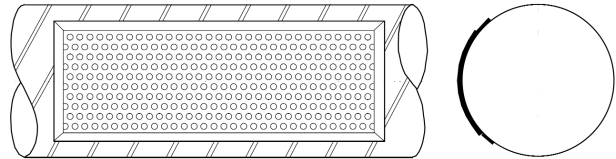


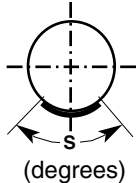
Framed Perforated Grille, DDFGF

Grille Size ⁴ (inches)	Grille Area (sq ft)	Radial Spread Angle ¹ (degrees)	Face Velocity (fpm)	200	400	600	800	1000	1200	1400
			Static Pressure (inches wg)	0.02	0.06	0.14	0.24	0.37	0.53	0.71
			Throw Distance ² (feet)	10 - 15	15 - 30	20 - 45	20 - 50	25 - 60	30 - 70	33 - 75
4 x 4	0.09	38 - 19 - 13	cfm	18	36	54	72	90	108	126
			NC ³	15	15	20	25	35	40	50
4 x 6	0.13	38 - 19 - 13	cfm	26	52	78	104	130	156	182
			NC	15	20	25	25	35	45	55
4 x 8	0.18	38 - 19 - 13	cfm	36	72	108	144	180	216	252
			NC	15	20	25	30	35	45	55
6 x 6	0.21	57 - 29 - 19	cfm	42	84	126	168	210	252	294
			NC	15	20	25	30	35	45	55
4 x 10	0.23	38 - 19 - 13	cfm	46	92	138	184	230	276	322
			NC	15	20	25	30	35	45	55
4 x 12	0.28	38 - 19 - 13	cfm	56	112	168	224	280	336	392
			NC	20	20	25	30	40	45	55
6 x 10	0.36	57 - 29 - 19	cfm	72	144	216	288	360	432	504
			NC	20	25	25	30	40	45	55
8 x 8	0.39	76 - 38 - 25	cfm	78	156	234	312	390	468	546
			NC	20	25	25	30	40	45	55
6 x 12	0.44	57 - 29 - 19	cfm	88	176	264	352	440	528	616
			NC	20	25	25	30	40	50	55
6 x 16	0.59	57 - 29 - 19	cfm	118	236	354	472	590	708	826
			NC	20	25	30	35	40	50	55
8 x 12	0.60	76 - 38 - 25	cfm	120	240	360	480	600	720	840
			NC	20	25	30	35	40	50	55
6 x 20	0.74	57 - 29 - 19	cfm	148	296	444	592	740	888	1036
			NC	25	25	30	35	40	50	60
8 x 16	0.81	76 - 38 - 25	cfm	162	324	486	648	810	972	1134
			NC	25	25	30	35	40	50	60
12 x 12	0.92	115 - 57 - 38	cfm	184	368	486	648	810	972	1134
			NC	25	25	30	35	45	50	60
8 x 24	1.22	76 - 38 - 25	cfm	244	488	732	976	1220	1464	1708
			NC	25	30	30	35	45	50	60

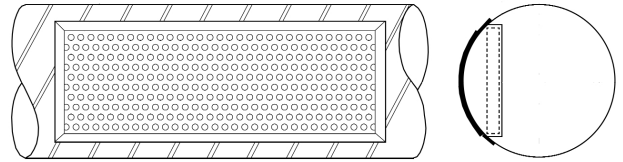
- Notes:**
1. Radial spread angle given as a function of diameter of duct to which grille is attached. Spread angles shown are given in A-B-C format, where 'A' is spread angle for 12-inch, 'B' for 24-inch, and 'C' for 36-inch diameter duct. $S = 360 \text{ (grille height)} / \pi D$.
 2. Throw distance is given in x-y format, where 'x' is the throw distance for the terminal velocity of 150 fpm and 'y' is the throw distance for the terminal velocity of 50 fpm. Throw distance is measured along the discharge centerline, which is generally at an angle from 45 to 65 degrees from the duct centerline. Throw distances may actually be shorter than shown. (See *Engineering Report 159* for details.)
 3. NC is noise criteria for room with 10 dB absorption in each octave band. Actual NC varies according to room absorption, room size, and distance from the diffuser to the occupants.
 4. Grille sizes shown are nominal sizes of height and width. The height dimension assumes the arc length of duct to which it is attached.



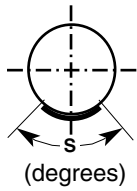
Framed Perforated Grille, DDFGF

Grille Size ⁴ (inches)	Grille Area (sq ft)	Radial Spread Angle ¹  (degrees)	Face Velocity (fpm)	200	400	600	800	1000	1200	1400
			Static Pressure (inches wg)	0.02	0.06	0.14	0.24	0.37	0.53	0.71
			Throw Distance ² (feet)	10 - 15	15 - 30	20 - 45	20 - 50	25 - 60	30 - 70	33 - 75
12 x 18	1.49	115 - 57 - 38	cfm	280	560	840	1120	1400	1680	1960
			NC ³	25	30	35	35	45	55	60
12 x 24	1.88	115 - 57 - 38	cfm	376	752	1128	1504	1880	2256	2632
			NC	25	30	35	40	45	55	65
18 x 18	2.13	172 - 86 - 57	cfm	426	852	1278	1704	2130	2556	2982
			NC	15	30	35	40	45	55	65
12 x 30	2.36	115 - 57 - 38	cfm	472	944	1416	1888	2360	2832	3304
			NC	25	30	35	40	45	55	65
12 x 36	2.84	115 - 57 - 38	cfm	568	1136	1704	2272	2840	3408	3976
			NC	30	30	35	40	50	55	65
18 x 24	2.86	172 - 86 - 57	cfm	572	1144	1716	2288	2860	3432	4004
			NC	30	30	35	40	45	55	65
18 x 30	3.59	172 - 86 - 57	cfm	718	1436	2154	2872	3590	4308	5026
			NC	30	35	35	40	50	55	65
24 x 24	3.84	229 - 115 - 76	cfm	768	1536	2304	3072	3840	4608	5376
			NC	30	35	35	40	50	55	65
18 x 36	4.31	172 - 86 - 57	cfm	862	1724	2586	3448	4310	5172	6034
			NC	30	35	40	40	50	55	65
24 x 36	5.79	229 - 115 - 76	cfm	1158	2316	3474	4632	5790	6948	8106
			NC	30	35	40	45	50	60	65
18 x 54	6.50	172 - 86 - 57	cfm	1300	2600	3900	5200	6500	7800	9100
			NC	35	35	40	45	50	60	65
18 x 60	7.23	172 - 86 - 57	cfm	1446	2892	4338	5784	7230	8676	10122
			NC	35	35	40	45	50	60	>65
24 x 48	7.75	229 - 115 - 76	cfm	1550	3100	4650	6200	7750	9300	10850
			NC	35	35	40	45	50	60	>65
24 x 60	9.71	229 - 57 - 38	cfm	1942	3884	5826	7768	9710	11652	13594
			NC	35	35	40	45	50	60	>65
30 x 48	9.73	286 - 143 - 95	cfm	1946	3892	5838	7784	9730	11676	13622
			NC	35	40	40	45	50	60	>65
30 x 60	12.19	286 - 143 - 95	cfm	2438	4876	7314	9752	12190	14628	17066
			NC	35	40	40	45	55	60	>65

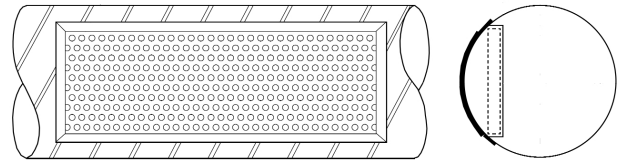
- Notes:**
- Radial spread angle given as a function of diameter of duct to which grille is attached. Spread angles shown are given in A-B-C format, where 'A' is spread angle for 12-inch, 'B' for 24-inch, and 'C' for 36-inch diameter duct. $S = 360$ (grille height) / πD .
 - Throw distance is given in x-y format, where 'x' is the throw distance for the terminal velocity of 150 fpm and 'y' is the throw distance for the terminal velocity of 50 fpm. Throw distance is measured along the discharge centerline, which is generally at an angle from 45 to 65 degrees from the duct centerline. Throw distances may actually be shorter than shown. (See *Engineering Report 159* for details.)
 - NC is noise criteria for room with 10 dB absorption in each octave band. Actual NC varies according to room absorption, room size, and distance from the diffuser to the occupants.
 - Grille sizes shown are nominal sizes of height and width. The height dimension assumes the arc length of duct to which it is attached.



Framed Perforated Grille with Opposed Blade Damper, DDFGOBD

Grille Size ⁴ (inches)	Grille Area (sq ft)	Radial Spread Angle ¹  (degrees)	Face Velocity (fpm)	200	400	600	800	1000	1200	1400
			Static Pressure (inches wg)	0.02	0.06	0.14	0.24	0.37	0.53	0.71
			Throw Distance ² (feet)	10 - 15	15 - 30	20 - 45	20 - 50	25 - 60	30 - 70	33 - 75
4 x 4 (8)	0.09	38 - 19 - 13	cfm	18	36	54	72	90	108	126
			NC ³	15	15	20	25	35	40	50
4 x 6 (8)	0.13	38 - 19 - 13	cfm	26	52	78	104	130	156	182
			NC	15	20	25	25	35	45	55
4 x 8 (8)	0.18	38 - 19 - 13	cfm	36	72	108	144	180	216	252
			NC	15	20	25	30	35	45	55
6 x 6 (10)	0.21	57 - 29 - 19	cfm	42	84	126	168	210	252	294
			NC	15	20	25	30	35	45	55
4 x 10 (8)	0.23	38 - 19 - 13	cfm	46	92	138	184	230	276	322
			NC	15	20	25	30	35	45	55
4 x 12 (8)	0.28	38 - 19 - 13	cfm	56	112	168	224	280	336	392
			NC	20	20	25	30	40	45	55
6 x 10 (10)	0.36	57 - 29 - 19	cfm	72	144	216	288	360	432	504
			NC	20	25	25	30	40	45	55
8 x 8 (12)	0.39	76 - 38 - 25	cfm	78	156	234	312	390	468	546
			NC	20	25	25	30	40	45	55
6 x 12 (10)	0.44	57 - 29 - 19	cfm	88	176	264	352	440	528	616
			NC	20	25	25	30	40	50	55
6 x 16 (10)	0.59	57 - 29 - 19	cfm	118	236	354	472	590	708	826
			NC	20	25	30	35	40	50	55
8 x 12 (12)	0.60	76 - 38 - 25	cfm	120	240	360	480	600	720	840
			NC	20	25	30	35	40	50	55
6 x 20 (10)	0.74	57 - 29 - 19	cfm	148	296	444	592	740	888	1036
			NC	25	25	30	35	40	50	60
8 x 16 (12)	0.81	76 - 38 - 25	cfm	162	324	486	648	810	972	1134
			NC	25	25	30	35	40	50	60
12 x 12 (18)	0.92	115 - 57 - 38	cfm	184	368	486	648	810	972	1134
			NC	25	25	30	35	45	50	60
8 x 24 (12)	1.22	76 - 38 - 25	cfm	244	488	732	976	1220	1464	1708
			NC	25	30	30	35	45	50	60

- Notes:**
1. Radial spread angle given as a function of diameter of duct to which grille is attached. Spread angles shown are given in A-B-C format, where 'A' is spread angle for 12-inch, 'B' for 24-inch, and 'C' for 36-inch diameter duct. $S = 360 \text{ (grille height)} / \pi D$.
 2. Throw distance is given in x-y format, where 'x' is the throw distance for the terminal velocity of 150 fpm and 'y' is the throw distance for the terminal velocity of 50 fpm. Throw distance is measured along the discharge centerline, which is approximately 90 degrees or perpendicular to the duct centerline. Throw distances may actually be shorter than shown.
 3. NC is noise criteria for room with 10 dB absorption in each octave band. Actual NC varies according to room absorption, room size, and distance from the diffuser to the occupants.
 4. Grille sizes shown are nominal sizes of height and width. The height dimension assumes the arc length of duct to which it is attached. The number shown in parentheses is the minimum applicable duct diameter for that grille size.



Framed Perforated Grille with Opposed Blade Damper, DDFGOBD

Grille Size ⁴ (inches)	Grille Area (sq ft)	Radial Spread Angle ¹ (degrees)	Face Velocity (fpm)	200	400	600	800	1000	1200	1400
			Static Pressure (inches wg)	0.02	0.06	0.14	0.24	0.37	0.53	0.71
			Throw Distance ² (feet)	10 - 15	15 - 30	20 - 45	20 - 50	25 - 60	30 - 70	33 - 75
12 x 18 (18)	1.49	115 - 57 - 38	cfm	280	560	840	1120	1400	1680	1960
			NC ³	25	30	35	35	45	55	60
12 x 24 (18)	1.88	115 - 57 - 38	cfm	376	752	1128	1504	1880	2256	2632
			NC	25	30	35	40	45	55	65
18 x 18 (24)	2.13	172 - 86 - 57	cfm	426	852	1278	1704	2130	2556	2982
			NC	15	30	35	40	45	55	65
12 x 30 (18)	2.36	115 - 57 - 38	cfm	472	944	1416	1888	2360	2832	3304
			NC	25	30	35	40	45	55	65
12 x 36 (18)	2.84	115 - 57 - 38	cfm	568	1136	1704	2272	2840	3408	3976
			NC	30	30	35	40	50	55	65
18 x 24 (24)	2.86	172 - 86 - 57	cfm	572	1144	1716	2288	2860	3432	4004
			NC	30	30	35	40	45	55	65
18 x 30 (24)	3.59	172 - 86 - 57	cfm	718	1436	2154	2872	3590	4308	5026
			NC	30	35	35	40	50	55	65
24 x 24 (32)	3.84	229 - 115 - 76	cfm	768	1536	2304	3072	3840	4608	5376
			NC	30	35	35	40	50	55	65
18 x 36 (24)	4.31	172 - 86 - 57	cfm	862	1724	2586	3448	4310	5172	6034
			NC	30	35	40	40	50	55	65
24 x 36 (32)	5.79	229 - 115 - 76	cfm	1158	2316	3474	4632	5790	6948	8106
			NC	30	35	40	45	50	60	65
18 x 54 (24)	6.50	172 - 86 - 57	cfm	1300	2600	3900	5200	6500	7800	9100
			NC	35	35	40	45	50	60	65
18 x 60 (24)	7.23	172 - 86 - 57	cfm	1446	2892	4338	5784	7230	8676	10122
			NC	35	35	40	45	50	60	>65
24 x 48 (32)	7.75	229 - 115 - 76	cfm	1550	3100	4650	6200	7750	9300	10850
			NC	35	35	40	45	50	60	>65
24 x 60 (32)	9.71	229 - 57 - 38	cfm	1942	3884	5826	7768	9710	11652	13594
			NC	35	35	40	45	50	60	>65
30 x 48 (40)	9.73	286 - 143 - 95	cfm	1946	3892	5838	7784	9730	11676	13622
			NC	35	40	40	45	50	60	>65
30 x 60 (40)	12.19	286 - 143 - 95	cfm	2438	4876	7314	9752	12190	14628	17066
			NC	35	40	40	45	55	60	>65

- Notes:**
- Radial spread angle given as a function of diameter of duct to which grille is attached. Spread angles shown are given in A-B-C format, where 'A' is spread angle for 12-inch, 'B' for 24-inch, and 'C' for 36-inch diameter duct. $S = 360$ (grille height) / πD .
 - Throw distance is given in x-y format, where 'x' is the throw distance for the terminal velocity of 150 fpm and 'y' is the throw distance for the terminal velocity of 50 fpm. Throw distance is measured along the discharge centerline, which is approximately 90 degrees or perpendicular to the duct centerline. Throw distances may actually be shorter than shown.
 - NC is noise criteria for room with 10 dB absorption in each octave band. Actual NC varies according to room absorption, room size, and distance from the diffuser to the occupants.
 - Grille sizes shown are nominal sizes of height and width. The height dimension assumes the arc length of duct to which it is attached. The number shown in parentheses is the minimum applicable duct diameter for that grille size.