

# OUR PRODUCTS

## SELECTION GUIDE

1- SQUARE CEILING DIFFUSER

### 2- ROUND CEILING DIFFUSER

3- SWIRL DIFFUSER

4- PERFORATED CEILING DIFFUSER

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6- LINEAR CEILING DIFFUSER

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14- JET NOZZLE

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17- DISC VALVE

18- NON RETURN DAMPER (SHUTTER)

19- VOLUME DAMPER

20- FIRE DAMPER

21- SMOKE DAMPER

22- DUCT ACCESS DOOR

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Air Outlet

# Andalasia

INTERTEK

## INTRODUCTION

- The diffuser can be used for ceiling or exposed duct mounting and has a fixed horizontal air pattern.

## DISCRIPTION

### MATERIAL

- Frame and inner cones are high quality die drawing aluminum.
- **Blade support** : Aluminum bar linkage to support inner cones together.
- **clamp** : Spring clamp to fix inner cones to the frame by hinge bar.

### DAMPER

- Damper frame and blades are galvanized steel sheets black matt finish.

### SEAL

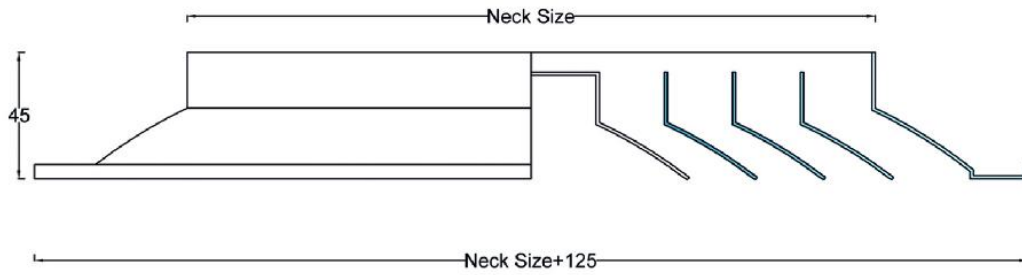
- Foam gasket is sealed around the back of the frame as option to avoid air leakage.

### FINISH

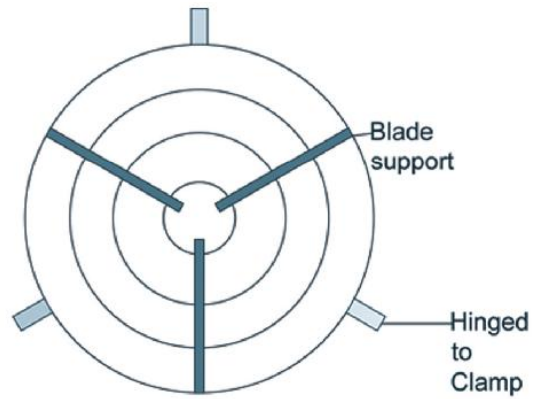
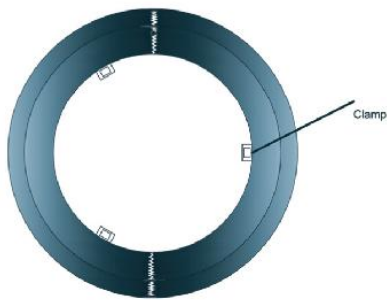
- Aluminium construction with white powder coated finish (RAL 9010) any color upon request.



## SECTION



## FIXING BLADES TO FRAME

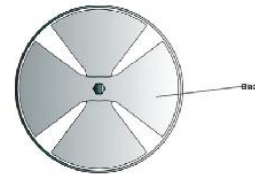


## DAMPERS

### RADIAL DAMPER

Gang operated radial blades slide, each blade over the next, at right angles to the airflow.

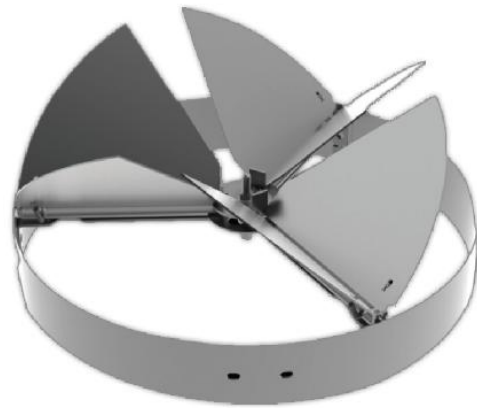
- it is separately mounted in the duct, just above the diffuser. Adjusts with a screw driver from the face side of the diffuser.
- Galvanized steel material



### BUTTERFLY DAMPER

Mounts directly to the diffuser neck. Three sets of gang operated opposed blades distribute air evenly over the diffuser face. Quickly, easily adjusted from the face side of the diffuser.

- Galvanized steel material





## DEFINITIONS

### THROW:

is the horizontal distance between the center of the diffuser and the point at which the terminal velocity of the air stream occurs. (tabulated values of throw in the table represent the minimum and the maximum throw in feet).

### MINIMUM THROW:

is the distance between the center of the diffuser and the point at which the terminal velocity is 200 (corresponding to a residual velocity of 7 FPM).

### MAXIMUM THROW :

is the distance between the center of the diffuser and the point at which the terminal velocity is 100 FPM (corresponding to a residual velocity of 35 FPM).  
An average value of throw can be taken for general applications such as restaurants, offices, apartments etc. and results in a residual velocity of 55 FPM .

### CFM :

the air flow rate in cubic feet per minute .

### NECK VELOCITY :

is the air stream velocity measured in feet per minute (FPM).

### TOTAL PRESSURE :

is the sum of static pressure and velocity pressure gives in inches water gauge.

### NC level(Db) :

is the noise criteria based on 10 Db room attenuation and measured at 10 FT away from diffuser face (deduce 3 Db for distance and 7 Db for 30 FT distance).

• The sound caused by an air outlets is directly proportional to the velocity of air passing through it (see table 1).

NECK VELOCITY(FPM)	SOUND LEVEL- NC
300-600	Less than 20
700 -600	Less than 30
900 -700	Less than 35
1100 -900	Less than 40
1600-1100	Less than 40

## RECOMMENDED RANGE OF NOISE CRITERIA

TYPE OF AREA	NC LEVEL(Db)	TYPE OF AREA	NC LEVEL(Db)
<b>AUDITORIUMS</b>		<b>SPORT ACTIVITIES INDOOR</b>	
Concert and opera Halls. Studios for sound Reproduction	20-25	Coliseums	30-40
Legitimate theaters. Multi- purpose Halls	25-30	Bowling alleys, gymnasiums	35-45
Movie Theaters. Lecture halls. Planetarium		Swimming pools	40-55
TV audience studios	30-35	<b>TRANSPORTATION</b>	
Lobbies.	35-45	Ticket Sales Offices	30-40
<b>CHURCHES &amp; SCHOOLS</b>		Lounges, waiting rooms	35-50
Sanctuaries	20-30	<b>HOTELS</b>	
Libraries, school and classrooms	30-40	Individual rooms or suits, bell rooms, banquet rooms.	30-40
Laboratories	35-45	Halls & corridors lobbies	35-45
Recreation Halls, corridors and Halls	35-50	Granges, kitchens and laundries	40-50
Kitchens	40-50	<b>MANUFACTURING AREAS</b>	
<b>HOSPITAL AND CLINICS</b>		Foreman's office	40-50
Private rooms	25-35	Assembly lines, light Machinery	55-75
Operating rooms. Wards	30-40	Foundries, heavy Machinery	55-75
Halls, Corridors, laboratories, lobbies and waiting rooms	35-45	<b>OFFICES</b>	
Washrooms and toilets	40-50	Board room	20-30
<b>RESTURANTS &amp; LOUNGES</b>		Conference Room	25-35
Restaurants	35-45	Tabulation and computation	40-60
Cocktail lounges	35-50	<b>BUBLIC BUILDINGS</b>	
Night clubs	35-50	Public libraries, Museums	30-40
Cafeterias	40-50	Post offices, general banking areas, lobbies	35-45
<b>STORES DETAIL</b>			
Clothing Stores, department stores (upper floors)			
Department Stores (main floor)	35-45		
supermarkets	40-50		

recommended range of noise criteria from ASHREA GUIDE



## SELECTION PROCEDURE

In general the selection of diffuser starts from a given quantity of air to be handled by the diffuser.

Limitations and restrictions on sound level and pressure drop are other factors that one has to consider.

1. knowing the ceiling height , table , will read the maximum permissible CFM that could be handled by the diffuser and hence the total CFM can be divided over the most reasonable number of diffusers which would best fit the application. Remember that round diffuser has uniform pattern and it is always best to center it in a square area .

$$\text{No. of diffusers} = \frac{\text{Total CFM}}{\text{Max. permissible CFM for each air outlet}}$$

CEILING HEIGHT (ft)	MAXIMUM TEMP. DIFFERENTIAL	MAXIMUM CFM PER DIFFUSER
8	20° F	800
10	26° F	2000
12	30° F	3000
14	30° F	5000
16	30° F	6400

**Table**

2. determine from table the maximum allowable neck velocity which keeps the application as silent as required . recommended Sound levels could be read from table

Remember that

$$\text{CFM} = \text{Area Factor} \times \text{Average velocity} \times \text{Gross Area} .$$

3. Refer to the selection table ( Basic performance Data) on next page to determine the size of the diffuser which would best fit your application. The table also reads area factor AK, velocity pressure , total pressure , and throw.

## SUPPLY ROUND CEILING DIFFUSER PERFORMANCE DATA

Neck Size (inches)	Neck Area (FT <sup>2</sup> )	Area factor (FT <sup>2</sup> )	Neck Velocity (FPM)	300	400	500	600	700	800	1000	1200	1400	1600
			Velocity Pressure (inches W.G)	0.007	0.01	0.016	0.023	0.031	0.041	0.064	0.091	0.123	0.161
6"	0.196	0.13	Air flowrate(CFM)	60	80	100	120	135	155	195	235	275	315
			Total pressure drop	0.025	0.04	0.061	0.082	0.106	0.132	0.201	0.282	0.380	0.480
			Throw (FT)	3-5	3-6	3-6	4-6	4-6	4-6	5-7	5-7	6-8	7-10
			NC	<20	<20	<20	<20	<20	25	30	35	39	45
8"	0.349	0.22	Air flowrate(CFM)	105	140	175	210	245	280	350	420	490	560
			Total pressure drop	0.021	0.03	0.052	0.071	0.100	0.122	0.183	0.271	0.370	0.480
			Throw (FT)	4-6	4-6	5-7	6-8	6-8	6-8	7-10	7-11	8-13	9-14
			NC	<20	<20	<20	20	25	29	33	38	42	46
10"	0.545	0.25	Air flowrate(CFM)	165	220	275	325	380	435	545	655	765	870
			Total pressure drop	0.040	0.06	0.092	0.122	0.181	0.242	0.361	0.500	0.710	0.950
			Throw (FT)	4-6	6-9	7-10	7-10	7-11	8-13	9-14	10-16	12-18	15-22
			NC	<20	<20	<20	21	26	30	34	39	43	47
12"	0.785	0.38	Air flowrate(CFM)	225	315	395	470	550	630	785	940	1100	1255
			Total pressure drop	0.026	0.04	0.072	0.101	0.152	0.201	0.313	0.490	0.670	0.870
			Throw (FT)	6-8	7-10	7-11	7-11	8-13	9-14	10-16	14-21	15-23	19-27
			NC	<20	<20	<20	32	28	32	36	41	45	48
14"	1.07	0.50	Air flowrate(CFM)	320	430	535	640	750	855	1070	1285	1500	1710
			Total pressure drop	.034	0.05	0.080	0.112	0.156	0.201	0.313	0.460	0.600	0.80
			Throw (FT)	6-8	8-13	9-15	10-16	11-17	12-18	15-23	19-2	19-27	21-31
			NC	<20	<20	<20	24	29	33	37	42	46	49
16"	1.40	0.59	Air flowrate(CFM)	420	560	700	840	980	1120	1400	1680	1960	2240
			Total pressure drop	0.043	0.07	0.106	0.140	0.202	0.262	0.413	0.593	0.800	0.980
			Throw (FT)	7-11	9-14	9-15	11-17	12-18	15-23	16-25	19-27	21-31	25-36
			NC	<20	<20	20	25	30	34	38	43	47	50
18"	1.77	0.75	Air flowrate(CFM)	530	710	885	1060	1240	1415	1770	2125	2480	2830
			Total pressure drop	0.033	0.05	0.082	0.113	0.166	0.220	0.350	0.530	0.710	0.950
			Throw (FT)	8-13	9-14	10-16	12-18	14-12	17-24	19-27	21-31	22-33	26-38
			NC	<20	<20	21	26	31	35	39	44	48	51
20"	2.18	0.96	Air flowrate(CFM)	660	850	1100	1300	1530	1750	2150	2650	3050	3500
			Total pressure drop	0.040	0.06	0.092	0.131	0.182	0.251	0.450	0.640	0.820	0.930
			Throw (FT)	8-14	11-16	14-20	17-21	19-25	22-28	29-34	34-40	41-47	43-50
			NC	<20	<20	21	27	32	36	40	45	49	52
24"	3.14	1.23	Air flowrate(CFM)	940	1250	1570	1850	2200	2500	3130	3850	4320	4950
			Total pressure drop	0.045	0.07	0.105	0.135	0.195	0.265	0.460	0.690	0.790	0.960
			Throw (FT)	10-15	14-20	17-23	20-26	24-30	27-34	35-41	43-50	46-52	51-58
			NC	<20	<20	22	28	33	37	41	46	50	53

Notes : —AK→Area Factor  
—Noise Level→db

—Throw→FT —Air Flow→CFM  
—Total Pressure → IN W.G

—Terminal Velocity= 50 FPM  
—Face Velocity→ FP



## RETURN AIR ROUND CEILING PERFORMANCE DATA

Neck Size (inches)	Neck Area (FT <sup>2</sup> )	Neck Velocity (FPM)	300	400	500	600	700	800	1000	1200	1400	1600
		Velocity Pressure (inches W.G)	0.007	0.01	0.016	0.023	0.031	0.041	0.064	0.091	0.123	0.161
6"	0.196	Air flowrate(CFM)	60	80	100	120	135	155	195	235	275	315
		Total pressure drop	0.029	0.04	0.076	0.108	0.146	0.18	0.294	0.421	0.569	0.749
		NC	<20	<20	<20	<20	21	26	32	37	41	46
8"	0.349	Air flowrate(CFM)	105	140	175	210	245	280	350	420	490	560
		Total pressure drop	0.020	0.03	0.053	0.077	0.100	0.123	0.207	0.293	0.394	0.519
		NC	<20	<20	<20	21	26	30	34	39	43	47
10"	0.545	Air flowrate(CFM)	165	220	275	325	380	435	545	655	765	870
		Total pressure drop	0.010	0.03	0.050	0.071	0.096	0.120	0.196	0.281	0.379	0.477
		NC	<20	<20	<20	22	27	31	36	41	45	48
12"	0.785	Air flowrate(CFM)	225	315	395	470	550	630	785	940	1100	1255
		Total pressure drop	0.018	0.02	0.045	0.064	0.086	0.112	0.176	0.249	0.339	0.443
		NC	<20	<20	<20	23	29	33	37	42	46	49
14"	1.07	Air flowrate(CFM)	320	430	535	640	750	855	1070	1285	1500	1710
		Total pressure drop	0.017	0.02	0.042	0.061	0.083	0.108	0.170	0.242	0.328	0.430
		NC	<20	<20	<20	25	30	34	38	43	47	50
16"	1.40	Air flowrate(CFM)	420	560	700	840	980	1120	1400	1680	1960	2240
		Total pressure drop	0.016	0.02	0.041	0.059	0.079	0.103	0.162	0.231	0.314	0.411
		NC	<20	<20	21	26	31	35	39	44	48	51
18"	1.77	Air flowrate(CFM)	530	710	885	1060	1240	1415	1770	2125	2480	2830
		Total pressure drop	0.015	0.02	0.040	0.057	0.077	0.099	0.156	0.224	0.303	0.397
		NC	<20	<20	22	27	32	36	40	45	49	52
20"	2.18	Air flowrate(CFM)	660	850	1100	1300	1530	1750	2150	2650	3050	3500
		Total pressure drop	0.014	0.02	0.036	0.052	0.071	0.091	0.143	0.205	0.277	0.363
		NC	<20	<20	21	28	33	37	41	46	50	53
24"	3.14	Air flowrate(CFM)	940	1250	1570	1850	2200	2500	3130	3850	4320	4950
		Total pressure drop	0.013	0.02	0.031	0.046	0.064	0.082	0.130	0.185	0.246	0.326
		NC	<20	<20	23	29	34	38	42	47	51	55

Notes : -Noise Level → db

-Air Flow → CFM

-Total Pressure → IN W.G