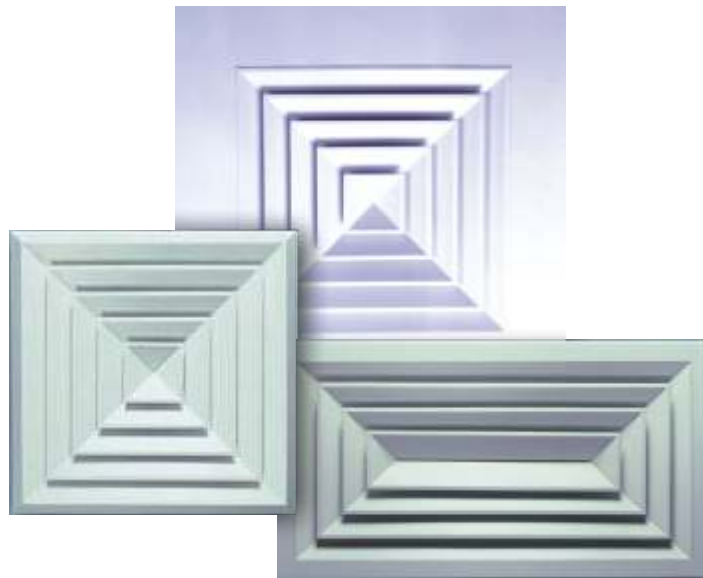




COSMOS[®]
Air Distribution Products



**SQUARE
&
RECTANGULAR LOUVERED**

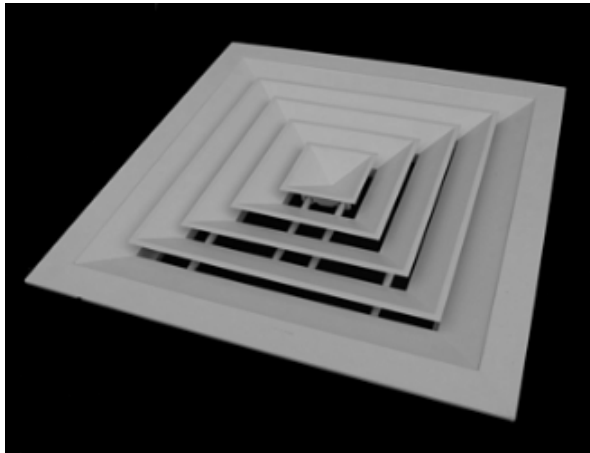
FACE DIFFUSERS

SQUARE AND RECTANGULAR LOUVERED FACE DIFFUSER

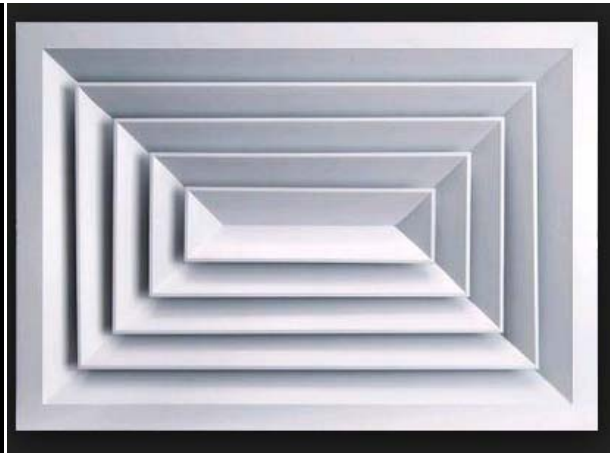
INTRODUCTION

Ceiling diffusers are the excellent choice for HVAC system where a high standard of comfort indoor air quality and controlled performance are to be achieved. COSMOS ceiling diffusers are specially designed for ceiling-mounting applications. They are suitable for supply air as well as exhaust air, providing a stable pattern of air diffusion, flowing through a number of concentrically arranged sections.

Controlled air distribution, flow equalization, sound attenuation, architectural appearance and solid construction are all reasonable and worthwhile reasons to choose **COSMOS CEILING DIFFUSERS**.



Model: SQL-4



Model: RTL-4

COSMOS ceiling diffusers are designed to handle a wide range of horizontal airflows that will meet all HVAC requirements, and yet with a pleasing appearance to suit architectural requirements.

An engineered blade design on all angular discharge louvers creates a stable horizontal air pattern that is tight to the ceiling. Corners of outer cores are mechanically fastened to provide precisely mitered corners and add strength to the diffuser.

COSMOS ceiling diffusers are available in square (SQL) or rectangular (RTL) patterns for supply air as well as for return air and which in turn is supplied with or without opposed blade damper. When supply with opposed blade damper (for supply air diffuser), damper is fixed to the outer frame of the diffuser and is screw operated from the face of the diffuser. The damper frame is separated from its blades by using nylon bushings to eliminate corrosion and vibration.

COSMOS ceiling diffusers SQL and RTL are multi-vane type with a fully removable core from its face for easy installation, with square neck and can be supplied in 1, 2, 3 and 4 way airflow patterns for all air distribution requirement.

Different frame types are available to suit almost any mounting condition including surface mount and T-bar panel types. Ceiling diffuser is also available with an extended frame to suit the size of ceiling tile thus models offer a great degree of design flexibility.

Diffusers are available with wide variety of core styles and neck sizes. A combination can be selected to suit a specified air pattern and deliver the desired volume of air to suit any particular requirements.

Feature

- Engineered air distribution patterns for 1, 2, 3 and 4 way blow in a wide selection of square and rectangular neck sizes.
- Spring loaded core. Removable without the use of tool.
- Secure core attachment.
- Wide variety of frame styles to suit most ceiling applications.
- Optional extruded panel to suit modular ceiling systems.
- Optional opposed blade damper with screwdriver slot operator.
- Standard finish RAL 9016.

Material

Heavy gauge aluminum extrusion.

Finish

Standard RAL 9016 powder coated. Other finishes available on request.

Volume control damper: Powder coated in matt black shade.

SELECTION OF DIFFUSERS

The following data are required for proper selection:

1. CFM : The air volume to be delivered to each space is calculated by the system designer and the cfm per diffuser is determined by the number of diffusers which supply each space.

2. NC level : The permissible sound level in each space is specified by the consultant or determined by the designing engineer. Fig. 1 indicates the recommended NC levels for various applications.

NC Range	Communication		Typical Application
	Telephone	Voice	
20-25	Excellent	30-50 Ft.	Concert Halls, Sound Reproduction Studios
25-30	Excellent	20-40Ft.	Board Rooms, Conference Rooms
30-35	Good	10-30 Ft.	Private Office, Banquet Rooms, Hospital Rooms, Movie Theaters
35-40	Fair	6-12 Ft.	Building Lobbies, Restaurants, General Offices
40-45	Fair	4-9 Ft.	Halls and Corridors, Cafeterias
45-50	Poor	3-6 Ft.	Department Stores (Main Floor), Restaurant Kitchens
Over 50 NC	Very Poor	1-2 Ft.	Manufacturing Areas

Table 1 - Recommended NC Levels

3. Pattern Requirement : The pattern requirement is determined by the shape of the space to be conditioned, the number of diffusers in it, and the type and location of lighting fixtures or other devices mounted on the ceiling. For example, a two-way opposite pattern - pattern 21, 22 or 23 might be used in a corridor. A larger area can often be divided into squares or rectangles of nearly equal size, and, if a diffuser can be located in the centre of each of these areas, a pattern 41 or 42 could be used for four-way delivery.

4. Throw : The required throw is determined from the building plan after the diffuser location has been decided. Usually, the throw requirement is the distance from the diffuser to the nearest enclosing wall. In some cases, the throw requirement will be the distance from the diffuser to the intersection of its air stream with air being delivered from another diffuser. For high ceiling applications, the throw requirement may be measured as the horizontal distance described above plus the vertical distance from the diffuser to the occupied zone. This is usually considered to extend to the five-foot level in the room.

Another consideration is diffuser mounting height. As air travels from a diffuser, room air is entrained into the supply air stream and the delivery pattern thickens. If the throw requirement is too great, the lower part of the supply air stream can intrude into the occupied zone of the conditioned space. To avoid

this, diffusers should be located so that the throw requirement is no greater than 1.5 times the diffuser mounting height. For example, in a space with a 12 ft. ceiling height diffusers should be so located and in such numbers that the required throw of any one diffuser would not exceed 18 ft. See Table 1.

The final consideration is the pressure loss of the diffuser. The allowance in the design of the system for outlet pressure loss should not be exceeded by the diffuser pressure loss.

TABLE 2 - RECOMMENDED MAXIMUM THROW REQUIREMENT

Ceiling Height ft.	8	9	10	12
Maximum, throw requirement, ft. *	12	13.5	15	18

* Throw requirement should not exceed 1.5 times the diffuser mounting height

The basic selection data are given in Table 2 for all Cosmos directional diffusers. The table lists performance data as a function of air velocity in the neck of the diffuser. It lists several sizes for each core pattern and gives the neck area, expressed in square feet, for each diffuser size. Performance factors listed are the air volume delivered through the diffuser, the NC level, the air volume delivered through each side of the diffuser and two values of throw.

The values of throw shown in Table 2. are based upon

cooling system operation. The room velocity VR will not exceed 50 ft. per min when the diffuser selection is based upon minimum throw. When diffuser selection is based upon maximum throw, the room velocity VR will not exceed 20 ft. per min. The tabulated values of throw apply for diffusers mounted in a ceiling.

Selection data are given for neck velocities of from 300 to 700 ft. per min. Also listed are values of total pressure drop through the diffuser at each of these neck velocities.

The total pressure requirement is the sum of the static pressure drop of the air as it passes through the diffuser and the velocity pressure of the air at the neck of the diffuser. If the static pressure is required it can be determined by subtracting the velocity pressure (Table 3) from the total pressure shown in Table 2.

TABLE 3 - VELOCITY PRESSURE

Air Velocity at Diffuser Neck, fpm	300	400	500	600	700
Velocity Pressure, in. of water column	.006	.010	.016	.023	.031

When a diffuser is equipped with an OBD (opposed blade damper) both the total pressure requirement and the NC level increase. The OBD increases the total pressure requirement of a diffuser by 10 percent. The NC addition when the OBD is wide open can be determined from Table 4. When the OBD is throttled, the NC factor for the throttled damper can be determined from Fig. 2.

Example : An air volume of 200 cfm is to be introduced into an office which is 18 feet long and 12 feet wide with a ceiling height of 9 feet. A directional diffuser is to be located in the center of the ceiling. The NC level of the diffuser should be less than 30.

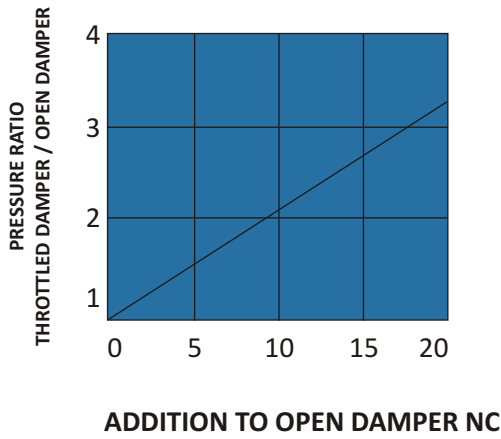


Fig 1 - Throttled damper NC factors

TABLE 4 - NC ADDITION FOR DIRECTIONAL DIFFUSER WITH OPPOSED BLADE DAMPER

Diffuser NC from Table 2 (without OBD)	NC Addition for OBD	
	All 1, 2 & 3-way Patterns	All 4-way Patterns
NC 25 or less	0	2
NC 30	1	2
NC 35	3	2
NC 40	6	2
NC 45	7	2

NC of diffuser with OBD = (Diffuser NC) + (NC addition for OBD)

Solution : Because the room is rectangular in shape and the diffuser is to be located in the center of the ceiling, it would appear logical to select a Pattern 42 rectangular, 4-way blow diffuser. The throw from the

long-side of the diffuser should be approx. 9 ft. One half the length of the room. The short-side throw should be 4 ft. or 5 ft. - about half the width of the room.

Table 2 shows that a 12 in. x 6 in. Pattern 42 diffuser would deliver 200 cfm at a neck velocity of 400 ft. per min. The NC level would be less than 20, the long-side throw would be from 5 to 11 ft. and the short-side throw would be from 3 ft. to 6 ft. At a 400 ft. per min. neck velocity, the total pressure requirement would be .06 in.w.g. This selection is one of several satisfactory solutions.

COMBINING SOUND SOURCES

Determining the sound level which results from the combined effects of several sound sources is not as difficult as it is confusing. The NC data for diffusers given in Table 2 contains an allowance for the sound absorbing properties of the average room and its contents. This absorption is assumed to be 8 db with sound power level referenced to 10-12 Watt. (The absorption is 18 db referenced to 10-13 Watt). For relatively small spaces - about 250 sq. ft. or less of floor area and ceiling height of 10 ft. or less - the following simplified method of estimating NC level produced by a combination of supply diffusers and return registers or grilles can be used.

1. Determine the difference in NC level between the supply outlets or return intakes having the highest NC and the second highest NC level.

2. From Table 5 determine the number of decibels to be added to the NC level of the unit having the highest NC level. This sum is the combined NC level generated by the two units.

3. If three units serve the space, determine the difference between the combined NC level of the first two units and the NC level of the third unit. Determine the NC addition as above, and add this to the combined NC level of the first two units. If the difference between NC levels of two units is 10 db or more, the sound generated by the quieter unit will not affect the space NC.

Example : Two supply diffusers having an NC level of 30 and a return grille having a NC level of 35 serve a room. What is the combined NC level generated?

Solution : The return has the highest NC level, 35 db. The second highest is one of the diffusers at 30 db. The difference between them is 5 db. From Table 5, the NC addition for a 5 db difference is about one. Adding this to the higher NC gives a combined NC of 36.

To take the second diffuser into consideration, follow the same procedure as above. The NC calculated above is 36. The NC of the diffuser is 30. The difference between them is 6. The NC addition for this difference is 1 and the combined effect of the two supply diffusers and the return grille is NC37.

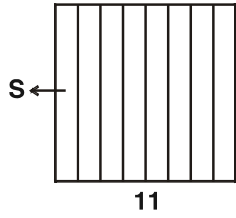
TABLE 5 - NC ADDITION FOR COMBINING EFFECTS OF SOUND SOURCES

Difference Between Two Levels To Be Combined	0	1	2	4	6	9	10
Number To Be Added To Higher Level To Obtain Combined Level	3	2.5	2	1.5	1	0.5	0

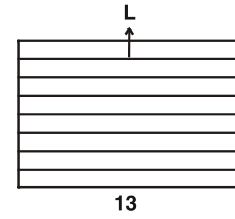
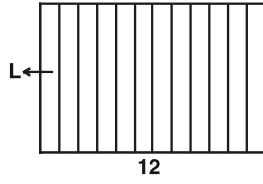
CORE PATTERNS (PLAN VIEW)

1 - WAY AIR PATTERNS

SQUARE SHAPE

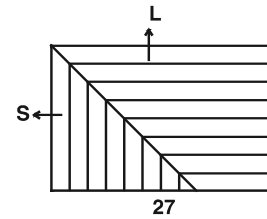
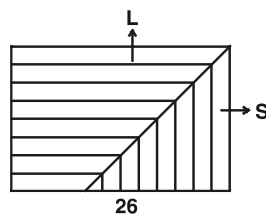
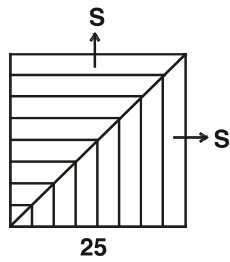
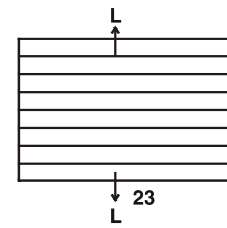
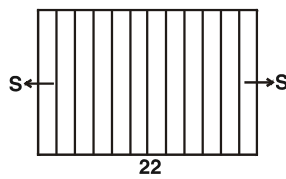
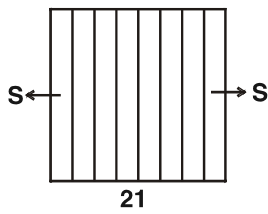


RECTANGULAR SHAPE

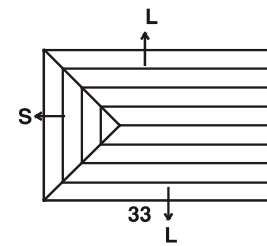
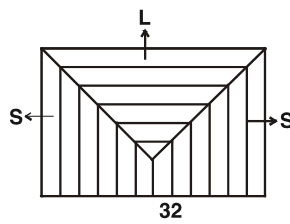
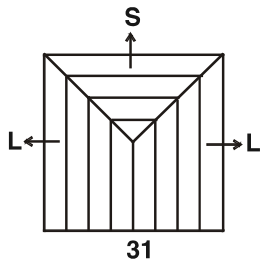


2 - WAY AIR PATTERNS

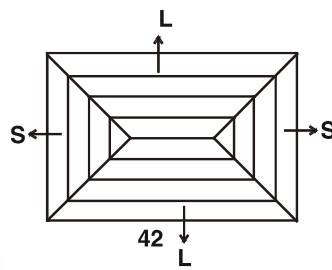
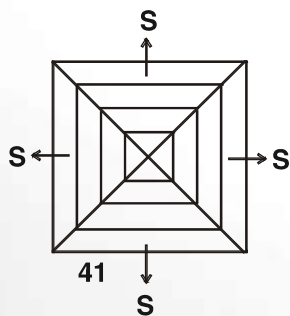
Two way opposite flow



3 - WAY AIR PATTERNS



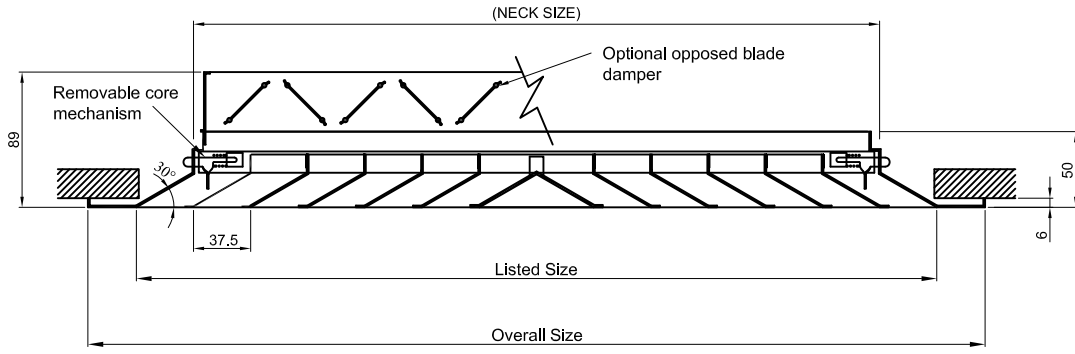
4 - WAY AIR PATTERNS



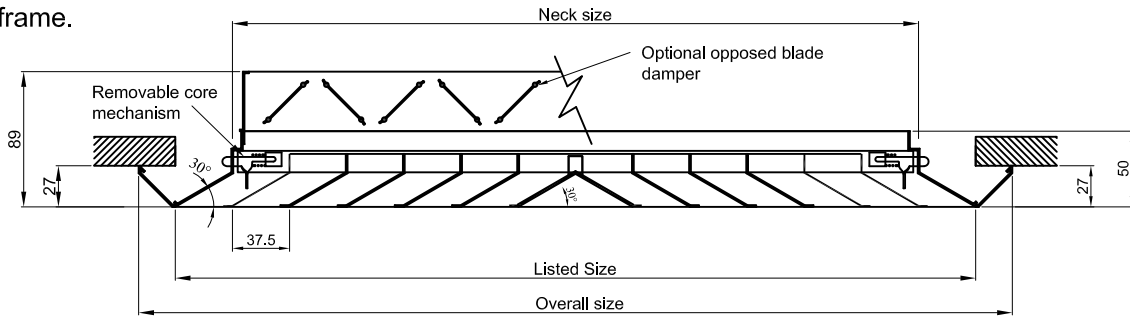
Dimensional data

SQUARE LOUVERED FACE DIFFUSER

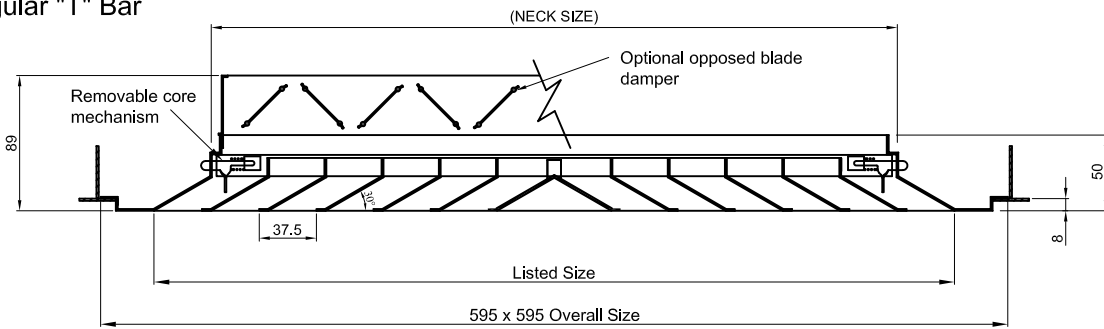
Suitable for flat face
(FF Frame)



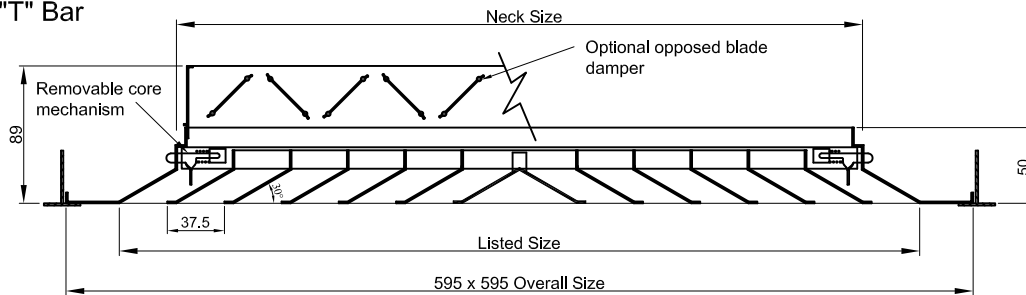
Antismudge frame.
(AS Frame)



Suitable for tegular "T" Bar
(TG Frame)



Suitable for flush "T" Bar
(FL Frame)

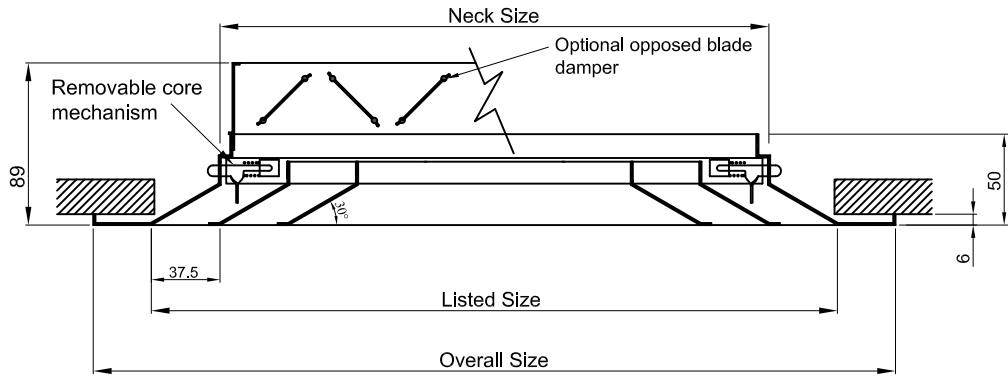


Sr.no.	Neck size	Listed size	Overall Size		
			FF	TG / FL	AS
1	150 x 150	225 x 225	289 x 289	595 x 595	273 x 273
2	225 x 225	300 x 300	364 x 364	595 x 595	348 x 348
3	300 x 300	375 x 375	439 x 439	595 x 595	423 x 423
4	375 x 375	450 x 450	514 x 514	595 x 595	498 x 498
5	450 x 450	525 x 525	589 x 589	595 x 595	573 x 573

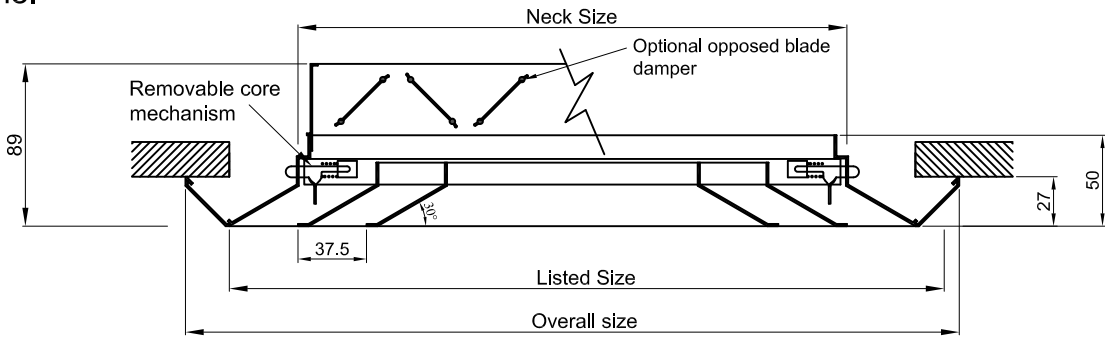
Dimensional data

RECTANGULAR LOUVERED FACE DIFFUSER

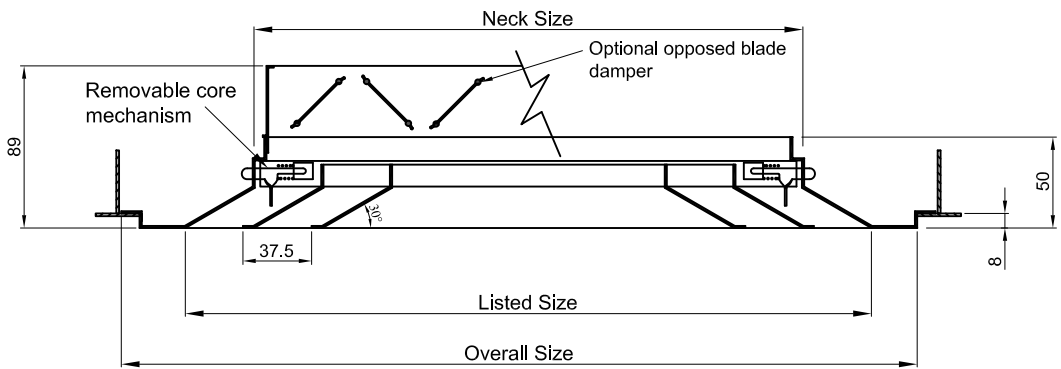
Suitable for flat face
(FF Frame)



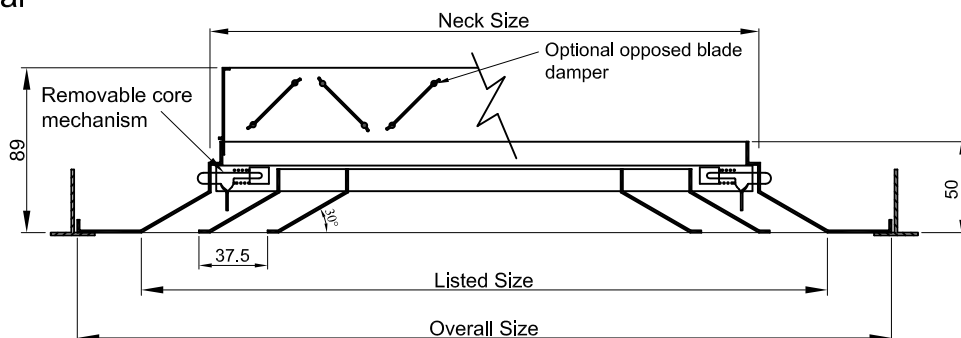
Antismudge frame.
(AS Frame)



Suitable for tegular "T" Bar
(TG Frame)



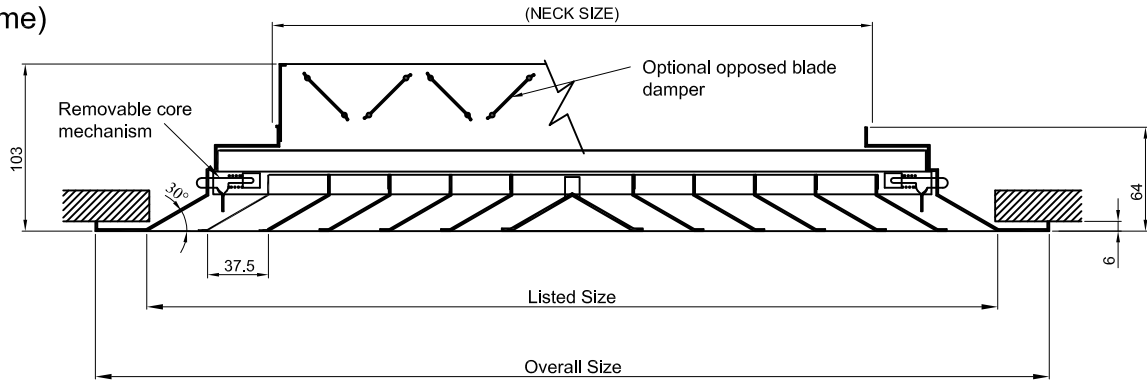
Suitable for flush "T" Bar
(FL Frame)



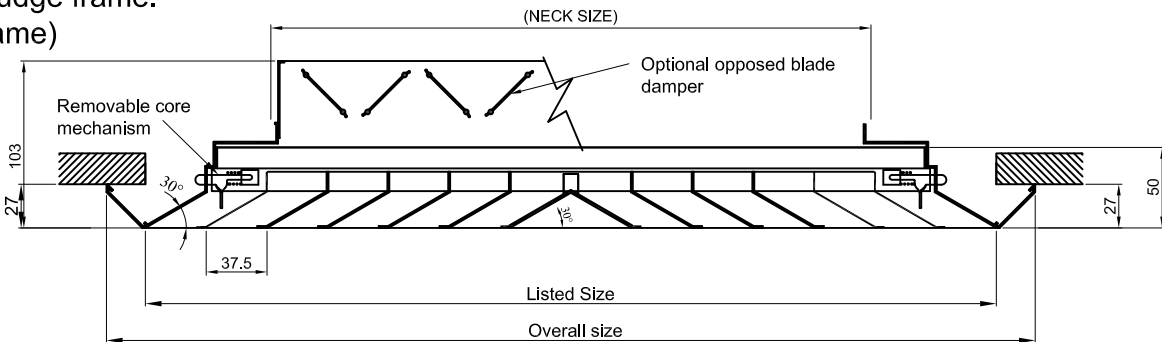
Dimensional data

SQUARE LOUVERED FACE DIFFUSER (BACK TRAY TYPE)

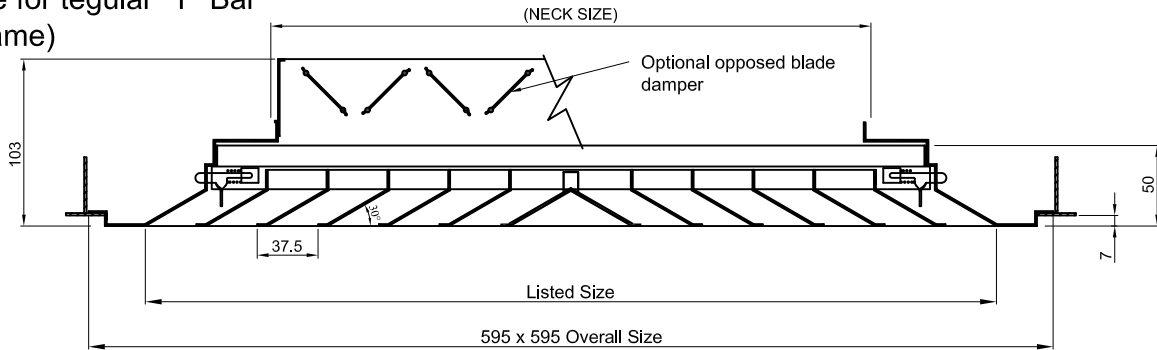
Suitable for flat face
(FF Frame)



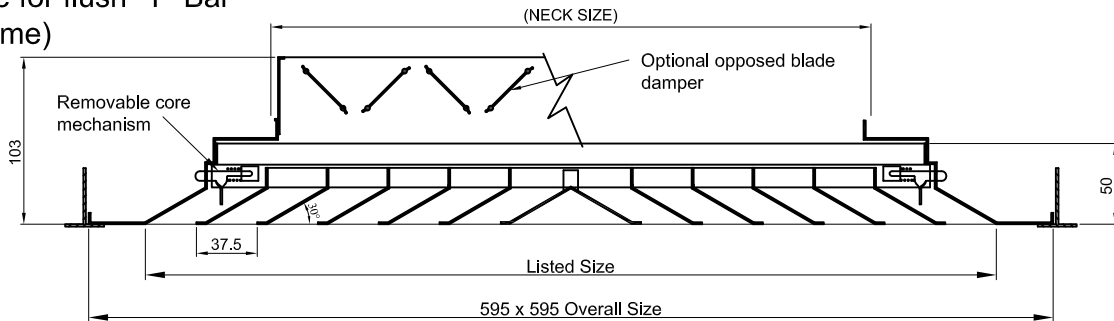
Antismudge frame.
(AS Frame)



Suitable for tegular "T" Bar
(TG Frame)



Suitable for flush "T" Bar
(FL Frame)



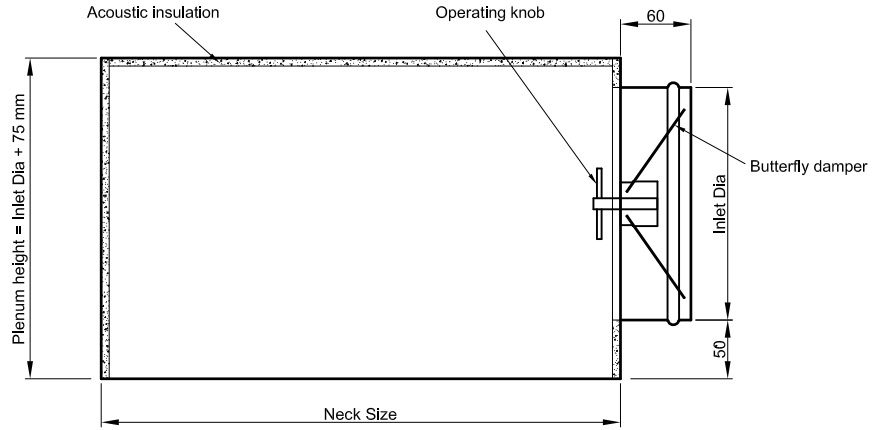
Neck size	Listed size	Overall Size		
		FF	TG / FL	AS
150 x 150	525 x 525	589 x 589	595 x 595	573 x 573
225 x 225				
300 x 300				
375 x 375				

Dimensional data

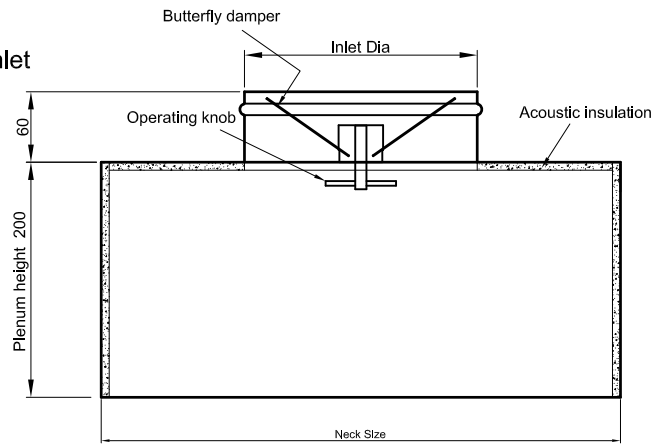
SQUARE LOUVERED FACE DIFFUSER PLENUM BOX

Accessory

Plenum Side Inlet



Plenum Top Inlet



Inlet Dia
400
350
300
250
200
150
100

Oposed blade damper
(Collar damper)

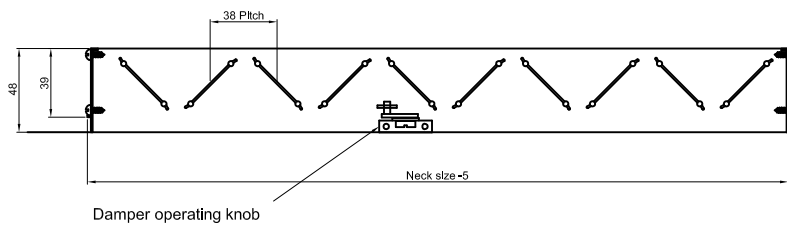
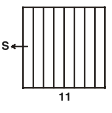
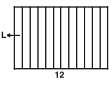
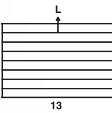
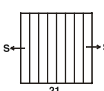
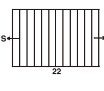
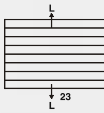


Table 2 - SELECTION DATA FOR DIFFUSERS (SQUARE & RECTANGULAR)

Core Pattern	Size		Rating Total Pressure Drop, Inches, w.g.	Neck Velocity, f.p.m.										
	Listed Size mm	Neck Size mm		300 .035		400 .06		500 .09		600 .13		700 .17		
				L	S	L	S	L	S	L	S	L	S	
	225X225	150X150	c.f.m.	75	100	125	150	175	NC - db	—	—	20	24	28
		0.022	Min. - Max. Throw, ft.	5-11	6-13	8-14	9-16	11-17						
	300x300	225x225	c.f.m.	170	225	280	340	395	NC - db	—	20	25	29	32
		0.051	Min.—Max. Throw, ft.	7-17	9-19	12-22	14-24	16-26						
	375x375	300x300	c.f.m.	300	400	500	600	700	NC-db	—	23	28	32	35
		0.09	Min.—Max. Throw, ft.	9 - 22	12-26	15-29	19-32	22-34						
450x450	375x375	c.f.m.	470	625	780	940	1095	NC-db	—	25	30	34	37	
	0.141	Min. - Max. Throw, ft.	12-28	15-32	19-36	23-40	27-43							
525x525	450x450	c.f.m.	675	900	1125	1350	1575	NC - db	22	28	31	34	35	
	0.202	Min.—Max. Throw, ft.	13-30	18-34	21-38	25-39	27-41							
600x600	525x525	c.f.m.	919	1225	1531	1837	2144	NC - db	22	28	32	35	37	
	0.275	Min. - Max. Throw, ft.	14-31	19-35	20-39	26-41	29-43							
	300x225	225x150	c.f.m.	115	150	190	225	265	NC - db	—	—	23	27	30
		0.034	Min.—Max. Throw, ft.	6-14	8-16	10-18	11-19	13-21						
	375x300	300x225	c.f.m.	230	300	380	450	530	NC - db	—	22	27	30	34
450x375	375x300	c.f.m.	375	500	625	750	875	NC - db	—	24	29	33	36	
	0.113	Min. - Max. Throw, ft.	10-25	14-29	17-32	21-36	24-38							
	300x225	225x150	c.f.m.	115	150	190	225	265	NC - db	—	—	23	27	30
		0.031	Min. - Max. Throw, ft.	6-14	8-16	10-18	11-19	13-21						
	375x225	300x150	c.f.m.	150	200	250	300	350	NC - db	—	—	24	28	32
		0.045	Min.—Max. Throw, ft.	7-16	9-18	11-21	13-22	15-24						
	450x225	375x150	c.f.m.	190	250	315	375	440	NC - db	—	20	26	29	33
		0.056	Min. - Max. Throw, ft.	7-18	10-21	12-23	15-25	17-27						
	525x225	450x150	c.f.m.	230	300	380	450	530	NC - db	—	22	27	30	34
		0.068	Min. - Max. Throw, ft.	8-19	11-22	13-25	16-28	19-30						
	375x300	300x225	c.f.m.	230	300	380	450	530	NC - db	—	22	27	30	34
		0.068	Min. - Max. Throw, ft.	8-19	11-22	13-25	16-28	19-30						
	450x300	375x225	c.f.m.	280	375	470	565	660	NC - db	—	22	27	32	35
		0.084	Min. - Max. Throw, ft.	9-22	12-25	15-28	18-31	21-33						
	600x300	525x225	c.f.m.	395	525	655	785	915	NC - db	—	24	29	33	37
		0.118	Min. - Max. Throw, ft.	11-26	14-30	18-33	21-36	25-39						
	450x375	375x300	c.f.m.	375	500	625	750	875	NC - db	—	24	29	33	36
0.113		Min. - Max. Throw, ft.	10-25	14-29	17-32	21-36	24-38							
525x375	450X300	c.f.m.	450	600	750	900	1050	NC - db	—	25	30	33	37	
	0.135	Min. - Max. Throw, ft.	11-28	15-32	19-36	23-39	26-42							
600x375	525x300	c.f.m.	525	700	875	1050	1225	NC - db	20	26	30	34	37	
	1.58	Min. - Max. Throw, ft.	12-30	16-34	20-38	24-42	29-45							
Pattern 21	225x225	150x150	c.f.m.	75	100	125	150	175	NC - db	—	—	20	24	28
		0.023	Min.—Max. Throw, ft.	3-8	4-9	5-10	7-11	8-12						

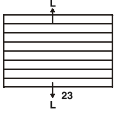
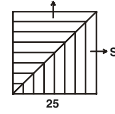
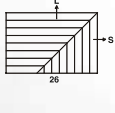
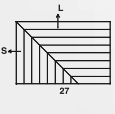
Note : Min. throw based on $V_i = 300$ fpm with V_R not greater than 50 fpm. Max. throw based on $V_i = 125$ fpm with V_R not greater than 20 fpm.

Table 2 - SELECTION DATA FOR DIFFUSERS (SQUARE & RECTANGULAR)

Core Pattern	Size		Neck Velocity, f.p.m.										
	Listed Size mm	Neck Size mm	Rating Total Pressure Drop, Inches, w.g.	300 .035		400 .06		500 .09		600 .13		700 .17	
				L	S	L	S	L	S	L	S	L	S
	300x300	225x225	c.f.m. NC - db Min. - Max. Throw, ft.	170 — 5-12	225 20 7-14	280 25 8-15	340 29 10-17	395 32 12-18					
	375x375	300x300	c.f.m. NC - db Min. - Max. Throw, ft.	300 — 7-16	400 23 9-18	500 28 11-21	600 32 13-22	700 35 15-24					
	450x450	375x375	c.f.m. NC - db Min. - Max. Throw, ft.	470 — 8-20	625 25 11-23	780 30 14-26	940 34 16-28	1095 37 19-30					
	525x525	450x450	c.f.m. NC - db Min. - Max. Throw, ft.	675 21 10-24	900 27 13-28	1125 32 16-31	1350 35 20-34	1575 39 23-36					
	600x600	525x525	c.f.m. NC - db Min. - Max. Throw, ft.	920 22 11-28	1225 28 15-32	1530 34 19-36	1840 37 23-39	2145 41 27-42					
	675x675	600x600	c.f.m. NC - db Min. - Max. Throw, ft.	1200 23 17-29	1600 28 23-35	2000 34 28-40	2400 40 33-46	2800 43 38-52					
	300x225	225x150	c.f.m. NC - db Min. - Max. Throw, ft.	115 — 4-10	150 — 5-11	190 23 7-13	225 27 8-14	265 30 9-15					
	375x225	300x150	c.f.m. NC - db Min. - Max. Throw, ft.	150 — 5-11	200 — 6-13	250 24 8-14	300 28 9-16	350 32 11-17					
	375x300	300x225	c.f.m. NC - db Min. - Max. Throw, ft.	230 — 6-14	300 22 8-16	380 27 10-18	450 30 11-19	530 34 13-21					
	450x300	375x225	c.f.m. NC - db Min. - Max. Throw, ft.	280 — 6-15	375 22 8-18	470 27 11-20	565 32 13-22	660 35 15-24					
	450x375	375x300	c.f.m. NC - db Min. - Max. Throw, ft.	375 — 7-18	500 24 9-21	625 29 12-23	750 33 15-25	875 36 17-27					
	300x525	225x450	c.f.m. NC - db Min. - Max. Throw, ft.	338 0 13-22	450 23 18-29	563 29 23-33	675 33 30-40	788 40 33-48					
	450x675	375x600	c.f.m. NC - db Min. - Max. Throw, ft.	750 22 18-30	1000 27 23-36	1250 32 29-42	1500 37 35-47	1750 42 40-54					
	525x600	450x525	c.f.m. NC - db Min. - Max. Throw, ft.	788 22 18-30	1050 27 23-36	1313 32 29-42	1575 38 34-48	1837 45 38-53					
	525x675	450x600	c.f.m. NC - db Min. - Max. Throw, ft.	900 22 16-31	1200 28 23-36	1500 32 29-40	1800 38 32-46	2100 42 38-50					
	300x225	225x150	c.f.m. NC - db Min. - Max. Throw, ft.	115 — 4-10	150 — 5-11	190 23 7-13	225 27 8-14	265 30 9-15					
	375x225	300x150	c.f.m. NC - db Min. - Max. Throw, ft.	150 — 5-11	200 — 6-13	250 24 8-14	300 28 9-16	350 32 11-17					
	450x225	375x150	c.f.m. NC - db Min. - Max. Throw, ft.	190 — 5-14	250 20 7-16	315 26 9-17	375 29 10-19	440 33 12-21					
	525x225	450x150	c.f.m. NC - db Min. - Max. Throw, ft.	230 — 6-14	300 22 8-16	380 27 10-18	450 30 11-19	530 34 13-21					
	375x300	300x225	c.f.m. NC - db Min. - Max. Throw, ft.	230 — 6-14	300 22 8-16	380 27 10-18	450 30 11-19	530 34 13-21					











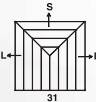
Note : Min. throw based on $V_i = 300$ fpm with V_R not greater than 50 fpm. Max. throw based on $V_i = 125$ fpm with V_R not greater than 20 fpm.

Table 2 - SELECTION DATA FOR DIFFUSERS (SQUARE & RECTANGULAR)

Core Pattern	Size		Rating Total Pressure Drop, Inches, w.g.	Neck Velocity, f.p.m.									
	Listed Size mm	Neck Size mm		300 .035		400 .06		500 .09		600 .13		700 .17	
				L	S	L	S	L	S	L	S	L	S
	450x300	375x225	c.f.m. NC - db Min. - Max. Throw, ft.	280 — 6-15		375 22 8-18		470 27 11-20		565 32 13-22		660 35 15-24	
	600x300	525x225	c.f.m. NC - db Min. - Max. Throw, ft.	395 — 9-18		525 24 10-21		655 29 13-23		785 33 15-26		915 37 17-28	
	450x375	375x300	c.f.m. NC - db Min. - Max. Throw, ft.	375 — 9-18		500 24 10-21		625 29 12-23		750 33 15-25		875 36 17-27	
	525x375	450x300	c.f.m. NC - db Min. - Max. Throw, ft.	450 — 8-19		600 25 11-22		750 30 13-25		900 33 16-28		1050 37 19-30	
	600x375	525x300	c.f.m. NC - db Min. - Max. Throw, ft.	525 20 9-21		700 26 12-24		875 30 14-27		1050 34 17-30		1225 37 20-32	
	525x450	450x375	c.f.m. NC - db Min. - Max. Throw, ft.	565 20 9-22		750 26 12-25		940 31 15-28		1130 35 18-31		1315 38 21-33	
	225x225	150x150	c.f.m. NC - db Min. - Max. Throw, ft.	75 — 3-8		100 — 4-9		125 20 5-10		150 24 7-11		175 28 8-12	
	300x300	225x225	c.f.m. NC - db Min. - Max. Throw, ft.	170 — 5-12		225 20 7-14		280 25 8-15		340 29 10-17		395 32 12-28	
	375x375	300x300	c.f.m. NC - db Min. - Max. Throw, ft.	300 — 7-16		400 23 9-18		500 28 11-21		600 32 13-22		700 35 15-24	
	450x450	375x375	c.f.m. NC - db Min. - Max. Throw, ft.	470 — 8-20		625 25 11-23		780 30 14-26		940 34 16-28		1095 37 19-30	
	525x525	450x450	c.f.m. NC - db Min. - Max. Throw, ft.	675 21 10-24		900 27 13-28		1125 32 16-31		1350 35 20-34		1575 39 23-36	
	600x600	525x525	c.f.m. NC - db Min. - Max. Throw, ft.	919 22 13-22		1225 25 16-24		1531 29 19-27		1837 35 22-29		2144 39 24-31	
	675x675	600x600	c.f.m. NC - db Min. - Max. Throw, ft.	1200 21 —		1600 26 17-28		2000 31 20-29		2400 36 23-31		2800 40 25-31	
	300x225	225x150	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	115 — 75 40 5-11 3-8		150 — 100 50 6-13 4-9		190 23 125 65 8-14 6-10		225 27 150 75 9-16 7-11		265 30 175 90 11-17 8-12	
	375x225	300x150	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	150 — 110 40 6-14 3-8		200 — 150 50 8-16 4-9		250 24 185 65 9-18 6-10		300 28 225 75 11-19 7-11		350 32 260 90 13-21 8-12	
	450x225	375x150	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	190 — 150 40 7-16 3-8		250 20 200 50 9-18 4-9		315 26 250 65 11-2 6-10		375 29 300 75 13-22 7-11		440 33 350 90 15-24 8-12	
		375x300	300x225	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	230 — 145 85 7-15 5-12		300 22 190 110 9-18 6-14		380 27 235 145 11-20 8-15		450 30 280 170 13-22 10-17		530 34 335 195 15-24 11-18
450x300		375x225	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	280 — 195 85 7-18 5-12		375 22 265 110 10-21 6-14		470 27 328 145 12-23 8-15		565 30 395 170 15-26 10-17		660 35 465 195 18-28 11-18	

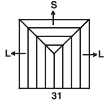
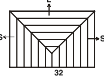
Note : Min. throw based on $V_i = 300$ fpm with V_R not greater than 50 fpm. Max. throw based on $V_i = 125$ fpm with V_R not greater than 20 fpm.

Table 2 - SELECTION DATA FOR DIFFUSERS (SQUARE & RECTANGULAR)

Core Pattern	Size		Neck Velocity, f.p.m.										
	Listed Size mm	Neck Size mm	Rating Total Pressure Drop, Inches, w.g.	300 .035		400 .06		500 .09		600 .13		700 .17	
				L	S	L	S	L	S	L	S	L	S
	450x375	375x300 0.113	c.f.m. Total	375		500		625		750		875	
			NC - db	—		24		29		33		36	
			c.f.m. Per Side	225	150	300	200	375	250	450	300	525	350
			Min. - Max. Throw, ft.	8-19	7-16	11-22	9-18	13-25	11-21	16-28	13-22	19-30	15-24
	525x375	450x300 0.135	c.f.m., Total	450		600		750		900		1050	
			NC - db	—		25		30		33		37	
			c.f.m. Per Side	300	150	400	200	500	250	600	300	700	350
			Min. - Max. Throw, ft.	9-22	7-16	12-26	9-18	15-29	11-21	19-32	13-22	22-34	15-24
	525x450	450x375 0.169	c.f.m., Total	565		750		940		1130		131	
			NC - db	20		26		31		35		38	
			c.f.m. Per Side	330	235	440	310	550	390	660	470	770	545
			Min. - Max. Throw, ft.	10-23	8-20	13-27	11-23	16-30	14-26	19-33	16-28	23-36	19-30
	300x525	225x450 0.101	c.f.m., Total	338		450		563		675		788	
			NC - db	22		22		26		31		36	
			c.f.m. Per Side	253	84	338	113	422	141	506	169	591	197
			Min. - Max. Throw, ft.	12-21		17-28		15-20		15-22		18-24	
	300x600	225x525 0.118	c.f.m., Total	394		525		656		788		919	
			NC - db	22		25		27		32		37	
			c.f.m. Per Side	309	84	413	113	516	141	619	169	722	197
			Min. - Max. Throw, ft.	10-15		13-20		16-22		18-24		19-26	
	375x600	300x525 0.157	c.f.m., Total	525		700		875		1050		1225	
			NC - db	22		23		27		32		38	
			c.f.m. Per Side	375	150	500	200	625	250	750	300	875	350
			Min. - Max. Throw, ft.	15-20		16-22		19-25		21-27		23-28	
	450x600	375x525 0.196	c.f.m., Total	656		875		1094		1313		1531	
			NC - db	21		23		28		33		38	
			c.f.m. Per Side	422	234	563	313	703	391	844	469	984	547
			Min. - Max. Throw, ft.	16-20		19-23		21-25		17-20		25-29	
	450x675	375x600 0.225	c.f.m., Total	750		1000		1250		1500		1750	
			NC - db	22		24		29		34		38	
			c.f.m. Per Side	516	234	688	313	859	391	1031	469	1203	547
			Min. - Max. Throw, ft.	9-21		12-24		15-27		17-29		19-31	
	525x600	450x525 0.236	c.f.m., Total	788		1050		1313		1575		1837	
			NC - db	22		25		29		34		40	
			c.f.m. Per Side	450	338	600	450	750	563	900	675	1050	788
			Min. - Max. Throw, ft.	15-20		18-22		20-26		23-29		27-29	
	525x675	450x600 0.27	c.f.m., Total	900		1200		1500		1800		2100	
			NC - db	22		25		29		35		39	
			c.f.m. Per Side	563	338	750	450	938	563	1125	675	1313	788
			Min. - Max. Throw, ft.	7-14		10-18		14-21		17-25		22-28	
	225x225	150x150 0.022	c.f.m., Total	75		100		125		150		175	
			NC - db	—		—		20		24		28	
			c.f.m. Per Side	28	19	38	24	47	31	56	38	66	43
			Min. - Max. Throw, ft.	3-7	2-6	4-8	3-6	5-9	4-7	6-10	5-8	7-11	5-9
			300x300	225x225 0.051	c.f.m., Total	170		225		280		340	
NC - db	—		20		25		29		32		32		
c.f.m. Per Side	63	44	84	57	106	68	127	81	148	94			
Min. - Max. Throw, ft.	4-10	4-8	6-12	5-10	7-13	6-11	9-15	7-12	10-16	8-13			
375x375	300x300 0.09	c.f.m., Total	300		400		500		600		700		
NC - db	—		23		28		32		35		35		
c.f.m. Per Side	113	74	150	100	188	124	225	150	263	174			
Min. - Max. Throw, ft.	6-14	5-11	8-16	6-13	9-18	8-14	11-19	9-16	13-21	11-17			
450x450	375x375 0.141	c.f.m., Total	470		625		780		940		1095		
NC - db	—		25		30		34		37		37		
c.f.m. Per Side	176	118	235	155	295	190	350	240	410	275			
Min. - Max. Throw, ft.	7-17	6-14	9-20	8-16	12-22	10-18	14-24	12-20	17-26	14-21			
525x525	450x450 0.203	c.f.m., Total	675		900		1125		1350		1575		
NC - db	21		27		32		35		39		39		
c.f.m. Per Side	255	165	340	220	420	285	505	340	590	395			
Min. - Max. Throw, ft.	9-21	7-17	11-24	9-19	14-27	12-22	17-29	14-24	20-32	16-26			

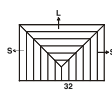
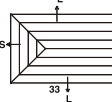
Note : Min. throw based on $V_1 = 300$ fpm with V_2 not greater than 50 fpm. Max. throw based on $V_1 = 125$ fpm with V_2 not greater than 20 fpm.

Table 2 - SELECTION DATA FOR DIFFUSERS (SQUARE & RECTANGULAR)

Core Pattern	Size		Rating Total Pressure Drop, Inches, w.g.	Neck Velocity, f.p.m.									
	Listed Size mm	Neck Size mm		300 .035		400 .06		500 .09		600 .13		700 .17	
				L	S	L	S	L	S	L	S	L	S
	600x600	525x525 0.276	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	920 22 345 230 10-24 8-20	1225 28 460 305 13-28 11-23	1530 34 575 380 17-31 13-25	1840 37 690 455 24-16-28 23-37	2145 41 805 530 19-30					
	675x375	600x600 0.36	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	1200 24 450 300 11-28 9-22	1600 30 600 400 15-32 12-26	2000 35 750 500 19-36 15-29	2400 38 900 600 23-39 19-32	2800 42 1050 700 26-42 22-34					
	300x225	225x150 0.034	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	115 — 42 36 4-8 3-8	150 — 56 47 5-10 4-9	190 23 71 59 6-11 5-10	225 27 85 70 7-12 6-11	265 30 100 83 8-13 7-12					
	375x225	300x150 0.045	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	150 — 76 37 5-11 3-8	200 — 100 50 6-13 4-9	250 24 125 63 8-14 5-10	300 28 150 75 9-16 7-11	350 32 175 87 11-17 8-12					
	450x225	375x150 0.056	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	190 — 115 38 6-14 3-8	250 20 150 50 8-16 4-9	315 26 190 63 10-18 6-10	375 29 225 75 11-19 7-11	440 33 265 88 13-21 8-12					
	525x225	450x150 0.068	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	230 — 150 40 7-16 3-8	300 22 200 50 9-18 4-9	380 27 250 65 11-2 6-10	450 30 300 75 13-22 7-11	530 34 350 90 15-24 8-12					
	375x300	300x225 0.068	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	230 — 80 75 5-11 5-11	300 22 100 100 6-13 6-13	380 27 130 125 8-14 8-14	450 30 150 150 9-16 9-16	530 34 180 175 11-17 1-17					
	450x300	375x225 0.084	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	280 — 120 80 6-14 5-12	375 22 155 110 8-16 6-14	470 27 195 140 10-18 8-15	565 32 235 165 12-20 10-17	660 35 275 195 14-21 11-18					
	600x300	525x225 0.118	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	395 — 225 85 8-19 5-12	525 24 300 115 11-22 7-14	655 29 375 140 13-25 8-15	785 33 450 170 16-28 10-17	915 37 525 195 19-20 11-18					
	450x375	375x300 0.112	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	375 — 115 130 6-14 6-11	500 24 160 170 8-16 8-13	625 29 195 215 10-18 10-15	750 33 240 235 12-20 12-16	875 36 275 300 14-21 14-17					
	525x375	450x300 0.135	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	450 — 170 140 7-17 6-15	600 25 225 185 9-19 8-18	750 30 280 235 12-22 11-20	900 33 340 280 14-24 13-22	1050 37 395 325 16-26 15-24					
	525x450	450x375 0.169	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	565 20 165 200 7-17 8-18	750 26 230 260 9-19 10-21	940 31 280 330 12-22 13-23	1130 35 340 395 14-24 15-26	1315 38 395 460 16-26 18-28					
	600x525	525x450 0.236	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	790 22 230 280 8-20 9-22	1050 28 300 375 11-23 12-25	1315 32 385 465 14-25 15-28	1580 37 460 560 16-28 18-31	1840 40 540 650 19-30 21-33					
	225x375	150x300 0.045	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	150 22 75 38 6-10	200 22 100 50 9-14	250 22 124 62 10-14	300 27 150 75 13-18	350 32 175 88 14-18					

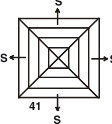
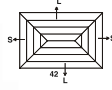
Note : Min. throw based on $V_t = 300$ fpm with V_R not greater than 50 fpm. Max. throw based on $V_t = 125$ fpm with V_R not greater than 20 fpm.

Table 2 - SELECTION DATA FOR DIFFUSERS (SQUARE & RECTANGULAR)

Core Pattern	Size		Neck Velocity, f.p.m.										
	Listed Size mm	Neck Size mm	Rating Total Pressure Drop, Inches, w.g.	300 .035		400 .06		500 .09		600 .13		700 .17	
				L	S	L	S	L	S	L	S	L	S
	450x600	375x525	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	656 21 229 212 9-15	875 23 305 283 12-18	1094 28 382 354 15-21	1313 33 458 426 17-22	1531 40 535 497 19-24					
	525x675	450x600	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	900 22 300 300 11-18	1200 24 400 400 13-19	1500 29 500 500 17-24	1800 35 600 600 18-24	2100 40 700 700 21-28					
<p>Pattern 33</p> 	300x225	225x150	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	115 — 48 19 4-9 2-6	150 — 63 25 5-10 3-6	190 23 79 32 6-11 4-7	225 27 94 38 7-13 5-8	265 30 110 44 9-14 5-9					
	375x225	300x150	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	150 — 65 19 4-11 2-6	200 — 88 25 6-12 3-6	250 24 110 32 7-14 4-7	300 28 130 38 9-15 5-8	350 32 155 44 10-16 5-9					
	450x225	375x150	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	190 — 85 19 5-12 2-6	250 20 115 25 7-14 3-6	315 26 140 32 8-15 4-7	375 29 170 38 10-17 5-8	440 33 200 44 12-18 5-9					
	375x300	300x225	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	230 — 94 42 5-12 3-8	300 22 120 56 7-14 5-10	380 27 155 71 9-16 6-11	450 30 185 85 10-18 7-12	530 34 215 100 12-19 8-13					
	450x300	375x225	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	280 — 120 42 6-14 3-8	375 22 160 56 8-16 5-10	470 27 200 71 10-18 6-11	565 32 240 85 12-20 7-12	660 35 280 100 14-22 8-13					
	600x300	525x225	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	395 — 175 45 7-17 4-8	525 24 235 55 9-20 5-10	655 29 295 65 12-22 6-11	785 33 350 85 14-24 7-12	915 37 410 95 17-26 8-13					
	450x375	375x300	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	375 — 150 75 7-16 5-11	500 24 200 100 9-18 6-13	625 29 250 125 11-21 8-14	750 33 300 150 13-22 9-16	875 36 350 175 15-24 11-17					
	525x375	450x300	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	450 — 190 75 7-18 5-11	600 25 250 100 10-21 6-13	750 30 315 125 12-23 8-14	900 33 375 150 15-25 9-16	1050 37 440 175 17-27 11-17					
	525x450	450x375	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	565 20 225 115 8-19 6-14	750 26 300 155 11-22 8-16	940 31 375 195 13-25 10-18	1130 35 450 235 16-27 12-20	1315 38 520 275 19-30 14-21					
	600x525	525x450	c.f.m., Total NC - db c.f.m. Per Side Min. - Max. Throw, ft.	790 22 310 170 9-23 7-17	1050 28 415 225 13-26 9-19	1315 32 520 280 16-29 12-22	1580 37 620 340 19-32 14-24	1840 40 725 395 22-35 16-26					
	300x525	225x450	C.f.m. NC - db c.f.m. Per Side Min. - Max. Throw, ft.	338 22 147 42 8-12	450 22 96 56 11-15	563 26 246 70 13-15	675 31 294 84 15-21	788 35 344 98 17-2					
	450x600	375x525	C.f.m. NC - db c.f.m. Per Side Min. - Max. Throw, ft.	656 22 270 117 10-17	875 24 359 156 13-20	1094 28 448 195 12-22	1313 33 538 234 18-24	1531 39 629 273 17-26					


Note : Min. throw based on $V_i = 300$ fpm with V_r not greater than 50 fpm. Max. throw based on $V_i = 125$ fpm with V_r not greater than 20 fpm.

Table 2 - SELECTION DATA FOR DIFFUSERS (SQUARE & RECTANGULAR)

Core Pattern	Size		Rating Total Pressure Drop, Inches, w.g.	Neck Velocity, f.p.m.										
	Listed Size mm	Neck Size mm		300 .035		400 .06		500 .09		600 .13		700 .17		
				L	S	L	S	L	S	L	S	L	S	
Pattern 33	525x675	450x600	c.f.m.	—		1200		1500		1800		2100		
		0.27	NC - db	22		25		30		34		39		
			c.f.m. Per Side	366	169	488	225	609	281	730	338	852	394	
			Min. - Max. Throw, ft.	8-19		14-22		14-20		19-22		18-23		
	255x225	150x150	c.f.m.	75		100		125		150		175		
		0.022	NC - db	—		—		—		—		—		
				Min. - Max. Throw, ft.	2-6		3-6		4-7		5-8		5-9	
	300x300	225x225	c.f.m.	170		225		280		340		395		
		0.050	NC - db	—		—		—		23		27		
				Min. - Max. Throw, ft.	4-8		5-10		6-11		7-12		8-13	
	375x375	300x300	c.f.m.	300		400		500		600		700		
		0.09	NC - db	—		20		25		29		32		
				Min. - Max. Throw, ft.	5-11		6-13		8-14		9-16		11-17	
	450x450	375x375	c.f.m.	470		625		780		940		1095		
		0.141	NC - db	—		24		29		33		37		
				Min. - Max. Throw, ft.	6-14		7-16		10-18		12-20		14-21	
525x525	450x450	c.f.m.	675		900		1125		1350		1575			
	0.203	NC - db	22		28		33		36		40			
			Min. - Max. Throw, ft.	7-17		9-19		12-22		14-24		16-26		
600x600	525x525	c.f.m.	920		1225		1530		1840		2145			
	0.276	NC - db	25		31		36		39		43			
			Min. - Max. Throw, ft.	8-20		11-23		14-25		16-28		19-30		
675x675	600x600	c.f.m.	1200		1600		2000		2400		2800			
	0.36	NC - db	27		33		38		43		46			
			Min. - Max. Throw, ft.	9-22		13-26		15-29		19-32		22-34		
	300x225	225x150	c.f.m., Total	115		150		190		225		265		
		0.034	NC - db	—		—		—		—		23		
				c.f.m. Per Side	39	19	50	25	63	32	75	38	89	44
				Min. - Max. Throw, ft.	3-8		2-6		4-9		3-6		5-10	
	375x225	300x150	c.f.m., Total	150		200		250		300		350		
		0.045	NC - db	—		—		—		22		25		
				c.f.m. Per Side	56	19	75	25	93	32	110	38	155	44
				Min. - Max. Throw, ft.	4-10		2-6		5-11		3-6		7-13	
	450x225	375x150	c.f.m., Total	190		250		315		375		440		
		0.056	NC - db	—		—		20		24		28		
				c.f.m. Per Side	76	19	100	25	125	32	150	38	175	44
				Min. - Max. Throw, ft.	5-11		2-6		6-13		3-6		8-14	
525x225	450x150	c.f.m., Total	230		300		380		450		530			
	0.068	NC - db	—		—		22		26		30			
			c.f.m. Per Side	96	19	125	25	160	32	185	38	220	44	
			Min. - Max. Throw, ft.	5-13		2-6		7-15		3-6		9-16		
375x300	300x225	c.f.m., Total	230		300		380		450		530			
	0.068	NC - db	—		—		22		26		30			
			c.f.m. Per Side	73	42	94	56	120	70	140	84	165	98	
			Min. - Max. Throw, ft.	5-11		3-8		6-13		5-10		8-14		
450x300	375x225	c.f.m., Total	280		375		470		565		660			
	0.084	NC - db	—		20		24		28		32			
			c.f.m. Per Side	98	42	130	56	165	70	200	84	230	98	
			Min. - Max. Throw, ft.	5-13		3-8		7-15		5-10		9-17		
525x300	450x225	c.f.m., Total	340		450		565		675		790			
	0.101	NC - db	—		21		26		30		33			
			c.f.m. Per Side	125	42	170	56	210	70	255	84	295	98	
			Min. - Max. Throw, ft.	6-15		3-8		8-17		5-10		10-19		
600x300	525x225	c.f.m., Total	395		525		655		785		915			
	0.118	NC - db	—		23		27		32		35			
			c.f.m. Per Side	155	42	205	56	260	70	310	84	360	98	
			Min. - Max. Throw, ft.	7-16		3-8		9-19		5-10		11-21		

Note : Min. throw based on $V_i = 300$ fpm with V_n not greater than 50 fpm. Max. throw based on $V_i = 125$ fpm with V_n not greater than 20 fpm.

Table 2 - SELECTION DATA FOR DIFFUSERS (SQUARE & RECTANGULAR)

Core Pattern	Size		Rating Total Pressure Drop, Inches, w.g.	Neck Velocity, f.p.m.									
	Listed Size mm	Neck Size mm		300 .035		400 .06		500 .09		600 .13		700 .17	
				L	S	L	S	L	S	L	S	L	S
	675x300	600x225 0.135	c.f.m., Total	450		600		750		900		1050	
			NC - db	—		24		28		33		36	
			c.f.m. Per Side	185	42	245	56	305	70	365	84	425	98
	Min. - Max. Throw, ft.	7-18	3-8	10-20	5-10	12-23	6-11	14-25	7-12	17-27	8-13		
	450x375	375x300 0.112	c.f.m., Total	375		500		625		750		875	
			NC - db	—		22		27		31		34	
			c.f.m. Per Side	115	75	150	100	190	125	225	150	265	175
	Min. - Max. Throw, ft.	6-14	5-11	8-16	6-13	10-18	8-14	11-19	9-16	13-20	11-17		
	525x375	450x300 0.135	c.f.m., Total	450		600		750		900		1050	
			NC - db	—		24		28		33		36	
			c.f.m. Per Side	150	75	200	100	250	125	300	150	350	175
	Min. - Max. Throw, ft.	7-16	5-11	9-18	6-13	11-21	8-14	13-22	9-16	15-24	11-17		
	600x375	525x300 0.158	c.f.m., Total	525		700		875		1050		1225	
			NC - db	—		25		30		34		37	
c.f.m. Per Side			190	75	250	100	315	125	375	150	440	175	
Min. - Max. Throw, ft.	7-18	5-11	10-21	6-13	12-23	8-14	15-25	9-16	17-27	11-17			
675x375	600x300 0.18	c.f.m., Total	600		800		1000		1200		1400		
		NC - db	21		27		32		35		38		
		c.f.m. Per Side	225	125	300	100	375	125	450	150	525	175	
Min. - Max. Throw, ft.	8-19	6-11	11-22	6-13	13-25	8-14	16-28	9-16	19-30	11-17			
525x450	450x375 0.169	c.f.m., Total	565		750		940		1130		1315		
		NC - db	20		26		31		35		38		
		c.f.m. Per Side	165	120	220	155	280	190	330	235	380	275	
Min. - Max. Throw, ft.	7-17	6-14	9-19	8-16	12-21	10-18	14-23	12-20	16-25	14-21			
600x450	525x375 0.197	c.f.m., Total	655		875		1095		1315		1530		
		NC - db	21		27		32		36		40		
		c.f.m. Per Side	210	120	285	155	360	190	425	235	495	275	
Min. - Max. Throw, ft.	8-19	6-14	10-22	8-16	13-24	10-18	16-27	12-20	18-29	14-21			
675x450	600x375 0.225	c.f.m., Total	750		1000		1250		1500		1750		
		NC - db	22		29		33		27		41		
		c.f.m. Per Side	260	115	345	155	430	195	518	236	800	275	
Min. - Max. Throw, ft.	9-21	6-14	11-24	8-16	14-27	10-16	17-29	12-20	20-32	14-21			
600x525	525x450 0.236	c.f.m., Total	790		1050		1315		1580		1840		
		NC - db	23		29		34		38		41		
		c.f.m. Per Side	225	170	300	225	380	280	450	340	525	395	
Min. - Max. Throw, ft.	8-19	7-17	11-22	9-19	13-25	11-22	16-28	14-24	19-30	16-26			
675x525	600x450 0.27	c.f.m., Total	900		1200		1500		1800		2100		
		NC - db	24		31		36		39		43		
		c.f.m. Per Side	280	170	375	225	470	280	560	340	655	395	
Min. - Max. Throw, ft.	9-22	7-17	12-25	9-19	15-28	11-22	18-31	14-24	21-33	16-26			
675x600	600x525 0.315	c.f.m., Total	1050		1400		1750		2100		2450		
		NC - db	26		32		37		41		44		
		c.f.m. Per Side	295	230	395	305	490	385	590	460	690	540	
Min. - Max. Throw, ft.	9-22	8-20	12-26	11-23	15-29	14-25	18-32	16-28	21-34	19-30			

Note : Min. throw based on $V_i = 300$ fpm with V_a not greater than 50 fpm. Max. throw based on $V_i = 125$ fpm with V_a not greater than 20 fpm.

Mfg. & Mkt. By:

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