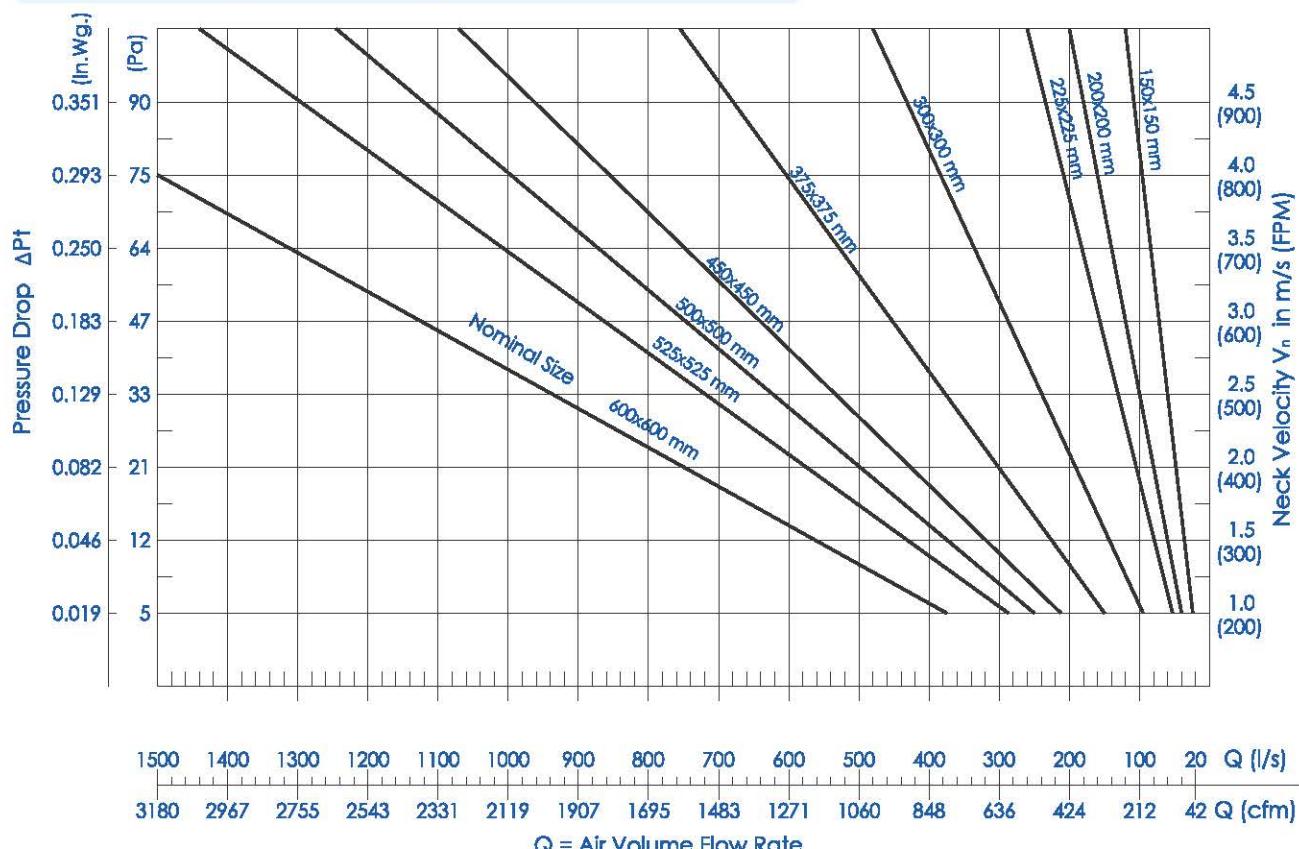
SIZE		1 Way-Discharge		2 Way-Discharge		3 Way-Discharge		4 Way-Discharge	
mm	Inch	Supply	Return	Supply	Return	Supply	Return	Supply	Return
150 X 150	6" x 6"	0.007	0.007	0.006	0.006	0.006	0.006	0.007	0.007
200 X 200	8" x 8"	-	-	-	-	0.011	0.010	0.013	0.011
225 X 225	9" x 9"	0.017	0.015	0.015	0.013	0.015	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



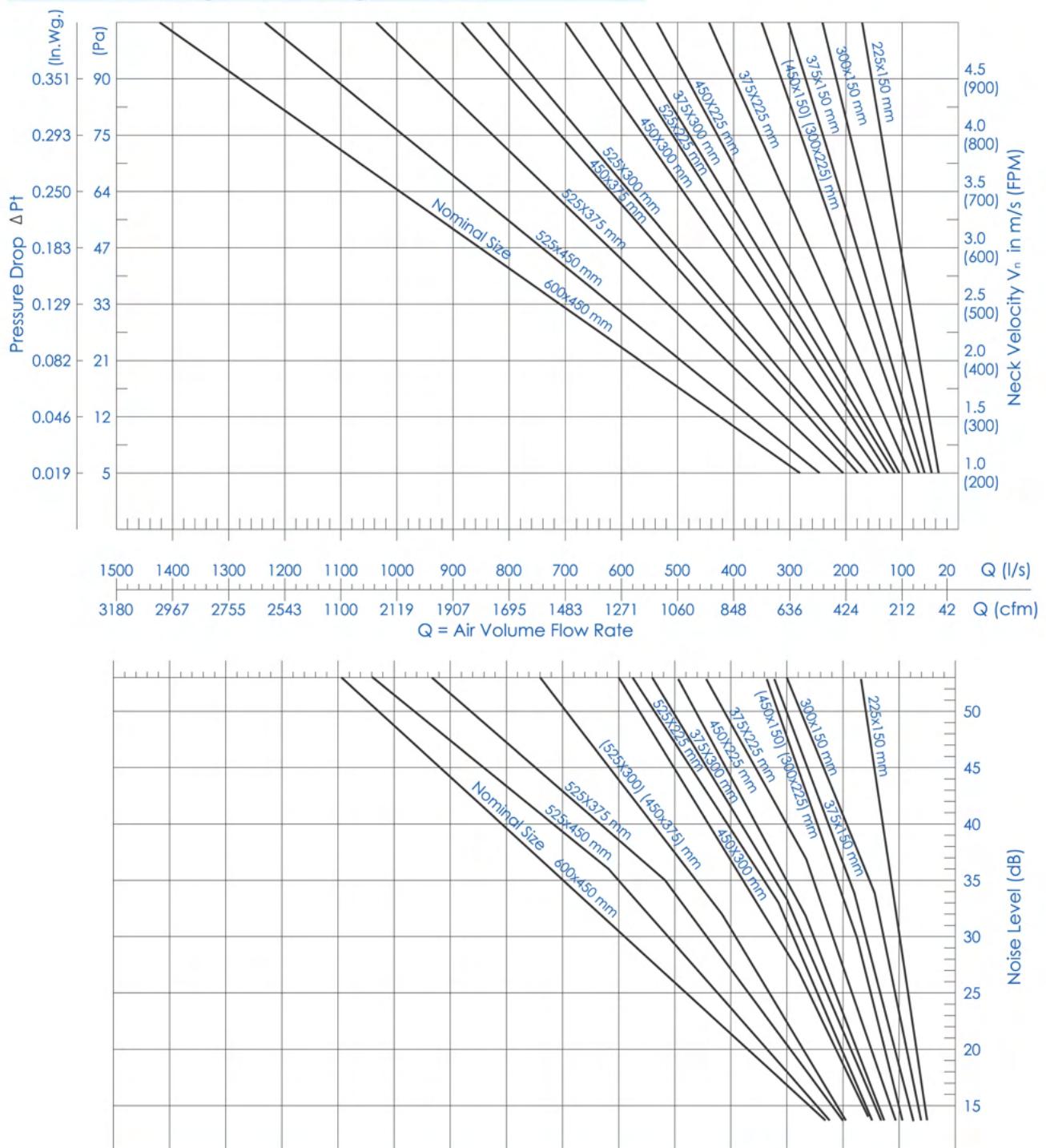
Selection Diagrams for 1,2,3 & 4 Way Rectangular Ceiling Diffuser



Engineering and Performance Data



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 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 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	*SI UNITS				
													L/S	Pt	Th		
375x225	0.087	0.033		89	111	133	155	177	221	266	310	354					
			L/S	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502					
			Pt	1.8-27-4.5	2.4-3.0-5.7	2.7-3.9-6.9	3.3-4.5-7.2	3.6-5.1-7.8	7.2-5.7-8.7	5.1-6.3-9.6	3.658	4.978	6.6-7.8-11.4				
			Th	<15	15	17	20	24	30	34	38	42					
			NC	94	118	142	165	189	236	283	330	378					
300x300	0.093	0.033		0.356	0.533	0.787	1.067	1.397	2.159	3.150	4.242	5.563					
			L/S	1.8-27-5.4	2.1-3.3-6.3	2.7-3.9-7.2	3.3-4.8-7.8	3.6-5.4-8.1	4.5-6.3-9.0	5.4-7.2-9.9	6.3-7.8-10.8	6.9-8.1-11.4					
			Pt	<15	<15	<15	16	19	25	32	36	40					
			Th	94	118	142	165	189	236	283	330	378					
			NC	106	133	159	186	212	265	319	372	425					
600x150	0.093	0.033		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502					
			L/S	1.7-28-5.5	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	6.6-8-11.1	7.2-8.4-11.7					
			Pt	<15	<15	<15	<15	17	24	30	34	38					
			Th	106	133	159	186	212	265	319	372	425					
			NC	106	133	159	186	212	265	319	372	425					
450x225	0.105	0.039		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502					
			L/S	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	6.6-8-11.1	7.2-8.7-12					
			Pt	<15	<15	<15	<15	15	18	25	31	35	39				
			Th	118	147	177	206	236	295	354	413	472					
			NC	118	147	177	206	236	295	354	413	472					
375x300	0.116	0.043		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502					
			L/S	2.4-3.3-6.6	2.7-3.9-6.9	3.0-4.5-7.5	3.6-5.4-8.1	4.5-6-3.9-0	5.4-6.9-9.9	6.3-7.8-10.5	6.9-8-11.1	7.5-9-12.6					
			Pt	<15	<15	<15	<15	15	19	26	32	36	40				
			Th	118	147	177	206	236	295	354	413	472					
			NC	118	147	177	206	236	295	354	413	472					
525x225	0.122	0.045		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502					
			L/S	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	5.1-6.6-9.3	6.0-7.5-9.9	6.9-8-11.1	7.2-9-12.9					
			Pt	<15	<15	<15	<15	15	18	25	31	35	39				
			Th	124	155	186	217	248	310	372	434	496					
			NC	124	155	186	217	248	310	372	434	496					
600x225	0.139	0.052		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502					
			L/S	142	177	212	248	283	354	425	496	566					
			Pt	<15	<15	<15	<15	15	19	26	32	36	40				
			Th	142	177	212	248	283	354	425	496	566					
			NC	142	177	212	248	283	354	425	496	566					
450x300	0.139	0.052		0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502					
			L/S	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	6.9-8-10.8	7.2-8-12.3					
			Pt	<15	<15	<15	<15	15	20	27	33	37	41				
			Th	142	177	212	248	283	354	425	496	566					
			NC	142	177	212	248	283	354	425	496	566					

CEILING DIFFUSERS SAD,RAD
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	*SI UNITS		
													L/S	Pt	Th
375x375	0.145	0.054	L/S	148	184	221	258	295	369	443	516	590	5.715	5.715	5.715
				Pt	0.356	0.559	0.813	1.092	1,422	2,210	3,200	4,369			
				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		
				NC	<15	<15	17	23	28	35	41	45			
525x300	0.163	0.060	L/S	165	206	248	289	330	413	496	578	661	6.502	6.502	6.502
				Pt	0.395	0.616	0.914	1.205	1,651	2,515	3,658	4,978			
				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			
450x375	0.174	0.064	L/S	177	221	265	310	354	442	531	619	708	6.502	6.502	6.502
				Pt	0.395	0.616	0.914	1.205	1,651	2,515	3,658	4,978			
				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	9.3-11-16.2		
				NC	<15	<15	<15	17	21	28	34	38			
600x300	0.186	0.068	L/S	189	236	283	330	378	472	566	661	755	6.502	6.502	6.502
				Pt	0.395	0.616	0.914	1.205	1,651	2,515	3,658	4,978			
				Th	2.4-3.3-7.2	3.3-4.8-8.7	3.9-6.0-9.3	4.5-6.9-9.9	5.7-7.8-11.4	6.9-8.7-12.9	7.8-9.6-14.1	8.4-10.5-15.3	9.0-11-16.8		
				NC	<15	<15	<15	17	21	28	34	38			
525x300	0.203	0.074	L/S	207	258	310	361	413	516	620	723	826	6.502	6.502	6.502
				Pt	0.395	0.616	0.914	1.205	1,651	2,515	3,658	4,978			
				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		
				NC	<15	<15	<15	17	21	28	34	38			
450x450	0.209	0.073	L/S	212	265	319	372	425	531	637	743	849	6.502	6.502	6.502
				Pt	0.381	0.584	0.838	1,143	1,473	2,311	3,353	4,521			
				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	18	22	27	34	39	44	48			
600x375	0.232	0.084	L/S	236	295	354	413	472	590	708	826	944	6.502	6.502	6.502
				Pt	0.395	0.616	0.914	1,205	1,651	2,515	3,658	4,978			
				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			
525x450	0.244	0.088	L/S	248	310	372	434	496	619	743	867	991	6.502	6.502	6.502
				Pt	0.395	0.616	0.914	1,205	1,651	2,515	3,658	4,978			
				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			

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	*SI UNITS					
													L/S	Pt	Th	NC		
600x450	0.279	0.101		283	354	425	496	566	708	849	991	1133						
			L/S	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502						
			Pt	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						
			Th	<15	<15	<15	19	23	30	36	40	44						
			NC															
525x525	0.285	0.099		289	361	434	506	578	723	867	1012	1156						
			L/S	0.381	0.610	0.864	1.168	1.524	2.413	3.454	4.724	6.121						
			Pt	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						
			Th	16	20	25	31	37	42	47	51	55						
			NC															
600x525	0.325	0.117		330	413	496	578	661	826	991	1156	1321						
			L/S	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502						
			Pt	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						
			Th	<15	<15	15	18	24	31	37	41	45						
			NC															
600x600	0.372	0.130		378	472	566	661	755	944	1133	1321	1510						
			L/S	0.381	0.610	0.889	1.194	1.549	2.413	3.505	4.775	6.223						
			Pt	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	12.3-15.2-21.6	13.5-16.2-23.7						
			Th	18	23	29	34	40	45	50	53	57						
			NC															

CONDITIONS

NOTES

- * Supply.
- * Damper is fully open.
- * Noise Criteria values are based on (10 dB) room attenuation
- Neck velocity in meter per second
- Total pressure in mm water gauge
- Throw in meter
- Noise Criteria
- Air volume in litre per second
- Effective area in square meter
- Neck area in square meter
- 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.
- * 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.
- * 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.

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

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%

CEILING DIFFUSERS

SAD,RAD

PERFORMANCE DATA - RETURN

SIZE	A _n	V _n	L/S	*SI UNITS				
				1.5	2	2.5	3	3.6
150 x 150	0.023	P ₅	1.270	2.032	47	59	71	83
		NC	<15	17	25	31	36	41
		L/S	53	71	88	106	124	142
		P ₅	1.524	2.540	3.810	5.588	7.620	9.906
		NC	<15	19	28	33	38	44
		L/S	71	94	118	142	165	189
		P ₅	1.524	2.540	3.810	5.588	7.620	9.906
		NC	<15	21	29	34	40	45
		L/S	79	106	132	159	185	211
		P ₅	1.524	2.540	3.810	5.588	7.620	9.906
		NC	<15	22	30	36	41	46
		L/S	88	118	147	177	206	236
		P ₅	1.524	2.626	3.986	5.764	7.881	10.253
		NC	<15	23	31	36	42	46
		L/S	106	142	177	212	248	283
		P ₅	1.524	2.793	4.320	6.038	8.383	10.922
		NC	15	24	32	37	43	47
		L/S	106	142	177	212	248	283
		P ₅	1.524	2.793	4.320	6.038	8.382	10.922
		NC	15	24	32	37	43	47
		L/S	124	165	206	243	289	330
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	16	25	33	38	44	48
		L/S	106	133	177	221	266	310
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	16	26	33	38	45	48
		L/S	124	189	236	283	330	373
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	16	26	33	39	45	49
		L/S	124	189	236	283	330	373
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	16	26	33	39	45	48
		L/S	159	212	265	319	372	425
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	17	27	34	40	46	50
		L/S	177	236	295	354	413	472
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	16	26	33	39	45	49
		L/S	159	212	265	319	372	425
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	17	27	35	41	46	51
		L/S	177	236	295	354	413	472
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	17	27	34	40	46	50
		L/S	186	248	310	372	434	496
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	18	27	35	41	46	51
		L/S	212	283	354	425	495	566
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	19	28	36	42	47	52
		L/S	212	283	354	425	495	566
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	19	28	36	42	47	52
		L/S	212	283	354	425	495	566
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	19	28	36	42	47	52
		L/S	212	283	354	425	495	566
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	19	28	36	42	47	52
		L/S	212	283	354	425	495	566
		P ₅	1.524	2.794	4.318	6.036	8.382	10.922
		NC	19	28	36	42	47	52

CEILING DIFFUSERS

SAD,RAD

PERFORMANCE DATA - RETURN

		*SI UNITS									
SIZE	An	Vn	1.5	2	2.5	3	3.6	4.1			
525 x 300	NC	19	28	36	42	47	52				
	L/S	248	330	413	495	578	661				
	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
	NC	20	29	37	42	48	53				
450 x 375	L/S	265	354	442	531	619	708				
	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
	NC	20	29	37	43	49	53				
	L/S	283	378	472	566	661	755				
600 x 300	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
	NC	21	30	37	43	49	53				
	L/S	310	413	516	620	723	826				
	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
525 x 375	NC	21	31	38	44	50	54				
	L/S	319	425	531	637	743	849				
	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
	NC	21	31	38	44	50	54				
450 x 450	L/S	354	472	590	708	826	944				
	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
	NC	22	32	39	45	51	55				
	L/S	372	495	619	743	867	991				
525 x 450	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
	NC	22	32	39	45	51	55				
	L/S	425	566	708	849	991	1133				
	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
600 x 375	NC	23	33	40	46	52	56				
	L/S	433	578	722	866	1011	1155				
	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
	NC	23	33	40	46	52	56				
600 x 450	L/S	495	661	826	991	1156	1321				
	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
	NC	24	34	41	47	53	57				
	L/S	566	755	944	1133	1321	1510				
600 x 600	P _s	1.524	2.794	4.318	6.096	8.382	10.922				
	NC	24	34	42	48	53	58				

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

SIZE	A _n	A _k	V _n	200	250	300	350	400	500	600	700	800	*IMPERIAL UNITS	
													CFM	Pt
6 x 6	0.250	0.096	CFM	50	63	75	88	100	125	150	175	200	0.013	0.020
			Pt	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		
	0.375	0.146	NC	<15	<15	<15	<15	<15	19	24	29	33		
			CFM	75	93	112	131	150	187	225	262	300		
9 x 6	0.500	0.192	CFM	100	125	150	175	200	250	300	350	400	0.013	0.020
			Pt	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		
	0.563	0.210	NC	<15	<15	<15	<15	<15	20	26	30	34		
			CFM	110	140	170	195	225	280	335	395	450		
12 x 6	0.625	0.239	CFM	125	156	188	219	250	312	375	438	500	0.016	0.024
			Pt	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		
	0.625	0.239	NC	<15	<15	<15	<15	<15	21	27	31	35		
			CFM	140	170	200	240	280	340	400	460	520		
9 x 9	0.625	0.239	CFM	110	140	170	200	240	300	360	420	480	0.016	0.024
			Pt	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		
	0.625	0.239	NC	<15	<15	<15	<15	<15	16	22	28	33		
			CFM	125	156	188	219	250	312	375	438	500		
15 x 6	0.625	0.239	CFM	140	170	200	240	280	340	400	460	520	0.016	0.024
			Pt	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		
	0.625	0.239	NC	<15	<15	<15	<15	<15	15	22	28	32		
			CFM	156	188	220	260	300	360	420	480	540		

CEILING DIFFUSERS SAD,RAD
PERFORMANCE DATA - SUPPLY

SIZE	A _n	A _k	V _n	200	250	300	350	400	500	*IMPERIAL UNITS												
										CFM	Pt	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	
18 x 6	0.750	0.284	CFM	150	188	225	263	300	375	450	525	600	NC	<15	<15	<15	16	23	29	33	37	
				Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196										
12 x 9	0.750	0.284	CFM	150	188	225	263	300	375	450	525	600	NC	<15	<15	<15	16	23	29	33	37	
				Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196										
21 x 6	0.875	0.330	CFM	175	218	262	306	350	437	525	612	700	NC	<15	<15	<15	16	23	29	33	37	
				Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196										
15 x 9	0.938	0.353	CFM	188	235	281	328	375	469	563	657	750	NC	<15	<15	<15	16	23	29	33	37	
				Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196										
12 x 12	1.000	0.353	CFM	200	250	300	350	400	500	600	700	800	NC	<15	<15	<15	16	19	25	32	36	40
				Pt	0.014	0.021	0.031	0.042	0.055	0.085	0.124	0.167										

CEILING DIFFusers 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	
15 x 15	1.563	0.577	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		
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	
18 x 15	1.875	0.688	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		
24 x 12	2.000	0.732	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	

CEILING DIFFUSERS SAD,RAD
PERFORMANCE DATA = SUPPLY

SIZE	A _n	A _k	V _n	200	250	300	350	400	500	*IMPERIAL UNITS														
										CFM	Pt	Th	NC	<15	<15	<15	11-13-22	11-16-24	12-18-26	14-19-28	17-22-30	20-24-33	23-28-36	24-29-41
18 x 12	1.500	0.555		305	380	458	530	600	750	900	0.099	0.144	0.196	0.256									1200	
15 x 15	1.563	0.577		310	390	470	545	625	780	940	0.099	0.144	0.196	0.256										1250
21 x 12	1.750	0.644		350	438	525	613	700	875	1050	0.099	0.144	0.196	0.256										1400
18 x 15	1.875	0.688		375	468	562	656	750	937	1125	0.099	0.144	0.196	0.256										1500
24 x 12	2.000	0.732		400	500	600	700	800	1000	1200	0.099	0.144	0.196	0.256										1600

CEILING DIFFUSERS SAD,RAD
PERFORMANCE DATA - SUPPLY

*IMPERIAL UNITS													
SIZE	A _n	A _k	V _n	200	250	300	350	400	500	600	700	800	
24 x 6	1.000	0.358	CFM	200	250	300	350	400	500	600	700	800	
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256	
			Th	7-10-19	9-12-22	10-14-25	12-16-27	13-19-28	16-22-31	19-25-34	22-27-37	24-28-39	
18 x 9	1.125	0.420	NC	<15	<15	<15	<15	17	24	30	34	38	
			CFM	226	282	337	393	450	562	675	768	900	
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256	
15 x 12	1.250	0.465	Th	8-11-20	9-12-23	10-14-25	12-17-26	14-20-30	17-24-32	20-25-35	22-27-37	24-29-40	
			NC	<15	<15	<15	15	18	25	31	35	39	
			CFM	250	313	375	438	500	625	750	875	1000	
21 x 9	1.313	0.488	Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256	
			Th	8-12-22	19-13-23	10-15-25	12-18-27	15-21-30	18-23-33	21-26-35	23-28-37	25-31-42	
			NC	<15	<15	<15	15	19	26	32	36	40	
24 x 9	1.500	0.555	CFM	262	327	393	458	524	655	786	917	1050	
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256	
			Th	8-10-20	9-12-22	10-16-25	12-19-27	14-20-29	17-22-31	20-25-33	23-28-37	24-30-43	
NC	<15	<15	NC	<15	<15	15	18	25	31	35	39		
			CFM	300	375	450	525	600	750	900	1050	1200	
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256	
NC	<15	<15	Th	8-10-20	9-14-23	11-17-25	13-19-27	15-20-29	18-23-31	21-25-34	23-29-37	25-30-43	
			NC	<15	<15	<15	15	19	26	32	36	40	

CEILING DIFFUSERS SAD,RAD
PERFORMANCE DATA - SUPPLY

										*IMPERIAL UNITS				
21 x 21	3.063	1.065	CFM	610	765	920	1070	1225	1530	1835	2140	2450		
		Pt	0.015	0.024	0.034	0.046	0.060	0.095	0.036	0.186	0.241			
	Th	11-16-31	13-20-37	16-24-41	19-27-45	22-32-47	26-37-53	32-41-59	36-44-63	39-47-69				
NC	16	20	25	31	37	42	47	51	55					
CFM	700	875	1050	1225	1400	1750	2100	2450	2800					
24 x 21	3.500	1.256	Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256		
	Th	11-17-33	14-22-39	18-26-42	21-30-45	23-34-49	29-39-56	35-42-60	38-45-66	41-49-72				
NC	<15	<15	15	18	24	31	37	41	45					
CFM	800	1000	1200	1400	1600	2000	2400	2800	3200					
24 x 24	4.000	1.400	Pt	0.015	0.024	0.035	0.047	0.061	0.095	0.038	0.188	0.245		
	Th	12-19-36	15-23-43	18-27-47	21-31-52	25-37-54	30-43-60	37-47-67	41-51-72	45-54-79				
NC	18	23	29	34	40	45	50	53	57					
SYMBOLS	CONDITIONS		NOTES		CORRECTION FOR 1-2 AND 3 WAY									
CFM	: Air Volume in cubic foot per minute.		* Supply.		Criteria									
Ak	: Effective area in square foot.		* Damper is fully open		: No correction required.									
An	: Neck area in square foot.		* The middle throw values are based on the middle terminal velocity of 100 fpm.		* Pressure									
Vn	: Neck velocity in foot per minute.		* Noise Criteria values are based on (10 dB) room attenuation.		* Throw									
Pt	: Total pressure in inches water gauge.		* The small throw values are based on the maximum terminal velocity of 150fpm.		: 3 way - increase from 10 - 20%									
Th	: Throw in feet.		* 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.		: 2 way - increase from 20 - 30%									
NC	: Noise Criteria		* Drop		: 1 way - increase from 40 - 50%									

CEILING DIFFUSERS

PERFORMANCE DATA - RETURN

SAD,RAD

SIZE	An	Vn	300	400	500	600	700	800
6 x 6	0.250	Ps	0.050	0.080	0.130	0.180	0.250	0.320
		NC	<15	17	25	31	36	41
		CFM	113	150	188	225	263	300
9 x 6	0.375	Ps	0.060	0.100	0.150	0.220	0.300	0.390
		NC	<15	19	28	33	38	44
		CFM	150	200	250	300	350	400
12 x 6	0.500	Ps	0.060	0.100	0.150	0.220	0.300	0.390
		NC	<15	21	29	34	40	45
		CFM	168	224	280	336	392	448
9 x 9	0.563	Ps	0.060	0.100	0.150	0.220	0.300	0.390
		NC	<15	22	30	36	41	46
		CFM	188	250	313	375	438	500
15 x 6	0.625	Ps	0.060	0.103	0.157	0.227	0.310	0.404
		NC	<15	23	31	36	42	46
		CFM	225	300	375	450	525	600
18 x 6	0.750	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	15	24	32	37	43	47
		CFM	225	300	375	450	525	600
12 x 9	0.750	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	15	24	32	37	43	47
		CFM	263	350	438	525	613	700
21 x 6	0.875	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	16	25	33	38	44	48
		CFM	281	375	469	563	657	750
15 x 9	0.938	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	16	26	33	38	45	48
		CFM	300	400	500	600	700	800
12 x 12	1.000	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	16	26	33	39	45	49
		CFM	300	400	500	600	700	800
24 x 6	1.000	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	16	26	33	39	45	49
		CFM	338	450	563	675	788	900
18 x 9	1.125	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	17	27	34	40	46	50
		CFM	375	500	625	750	875	1000
15 x 12	1.250	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	17	27	34	40	46	50
		CFM	394	525	657	788	919	1050
21 x 9	1.313	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	18	27	35	41	46	51
		CFM	450	600	750	900	1050	1200
24 x 9	1.500	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	19	28	36	42	47	52
		CFM	450	600	750	900	1050	1200
18 x 12	1.500	Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	19	28	36	42	47	52
		CFM	468	624	780	936	1092	1248
15 x 15	1.563	Ps	0.060	0.110	0.170	0.240	0.339	0.430
		NC	19	28	36	42	47	52

CEILING DIFFUSERS

PERFORMANCE DATA - RETURN

SAD,RAD

				*IMPERIAL UNITS					
SIZE	An	Vn	300	400	500	600	700	800	
21 x 12	NC	19	28	36	42	47	52	57	
	CFM	525	700	875	1050	1225	1400	1400	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
18 x 15	NC	20	29	37	42	48	53	53	
	CFM	563	750	938	1125	1313	1500	1500	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
24 x 12	NC	20	29	37	43	49	53	53	
	CFM	600	800	1000	1200	1400	1600	1600	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
18 x 15	NC	21	30	37	43	49	53	53	
	CFM	656	875	1094	1313	1532	1750	1750	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
21 x 15	NC	21	31	38	44	50	54	54	
	CFM	675	900	1125	1350	1575	1800	1800	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
18 x 18	NC	21	31	38	44	50	54	54	
	CFM	750	1000	1250	1500	1750	2000	2000	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
24 x 15	NC	22	32	39	45	51	55	55	
	CFM	788	1050	1313	1575	1838	2100	2100	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
21 x 18	NC	22	32	39	45	51	55	55	
	CFM	900	1200	1500	1800	2100	2400	2400	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
24 x 18	NC	23	33	40	46	52	56	56	
	CFM	918	1224	1530	1836	2142	2448	2448	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
21 x 21	NC	23	33	40	46	52	56	56	
	CFM	1050	1400	1750	2100	2450	2800	2800	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
24 x 21	NC	24	34	40	47	53	57	57	
	CFM	1200	1600	2000	2400	2800	3200	3200	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	
24 x 24	NC	24	34	42	48	53	58	58	
	CFM	1600	2000	2400	2800	3200	3600	3600	
	Ps	0.060	0.110	0.170	0.240	0.330	0.430	0.430	

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

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

CEILING DIFFUSERS SAD,RAD
PERFORMANCE DATA - SUPPLY

*SI UNITS												
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	0.023	0.009	L/S	24	29	35	41	47	59	71	83	94
	Pt	0.91.2.2.4	1.2-1.8.3.3	0.330	0.508	0.711	0.991	1.295	2.007	2.7.3.6.5.1	3.0.3.9.5.4	5.029
	Th	<15	<15	1.2-2.1.3.6	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	33
225 X 150	0.035	0.014	NC	35	44	53	62	71	88	106	124	142
	L/S	0.330	0.508	0.711	0.991	1.295	2.032	3.032	3.568	4.978	6.502	
	Pt	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	4.5-5.4-7.5		
	Th	<15	<15	<15	<15	<15	<15	20	26	30	34	
300 X 150	0.046	0.018	NC	47	59	71	83	94	118	142	165	189
	L/S	0.330	0.508	0.737	1.013	1.321	2.057	3.057	3.658	4.978	6.502	
	Pt	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		
	Th	<15	<15	<15	<15	<15	<15	21	27	31	35	
225 X 225	0.052	0.020	NC	53	66	80	93	106	133	159	186	213
	L/S	0.330	0.508	0.737	1.016	1.321	2.057	3.057	3.658	4.978	6.502	5.283
	Pt	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		
	Th	<15	<15	<15	<15	<15	<15	16	22	28	33	37
375 X 150	0.058	0.020	NC	59	74	88	103	118	147	177	206	236
	L/S	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
	Pt	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		
	Th	<15	<15	<15	<15	<15	15	22	28	32	36	
450 X 150	0.070	0.026	NC	71	88	106	124	142	177	212	248	283
	L/S	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
	Pt	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	6.3-7-8-11.1		
	Th	<15	<15	<15	<15	<15	16	23	29	33	37	
300 X 225	0.070	0.026	NC	71	88	106	124	142	177	212	248	283
	L/S	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
	Pt	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	6.3-7-8-11.1		
	Th	<15	<15	<15	<15	<15	16	23	29	33	37	
525 X 150	0.081	0.031	NC	83	103	124	145	165	206	248	289	330
	L/S	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502		
	Pt	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	5.7-6-9-0.2	6.3-7-8-11.1		
	Th	<15	<15	<15	<15	<15	16	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

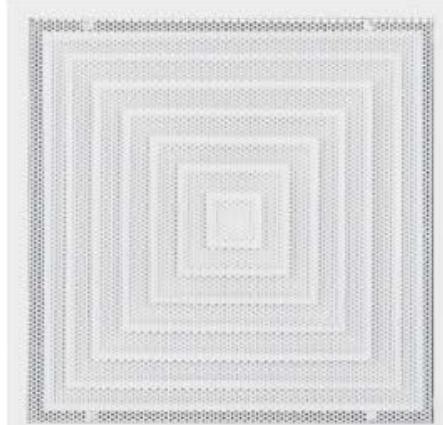
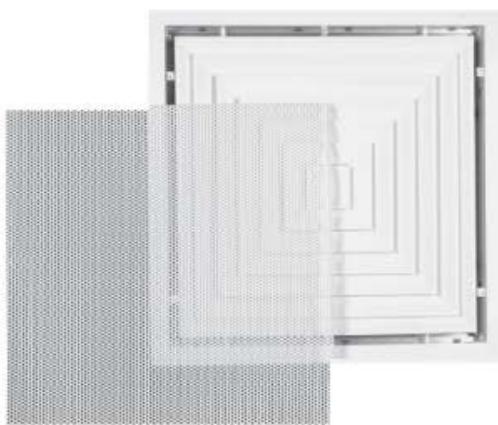
- 01 **Introduction, Features & Characteristics.**
- 02 **Models, Perforated Ceiling Diffusers.**
- 03 **Diffuser Accessories, Profiles used in Perforated Diffusers.**
- 04 **Tabular Selection for Perforated Ceiling Diffusers.**
- 05 **Ordering Data.**

Engineering Notes:

→ Global Air Aluminum 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.



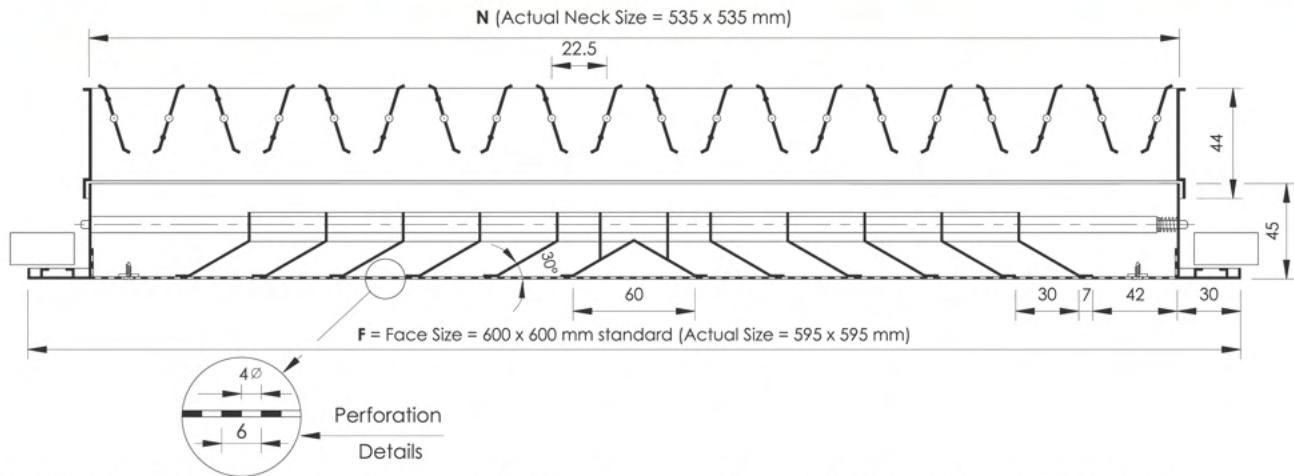
→ Features & Characteristics:

- 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

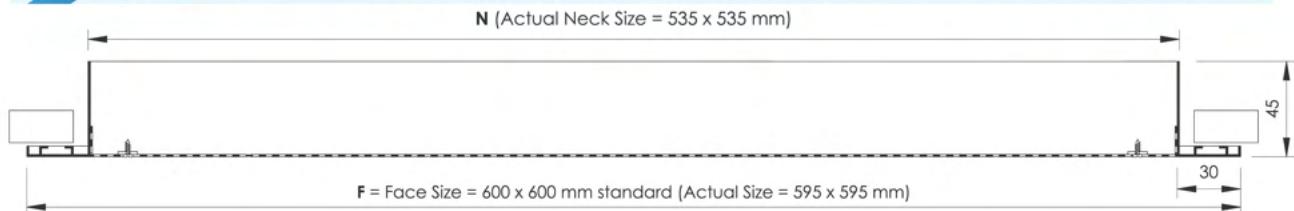
Construction and Dimensional Details

Model PSCD4WS, Standard Module 600 X 600 mm Face Size



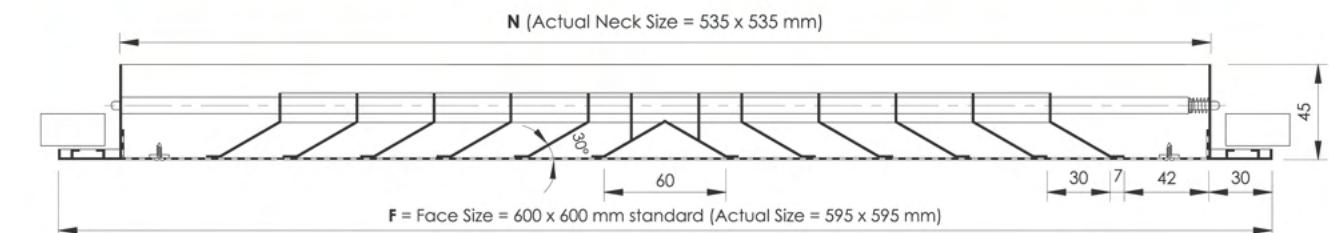
- Diffusers called Perforated Supply Ceiling Diffuser and coded as PSCD 4WS are always equipped with 4-Way Square
- Pattern and Opposed Blade Damper (provided as standard).

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).

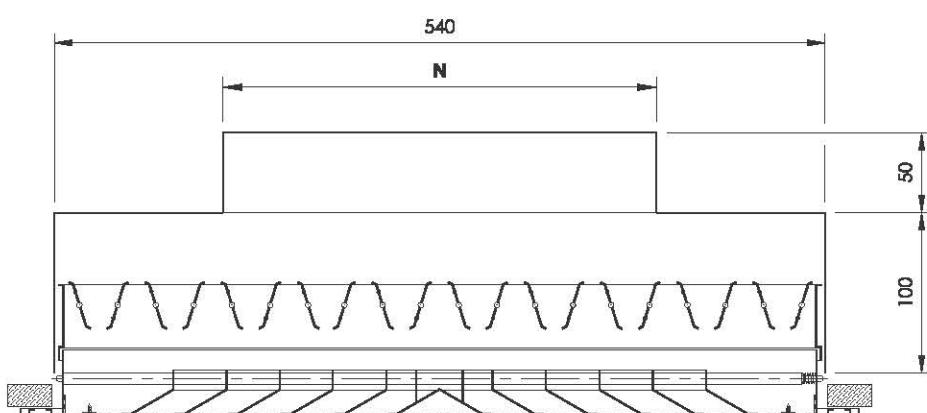
B. Equalizing Grid (Optional)

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

C. Foam Type Rubber Gasket (Optional)

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

D. Neck Adaptor (Optional)

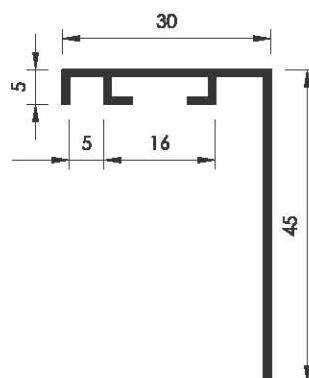


Perforated Diffuser Fixed with Neck: Adaptor

- 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 Inch	Adaptor Neck Size mm	Vn m/s FPM	1.5 300	2.0 400	2.5 500	3.0 600	3.5 700	4.0 800	4.5 900
1	6" x 6"	150 x 150	L/S (CFM)	34 (73)	46 (97)	57 (121)	69 (145)	80 (170)	91 (194)	103 (218)
			△Pt (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)
			△Pt (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" x 10"	250 x 250	L/S (CFM)	95 (202)	127 (269)	159 (336)	191 (404)	222 (471)	254 (538)	286 (606)
			△Pt (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" x 12"	300 x 300	L/S (CFM)	137 (291)	183 (388)	229 (484)	274 (581)	320 (678)	366 (775)	411 (872)
			△Pt (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" x 15"	375 x 375	L/S (CFM)	214 (454)	286 (605)	357 (757)	429 (908)	500 (1059)	571 (1211)	643 (1362)
			△Pt (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" x 18"	450 x 450	L/S (CFM)	309 (654)	411 (872)	504 (1090)	617 (1308)	720 (1526)	823 (1744)	926 (1962)
			△Pt (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)
			△Pt (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)
			△Pt (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)
			△Pt (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)
			△Pt (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)
			△Pt (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)
			△Pt (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)
			△Pt (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 | 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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