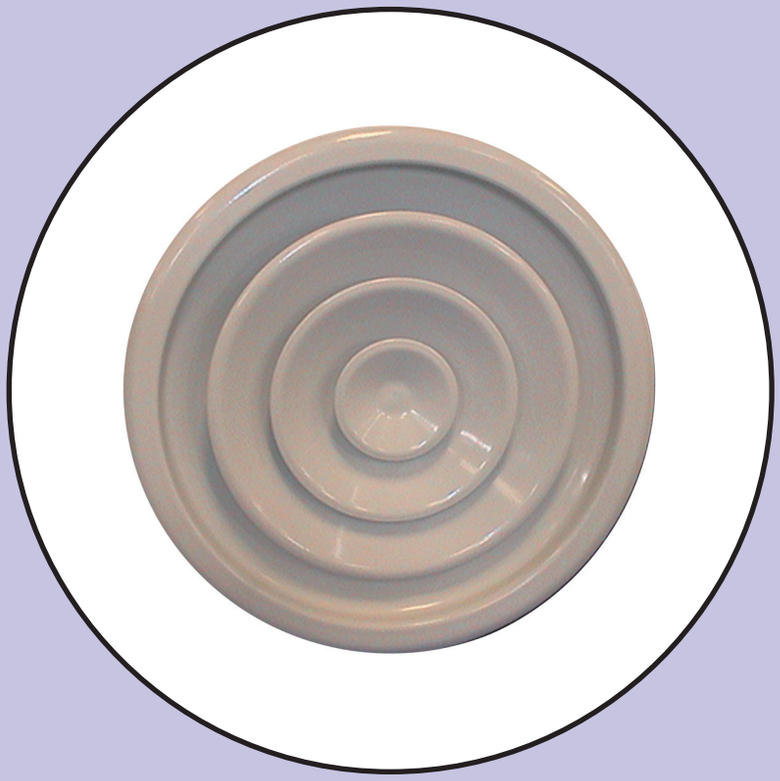
جي جي سي

GGC

شركة الخليج لفتحات التكييف المركزي

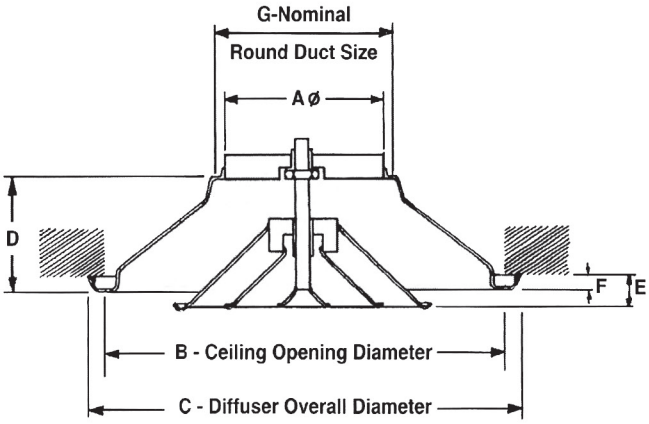
GULF GRILLES CO.



ROUND CEILING DIFFUSER

CRD12

ROUND CEILING DIFFUSERS



OUTSTANDING FEATURES

- Supply or exhaust round ceiling diffusers with fully adjustable cores to provide horizontal or vertical air pattern.
- The "UP" position of the core provides vertical throw and "DOWN" position provides horizontal throw.
- Expanded cones feature gives a high degree of mixing of primary and secondary air that provides excellent air distribution and efficiency.
- Removable inner core permit easy installation and access to duct.
- Composed of 2 inner cones for sizes 6" Ø and 8" Ø, 3 inner cones for 10" Ø and 24" Ø.
- Sponge gasket added to prevent streaking.
- Construction : Aluminum.
- Standard finish : White painted under electrostatic polyester powder coated system. Other colors available on request. The polyester powder of highest quality are used to enhance the appearance of the units.
- Application Recommendation : Heating, Cooling or Ventilating with temperature differential of 30°F and over requiring wide diffusion effect. For ceiling or exposed duct installation.

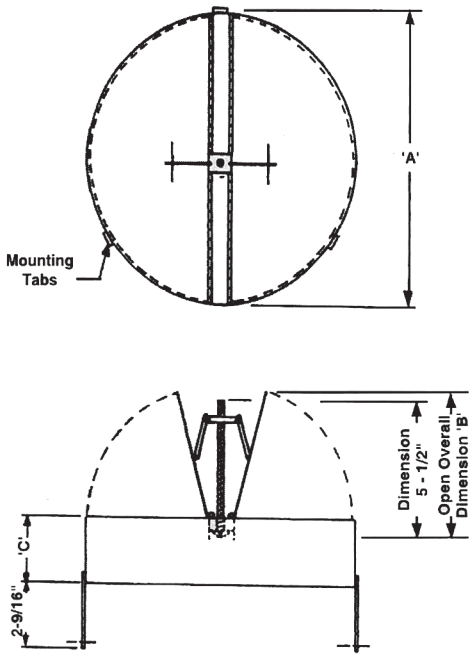
Listed Sizes

Size	Cores	CFM Range
6" Ø	2	60 - 315
8" Ø	2	105 - 560
10" Ø	3	165 - 870
12" Ø	3	235 - 1255
14" Ø	3	320 - 1710
16" Ø	3	420 - 2240
18" Ø	3	530 - 2830
20" Ø	3	655 - 3490
24" Ø	3	940 - 5025

Nominal Size (G)	Dimension in Inches					
	AØ	BØ	CØ	D	E	F
6"	5 -3/4	11 - 5/8	12 - 5/8	1 - 13/16	7/8	3/8
8"	7 - 3/4	15 - 3/8	16 - 7/8	2 - 3/8	1 - 1/32	7/16
10"	9 - 3/4	19	21 - 1/8	3 - 3/16	1 - 5/16	1/2
12"	11 - 3/4	22 - 9/16	25 - 13/32	3 - 3/4	1 - 11/16	5/8
14"	13 - 3/4	25 - 1/2	27 - 5/8	4	1 - 13/16	3/4
16"	15 - 3/4	29 - 1/2	31 - 3/4	4 - 1/2	1 - 15/16	7/8
18"	17 - 3/4	32 - 1/2	34 - 1/2	5	2 - 5/8	3/4
20"	19 - 3/4	35 - 1/4	37 - 1/2	5 - 1/4	2 - 5/8	7/8
24"	23 - 3/4	42	45 -1/4	4 - 3/4	2 - 3/4	1

ACCESSORY

BUTTERFLY DAMPER



NOMINAL DIMENSION (IN.)	A (IN.)	B (IN.)	C (IN.)
6"	5 - 7/8	3 - 3/16	2
8"	7 - 7/8	4 - 3/16	2
10"	9 - 7/8	5 - 3/16	2
12"	11 - 7/8	6 -19/64	2
14"	13 - 7/8	7 -19/64	2
16"	15 - 7/8	8	3
18"	17 - 7/8	9	3
20"	19 - 7/8	10 - 7/16	3
24"	23 - 7/8	12	3

Economical damper for volume control in round neck diffusers. Continuously adjustable, friction pivots hold the heavy gauge blades at the desired setting. Quickly, easily adjusted from the face side of the diffuser. Can be mounted directly on the diffuser neck before installation.

SUPPLY AIR ROUND CEILING DIFFUSERS
PERFORMANCE DATA

MODEL : CRD12 - D

NECK SIZE (nohes)	NECK AREA (Sq.Ft,)	NECK VELOCITY (FPM)		300	400	500	600	700	800	900	1000	1100	1200	1400	1600
		Velocity Pressure		0.006	0.010	0.016	0.023	0.031	0.040	0.051	0.063	0.075	0.090	0.122	0.160
6 Dia.	0.196	Air Flow, CFM		60	80	100	120	135	155	175	195	215	235	275	315
		Total Pressure	H	0.024	0.041	0.065	0.093	0.126	0.162	0.207	0.255	0.304	0.365	0.494	0.648
			V	0.035	0.058	0.093	0.133	0.180	0.232	0.296	0.365	0.435	0.522	0.708	0.928
		Radius of Diff., Feet		2-3	2-4	3-5	3-5	4-6	4-6	5-7	5-7	5-7	6-8	6-8	7-9
		NC		<20	<20	<20	<20	<20	23	26	30	33	35	40	44
8 Dia.	0.349	Air Flow, CFM		105	140	175	210	245	280	315	350	385	420	490	560
		Total Pressure	H	0.017	0.029	0.046	0.066	0.088	0.114	0.145	0.180	0.214	0.257	0.348	0.456
			V	0.026	0.044	0.070	0.101	0.136	0.176	0.224	0.277	0.330	0.396	0.537	0.704
		Radius of Diff., Feet		2-4	3-5	4-6	4-7	5-7	6-8	6-8	7-9	7-10	7-10	8-11	9-12
		NC		<20	<20	<20	21	26	31	34	37	40	44	48	>50
10 Dia.	0.545	Air Flow, CFM		165	220	275	325	380	435	490	545	600	655	765	870
		Total Pressure	H	0.017	0.028	0.044	0.063	0.085	0.110	0.140	0.173	0.206	0.248	0.335	0.440
			V	0.025	0.041	0.066	0.095	0.128	0.165	0.210	0.260	0.309	0.371	0.503	0.659
		Radius of Diff., Feet		3-6	5-7	5-8	6-9	7-9	8-10	8-11	9-12	9-12	10-13	11-14	12-15
		NC		<20	<20	<20	<20	21	26	30	33	36	39	44	48
12 Dia.	0.785	Air Flow, CFM		235	315	395	470	550	630	705	785	865	940	1100	1255
		Total Pressure	H	0.015	0.025	0.040	0.057	0.077	0.099	0.126	0.156	0.185	0.222	0.301	0.395
			V	0.022	0.036	0.058	0.083	0.112	0.144	0.184	0.227	0.270	0.324	0.439	0.576
		Radius of Diff., Feet		4-6	5-7	6-9	7-10	8-11	9-12	10-13	10-14	11-14	11-15	13-16	14-18
		NC		<20	<20	<20	<20	22	26	30	33	36	39	45	49
14 Dia.	1.07	Air Flow, CFM		320	430	535	640	750	855	965	1070	1175	1285	1500	1710
		Total Pressure	H	0.014	0.024	0.038	0.055	0.074	0.096	0.122	0.151	0.180	0.216	0.293	0.384
			V	0.022	0.036	0.058	0.083	0.112	0.144	0.184	0.227	0.270	0.324	0.439	0.576
		Radius of Diff., Feet		4-7	6-8	7-10	8-11	9-12	10-13	11-15	12-16	13-16	13-17	15-19	16-23
		NC		<20	<20	<20	23	28	32	36	40	43	46	>50	>50
16 Dia.	1.40	Air Flow, CFM		420	560	700	840	980	1120	1260	1400	1540	1680	1960	2240
		Total Pressure	H	0.014	0.023	0.037	0.053	0.071	0.092	0.117	0.145	0.173	0.207	0.281	0.368
			V	0.021	0.035	0.056	0.080	0.108	0.139	0.177	0.219	0.260	0.312	0.423	0.555
		Radius of Diff., Feet		5-7	7-10	8-12	10-13	11-15	12-16	13-17	14-18	15-19	15-20	17-21	19-23
		NC		<20	<20	<20	22	27	31	35	39	42	44	49	>50
18 Dia.	1.77	Air Flow, CFM		530	710	885	1060	1240	1415	1595	1770	1945	2125	2480	2830
		Total Pressure	H	0.014	0.022	0.036	0.051	0.069	0.089	0.114	0.140	0.167	0.201	0.272	0.357
			V	0.022	0.037	0.059	0.084	0.114	0.147	0.187	0.231	0.275	0.330	0.448	0.587
		Radius of Diff., Feet		6-8	7-11	9-12	10-14	12-16	13-17	14-19	16-20	16-21	18-22	19-24	21-25
		NC		<20	<20	<20	21	26	30	34	37	40	43	48	>50
20 Dia.	2.18	Air Flow, CFM		655	870	1090	1310	1525	1745	1960	2180	2400	2615	3050	3490
		Total Pressure	H	0.012	0.021	0.033	0.047	0.064	0.082	0.105	0.129	0.154	0.185	0.250	0.328
			V	0.023	0.039	0.062	0.090	0.121	0.156	0.199	0.246	0.293	0.351	0.476	0.624
		Radius of Diff., Feet		6-9	8-12	10-14	12-16	14-17	15-19	16-21	17-22	18-23	19-24	21-26	23-28
		NC		<20	<20	<20	21	26	30	34	38	40	43	48	>50

- Total Prssure - The sum of static pressure plus velocity pressure is given in inches W.C.
- Neck velocity - Air flow rate (CFM) divided by Neck Area (SQ.FT) equals Neck Velocity(FPM)
- Radus of Dffusion, Feet - Radius of diffusion is basedcon a minimum terminal velocity of 100 FPM and a maximum terminal velocity of 50 FPM. Using isothermal air and horizontal air pattern
- NO Level dB - It is dased on a room adsorpt ion of 10 dB, re 10 W atts Values shown are dor horizontal pattern: Add 1 dB for a vertical pattern.

SUPPLY AIR ROUND CEILING DIFFUSERS
PERFORMANCE DATA

MODEL : CRD12 -D

NECK SIZE (inches)	NECK AREA (Sq. Ft.)	NECK VELOCITY (FPM)		300	400	500	600	700	800	900	1000	1100	1200	1400	1600
		Velocity Pressure		0.006	0.010	0.016	0.023	0.031	0.040	0.051	0.063	0.075	0.090	0.122	0.160
24 Dia.	3.14	Air Flow, CFM		940	1255	1570	1885	2200	2510	2825	3140	3455	3770	4395	5025
		Total Pressure	H	0.011	0.018	0.030	0.045	0.064	0.080	0.102	0.122	0.142	0.174	0.23	0.305
			V	0.025	0.042	0.068	0.102	0.118	0.158	0.205	0248	0.295	0.255	0.488	0.640
		Radi. of Diffusion		8-11	10-14	12-16	14-18	16-20	17-22	18-24	19-25	20-27	22-30	24-32	26-34
		N.C. Level		<20	<20	22	26	30	32	36	40	44	47	50	>50

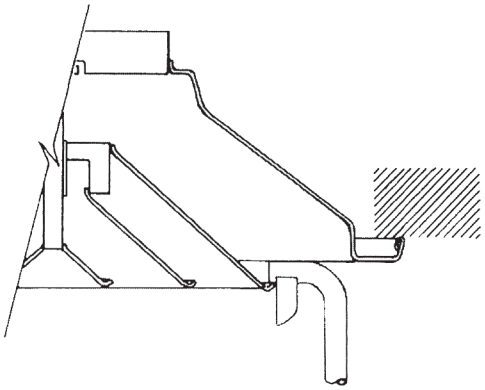
BALANCING DATA

AREA FACTOR (Ak) TABLE									
Diffuser Neck Size	6" Ø	8" Ø	10"Ø	12"Ø	14"Ø	16"Ø	18"Ø	20"Ø	24"Ø
Horizontal Pattern (Sq. Ft.)	0.181	0.331	0.361	0.622	0.892	1.03	1.48	1.72	2.85
Vertical Pattern (Sq. Ft.)	0.142	0.252	0.342	0.472	0.652	0.842	1.04	1.25	1.72

To determine CFM :

1. Position the Tip as shown and take a minimum of 6 readings around the perimeter of the diffuser.
2. Average the measured velocities.
3. Select proper Ak from table using diffuser size and air pattern.
4. Determine CFM by the following equation :

   CFM = Ak x Average velocity.



Sample Problem :

Determine Air flow rate (CFM) through an 18" with a horizontal pattern.
Use ALNOR velometer with number 2220A Tip.

Solution :

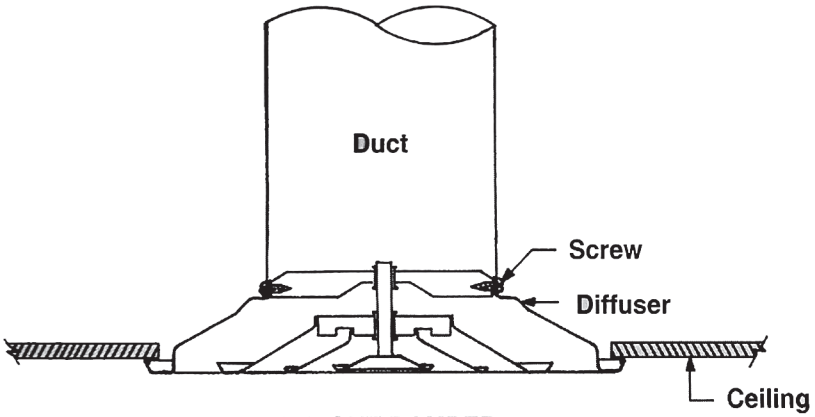
1. Assume the average of six velocity readings taken with the ALNOR velometer is 600 FPM.
2. From table, the area factor for an 18" with horizontal pattern is
   Ak = 1.48 sq. ft.
3. CFM = Ak x Average velocity.
   = 1.48 sq. ft. x 600 fpm.
   = 888 CFM.

RETURN AIR ROUND CEILING DIFFUSERS
PERFORMANCE DATA

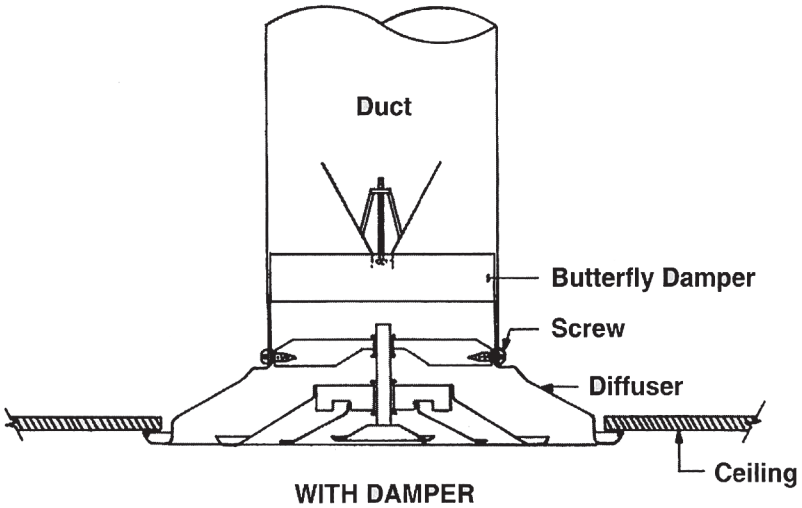
MODEL : CRD12 - X

NECK SIZE (Inches)	NECK AREA (Sq. Ft.)	NECK VELOCITY(fpm)	300	400	500	600	700	800	900	1000	1100	1200	1400	1600
		Velocity Pressure(in. w.g.)	0.006	0.010	0.016	0.023	0.031	0.040	0.051	0.063	0.075	0.090	0.122	0.160
6 Dia.	0.196	CFM	60	80	100	120	135	155	175	195	215	235	275	315
		Negative SP (in. w.g.)	0.022	0.037	0.059	0.084	0.114	0.146	0.187	0.230	0.275	0.330	0.446	0.586
		NC	<20	<20	<20	<20	21	25	28	32	34	37	42	46
8 Dia.	0.349	CFM	105	140	175	210	245	280	315	350	385	420	490	560
		Negative SP (in. w.g.)	0.013	0.023	0.037	0.052	0.068	0.089	0.113	0.140	0.167	0.200	0.271	0.355
		NC	<20	<20	<20	23	28	32	34	37	41	46	>50	>50
10 Dia.	0.545	CFM	165	220	275	325	380	435	490	545	600	655	765	870
		Negative SP (in. w.g.)	0.013	0.022	0.034	0.048	0.065	0.084	0.107	0.132	0.157	0.190	0.256	0.336
		NC	<20	<20	<20	<20	23	28	32	35	38	41	46	50
12 Dia.	0.785	CFM	235	315	395	470	550	630	705	785	865	940	1100	1255
		Negative SP (in. w.g.)	0.011	0.018	0.029	0.041	0.055	0.071	0.090	0.112	0.132	0.158	0.215	0.282
		NC	<20	<20	<20	<20	24	28	32	35	38	41	47	>50
14 Dia.	1.07	CFM	320	430	535	640	750	855	965	1070	1175	1285	1500	1710
		Negative SP (in. w.g.)	0.010	0.017	0.026	0.038	0.052	0.067	0.085	0.106	0.126	0.151	0.205	0.269
		NC	<20	<20	20	25	30	34	38	42	45	48	>50	>50
16 Dia.	1.40	CFM	420	560	700	840	980	1120	1260	1400	1540	1680	1960	2240
		Negative SP (in. w.g.)	0.010	0.016	0.025	0.036	0.048	0.062	0.079	0.098	0.118	0.140	0.191	0.250
		NC	<20	<20	<20	24	29	33	37	41	44	46	>50	>50
18 Dia.	1.77	CFM	530	710	885	1060	1240	1415	1595	1770	1945	2125	2480	2830
		Negative SP (in. w.g.)	0.010	0.014	0.024	0.034	0.046	0.059	0.076	0.092	0.110	0.133	0.180	0.236
		NC	<20	<20	<20	23	28	32	36	39	43	45	50	>50
20 Dia.	2.18	CFM	655	870	1090	1310	1525	1745	1960	2180	2400	2615	3050	3490
		Negative SP (in. w.g.)	0.007	0.013	0.020	0.029	0.040	0.050	0.065	0.079	0.095	0.114	0.154	0.202
		NC	<20	<20	<20	23	28	32	36	40	43	45	50	>50
24 Dia.	3.14	CFM	940	1255	1570	1885	2200	2510	2825	3140	3455	3770	4395	5025
		Negative SP (in w.g.)	0.005	0.012	0.016	0.024	0.032	0.040	0.055	0.062	0.070	0.102	0.114	0.156
		NC	<20	<20	24	28	31	36	40	43	47	50	>50	>50

- All pressure are in inches of water.
- NC Data based upon 10 dB room attenuation.



WITHOUT DAMPER



WITH DAMPER

1. Install outer cone of the circular diffuser by means of ceiling hangers or with the help of self tapping screws. Duct joints are then sealed with adhesive tape.

2. Central cone assembly can be detached or attached by rotating anti-clockwise or clockwise direction.

3. Horizontal or vertical discharge pattern could be achieved by rotating the central cone clockwise or anti-clockwise directions.

   a. Rotate the central cone clockwise until you get required horizontal discharge pattern.

   b. Rotate anti-clockwise to get required vertical discharge pattern.

4. Butterfly damper is attached to the outer cone collar of the diffuser. (factory assembled for supply diffuser only). Damper adjustable from the face of the diffuser, rotate anti-clockwise and remove the central cone, then with the help of a screw driver damper can be opened or closed.