

**Lüma<sup>®</sup>**

*Grilles, Registers and Diffusers*

PERFORMANCE DATA

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### 667 Baseboard Register

Face Velocity		300	400	500	600	700	800	900	1000
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062
8 x 6	CFM	55	70	90	110	125	145	160	180
Ak .180	Throw	5.5	7.0	9.0	10.5	12.5	14.0	16.0	18.0
10 x 6 and 12 x 5	CFM	75	100	125	145	170	195	220	245
Ak .245	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
14 x 6	CFM	110	145	180	215	252	290	325	360
Ak .360	Throw	7.0	9.5	12.0	14.0	16.5	19.0	21.5	24.0
12 x 8	CFM	130	170	215	255	300	340	385	425
Ak .425	Throw	7.5	10.0	12.5	15.0	18.0	20.5	23.0	25.5

Terminal Velocity of 75 FPM

### 470 Baseboard Diffuser (18")

Face Velocity		300	400	500	600	700	800	900	1000	1200	1400
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062	.090	.122
18" AK .144	CFM	45	60	70	85	100	115	130	145	175	200
	Throw	11	14	17	20	24	27	31	35	42	48
	Spread	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5

Tests conducted with a 2 1/4" x 12" register boot.

Terminal Velocity of 50 FPM

### 471 Baseboard Return

Face Velocity		300	400	500	600	700	800
Pressure Loss		.013	.022	.035	.048	.067	.088
AK .260	CFM	80	105	130	155	180	210
	Spread	4.5	6.5	7.5	8.5	9.5	11.0
	Throw	5.0	7.0	8.0	9.0	10.0	11.0

Terminal Velocity of 50 FPM

### 649 Baseboard Register

Face Velocity		300	400	500	600	700	800	900	1000
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062
8 x 4	CFM	33	44	55	66	77	88	100	110
Ak .110	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
10 x 4	CFM	40	54	67	80	95	110	120	135
Ak .135	Throw	6.5	8.5	10.5	12.5	15.0	17.5	19.0	21.0
12 x 4 and 8 x 6	CFM	55	72	90	108	125	145	162	180
Ak .180	Throw	7.5	10.0	12.5	15.0	17.5	20.5	23.0	25.0
10 x 6	CFM	70	92	115	140	160	185	205	230
Ak .230	Throw	9.0	11.5	14.5	17.5	20.0	23.0	25.5	29.0
12 x 6	CFM	85	115	145	175	205	230	260	290
Ak .290	Throw	10.0	13.0	17.0	20.0	23.5	26.5	30.0	33.0
14 x 6	CFM	102	135	170	205	240	270	305	340
Ak .340	Throw	11.0	14.5	18.0	22.0	25.5	29.0	32.5	36.0

Terminal Velocity of 75 FPM

### AL833 Floor Register

Face Velocity		300		400		500		600		700		800		900		1000	
Pressure Loss		.006		.010		.016		.022		.031		.040		.050		.062	
		H	C	H	C	H	C	H	C	H	C	H	C	H	C	H	C
23x10	cfm							35	35	40	40	45	50	50	55	55	60
Ak .055 Heating	Spread							3.5	3.5	4.5	5	5	5.5	5.5	5.5	5.5	6
Ak .060 Cooling	Throw							4	6	5.5	7.5	6	8.5	6.5	9	7	10
23x12	cfm					35	35	40	45	45	50	55	60	60	65	65	75
Ak .067 Heating	Spread					3.5	4	4	4.5	5	5	5.5	5.5	5.5	6*	6*	7
Ak .074 Cooling	Throw					4	6	5	6.5	5.5	7.5	6	9	7	10	8	11
23x14	cfm			30	35	40	45	45	50	55	60	65	70	70	80	80	85
Ak .079 Heating	Spread			3	4	4	4.5	4.5	5	5.5	5.5	6*	6*	6*	6*	6*	7
Ak .087 Cooling	Throw			3.5	4.5	5	6	5.5	7	6.5	8.5	7.5	10	8	11.5	8.5	12.5
4x10	cfm	35	40	45	50	55	65	70	75	80	90	90	100	105	115	115	125
Ak .115 Heating	Spread	3	3	3.5	4	4.5	5.5	5.5	6*	6*	6*	6*	6*	6*	6*	6*	6*
Ak .125 Cooling	Throw	3	4.5	4	6	5.5	7.5	6.5	9.5	7.5	10.5	8.5	11.5	9.5	13.5	11.5	15
4x12	cfm	40	50	55	65	70	80	85	95	100	110	115	130	125	145	140	160
Ak .140 Heating	Spread	3	4	4	5	5	5.5	5.5	6*	6*	6*	6*	6*	6*	6*	6*	6*
Ak .160 Cooling	Throw	3.5	5	4.5	6.5	6	8.5	7.5	10	11	11.5	10	13	11	15	12	17
4x14	cfm	50	55	65	70	80	90	100	110	115	125	130	145	150	160	165	180
Ak .165 Heating	Spread	3.5	4.5	4.5	5	5	5.5	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*
Ak .180 Cooling	Throw	4	5.5	5.5	7	6.5	9.5	8	11	10	12.5	11	14	12	15.5	13.5	17.5
6x10	cfm	60	60	75	80	95	105	115	125	135	145	150	165	170	185	190	205
Ak .190 Heating	Spread	3.5	4.5	4.5	5.5	5.5	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*
Ak .205 Cooling	Throw	4.5	6	5.5	7.5	7	9.5	8.5	11	10	13	11	15	12.5	16.5	14	18.5
6x12	cfm	70	75	90	100	115	125	135	150	160	175	180	200	205	225	225	250
Ak .225 Heating	Spread	4	5	5	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*
Ak .250 Cooling	Throw	5	6.5	6	8.5	8	10.5	9	12	11	15	12.5	16.5	14	18.5	16	21
6x14	cfm	80	90	105	120	135	150	160	180	185	210	210	240	240	270	265	300
Ak .265 Heating	Spread	4.5	5	5	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*	6*
Ak .300 Cooling	Throw	5	7	7	9.5	8.5	11.5	10	13.5	12	16	13.5	18	16	20.5	17.5	23.5

The spread shown for the heating mode is for a valve setting of 22° right deflection and 22° left deflection. \*The maximum value given for spread for heating is that which occurs at the ceiling height (8 ft.). The cooling spread is a straight vertical column of air and is not shown. Throw and spread values are based on a terminal velocity of 50 fpm.

Recommended Noise Criteria and Face Velocity Ranges are on page 19.



652 / 671 Baseboard Return Grille

827 Toe-Space Grille

Table with columns: Average Face Velocity\*, 300, 400, 500, 600, 700. Rows include various grille sizes (10x6, 12x6, 10x8, 14x6, 12x8, 14x8, 20x6, 16x8, 14x10 and 24x6, 14x12, 30x6, 24x8, 20x10, 24x10 and 30x8, 24x12, 30x10, 30x12) and their corresponding CFM and Pt values.

\*Velocity measured 1" from face

Table with columns: Face Velocity, Pressure Loss, 300, 400, 500, 600, 700, 800, 900, 1000. Rows include grille sizes (2x10, 2x12, 2x14, 4x8, 4x10, 4x12, 4x14, 6x10, 6x12, 6x14) and their corresponding CFM, Spread, and Throw values.

Terminal Velocity of 50 FPM

60GH / AL60GH / 60GHFF / 60GH7 Stamped-Face Return Grille

Table with columns: Face Velocity\*, 300, 400, 500, 600, 700. Rows include grille sizes (6x4, 6x6, 8x4, 8x6, 8x8, 10x4, 10x6, 10x8, 10x10, 12x6, 12x8, 12x10, 12x12, 14x6, 14x8, 14x10, 14x12, 14x14, 14x18) and their corresponding CFM and Ps values.

Table with columns: Face Velocity\*, 300, 400, 500, 600, 700. Rows include grille sizes (14x18, 16x6, 16x8, 16x10, 16x12, 16x14, 16x16, 16x24, 16x25, 18x6, 18x18, 18x24, 20x6, 20x10, 20x12, 20x14, 20x20, 20x24, 20x25) and their corresponding CFM and Ps values.

Table with columns: Face Velocity\*, 300, 400, 500, 600, 700. Rows include grille sizes (24x4, 24x6, 24x8, 24x10, 24x12, 24x14, 24x24, 30x4, 30x6, 30x8, 30x10, 30x12, 30x14, 30x18, 30x20, 30x24, 30x30, 36x8) and their corresponding CFM and Ps values.

\*Tested without filters. Typical disposable 1-inch capacity is 2 CFM per square inch of gross filter area. Recommended velocity is 300-400 FPM. Velocities higher than 500 FPM will decrease filter performance, increase flow resistance, and possibly blow off agglomerates of collected dirt. Velocity measured 1" from face.



63GH Stamped-Face Return Grille

Face Velocity*		300	400	500	600
6 x 4	CFM	33	44	55	66
Ak .111	Ps	.010	.018	.029	.041
6 x 6	CFM	50	67	83	100
Ak .167	Ps	.010	.018	.029	.041
8 x 4	CFM	44	59	74	89
Ak .148	Ps	.010	.018	.029	.041
8 x 6	CFM	67	89	112	134
Ak .223	Ps	.010	.018	.029	.041
8 x 8	CFM	90	120	150	179
Ak .299	Ps	.010	.018	.029	.041
10 x 4	CFM	56	74	93	111
Ak .186	Ps	.010	.018	.029	.041
10 x 6	CFM	84	112	140	168
Ak .280	Ps	.010	.018	.029	.041
10 x 8	CFM	112	150	187	225
Ak .375	Ps	.010	.018	.029	.041
10 x 10	CFM	141	188	235	282
Ak .470	Ps	.010	.018	.029	.041
12 x 6	CFM	101	135	168	202
Ak .337	Ps	.010	.018	.029	.041
12 x 8	CFM	135	180	226	271
Ak .451	Ps	.010	.018	.029	.041
12 x 10	CFM	170	226	283	339
Ak .566	Ps	.010	.018	.029	.041
12 x 12	CFM	204	272	340	408
Ak .681	Ps	.010	.018	.029	.041
12 x 18	CFM	308	411	513	616
Ak 1.027	Ps	.010	.018	.029	.041
14 x 6	CFM	118	158	197	236
Ak .394	Ps	.010	.018	.029	.041
14 x 8	CFM	158	211	264	316
Ak .527	Ps	.010	.018	.029	.041
14 x 10	CFM	198	265	331	397
Ak .661	Ps	.010	.018	.029	.041
14 x 12	CFM	239	318	398	477
Ak .796	Ps	.010	.018	.029	.041
14 x 14	CFM	279	372	465	558
Ak .930	Ps	.010	.018	.029	.041
14 x 18	CFM	360	480	600	720
Ak 1.200	Ps	.010	.018	.029	.041

Face Velocity*		300	400	500	600
16 x 6	CFM	135	180	226	271
Ak .451	Ps	.010	.018	.029	.041
16 x 8	CFM	181	242	302	362
Ak .604	Ps	.010	.018	.029	.041
16 x 10	CFM	227	303	379	454
Ak .757	Ps	.010	.018	.029	.041
16 x 12	CFM	273	364	455	547
Ak .911	Ps	.010	.018	.029	.041
16 x 14	CFM	320	426	533	639
Ak 1.065	Ps	.010	.018	.029	.041
16 x 16	CFM	366	488	610	732
Ak 1.219	Ps	.010	.018	.029	.041
16 x 24	CFM	552	736	920	1104
Ak 1.840	Ps	.010	.018	.029	.041
18 x 6	CFM	153	203	254	305
Ak .508	Ps	.010	.018	.029	.041
18 x 18	CFM	465	619	774	929
Ak 1.548	Ps	.010	.018	.029	.041
20 x 6	CFM	170	226	283	339
Ak .566	Ps	.010	.018	.029	.041
20 x 10	CFM	285	380	475	570
Ak .949	Ps	.010	.018	.029	.041
20 x 12	CFM	343	457	571	685
Ak 1.142	Ps	.010	.018	.029	.041
20 x 14	CFM	401	534	668	801
Ak 1.335	Ps	.010	.018	.029	.041
20 x 20	CFM	575	767	959	1150
Ak 1.917	Ps	.010	.018	.029	.041
20 x 24	CFM	692	923	1153	1384
Ak 2.307	Ps	.010	.019	.029	.042
20 x 25	CFM	721	962	1202	1442
Ak 2.404	Ps	.010	.019	.029	.042

Face Velocity*		300	400	500	600
24 x 4	CFM	135	180	226	271
Ak .451	Ps	.010	.018	.029	.041
24 x 6	CFM	204	272	340	408
Ak .681	Ps	.010	.018	.029	.041
24 x 8	CFM	273	364	455	547
Ak .911	Ps	.010	.018	.029	.041
24 x 10	CFM	343	457	571	685
Ak 1.142	Ps	.010	.018	.029	.041
24 x 12	CFM	412	550	687	825
Ak 1.374	Ps	.010	.018	.029	.041
24 x 14	CFM	482	643	803	964
Ak 1.607	Ps	.010	.018	.029	.041
24 x 24	CFM	832	1110	1387	1665
Ak 2.775	Ps	.010	.019	.029	.042
30 x 4	CFM	170	226	283	339
Ak .566	Ps	.010	.018	.029	.041
30 x 6	CFM	256	341	427	512
Ak .853	Ps	.010	.018	.029	.041
30 x 8	CFM	343	457	571	685
Ak 1.142	Ps	.010	.018	.029	.041
30 x 10	CFM	430	573	716	859
Ak 1.432	Ps	.010	.018	.029	.041
30 x 12	CFM	517	689	862	1034
Ak 1.723	Ps	.010	.018	.029	.041
30 x 14	CFM	604	806	1007	1209
Ak 2.015	Ps	.010	.018	.029	.042
30 x 18	CFM	780	1040	1300	1560
Ak 2.599	Ps	.010	.019	.029	.042
30 x 20	CFM	868	1157	1446	1735
Ak 2.892	Ps	.010	.019	.029	.042
30 x 24	CFM	1044	1392	1740	2088
Ak 3.479	Ps	.010	.019	.029	.042
30 x 30	CFM	1309	1745	2181	2618
Ak 4.363	Ps	.010	.019	.029	.042
36 x 6	CFM	308	411	513	616
Ak 1.027	Ps	.010	.018	.029	.041
36 x 8	CFM	412	550	687	825
Ak 1.374	Ps	.010	.018	.029	.041

\*Filter grilles: Tested without filters. Typical capacity is 2 CFM per square inch of nominal filter area. Recommended face velocity is 300-450 FPM. Velocities higher will decrease filter performance, increase flow resistance, and possibly be of noise concern. Velocity measured 1" from face.



## Series 500 / AL500, Series CB Stamped-Face Supply Register

**501 / AL501 / CB1**

Face Velocity		300	400	500	600	700	800	900	1000
6 x 4 Ak .09	CFM	30	35	45	55	65	75	85	95
	Ps	.007	.013	.020	.029	.040	.052	.066	.081
	Throw	6.0	8.0	9.0	11.0	13.0	15.0	17.0	19.0
8 x 4 Ak .11	CFM	30	45	55	65	75	85	95	105
	Ps	.007	.013	.021	.030	.041	.053	.067	.083
	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
8 x 6 Ak .12	CFM	35	50	60	75	85	100	110	125
	Ps	.007	.013	.021	.030	.040	.053	.067	.082
	Throw	7.0	9.0	11.0	13.0	15.0	17.0	19.0	22.0
10 x 4 Ak .12	CFM	35	50	60	70	85	95	110	120
	Ps	.008	.013	.021	.030	.041	.054	.068	.084
	Throw	6.0	9.0	11.0	13.0	15.0	17.0	19.0	21.0
10 x 6 Ak .14	CFM	40	55	70	80	95	110	120	135
	Ps	.008	.014	.021	.031	.042	.054	.069	.085
	Throw	7.0	9.0	11.0	14.0	16.0	18.0	20.0	23.0
10 x 8 Ak .19	CFM	55	75	95	115	130	150	170	190
	Ps	.008	.014	.022	.031	.043	.056	.071	.087
	Throw	8.0	11.0	13.0	16.0	19.0	21.0	24.0	27.0
10 x 10 Ak .24	CFM	70	95	120	145	170	190	215	240
	Ps	.008	.014	.021	.030	.042	.054	.069	.085
	Throw	8.0	11.0	14.0	16.0	19.0	22.0	24.0	27.0
12 x 6 Ak .18	CFM	55	75	95	110	130	150	165	185
	Ps	.008	.015	.023	.033	.045	.059	.074	.091
	Throw	7.0	9.0	11.0	13.0	16.0	18.0	20.0	22.0
12 x 8 Ak .22	CFM	65	85	110	130	150	170	195	215
	Ps	.008	.014	.022	.032	.043	.056	.071	.088
	Throw	8.0	11.0	13.0	16.0	19.0	21.0	24.0	26.0
12 x 12 Ak .30	CFM	90	120	150	180	210	235	265	295
	Ps	.008	.014	.022	.032	.044	.057	.073	.090
	Throw	10.0	13.0	16.0	19.0	22.0	25.0	28.0	31.0
14 x 6 Ak .22	CFM	65	85	110	130	150	175	195	215
	Ps	.008	.014	.022	.031	.042	.055	.070	.087
	Throw	7.0	9.0	12.0	14.0	16.0	19.0	21.0	23.0
14 x 8 Ak .24	CFM	75	95	120	145	170	195	220	240
	Ps	.008	.014	.022	.032	.043	.057	.072	.089
	Throw	9.0	12.0	14.0	17.0	20.0	23.0	26.0	29.0
16 x 6 Ak .22	CFM	65	85	110	130	150	175	195	215
	Ps	.008	.014	.022	.032	.043	.056	.071	.088
	Throw	9.0	12.0	14.0	17.0	20.0	23.0	26.0	28.0
16 x 8 Ak .25	CFM	75	100	125	150	175	200	225	250
	Ps	.008	.015	.023	.033	.045	.059	.075	.092
	Throw	9.0	12.0	15.0	18.0	21.0	25.0	28.0	31.0

Terminal Velocity of 75 FPM

**502H / AL502H / CB2**

Face Velocity		300	400	500	600	700	800	900	1000
6 x 4 Ak .09	CFM	25	35	40	5	6	70	75	85
	Ps	.012	.021	.033	.048	.065	.085	.108	.134
	Throw	3.0	4.0	5.0	6.0	7.0	7.0	8.0	9.0
8 x 4 Ak .11	CFM	30	40	50	65	75	85	95	105
	Ps	.012	.021	.033	.047	.064	.083	.106	.131
	Throw	3.0	4.0	6.0	7.0	8.0	9.0	10.0	11.0
8 x 6 Ak .13	CFM	40	50	65	75	90	100	115	125
	Ps	.012	.020	.032	.046	.063	.082	.104	.128
	Throw	4.0	5.0	6.0	7.0	8.0	9.0	11.0	12.0
10 x 4 Ak .13	CFM	35	50	60	75	85	100	110	125
	Ps	.012	.021	.032	.046	.063	.082	.104	.128
	Throw	3.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
10 x 6 Ak .17	CFM	50	65	85	100	115	130	150	165
	Ps	.011	.020	.031	.045	.062	.080	.102	.126
	Throw	4.0	6.0	7.0	8.0	9.0	11.0	12.0	13.0
10 x 8 Ak .23	CFM	65	90	110	135	155	180	200	225
	Ps	.011	.020	.031	.044	.061	.079	.100	.124
	Throw	5.0	7.0	8.0	10.0	11.0	13.0	14.0	15.0
10 x 10 Ak .27	CFM	80	110	135	160	190	215	240	270
	Ps	.011	.020	.031	.044	.060	.078	.099	.123
	Throw	5.0	7.0	9.0	10.0	12.0	13.0	15.0	17.0
12 x 6 Ak .21	CFM	60	80	100	125	145	165	185	205
	Ps	.011	.020	.031	.045	.061	.079	.101	.124
	Throw	5.0	6.0	8.0	9.0	10.0	12.0	13.0	15.0
12 x 8 Ak .27	CFM	80	105	130	160	185	210	240	265
	Ps	.011	.020	.031	.044	.060	.079	.099	.123
	Throw	5.0	7.0	9.0	10.0	12.0	14.0	15.0	17.0
12 x 12 Ak .39	CFM	115	155	190	230	270	310	345	385
	Ps	.011	.019	.030	.044	.059	.078	.098	.121
	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
14 x 6 Ak .24	CFM	70	95	115	140	165	190	210	235
	Ps	.011	.020	.031	.044	.060	.079	.100	.123
	Throw	5.0	7.0	8.0	10.0	11.0	13.0	14.0	16.0
14 x 8 Ak .31	CFM	90	120	150	185	215	245	275	305
	Ps	.011	.020	.031	.044	.060	.078	.099	.122
	Throw	6.0	8.0	9.0	11.0	13.0	14.0	16.0	18.0
16 x 6 Ak .27	CFM	80	105	132	160	185	210	240	265
	Ps	.011	.020	.031	.044	.060	.079	.099	.123
	Throw	5.0	7.0	8.0	10.0	12.0	13.0	15.0	16.0
16 x 8 Ak .35	CFM	105	140	170	205	240	275	310	345
	Ps	.011	.019	.030	.044	.060	.078	.098	.122
	Throw	6.0	8.0	10.0	11.0	13.0	15.0	17.0	19.0

Terminal Velocity of 75 FPM





Series 500 / AL500, Series CB Stamped-Face Supply Register

502 / AL502 Standard

Face Velocity		300	400	500	600	700	800	900	1000
6 x 4 Ak .06	CFM	20	25	30	40	45	50	60	65
	Ps	.017	.030	.047	.068	.092	.121	.153	.189
	Throw	3.0	4.0	4.0	5.0	6.0	7.0	8.0	9.0
8 x 4 Ak .09	CFM	25	35	45	50	60	70	80	85
	Ps	.013	.024	.037	.054	.073	.095	.121	.149
	Throw	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
8 x 6 Ak .13	CFM	40	50	65	75	90	100	115	125
	Ps	.012	.021	.033	.048	.065	.085	.108	.133
	Throw	4.0	5.0	6.0	7.0	9.0	10.0	11.0	12.0
10 x 4 Ak .11	CFM	30	45	55	65	75	85	95	110
	Ps	.012	.021	.033	.047	.064	.084	.106	.131
	Throw	3.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
10 x 6 Ak .17	CFM	50	65	85	100	115	130	150	165
	Ps	.009	.016	.025	.036	.050	.065	.082	.101
	Throw	4.0	6.0	7.0	8.0	10.0	11.0	13.0	14.0
10 x 8 Ak .22	CFM	65	85	110	130	150	175	195	215
	Ps	.009	.017	.026	.037	.051	.066	.084	.103
	Throw	5.0	7.0	8.0	10.0	11.0	13.0	14.0	16.0
10 x 10 Ak .27	CFM	80	110	135	160	190	215	240	270
	Ps	.009	.016	.025	.036	.049	.064	.081	.100
	Throw	6.0	7.0	9.0	11.0	13.0	14.0	16.0	18.0
12 x 6 Ak .19	CFM	60	80	95	115	135	155	175	195
	Ps	.010	.017	.026	.038	.052	.068	.086	.106
	Throw	5.0	6.0	8.0	9.0	11.0	12.0	14.0	15.0
12 x 8 Ak .26	CFM	80	105	130	155	180	205	235	260
	Ps	.009	.016	.025	.036	.049	.064	.081	.100
	Throw	5.0	7.0	9.0	11.0	12.0	14.0	16.0	17.0
12 x 12 Ak .39	CFM	115	155	195	235	270	310	350	390
	Ps	.008	.015	.023	.034	.046	.060	.076	.094
	Throw	4.0	5.0	7.0	8.0	9.0	11.0	12.0	13.0
14 x 6 Ak .23	CFM	70	90	115	135	160	180	205	225
	Ps	.009	.016	.026	.037	.050	.065	.083	.102
	Throw	5.0	7.0	8.0	10.0	11.0	13.0	15.0	16.0
14 x 8 Ak .30	CFM	90	120	150	180	210	240	270	300
	Ps	.009	.016	.024	.035	.048	.062	.079	.097
	Throw	6.0	8.0	10.0	11.0	13.0	15.0	17.0	19.0
16 x 6 Ak .26	CFM	80	105	130	155	180	205	235	260
	Ps	.009	.016	.025	.036	.049	.064	.081	.100
	Throw	5.0	7.0	9.0	11.0	12.0	14.0	16.0	17.0
16 x 8 Ak .34	CFM	105	140	175	205	240	275	310	345
	Ps	.009	.015	.024	.034	.047	.061	.077	.095
	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0

Terminal Velocity of 75 FPM

503 / AL503 / CB3

Face Velocity		300	400	500	600	700	800	900	1000
6 x 4 Ak .08	CFM	25	35	20	50	60	65	75	85
	Ps	.016	.029	.046	.066	.090	.117	.148	.183
	Throw	4.0	6.0	7.0	8.0	10.0	11.0	13.0	14.0
8 x 4 Ak .10	CFM	30	40	50	65	75	85	95	105
	Ps	.015	.027	.041	.060	.081	.106	.134	.166
	Throw	5.0	6.0	8.0	9.0	11.0	12.0	14.0	15.0
8 x 6 Ak .14	CFM	40	55	70	85	100	115	125	140
	Ps	.015	.026	.041	.059	.080	.104	.132	.163
	Throw	6.0	7.0	9.0	11.0	13.0	15.0	16.0	18.0
10 x 4 Ak .12	CFM	35	50	60	75	85	100	110	125
	Ps	.014	.025	.039	.056	.076	.100	.126	.156
	Throw	5.0	7.0	9.0	10.0	12.0	14.0	15.0	17.0
10 x 6 Ak .17	CFM	50	70	85	105	120	140	155	175
	Ps	.015	.027	.043	.062	.084	.110	.139	.171
	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
10 x 8 Ak .22	CFM	65	90	110	135	155	180	200	225
	Ps	.012	.022	.034	.049	.066	.086	.109	.135
	Throw	7.0	9.0	12.0	14.0	16.0	18.0	21.0	23.0
10 x 10 Ak .31	CFM	80	110	135	165	185	220	250	310
	Ps	.015	.027	.043	.062	.084	.110	.139	.172
	Throw	8.0	11.0	14.0	16.0	19.0	22.0	24.0	27.0
12 x 6 Ak .21	CFM	60	85	105	125	145	165	185	205
	Ps	.012	.022	.034	.049	.066	.086	.109	.135
	Throw	7.0	9.0	11.0	13.0	15.0	18.0	20.0	22.0
12 x 8 Ak .26	CFM	80	105	130	160	185	210	240	265
	Ps	.008	.014	.022	.032	.044	.057	.072	.089
	Throw	8.0	10.0	13.0	15.0	17.0	20.0	22.0	25.0
12 x 12 Ak .40	CFM	115	155	190	230	270	305	345	385
	Ps	.008	.014	.023	.033	.044	.058	.073	.090
	Throw	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0
14 x 6 Ak .20	CFM	60	80	100	120	145	165	185	205
	Ps	.009	.017	.026	.037	.051	.066	.084	.104
	Throw	7.0	9.0	11.0	13.0	15.0	17.0	20.0	22.0
14 x 8 Ak .30	CFM	90	120	150	185	215	245	275	305
	Ps	.008	.014	.022	.032	.044	.057	.073	.090
	Throw	8.0	11.0	13.0	16.0	19.0	21.0	24.0	27.0
16 x 6 Ak .26	CFM	80	105	130	160	185	210	240	265
	Ps	.008	.014	.022	.032	.044	.057	.072	.089
	Throw	8.0	10.0	12.0	15.0	17.0	20.0	22.0	25.0
16 x 8 Ak .34	CFM	100	130	165	195	230	260	295	325
	Ps	.010	.017	.027	.039	.052	.069	.087	.107
	Throw	8.0	11.0	14.0	17.0	19.0	22.0	25.0	27.0

Terminal Velocity of 75 FPM

504 / AL504 / CB4

Face Velocity		300	400	500	600	700	800	900	1000
6 x 6 Ak .16	CFM	50	65	80	95	110	125	145	160
	Ps	.040	.072	.112	.161	.219	.287	.363	.448
	Throw	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
8 x 8 Ak .22	CFM	65	85	110	130	155	175	195	220
	Ps	.024	.043	.067	.096	.130	.170	.216	.266
	Throw	4.0	5.0	6.0	7.0	8.0	10.0	11.0	12.0
10 x 10 Ak .28	CFM	85	115	140	170	200	225	255	285
	Ps	.016	.029	.045	.064	.087	.114	.144	.178
	Throw	4.0	6.0	7.0	8.0	10.0	11.0	12.0	14.0
12 x 12 Ak .40	CFM	120	160	200	235	275	315	355	395
	Ps	.012	.022	.032	.047	.064	.084	.107	.133
	Throw	5.0	7.0	8.0	10.0	11.0	13.0	14.0	16.0
14 x 14 Ak .48	CFM	145	190	240	285	335	380	430	475
	Ps	.009	.016	.025	.037	.049	.065	.081	.102
	Throw	6.0	7.0	9.0	11.0	12.0	14.0	16.0	18.0

Terminal Velocity of 75 FPM

## Series 600 / AL600, Series SW Stamped-Face Register

**601 / AL601 / SW1 One-Way**

Face Velocity		300	400	500	600	700	800	900	1000
<b>Pressure Loss</b>		<b>.006</b>	<b>.010</b>	<b>.016</b>	<b>.022</b>	<b>.031</b>	<b>.040</b>	<b>.050</b>	<b>.062</b>
8 x 6	CFM	40	55	70	90	100	110	125	140
Ak .140	Throw	5.0	6.0	8.0	9.0	11.0	12.0	14.0	15.0
10 x 6	CFM	55	80	95	110	130	150	165	185
Ak .185	Throw	5.0	7.0	10.0	11.0	13.0	14.0	16.0	18.0
12 x 6	CFM	70	90	115	135	160	180	205	225
Ak .225	Throw	6.0	8.0	12.0	12.0	14.0	16.0	18.0	20.0
14 x 6	CFM	85	115	145	175	205	230	260	290
Ak .290	Throw	7.0	9.0	16.0	14.0	17.0	19.0	21.0	24.0
16 x 6	CFM	100	130	165	200	230	265	295	330
Ak .330	Throw	8.0	10.0	18.0	15.0	18.0	20.0	23.0	25.0
18 x 6	CFM	115	155	195	235	275	310	350	390
Ak .390	Throw	8.0	11.0	21.0	17.0	20.0	22.0	25.0	28.0
20 x 6	CFM	130	175	220	265	310	360	395	440
Ak .440	Throw	5.0	12.0	24.0	18.0	21.0	24.0	27.0	30.0

Terminal Velocity of 75 FPM

**602 / AL602 / SW2 Two-Way**

Face Velocity		300	400	500	600	700	800	900	1000
<b>Pressure Loss</b>		<b>.006</b>	<b>.010</b>	<b>.016</b>	<b>.022</b>	<b>.031</b>	<b>.040</b>	<b>.050</b>	<b>.062</b>
8 x 4	CFM	25	35	45	55	65	70	80	90
Ak .090	Throw	2.0	3.5	4.5	5.5	6.5	7.0	8.0	9.0
6 x 6	CFM	30	40	50	65	75	85	95	105
Ak .105	Throw	3.0	3.5	4.5	6.0	7.0	8.0	9.0	10.0
10 x 4	CFM	35	45	60	70	80	90	105	115
Ak .115	Throw	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
12 x 4	CFM	40	55	70	85	100	110	125	140
Ak .140	Throw	3.5	4.5	5.5	6.5	8.0	9.0	10.0	11.5
10 x 6	CFM	55	75	95	110	130	150	165	185
Ak .185	Throw	4.0	5.0	6.5	8.0	9.0	10.5	12.0	13.0
8 x 8	CFM	60	80	100	120	140	160	180	200
Ak .200	Throw	4.0	5.5	7.0	8.0	9.5	11.0	12.5	13.5
12 x 6	CFM	70	90	115	135	160	180	205	225
Ak .225	Throw	4.5	6.0	7.5	8.5	10.5	12.0	13.0	14.5
14 x 6	CFM	85	115	145	175	205	230	260	290
Ak .290	Throw	5.0	6.5	8.5	10.0	11.5	13.5	15.0	17.0
10 x 10	CFM	95	125	155	185	215	250	280	310
Ak .310	Throw	5.0	7.0	8.5	10.0	12.0	14.0	15.5	17.0
12 x 8	CFM	95	130	160	190	225	255	290	320
Ak .320	Throw	5.5	7.0	9.0	10.5	12.5	14.0	16.0	18.0
14 x 8	CFM	115	155	195	235	275	310	350	390
Ak .390	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
12 x 12	CFM	140	190	235	280	330	375	425	470
Ak .470	Throw	6.5	8.5	10.5	12.5	15.0	17.0	19.0	21.0

Terminal Velocity of 75 FPM

**603/AL603/SW3 Three-Way**

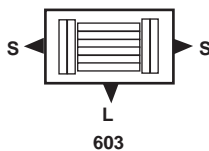
Face Velocity		300	400	500	600	700	800	900	1000
<b>Pressure Loss</b>		<b>.006</b>	<b>.010</b>	<b>.016</b>	<b>.022</b>	<b>.031</b>	<b>.040</b>	<b>.050</b>	<b>.062</b>
8 x 4	Total CFM	25	35	45	55	65	70	80	90
Ak .090	CFM L/S	13/6	17/9	24/11	29/13	34/16	37/17	42/19	48/22
	Throw L/S	3.0/2.5	4.0/3.0	5.0/3.5	6.0/4.0	7.0/5.0	7.5/5.5	8.5/6.0	10.0/6.5
6 x 6	Total CFM	30	40	50	65	75	85	95	105
Ak .105	CFM L/S	10/10	13/14	16/17	21/22	24/26	27/29	30/32	34/36
	Throw L/S	3.0/3.0	3.5/3.5	4.0/4.0	5.5/5.5	6.0/6.0	7.0/7.0	8.0/8.0	9.0/9.0
10 x 4	Total CFM	35	45	60	70	80	90	105	115
Ak .115	CFM L/S	21/7	29/8	38/11	45/13	51/14	58/16	67/19	74/21
	Throw L/S	4.0/2.0	5.0/2.5	6.0/3.5	7.5/4.0	8.5/4.5	9.5/5.0	11.0/6.0	12.0/6.5
12 x 4	Total CFM	40	55	70	85	100	110	125	140
Ak .140	CFM L/S	21/10	29/13	36/17	44/20	52/24	57/26	65/30	73/34
	Throw L/S	3.5/2.5	5.0/3.0	6.0/4.0	7.5/5.0	8.5/5.5	9.5/6.0	10.5/7.0	12.0/8.0
10 x 6	Total CFM	55	75	95	110	130	150	165	185
Ak .185	CFM L/S	35/10	48/14	61/17	70/20	83/23	96/27	106/30	118/33
	Throw L/S	4.5/2.5	6.5/3.5	8.0/4.0	9.0/5.0	11.0/5.5	12.5/6.5	14.0/7.5	15.5/8.0
8 x 8	Total CFM	60	80	100	120	140	160	180	200
Ak .200	CFM L/S	31/14	42/19	52/24	62/29	73/34	83/38	94/43	104/48
	Throw L/S	4.5/3.0	6.0/4.0	7.5/5.0	8.5/6.0	10.5/7.0	11.5/8.0	13.0/9.0	14.5/10.0
12 x 6	Total CFM	70	90	115	135	160	180	205	225
A .225	CFM L/S	36/17	47/22	60/28	70/32	83/38	94/43	107/49	117/54
	Throw L/S	4.5/3.5	6.0/4.0	8.0/5.5	9.0/6.0	11.0/7.5	12.5/8.0	14.0/6.5	15.5/10.5
14 x 6	Total CFM	85	115	145	175	205	230	260	290
Ak .290	CFM L/S	51/17	69/23	87/29	105/35	123/41	138/46	156/52	174/58
	Throw L/S	5.5/3.5	7.5/4.5	10.0/5.5	12.0/6.5	14.0/8.0	15.5/9.0	18.0/10.0	20.0/11.0
10 x 10	Total CFM	95	125	155	185	215	250	280	310
Ak .310	CFM L/S	61/17	80/23	99/28	118/33	138/39	160/45	179/50	198/56
	Throw L/S	6.0/3.5	8.0/4.5	10.0/5.5	12.0/6.5	14.0/7.5	16.5/9.0	18.0/9.5	20.0/10.5
12 x 8	Total CFM	95	130	160	190	225	255	290	320
Ak .320	CFM L/S	49/23	68/31	83/38	99/46	117/54	133/61	151/70	166/77
	Throw L/S	5.5/4.0	7.5/5.0	9.5/6.0	11.0/7.5	13.0/9.0	15.0/10.0	17.0/11.5	19.0/12.5
14 x 8	Total CFM	115	155	195	235	275	310	350	390
Ak .390	CFM L/S	69/23	93/31	117/39	141/47	165/55	186/62	210/70	234/78
	Throw L/S	6.5/4.0	9.0/5.0	11.0/6.0	13.5/7.5	16.0/9.0	18.0/10.0	20.0/11.5	22.0/12.5
12 x 12	Total CFM	140	190	235	280	330	375	425	470
Ak .470	CFM L/S	73/34	99/46	122/56	146/67	172/79	195/90	221/102	244/113
	Throw L/S	7.0/4.5	9.0/6.0	11.5/7.5	13.5/9.0	16.0/10.5	18.0/12.0	20.0/14.0	23.0/15.5
14 x 14	Total CFM	195	260	325	390	455	520	585	650
Ak .650	CFM L/S	117/39	156/52	195/65	234/78	273/91	312/104	351/117	390/130
	Throw L/S	8.5/5.0	11.5/6.5	14.0/8.0	17.0/9.5	20.0/11.5	23.0/13.0	26.0/14.5	28.0/16.0
16 x 16	Total CFM	280	370	465	560	650	745	835	930
Ak .930	CFM L/S	164/67	192/89	242/112	291/134	338/156	387/179	434/200	484/223
	Throw L/S	10.0/6.5	13.0/9.0	16.5/11.0	20.0/13.0	23.0/15.5	26.0/17.0	29.0/20.0	33.0/22.0

Terminal Velocity of 75 FPM

**604/AL604/SW4 Four-Way**

Face Velocity		300	400	500	600	700	800	900	1000
<b>Pressure Loss</b>		<b>.006</b>	<b>.010</b>	<b>.016</b>	<b>.022</b>	<b>.031</b>	<b>.040</b>	<b>.050</b>	<b>.062</b>
6 x 6	Total CFM	30	40	50	65	75	85	95	105
Ak .105	CFM L/S	4/11	6/14	8/17	10/22	12/26	14/29	15/32	17/36
	Throw L/S	2.0/3.0	2.0/3.5	3.0/4.0	3.5/5.5	4.5/6.5	5.0/7.0	5.5/8.0	6.0/9.0
8 x 8	Total CFM	60	80	100	120	140	160	180	200
Ak .200	CFM L/S	16/14	21/19	26/24	31/29	37/34	42/38	47/43	52/48
	Throw L/S	3.0/3.0	4.0/4.0	5.0/5.0	6.0/6.0	7.5/7.0	8.5/8.0	9.5/9.0	10.5/10.0
10 x 10	Total CFM	95	125	155	185	215	250	280	310
Ak .310	CFM L/S	31/17	40/23	50/28	59/33	69/39	80/45	90/50	99/56
	Throw L/S	4.5/3.5	6.0/4.5	7.0/5.5	8.5/6.5	10.0/7.5	11.0/9.0	13.0/9.5	14.5/10.5
12 x 12	Total CFM	140	190	235	280	330	375	425	470
Ak .470	CFM L/S	37/34	50/46	61/56	73/67	86/79	98/90	111/102	122/113
	Throw L/S	5.0/4.5	6.5/6.0	8.0/7.5	9.5/9.0	11.5/10.5	13.0/12.0	14.5/14.0	16.0/15.5
14 x 14	Total CFM	195	260	325	390	455	520	585	650
Ak .650	CFM L/S	59/39	78/52	98/65	117/78	137/91	156/104	176/117	195/130
	Throw L/S	6.0/5.0	8.0/6.5	10.0/8.0	12.0/9.5	14.0/11.5	16.0/13.0	18.0/14.5	20.0/16.0
16 x 16	Total CFM	280	370	465	560	650	745	835	930
Ak .930	CFM L/S	73/67	96/89	121/112	146/134	169/156	194/179	217/200	242/223
	Throw L/S	7.0/6.5	9.0/9.0	11.5/11.0	14.0/13.0	16.0/15.5	19.0/17.0	21.0/20.0	23.0/22.0

Terminal Velocity of 75 FPM





632 Stamped Ceiling/Wall Register

Face Velocity		300	400	500	600	700	800	900	1000
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062
6 x 4	CFM	25	30	40	50	55	65	70	80
Ak .080	Throw	4.0	4.5	6.0	7.0	8.5	10.0	11.0	12.5
8 x 4	CFM	35	45	55	65	75	90	100	110
Ak .110	Throw	4.5	5.5	7.0	8.5	10.0	11.5	13.0	14.5
10 x 4 and 8 x 5	CFM	45	60	75	85	100	115	130	145
Ak .145	Throw	5.0	6.5	8.0	9.5	11.5	13.0	14.5	16.0
12 x 4 and 8 x 6	CFM	55	70	90	110	125	145	160	180
Ak .180	Throw	5.5	7.0	9.0	10.5	12.5	14.0	16.0	18.0
14 x 4	CFM	65	85	110	130	150	170	195	215
Ak .215	Throw	6.0	7.5	9.5	11.5	13.5	15.5	17.0	19.0
10 x 6 and 12 x 5	CFM	75	100	125	145	170	195	220	245
Ak .245	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
12 x 6 and 14 x 5	CFM	90	120	150	175	205	235	265	295
Ak .295	Throw	6.5	8.5	11.0	13.0	15.5	17.5	19.5	22.0
10 x 8	CFM	105	140	175	205	240	275	310	345
Ak .345	Throw	7.0	9.0	11.5	13.5	16.5	18.5	21.0	23.5
14 x 6	CFM	110	145	180	215	250	290	325	360
Ak .360	Throw	7.0	9.5	12.0	14.0	16.5	19.0	21.5	24.0

Terminal Velocity of 75 FPM

Face Velocity		300	400	500	600	700	800	900	1000
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062
16 x 6 and 12 x 8	CFM	130	170	215	255	300	340	385	425
Ak .425	Throw	7.5	10.0	12.5	15.0	18.0	20.5	23.0	25.5
14 x 8	CFM	155	205	260	310	360	410	465	515
Ak .515	Throw	8.0	10.5	14.0	16.0	19.5	22.0	25.0	28.0
20 x 6	CFM	165	220	275	330	385	440	495	550
Ak .550	Throw	8.5	11.0	14.5	17.0	20.0	23.0	25.5	29.0
16 x 8	CFM	180	240	300	360	420	480	540	600
Ak .600	Throw	8.5	11.0	14.5	17.0	20.0	23.0	25.5	29.0
24 x 6 and 18 x 8	CFM	205	270	340	410	475	545	610	680
Ak .680	Throw	9.5	12.0	15.5	18.5	22.0	25.0	28.0	31.5
20 x 8	CFM	230	305	380	455	530	610	685	760
Ak .760	Throw	10.0	13.0	16.5	19.0	23.0	26.0	28.5	33.0
30 x 6	CFM	265	350	440	530	615	705	790	880
Ak .880	Throw	10.5	14.0	17.5	20.5	24.5	28.0	31.5	35.0
24 x 8	CFM	295	390	490	590	685	785	880	980
Ak .980	Throw	11.0	14.0	18.0	21.5	25.5	29.0	33.0	37.0
30 x 8	CFM	375	500	625	750	875	1000	1125	1250
Ak 1.250	Throw	12.0	16.0	20.0	24.0	28.5	32.0	37.0	41.0

653 Stamped Ceiling/Wall Register

Face Velocity		300	400	500	600	700	800	900	1000
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062
8 x 4	CFM	33	44	55	66	77	88	100	110
Ak .110	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
10 x 4	CFM	40	54	67	80	95	110	120	135
Ak .135	Throw	6.5	8.5	10.5	12.5	15.0	17.5	19.0	21.0
12 x 4 and 8 x 6	CFM	55	72	90	108	125	145	162	180
Ak .180	Throw	7.5	10.0	12.5	15.0	17.5	20.5	23.0	25.0
10 x 6	CFM	70	92	115	140	160	185	205	230
Ak .230	Throw	9.0	11.5	14.5	17.5	20.0	23.0	25.5	29.0
12 x 6	CFM	85	115	145	175	205	230	260	290
Ak .290	Throw	10.0	13.0	17.0	20.0	23.5	26.5	30.0	33.0
14 x 6	CFM	102	135	170	205	240	270	305	340
Ak .340	Throw	11.0	14.5	18.0	22.0	25.5	29.0	32.5	36.0

Terminal Velocity of 75 FPM



### 150 Round Ceiling Diffuser

Face Velocity		300	400	500	600	700	800	900	1000
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062
Neck Size 6"	CFM		55	65	80	95	105	120	135
Ak .135	Throw		2.5	3.0	3.5	4.0	4.5	5.0	5.5
Neck Size 8"	CFM	70	90	115	135	160	180	200	225
Ak .225	Throw	2.0	3.0	3.5	4.5	5.0	5.5	6.5	7.0
Neck Size 10"	CFM	105	140	175	210	240	275	310	345
Ak .345	Throw	2.5	3.5	4.5	5.0	6.0	7.0	8.0	8.5
Neck Size 12"	CFM	150	200	250	300	350	400	450	500
Ak .500	Throw	3.0	4.0	5.0	6.0	7.5	8.5	9.0	10.5
Neck Size 14"	CFM	190	250	315	375	440	500	565	625
Ak .625	Throw	3.5	4.5	5.5	6.5	8.0	9.0	10.0	11.0
Neck Size 18"	CFM	310	415	520	625	730	830	935	1040
Ak 1.040	Throw	4.5	6.0	7.0	8.5	10.0	11.5	13.0	14.5
Neck Size 22"	CFM	450	600	750	900	1050	1200	1350	1500
Ak 1.500	Throw	5.0	6.5	8.5	10.0	12.0	13.0	15.0	16.0

Terminal Velocity of 50 FPM

### Series AL160 Square Ceiling Diffuser

#### AL161OBD/AL161ML One-Way Air Pattern

Face Velocity		400	500	600	700	900	1100	1500
Pressure Loss		.010	.016	.022	.031	.050	.075	.140
6 x 6	CFM	55	65	75	90	120	140	195
Ak .13	Throw	5.0	6.0	7.0	8.0	10.0	12.0	15.0
8 x 8	CFM	75	90	105	120	150	180	240
Ak .20	Throw	6.0	7.0	8.0	10.0	12.0	15.0	18.0
10 x 10	CFM	115	135	155	175	235	290	395
Ak .29	Throw	7.0	8.0	10.0	12.0	15.0	19.0	24.0
12 x 12	CFM	170	210	255	300	380	470	610
Ak .42	Throw	8.0	10.0	12.0	15.0	19.0	24.0	29.0
14 x 14	CFM	250	305	360	410	505	610	800
Ak .59	Throw	11.0	13.0	15.0	18.0	24.0	30.0	35.0

Terminal Velocity of 75 FPM

#### AL162OBD/AL162ML Two-Way Air Pattern

Face Velocity		400	500	600	700	900	1100	1500
Pressure Loss		.010	.016	.022	.031	.050	.075	.140
6 x 6	CFM	55	65	75	90	120	140	195
Ak .13	Throw	3.0	4.0	5.0	6.0	7.0	9.0	12.0
8 x 8	CFM	75	90	105	120	150	180	240
Ak .20	Throw	4.0	5.0	6.0	7.0	9.0	12.0	16.0
10 x 10	CFM	115	135	155	175	235	290	395
Ak .29	Throw	5.0	6.0	7.0	8.0	10.0	14.0	20.0
12 x 12	CFM	170	210	255	300	380	470	610
Ak .42	Throw	6.0	7.0	8.0	10.0	13.0	17.0	23.0
14 x 14	CFM	250	305	360	410	505	610	800
Ak .59	Throw	7.0	9.0	11.0	13.0	16.0	19.0	27.0

Terminal Velocity of 75 FPM

#### AL163OBD/AL163ML Three-Way Air Pattern

Face Velocity		400	500	600	700	900	1100	1500
Pressure Loss		.010	.016	.022	.031	.050	.075	.140
6 x 6	CFM	55	65	75	90	120	140	195
Ak .13	Throw L/S	3.5/2.5	4.0/3.0	5.0/3.5	5.5/4.0	7.0/5.0	9.0/6.0	12.0/9.0
8 x 8	CFM	75	90	105	120	150	180	240
Ak .20	Throw L/S	4.0/2.0	5.0/2.5	6.0/3.5	7.0/4.0	8.0/4.5	10.0/5.5	12.0/7.0
10 x 10	CFM	115	135	155	175	235	290	395
Ak .29	Throw L/S	5.0/3.0	7.0/4.0	8.0/4.5	10.0/5.5	12.0/7.0	14.0/8.5	18.0/10.5
12 x 12	CFM	170	210	255	300	380	470	610
Ak .42	Throw L/S	7.0/4.0	8.5/4.5	10.0/5.5	12.0/6.5	15.0/8.5	18.0/10.0	23.0/14.0
14 x 14	CFM	250	305	360	410	505	610	800
Ak .59	Throw L/S	8.0/5.5	10.0/6.0	11.5/7.0	13.0/7.5	15.5/9.0	20.0/11.0	27.0/16.0

Terminal Velocity of 75 FPM

#### AL164OBD/AL164ML Four-Way Air Pattern

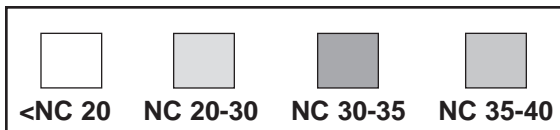
Face Velocity		400	500	600	700	900	1100	1500
Pressure Loss		.010	.016	.022	.031	.050	.075	.140
6 x 6	CFM	55	65	75	90	120	140	195
Ak .13	Throw	2.0	3.0	4.0	5.0	6.0	7.0	9.0
8 x 8	CFM	75	90	105	120	150	180	240
Ak .20	Throw	3.0	4.0	5.0	6.0	8.0	10.0	13.0
10 x 10	CFM	115	135	155	175	235	290	395
Ak .29	Throw	4.0	5.0	6.0	7.0	9.0	12.0	14.0
12 x 12	CFM	170	210	255	300	380	470	610
Ak .42	Throw	5.0	6.0	7.0	8.0	10.0	12.0	15.0
14 x 14	CFM	250	305	360	410	505	610	800
Ak .59	Throw	6.0	7.0	8.0	9.0	11.0	14.0	18.0

Terminal Velocity of 75 FPM

#### AL165OBD/AL165ML Two-Way Corner Air Pattern

Face Velocity		400	500	600	700	900	1100	1500
Pressure Loss		.010	.016	.022	.031	.050	.075	.140
6 x 6	CFM	55	65	75	90	120	140	195
Ak .13	Throw	3.0	4.0	5.0	6.0	7.0	9.0	12.0
8 x 8	CFM	75	90	105	120	150	180	240
Ak .20	Throw	4.0	5.0	6.0	7.0	9.0	12.0	16.0
10 x 10	CFM	115	135	155	175	235	290	395
Ak .29	Throw	5.0	6.0	7.0	8.0	10.0	14.0	20.0
12 x 12	CFM	170	210	255	300	380	470	610
Ak .42	Throw	6.0	7.0	8.0	10.0	13.0	17.0	23.0
14 x 14	CFM	250	305	360	410	505	610	800
Ak .59	Throw	7.0	9.0	11.0	13.0	16.0	19.0	27.0

Terminal Velocity of 75 FPM



## Rezzin Sidewall Register

### 2-Way

#### Two-Way Air Pattern

Face Velocity		300	400	500	600	700	800	900	1000
8 x 4 Ak .095	CFM	28	38	47	57	66	76	85	95
	Ps	.02	.02	.02	.03	.04	.05	.06	.07
	Throw	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
10 x 4 Ak .117	CFM	35	47	59	70	82	94	105	117
	Ps	.01	.01	.02	.02	.03	.04	.05	.06
	Throw	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
10 x 6 Ak .193	CFM	58	77	97	116	135	154	174	193
	Ps	.01	.01	.02	.02	.03	.04	.05	.06
	Throw	1.5	2.0	2.5	3.0	3.5	4.5	5.0	5.5
12 x 6 Ak .238	CFM	71	95	119	143	167	190	214	238
	Ps	.01	.01	.01	.02	.03	.04	.05	.06
	Throw	5.5	7.0	9.0	10.5	12.5	14.0	16.0	17.5
14 x 6 Ak .291	CFM	87	116	145	174	204	233	262	291
	Ps	.01	.01	.02	.02	.03	.04	.05	.06
	Throw	NA	NA	NA	NA	NA	NA	NA	NA
14 x 8 Ak .395	CFM	119	158	198	237	277	316	356	395
	Ps	.01	.01	.01	.02	.03	.04	.05	.06
	Throw	NA	NA	NA	NA	NA	NA	NA	NA

Terminal Velocity of 75 FPM

NA = Not Available

### 3-Way

#### Three-Way Air Pattern

Face Velocity		300	400	500	600	700	800	900	1000
8 x 4 Ak .108	CFM	32	43	54	65	75	86	97	108
	Ps	.01	.01	.02	.03	.04	.05	.07	.08
	Throw Short	NA	NA	NA	NA	NA	NA	NA	NA
	Throw Long	NA	NA	NA	NA	NA	NA	NA	NA
10 x 6 Ak .193	CFM	58	77	97	116	135	154	174	193
	Ps	.01	.01	.02	.03	.03	.04	.05	.06
	Throw Short	2.0	3.0	3.5	4.0	5.0	5.5	6.5	7.0
	Throw Long	1.0	1.5	2.0	2.5	2.5	3.0	3.5	4.0
10 x 8 Ak .246	CFM	74	98	123	148	172	197	221	246
	Ps	.01	.01	.01	.02	.03	.03	.04	.05
	Throw Short	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
	Throw Long	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.5
12 x 6 Ak .238	CFM	71	95	119	143	167	190	214	238
	Ps	.01	.01	.02	.02	.03	.04	.05	.07
	Throw Short	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.5
	Throw Long	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.5
14 x 6 Ak .297	CFM	89	119	148	178	208	237	267	297
	Ps	.01	.01	.02	.03	.03	.04	.06	.07
	Throw Short	NA	NA	NA	NA	NA	NA	NA	NA
	Throw Long	NA	NA	NA	NA	NA	NA	NA	NA
14 x 8 Ak .399	CFM	120	160	199	239	279	319	359	399
	Ps	.01	.01	.01	.02	.03	.04	.05	.06
	Throw Short	NA	NA	NA	NA	NA	NA	NA	NA
	Throw Long	NA	NA	NA	NA	NA	NA	NA	NA

Terminal Velocity of 75 FPM

NA = Not Available

### 4-Way

#### Four-Way Air Pattern

Face Velocity		300	400	500	600	700	800	900	1000
6 x 6 Ak .124	CFM	37	49	62	74	87	99	111	124
	Ps	.01	.01	.02	.03	.03	.05	.06	.07
	Throw	NA	NA	NA	NA	NA	NA	NA	NA
8 x 8 Ak .231	CFM	69	92	115	139	162	185	208	231
	Ps	.00	.01	.01	.02	.02	.03	.04	.04
	Throw	NA	NA	NA	NA	NA	NA	NA	NA
10 x 10 Ak .347	CFM	104	139	173	208	243	277	312	347
	Ps	.01	.01	.02	.02	.03	.04	.05	.07
	Throw	NA	NA	NA	NA	NA	NA	NA	NA
12 x 12 Ak .510	CFM	153	204	255	306	357	408	459	510
	Ps	.01	.01	.02	.02	.03	.04	.05	.07
	Throw	NA	NA	NA	NA	NA	NA	NA	NA

Terminal Velocity of 75 FPM

NA = Not Available

## Rezzin Square Ceiling Diffuser

### 2-Way Corner

#### Two-Way Corner Air Pattern

Neck Velocity		300	400	500	600	700
Neck Size 6"	CFM	60	80	100	120	135
Ak 0.284	Ps	0.002	0.004	0.006	0.008	0.011
Vt 75	Throw	2.5	3.5	4.0	5.0	6.0
Vt 100	Throw	2.5	3.0	4.0	4.5	5.5
Vt 150	Throw	1.5	2.0	2.5	3.0	3.5
Neck size 7"	CFM	82	109	136	164	191
Ak 0.267	Ps	0.009	0.016	0.025	0.037	0.050
Vt 75	Throw	4.0	5.0	6.0	7.5	8.5
Vt 100	Throw	3.5	4.5	5.5	7.0	8.0
Vt 150	Throw	2.5	3.0	4.0	4.5	5.5
Neck size 8"	CFM	105	140	175	209	244
Ak 0.251	Ps	0.016	0.029	0.045	0.065	0.088
Vt 75	Throw	5.0	6.5	8.0	9.5	11.0
Vt 100	Throw	4.5	6.0	7.5	9.0	10.5
Vt 150	Throw	3.0	4.0	5.0	6.0	7.0

### 3-Way

#### Three-Way Air Pattern

Neck Velocity		300	400	500	600	700
Neck Size 6"	CFM	60	80	100	120	135
Ak 0.247	Ps	0.002	0.004	0.006	0.008	0.011
Vt 75 S/L	Throw	2.0 2.5	3.0 3.5	3.5 4.5	4.5 5.5	5.0 6.0
Vt 100 S/L	Throw	2.0 2.5	3.0 3.5	3.5 4.0	4.0 5.0	5.0 6.0
Vt 150 S/L	Throw	1.5 1.5	2.0 2.0	2.5 3.0	3.0 3.5	3.0 4.0
Neck Size 7"	CFM	80	110	135	165	190
Ak 0.243	Ps	0.009	0.016	0.026	0.037	0.050
Vt 75 S/L	Throw	2.5 4.0	3.5 5.5	4.5 7.0	5.5 8.5	6.0 9.5
Vt 100 S/L	Throw	2.5 3.5	3.5 5.3	4.0 6.3	5.0 7.5	5.5 9.0
Vt 150 S/L	Throw	1.8 2.5	2.5 3.5	3.0 4.5	3.5 5.5	4.0 6.0
Neck Size 8"	CFM	105	140	175	210	245
Ak 0.239	Ps	0.016	0.029	0.046	0.066	0.090
Vt 75 S/L	Throw	3.0 5.5	4.0 7.5	5.0 9.0	6.0 11.0	7.0 13.0
Vt 100 S/L	Throw	3.0 5.0	3.5 7.0	4.5 8.5	5.5 10.5	6.5 12.0
Vt 150 S/L	Throw	2.0 3.5	2.5 4.5	3.0 6.0	3.5 7.0	4.5 8.0

### 4-Way

#### Four-Way Air Pattern

Neck Velocity		300	400	500	600	700
Neck Size 6"	CFM	60	80	100	120	135
Ak 0.210	Ps	0.001	0.002	0.003	0.005	0.006
Vt 75	Throw	3.0	3.5	4.5	5.5	6.5
Vt 100	Throw			4.5	5.0	6.0
Vt 150	Throw	1.5	2.5	3.0	3.5	4.0
Neck Size 7"	CFM	80	110	135	165	190
Ak 0.209	Ps	0.003	0.005	0.008	0.011	0.015
Vt 75	Throw	3.8		6.0	7.5	8.5
Vt 100	Throw	3.5	4.5	5.5	7.0	8.0
Vt 150	Throw	2.5	3.0	4.0	4.5	5.5
Neck Size 8"	CFM	105	140	175	210	245
Ak 0.209	Ps	0.005	0.008	0.013	0.018	0.025
Vt 75	Throw	4.5	6.0	7.5	9.0	10.5
Vt 100	Throw	4.0	5.5	7.0	8.5	10.0
Vt 150	Throw	3.0	3.5	4.5	5.5	6.5

## Rezzin Round Ceiling Diffuser

Face Velocity		300	400	500	600	700	800	900	1000
Neck Size 6"	CFM	67	89	112	134	157	179	201	224
Ak .224	Ps	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
	Throw	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00
Neck Size 7"	CFM	69	92	115	137	160	183	206	229
Ak .229	Ps	0.05	0.09	0.13	0.19	0.26	0.34	0.43	0.53
	Throw	1.75	2.25	2.75	3.25	3.75	4.25	5.00	5.50
Neck Size 8"	CFM	70	94	117	141	164	188	211	235
Ak .235	Ps	0.10	0.17	0.26	0.38	0.52	0.67	0.85	1.05
	Throw	2.00	2.50	3.00	3.50	4.00	4.50	5.50	6.00

Terminal Velocity of 50 FPM

### Rezzin Floor Register

Face Velocity		300	400	500	600	700	800	900	1000
2 x 12 Ak .084	CFM	25	34	42	50	59	67	76	84
	Ps	.01	.02	.03	.05	.06	.08	.10	.12
	Throw	2.0	2.5	3.5	4.0	4.5	5.5	6.0	6.5
	Spread	1.5	2.0	2.5	3.0	3.0	3.5	4.0	4.5
4 x 10 Ak .141	CFM	42	56	71	85	99	113	127	141
	Ps	.02	.02	.03	.04	.06	.07	.09	.11
	Throw	2.0	2.5	3.0	3.5	4.5	5.0	5.5	6.0
	Spread	0.5	1.5	2.5	3.0	4.0	5.0	5.5	6.5
4 x 12 Ak .157	CFM	47	63	79	94	110	126	141	157
	Ps	.02	.03	.04	.05	.07	.09	.11	.13
	Throw	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
	Spread	0.5	1.5	2.5	4.0	5.0	6.0	7.0	8.0

Terminal Velocity of 50 FPM

### Rezzin T-Bar Directional Diffuser

		Neck Velocity FPM									
		400	500	600	700	800	900	1000	1200	1400	1600
6"	CFM	79	98	118	137	157	177	196	236	275	314
	Static Pressure	.003	.005	.006	.008	.011	.013	.016	.023	.031	.041
	Total Pressure	.015	.024	.034	.046	.060	.076	.094	.134	.183	.238
	NC	-	-	-	-	-	-	15	22	26	31
8"	CFM	140	175	209	244	279	314	349	419	489	559
	Static Pressure	.009	.014	.021	.028	.037	.046	.057	.082	.111	.145
	Total Pressure	.019	.030	.043	.058	.076	.096	.118	.170	.231	.301
	NC	-	-	-	-	18	22	23	31	35	39
10"	CFM	218	273	327	382	436	491	545	654	764	873
	Static Pressure	.009	.014	.021	.028	.037	.047	.058	.083	.113	.148
	Total Pressure	.019	.029	.042	.058	.075	.095	.117	.169	.230	.300
	NC	-	-	-	-	18	22	26	31	36	40
12"	CFM	314	393	471	550	628	707	785	942	1100	1257
	Static Pressure	.015	.022	.032	.044	.059	.076	.095	.142	.198	.264
	Total Pressure	.025	.038	.054	.074	.098	.126	.157	.231	.319	.422
	NC	-	-	-	18	20	26	29	36	41	45
14"	CFM	428	535	641	748	855	962	1069	1283	1497	1710
	Static Pressure	.015	.023	.033	.044	.057	.072	.089	.128	.175	.228
	Total Pressure	.025	.037	.053	.072	.094	.119	.146	.211	.287	.375
	NC	-	-	-	15	21	25	29	35	40	44

#### Rezzin T-Bar Throw - Terminal Velocity of 75 FPM

Neck Velocity	400	500	600	700	800	900	1000	1200	1400	1600
CFM	79	98	118	137	157	177	196	236	275	314
6"	3.1	3.9	4.6	5.4	6.2	7.0	7.7	9.3	10.8	12.4
CFM	140	175	209	244	279	314	349	419	489	559
8"	5.3	6.7	8.0	9.3	10.7	12.0	13.3	16.0	18.7	21.3
CFM	218	273	327	382	436	491	545	654	764	873
10"	6.3	7.9	9.4	11.0	12.6	14.1	15.7	18.8	22.0	25.1
CFM	314	393	471	550	628	707	785	942	1100	1257
12"	7.1	8.8	10.6	12.4	14.2	15.9	17.7	21.2	24.8	28.3
CFM	428	535	641	748	855	962	1069	1283	1497	1710
14"	9.1	11.3	13.6	15.9	18.1	20.4	22.7	27.2	31.8	36.3

#### Rezzin T-Bar Throw - Terminal Velocity of 150 FPM

Neck Velocity	400	500	600	700	800	900	1000	1200	1400	1600
CFM	79	98	118	137	157	177	196	236	275	314
6"	1.3	1.7	2.0	2.4	2.7	3.0	3.4	4.0	4.7	5.4
CFM	140	175	209	244	279	314	349	419	489	559
8"	2.2	2.7	3.3	3.8	4.4	4.9	5.5	6.6	7.7	8.8
CFM	218	273	327	382	436	491	545	654	764	873
10"	2.5	3.1	3.7	4.4	5.0	5.6	6.2	7.5	8.7	10.0
CFM	314	393	471	550	628	707	785	942	1100	1257
12"	3.8	4.8	5.8	6.7	7.7	8.6	9.6	11.5	13.4	15.3
CFM	428	535	641	748	855	962	1069	1283	1497	1710
14"	4.2	5.2	6.3	7.3	8.3	9.4	10.4	12.5	14.6	16.7

### Rezzin Modular Core Diffuser

		Neck Velocity FPM									
		400	500	600	700	800	900	1000	1200	1400	1600
6"	CFM	79	98	118	137	157	177	196	236	275	314
	Static Pressure	.003	.005	.007	.010	.013	.017	.021	.030	.041	.054
	Total Pressure	.018	.023	.026	.035	.043	.067	.086	.120	.166	.209
	NC	-	-	-	-	-	16	20	24	30	34
8"	CFM	140	175	209	244	279	314	349	419	489	559
	Static Pressure	.004	.006	.008	.011	.014	.017	.020	.028	.036	.045
	Total Pressure	.013	.021	.030	.041	.053	.066	.081	.115	.155	.201
	NC	-	-	-	-	17	22	24	34	37	41
10"	CFM	218	273	327	382	436	491	545	654	764	873
	Static Pressure	.004	.007	.010	.013	.017	.022	.027	.039	.053	.069
	Total Pressure	.014	.021	.031	.042	.055	.070	.086	.124	.170	.222
	NC	-	-	-	17	22	26	34	42	44	48

- Indicates less than NC15.

		Neck Velocity FPM									
		400	500	600	700	800	900	1000	1200	1400	1600
12"	CFM	314	393	471	550	628	707	785	942	1100	1257
	Static Pressure	.006	.009	.012	.017	.022	.028	.034	.048	.065	.084
	Total Pressure	.015	.024	.035	.047	.061	.077	.095	.137	.186	.242
	NC	-	-	-	20	24	27	35	40	45	49
14"	CFM	428	535	641	748	855	962	1069	1283	1497	1710
	Static Pressure	.008	.013	.018	.024	.031	.040	.048	.069	.093	.120
	Total Pressure	.017	.030	.041	.056	.071	.090	.114	.144	.200	.278
	NC	-	-	15	23	27	34	39	44	48	51
16"	CFM	559	698	838	977	1117	1257	1396	1676	1955	2234
	Static Pressure	.012	.019	.028	.037	.048	.061	.075	.107	.145	.189
	Total Pressure	.022	.034	.049	.066	.086	.108	.134	.192	.260	.339
	NC	-	-	24	27	31	38	40	45	49	51

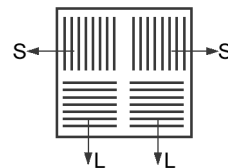
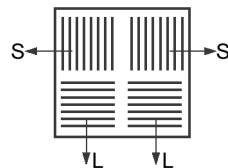
- Indicates less than NC15.

### Rezzin Mod Core Throw - Terminal Velocity of 75 FPM

Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
<b>CFM</b>		<b>79</b>	<b>98</b>	<b>118</b>	<b>137</b>	<b>157</b>	<b>177</b>	<b>196</b>	<b>236</b>	<b>275</b>	<b>314</b>
6"	1-direction	3.5	4.4	5.3	6.2	7.1	7.9	8.8	10.6	12.4	14.1
	2-direction	4.5	5.6	6.8	7.9	9.0	10.2	11.3	13.6	15.8	18.1
	3-direction Short	0.9	1.1	1.3	1.5	1.7	2.0	2.2	2.6	3.0	3.5
	3-direction Long	1.2	1.5	1.8	2.1	2.5	2.8	3.1	3.7	4.3	4.9
	4-direction	0.6	0.8	0.9	1.1	1.2	1.4	1.5	1.8	2.1	2.5
8"	<b>CFM</b>	<b>140</b>	<b>175</b>	<b>209</b>	<b>244</b>	<b>279</b>	<b>314</b>	<b>349</b>	<b>419</b>	<b>489</b>	<b>559</b>
	1-direction	3.1	3.9	4.6	5.4	6.2	7.0	7.7	9.3	10.8	12.4
	2-direction	4.4	5.5	6.6	7.7	8.8	9.9	11.0	13.2	15.4	17.6
	3-direction Short	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.1	8.1
	3-direction Long	3.5	4.4	5.3	6.2	7.0	7.9	8.8	10.6	12.3	14.1
4-direction	1.5	1.9	2.3	2.7	3.1	3.4	3.8	4.6	5.4	6.1	
10"	<b>CFM</b>	<b>218</b>	<b>273</b>	<b>327</b>	<b>382</b>	<b>436</b>	<b>491</b>	<b>545</b>	<b>654</b>	<b>764</b>	<b>873</b>
	1-direction	6.1	7.6	9.2	10.7	12.2	13.7	15.3	18.3	21.4	24.4
	2-direction	7.1	8.9	10.7	12.5	14.3	16.1	17.8	21.4	25.0	28.5
	3-direction Short	2.1	2.6	3.1	3.7	4.2	4.7	5.2	6.3	7.3	8.4
	3-direction Long	6.4	8.0	9.6	11.2	12.8	14.4	16.0	19.2	22.4	25.6
4-direction	2.9	3.6	4.3	5.0	5.7	6.4	7.1	8.6	10.0	11.4	
12"	<b>CFM</b>	<b>314</b>	<b>393</b>	<b>471</b>	<b>550</b>	<b>628</b>	<b>707</b>	<b>785</b>	<b>942</b>	<b>1100</b>	<b>1257</b>
	1-direction	9.8	12.2	14.7	17.1	19.6	22.0	24.5	29.3	34.2	39.1
	2-direction	9.1	11.4	13.6	15.9	18.2	20.5	22.7	27.3	31.8	36.4
	3-direction Short	3.6	4.5	5.4	6.3	7.2	8.1	9.0	10.8	12.6	14.4
	3-direction Long	8.0	10.0	12.0	14.0	16.0	18.0	20.1	24.1	28.1	32.1
4-direction	2.1	2.6	3.1	3.7	4.2	4.7	5.2	6.3	7.3	8.4	
14"	<b>CFM</b>	<b>428</b>	<b>535</b>	<b>641</b>	<b>748</b>	<b>855</b>	<b>962</b>	<b>1069</b>	<b>1283</b>	<b>1497</b>	<b>1710</b>
	1-direction	12.1	15.1	18.2	21.2	24.2	27.3	30.3	36.3	42.4	48.5
	2-direction	8.4	10.5	12.6	14.7	16.8	18.9	21.0	25.2	29.4	33.6
	3-direction Short	3.9	4.9	5.9	6.8	7.8	8.8	9.8	11.7	13.7	15.7
	3-direction Long	7.0	8.8	10.5	12.3	14.0	15.8	17.5	21.0	24.5	28.0
4-direction	2.8	3.5	4.2	4.9	5.6	6.3	7.0	8.4	9.8	11.2	
16"	<b>CFM</b>	<b>559</b>	<b>698</b>	<b>838</b>	<b>977</b>	<b>1117</b>	<b>1257</b>	<b>1396</b>	<b>1676</b>	<b>1955</b>	<b>2234</b>
	1-direction	24.3	30.4	36.5	42.5	48.6	54.7	60.8	72.9	85.1	97.2
	2-direction	14.1	17.6	21.1	24.6	28.1	31.7	35.2	42.2	49.3	56.3
	3-direction Short	11.2	14.0	16.8	19.7	22.5	25.3	28.1	33.7	39.3	44.9
	3-direction Long	16.3	20.4	24.5	28.6	32.7	36.7	40.8	49.0	57.1	65.3
4-direction	3.2	4.0	4.9	5.7	6.5	7.3	8.1	9.7	11.3	12.9	

### Rezzin Mod Core Throw - Terminal Velocity of 150 FPM

Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
<b>CFM</b>		<b>79</b>	<b>98</b>	<b>118</b>	<b>137</b>	<b>157</b>	<b>177</b>	<b>196</b>	<b>236</b>	<b>275</b>	<b>314</b>
6"	1-direction	1.5	1.9	2.3	2.6	3.0	3.4	3.8	4.2	4.5	4.9
	2-direction	1.7	2.1	2.5	3.0	3.4	3.8	4.2	4.7	5.1	5.5
	3-direction Short	0.6	0.7	0.9	1.0	1.2	1.3	1.5	1.6	1.8	1.9
	3-direction Long	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.9	0.9
	4-direction	0.6	0.7	0.8	1.0	1.1	1.2	1.4	1.5	1.7	1.8
8"	<b>CFM</b>	<b>140</b>	<b>175</b>	<b>209</b>	<b>244</b>	<b>279</b>	<b>314</b>	<b>349</b>	<b>419</b>	<b>489</b>	<b>559</b>
	1-direction	1.6	2.1	2.5	2.9	3.3	3.7	4.1	4.5	4.9	5.4
	2-direction	1.7	2.1	2.5	2.9	3.3	3.8	4.2	4.6	5.0	5.4
	3-direction Short	1.3	1.6	1.9	2.3	2.6	2.9	3.2	3.5	3.9	4.2
	3-direction Long	1.5	1.9	2.2	2.6	3.0	3.3	3.7	4.1	4.5	4.8
4-direction	1.1	1.4	1.6	1.9	2.2	2.5	2.7	3.0	3.3	3.6	
10"	<b>CFM</b>	<b>218</b>	<b>273</b>	<b>327</b>	<b>382</b>	<b>436</b>	<b>491</b>	<b>545</b>	<b>654</b>	<b>764</b>	<b>873</b>
	1-direction	3.0	3.7	4.5	5.2	6.0	6.7	7.5	8.2	9.0	9.7
	2-direction	2.8	3.5	4.1	4.8	5.5	6.2	6.9	7.6	8.3	9.0
	3-direction Short	1.5	1.9	2.2	2.6	3.0	3.4	3.7	4.1	4.5	4.8
	3-direction Long	2.5	3.1	3.7	4.3	5.0	5.6	6.2	6.8	7.4	8.1
4-direction	2.3	2.9	3.4	4.0	4.6	5.2	5.7	6.3	6.9	7.5	
12"	<b>CFM</b>	<b>314</b>	<b>393</b>	<b>471</b>	<b>550</b>	<b>628</b>	<b>707</b>	<b>785</b>	<b>942</b>	<b>1100</b>	<b>1257</b>
	1-direction	3.4	4.3	5.2	6.0	6.9	7.8	8.6	9.5	10.3	11.2
	2-direction	2.1	2.6	3.1	3.6	4.1	4.7	5.2	5.7	6.2	6.7
	3-direction Short	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.7	7.3	7.9
	3-direction Long	2.1	2.6	3.1	3.6	4.1	4.7	5.2	5.7	6.2	6.7
4-direction	1.7	2.1	2.5	2.9	3.3	3.8	4.2	4.6	5.0	5.4	
14"	<b>CFM</b>	<b>428</b>	<b>535</b>	<b>641</b>	<b>748</b>	<b>855</b>	<b>962</b>	<b>1069</b>	<b>1283</b>	<b>1497</b>	<b>1710</b>
	1-direction	5.3	6.6	7.9	9.3	10.6	11.9	13.2	14.5	15.9	17.2
	2-direction	3.0	3.8	4.6	5.3	6.1	6.8	7.6	8.3	9.1	9.9
	3-direction Short	2.3	2.9	3.5	4.1	4.6	5.2	5.8	6.4	6.9	7.5
	3-direction Long	2.6	3.2	3.9	4.5	5.1	5.8	6.4	7.1	7.7	8.4
4-direction	2.2	2.7	3.2	3.8	4.3	4.9	5.4	5.9	6.5	7.0	
16"	<b>CFM</b>	<b>559</b>	<b>698</b>	<b>838</b>	<b>977</b>	<b>1117</b>	<b>1257</b>	<b>1396</b>	<b>1676</b>	<b>1955</b>	<b>2234</b>
	1-direction	14.9	18.6	22.3	26.0	29.7	33.5	37.2	40.9	44.6	48.3
	2-direction	7.0	8.7	10.4	12.2	13.9	15.6	17.4	19.1	20.9	22.6
	3-direction Short	5.2	6.5	7.8	9.1	10.4	11.7	13.0	14.3	15.6	16.9
	3-direction Long	6.7	8.4	10.0	11.7	13.4	15.1	16.7	18.4	20.1	21.8
4-direction	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.6	







## Series AL270 Adjustable Curved-Blade Register

### AL271ML One-Way

Face Velocity		300	400	500	600	700	800	900	1000	1100	1200
<b>Pressure Loss</b>		<b>.006</b>	<b>.010</b>	<b>.016</b>	<b>.022</b>	<b>.031</b>	<b>.040</b>	<b>.050</b>	<b>.062</b>	<b>.075</b>	<b>.090</b>
8 x 4	CFM	30	45	55	65	75	85	95	105	120	130
Ak .107	Throw	3.5	5.5	6.5	7.5	9.0	10.0	11.5	12.5	14.0	15.5
10 x 4	CFM	40	55	65	80	90	105	120	130	145	160
Ak .132	Throw	4.0	6.0	7.0	8.5	9.5	11.0	12.5	13.5	15.5	17.0
10 x 6	CFM	60	80	100	120	140	160	180	200	220	240
Ak .200	Throw	5.0	6.5	8.5	10.0	11.5	13.5	15.0	16.0	18.0	20.0
12 x 6	CFM	70	95	120	140	165	190	210	235	260	280
Ak .235	Throw	5.5	7.0	9.0	10.5	12.5	14.5	16.0	18.0	20.0	22.0
10 x 8	CFM	80	105	130	160	185	210	240	265	290	315
Ak .264	Throw	5.5	7.5	9.5	11.5	13.0	15.0	17.0	19.0	21.0	23.0
12 x 8	CFM	95	130	160	190	225	255	290	320	350	385
Ak .320	Throw	6.0	8.5	10.5	12.5	14.5	16.5	19.0	21.0	23.0	25.0
14 x 8	CFM	110	145	180	220	255	290	330	365	400	435
Ak .364	Throw	6.5	8.5	11.0	13.0	15.5	17.5	20.0	22.0	24.0	26.0

Terminal Velocity of 75 FPM

### AL272ML Two-Way

Face Velocity		300	400	500	600	700	800	900	1000	1100	1200
<b>Pressure Loss</b>		<b>.006</b>	<b>.010</b>	<b>.016</b>	<b>.022</b>	<b>.031</b>	<b>.040</b>	<b>.050</b>	<b>.062</b>	<b>.075</b>	<b>.090</b>
8 x 4	CFM	30	45	55	65	75	85	95	105	120	130
Ak .107	Throw	2.5	4.0	4.5	5.5	6.5	7.0	8.0	9.0	10.0	11.0
10 x 4	CFM	40	55	65	80	90	105	120	130	145	160
Ak .132	Throw	3.0	4.0	5.0	6.0	6.5	8.0	9.0	9.5	11.0	12.0
10 x 6	CFM	60	80	100	120	140	160	180	200	220	240
Ak .200	Throw	3.5	4.5	6.0	7.0	8.5	9.5	10.5	12.0	13.0	14.0
12 x 6	CFM	70	95	120	140	165	190	210	235	260	280
Ak .235	Throw	4.0	5.0	6.5	7.5	9.0	10.0	11.5	12.5	14.0	15.0
10 x 8	CFM	80	105	130	160	185	210	240	265	290	315
Ak .264	Throw	4.0	5.5	6.5	8.0	9.5	10.5	12.0	13.5	14.5	16.0
12 x 8	CFM	95	130	160	190	225	255	290	320	350	385
Ak .320	Throw	4.5	6.0	7.5	8.5	10.5	11.5	13.5	14.5	16.0	18.0
14 x 8	CFM	110	145	180	220	255	290	330	365	400	435
Ak .364	Throw	4.5	6.0	7.5	9.5	11.0	12.5	14.0	15.5	17.0	19.0

Terminal Velocity of 75 FPM

### AL273ML Three-Way

Face Velocity		300	400	500	600	700	800	900	1000	1100	1200
<b>Pressure Loss</b>		<b>.006</b>	<b>.010</b>	<b>.016</b>	<b>.022</b>	<b>.031</b>	<b>.040</b>	<b>.050</b>	<b>.062</b>	<b>.075</b>	<b>.090</b>
10 x 6	Total CFM	60	80	100	120	140	160	180	200	220	240
Ak .200	CFM L/S	22/19	29/26	36/32	43/38	50/45	58/51	65/58	72/64	79/70	86/77
	Throw L/S	3.0/2.0	4.0/4.0	5.0/4.5	6.0/5.0	7.0/6.5	8.0/7.5	9.0/8.5	10.0/9.5	11.0/10.5	12.0/11.5
8 x 8	Total CFM	65	85	110	130	150	170	195	215	235	260
Ak .215	CFM L/S	30/18	39/23	50/30	60/35	68/41	78/46	89/53	98/58	108/64	119/70
	Throw L/S	3.5/3.0	4.5/3.5	6.0/4.5	7.0/5.5	8.0/6.5	9.5/7.0	10.5/8.0	11.5/9.0	13.0/10.0	14.0/11.0
12 x 6	Total CFM	70	95	120	140	165	190	210	235	260	280
Ak .235	CFM L/S	21/25	28/33	36/42	42/49	49/58	57/67	63/74	70/82	77/91	83/98
	Throw L/S	3.0/3.0	4.0/4.0	5.0/5.5	6.0/6.5	7.0/7.5	8.0/8.5	9.0/9.5	9.5/10.5	10.5/11.5	11.5/12.5
10 x 10	Total CFM	100	130	165	200	230	265	295	330	365	395
Ak .330	CFM L/S	36/32	47/42	59/63	72/64	83/74	95/85	106/94	119/106	131/117	142/126
	Throw L/S	4.0/3.5	5.0/4.5	6.5/6.0	7.5/7.0	9.0/8.5	10.0/9.5	11.0/10.5	12.5/12.0	14.0/13.0	15.0/14.0

Terminal Velocity of 75 FPM

### AL274ML Four-Way

Face Velocity		300	400	500	600	700	800	900	1000	1100	1200
<b>Pressure Loss</b>		<b>.006</b>	<b>.010</b>	<b>.016</b>	<b>.022</b>	<b>.031</b>	<b>.040</b>	<b>.050</b>	<b>.062</b>	<b>.075</b>	<b>.090</b>
8 x 8	Total CFM	65	85	110	130	150	170	195	215	235	260
Ak .215	CFM L/S	15/18	20/23	25/30	30/35	35/41	39/46	45/53	49/58	54/64	60/70
	Throw L/S	2.5/3.0	3.5/3.5	4.0/4.5	5.0/5.5	6.0/6.5	6.5/7.0	7.5/8.0	8.0/9.0	9.0/10.0	10.0/11.0
10 x 10	Total CFM	100	130	165	200	230	265	295	330	365	395
Ak .330	CFM L/S	18/32	24/42	30/53	36/64	42/74	48/85	53/94	60/106	66/117	71/126
	Throw L/S	2.5/3.5	3.5/4.5	4.5/6.0	5.5/7.0	6.5/8.5	7.0/9.5	8.0/10.5	9.0/12.0	10.0/13.0	10.5/14.0
12 x 12	Total CFM	135	180	225	270	315	360	405	450	495	540
Ak .452	CFM L/S	20/47	27/63	34/79	40/95	47/111	54/126	61/142	67/158	74/174	81/190
	Throw L/S	2.5/4.0	3.5/5.5	4.5/7.0	5.5/8.5	6.5/10.0	7.5/11.0	8.5/12.5	9.0/14.0	10.0/15.5	11.0/17.0

Terminal Velocity of 75 FPM



AL278ML Adjustable Fin Register

Deflection A

Face Velocity		300	400	500	600	700	800	900	1000	1100	1200
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062	.075	.090
8 x 4	CFM	45	60	80	95	110	125	140	155	170	185
Ak .156	Throw	5.0	6.5	8.5	10.0	12.0	13.0	15.0	16.0	18.0	19.0
10 x 4	CFM	60	80	100	120	140	160	180	200	220	240
Ak .198	Throw	6.0	7.5	9.5	12.0	13.0	15.0	17.0	19.0	20.0	22.0
12 x 4	CFM	70	95	120	145	170	190	215	240	265	290
Ak .240	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.0
10 x 6	CFM	95	125	155	190	220	250	280	315	345	375
Ak .313	Throw	7.0	9.0	12.0	14.0	16.0	19.0	21.0	23.0	26.0	28.0
12 x 6	CFM	115	150	190	225	265	305	340	380	415	455
Ak .379	Throw	8.0	10.0	13.0	15.0	18.0	21.0	23.0	26.0	28.0	31.0
10 x 8	CFM	130	170	215	255	300	340	385	425	470	510
Ak .425	Throw	8.0	11.0	14.0	16.0	19.0	21.0	24.0	27.0	30.0	32.0
14 x 6	CFM	135	180	225	270	310	355	400	445	490	545
Ak .446	Throw	8.0	11.0	14.0	17.0	19.0	22.0	25.0	28.0	30.0	33.0
12 x 8	CFM	160	200	265	320	370	425	475	530	585	635
Ak .530	Throw	9.0	11.0	15.0	18.0	21.0	24.0	27.0	30.0	33.0	36.0
14 x 8	CFM	185	250	310	370	435	495	560	620	680	745
Ak .620	Throw	10.0	13.0	16.0	20.0	23.0	26.0	30.0	33.0	36.0	39.0

Terminal Velocity of 75 FPM

Deflection C

Face Velocity		300	400	500	600	700	800	900	1000	1100	1200
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062	.075	.090
8 x 4	CFM	40	55	70	85	100	115	125	140	155	170
Ak .141	Throw	3.5	5.0	6.5	7.5	9.0	10.0	11.0	13.0	14.0	15.0
10 x 4	CFM	55	70	90	105	125	140	160	180	195	215
Ak .178	Throw	4.0	5.5	7.0	8.5	10.0	11.0	13.0	14.0	16.0	17.0
12 x 4	CFM	65	85	110	130	150	175	195	215	240	260
Ak .216	Throw	4.5	6.0	8.0	9.5	11.0	13.0	14.0	16.0	18.0	19.0
10 x 6	CFM	85	115	140	170	195	225	255	280	310	340
Ak .282	Throw	5.5	7.5	9.0	11.0	12.0	14.0	16.0	18.0	20.0	22.0
12 x 6	CFM	105	135	170	205	240	275	310	340	375	410
Ak .342	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0
10 x 8	CFM	115	155	195	235	275	310	350	390	430	470
Ak .390	Throw	6.0	8.0	11.0	13.0	15.0	17.0	19.0	21.0	23.0	26.0
14 x 6	CFM	125	165	205	245	290	330	370	410	455	495
Ak .412	Throw	7.0	9.0	11.0	13.0	16.0	18.0	20.0	22.0	24.0	27.0
12 x 8	CFM	140	190	235	280	330	375	425	470	515	565
Ak .470	Throw	7.0	9.0	12.0	14.0	16.0	19.0	21.0	23.0	25.0	28.0
14 x 8	CFM	165	220	275	330	385	440	495	550	605	660
Ak .550	Throw	8.0	10.0	13.0	15.0	18.0	20.0	23.0	25.0	28.0	30.0

Terminal Velocity of 75 FPM

Deflection E

Face Velocity		300	400	500	600	700	800	900	1000	1100	1200
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062	.075	.090
8 x 4	CFM	40	50	65	75	90	100	115	125	140	150
Ak .127	Throw	3.0	4.0	5.0	5.5	7.0	7.5	8.5	9.5	11.0	11.5
10 x 4	CFM	50	65	80	95	115	130	145	160	180	195
Ak .162	Throw	3.0	4.5	5.5	6.5	7.5	8.5	9.5	11.0	12.0	13.0
12 x 4	CFM	60	80	100	120	140	160	175	195	215	235
Ak .197	Throw	4.0	4.5	6.0	7.5	8.5	10.0	11.0	12.0	13.0	14.0
10 x 6	CFM	75	105	130	155	180	205	230	255	285	310
Ak .257	Throw	4.0	5.5	7.5	8.5	9.5	11.0	12.0	14.0	15.0	17.0
12 x 6	CFM	95	125	155	185	220	250	280	310	340	375
Ak .311	Throw	4.5	6.0	7.5	9.0	11.0	12.0	14.0	15.0	17.0	18.0
10 x 8	CFM	105	140	175	210	245	280	315	350	385	420
Ak .350	Throw	5.0	6.0	8.0	10.0	11.0	13.0	14.0	16.0	18.0	19.0
14 x 6	CFM	110	145	185	220	255	290	330	365	400	440
Ak .365	Throw	5.5	6.5	8.5	10.0	11.0	13.0	15.0	16.0	18.0	20.0
12 x 8	CFM	130	175	220	260	305	350	390	435	480	520
Ak .435	Throw	5.0	7.0	9.0	11.0	13.0	15.0	16.0	18.0	20.0	22.0
14 x 8	CFM	155	205	255	305	355	410	460	510	560	610
Ak .510	Throw	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	23.0

Terminal Velocity of 75 FPM

Deflection G

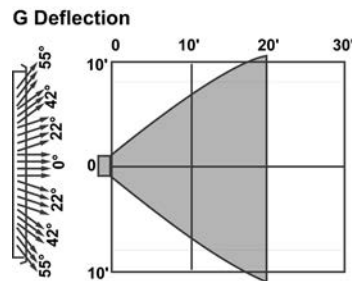
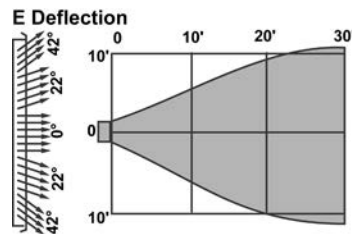
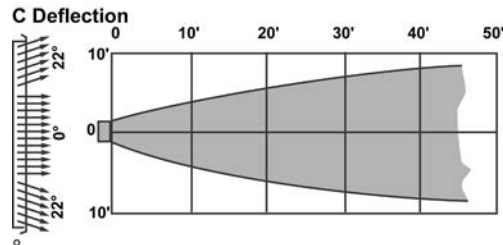
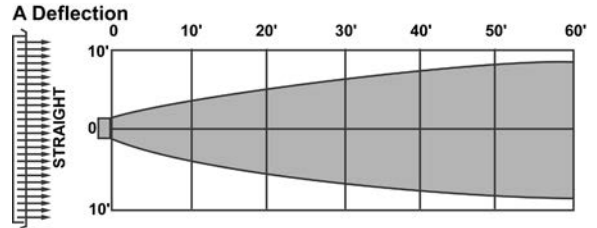
Face Velocity		300	400	500	600	700	800	900	1000	1100	1200
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062	.075	.090
8 x 4	CFM	35	45	60	70	85	95	105	120	130	140
Ak .118	Throw	2.0	2.5	3.5	4.0	5.0	5.5	6.0	6.5	7.5	8.0
10 x 4	CFM	45	60	75	90	105	120	135	150	165	180
Ak .149	Throw	2.0	3.0	3.5	4.5	5.0	6.0	6.5	7.5	8.0	9.0
12 x 4	CFM	55	70	90	110	125	145	165	180	200	215
Ak .181	Throw	2.5	3.0	4.0	5.0	5.5	6.5	7.5	8.0	9.0	10.0
10 x 6	CFM	70	95	120	140	165	190	210	235	260	285
Ak .236	Throw	3.0	4.0	5.0	5.5	6.5	7.5	8.5	9.5	10.0	11.0
12 x 6	CFM	85	115	145	170	200	230	255	285	315	345
Ak .286	Throw	3.0	4.0	5.0	6.0	7.0	8.5	9.0	10.0	11.0	12.0
10 x 8	CFM	95	130	160	190	225	255	290	320	350	385
Ak .320	Throw	3.0	4.5	5.5	6.5	7.5	8.5	10.0	11.0	12.0	13.0
14 x 6	CFM	100	135	170	200	235	270	300	335	370	405
Ak .336	Throw	3.5	4.5	5.5	6.5	8.0	9.0	10.0	11.0	12.0	13.0
12 x 8	CFM	120	160	200	235	275	315	355	395	435	475
Ak .395	Throw	3.5	5.0	6.0	7.0	8.0	10.0	11.0	12.0	13.0	15.0
14 x 8	CFM	140	185	230	275	320	370	415	460	505	550
Ak .460	Throw	4.0	5.5	6.5	8.0	9.0	10.5	11.5	13.0	14.5	15.5

Terminal Velocity of 75 FPM

**Recommended NC Criteria**

	Communication Environment	Typical Occupancy
< NC 25	Extremely quiet environment; suppressed speech is quite audible; suitable for acute pickup of all sounds.	Broadcasting studios, concert halls, music rooms.
NC 30	Very quiet office; suitable for large conferences; telephone use satisfactory.	Residences, theaters, libraries, executive offices, directors rooms.
NC 35	Quiet office; satisfactory for conference at a 15-foot table; normal voice 10 to 30 feet; telephone use satisfactory.	Private offices, schools, hotel guestrooms, courtrooms, churches, hospital rooms.
NC 40	Satisfactory for conferences at a 6-to 8-foot table; normal voice 6 to 12 feet; telephone use satisfactory.	General office, labs, dining rooms.
NC 45	Satisfactory for conferences at a 4- to 5-foot table; normal voice 3 to 6 feet; raised voice 6 to 12 feet; telephone use occasionally difficult.	Retail stores, cafeterias, lobby areas, large drafting and engineering offices, reception areas.
> NC 50	Unsatisfactory for conference of more than two or three persons; normal voice 1 to 2 feet; raised voice 3 to 6 feet; telephone use slightly difficult.	Computer rooms, stenographic pools, print machine rooms, process areas.

**Air Pattern Obtained with Various Deflection Settings**



**Velocity Limitations for Various Applications**

The sound caused by an air outlet in operation is directly proportional to the velocity of the air passing through it. By selecting outlets of proper sizes, face velocities can be controlled within safe sound limits.

The following recommended face velocities are within the safe sound limits for most applications, when NC data are not available.

Application	Recommended Velometer Velocities
Broadcasting Studios	500 FPM
Residences	500 to 750 FPM
Apartments	500 to 750 FPM
Churches	500 to 750 FPM
Hotel Guestrooms	500 to 750 FPM
Legitimate Theaters	500 to 1000 FPM
Private Offices, acoustically treated	500 to 1000 FPM
Private Offices, not treated	1000 to 1250 FPM
Motion Picture Theaters	1000 to 1250 FPM
General Offices	1250 to 1500 FPM
Stores, upper floors	1500 FPM
Stores, main floors	1500 FPM
Industrial Buildings	1500 to 2000 FPM



**PERFORMANCE DATA—LIGHT COMMERCIAL**

**90H / 90V / AL90H / AL90V / ALS90ZH / ALS90ZV Single-Deflection Supply**

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nom. Duct Size (in.)	Nom. Duct Area (ft²)	Core Area (ft²)	Core Vel. Vel. Press. 0° Total Press. 45°	NC-20						NC-30		NC-40	
				300	400	500	600	700	800	1000	1200	1400	
				0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122	
<b>6x6</b>	<b>0.25</b>	<b>0.19</b>	cfm	57	76	95	114	133	152	190	228	266	
			NC	-	-	-	15	20	24	31	36	41	
			Throw 0°	5-7-14	7-10-16	8-12-18	10-14-20	12-15-21	13-16-23	15-18-25	16-20-28	17-21-30	
			Throw 22.5°	4-6-11	5-8-12	6-10-14	8-11-15	9-12-16	10-12-18	11-14-20	12-15-22	13-16-23	
<b>8x6</b>	<b>0.33</b>	<b>0.26</b>	cfm	78	104	130	156	182	208	260	312	364	
			NC	-	-	11	17	21	25	32	38	42	
			Throw 0°	5-9-16	8-12-19	10-15-21	12-16-23	14-18-25	15-19-27	17-21-30	19-23-32	20-25-35	
			Throw 22.5°	4-7-13	6-9-15	8-11-16	9-13-18	11-14-19	12-15-21	13-16-23	15-18-25	16-19-27	
<b>10x6</b>	<b>0.42</b>	<b>0.34</b>	cfm	102	136	170	204	238	272	340	408	476	
			NC	-	-	12	18	23	27	33	39	43	
			Throw 0°	6-10-19	9-13-21	11-17-24	13-19-26	16-20-28	18-21-30	20-24-34	21-26-37	23-28-40	
			Throw 22.5°	5-8-14	7-10-17	9-13-19	10-14-20	12-16-22	14-17-23	15-19-26	17-20-29	18-22-31	
<b>8x8</b>	<b>0.44</b>	<b>0.37</b>	cfm	111	148	185	222	259	296	370	444	518	
			NC	-	-	13	18	23	27	34	39	44	
			Throw 0°	6-10-19	9-14-22	12-17-25	14-19-27	16-21-30	18-22-32	20-25-35	22-27-39	24-30-42	
			Throw 22.5°	5-8-15	7-11-17	9-13-19	11-15-21	13-16-23	14-17-25	16-19-27	17-21-30	19-23-32	
<b>12x6</b>	<b>0.50</b>	<b>0.41</b>	cfm	123	164	205	246	287	328	410	492	574	
			NC	-	-	13	19	23	27	34	39	44	
			Throw 0°	7-11-20	10-15-24	12-18-26	15-20-29	17-22-31	19-24-33	21-26-37	24-29-41	25-31-44	
			Throw 22.5°	5-8-16	8-11-18	9-14-20	11-16-22	13-17-24	15-18-26	17-20-29	18-22-32	20-24-34	
<b>14x6</b>	<b>0.58</b>	<b>0.48</b>	cfm	144	192	240	288	336	384	480	576	672	
			NC	-	-	14	19	24	28	35	40	45	
			Throw 0°	7-12-22	11-16-25	13-20-28	16-22-31	18-24-34	21-25-36	23-28-40	25-31-44	28-34-48	
			Throw 22.5°	6-9-17	8-12-20	10-15-22	12-17-24	14-18-26	16-20-28	18-22-31	20-24-34	21-26-37	
<b>16x6</b> <b>12x8</b>	<b>0.67</b>	<b>0.57</b>	cfm	171	228	285	342	399	456	570	684	798	
			NC	-	-	15	20	25	29	35	41	45	
			Throw 0°	8-13-24	11-17-28	14-22-31	17-24-34	20-26-37	23-28-39	25-31-44	28-34-48	30-37-52	
			Throw 22.5°	6-10-19	9-13-22	11-17-24	13-19-26	16-20-28	18-22-30	20-24-34	22-26-37	23-28-40	
<b>10x10</b>	<b>0.69</b>	<b>0.59</b>	cfm	177	236	295	354	413	472	590	708	826	
			NC	-	-	15	20	25	29	35	41	46	
			Throw 0°	8-13-24	12-18-28	15-22-32	18-24-35	20-26-37	23-28-40	26-32-45	28-35-49	31-37-53	
			Throw 22.5°	6-10-19	9-14-22	11-17-24	14-19-27	16-20-29	18-22-31	20-24-35	22-27-38	24-29-41	
<b>18x6</b>	<b>0.75</b>	<b>0.63</b>	cfm	189	252	315	378	441	504	630	756	882	
			NC	-	-	15	20	25	29	36	41	46	
			Throw 0°	8-14-25	12-18-29	15-23-33	18-25-36	21-27-39	24-29-41	27-33-46	29-36-51	32-39-55	
			Throw 22.5°	7-11-20	9-14-23	12-18-25	14-20-28	16-21-30	18-23-32	21-25-36	23-28-39	24-30-42	
<b>20x6</b> <b>12x10</b>	<b>0.83</b>	<b>0.72</b>	cfm	216	288	360	432	504	576	720	864	1008	
			NC	-	-	16	21	26	30	36	42	46	
			Throw 0°	9-15-27	13-19-31	16-24-35	19-27-38	23-29-41	25-31-44	28-35-49	31-38-54	34-41-58	
			Throw 22.5°	7-11-21	10-15-24	12-19-27	15-21-30	17-23-32	20-24-34	22-27-38	24-30-42	26-32-45	
<b>22x6</b>	<b>0.92</b>	<b>0.77</b>	cfm	231	308	385	462	539	616	770	924	1078	
			NC	-	-	16	21	26	30	37	42	47	
			Throw 0°	9-15-28	13-20-32	17-25-36	20-28-40	23-30-43	26-32-46	29-36-51	32-40-56	35-43-60	
			Throw 22.5°	7-12-22	10-16-25	13-19-28	16-22-31	18-23-33	20-25-35	23-28-40	25-31-43	27-33-47	
<b>24x6</b> <b>18x8</b> <b>12x12</b>	<b>1.00</b>	<b>0.88</b>	cfm	264	352	440	528	616	704	880	1056	1232	
			NC	-	-	16	22	26	30	37	43	47	
			Throw 0°	10-16-30	14-21-34	18-27-39	21-30-42	25-32-46	28-34-49	31-39-55	34-42-60	37-46-65	
			Throw 22.5°	8-12-23	11-17-27	14-21-30	17-23-33	19-25-35	22-27-38	24-30-42	27-33-46	29-35-50	
<b>30x6</b> <b>18x10</b>	<b>1.25</b>	<b>1.11</b>	cfm	333	444	555	666	777	888	1110	1332	1554	
			NC	-	11	17	23	27	31	38	44	48	
			Throw 0°	11-18-34	16-24-39	20-30-43	24-34-47	28-36-51	32-39-55	35-43-61	39-47-67	42-51-72	
			Throw 22.5°	9-14-26	12-19-30	16-23-34	19-26-37	22-28-40	25-30-42	27-34-47	30-37-52	32-40-56	

Performance notes appear at end of table

Recommended Noise Criteria and Face Velocity Ranges are on page 19.

90H / 90V / AL90H / AL90V / ALS90ZH / ALS90ZV Single-Deflection Supply

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

			NC-20			NC-30			NC-40			NC-50
Nom. Duct Size (in.)	Nom. Duct Area (ft²)	Core Area (ft²)	Core Vel.	300	400	500	600	700	800	1000	1200	1400
			Vel. Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
			0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183	0.263	0.358
			Total 22.5° Press. 45°	0.018	0.033	0.051	0.074	0.100	0.131	0.204	0.294	0.401
14x14	1.36	1.22	cfm	366	488	610	732	854	976	1220	1464	1708
			NC	-	11	18	23	28	32	39	44	49
			0°	12-19-35	17-25-41	21-31-45	25-35-50	29-38-54	33-41-57	37-45-64	41-50-70	44-54-76
			Throw 22.5° (ft) 45°	9-15-27 5-8-16	13-20-31 8-11-18	16-24-35 9-14-20	20-27-39 11-16-22	23-29-42 13-17-24	26-31-45 15-18-26	29-35-50 17-20-29	31-39-55 18-22-32	34-42-59 20-24-34
36x6 27x8 18x12	1.50	1.35	cfm	405	540	675	810	945	1080	1350	1620	1890
			NC	-	12	18	24	28	32	39	44	49
			0°	12-20-37	18-26-43	22-33-48	26-37-52	31-40-57	35-43-60	39-48-68	43-52-74	46-57-80
			Throw 22.5° (ft) 45°	10-15-29 6-9-17	14-21-33 8-12-19	17-26-37 10-15-21	21-29-41 12-17-24	24-31-44 14-18-25	27-33-47 16-19-27	30-37-52 18-21-30	33-41-57 19-24-33	36-44-62 21-25-36
22x10	1.53	1.37	cfm	411	548	685	822	959	1096	1370	1644	1918
			NC	-	12	18	24	28	32	39	44	49
			0°	12-20-37	18-27-43	22-33-48	27-37-53	31-40-57	35-43-61	39-48-68	43-53-75	46-57-81
			Throw 22.5° (ft) 45°	10-16-29 6-9-17	14-21-33 8-12-19	17-26-37 10-15-22	21-29-41 12-17-24	24-31-44 14-18-26	27-33-47 16-19-27	30-37-53 18-22-31	33-41-58 19-24-34	36-44-62 21-26-36
30x8 24x10	1.67	1.49	cfm	447	596	745	894	1043	1192	1490	1788	2086
			NC	-	12	19	24	29	33	39	45	49
			0°	13-21-39	19-28-45	23-35-50	28-39-55	32-42-59	37-45-63	41-50-71	45-55-78	48-59-84
			Throw 22.5° (ft) 45°	10-16-30 6-9-17	14-22-35 8-13-20	18-27-39 10-16-23	22-30-43 13-17-25	25-33-46 15-19-27	28-35-49 16-20-29	32-39-55 18-23-32	35-43-60 20-25-35	38-46-65 22-27-38
42x6 18x14	1.75	1.59	cfm	477	636	795	954	1113	1272	1590	1908	2226
			NC	-	12	19	24	29	33	40	45	50
			0°	13-22-40	19-29-46	24-36-52	29-40-57	34-43-61	38-46-66	42-52-73	46-57-80	50-61-87
			Throw 22.5° (ft) 45°	10-17-31 6-10-18	15-22-36 9-13-21	19-28-40 11-16-23	22-31-44 13-18-26	26-34-48 15-20-28	29-36-51 17-21-30	33-40-57 19-23-33	36-44-62 21-26-36	39-48-67 23-28-39
16x16	1.78	1.62	cfm	486	648	810	972	1134	1296	1620	1944	2268
			NC	-	12	19	24	29	33	40	45	50
			0°	14-22-41	19-29-47	24-36-52	29-41-57	34-44-62	38-47-66	43-52-74	47-57-81	51-62-88
			Throw 22.5° (ft) 45°	11-17-31 6-10-18	15-22-36 9-13-21	19-28-41 11-16-24	22-31-44 13-18-26	26-34-48 15-20-28	30-36-51 17-21-30	33-41-57 19-24-33	36-44-63 21-26-36	39-48-68 23-28-39
48x6 36x8 24x12 18x16	2.00	1.82	cfm	546	728	910	1092	1274	1456	1820	2184	2548
			NC	-	13	19	25	30	34	40	46	50
			0°	14-23-43	20-31-50	26-38-55	31-43-61	36-46-66	41-50-70	45-55-78	50-61-86	54-66-93
			Throw 22.5° (ft) 45°	11-18-33 6-10-19	16-24-38 9-14-22	20-30-43 12-17-25	24-33-47 14-19-27	28-36-51 16-21-30	31-38-54 18-22-32	35-43-61 20-25-35	38-47-67 22-27-39	42-51-72 24-30-42
18x18	2.25	2.07	cfm	621	828	1035	1242	1449	1656	2070	2484	2898
			NC	-	13	20	25	30	34	41	46	51
			0°	15-25-46	22-33-53	27-41-59	33-46-65	38-49-70	43-53-75	48-59-84	53-65-92	57-70-99
			Throw 22.5° (ft) 45°	12-19-36 7-11-21	17-25-41 10-15-24	21-32-46 12-18-27	25-36-50 15-21-29	30-38-54 17-22-31	33-41-58 19-24-34	37-46-65 22-27-38	41-50-71 24-29-41	44-54-77 26-31-45
42x8 24x14	2.33	2.14	cfm	642	856	1070	1284	1498	1712	2140	2568	2996
			NC	-	13	20	26	30	34	41	46	51
			0°	16-25-47	22-33-54	28-42-60	33-47-66	39-50-71	44-54-76	49-60-85	54-66-93	58-71-101
			Throw 22.5° (ft) 45°	12-19-36 7-11-21	17-26-42 10-15-24	22-32-47 13-19-27	26-36-51 15-21-30	30-39-55 18-23-32	34-42-59 20-24-34	38-47-66 22-27-38	42-51-72 24-30-42	45-55-78 26-32-45
36x10 30x12	2.50	2.29	cfm	687	916	1145	1374	1603	1832	2290	2748	3206
			NC	-	14	20	26	30	34	41	47	51
			0°	16-26-48	23-34-56	29-43-62	34-48-68	40-52-74	45-56-79	51-62-88	56-68-96	60-74-104
			Throw 22.5° (ft) 45°	12-20-37 7-12-22	18-27-43 10-16-25	22-33-48 13-19-28	27-37-53 16-22-31	31-40-57 18-23-33	35-43-61 20-25-35	39-48-68 23-28-40	43-53-75 25-31-43	47-57-81 27-33-47
48x8 24x16	2.67	2.46	cfm	738	984	1230	1476	1722	1968	2460	2952	3444
			NC	-	14	21	26	31	35	41	47	51
			0°	17-27-50	24-36-58	30-45-64	36-50-71	42-54-76	47-58-82	53-64-91	58-71-100	62-76-108
			Throw 22.5° (ft) 45°	13-21-39 8-12-22	18-28-45 11-16-26	23-35-50 13-20-29	28-39-55 16-22-32	32-42-59 19-24-34	36-45-63 21-26-37	41-50-71 24-29-41	45-55-77 26-32-45	48-59-84 28-34-49
20x20	2.78	2.57	cfm	771	1028	1285	1542	1799	2056	2570	3084	3598
			NC	-	14	21	26	31	35	42	47	52
			0°	17-27-51	24-37-59	30-46-66	37-51-72	43-55-78	48-59-83	54-66-93	59-72-102	64-78-110
			Throw 22.5° (ft) 45°	13-21-40 8-12-23	19-28-46 11-16-27	24-35-51 14-21-30	28-40-56 16-23-32	33-43-60 19-25-35	37-46-65 22-27-38	42-51-72 24-30-42	46-56-79 27-32-46	49-60-85 29-35-50
36x12 24x18	3.00	2.75	cfm	825	1100	1375	1650	1925	2200	2750	3300	3850
			NC	-	15	21	27	31	35	42	47	52
			0°	18-28-53	25-38-61	31-47-68	38-53-75	44-57-81	50-61-86	56-68-96	61-75-106	66-81-114
			Throw 22.5° (ft) 45°	14-22-41 8-13-24	20-29-47 11-17-27	24-37-53 14-21-31	29-41-58 17-24-34	34-44-63 20-26-36	39-47-67 22-27-39	43-53-75 25-31-43	47-58-82 27-34-48	51-63-88 30-36-51

Performance notes appear at end of table

Recommended Noise Criteria and Face Velocity Ranges are on page 19.



# PERFORMANCE DATA—LIGHT COMMERCIAL

## 90H / 90V / AL90H / AL90V / ALS90ZH / ALS90ZV Single-Deflection Supply

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nom. Duct Size (in.)	Nom. Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	Core Vel. Vel. Press.	NC-20		NC-30		NC-40		NC-50		
				300	400	500	600	700	800	1000	1200	1400
48x10 30x16 24x20	3.33	3.11	0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183	0.263	0.358
			22.5°	0.018	0.033	0.051	0.074	0.100	0.131	0.204	0.294	0.401
			45°	0.028	0.049	0.077	0.111	0.152	0.198	0.309	0.445	0.606
			cfm	933	1244	1555	1866	2177	2488	3110	3732	4354
			NC	-	15	22	27	32	36	42	48	52
22x22	3.36	3.14	0°	19-30-56	27-40-65	33-50-72	40-56-79	47-61-86	53-65-92	59-72-103	65-79-112	70-86-121
			22.5°	15-23-44	21-31-50	26-39-56	31-44-62	36-47-66	41-50-71	46-56-79	50-62-87	54-66-94
			45°	8-14-25	12-18-29	15-23-33	18-25-36	21-27-39	24-29-41	27-33-46	29-36-51	32-39-55
			cfm	942	1256	1570	1884	2198	2512	3140	3768	4396
			NC	-	15	22	27	32	36	42	48	53
42x12 36x14	3.50	3.22	0°	19-31-57	27-41-66	34-51-74	41-57-81	48-62-87	54-66-93	60-74-104	66-81-114	71-87-123
			22.5°	15-24-44	21-32-51	26-40-57	32-44-63	37-48-68	42-51-72	47-57-81	51-63-89	55-68-96
			45°	9-14-26	12-18-30	15-23-33	18-26-36	21-28-39	24-30-42	27-33-47	30-36-51	32-39-56
			cfm	966	1288	1610	1932	2254	2576	3220	3864	4508
			NC	-	15	22	27	32	36	43	48	53
24x22	3.67	3.43	0°	20-32-59	28-42-68	35-53-76	42-59-83	49-64-90	56-68-96	62-76-108	68-83-118	74-90-127
			22.5°	15-25-46	22-33-53	27-41-59	33-46-65	38-49-70	43-53-75	48-59-83	53-65-91	57-70-99
			45°	9-14-27	13-19-31	16-24-34	19-27-38	22-29-41	25-31-43	28-34-48	31-38-53	33-41-57
			cfm	1029	1372	1715	2058	2401	2744	3430	4116	4802
			NC	-	15	22	28	32	36	43	48	53
30x18	3.75	3.5	0°	20-32-60	28-43-69	36-53-77	43-60-84	50-64-91	56-69-97	63-77-109	69-84-119	74-91-129
			22.5°	15-25-46	22-33-53	28-41-60	33-46-65	39-50-71	44-53-75	49-60-84	53-65-92	58-71-100
			45°	9-14-27	13-19-31	16-24-35	19-27-38	22-29-41	25-31-44	28-35-49	31-38-54	33-41-58
			cfm	1050	1400	1750	2100	2450	2800	3500	4200	4900
			NC	-	16	22	28	32	36	43	48	53
48x12 36x16 24x24	4.00	3.75	0°	21-33-62	29-44-71	37-55-80	44-62-87	51-67-94	58-71-101	65-80-113	71-87-123	77-94-133
			22.5°	16-26-48	23-34-55	29-43-62	34-48-68	40-52-73	45-55-78	50-62-87	55-68-96	60-73-103
			45°	9-15-28	13-20-32	17-25-36	20-28-39	23-30-42	26-32-45	29-36-51	32-39-55	35-42-60
			cfm	1125	1500	1875	2250	2625	3000	3750	4500	5250
			NC	-	16	22	28	33	37	43	49	53
36x18	4.50	4.22	0°	22-35-65	31-47-76	39-59-84	47-65-93	55-71-100	62-76-107	69-84-119	76-93-131	82-100-141
			22.5°	17-27-51	24-36-59	30-45-65	36-51-72	42-55-77	48-59-83	53-65-93	59-72-101	63-77-110
			45°	10-16-29	14-21-34	18-26-38	21-29-42	25-32-45	28-34-48	31-38-54	34-42-59	37-45-64
			cfm	1266	1688	2110	2532	2954	3376	4220	5064	5908
			NC	-	16	23	28	33	37	44	49	54
36x20 30x24	5.00	4.71	0°	23-37-69	33-49-80	41-62-89	49-69-98	58-75-106	65-80-113	73-89-126	80-98-138	86-106-149
			22.5°	18-29-54	26-38-62	32-48-69	38-54-76	45-58-82	50-62-87	56-69-98	62-76-107	67-82-116
			45°	10-17-31	15-22-36	19-28-40	22-31-44	26-34-48	29-36-51	33-40-57	36-44-62	39-48-67
			cfm	1413	1884	2355	2826	3297	3768	4710	5652	6594
			NC	-	17	23	29	33	37	44	50	54
42x18	5.25	4.94	0°	24-38-71	34-51-82	42-63-91	51-71-100	59-76-108	67-82-116	75-91-129	82-100-142	88-108-153
			22.5°	18-29-55	26-39-63	33-49-71	39-55-78	46-59-84	52-63-90	58-71-100	63-78-110	68-84-118
			45°	11-17-32	15-23-37	19-28-41	23-32-45	27-34-49	30-37-52	34-41-58	37-45-64	40-49-69
			cfm	1482	1976	2470	2964	3458	3952	4940	5928	6916
			NC	-	17	24	29	34	38	44	50	54
28x28	5.44	5.16	0°	24-39-72	35-52-84	43-65-93	52-72-102	60-78-110	68-84-118	76-93-132	84-102-145	90-110-156
			22.5°	19-30-56	27-40-65	33-50-72	40-56-79	47-61-86	53-65-92	59-72-102	65-79-112	70-86-121
			45°	11-17-33	16-23-38	19-29-42	23-33-46	27-35-50	31-38-53	34-42-59	38-46-65	41-50-70
			cfm	1548	2064	2580	3096	3612	4128	5160	6192	7224
			NC	-	17	24	29	34	38	45	50	55
42x20 30x28	5.83	5.51	0°	25-40-75	36-54-86	45-67-96	54-75-106	62-81-114	70-86-122	79-96-136	86-106-149	93-114-161
			22.5°	19-31-58	28-41-67	35-52-75	41-58-82	48-63-88	55-67-95	61-75-106	67-82-116	72-88-125
			45°	11-18-34	16-24-39	20-30-43	24-34-48	28-36-51	32-39-55	35-43-61	39-48-67	42-51-73
			cfm	1653	2204	2755	3306	3857	4408	5510	6612	7714
			NC	-	17	24	30	34	38	45	50	55
48x18 36x24	6.00	5.66	0°	25-41-76	36-54-87	45-68-98	54-76-107	63-82-116	71-87-124	80-98-138	87-107-152	94-116-164
			22.5°	20-32-59	28-42-68	35-53-76	42-59-83	49-63-90	55-68-96	62-76-107	68-83-117	73-90-127
			45°	11-18-34	16-24-39	20-31-44	24-34-48	28-37-52	32-39-56	36-44-62	39-48-68	43-52-74
			cfm	1698	2264	2830	3396	3962	4528	5660	6792	7924
			NC	-	18	24	30	34	38	45	50	55
30x30	6.25	5.94	0°	26-42-78	37-56-90	46-69-100	56-78-110	65-84-119	73-90-127	82-100-142	90-110-155	97-119-168
			22.5°	20-32-60	29-43-69	36-54-78	43-60-85	50-65-92	57-69-98	63-78-110	69-85-120	75-92-130
			45°	12-19-35	17-25-40	21-31-45	25-35-49	29-38-53	33-40-57	37-45-64	40-49-70	44-53-75
			cfm	1782	2376	2970	3564	4158	4752	5940	7128	8316
			NC	-	18	24	30	34	38	45	51	55

Performance notes appear at end of table



**90H / 90V / AL90H / AL90V / ALS90ZH / ALS90ZV Single-Deflection Supply**

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nom. Duct Size (in.)	Nom. Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	Core Vel. Vel. Press.	NC-20		NC-30		NC-40		NC-50		
				300	400	500	600	700	800	1000	1200	1400
				0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183	0.263
42x24 36x28	7.00	6.66	Total	0.018	0.033	0.051	0.074	0.100	0.131	0.204	0.294	0.401
			Press.	0.028	0.049	0.077	0.111	0.152	0.198	0.309	0.445	0.606
			cfm	1998	2664	3330	3996	4662	5328	6660	7992	9324
			NC	-	18	25	30	35	39	46	51	56
46x22	7.03	6.68	0°	28-44-82	39-59-95	49-74-106	59-82-116	69-89-126	77-95-134	87-106-150	95-116-164	102-126-178
			Throw 22.5°	21-34-64	30-46-74	38-57-82	46-64-90	53-69-97	60-74-104	67-82-116	74-90-127	79-97-138
			(ft) 45°	12-20-37	18-26-43	22-33-48	26-37-52	31-40-56	35-43-60	39-48-68	43-52-74	46-56-80
			cfm	2004	2672	3340	4008	4676	5344	6680	8016	9352
32x32	7.11	6.78	0°	28-44-82	39-59-95	49-74-106	59-82-116	69-89-126	77-95-134	87-106-150	95-116-164	102-126-178
			Throw 22.5°	21-34-64	30-46-74	38-57-82	46-64-90	53-69-97	60-74-104	67-82-116	74-90-127	79-97-138
			(ft) 45°	12-20-37	18-26-43	22-33-48	26-37-52	31-40-56	35-43-60	39-48-68	43-52-74	46-56-80
			cfm	2034	2712	3390	4068	4746	5424	6780	8136	9492
36x30	7.50	7.16	0°	29-46-85	41-61-98	51-76-110	61-85-121	71-92-130	80-98-139	90-110-156	98-121-170	106-130-184
			Throw 22.5°	22-35-66	32-47-76	39-59-85	47-66-93	55-71-101	62-76-108	70-85-121	76-93-132	82-101-143
			(ft) 45°	13-21-38	18-27-44	23-34-50	27-38-54	32-41-59	36-44-63	40-50-70	44-54-77	48-59-83
			cfm	2148	2864	3580	4296	5012	5728	7160	8592	10024
48x24 36x32	8.00	7.63	0°	29-46-85	41-61-98	51-76-110	61-85-121	71-92-130	80-98-139	90-110-156	98-121-170	106-130-184
			Throw 22.5°	23-37-68	33-49-79	41-61-88	49-68-96	57-74-104	64-79-111	72-88-124	79-96-136	85-104-147
			(ft) 45°	13-21-40	19-28-46	24-35-51	28-40-56	33-43-60	37-46-65	42-51-72	46-56-79	49-60-86
			cfm	2289	3052	3815	4578	5341	6104	7630	9156	10682
34x34	8.03	7.68	0°	30-47-88	42-63-102	52-79-114	63-88-124	73-95-134	83-102-144	93-114-161	102-124-176	110-134-190
			Throw 22.5°	23-37-68	33-49-79	41-61-88	49-68-97	57-74-104	64-79-112	72-88-125	79-97-137	85-104-148
			(ft) 45°	13-21-40	19-28-46	24-36-51	28-40-56	33-43-61	37-46-65	42-51-73	46-56-79	50-61-86
			cfm	2304	3072	3840	4608	5376	6144	7680	9216	10752
36x34	8.50	8.14	0°	30-49-91	43-65-105	54-81-117	65-91-128	76-98-139	86-105-148	96-117-166	105-128-182	113-139-196
			Throw 22.5°	24-38-70	34-50-81	42-63-91	50-70-100	59-76-108	66-81-115	74-91-129	81-100-141	88-108-152
			(ft) 45°	14-22-41	20-29-47	24-37-53	29-41-58	34-44-62	39-47-67	43-53-75	47-58-82	51-62-88
			cfm	2514	3352	4190	5028	5866	6704	8380	10056	11732
42x30	8.75	8.38	0°	31-49-92	44-66-106	55-82-119	66-92-130	77-100-141	87-106-151	97-119-168	106-130-184	115-141-199
			Throw 22.5°	24-38-71	34-51-82	43-64-92	51-71-101	60-77-109	67-82-117	75-92-130	82-101-143	89-109-154
			(ft) 45°	14-22-41	20-30-48	25-37-54	30-41-59	35-45-63	39-48-68	44-54-76	48-59-83	52-63-90
			cfm	2589	3452	4315	5178	6041	6904	8630	10356	12082
36x36	9.00	8.63	0°	31-50-94	45-67-108	56-84-121	67-94-132	78-101-143	88-108-153	99-121-171	108-132-187	117-143-202
			Throw 22.5°	24-39-72	35-52-84	43-65-94	52-72-103	61-78-111	68-84-118	76-94-132	84-103-145	90-111-157
			(ft) 45°	14-23-42	20-30-49	25-38-54	30-42-60	35-45-64	40-49-69	44-54-77	49-60-84	53-64-91
			cfm	2880	3840	4800	5760	6720	7680	9600	11520	13440
42x34 48x30	10.00	9.6	0°	33-53-99	47-71-114	59-88-127	71-99-140	82-107-151	93-114-161	104-127-180	114-140-197	123-151-213
			Throw 22.5°	26-41-76	36-55-88	46-68-99	55-76-108	64-83-117	72-88-125	81-99-140	88-108-153	95-117-165
			(ft) 45°	15-24-44	21-32-51	26-40-57	32-44-63	37-48-68	42-51-73	47-57-81	51-63-89	55-68-96
			cfm	2892	3856	4820	5784	6748	7712	9640	11568	13496
38x38	10.03	9.64	0°	33-53-99	47-71-114	59-88-128	71-99-140	83-107-151	93-114-161	104-128-181	114-140-198	123-151-214
			Throw 22.5°	26-41-77	37-55-88	46-69-99	55-77-108	64-83-117	72-88-125	81-99-140	88-108-153	96-117-166
			(ft) 45°	15-24-44	21-32-51	27-40-57	32-44-63	37-48-68	42-51-73	47-57-81	51-63-89	55-68-96
			cfm	3030	4040	5050	6060	7070	8080	10100	12120	14140
42x36	10.50	10.1	0°	34-54-101	48-72-117	60-91-131	72-101-143	85-109-155	95-117-165	107-131-185	117-143-202	126-155-219
			Throw 22.5°	26-42-78	37-56-91	47-70-101	56-78-111	65-85-120	74-91-128	83-101-143	91-111-157	98-120-169
			(ft) 45°	15-24-46	22-33-53	27-41-59	33-46-64	38-49-70	43-53-74	48-59-83	53-64-91	57-70-98
			cfm	3135	4180	5225	6270	7315	8360	10450	12540	14630
46x34	10.86	10.45	0°	34-55-103	49-74-119	61-92-133	74-103-146	86-111-157	97-119-168	109-133-188	119-146-206	128-157-222
			Throw 22.5°	27-43-80	38-57-92	48-71-103	57-80-113	67-86-122	75-92-130	84-103-146	92-113-160	99-122-172
			(ft) 45°	16-25-46	22-33-53	28-41-60	33-46-66	39-50-71	44-53-76	49-60-85	53-66-93	58-71-100
			cfm	3300	4360	5420	6480	7540	8600	10760	12920	15080

Performance notes appear at end of table



**PERFORMANCE DATA—LIGHT COMMERCIAL**

**90H / 90V / AL90H / AL90V / ALS90ZH / ALS90ZV Single-Deflection Supply**

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nom. Duct Size (in.)	Nom. Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	NC-20		NC-30			NC-40		NC-50		
			Core Vel.	300	400	500	600	700	800	1000	1200	1400
			Vel. Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
			0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183	0.263	0.358
			Total 22.5° Press. 45°	0.018	0.033	0.051	0.074	0.100	0.131	0.204	0.294	0.401
				0.028	0.049	0.077	0.111	0.152	0.198	0.309	0.445	0.606
42x38	11.08	10.67	cfm	3201	4268	5335	6402	7469	8536	10670	12804	14938
			NC	12	20	27	32	37	41	48	53	58
			Throw 0°	35-56-104	50-74-120	62-93-134	74-104-147	87-112-159	98-120-170	110-134-190	120-147-208	130-159-225
			Throw 22.5° (ft)	27-43-81	38-58-93	48-72-104	58-81-114	67-87-123	76-93-132	85-104-147	93-114-161	101-123-174
			45°	16-25-47	22-34-54	28-42-60	34-47-66	39-51-71	44-54-76	49-60-85	54-66-94	58-71-101
40x40	11.11	10.7	cfm	3210	4280	5350	6420	7490	8560	10700	12840	14980
			NC	12	20	27	32	37	41	48	53	58
			Throw 0°	35-56-104	50-75-120	62-93-134	75-104-147	87-113-159	98-120-170	110-134-190	120-147-208	130-159-225
			Throw 22.5° (ft)	27-43-81	39-58-93	48-72-104	58-81-114	67-87-123	76-93-132	85-104-147	93-114-161	101-123-174
			45°	16-25-47	22-34-54	28-42-61	34-47-66	39-51-72	44-54-77	49-61-86	54-66-94	58-72-101
48x36	12.00	11.57	cfm	3471	4628	5785	6942	8099	9256	11570	13884	16198
			NC	12	21	27	33	37	41	48	53	58
			Throw 0°	36-58-108	52-78-125	65-97-140	78-108-153	90-117-165	102-125-177	114-140-198	125-153-217	135-165-234
			Throw 22.5° (ft)	28-45-84	40-60-97	50-75-108	60-84-119	70-91-128	79-97-137	88-108-153	97-119-168	105-128-181
			45°	16-26-49	23-35-56	29-44-63	35-49-69	41-53-74	46-56-80	51-63-89	56-69-97	61-74-105
42x42	12.25	11.82	cfm	3546	4728	5910	7092	8274	9456	11820	14184	16548
			NC	12	21	27	33	37	41	48	53	58
			Throw 0°	37-59-109	52-78-126	65-98-141	78-109-155	91-118-167	103-126-179	115-141-200	126-155-219	137-167-236
			Throw 22.5° (ft)	28-46-85	40-61-98	51-76-110	61-85-120	71-92-130	80-98-139	89-110-155	98-120-170	106-130-183
			45°	16-26-49	24-35-57	29-44-64	35-49-70	41-53-75	46-57-80	52-64-90	57-70-99	61-75-106
44x44	13.44	12.99	cfm	3897	5196	6495	7794	9093	10392	12990	15588	18186
			NC	12	21	28	33	38	42	48	54	58
			Throw 0°	38-62-115	55-82-133	68-103-148	82-115-162	96-124-175	108-133-187	121-148-210	133-162-230	143-175-248
			Throw 22.5° (ft)	30-48-89	42-64-103	53-80-115	64-89-126	74-96-136	84-103-145	94-115-162	103-126-178	111-136-192
			45°	17-28-52	25-37-60	31-46-67	37-52-73	43-56-79	49-60-84	54-67-94	60-73-103	64-79-112
48x42	14.00	13.54	cfm	4062	5416	6770	8124	9478	10832	13540	16248	18956
			NC	13	21	28	33	38	42	49	54	59
			Throw 0°	39-63-117	56-84-135	70-105-151	84-117-166	98-127-179	110-135-191	124-151-214	135-166-234	146-179-253
			Throw 22.5° (ft)	30-49-91	43-65-105	54-81-117	65-91-128	76-98-139	86-105-148	96-117-166	105-128-182	113-139-196
			45°	18-28-53	25-38-61	31-47-68	38-53-75	44-57-81	50-61-86	56-68-96	61-75-105	66-81-114
46x46	14.69	14.22	cfm	4266	5688	7110	8532	9954	11376	14220	17064	19908
			NC	13	21	28	33	38	42	49	54	59
			Throw 0°	40-64-120	57-86-139	72-107-155	86-120-170	100-130-183	113-139-196	127-155-219	139-170-240	150-183-259
			Throw 22.5° (ft)	31-50-93	44-67-107	56-83-120	67-93-132	78-101-142	88-107-152	98-120-170	107-132-186	116-142-201
			45°	18-29-54	26-39-62	32-48-70	39-54-76	45-58-83	51-62-88	57-70-99	62-76-108	67-83-117
48x46	15.33	14.85	cfm	4455	5940	7425	8910	10395	11880	14850	17820	20790
			NC	13	22	28	34	38	42	49	54	59
			Throw 0°	41-66-123	59-88-142	73-110-158	88-123-174	102-133-187	116-142-200	129-158-224	142-174-245	153-187-265
			Throw 22.5° (ft)	32-51-95	45-68-110	57-85-123	68-95-134	79-103-145	90-110-155	100-123-174	110-134-190	119-145-205
			45°	18-30-55	26-40-64	33-49-71	40-55-78	46-60-84	52-64-90	58-71-101	64-78-110	69-84-119
48x48	16.00	15.50	cfm	4650	6200	7750	9300	10850	12400	15500	18600	21700
			NC	13	22	28	34	38	42	49	55	59
			Throw 0°	42-67-125	60-90-145	75-112-162	90-125-177	105-135-192	118-145-205	132-162-229	145-177-251	156-192-271
			Throw 22.5° (ft)	33-52-97	46-70-112	58-87-125	70-97-137	81-105-148	92-112-159	102-125-177	112-137-194	121-148-210
			45°	19-30-56	27-40-65	34-50-73	40-56-80	47-61-86	53-65-92	59-73-103	65-80-113	70-86-122

- 0°, 22.5° & 45° represent blade deflection angles
- Performance data is based on duct sizes in bold, the performance varies slightly for duct sizes not shown in bold
- See the section, Engineering Guidelines, for drop information when selecting larger supply grilles for cooling purposes
- See the "Performance Notes" portion in this section for notes and correction factors

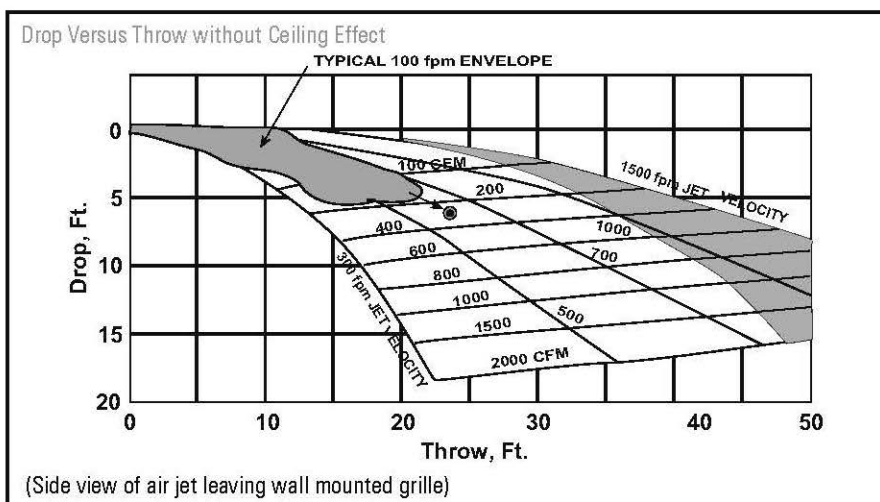
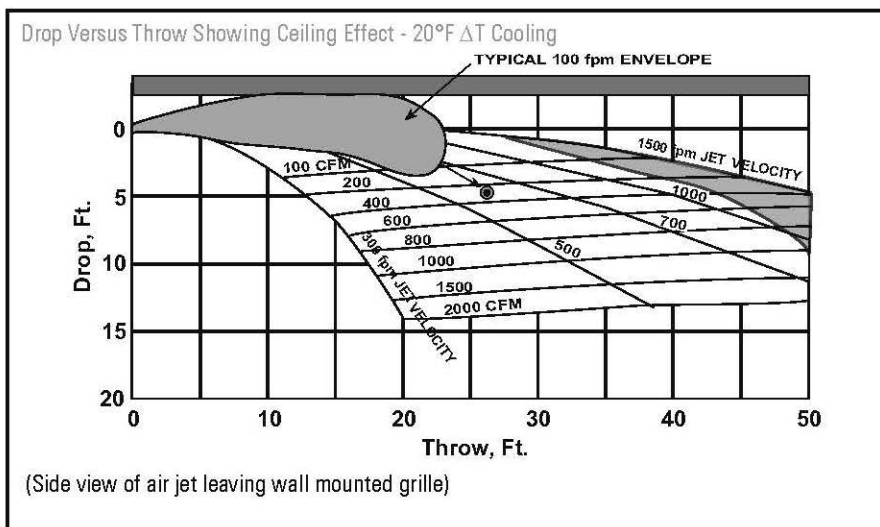
- See the section, Engineering Guidelines, for catalog throw information
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10<sup>-12</sup> watts



90H / 90V / AL90H / AL90V / ALS90ZH / ALS90ZV Single-Deflection Supply

PERFORMANCE NOTES

- Performance data includes damper
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- All pressures are in inches of water
- Core velocities are in feet per minute
- Throw values given are for isothermal terminal velocities of 150, 100 and 50 fpm
- Each NC value represents the noise criterion curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7. Each NC value is based on a room absorption of 10 dB, re 10<sup>-12</sup> watts. Each NC value is further based on grille operating at a 0° deflection. Settings of 22½° or 45°, increase the stated sound levels by 1 or 7 NC, respectively.
- Bold dividing lines on H12-H16 denote ranges of NC values
- The stated deflection settings refer to the horizontal setting of the blade's deflection angle. For a 20° upward deflection, use the throw rating for the 0° setting and the total pressure for the 22½° horizontal setting.
- Dash (—) in space indicates NC value less than 10
- For additional information concerning drop and throw, see the Engineering Guidelines section of this catalog



VARIABLE AIR VOLUME

APPLICATIONS

All supply grilles can be applied to variable air volume systems with excellent results. For detailed selection methods, consult your Titus representative or the Engineering Guidelines section of this catalog.

Correction Factors for Supply Grilles

Damper	$A_k / A_c$	Throw	Total Pressure	NC
With	0.77	1.00	1.00	0
Without	0.82	0.98	0.88	-2

Note: Throw and total pressure corrections are multipliers. The NC correction is an addition.  $A_k$  is the flow factor.  $A_c$  is the core area from the main table.

90H / 90V / AL90H / AL90V / ALS90ZH / ALS90ZV Single-Deflection Supply

HORIZONTAL DEFLECTION (SPREAD)

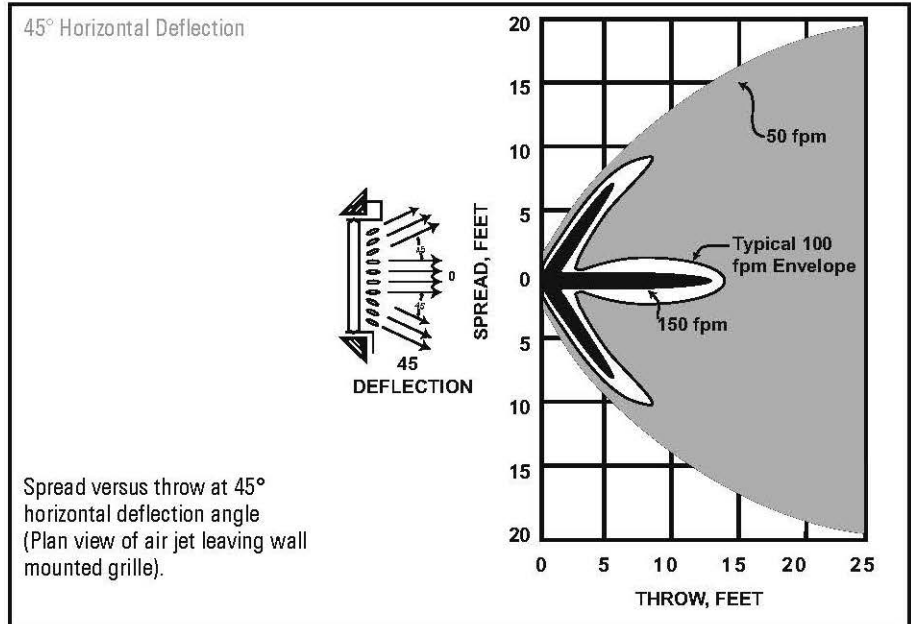
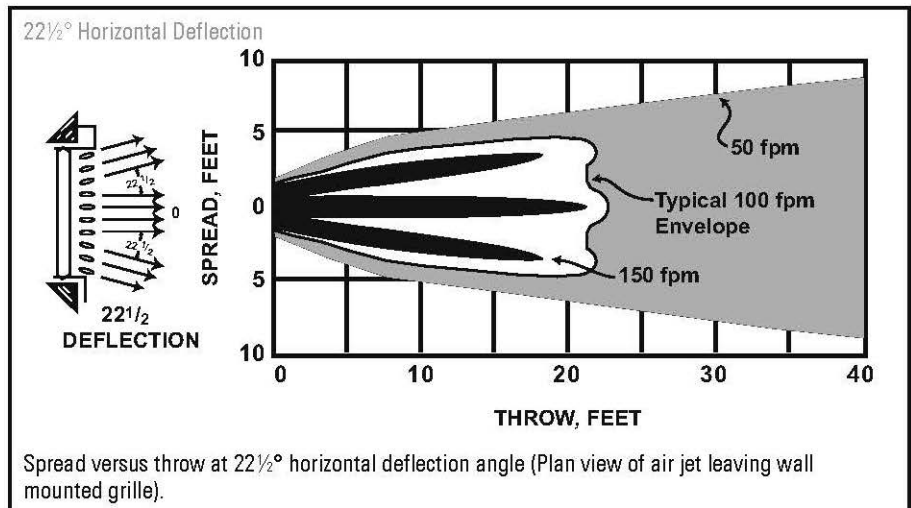
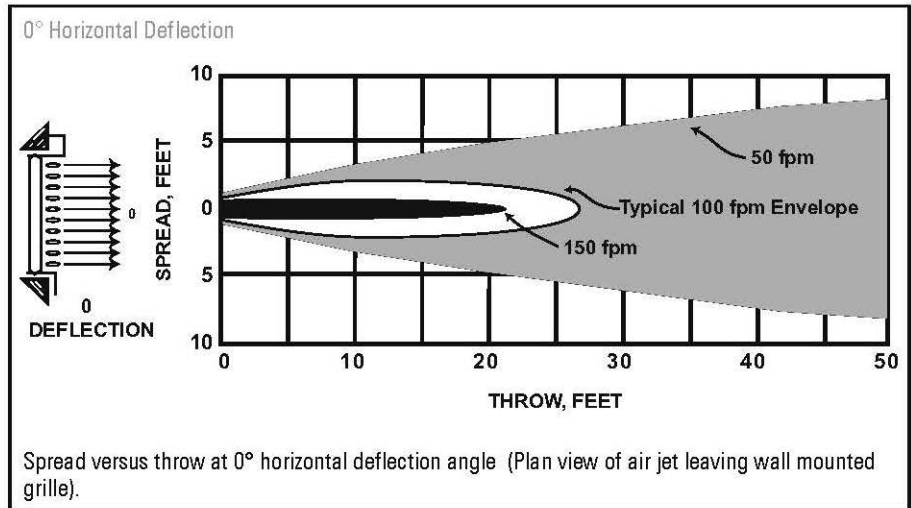
SUPPLY GRILLES

The figures depicting deflection, throw and drop are based on actual tests conducted by Titus. They show the relationship of spread to throw for a typical high side-wall supply outlet selection.

Notice the outer shaded area represents the 50 fpm isovel, the white area, the 100 fpm isovel, and the inner area, the 150 fpm isovel.

The spread angle also affects the airstream drop amount. Always consider for any given temperature, volume and core velocity; the wider spread results in a smaller drop. See section, Engineering Guidelines, for more drop, throw and spread relationship information.

Grilles can be selected with a single set of blades for adjusting either horizontal or vertical deflection, or with two sets of blades for adjusting both horizontal and vertical deflections.





**S90H/S90V, S90HFF/S90VFF, ALS90H/ALS90V, S90HFFI Return Grille**

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

NC-20

Nominal Duct Size (in.)	Nominal Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	Core Velocity Velocity Pressure Neg. Static Pressure	NC-20									
				100 0.001 0.002	200 0.002 0.008	300 0.006 0.018	400 0.010 0.032	500 0.016 0.051	600 0.022 0.073	700 0.031 0.099	800 0.040 0.130	900 0.050 0.164	
6x6	<b>0.25</b>	<b>0.19</b>	Airflow, cfm NC	19 -	38 -	57 -	76 -	95 -	114 13	133 19	152 25	171 29	
8x6	<b>0.33</b>	<b>0.26</b>	Airflow, cfm NC	26 -	52 -	78 -	104 -	130 -	156 15	182 20	208 26	234 30	
10x6	<b>0.42</b>	<b>0.34</b>	Airflow, cfm NC	34 -	68 -	102 -	136 -	170 -	204 16	<b>238</b> 21	272 28	306 32	
8x8	<b>0.44</b>	<b>0.37</b>	Airflow, cfm NC	37 -	74 -	111 -	148 -	185 -	222 16	259 22	296 28	333 32	
12x6	<b>0.5</b>	<b>0.41</b>	Airflow, cfm NC	41 -	82 -	123 -	164 -	205 -	246 17	287 22	328 30	369 34	
14x6	<b>0.58</b>	<b>0.48</b>	Airflow, cfm NC	48 -	96 -	144 -	192 -	240 -	288 18	336 24	384 30	432 34	
16x6			Airflow, cfm NC	57 -	114 -	171 -	228 -	285 10	342 19	399 25	456 30	513 35	
12x8	<b>0.67</b>	<b>0.57</b>	Airflow, cfm NC	57 -	114 -	171 -	228 -	285 10	342 19	399 25	456 30	513 35	
10x10	<b>0.69</b>	<b>0.59</b>	Airflow, cfm NC	59 -	118 -	177 -	236 10	295 19	354 25	413 31	472 35	531 35	
18x6	<b>0.75</b>	<b>0.63</b>	Airflow, cfm NC	63 -	126 -	189 -	252 10	315 19	378 25	441 32	504 35	567 35	
20x6			Airflow, cfm NC	72 -	144 -	216 -	288 11	360 19	432 25	504 30	576 35	648 35	
12x10	<b>0.83</b>	<b>0.72</b>	Airflow, cfm NC	72 -	144 -	216 -	288 11	360 19	432 25	504 30	576 35	648 35	
22x6	<b>0.92</b>	<b>0.77</b>	Airflow, cfm NC	77 -	154 -	231 -	308 -	385 11	462 19	539 25	616 30	693 35	
24x6			Airflow, cfm NC	88 -	176 -	264 -	352 -	440 11	528 19	616 25	704 30	792 35	
12x12	<b>1</b>	<b>0.88</b>	Airflow, cfm NC	88 -	176 -	264 -	352 -	440 11	528 19	616 25	704 30	792 35	
30x6			Airflow, cfm NC	111 -	222 -	333 -	444 -	555 12	666 20	777 26	888 32	999 35	
18x10	<b>1.25</b>	<b>1.11</b>	Airflow, cfm NC	111 -	222 -	333 -	444 -	555 12	666 20	777 26	888 32	999 35	
14x14	<b>1.36</b>	<b>1.22</b>	Airflow, cfm NC	122 -	244 -	366 -	488 -	610 12	732 20	854 27	976 32	1098 35	
36x6			Airflow, cfm NC	135 -	270 -	405 -	540 -	675 13	810 20	945 27	1080 32	1215 35	
18x12	<b>1.5</b>	<b>1.35</b>	Airflow, cfm NC	135 -	270 -	405 -	540 -	675 13	810 20	945 27	1080 32	1215 35	
22x10	<b>1.53</b>	<b>1.37</b>	Airflow, cfm NC	137 -	274 -	411 -	548 -	685 13	822 20	959 27	1096 32	1233 36	
30x8			Airflow, cfm NC	149 -	298 -	447 -	596 -	745 14	894 21	1043 27	1192 33	1341 37	
24x10	<b>1.67</b>	<b>1.49</b>	Airflow, cfm NC	149 -	298 -	447 -	596 -	745 14	894 21	1043 27	1192 33	1341 37	
42x6			Airflow, cfm NC	159 -	318 -	477 -	636 -	795 14	954 21	1113 27	1272 33	1431 37	
18x14	<b>1.75</b>	<b>1.59</b>	Airflow, cfm NC	159 -	318 -	477 -	636 -	795 14	954 21	1113 27	1272 33	1431 37	
16x16	<b>1.78</b>	<b>1.62</b>	Airflow, cfm NC	162 -	324 -	486 -	648 -	810 14	972 21	1134 27	1296 33	1458 37	
24x12			Airflow, cfm NC	182 -	364 -	546 -	728 -	910 14	1092 21	1274 28	1456 33	1638 38	
18x16	<b>2</b>	<b>1.82</b>	Airflow, cfm NC	182 -	364 -	546 -	728 -	910 14	1092 21	1274 28	1456 33	1638 38	
18x18	<b>2.25</b>	<b>2.07</b>	Airflow, cfm NC	207 -	414 -	621 -	828 -	1035 14	1242 21	1449 28	1656 33	1863 38	
24x14	<b>2.33</b>	<b>2.14</b>	Airflow, cfm NC	214 -	428 -	642 -	856 -	1070 14	1284 22	1498 28	1712 33	1926 38	
30x12	<b>2.5</b>	<b>2.29</b>	Airflow, cfm NC	229 -	458 -	687 -	916 -	1145 15	1374 22	1603 28	1832 33	2061 38	
24x16	<b>2.67</b>	<b>2.46</b>	Airflow, cfm NC	246 -	492 -	738 -	984 -	1230 15	1476 22	1722 29	1968 34	2214 39	
20x20	<b>2.78</b>	<b>2.57</b>	Airflow, cfm NC	257 -	514 -	771 -	1028 -	1285 16	1542 23	1799 29	2056 34	2313 39	
36x12	<b>3</b>	<b>2.75</b>	Airflow, cfm NC	275 -	550 -	825 -	1100 -	1375 16	1650 23	1925 29	2200 34	2475 39	
30x16			Airflow, cfm NC	311 -	622 -	933 -	1244 -	1555 17	1866 24	2177 30	2488 35	2799 40	
24x20	<b>3.33</b>	<b>3.11</b>	Airflow, cfm NC	311 -	622 -	933 -	1244 -	1555 17	1866 24	2177 30	2488 35	2799 40	
22x22	<b>3.36</b>	<b>3.14</b>	Airflow, cfm NC	314 -	628 -	942 -	1256 -	1570 17	1884 24	2198 30	2512 35	2826 40	
42x12			Airflow, cfm NC	322 -	644 -	966 -	1288 -	1610 17	1932 24	2254 30	2576 36	2898 40	
36x14	<b>3.5</b>	<b>3.22</b>	Airflow, cfm NC	322 -	644 -	966 -	1288 -	1610 17	1932 24	2254 30	2576 36	2898 40	
24x22	<b>3.67</b>	<b>3.43</b>	Airflow, cfm NC	343 -	686 -	1029 -	1372 -	1715 17	2058 24	2401 30	2744 36	3087 40	
30x18	<b>3.75</b>	<b>3.5</b>	Airflow, cfm NC	350 -	700 -	1050 -	1400 -	1750 17	2100 24	2450 30	2800 36	3150 40	

NC-30

NC-40

• Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

• NC based on room absorption of 10 dB, re 10<sup>-12</sup> watts, measured per ANSI/ASHRAE Standard 70-2006



**PERFORMANCE DATA—LIGHT COMMERCIAL**

**S90H/S90V, S90HFF/S90VFF, ALS90H/ALS90V, S90HFFI Return Grille**

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nominal Duct Size (in.)	Nominal Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	Core Velocity Velocity Pressure Neg. Static Pressure	NC-20 NC-30 NC-40										
				100 0.001 0.002	200 0.002 0.008	300 0.006 0.018	400 0.010 0.032	500 0.016 0.051	600 0.022 0.073	700 0.031 0.099	800 0.040 0.130	900 0.050 0.164		
48x12 24x24	<b>4</b>	<b>3.75</b>	Airflow, cfm NC	375 -	750 -	1125 -	1500 -	1875 18	2250 25	2625 37	3000 38	3375 41		
<b>36x18</b>	<b>4.5</b>	<b>4.22</b>	Airflow, cfm NC	422 -	844 -	1266 -	1688 -	2110 18	2532 25	2954 31	3376 38	3798 41		
36x20 30x24	<b>5</b>	<b>4.71</b>	Airflow, cfm NC	471 -	942 -	1413 -	1884 -	2355 18	2826 25	3297 31	3768 38	4239 41		
<b>42x18</b>	<b>5.25</b>	<b>4.94</b>	Airflow, cfm NC	494 -	988 -	1482 -	1976 -	2470 18	2964 25	3458 31	3952 38	4446 41		
28x28	<b>5.44</b>	<b>5.16</b>	Airflow, cfm NC	516 -	1032 -	1548 -	2064 -	2580 18	3096 25	3612 32	4128 38	4644 41		
42x20 30x28	<b>5.83</b>	<b>5.51</b>	Airflow, cfm NC	551 -	1102 -	1653 -	2204 10	2755 18	3306 26	3857 32	4408 38	4959 41		
48x18 36x24	<b>6</b>	<b>5.66</b>	Airflow, cfm NC	566 -	1132 -	1698 -	2264 10	2830 18	3396 26	3962 32	4528 38	5094 41		
<b>30x30</b>	<b>6.25</b>	<b>5.94</b>	Airflow, cfm NC	594 -	1188 -	1782 -	2376 10	2970 18	3564 26	4158 32	4752 38	5346 41		
42x24 36x28	<b>7</b>	<b>6.66</b>	Airflow, cfm NC	666 -	1332 -	1998 -	2664 10	3330 19	3996 26	4662 32	5328 38	5994 41		
<b>46x22</b>	<b>7.03</b>	<b>6.68</b>	Airflow, cfm NC	668 -	1336 -	2004 -	2672 10	3340 19	4008 27	4676 32	5344 38	6012 42		
<b>32x32</b>	<b>7.11</b>	<b>6.78</b>	Airflow, cfm NC	678 -	1356 -	2034 -	2712 10	3390 19	4068 27	4746 32	5424 38	6102 42		
<b>36x30</b>	<b>7.5</b>	<b>7.16</b>	Airflow, cfm NC	716 -	1432 -	2148 -	2864 10	3580 19	4296 27	5012 32	5728 38	6444 42		
48x24 36x32	<b>8</b>	<b>7.63</b>	Airflow, cfm NC	763 -	1526 -	2289 -	3052 10	3815 19	4578 27	5341 32	6104 38	6867 42		
34x34	<b>8.03</b>	<b>7.68</b>	Airflow, cfm NC	768 -	1536 -	2304 -	3072 10	3840 19	4608 27	5376 32	6144 38	6912 42		
36x34	<b>8.5</b>	<b>8.14</b>	Airflow, cfm NC	814 -	1628 -	2442 -	3256 11	4070 19	4884 27	5698 32	6512 38	7326 42		
<b>42x30</b>	<b>8.75</b>	<b>8.38</b>	Airflow, cfm NC	838 -	1676 -	2514 -	3352 11	4190 20	5028 27	5866 32	6704 38	7542 42		
<b>36x36</b>	<b>9</b>	<b>8.63</b>	Airflow, cfm NC	863 -	1726 -	2589 -	3452 11	4315 20	5178 27	6041 33	6904 38	7767 43		
42x34 48x30	<b>10</b>	<b>9.6</b>	Airflow, cfm NC	960 -	1920 -	2880 -	3840 11	4800 20	5760 27	6720 33	7680 38	8640 43		
<b>38x38</b>	<b>10.03</b>	<b>9.64</b>	Airflow, cfm NC	964 -	1928 -	2892 -	3856 11	4820 20	5784 27	6748 33	7712 38	8676 43		
<b>42x36</b>	<b>10.5</b>	<b>10.1</b>	Airflow, cfm NC	1010 -	2020 -	3030 -	4040 11	5050 20	6060 27	7070 33	8080 38	9090 43		
<b>46x34</b>	<b>10.86</b>	<b>10.45</b>	Airflow, cfm NC	1045 -	2090 -	3135 -	4180 11	5225 20	6270 27	7315 33	8360 38	9405 43		
<b>42x38</b>	<b>11.08</b>	<b>10.67</b>	Airflow, cfm NC	1067 -	2134 -	3201 -	4268 11	5335 20	6402 27	7469 33	8536 38	9603 43		
<b>40x40</b>	<b>11.11</b>	<b>10.7</b>	Airflow, cfm NC	1070 -	2140 -	3210 -	4280 11	5350 20	6420 27	7490 33	8560 38	9630 43		
48x36	<b>12</b>	<b>11.57</b>	Airflow, cfm NC	1157 -	2314 -	3471 -	4628 11	5785 20	6942 27	8099 33	9256 39	10413 44		
<b>42x42</b>	<b>12.25</b>	<b>11.82</b>	Airflow, cfm NC	1182 -	2364 -	3546 -	4728 11	5910 20	7092 27	8274 33	9456 39	10638 44		
<b>44x44</b>	<b>13.44</b>	<b>12.99</b>	Airflow, cfm NC	1299 -	2598 -	3897 -	5196 12	6495 21	7794 28	9093 34	10392 39	11691 44		
<b>48x42</b>	<b>14</b>	<b>13.54</b>	Airflow, cfm NC	1354 -	2708 -	4062 -	5416 12	6770 21	8124 28	9478 34	10832 40	12186 45		
<b>46x46</b>	<b>14.69</b>	<b>14.22</b>	Airflow, cfm NC	1422 -	2844 -	4266 -	5688 12	7110 21	8532 28	9954 35	11376 40	12798 45		
<b>48x46</b>	<b>15.33</b>	<b>14.85</b>	Airflow, cfm NC	1485 -	2970 -	4455 -	5940 12	7425 22	8910 28	10395 35	11880 40	13365 45		
<b>48x48</b>	<b>16</b>	<b>15.5</b>	Airflow, cfm NC	1550 -	3100 -	4650 -	6200 13	7750 22	9300 29	10850 35	12400 40	13950 45		

• Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

• NC based on room absorption of 10 dB, re 10<sup>-12</sup> watts, measured per ANSI/ASHRAE Standard 70-2006



**S90H/S90V, S90HFF/S90VFF, ALS90H/ALS90V, S90HFFI Return Grille**

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nominal Duct Size (in.)	Nominal Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	Core Velocity Velocity Pressure Neg. Static Pressure	300		400		500		600		700		900		1100		1300		1500	
				0.006 0.012	0.010 0.022	0.016 0.034	0.022 0.049	0.031 0.067	0.050 0.111	0.075 0.165	0.105 0.231	0.140 0.307	NC-10	NC-20	NC-30	NC-40					
<b>6x6</b>	<b>0.25</b>	<b>0.19</b>	Airflow, cfm NC	57 -	76 -	95 -	114 -	133 13	171 20	209 26	247 31	285 35									
<b>8x6</b>	<b>0.33</b>	<b>0.26</b>	Airflow, cfm NC	78 -	104 -	130 -	156 -	182 14	234 22	286 27	338 32	390 36									
<b>10x6</b>	<b>0.42</b>	<b>0.34</b>	Airflow, cfm NC	102 -	136 -	170 -	204 11	238 16	306 23	374 28	442 33	510 37									
<b>8x8</b>	<b>0.44</b>	<b>0.37</b>	Airflow, cfm NC	111 -	148 -	185 -	222 12	259 16	333 23	407 29	481 34	555 38									
<b>12x6</b>	<b>0.5</b>	<b>0.41</b>	Airflow, cfm NC	123 -	164 -	205 -	246 12	287 16	369 24	451 29	533 34	615 38									
<b>14x6</b>	<b>0.58</b>	<b>0.48</b>	Airflow, cfm NC	144 -	192 -	240 -	288 13	336 17	432 24	528 30	624 35	720 39									
<b>16x6</b>	<b>0.67</b>	<b>0.57</b>	Airflow, cfm NC	171 -	228 -	285 -	342 13	399 18	513 25	627 31	741 36	855 40									
<b>10x10</b>	<b>0.69</b>	<b>0.59</b>	Airflow, cfm NC	177 -	236 -	295 -	354 14	413 18	531 25	649 31	767 36	885 40									
<b>18x6</b>	<b>0.75</b>	<b>0.63</b>	Airflow, cfm NC	189 -	252 -	315 -	378 14	441 18	567 25	693 31	819 36	945 40									
<b>20x6</b>	<b>0.83</b>	<b>0.72</b>	Airflow, cfm NC	216 -	288 -	360 -	432 14	504 19	648 26	792 32	936 37	1080 41									
<b>22x6</b>	<b>0.92</b>	<b>0.77</b>	Airflow, cfm NC	231 -	308 -	385 -	462 15	539 19	693 26	847 32	1001 37	1155 41									
<b>24x6</b>	<b>1</b>	<b>0.88</b>	Airflow, cfm NC	264 -	352 -	440 -	528 15	616 20	792 27	968 33	1144 37	1320 42									
<b>30x6</b>	<b>1.25</b>	<b>1.11</b>	Airflow, cfm NC	333 -	444 -	555 11	666 16	777 21	999 28	1221 34	1443 38	1665 43									
<b>14x14</b>	<b>1.36</b>	<b>1.22</b>	Airflow, cfm NC	366 -	488 -	610 11	732 17	854 21	1098 28	1342 34	1586 39	1830 43									
<b>36x6</b>	<b>1.5</b>	<b>1.35</b>	Airflow, cfm NC	405 -	540 -	675 12	810 17	945 22	1215 29	1485 35	1755 39	2025 43									
<b>22x10</b>	<b>1.53</b>	<b>1.37</b>	Airflow, cfm NC	411 -	548 -	685 12	822 17	959 22	1233 29	1507 35	1781 39	2055 43									
<b>30x8</b>	<b>1.67</b>	<b>1.49</b>	Airflow, cfm NC	447 -	596 -	745 12	894 18	1043 22	1341 29	1639 35	1937 40	2235 44									
<b>42x6</b>	<b>1.75</b>	<b>1.59</b>	Airflow, cfm NC	477 -	636 -	795 13	954 18	1113 22	1431 29	1749 35	2067 40	2385 44									
<b>16x16</b>	<b>1.78</b>	<b>1.62</b>	Airflow, cfm NC	486 -	648 -	810 13	972 18	1134 22	1458 30	1782 35	2106 40	2430 44									
<b>24x12</b>	<b>2</b>	<b>1.82</b>	Airflow, cfm NC	546 -	728 -	910 13	1092 18	1274 23	1638 30	2002 36	2366 41	2730 45									
<b>18x18</b>	<b>2.25</b>	<b>2.07</b>	Airflow, cfm NC	621 -	828 -	1035 14	1242 19	1449 23	1863 31	2277 36	2691 41	3105 45									
<b>24x14</b>	<b>2.33</b>	<b>2.14</b>	Airflow, cfm NC	642 -	856 -	1070 14	1284 19	1498 24	1926 31	2354 37	2782 41	3210 45									
<b>30x12</b>	<b>2.5</b>	<b>2.29</b>	Airflow, cfm NC	687 -	916 -	1145 14	1374 19	1603 24	2061 31	2519 37	2977 42	3435 46									
<b>24x16</b>	<b>2.67</b>	<b>2.46</b>	Airflow, cfm NC	738 -	984 -	1230 15	1476 20	1722 24	2214 31	2706 37	3198 42	3690 46									
<b>20x20</b>	<b>2.78</b>	<b>2.57</b>	Airflow, cfm NC	771 -	1028 -	1285 15	1542 20	1799 24	2313 32	2827 37	3341 42	3855 46									
<b>36x12</b>	<b>3</b>	<b>2.75</b>	Airflow, cfm NC	825 -	1100 -	1375 15	1650 20	1925 25	2475 32	3025 38	3575 42	4125 47									
<b>30x16</b>	<b>3.33</b>	<b>3.11</b>	Airflow, cfm NC	933 -	1244 -	1555 16	1866 21	2177 25	2799 32	3421 38	4043 43	4665 47									
<b>22x22</b>	<b>3.36</b>	<b>3.14</b>	Airflow, cfm NC	942 -	1256 -	1570 16	1884 21	2198 25	2826 32	3454 38	4082 43	4710 47									
<b>42x12</b>	<b>3.5</b>	<b>3.22</b>	Airflow, cfm NC	966 -	1288 -	1610 16	1932 21	2254 25	2898 33	3542 38	4186 43	4830 47									
<b>24x22</b>	<b>3.67</b>	<b>3.43</b>	Airflow, cfm NC	1029 -	1372 -	1715 16	2058 21	2401 26	3087 33	3773 39	4459 43	5145 47									
<b>30x18</b>	<b>3.75</b>	<b>3.5</b>	Airflow, cfm NC	1050 -	1400 -	1750 16	2100 21	2450 26	3150 33	3850 39	4550 43	5250 48									

- Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006
- NC based on room absorption of 10 dB, re 10<sup>-12</sup> watts, measured per ANSI/ASHRAE Standard 70-2006

**Recommended Noise Criteria and Face Velocity Ranges are on page 19.**



# PERFORMANCE DATA—LIGHT COMMERCIAL

## S90H/S90V, S90HFF/S90VFF, ALS90H/ALS90V, S90HFFI Return Grille

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nominal Duct Size (in.)	Nominal Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	Core Velocity Velocity Pressure Neg. Static Pressure	NC-10			NC-20		NC-30		NC-40		
				300 0.006 0.012	400 0.010 0.022	500 0.016 0.034	600 0.022 0.049	700 0.031 0.067	900 0.050 0.111	1100 0.075 0.165	1300 0.105 0.231	1500 0.140 0.307	
48x12 <b>24x24</b>	<b>4</b>	<b>3.75</b>	Airflow, cfm NC	1125 -	1500 -	1875 16	2250 22	2625 26	3375 33	4125 39	4875 44	5625 48	
<b>36x18</b>	<b>4.5</b>	<b>4.22</b>	Airflow, cfm NC	1266 -	1688 -	2110 17	2532 22	2954 27	3798 34	4642 39	5486 44	6330 48	
<b>36x20</b> <b>30x24</b>	<b>5</b>	<b>4.71</b>	Airflow, cfm NC	1413 -	1884 11	2355 17	2826 23	3297 27	4239 34	5181 40	6123 45	7065 49	
<b>42x18</b>	<b>5.25</b>	<b>4.94</b>	Airflow, cfm NC	1482 -	1976 11	2470 18	2964 23	3458 27	4446 34	5434 40	6422 45	7410 49	
<b>28x28</b>	<b>5.44</b>	<b>5.16</b>	Airflow, cfm NC	1548 -	2064 11	2580 18	3096 23	3612 27	4644 35	5676 40	6708 45	7740 49	
<b>42x20</b> <b>30x28</b>	<b>5.83</b>	<b>5.51</b>	Airflow, cfm NC	1653 -	2204 12	2755 18	3306 23	3857 28	4959 35	6061 41	7163 45	8265 50	
<b>48x18</b> <b>36x24</b>	<b>6</b>	<b>5.66</b>	Airflow, cfm NC	1698 -	2264 12	2830 18	3396 23	3962 28	5094 35	6226 41	7358 46	8490 50	
<b>30x30</b>	<b>6.25</b>	<b>5.94</b>	Airflow, cfm NC	1782 -	2376 12	2970 18	3564 24	4158 28	5346 35	6534 41	7722 46	8910 50	
<b>42x24</b> <b>36x28</b>	<b>7</b>	<b>6.66</b>	Airflow, cfm NC	1998 -	2664 12	3330 19	3996 24	4662 28	5994 36	7326 41	8658 46	9990 50	
<b>46x22</b>	<b>7.03</b>	<b>6.68</b>	Airflow, cfm NC	2004 -	2672 12	3340 19	4008 24	4676 29	6012 36	7348 41	8684 46	10020 50	
<b>32x32</b>	<b>7.11</b>	<b>6.78</b>	Airflow, cfm NC	2034 -	2712 13	3390 19	4068 24	4746 29	6102 36	7458 42	8814 46	10170 50	
<b>36x30</b>	<b>7.5</b>	<b>7.16</b>	Airflow, cfm NC	2148 -	2864 13	3580 19	4296 24	5012 29	6444 36	7876 42	9308 47	10740 51	
<b>48x24</b> <b>36x32</b>	<b>8</b>	<b>7.63</b>	Airflow, cfm NC	2289 -	3052 13	3815 19	4578 25	5341 29	6867 36	8393 42	9919 47	11445 51	
<b>34x34</b>	<b>8.03</b>	<b>7.68</b>	Airflow, cfm NC	2304 -	3072 13	3840 19	4608 25	5376 29	6912 36	8448 42	9984 47	11520 51	
<b>36x34</b>	<b>8.5</b>	<b>8.14</b>	Airflow, cfm NC	2442 -	3256 13	4070 20	4884 25	5698 29	7326 37	8954 42	10582 47	12210 51	
<b>42x30</b>	<b>8.75</b>	<b>8.38</b>	Airflow, cfm NC	2514 -	3352 13	4190 20	5028 25	5866 29	7542 37	9218 42	10894 47	12570 51	
<b>36x36</b>	<b>9</b>	<b>8.63</b>	Airflow, cfm NC	2589 -	3452 14	4315 20	5178 25	6041 30	7767 37	9493 43	11219 47	12945 51	
<b>42x34</b> <b>48x30</b>	<b>10</b>	<b>9.6</b>	Airflow, cfm NC	2880 -	3840 14	4800 20	5760 26	6720 30	8640 37	10560 43	12480 48	14400 52	
<b>38x38</b>	<b>10.03</b>	<b>9.64</b>	Airflow, cfm NC	2892 -	3856 14	4820 20	5784 26	6748 30	8676 37	10604 43	12532 48	14460 52	
<b>42x36</b>	<b>10.5</b>	<b>10.1</b>	Airflow, cfm NC	3030 -	4040 14	5050 21	6060 26	7070 30	9090 38	11110 43	13130 48	15150 52	
<b>46x34</b>	<b>10.86</b>	<b>10.45</b>	Airflow, cfm NC	3135 -	4180 14	5225 21	6270 26	7315 30	9405 38	11495 43	13585 48	15675 52	
<b>42x38</b>	<b>11.08</b>	<b>10.67</b>	Airflow, cfm NC	3201 -	4268 14	5335 21	6402 26	7469 31	9603 38	11737 44	13871 48	16005 52	
<b>40x40</b>	<b>11.11</b>	<b>10.7</b>	Airflow, cfm NC	3210 -	4280 15	5350 21	6420 26	7490 31	9630 38	11770 44	13910 48	16050 52	
<b>48x36</b>	<b>12</b>	<b>11.57</b>	Airflow, cfm NC	3471 -	4628 15	5785 21	6942 26	8099 31	10413 38	12727 44	15041 49	17355 53	
<b>42x42</b>	<b>12.25</b>	<b>11.82</b>	Airflow, cfm NC	3546 -	4728 15	5910 21	7092 27	8274 31	10638 38	13002 44	15366 49	17730 53	
<b>44x44</b>	<b>13.44</b>	<b>12.99</b>	Airflow, cfm NC	3897 -	5196 15	6495 22	7794 27	9093 31	11691 39	14289 44	16887 49	19485 53	
<b>48x42</b>	<b>14</b>	<b>13.54</b>	Airflow, cfm NC	4062 -	5416 16	6770 22	8124 27	9478 32	12186 39	14894 45	17602 49	20310 53	
<b>46x46</b>	<b>14.69</b>	<b>14.22</b>	Airflow, cfm NC	4266 -	5688 16	7110 22	8532 27	9954 32	12798 39	15642 45	18486 50	21330 54	
<b>48x46</b>	<b>15.33</b>	<b>14.85</b>	Airflow, cfm NC	4455 -	5940 16	7425 22	8910 28	10395 32	13365 39	16335 45	19305 50	22275 54	
<b>48x48</b>	<b>16</b>	<b>15.5</b>	Airflow, cfm NC	4650 -	6200 16	7750 23	9300 28	10850 32	13950 39	17050 45	20150 50	23250 54	

• Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

• NC based on room absorption of 10 dB, re 10<sup>-12</sup> watts, measured per ANSI/ASHRAE Standard 70-2006

NC-50



900H/900V, AL900/AL900V, 990H/990V, AL990H/AL990V Supply Registers

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nom. Duct Size (in.)	Nom. Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	NC-20                      NC-30                      NC-40									
			Core Vel.	300	400	500	600	700	800	1000	1200	1400
			Vel. Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
			0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183	0.263	0.358
			22.5°	0.018	0.033	0.051	0.074	0.100	0.131	0.204	0.294	0.401
			45°	0.028	0.049	0.077	0.111	0.152	0.198	0.309	0.445	0.606
6x6	0.25	0.19	cfm	57	76	95	114	133	152	190	228	266
			NC	-	-	-	15	20	24	31	36	41
			0°	5-7-14	7-10-16	8-12-18	10-14-20	12-15-21	13-16-23	15-18-25	16-20-28	17-21-30
			Throw (ft)	22.5° 4-6-11	5-8-12	6-10-14	8-11-15	9-12-16	10-12-18	11-14-20	12-15-22	13-16-23
8x6	0.33	0.26	cfm	78	104	130	156	182	208	260	312	364
			NC	-	-	11	17	21	25	32	38	42
			0°	5-9-16	8-12-19	10-15-21	12-16-23	14-18-25	15-19-27	17-21-30	19-23-32	20-25-35
			Throw (ft)	22.5° 4-7-13	6-9-15	8-11-16	9-13-18	11-14-19	12-15-21	13-16-23	15-18-25	16-19-27
10x6	0.42	0.34	cfm	102	136	170	204	238	272	340	408	476
			NC	-	-	12	18	23	27	33	39	43
			0°	6-10-19	9-13-21	11-17-24	13-19-26	16-20-28	18-21-30	20-24-34	21-26-37	23-28-40
			Throw (ft)	22.5° 5-8-14	7-10-17	9-13-19	10-14-20	12-16-22	14-17-23	15-19-26	17-20-29	18-22-31
8x8	0.44	0.37	cfm	111	148	185	222	259	296	370	444	518
			NC	-	-	13	18	23	27	34	39	44
			0°	6-10-19	9-14-22	12-17-25	14-19-27	16-21-30	18-22-32	20-25-35	22-27-39	24-30-42
			Throw (ft)	22.5° 5-8-15	7-11-17	9-13-19	11-15-21	13-16-23	14-17-25	16-19-27	17-21-30	19-23-32
12x6	0.50	0.41	cfm	123	164	205	246	287	328	410	492	574
			NC	-	-	13	19	23	27	34	39	44
			0°	7-11-20	10-15-24	12-18-26	15-20-29	17-22-31	19-24-33	21-26-37	24-29-41	25-31-44
			Throw (ft)	22.5° 5-8-16	8-11-18	9-14-20	11-16-22	13-17-24	15-18-26	17-20-29	18-22-32	20-24-34
14x6	0.58	0.48	cfm	144	192	240	288	336	384	480	576	672
			NC	-	-	14	19	24	28	35	40	45
			0°	7-12-22	11-16-25	13-20-28	16-22-31	18-24-34	21-25-36	23-28-40	25-31-44	28-34-48
			Throw (ft)	22.5° 6-9-17	8-12-20	10-15-22	12-17-24	14-18-26	16-20-28	18-22-31	20-24-34	21-26-37
16x6 12x8	0.67	0.57	cfm	171	228	285	342	399	456	570	684	798
			NC	-	-	15	20	25	29	35	41	45
			0°	8-13-24	11-17-28	14-22-31	17-24-34	20-26-37	23-28-39	25-31-44	28-34-48	30-37-52
			Throw (ft)	22.5° 6-10-19	9-13-22	11-17-24	13-19-26	16-20-28	18-22-30	20-24-34	22-26-37	23-28-40
10x10	0.69	0.59	cfm	177	236	295	354	413	472	590	708	826
			NC	-	-	15	20	25	29	35	41	46
			0°	8-13-24	12-18-28	15-22-32	18-24-35	20-26-37	23-28-40	26-32-45	28-35-49	31-37-53
			Throw (ft)	22.5° 6-10-19	9-14-22	11-17-24	14-19-27	16-20-29	18-22-31	20-24-35	22-27-38	24-29-41
18x6	0.75	0.63	cfm	189	252	315	378	441	504	630	756	882
			NC	-	-	15	20	25	29	36	41	46
			0°	8-14-25	12-18-29	15-23-33	18-25-36	21-27-39	24-29-41	27-33-46	29-36-51	32-39-55
			Throw (ft)	22.5° 7-11-20	9-14-23	12-18-25	14-20-28	16-21-30	18-23-32	21-25-36	23-28-39	24-30-42
20x6 12x10	0.83	0.72	cfm	216	288	360	432	504	576	720	864	1008
			NC	-	-	16	21	26	30	36	42	46
			0°	9-15-27	13-19-31	16-24-35	19-27-38	23-29-41	25-31-44	28-35-49	31-38-54	34-41-58
			Throw (ft)	22.5° 7-11-21	10-15-24	12-19-27	15-21-30	17-23-32	20-24-34	22-27-38	24-30-42	26-32-45
22x6	0.92	0.77	cfm	231	308	385	462	539	616	770	924	1078
			NC	-	-	16	21	26	30	37	42	47
			0°	9-15-28	13-20-32	17-25-36	20-28-40	23-30-43	26-32-46	29-36-51	32-40-56	35-43-60
			Throw (ft)	22.5° 7-12-22	10-16-25	13-19-28	16-22-31	18-23-33	20-25-35	23-28-40	25-31-43	27-33-47
24x6 18x8 12x12	1.00	0.88	cfm	264	352	440	528	616	704	880	1056	1232
			NC	-	-	16	22	26	30	37	43	47
			0°	10-16-30	14-21-34	18-27-39	21-30-42	25-32-46	28-34-49	31-39-55	34-42-60	37-46-65
			Throw (ft)	22.5° 8-12-23	11-17-27	14-21-30	17-23-33	19-25-35	22-27-38	24-30-42	27-33-46	29-35-50
30x6 18x10	1.25	1.11	cfm	333	444	555	666	777	888	1110	1332	1554
			NC	-	11	17	23	27	31	38	44	48
			0°	11-18-34	16-24-39	20-30-43	24-34-47	28-36-51	32-39-55	35-43-61	39-47-67	42-51-72
			Throw (ft)	22.5° 9-14-26	12-19-30	16-23-34	19-26-37	22-28-40	25-30-42	27-34-47	30-37-52	32-40-56
			45°	5-8-15	7-11-17	9-14-19	11-15-21	13-16-23	14-17-25	16-19-28	17-21-30	

Performance notes appear at end of table



**PERFORMANCE DATA—LIGHT COMMERCIAL**

**900H/900V, AL900/AL900V, 990H/990V, AL990H/AL990V Supply Registers**

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nom. Duct Size (in.)	Nom. Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	Core Vel. Vel. Press. 0° Total 22.5° Press. 45°	NC-20			NC-30			NC-40		NC-50
				300	400	500	600	700	800	1000	1200	1400
				0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
<b>14x14</b>	<b>1.36</b>	<b>1.22</b>	cfm	366	488	610	732	854	976	1220	1464	1708
			NC	-	11	18	23	28	32	39	44	49
			Throw 0°	12-19-35	17-25-41	21-31-45	25-35-50	29-38-54	33-41-57	37-45-64	41-50-70	44-54-76
			Throw 22.5°	9-15-27	13-20-31	16-24-35	20-27-39	23-29-42	26-31-45	29-35-50	31-39-55	34-42-59
36x6 27x8 <b>18x12</b>	<b>1.50</b>	<b>1.35</b>	cfm	405	540	675	810	945	1080	1350	1620	1890
			NC	-	12	18	24	28	32	39	44	49
			Throw 0°	12-20-37	18-26-43	22-33-48	26-37-52	31-40-57	35-43-60	39-48-68	43-52-74	46-57-80
			Throw 22.5°	10-15-29	14-21-33	17-26-37	21-29-41	24-31-44	27-33-47	30-37-53	33-41-57	36-44-62
<b>22x10</b>	<b>1.53</b>	<b>1.37</b>	cfm	411	548	685	822	959	1096	1370	1644	1918
			NC	-	12	18	24	28	32	39	44	49
			Throw 0°	12-20-37	18-27-43	22-33-48	27-37-53	31-40-57	35-43-61	39-48-68	43-53-75	46-57-81
			Throw 22.5°	10-16-29	14-21-33	17-26-37	21-29-41	24-31-44	27-33-47	30-37-53	33-41-58	36-44-62
30x8 <b>24x10</b>	<b>1.67</b>	<b>1.49</b>	cfm	447	596	745	894	1043	1192	1490	1788	2086
			NC	-	12	19	24	29	33	39	45	49
			Throw 0°	13-21-39	19-28-45	23-35-50	28-39-55	32-42-59	37-45-63	41-50-71	45-55-78	48-59-84
			Throw 22.5°	10-16-30	14-22-35	18-27-39	22-30-43	25-33-46	28-35-49	32-39-55	35-43-60	38-46-65
42x6 <b>18x14</b>	<b>1.75</b>	<b>1.59</b>	cfm	477	636	795	954	1113	1272	1590	1908	2226
			NC	-	12	19	24	29	33	40	45	50
			Throw 0°	13-22-40	19-29-46	24-36-52	29-40-57	34-43-61	38-46-66	42-52-73	46-57-80	50-61-87
			Throw 22.5°	10-17-31	15-22-36	19-28-40	22-31-44	26-34-48	29-36-51	33-40-57	36-44-62	39-48-67
<b>16x16</b>	<b>1.78</b>	<b>1.62</b>	cfm	486	648	810	972	1134	1296	1620	1944	2268
			NC	-	12	19	24	29	33	40	45	50
			Throw 0°	14-22-41	19-29-47	24-36-52	29-41-57	34-44-62	38-47-66	43-52-74	47-57-81	51-62-88
			Throw 22.5°	11-17-31	15-22-36	19-28-41	22-31-44	26-34-48	30-36-51	33-41-57	36-44-63	39-48-68
48x6 36x8 <b>24x12</b> 18x16	<b>2.00</b>	<b>1.82</b>	cfm	546	728	910	1092	1274	1456	1820	2184	2548
			NC	-	13	19	25	30	34	40	46	50
			Throw 0°	14-23-43	20-31-50	26-38-55	31-43-61	36-46-66	41-50-70	45-55-78	50-61-86	54-66-93
			Throw 22.5°	11-18-33	16-24-38	20-30-43	24-33-47	28-36-51	31-38-54	35-43-61	38-47-67	42-51-72
<b>18x18</b>	<b>2.25</b>	<b>2.07</b>	cfm	621	828	1035	1242	1449	1656	2070	2484	2898
			NC	-	13	20	25	30	34	41	46	51
			Throw 0°	15-25-46	22-33-53	27-41-59	33-46-65	38-49-70	43-53-75	48-59-84	53-65-92	57-70-99
			Throw 22.5°	12-19-36	17-25-41	21-32-46	25-36-50	30-38-54	33-41-58	37-46-65	41-50-71	44-54-77
42x8 <b>24x14</b>	<b>2.33</b>	<b>2.14</b>	cfm	642	856	1070	1284	1498	1712	2140	2568	2996
			NC	-	13	20	26	30	34	41	46	51
			Throw 0°	16-25-47	22-33-54	28-42-60	33-47-66	39-50-71	44-54-76	49-60-85	54-66-93	58-71-101
			Throw 22.5°	12-19-36	17-26-42	22-32-47	26-36-51	30-39-55	34-42-59	38-47-66	42-51-72	45-55-78
36x10 <b>30x12</b>	<b>2.50</b>	<b>2.29</b>	cfm	687	916	1145	1374	1603	1832	2290	2748	3206
			NC	-	14	20	26	30	34	41	47	51
			Throw 0°	16-26-48	23-34-56	29-43-62	34-48-68	40-52-74	45-56-79	51-62-88	56-68-96	60-74-104
			Throw 22.5°	12-20-37	18-27-43	22-33-48	27-37-53	31-40-57	35-43-61	39-48-68	43-53-75	47-57-81
48x8 <b>24x16</b>	<b>2.67</b>	<b>2.46</b>	cfm	738	984	1230	1476	1722	1968	2460	2952	3444
			NC	-	14	21	26	31	35	41	47	51
			Throw 0°	17-27-50	24-36-58	30-45-64	36-50-71	42-54-76	47-58-82	53-64-91	58-71-100	62-76-108
			Throw 22.5°	13-21-39	18-28-45	23-35-50	28-39-55	32-42-59	36-45-63	41-50-71	45-55-77	48-59-84
<b>20x20</b>	<b>2.78</b>	<b>2.57</b>	cfm	771	1028	1285	1542	1799	2056	2570	3084	3598
			NC	-	14	21	26	31	35	42	47	52
			Throw 0°	17-27-51	24-37-59	30-46-66	37-51-72	43-55-78	48-59-83	54-66-93	59-72-102	64-78-110
			Throw 22.5°	13-21-40	19-28-46	24-35-51	28-40-56	33-43-60	37-46-65	42-51-72	46-56-79	49-60-85
36x12 24x18	<b>3.00</b>	<b>2.75</b>	cfm	825	1100	1375	1650	1925	2200	2750	3300	3850
			NC	-	15	21	27	31	35	42	47	52
			Throw 0°	18-28-53	25-38-61	31-47-68	38-53-75	44-57-81	50-61-86	56-68-96	61-75-106	66-81-114
			Throw 22.5°	14-22-41	20-29-47	24-37-53	29-41-58	34-44-63	39-47-67	43-53-75	47-58-82	51-63-88

Performance notes appear at end of table

*Recommended Noise Criteria and Face Velocity Ranges are on page 19.*





900H/900V, AL900/AL900V, 990H/990V, AL990H/AL990V Supply Registers

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nom. Duct Size (in.)	Nom. Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	NC-20			NC-30			NC-40			NC-50		
			Core Vel.	300	400	500	600	700	800	1000	1200	1400		
			Vel. Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122		
48x10 30x16 24x20	3.33	3.11	Total	0.018	0.033	0.051	0.074	0.100	0.131	0.204	0.294	0.401		
			Press.	0.028	0.049	0.077	0.111	0.152	0.198	0.309	0.445	0.606		
			45°											
22x22	3.36	3.14	cfm	942	1256	1570	1884	2198	2512	3140	3768	4396		
			NC	-	15	22	27	32	36	42	48	53		
			0°	19-30-56	27-40-65	34-50-73	40-56-80	47-61-86	53-65-92	59-73-103	65-80-113	70-86-122		
42x12 36x14	3.50	3.22	Throw	22.5°	15-23-44	21-31-50	26-39-56	31-44-62	36-47-66	41-50-71	46-56-79	50-62-87	54-66-94	
			45°	8-14-25	12-18-29	15-23-33	18-25-36	21-27-39	24-29-41	27-33-46	29-36-51	32-39-55		
			45°											
24x22	3.67	3.43	cfm	1029	1372	1715	2058	2401	2744	3430	4116	4802		
			NC	-	15	22	28	32	36	43	48	53		
			0°	20-32-59	28-42-68	35-53-76	42-59-83	49-64-90	56-68-96	62-76-108	68-83-118	74-90-127		
30x18	3.75	3.5	Throw	22.5°	15-25-46	22-33-53	27-41-59	33-46-65	38-49-70	43-53-75	48-59-83	53-65-91	57-70-99	
			45°	9-14-27	13-19-31	16-24-34	19-27-38	22-29-41	25-31-43	28-34-48	31-38-53	33-41-57		
			45°											
48x12 36x16 24x24	4.00	3.75	cfm	1125	1500	1875	2250	2625	3000	3750	4500	5250		
			NC	-	16	22	28	33	37	43	49	53		
			0°	21-33-62	29-44-71	37-55-80	44-62-87	51-67-94	58-71-101	65-80-113	71-87-123	77-94-133		
36x18	4.50	4.22	Throw	22.5°	16-26-48	23-34-55	29-43-62	34-48-68	40-52-73	45-55-78	50-62-87	55-68-96	60-73-103	
			45°	9-15-28	13-20-32	17-25-36	20-28-39	23-30-42	26-32-45	29-36-51	32-39-55	35-42-60		
			45°											
36x20 30x24	5.00	4.71	cfm	1413	1884	2355	2826	3297	3768	4710	5652	6594		
			NC	-	17	23	29	33	37	44	50	54		
			0°	23-37-69	33-49-80	41-62-89	49-69-98	58-75-106	65-80-113	73-89-126	80-98-138	86-106-149		
42x18	5.25	4.94	Throw	22.5°	18-29-54	26-38-62	32-48-69	38-54-76	45-58-82	50-62-87	56-69-98	62-76-107	67-82-116	
			45°	10-17-31	15-22-36	19-28-40	22-31-44	26-34-48	29-36-51	33-40-57	36-44-62	39-48-67		
			45°											
28x28	5.44	5.16	cfm	1548	2064	2580	3096	3612	4128	5160	6192	7224		
			NC	-	17	24	29	34	38	45	50	55		
			0°	24-39-72	35-52-84	43-65-93	52-72-102	60-78-110	68-84-118	76-93-132	84-102-145	90-110-156		
42x20 30x28	5.83	5.51	Throw	22.5°	19-30-56	27-40-65	33-50-72	40-56-79	47-61-86	53-65-92	59-72-102	65-79-112	70-86-121	
			45°	11-17-33	16-23-38	19-29-42	23-33-46	27-35-50	31-38-53	34-42-59	38-46-65	41-50-70		
			45°											
48x18 36x24	6.00	5.66	cfm	1698	2264	2830	3396	3962	4528	5660	6792	7924		
			NC	-	18	24	30	34	38	45	50	55		
			0°	25-41-76	36-54-87	45-68-98	54-76-107	63-82-116	71-87-124	80-98-138	87-107-152	94-116-164		
30x30	6.25	5.94	Throw	22.5°	20-32-60	28-42-68	35-53-76	42-59-83	49-63-90	55-68-96	62-76-107	68-83-117	73-90-127	
			45°	11-18-34	16-24-39	20-31-44	24-34-48	28-37-52	32-39-55	36-44-62	39-48-68	43-52-74		
			45°											

Performance notes appear at end of table



# PERFORMANCE DATA—LIGHT COMMERCIAL

## 900H/900V, AL900/AL900V, 990H/990V, AL990H/AL990V Supply Registers

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

			NC-20			NC-30			NC-40			NC-50		
Nom. Duct Size (in.)	Nom. Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	Core Vel.	<b>300</b>	<b>400</b>	<b>500</b>	<b>600</b>	<b>700</b>	<b>800</b>	<b>1000</b>	<b>1200</b>	<b>1400</b>		
			Vel. Press.	<b>0.006</b>	<b>0.010</b>	<b>0.016</b>	<b>0.022</b>	<b>0.031</b>	<b>0.040</b>	<b>0.062</b>	<b>0.090</b>	<b>0.122</b>		
			Total Press.	<b>0.018</b>	<b>0.033</b>	<b>0.051</b>	<b>0.074</b>	<b>0.100</b>	<b>0.131</b>	<b>0.204</b>	<b>0.309</b>	<b>0.445</b>		
			cfm	1998	2664	3330	3996	4662	5328	6660	7992	9324		
			NC	-	18	25	30	35	39	46	51	56		
42x24 36x28	7.00	6.66	0°	28-44-82	39-59-95	49-74-106	59-82-116	69-89-126	77-95-134	87-106-150	95-116-164	102-126-178		
			22.5°	21-34-64	30-46-74	38-57-82	46-64-90	53-69-97	60-74-104	67-82-116	74-90-127	79-97-138		
			45°	12-20-37	18-26-43	22-33-48	26-37-52	31-40-56	35-43-60	39-48-68	43-52-74	46-57-80		
			cfm	2004	2672	3340	4008	4676	5344	6680	8016	9352		
			NC	-	18	25	30	35	39	46	51	56		
46x22	7.03	6.68	0°	28-44-82	39-59-95	49-74-106	59-82-116	69-89-126	78-95-134	87-106-150	95-116-165	103-126-178		
			22.5°	21-34-64	30-46-74	38-57-82	46-64-90	53-69-97	60-74-104	67-82-116	74-90-128	80-97-138		
			45°	12-20-37	18-27-43	22-33-48	27-37-52	31-40-57	35-43-60	39-48-68	43-52-74	46-57-80		
			cfm	2034	2712	3390	4068	4746	5424	6780	8136	9492		
			NC	-	18	25	30	35	39	46	51	56		
32x32	7.11	6.78	0°	28-45-83	40-59-96	49-74-107	59-83-117	69-90-127	78-96-135	87-107-151	96-117-166	103-127-179		
			22.5°	22-34-64	31-46-74	38-57-83	46-64-91	54-69-98	61-74-105	68-83-117	74-91-129	80-98-139		
			45°	12-20-37	18-27-43	22-33-48	27-37-53	31-40-57	35-43-61	39-48-68	43-53-75	47-57-81		
			cfm	2148	2864	3580	4296	5012	5728	7160	8592	10024		
			NC	-	19	25	31	35	39	46	51	56		
36x30	7.50	7.16	0°	29-46-85	41-61-98	51-76-110	61-85-121	71-92-130	80-98-139	90-110-156	98-121-170	106-130-184		
			22.5°	22-35-66	32-47-76	39-59-85	47-66-93	55-71-101	62-76-108	70-85-121	76-93-132	82-101-143		
			45°	13-21-38	18-27-44	23-34-50	27-38-54	32-41-59	36-44-63	40-50-70	44-54-77	48-59-83		
			cfm	2289	3052	3815	4578	5341	6104	7630	9156	10682		
			NC	-	19	25	31	35	39	46	51	56		
48x24 36x32	8.00	7.63	0°	29-47-88	42-63-102	52-79-114	63-88-124	73-95-134	83-102-144	93-114-161	102-124-176	110-134-190		
			22.5°	23-37-68	33-49-79	41-61-88	49-68-96	57-74-104	64-79-111	72-88-124	79-96-136	85-104-147		
			45°	13-21-40	19-28-46	24-35-51	28-40-56	33-43-60	37-46-65	42-51-72	46-56-79	49-60-86		
			cfm	2304	3072	3840	4608	5376	6144	7680	9216	10752		
			NC	-	19	25	31	36	40	46	52	56		
34x34	8.03	7.68	0°	30-47-88	42-63-102	53-79-114	63-88-125	74-95-135	83-102-144	93-114-161	102-125-176	110-135-191		
			22.5°	23-37-68	33-49-79	41-61-88	49-68-97	57-74-104	64-79-112	72-88-125	79-97-137	85-104-148		
			45°	13-21-40	19-28-46	24-36-51	28-40-56	33-43-61	37-46-65	42-51-73	46-56-79	50-61-86		
			cfm	2442	3256	4070	4884	5698	6512	8140	9768	11396		
			NC	-	19	26	31	36	40	46	52	56		
36x34	8.50	8.14	0°	30-49-91	43-65-105	54-81-117	65-91-128	76-98-139	86-105-148	96-117-166	105-128-182	113-139-196		
			22.5°	24-38-70	34-50-81	42-63-91	50-70-100	59-76-108	66-81-115	74-91-129	81-100-141	88-108-152		
			45°	14-22-41	20-29-47	24-37-53	29-41-58	34-44-62	39-47-67	43-53-75	47-58-82	51-62-88		
			cfm	2514	3352	4190	5028	5866	6704	8380	10056	11732		
			NC	11	19	26	31	36	40	47	52	57		
42x30	8.75	8.38	0°	31-49-92	44-66-106	55-82-119	66-92-130	77-100-141	87-106-151	97-119-168	106-130-184	115-141-199		
			22.5°	24-38-71	34-51-82	43-64-92	51-71-101	60-77-109	67-82-117	75-92-130	82-101-143	89-109-154		
			45°	14-22-41	20-30-48	25-37-54	30-41-59	35-45-63	39-48-68	44-54-76	48-59-83	52-63-90		
			cfm	2589	3452	4315	5178	6041	6904	8630	10356	12082		
			NC	11	19	26	31	36	40	47	52	57		
36x36	9.00	8.63	0°	31-50-94	45-67-108	56-84-121	67-94-132	78-101-143	88-108-153	99-121-171	108-132-187	117-143-202		
			22.5°	24-39-72	35-52-84	43-65-94	52-72-103	61-78-111	68-84-118	76-94-132	84-103-145	90-111-157		
			45°	14-23-42	20-30-49	25-38-54	30-42-60	35-45-64	40-49-69	44-54-77	49-60-84	53-64-91		
			cfm	2880	3840	4800	5760	6720	7680	9600	11520	13440		
			NC	11	20	26	32	36	40	47	53	57		
42x34 48x30	10.00	9.6	0°	33-53-99	47-71-114	59-88-127	71-99-140	82-107-151	93-114-161	104-127-180	114-140-197	123-151-213		
			22.5°	26-41-76	36-55-88	46-68-99	55-76-108	64-83-117	72-88-125	81-99-140	88-108-153	95-117-165		
			45°	15-24-44	21-32-51	26-40-57	32-44-63	37-48-68	42-51-73	47-57-81	51-63-89	55-68-96		
			cfm	2892	3856	4820	5784	6748	7712	9640	11568	13496		
			NC	11	20	26	32	36	40	47	53	57		
38x38	10.03	9.64	0°	33-53-99	47-71-114	59-88-128	71-99-140	83-107-151	93-114-161	104-128-181	114-140-198	123-151-214		
			22.5°	26-41-77	37-55-88	46-69-99	55-77-108	64-83-117	72-88-125	81-99-140	88-108-153	96-117-166		
			45°	15-24-44	21-32-51	27-40-57	32-44-63	37-48-68	42-51-73	47-57-81	51-63-89	55-68-96		
			cfm	3030	4040	5050	6060	7070	8080	10100	12120	14140		
			NC	11	20	27	32	37	41	47	53	57		
42x36	10.50	10.1	0°	34-54-101	48-72-117	60-91-131	72-101-143	85-109-155	95-117-165	107-131-185	117-143-202	126-155-219		
			22.5°	26-42-78	37-56-91	47-70-101	56-78-111	65-85-120	74-91-128	83-101-143	91-111-157	98-120-169		
			45°	15-24-46	22-33-53	27-41-59	33-46-64	38-49-70	43-53-74	48-59-83	53-64-91	57-70-98		
			cfm	3135	4180	5225	6270	7315	8360	10450	12430	14430		
			NC	11	20	27	32	37	41	47	53	58		
46x34	10.86	10.45	0°	34-55-103	49-74-119	61-92-133	74-103-146	86-111-157	97-119-168	109-133-188	119-146-206	128-157-222		
			22.5°	27-43-80	38-57-92	48-71-103	57-80-113	67-86-122	75-92-130	84-103-146	92-113-160	99-122-172		
			45°	16-25-46	22-33-53	28-41-60	33-46-66	39-50-71	44-53-76	49-60-85	53-66-93	58-71-100		

Performance notes appear at end of table



900H/900V, AL900/AL900V, 990H/990V, AL990H/AL990V Supply Registers

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nom. Duct Size (in.)	Nom. Duct Area (ft <sup>2</sup> )	Core Area (ft <sup>2</sup> )	NC-20		NC-30			NC-40		NC-50		
			Core Vel.	300	400	500	600	700	800	1000	1200	1400
			Vel. Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
			0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183	0.263	0.358
			Total 22.5°	0.018	0.033	0.051	0.074	0.100	0.131	0.204	0.294	0.401
			Press. 45°	0.028	0.049	0.077	0.111	0.152	0.198	0.309	0.445	0.606
42x38	11.08	10.67	cfm	3201	4268	5335	6402	7469	8536	10670	12804	14938
			NC	12	20	27	32	37	41	48	53	58
			0°	35-56-104	50-74-120	62-93-134	74-104-147	87-112-159	98-120-170	110-134-190	120-147-208	130-159-225
			Throw (ft)	27-43-81 16-25-47	38-58-93 22-34-54	48-72-104 28-42-60	58-81-114 34-47-66	67-87-123 39-51-71	76-93-132 44-54-76	85-104-147 49-60-85	93-114-161 54-66-94	101-123-174 58-71-101
40x40	11.11	10.7	cfm	3210	4280	5350	6420	7490	8560	10700	12840	14980
			NC	12	20	27	32	37	41	48	53	58
			0°	35-56-104	50-75-120	62-93-134	75-104-147	87-113-159	98-120-170	110-134-190	120-147-208	130-159-225
			Throw (ft)	27-43-81 16-25-47	39-58-93 22-34-54	48-72-104 28-42-61	58-81-114 34-47-66	67-87-123 39-51-72	76-93-132 44-54-77	85-104-147 49-61-86	93-114-161 54-66-94	101-123-174 58-72-101
48x36	12.00	11.57	cfm	3471	4628	5785	6942	8099	9256	11570	13884	16198
			NC	12	21	27	33	37	41	48	53	58
			0°	36-58-108	52-78-125	65-97-140	78-108-153	90-117-165	102-125-177	114-140-198	125-153-217	135-165-234
			Throw (ft)	28-45-84 16-26-49	40-60-97 23-35-56	50-75-108 29-44-63	60-84-119 35-49-69	70-91-128 41-53-74	79-97-137 46-56-80	88-108-153 51-63-89	97-119-168 56-69-97	105-128-181 61-74-105
42x42	12.25	11.82	cfm	3546	4728	5910	7092	8274	9456	11820	14184	16548
			NC	12	21	27	33	37	41	48	53	58
			0°	37-59-109	52-78-126	65-98-141	78-109-155	91-118-167	103-126-179	115-141-200	126-155-219	137-167-236
			Throw (ft)	28-46-85 16-26-49	40-61-98 24-35-57	51-76-110 29-44-64	61-85-120 35-49-70	71-92-130 41-53-75	80-98-139 46-57-80	89-110-155 52-64-90	98-120-170 57-70-99	106-130-183 61-75-106
44x44	13.44	12.99	cfm	3897	5196	6495	7794	9093	10392	12990	15588	18186
			NC	12	21	28	33	38	42	48	54	58
			0°	38-62-115	55-82-133	68-103-148	82-115-162	96-124-175	108-133-187	121-148-210	133-162-230	143-175-248
			Throw (ft)	30-48-89 17-28-52	42-64-103 25-37-60	53-80-115 31-46-67	64-89-126 37-52-73	74-96-136 43-56-79	84-103-145 49-60-84	94-115-162 54-67-94	103-126-178 60-73-103	111-136-192 64-79-112
48x42	14.00	13.54	cfm	4062	5416	6770	8124	9478	10832	13540	16248	18956
			NC	13	21	28	33	38	42	49	54	59
			0°	39-63-117	56-84-135	70-105-151	84-117-166	98-127-179	110-135-191	124-151-214	135-166-234	146-179-253
			Throw (ft)	30-49-91 18-28-53	43-65-105 25-38-61	54-81-117 31-47-68	65-91-128 38-53-75	76-98-139 44-57-81	86-105-148 50-61-86	96-117-166 56-68-96	105-128-182 61-75-105	113-139-196 66-81-114
46x46	14.69	14.22	cfm	4266	5688	7110	8532	9954	11376	14220	17064	19908
			NC	13	21	28	33	38	42	49	54	59
			0°	40-64-120	57-86-139	72-107-155	86-120-170	100-130-183	113-139-196	127-155-219	139-170-240	150-183-259
			Throw (ft)	31-50-93 18-29-54	44-67-107 26-39-62	56-83-120 32-48-70	67-93-132 39-54-76	78-101-142 45-58-83	88-107-152 51-62-88	98-120-170 57-70-99	107-132-186 62-76-108	116-142-201 67-83-117
48x46	15.33	14.85	cfm	4455	5940	7425	8910	10395	11880	14850	17820	20790
			NC	13	22	28	34	38	42	49	54	59
			0°	41-66-123	59-88-142	73-110-158	88-123-174	102-133-187	116-142-200	129-158-224	142-174-245	153-187-265
			Throw (ft)	32-51-95 18-30-55	45-68-110 26-40-64	57-85-123 33-49-71	68-95-134 40-55-78	79-103-145 46-60-84	90-110-155 52-64-90	100-123-174 58-71-101	110-134-190 64-78-110	119-145-205 69-84-119
48x48	16.00	15.50	cfm	4650	6200	7750	9300	10850	12400	15000	18600	21700
			NC	13	22	28	34	38	42	49	55	59
			0°	42-67-125	60-90-145	75-112-162	90-125-177	105-135-192	118-145-205	132-162-229	145-177-251	156-192-271
			Throw (ft)	33-52-97 19-30-56	46-70-112 27-40-65	58-87-125 34-50-73	70-97-137 40-56-80	81-105-148 47-61-86	92-112-159 53-65-92	102-125-177 59-73-103	112-137-194 65-80-113	121-148-210 70-86-122

- 0°, 22.5° & 45° represent blade deflection angles
- Performance data is based on duct sizes in bold, the performance varies slightly for duct sizes not shown in bold
- See the section, Engineering Guidelines, for drop information when selecting larger supply grilles for cooling purposes
- See the "Performance Notes" portion in this section for notes and correction factors

- See the section, Engineering Guidelines, for catalog throw information
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10<sup>-12</sup> watts

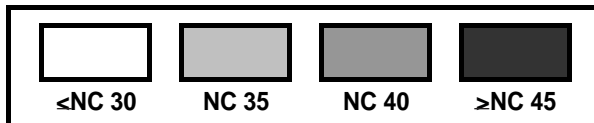


**ALH/ALV, ALHM/ALVM, ALHOB/ALVOB, ALHV/ALVH, ALHVOB/ALVHOB  
Supply Register and Grilles**

**Deflection A**

Face Velocity		400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000
Pressure Loss		.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249
8x4	CFM	60	80	95	110	125	140	155	170	185	205	220	250	280	310
Ak .156	Throw	6.5	8.5	10	12	13	15	16	18	19	22	23	26	29	33
10x4	CFM	80	100	120	140	160	180	200	220	240	260	275	315	355	395
Ak .198	Throw	7.5	9.5	12	13	15	17	19	20	22	24	26	29	33	37
12x4	CFM	95	120	145	170	190	215	240	265	290	310	335	385	430	480
Ak .240	Throw	8	10	12	14	16	18	20	22	25	26	28	33	36	41
14x4	CFM	115	140	170	195	225	255	280	310	340	365	395	450	510	565
Ak.282	Throw	9	11	13	15	18	20	22	24	27	29	31	35	40	44
12x5	CFM	125	155	185	215	250	280	310	340	370	405	435	495	560	620
Ak .310	Throw	9	12	14	16	19	21	23	25	28	30	32	37	42	46
10x6	CFM	125	155	190	220	250	280	315	345	375	405	440	500	565	625
Ak .313	Throw	9	12	14	16	19	21	23	26	28	30	33	37	42	46
14x5	CFM	145	180	220	255	290	330	365	400	435	475	510	580	655	730
Ak .364	Throw	10	12	15	18	20	23	25	28	30	33	35	40	45	50
12x6	CFM	150	190	225	265	305	340	380	415	455	495	530	605	680	760
Ak .379	Throw	10	13	15	18	21	23	26	28	31	33	36	41	46	51
16x5	CFM	165	210	250	295	335	375	420	460	500	545	585	670	750	835
Ak .418	Throw	11	13	16	19	22	24	27	30	32	35	38	43	48	54
14x6	CFM	180	225	270	310	355	400	445	490	535	580	625	715	805	890
Ak .446	Throw	11	14	17	19	22	25	28	30	33	36	39	44	50	55
16x6	CFM	205	255	305	360	410	460	510	565	615	665	715	820	920	1025
Ak .512	Throw	11	14	17	20	22	25	28	31	34	36	39	45	55	56
20x5	CFM	210	265	315	370	420	475	525	580	630	685	735	840	945	1050
Ak .526	Throw	12	15	18	21	24	27	30	33	36	39	42	48	54	60
24x5	CFM	255	315	380	445	505	570	635	695	760	825	890	1015	1140	1270
Ak .634	Throw	13	16	20	23	26	30	33	36	40	43	46	53	59	66
20x6	CFM	260	325	385	450	515	580	645	710	775	840	905	1030	1160	1290
Ak .645	Throw	13	17	20	23	27	30	33	37	40	43	47	53	60	67
24x6	CFM	310	390	465	545	620	700	775	855	930	1010	1090	1245	1400	1555
Ak .777	Throw	15	18	22	26	29	33	37	40	44	48	51	59	66	73
20x8	CFM	355	440	530	615	705	795	880	970	1060	1145	1235	1410	1590	1765
Ak .882	Throw	16	19	23	27	31	35	39	43	47	51	55	62	70	78
30x6	CFM	390	490	585	685	780	880	975	1075	1170	1270	1365	1560	1755	1950
Ak .976	Throw	16	21	25	29	33	37	41	45	49	53	57	66	74	82
24x8	CFM	425	530	635	740	850	955	1060	1165	1270	1380	1485	1695	1910	2120
Ak 1.06	Throw	17	21	23	30	34	38	43	47	51	56	60	68	77	85
30x8	CFM	535	670	805	940	1070	1205	1340	1475	1610	1740	1875	2145	2410	2680
Ak 1.34	Throw	19	24	29	34	38	43	48	53	58	62	67	77	87	96
24x10	CFM	540	675	810	945	1080	1215	1350	1485	1620	1755	1890	2160	2430	2700
Ak 1.35	Throw	19	24	29	34	39	43	48	53	58	63	68	77	87	97
36x8	CFM	645	805	965	1125	1290	1450	1610	1770	1930	2095	2255	2575	2900	3220
Ak 1.61	Throw	21	26	32	37	42	47	52	58	63	68	73	84	94	105
24x12	CFM	655	820	985	1150	1310	1475	1640	1805	1970	2130	2295	2625	2950	3280
Ak 1.64	Throw	21	27	32	37	43	48	53	59	64	69	75	85	96	107
30x10	CFM	675	845	1015	1185	1350	1520	1690	1860	2030	2195	2365	2705	3040	3380
Ak 1.69	Throw	21	27	32	38	43	48	54	59	65	70	75	86	97	108
36x10	CFM	815	1020	1225	1430	1630	1835	2040	2245	2450	2650	2855	3265	3670	4080
Ak 2.04	Throw	24	30	36	42	47	53	59	65	71	77	83	95	107	119
30x12	CFM	820	1025	1230	1435	1640	1845	2050	2255	2460	2665	2870	3280	3690	4100
Ak 2.05	Throw	24	30	36	42	48	54	59	65	71	77	83	95	107	119
36x12	CFM	990	1235	1480	1730	1975	2225	2470	2715	2965	3210	3460	3950	4445	4940
Ak 2.47	Throw	26	33	39	46	52	59	65	72	78	85	91	104	114	130

Terminal Velocity of 75 FPM

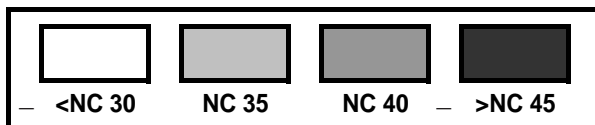


**ALH/ALV, ALHM/ALVM, ALHOB/ALVOB, ALHV/ALVH, ALHVOB/ALVHOB**  
Supply Register and Grilles

Deflection C

Face Velocity		400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000
Pressure Loss		.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249
8x4	CFM	55	70	85	100	115	125	140	155	170	185	195	225	255	280
Ak .141	Throw	5	6.5	7.5	9	10	11	13	14	15	17	18	20	23	25
10x4	CFM	70	90	105	125	140	160	180	195	215	230	250	285	320	355
Ak .178	Throw	5.5	7	8.5	10	11	13	14	16	17	18	20	23	26	29
12x4	CFM	85	110	130	150	175	195	215	240	260	280	300	345	390	430
Ak .216	Throw	6	8	9.5	11	13	14	16	18	19	20	22	25	28	31
14x4	CFM	100	125	150	180	205	230	255	280	305	330	355	405	455	510
Ak.254	Throw	7	8.5	10	12	14	16	17	19	21	22	24	27	31	34
12x5	CFM	110	140	165	195	225	250	280	305	335	365	390	445	500	560
Ak .279	Throw	7	9	11	13	14	16	18	20	22	23	25	29	32	36
10x6	CFM	115	140	170	195	225	255	280	310	340	365	395	450	510	565
Ak .282	Throw	7.5	9	11	12	14	16	18	20	22	23	25	29	33	36
14x5	CFM	130	165	195	230	260	295	330	360	395	425	460	525	590	655
Ak .328	Throw	7.5	10	12	14	15	17	20	21	23	25	27	31	35	39
12x6	CFM	135	170	205	240	275	310	340	375	410	445	480	545	615	685
Ak .342	Throw	8	10	12	14	16	18	20	22	24	26	28	32	36	40
16x5	CFM	150	190	225	265	300	340	375	415	450	490	525	605	680	755
Ak .377	Throw	8.5	11	12	15	17	19	21	23	25	27	29	34	38	41
14x6	CFM	165	205	245	290	330	370	410	455	495	535	575	660	740	825
Ak .412	Throw	9	11	13	16	18	22	22	24	27	28	31	35	40	44
16x6	CFM	185	230	275	325	370	415	460	510	555	600	645	740	830	925
Ak .462	Throw	9	11	13	15	18	20	22	24	26	28	31	35	39	44
20x5	CFM	190	235	285	330	380	425	475	520	570	615	665	760	855	950
Ak .474	Throw	9.5	12	14	16	19	21	23	26	28	30	33	38	42	47
24x5	CFM	230	285	345	400	460	515	570	630	685	745	800	915	1030	1145
Ak .572	Throw	10	13	15	18	21	23	26	28	33	33	36	41	46	51
20x6	CFM	230	290	350	405	465	525	580	640	695	755	815	930	1045	1160
Ak .581	Throw	10	13	16	18	21	23	26	29	31	34	36	41	47	52
24x6	CFM	280	350	420	490	560	630	700	770	840	910	980	1120	1260	1400
Ak .701	Throw	11	14	17	20	23	26	28	31	34	37	40	45	51	57
20x8	CFM	320	400	475	555	635	715	795	875	955	1035	1115	1270	1430	1590
Ak .795	Throw	12	15	18	21	24	27	30	33	36	39	42	48	54	61
30x6	CFM	350	440	530	615	705	790	880	970	1055	1145	1230	1410	1585	1760
Ak .880	Throw	13	16	19	22	26	29	32	35	38	41	46	51	57	64
24x8	CFM	385	480	575	670	765	865	960	1055	1150	1245	1345	1535	1725	1920
Ak .959	Throw	13	17	20	23	27	30	33	37	40	43	47	53	60	67
30x8	CFM	480	600	720	840	960	1080	1200	1320	1440	1560	1680	1920	2160	2400
Ak 1.20	Throw	15	19	22	26	30	33	37	41	45	48	52	60	67	74
24x10	CFM	490	610	730	855	975	1100	1220	1340	1465	1585	1710	1950	2200	2440
Ak 1.22	Throw	15	19	22	26	30	34	38	41	45	49	53	60	68	75
36x8	CFM	580	725	870	1015	1160	1305	1450	1595	1740	1885	2030	2320	2610	2900
Ak 1.45	Throw	16	20	25	29	33	37	41	45	49	53	57	65	74	82
24x12	CFM	590	735	880	1030	1175	1325	1470	1615	1765	1910	2060	2350	2645	2940
Ak 1.47	Throw	17	21	25	29	33	37	41	45	49	53	58	66	74	82
30x10	CFM	610	765	920	1070	1225	1375	1530	1685	1835	1990	2140	2450	2755	3060
Ak 1.53	Throw	17	21	25	29	34	38	42	46	50	55	59	67	76	84
36x10	CFM	735	920	1105	1290	1470	1655	1840	2025	2210	2390	2575	2945	3310	3680
Ak 1.84	Throw	18	23	28	32	37	42	46	51	55	60	65	74	83	92
30x12	CFM	740	925	1110	1295	1480	1665	1850	2035	2220	2405	2590	2960	3330	3700
Ak 1.85	Throw	19	23	28	32	37	42	46	51	56	60	65	74	83	93
36x12	CFM	890	1115	1340	1560	1785	2000	2230	2455	2675	2900	3120	3570	4015	4460
Ak 2.23	Throw	20	25	31	36	41	46	51	56	61	66	71	81	92	102

Terminal Velocity of 75 FPM



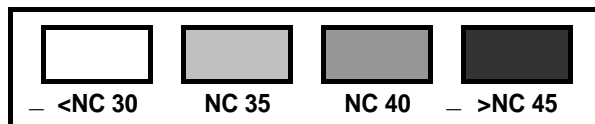


ALH/ALV, ALHM/ALVM, ALHOB/ALVOB, ALHV/ALVH, ALHVOB/ALVHOB  
Supply Register and Grilles

Deflection E

Table with columns for Face Velocity (400-2000) and Pressure Loss (.010-.249). Rows list various grille sizes (e.g., 8x4, 10x4, 12x4) and types (CFM, Throw) with corresponding performance values.

Terminal Velocity of 75 FPM



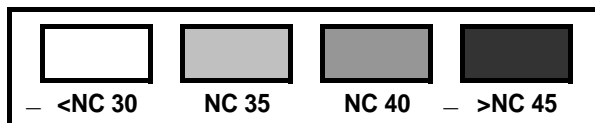


**ALH/ALV, ALHM/ALVM, ALHOB/ALVOB, ALHV/ALVH, ALHVOB/ALVHOB  
Supply Register and Grilles**

**Deflection G**

Face Velocity		400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000
Pressure Loss		.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249
8x4	CFM	45	60	70	85	95	105	120	130	140	155	165	190	210	235
Ak .118	Throw	2.5	3.5	4	5	5.5	6	6.5	7.5	8	8.5	9.5	11	12	13
10x4	CFM	60	75	90	105	120	135	150	165	180	195	210	240	270	300
Ak .149	Throw	3	3.5	4.5	5	6	6.5	7.5	8	9	9.5	10	12	13	15
12x4	CFM	70	90	110	125	145	165	180	200	215	235	255	290	325	360
Ak .181	Throw	3	4	5	5.5	6.5	7.5	8	9	10	11	12	13	15	16
14x4	CFM	85	105	125	150	170	190	210	235	255	275	300	340	380	425
Ak.212	Throw	3.5	4.5	5	6.5	7	8	9	10	11	12	13	14	16	18
12x5	CFM	95	115	140	165	185	210	235	255	280	305	325	375	420	465
Ak .233	Throw	4	4.5	5.5	6.5	7.5	8.5	9.5	10	11	12	13	15	17	19
10x6	CFM	95	120	140	165	190	210	235	260	285	305	330	380	425	470
Ak .236	Throw	4	5	5.5	6.5	7.5	8.5	9.5	10	11	12	13	15	17	19
14x5	CFM	110	135	165	190	220	245	275	300	330	355	385	440	495	550
Ak .274	Throw	4	5	6	7	8	9	10	11	12	13	14	16	18	20
12x6	CFM	115	145	170	200	230	255	285	315	345	370	400	460	515	570
Ak .286	Throw	4	5	6	7	8.5	9	10	11	12	13	14	17	19	21
16x5	CFM	125	160	190	220	250	285	315	345	380	410	440	505	565	630
Ak .315	Throw	4.5	5.5	6.5	7.5	8.5	10	11	12	13	14	15	17	19	22
14x6	CFM	135	170	200	235	270	300	335	370	405	435	470	540	605	670
Ak .336	Throw	4.5	5.5	6.5	8	9	10	11	12	13	13	16	18	20	22
16x6	CFM	155	195	230	270	310	345	385	425	465	500	540	620	695	770
Ak .386	Throw	4.5	5.5	6.5	8	9	10	11	12	14	15	16	18	20	23
20x5	CFM	160	200	240	280	320	355	395	435	475	515	555	635	715	795
Ak .397	Throw	5	6	7.5	8.5	10	11	12	13	15	16	17	19	22	24
24x5	CFM	190	240	285	335	380	430	480	525	575	620	670	765	860	955
Ak .478	Throw	5.5	6.5	8	9.5	11	12	13	15	16	17	19	21	24	27
20x6	CFM	195	245	290	340	390	435	485	535	585	630	680	780	875	970
Ak .486	Throw	5.5	7	8	9.5	11	12	13	15	16	17	19	22	24	27
24x6	CFM	235	295	350	410	470	525	585	645	705	760	820	940	1055	1170
Ak .586	Throw	6	7.5	9	10	12	13	15	16	18	19	21	24	27	29
20x8	CFM	265	335	400	465	530	600	665	730	800	865	930	1065	1195	1330
Ak .665	Throw	6.5	8	9.5	11	13	14	16	17	19	21	22	25	28	32
30x6	CFM	295	370	440	515	590	660	735	810	885	955	1030	1180	1325	1470
Ak .736	Throw	6.5	8.5	10	12	13	15	17	18	20	21	23	27	30	33
24x8	CFM	320	400	480	560	640	720	800	880	960	1045	1125	1285	1445	1605
Ak .802	Throw	7	8.5	10	12	14	15	17	19	21	22	24	28	31	35
30x8	CFM	405	505	605	705	810	910	1010	1110	1210	1315	1415	1615	1820	2020
Ak 1.01	Throw	8	9.5	12	14	16	17	19	21	23	25	27	31	35	39
24x10	CFM	410	510	610	715	815	920	1020	1120	1225	1325	1430	1630	1835	2040
Ak 1.02	Throw	8	9.5	12	14	16	18	19	21	23	25	27	31	35	40
36x8	CFM	485	605	725	845	970	1090	1210	1330	1450	1575	1695	1935	2180	2420
Ak 1.21	Throw	8.5	11	13	15	17	19	21	23	25	28	30	34	38	42
24x12	CFM	490	615	740	860	985	1105	1230	1355	1475	1600	1720	1970	2215	2460
Ak 1.23	Throw	8.5	11	13	15	17	19	21	24	26	28	30	34	39	43
30x10	CFM	510	640	770	900	1025	1150	1280	1410	1535	1665	1790	2050	2305	2560
Ak 1.28	Throw	8.5	11	13	15	18	20	22	24	26	28	31	35	39	44
36x10	CFM	615	770	925	1080	1230	1385	1540	1695	1850	2000	2155	2465	2770	3080
Ak 1.54	Throw	9.5	12	14	17	19	22	24	26	29	31	34	38	43	48
30x12	CFM	620	775	930	1085	1240	1395	1550	1705	1860	2015	2170	2480	2790	3100
Ak 1.55	Throw	9.5	12	14	17	19	22	24	26	29	31	34	38	43	48
36x12	CFM	745	930	1115	1300	1490	1675	1860	2045	2230	2420	2605	2975	3350	3720
Ak 1.86	Throw	11	13	16	18	21	24	26	29	31	34	37	42	47	52

Terminal Velocity of 75 FPM





PERFORMANCE DATA—LIGHT COMMERCIAL

ALHR90 / ALHR90OBD
Return Air Registers and Grilles

Table with columns for Avg. Face Velocity\* (400-1000) and rows for various grille sizes (6x6 to 48x48) and types (CFM, Ps).

ALH45FF and ALHR45 / ALHR45OBD
Return Air Registers and Grilles

Table with columns for Avg. Face Velocity\* (400-1000) and rows for various grille sizes (6x6 to 48x48) and types (CFM, Ps).

\*Velocity measured 1 inch from face. Multiple readings are taken in face areas not exceeding 6" x 6", but in no case less than 6 readings, to ensure a representative CFM = Ak x Average Measured Velocity.



**ALC / ALCML / ALCOBD Curved-Blade Diffusers**

**Selection Procedure**

1. Determine the diffuser air pattern best suited to the duct layout and room area to be served.
2. Select the air pattern type and CFM per outlet. The ALC tables gives the recommended limits of air volume per outlet for various ceiling heights. Choose the correct table for the style diffuser selected. Outlets are assumed to be mounted flush on the ceiling with no obstruction to the air stream.
3. Turn to the proper SIZE TABLE for the air pattern desired.
4. Determine the appropriate size based on the CFM, Throw, Pressure Loss, and Face Velocity requirements.

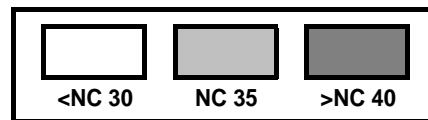
**One-Way, Two Way**

Face Velocity		400	500	600	700	800	900	1000	1100	1200
Pressure Loss		.010	.016	.022	.031	.040	.050	.062	.075	.090
6 x 6	CFM	0.35	45	55	65	70	80	90	100	110
Ak .09	Throw 1/2	3.5/2.5	5/3.5	6/4	7/5	7.5/5.5	8.5/6	9.5/7	11/7.5	11.5/8.5
8 x 6	CFM	40	50	60	70	80	90	100	110	120
Ak .10	Throw 1/2	3.5/2.5	4.5/3	5.5/4	6.5/4.5	7/5	8/6	9/6.5	10/7	11/7.5
10 x 6	CFM	60	75	90	105	120	135	150	165	180
Ak .15	Throw 1/2	5/3.5	6/4.5	7/5	8.5/6	9.5/7	11/7.5	12/8.5	13/9.5	14/10
8 x 8	CFM	65	80	95	110	130	145	160	175	190
Ak .16	Throw 1/2	5/3.5	6/4.5	7.5/5	8.5/6	10/7	11/8	12/9	14/9.5	15/10
12 x 6	CFM	70	90	110	125	145	160	180	200	215
Ak .18	Throw 1/2	5/3.5	6.5/4.5	8/5.5	9/6.5	11/7.5	12/8.5	13/9.5	15/10	16/11
14 x 6	CFM	85	105	125	145	170	190	210	230	250
Ak .21	Throw 1/2	5.5/4	7/5	8.5/6	10/7	11/8	13/9	14/10	16/11	17/12
10 x 10	CFM	95	120	145	170	190	215	240	265	290
Ak .24	Throw 1/2	6/4	7.5/5	9/6.5	10/7.5	12/8	13/9.5	15/10	16/11	18/13
12 x 10	CFM	115	145	175	205	230	260	290	320	350
Ak .29	Throw 1/2	6.5/4.5	8/5.5	9.5/7	11/8	13/9	14/10	16/11	18/13	19/14
16 x 8	CFM	125	155	185	215	250	280	310	340	370
Ak .31	Throw 1/2	6.5/5	8.5/6	10/7	12/8	13/9.5	15/11	17/12	18/13	20/14
12 x 12	CFM	140	175	210	245	280	315	350	385	420
Ak .35	Throw 1/2	7/5	9/6	11/7.5	12/8.5	14/10	16/11	18/12	19/14	21/15
16 x 12	CFM	185	230	275	320	370	415	460	505	550
Ak .46	Throw 1/2	8/5.5	10/7	12/8.5	14/10	16/11	18/13	20/14	22/16	24/17
14 x 14	CFM	190	240	290	335	385	430	480	530	575
Ak .48	Throw 1/2	8/5.5	10/7.5	12/9	14/10	17/12	18/13	21/15	23/16	25/17
16 x 16	CFM	250	315	380	440	505	565	630	695	755
Ak .63	Throw 1/2	9.5/6.5	12/8.5	14/10	16/12	19/13	21/15	23/17	26/18	28/20
20 x 14	CFM	270	340	410	475	545	610	680	750	815
Ak .68	Throw 1/2	9.5/7	12/8.5	15/10	17/12	19/14	22/15	24/17	27/19	29/21
24 x 12	CFM	280	350	420	490	560	630	700	770	840
Ak .70	Throw 1/2	10/7	12/8.5	15/10	17/12	20/14	22/16	25/17	27/19	30/21
30 x 10	CFM	290	365	440	510	585	655	730	805	875
Ak .73	Throw 1/2	10/7	13/9	15/11	18/12	20/14	23/16	25/18	28/20	30/21
36 x 10	CFM	350	440	530	615	705	790	880	970	1055
Ak .88	Throw 1/2	11/8	14/10	17/12	19/14	22/16	25/18	28/20	31/22	33/24
36 x 12	CFM	420	525	630	735	840	945	1050	1155	1260
Ak 1.05	Throw 1/2	12/8.5	15/11	18/13	21/15	24/17	27/19	30/21	33/23	36/25
30 x 16	CFM	460	575	690	805	920	1035	1150	1265	1380
Ak 1.15	Throw 1/2	12/9	16/11	19/13	22/15	25/18	28/20	31/22	34/24	37/26
36 x 16	CFM	560	700	840	980	1120	1260	1400	1540	1680
Ak 1.40	Throw 1/2	14/9.5	17/12	21/15	24/17	27/19	31/22	34/24	38/27	41/29

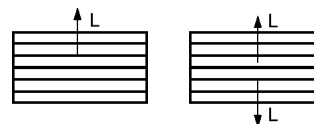
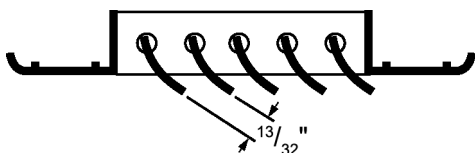
Terminal Velocity of 75 FPM

**Curved-Blade - ALC Series**

Ceiling Height in Feet	Maximum Cooling Temperature Differential (°F)	Maximum CFM per Outlet			
		1-way	2-way	3-way	4-way
7	15°	75	150	225	300
8	18°	100	200	300	400
9	20°	200	400	600	800
10	22°	300	600	900	1200
11	25°	400	800	1200	1600
12	25°	500	1000	1500	2000
14	25°	700	1400	2100	2800
16	25°	900	1800	2700	3600



The Face Bars on the Curved-Blade Diffuser should be preset to the dimension shown below.



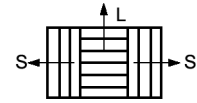


**PERFORMANCE DATA—LIGHT COMMERCIAL**

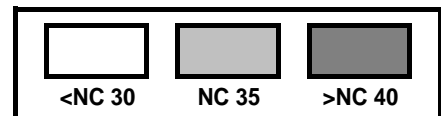
**ALC / ALCML / ALCOBD Curved-Blade Diffusers**

**Three-Way**

Face Velocity		400	500	600	700	800	900	1000	1100	1200
Pressure Loss		.010	.016	.022	.031	.040	.050	.062	.075	.090
6 x 6 Ak .09	Total CFM	35	45	55	65	70	80	90	100	110
	CFM L/S	9/13	11/17	15/20	17/24	18/26	22/29	24/33	26/37	30/40
	Throw L/S	2/2	2.5/3	3/3.5	3.5/4	4/4.5	4.5/5	5/6	5.5/6.5	6/7
8 x 6 Ak .10	Total CFM	40	50	60	70	80	90	100	110	120
	CFM L/S	18/11	24/13	28/16	32/19	36/22	42/24	46/27	50/30	56/32
	Throw L/S	2.5/2	3/2.5	3.5/3	4.5/3.5	5/4	5.5/4.5	6/5	7/5	7.5/5.5
10 x 6 Ak .15	Total CFM	60	75	90	105	120	135	150	165	180
	CFM L/S	22/19	27/24	32/29	39/33	44/38	49/43	54/48	61/52	66/57
	Throw L/S	3/2.5	3.5/3	4.5/4	5/4.5	6/5	6.5/5.5	7/6.5	8/7	9/7.5
8 x 8 Ak .16	Total CFM	65	80	95	110	130	145	160	175	190
	CFM L/S	31/17	36/22	43/26	50/30	60/35	67/39	74/43	81/47	88/51
	Throw L/S	3.5/2.5	4/3.5	5/4	5.5/4.5	7/5	7.5/6	8.5/6.5	9/7	10/7.5
12 x 6 Ak .18	Total CFM	70	90	110	125	145	160	180	200	215
	CFM L/S	20/25	26/32	32/39	37/44	43/51	48/56	54/63	60/70	65/75
	Throw L/S	2.5/3	3.5/4	4.5/5	5/5.5	5.5/6.5	6.5/7	7/8	8/8.5	8.5/9.5
14 x 6 Ak .21	Total CFM	85	105	125	145	170	190	210	230	250
	CFM L/S	21/32	27/39	31/47	37/54	44/63	48/71	54/78	58/86	64/93
	Throw L/S	2.5/3.5	3.5/4.5	4/5	5/6	6/7	6.5/8	7/8.5	8/9.5	17/12
10 x 10 Ak .24	Total CFM	95	120	145	170	190	215	240	265	290
	CFM L/S	35/30	44/38	53/46	62/54	70/60	79/68	88/76	97/84	106/92
	Throw L/S	3.5/3	4.5/4	5.5/5	6/6	7/6.5	8/7.5	9/8	10/9	11/10
12 x 10 Ak .29	Total CFM	115	145	175	205	230	260	290	320	350
	CFM L/S	35/40	44/51	53/61	62/72	70/80	78/91	88/101	96/112	106/122
	Throw L/S	3.5/4	4.5/5	5.5/5.5	6.5/7	7/7.5	8/8.5	9/9.5	9.5/11	11/11
16 x 8 Ak .31	Total CFM	125	155	185	215	250	280	310	340	370
	CFM L/S	43/41	55/50	65/60	75/70	88/81	98/91	108/101	120/110	130/120
	Throw L/S	4/4	5/4.5	6/5.5	7/6.5	8/7.5	9/8.5	10/9.5	11/10	12/11
12 x 12 Ak .35	Total CFM	140	175	210	245	280	315	350	385	420
	CFM L/S	42/49	53/61	62/74	73/86	84/98	95/110	105/123	115/135	126/147
	Throw L/S	4/4	5/5	6/6.5	6.5/7.5	7.5/8.5	8.5/9.5	9.5/10	11/11	13/13
16 x 12 Ak .46	Total CFM	185	230	275	320	370	415	460	505	550
	CFM L/S	65/60	80/75	97/89	113/104	130/120	146/134	162/149	178/164	194/178
	Throw L/S	4.5/4.5	6/5.5	7/7	8.5/8	9.5/9	11/10	12/11	13/12	14/14
14 x 4 Ak .48	Total CFM	190	240	290	335	385	430	480	530	575
	CFM L/S	48/71	62/89	74/108	86/125	99/143	110/160	123/179	136/197	147/214
	Throw L/S	4/5	5/6.5	6.5/7.5	7.5/9	8.5/10	9.5/11	10/13	12/14	13/15
16 x 16 Ak .63	Total CFM	250	315	380	440	505	565	630	695	755
	CFM L/S	88/81	111/102	134/123	155/143	178/164	199/183	222/204	245/225	266/245
	Throw L/S	5.5/5.5	7/7	8.5/8	9.5/9.5	11/11	13/12	14/13	15/15	17/16
20 x 14 Ak .68	Total CFM	270	340	410	475	545	610	680	750	815
	CFM L/S	76/97	95/122	115/148	133/171	153/196	171/220	190/245	210/270	228/293
	Throw L/S	5/6	6.5/7	7.5/9	9/10	10/12	12/13	13/15	14/16	15/17
24 x 12 Ak .70	Total CFM	280	350	420	490	560	630	700	770	840
	CFM L/S	90/95	112/119	134/143	156/167	178/191	200/215	222/239	244/263	268/286
	Throw L/S	5.5/5.5	7/7	8.5/8.5	9.5/10	11/12	12/13	14/14	15/16	17/17
30 x 10 Ak .73	Total CFM	290	365	440	510	585	655	730	805	875
	CFM L/S	92/99	117/124	140/150	164/173	187/199	210/223	234/248	258/274	280/298
	Throw L/S	5.5/6	7/7.5	8.5/9	10/10	11/12	13/13	14/15	16/16	17/18
36 x 10 Ak .88	Total CFM	350	440	530	615	705	790	880	970	1055
	CFM L/S	113/118	143/149	172/179	199/208	228/238	256/267	285/297	314/328	342/357
	Throw L/S	6.5/6.5	8/8	9.5/9.5	11/11	13/13	14/14	16/16	17/18	19/19
36 x 12 Ak 1.05	Total CFM	420	525	630	735	840	945	1050	1155	1260
	CFM L/S	135/142	169/178	203/214	237/249	270/285	304/320	338/356	372/392	406/427
	Throw L/S	7/7	8.5/9	10/11	12/12	14/14	15/16	17/18	19/19	20/21
30 x 16 Ak 1.15	Total CFM	460	575	690	805	920	1035	1150	1265	1380
	CFM L/S	148/156	183/196	220/235	258/274	295/313	331/352	368/391	405/430	442/469
	Throw L/S	7/7	9/9	10/11	12/13	14/15	16/16	18/18	19/20	21/22
36 x 16 Ak 1.40	Total CFM	560	700	840	980	1120	1260	1400	1540	1680
	CFM L/S	180/190	226/237	270/285	316/332	360/380	406/427	450/475	496/522	540/570
	Throw L/S	8/8	10/10	12/12	14/14	16/16	18/18	19/20	21/22	23/24



Terminal Velocity of 75 FPM

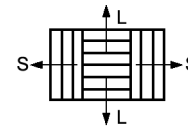




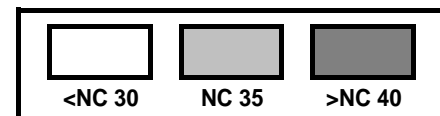
ALC / ALCML / ALCOBD Curved-Blade Diffusers

Four-Way

Face Velocity		400	500	600	700	800	900	1000	1100	1200
<b>Pressure Loss</b>		<b>.010</b>	<b>.016</b>	<b>.022</b>	<b>.031</b>	<b>.040</b>	<b>.050</b>	<b>.062</b>	<b>.075</b>	<b>.090</b>
6 x 6 Ak .09	Total CFM	35	45	55	65	70	80	90	100	110
	CFM L/S	5/13	6/17	7/20	9/24	9/26	11/29	12/33	13/37	15/40
	Throw L/S	1.5/2	1.5/3	2/3.5	2.5/4	2.5/4.5	3.5	3.5/6	4/6.5	4.5/7
8 x 6 Ak .10	Total CFM	40	50	60	70	80	90	100	110	120
	CFM L/S	9/11	12/13	14/16	16/19	18/22	21/24	23/27	25/30	28/32
	Throw L/S	1.5/1.5	2.5/2	2.5/2.5	3/2.5	3.5/3	4/3.5	4.5/4	4.5/4.5	5.5/4.5
10 x 6 Ak .15	Total CFM	60	75	90	105	120	135	150	165	180
	CFM L/S	11/19	14/24	16/29	19/33	22/38	25/43	27/48	30.52	33/57
	Throw L/S	2/2.5	2.5/3.5	3/4	3.5/4.5	4/5.5	4.5/6	5/7	5.5/7.5	6/8
8 x 8 Ak .16	Total CFM	65	80	95	110	130	145	160	175	190
	CFM L/S	15/17	18/22	22/26	25/30	30/35	33/39	37/43	40/47	44/51
	Throw L/S	2.5/2	3/2.5	3.5/3	4/3.5	5/4.5	5.5/5	6/5.5	6.5/6	7/6.5
12 x 6 Ak .18	Total CFM	70	90	110	125	145	160	180	200	215
	CFM L/S	10/25	13/32	16/39	19/44	22/51	24/56	27/63	30/70	32.75
	Throw L/S	2/3	2.5/4	3/5	3.5/5.5	4/6.5	4.5/7	5/8	5.5/8.5	6/9.5
14 x 6 Ak .21	Total CFM	85	105	125	145	170	190	210	230	250
	CFM L/S	11/32	13/39	16/47	18/54	22/63	24/71	27/78	29/86	32/93
	Throw L/S	2/3.5	2.5/4.5	3/5	3.5/6	4/7	4.5/8	5/8.5	5.5/9.5	6/10
10 x 10 Ak .24	Total CFM	95	120	145	170	190	215	240	265	290
	CFM L/S	17/30	22/38	26/46	31/54	35/60	39/68	44/76	48/84	53/92
	Throw L/S	2.5/3	3/4	3.5/5	4.5/6	5/6.5	5.5/7.5	6.5/8	7/9	7.5/10
12 x 10 Ak .29	Total CFM	115	145	175	205	230	260	290	320	350
	CFM L/S	17/40	22/51	26/61	31/72	35/80	39/91	44/101	48/112	53.122
	Throw L/S	2.5/4	3/5	3.5/5.5	4.5/7	5/7.5	5.5/8.5	6.5/9.5	7/11	7.5/11
16 x 8 Ak .31	Total CFM	125	155	185	215	250	280	310	340	370
	CFM L/S	22/41	27/50	33/60	38/70	44/81	49/91	55/100	60/110	65/120
	Throw L/S	3/4	3.5/4.5	4/5.5	5/6.5	5.5/7.5	6.5/8.5	7/9.5	7.5/10	8.5/11
12 x 12 Ak .35	Total CFM	140	175	210	245	280	315	350	385	420
	CFM L/S	21/49	26.61	31/74	37/86	42.98	47/110	52/123	58/135	63/147
	Throw L/S	2.5/4	3.5/5	4/6.5	5/7.5	5.5/8.5	6/9.5	7/10	7.5/11	8/13
16 x 12 Ak .46	Total CFM	185	230	275	320	370	415	460	505	550
	CFM L/S	33/60	40/75	48/89	56/104	65/120	73.135	81/149	89/164	97/178
	Throw L/S	3.5/4.5	4/5.5	5/7	6/8	7/9	7.5/10	8.5/11	9/12	10/14
14 x 4 Ak .48	Total CFM	190	240	290	335	385	430	480	530	575
	CFM L/S	24/71	31/89	37/108	43/125	49/143	55/160	61/179	68/197	74/214
	Throw L/S	3/5	3.5/6.5	4.5/7.5	5/9	6/10	6.5/11	7.5/13	8/14	9/15
16 x 16 Ak .63	Total CFM	250	315	380	440	505	565	630	695	755
	CFM L/S	44/81	55/102	67/123	77/143	89/164	99/183	111/204	122/225	133/245
	Throw L/S	4/5.5	5/6.5	6/8	7/9.5	8/11	9/12	10/13	11/15	12/16
20 x 14 Ak .68	Total CFM	270	340	410	475	545	610	680	750	815
	CFM L/S	38/97	48/122	57/148	67/171	76/196	85/220	95/245	105/270	114/293
	Throw L/S	3.5/6	4.5/7	5.5/9	6.5/10	7/12	8/13	9/15	10/16	11/17
24 x 12 Ak .70	Total CFM	280	350	420	490	560	630	700	770	840
	CFM L/S	45/95	56/119	67/143	78/167	89/191	100/215	111/239	122/263	134/286
	Throw L/S	4/5.5	5/7	6/8.5	7/10	8/12	9/13	10/14	11/16	12/17
30 x 10 Ak .73	Total CFM	290	365	440	510	585	655	730	805	875
	CFM L/S	46/99	58/124	70/150	82/173	94/199	105/223	117/248	129/274	140/298
	Throw L/S	4/6	5/7.5	6/9	7/10	8/12	9/13	10/15	11/16	12/18
36 x 10 Ak .88	Total CFM	350	440	530	615	705	790	880	970	1055
	CFM L/S	57/118	71/149	86/179	100/208	114/238	128/267	143/297	157/328	171/357
	Throw L/S	4.5/6.5	5.5/8	6.5/9.5	8/11	9/13	10/14	11/16	12/18	13/19
36 x 12 Ak 1.05	Total CFM	420	525	630	735	840	945	1050	1155	1260
	CFM L/S	67/142	85/178	101/214	118/249	135/285	152/320	169/356	186/392	203/427
	Throw L/S	5/7	6/9	7/11	8.5/12	9.5/14	11/16	12/18	13/19	14/21
30 x 16 Ak 1.15	Total CFM	460	575	690	805	920	1035	1150	1265	1380
	CFM L/S	74/156	92/196	110/235	129/274	147/313	166/352	184/391	202/430	221/469
	Throw L/S	5/7	6/9	7.5/11	8.5/13	10/15	11/16	12/18	14/20	15/22
36 x 16 Ak 1.40	Total CFM	560	700	840	980	1120	1260	1400	1540	1680
	CFM L/S	90/190	113/237	135/285	158/332	180/380	203/427	225/475	248/522	270/570
	Throw L/S	5.5/8	7/10	8.5/12	9.5/14	11/16	12/18	14/20	15/22	17/24



Terminal Velocity of 75 FPM





**ALHR45T and ALH45TFF  
T-Bar Return Air Grilles and Filter Grilles**

Type and Size		Average Face Velocity FPM							
		300	400	500	600	700	800	900	1000
<b>ALHR45T</b>									
22x22	CFM	785	1045	1305	1565	1825	2090	2350	2610
Ak 2.61	-Ps	.015	.030	.043	.062	.084	.120	.140	.170
46x22	CFM	1635	2180	2725	3270	3815	4360	4905	5450
Ak 5.46	-Ps	.015	.030	.040	.059	.081	.116	.136	.165
<b>ALH45TFF</b>									
20x20	CFM	650	870	1085	1300	1520	1735	1955	2170
Ak 2.17	-Ps	.015	.025	.040	.060	.080	.105	.135	.152
44x20	CFM	1430	1910	2385	2860	3340	3815	4295	4770
Ak 4.77	-Ps	.015	.024	.039	.058	.078	.103	.132	.148

# PERFORMANCE DATA—LIGHT COMMERCIAL



## Models 291, 292, 293, 294

Static Pressure in H <sub>2</sub> O Neck Velocity (FPM)	4" Height								5" Height								6" Height							
	.033	.055	.088	.130	.173	.224	.287	.355	.033	.055	.088	.130	.173	.224	.287	.355	.033	.055	.088	.130	.173	.224	.287	.355
Noise Criteria	<30	30	33	35	37	39	42	46	<30	30	33	35	38	40	42	46	<30	30	33	37	39	42	47	50
CFM	87	89	111	134	156	178	200	223	84	111	139	167	195	223	250	278	100	134	167	201	234	268	301	334
1-Way Throw (ft)	13	18	23	28	32	36	40	43	14	19	24	29	34	38	42	45	15	20	25	30	35	40	44	48
2-Way Throw (ft)	12	15	19	23	27	30	33	37	13	17	20	25	28	31	35	38	13	17	21	26	29	33	37	41
3-Way Throw (ft)	11	14	17	21	24	27	30	33	12	15	18	22	25	28	32	35	12	15	19	23	27	30	33	37
4-Way Throw (ft)	10	13	16	19	22	25	28	31	11	13	16	20	24	27	30	33	11	14	17	21	25	28	31	34
Noise Criteria	<30	30	34	36	38	40	43	47	<30	30	34	36	38	40	43	47	<30	30	34	37	40	44	47	50
CFM	94	111	139	167	195	223	250	278	104	139	174	209	243	278	313	348	125	167	208	250	282	334	375	417
1-Way Throw (ft)	14	19	24	29	34	38	42	45	15	20	25	30	35	40	44	48	16	21	26	31	36	42	46	50
2-Way Throw (ft)	13	16	20	25	28	32	35	39	13	17	21	26	29	33	37	40	14	18	22	27	30	35	39	42
3-Way Throw (ft)	12	15	18	22	25	28	32	35	12	15	19	23	26	30	33	37	13	16	20	25	27	31	35	39
4-Way Throw (ft)	11	13	17	20	24	26	30	33	11	14	17	21	25	28	31	35	12	15	19	23	26	29	32	36
Noise Criteria	<30	30	34	36	38	42	45	48	<30	30	35	37	39	42	46	50	<30	30	35	37	41	45	48	51
CFM	100	134	167	210	234	268	301	334	125	167	208	250	282	334	375	417	150	200	250	300	350	400	450	500
1-Way Throw (ft)	15	20	25	30	35	40	44	48	16	21	26	31	36	42	46	50	17	22	27	33	38	44	48	52
2-Way Throw (ft)	13	17	21	26	29	33	37	40	14	18	22	27	30	35	39	42	14	19	23	28	32	37	41	44
3-Way Throw (ft)	12	15	19	23	26	30	33	37	13	16	20	24	27	31	35	39	13	17	21	26	29	33	37	41
4-Way Throw (ft)	11	14	18	21	25	27	31	34	12	15	18	22	26	29	32	36	12	16	20	24	27	30	34	37
Noise Criteria	<30	30	35	38	40	42	46	51	<30	30	36	38	40	43	46	52	<30	30	36	39	42	46	48	53
CFM	117	156	194	233	272	311	350	389	146	195	243	282	340	389	438	486	175	233	292	350	408	466	525	584
1-Way Throw (ft)	16	21	26	31	36	41	46	50	18	22	28	33	38	44	48	52	18	23	29	34	40	46	50	54
2-Way Throw (ft)	14	18	22	26	30	34	38	42	14	18	24	27	32	36	40	44	15	20	25	29	33	38	42	46
3-Way Throw (ft)	12	16	20	24	27	31	35	38	13	17	21	25	28	32	36	40	14	17	22	26	30	34	38	42
4-Way Throw (ft)	11	15	18	22	26	28	32	35	12	16	19	23	27	30	34	37	13	16	20	25	28	31	35	39
Noise Criteria	<30	30	35	38	41	43	47	52	<30	30	36	38	41	43	47	52	<30	30	36	39	42	46	50	53
CFM	133	178	222	267	311	356	400	444	167	222	278	333	389	444	500	555	200	267	334	400	467	537	600	668
1-Way Throw (ft)	17	22	27	32	38	42	48	52	19	23	29	35	40	46	50	54	19	24	30	36	42	47	51	56
2-Way Throw (ft)	14	18	23	27	31	34	40	43	15	19	25	28	33	37	42	46	16	20	25	30	34	39	43	48
3-Way Throw (ft)	13	16	20	25	28	32	36	39	13	17	22	26	30	33	37	41	14	18	23	27	31	35	39	43
4-Way Throw (ft)	12	15	19	23	26	30	33	37	12	16	20	24	27	31	35	38	13	17	21	25	29	32	36	40
Noise Criteria	<30	30	35	38	41	43	47	52	<30	30	36	39	42	44	47	52	<30	30	36	39	43	46	51	54
CFM	150	200	250	300	350	400	450	500	188	250	313	376	438	500	564	626	225	300	375	450	525	600	675	750
1-Way Throw (ft)	18	23	28	34	39	44	49	53	19	24	30	36	41	48	51	56	20	25	31	37	44	49	52	58
2-Way Throw (ft)	15	19	24	28	32	36	41	44	16	20	25	29	34	38	43	47	16	21	25	31	35	40	44	50
3-Way Throw (ft)	13	17	21	26	29	32	37	40	14	18	22	27	30	35	38	42	14	18	24	28	32	36	41	44
4-Way Throw (ft)	12	16	20	24	27	30	34	38	13	17	21	25	28	32	36	40	13	17	22	26	30	33	37	41
Noise Criteria	<30	30	35	38	42	44	48	52	<30	30	36	39	42	44	48	52	<30	30	37	39	43	46	51	54
CFM	167	222	278	333	389	444	500	555	208	278	347	417	486	555	625	695	250	334	416	500	584	666	750	844
1-Way Throw (ft)	19	24	29	35	40	46	50	54	19	25	31	37	43	49	52	57	20	26	32	38	45	50	56	61
2-Way Throw (ft)	15	20	25	28	33	37	42	46	16	21	26	30	35	39	44	48	17	22	27	32	36	41	46	51
3-Way Throw (ft)	13	17	22	26	30	33	38	41	14	18	23	27	31	36	40	43	15	20	25	28	33	37	42	46
4-Way Throw (ft)	12	16	20	25	27	31	35	38	13	17	22	26	29	33	37	41	13	18	22	27	31	35	38	42
Noise Criteria	<30	30	35	38	43	45	49	53	<30	30	36	39	43	45	49	53	<30	30	36	40	44	47	51	54
CFM	200	267	333	400	467	534	600	667	250	334	416	500	584	666	750	844	300	400	500	600	700	800	900	1000
1-Way Throw (ft)	19	25	30	36	43	48	52	56	20	26	32	38	45	50	56	61	21	27	34	40	47	52	59	63
2-Way Throw (ft)	16	21	26	30	35	40	43	48	17	22	27	31	36	41	46	51	17	23	28	33	38	43	48	53
3-Way Throw (ft)	14	18	23	27	31	35	39	43	15	19	24	28	33	37	41	46	15	20	26	30	34	38	43	48
4-Way Throw (ft)	13	17	21	26	29	33	36	40	14	18	23	27	31	35	38	42	14	19	24	28	32	36	40	44
Noise Criteria	<30	30	35	39	44	47	51	55	<30	30	38	39	44	47	52	56	<30	30	38	40	45	48	53	56
CFM	250	334	416	500	584	666	750	844	313	417	522	625	730	835	940	1040	375	500	625	750	875	1000	1125	1250
1-Way Throw (ft)	20	26	32	38	45	50	56	61	21	27	35	40	47	52	59	63	22	28	36	42	49	57	63	67
2-Way Throw (ft)	17	22	27	31	36	41	46	51	17	23	28	33	38	43	48	53	18	24	30	35	40	45	51	57
3-Way Throw (ft)	15	19	24	28	32	37	41	46	15	20	26	30	35	39	43	49	16	21	27	31	36	41	46	51
4-Way Throw (ft)	14	18	23	27	31	35	38	42	14	19	24	28	32	37	41	45	15	20	25	29	33	38	42	47
Noise Criteria	<30	30	36	40	45	48	52	56	<30	30	38	39	45	48	52	57	<30	30	38	41	46	49	54	57
CFM	300	400	500	600	700	800	900	1000	375	500	625	750	875	1000	1125	1250	450	600	750	900	1050	1200	1350	1500
1-Way Throw (ft)	21	27	34	40	47	51	59	63	22	28	36	42	49	57	63	67	23	30	37	44	50	59	65	71
2-Way Throw (ft)	17	23	28	33	38	43	48	53	18	24	29	35	40	45	51	56	19	25	31	36	42	47	53	60
3-Way Throw (ft)	16	20	26	30	34	38	43	48	16	21	27	31	36	41	45	51	17	22	28	33	38	42	48	53
4-Way Throw (ft)	14	19	24	28	32	36	40	44	15	20	25	29	34	38	42	47	16	21	26	30	35	40	44	50
Noise Criteria	<30	30	37	41	46	49	53	57	<30	30	38	41	46	49	54	57	<30	30	39	42	47	50	55	58
CFM	400																							



# PERFORMANCE DATA—LIGHT COMMERCIAL

## Models 291, 292, 293, 294

	8" Height								10" Height								12" Height							
	.033	.055	.088	.130	.173	.224	.287	.355	.033	.055	.088	.130	.173	.224	.287	.355	.033	.055	.088	.130	.173	.224	.287	.355
Static Pressure in H <sub>2</sub> O Neck Velocity (FPM)	300	400	500	600	700	800	900	1000	300	400	500	600	700	800	900	1000	300	400	500	600	700	800	900	1000
<b>Noise Criteria</b>	<30	30	35	37	42	44	48	50	<30	30	35	39	44	47	50	53	<30	30	35	41	45	49	52	55
<b>8" Width</b>																								
CFM	133	178	222	267	311	356	400	444	133	178	222	267	311	356	400	444	133	178	222	267	311	356	400	444
1-Way Throw (ft)	16	21	27	32	38	42	48	52	16	21	27	32	38	42	48	52	16	21	27	32	38	42	48	52
2-Way Throw (ft)	14	18	23	27	31	35	40	43	14	18	23	27	31	35	40	43	14	18	23	27	31	35	40	43
3-Way Throw (ft)	13	16	21	25	28	32	36	40	13	16	21	25	28	32	36	40	13	16	21	25	28	32	36	40
4-Way Throw (ft)	12	15	19	23	26	30	33	36	12	15	19	23	26	30	33	36	12	15	19	23	26	30	33	36
<b>Noise Criteria</b>	<30	30	35	38	43	46	49	52	<30	30	35	39	44	47	50	53	<30	30	35	41	45	49	52	55
<b>10" Width</b>																								
CFM	167	222	278	333	389	444	500	555	208	278	347	417	486	555	625	695	208	278	347	417	486	555	625	695
1-Way Throw (ft)	17	23	29	35	40	46	50	54	19	25	31	37	43	49	52	57	19	25	31	37	43	49	52	57
2-Way Throw (ft)	15	19	25	28	33	37	42	46	16	21	26	30	35	40	44	49	16	21	26	30	35	40	44	49
3-Way Throw (ft)	13	17	22	25	30	33	37	42	14	18	23	27	31	35	40	44	14	18	23	27	31	35	40	44
4-Way Throw (ft)	12	16	20	24	28	31	35	39	13	17	21	25	29	33	37	41	13	17	21	25	29	33	37	41
<b>Noise Criteria</b>	<30	30	36	39	43	47	51	54	<30	30	37	40	44	46	51	54	<30	30	35	41	45	49	52	55
<b>12" Width</b>																								
CFM	200	267	333	400	467	534	600	637	250	334	416	500	584	666	750	844	300	400	500	600	700	800	900	1000
1-Way Throw (ft)	18	24	30	36	42	48	52	56	20	26	32	38	45	50	56	61	21	27	34	40	47	52	59	63
2-Way Throw (ft)	16	20	25	30	35	39	43	48	17	22	27	32	36	42	46	51	17	22	28	33	38	43	48	53
3-Way Throw (ft)	14	18	23	27	31	35	39	43	15	19	24	28	33	37	42	46	15	20	26	30	34	38	43	48
4-Way Throw (ft)	13	17	21	25	29	33	36	41	13	18	22	26	30	35	38	42	13	18	24	28	32	36	40	44
<b>Noise Criteria</b>	<30	30	37	39	43	47	51	54	<30	30	37	41	44	48	52	56	<30	30	37	42	45	50	53	57
<b>14" Width</b>																								
CFM	234	312	389	467	545	623	700	779	292	389	486	583	680	776	875	972	350	467	584	700	817	935	1050	1170
1-Way Throw (ft)	19	25	32	37	44	49	55	58	21	26	33	39	47	51	58	63	22	28	34	40	47	53	60	68
2-Way Throw (ft)	16	21	26	31	36	41	45	50	17	22	27	33	38	43	48	53	18	23	29	34	40	45	50	55
3-Way Throw (ft)	14	19	24	28	32	36	41	44	15	20	25	30	34	38	43	48	16	21	26	31	36	40	44	50
4-Way Throw (ft)	13	17	22	26	30	34	38	42	14	18	23	27	31	36	40	44	15	20	25	29	33	37	41	46
<b>Noise Criteria</b>	<30	30	36	39	42	47	51	54	<30	30	36	40	43	47	51	55	<30	30	36	40	43	47	51	55
<b>16" Width</b>																								
CFM	266	356	445	533	622	710	800	890	334	445	555	667	778	890	1000	1110	400	545	667	800	935	1070	1200	1335
1-Way Throw (ft)	20	26	33	38	46	50	57	61	21	27	35	41	48	53	61	65	22	29	35	41	48	55	62	71
2-Way Throw (ft)	17	22	27	32	37	42	46	52	18	23	28	34	39	44	50	54	18	25	30	35	41	46	51	58
3-Way Throw (ft)	15	20	25	28	33	37	42	46	16	21	26	31	35	40	44	50	16	22	27	32	37	42	46	51
4-Way Throw (ft)	14	18	23	27	31	35	39	43	15	19	24	28	32	37	41	46	15	20	25	30	34	39	42	48
<b>Noise Criteria</b>	<30	30	36	39	43	46	51	55	<30	30	36	40	43	47	52	59	<30	30	37	41	43	47	53	56
<b>18" Width</b>																								
CFM	300	400	500	600	700	800	900	1000	375	500	625	750	875	1000	1125	1250	450	600	750	900	1050	1200	1350	1500
1-Way Throw (ft)	21	27	34	40	47	52	59	63	22	28	36	42	49	57	63	67	23	30	36	42	50	57	63	73
2-Way Throw (ft)	17	22	28	33	38	43	48	53	18	24	29	35	40	45	51	56	19	25	30	36	42	47	52	60
3-Way Throw (ft)	15	20	25	30	34	38	43	48	16	21	27	31	36	41	46	51	17	22	28	32	38	43	47	52
4-Way Throw (ft)	14	19	23	28	32	36	40	44	15	20	25	29	34	38	42	47	16	21	26	30	35	40	44	50
<b>Noise Criteria</b>	<30	30	37	39	44	46	52	55	<30	30	37	40	44	47	53	55	<30	30	37	42	45	49	54	56
<b>20" Width</b>																								
CFM	334	445	555	667	778	890	1000	1110	417	555	695	834	973	1110	1250	1390	500	667	834	1000	1167	1334	1500	1667
1-Way Throw (ft)	21	27	35	41	48	53	61	65	22	29	37	43	50	58	65	69	24	30	37	43	51	59	66	76
2-Way Throw (ft)	17	23	28	34	39	44	50	54	18	25	30	36	41	46	52	58	19	26	31	37	43	49	53	61
3-Way Throw (ft)	16	21	26	31	35	40	44	50	17	22	27	32	37	42	48	52	17	23	28	33	39	44	49	53
4-Way Throw (ft)	15	20	24	29	33	37	41	45	16	21	26	30	35	40	43	48	16	21	27	31	36	41	45	51
<b>Noise Criteria</b>	<30	30	37	40	45	47	52	56	<30	30	37	42	45	48	54	57	<30	31	37	43	46	50	55	58
<b>24" Width</b>																								
CFM	400	545	667	800	935	1070	1200	1335	502	669	836	1005	1170	1340	1505	1670	600	800	1000	1200	1400	1600	1800	2000
1-Way Throw (ft)	22	28	36	42	50	57	63	68	23	31	38	46	51	60	68	72	25	32	39	46	53	62	70	82
2-Way Throw (ft)	18	25	30	35	41	46	52	57	19	26	32	37	42	48	54	61	21	27	33	39	45	51	57	64
3-Way Throw (ft)	16	22	27	32	37	42	46	52	17	23	28	34	39	44	50	54	18	25	30	35	41	46	51	57
4-Way Throw (ft)	15	20	26	30	34	39	42	48	16	22	27	31	36	41	46	51	17	22	28	33	38	41	48	53
<b>Noise Criteria</b>	<30	31	38	42	46	50	54	58	<30	31	38	42	46	49	55	59	<30	31	39	43	47	49	57	-
<b>30" Width</b>																								
CFM	502	669	836	1005	1170	1340	1505	1670	625	833	1040	1250	1460	1667	1875	2080	750	1000	1250	1500	1750	2000	2250	2500
1-Way Throw (ft)	23	31	38	46	51	60	68	72	25	32	40	48	55	62	70	75	26	33	41	49	57	65	75	90
2-Way Throw (ft)	19	26	32	37	42	49	54	61	21	27	33	40	45	52	58	65	22	28	35	41	47	54	61	68
3-Way Throw (ft)	17	23	28	34	39	44	50	54	18	25	30	36	41	46	52	58	19	26	31	37	43	48	54	61
4-Way Throw (ft)	16	21	27	31	36	41	46	51	17	23	28	33	38	42	49	53	18	24	29	35	40			

# PERFORMANCE DATA—LIGHT COMMERCIAL



## Models 291, 292, 293, 294

Static Pressure in H <sub>2</sub> O Neck Velocity (FPM)	14" Height								16" Height								18" Height							
	.033	.055	.088	.130	.173	.224	.287	.355	.033	.055	.088	.130	.173	.224	.287	.355	.033	.055	.088	.130	.173	.224	.287	.355
300	400	500	600	700	800	900	1000	300	400	500	600	700	800	900	1000	300	400	500	600	700	800	900	1000	
Noise Criteria	<30	30	37	42	46	51	54	58	<30	30	37	43	47	52	56	59	<30	33	38	44	49	53	57	61
<b>14" Width</b>																								
CFM	408	545	680	816	955	1090	1225	1360																
1-Way Throw (ft)	22	29	35	42	49	55	63	71																
2-Way Throw (ft)	18	25	30	35	41	46	52	58																
3-Way Throw (ft)	16	22	27	32	37	42	46	52																
4-Way Throw (ft)	15	20	25	30	35	39	43	48																
Noise Criteria	<30	30	36	42	44	46	53	57	<30	30	37	43	47	52	56	59	<30	33	38	44	49	53	57	61
<b>16" Width</b>																								
CFM	467	623	778	935	1090	1245	1400	1555	534	710	890	1070	1245	1425	1600	1780								
1-Way Throw (ft)	23	30	37	43	50	57	65	74	23	31	38	45	52	60	67	78								
2-Way Throw (ft)	19	26	31	37	42	48	53	60	20	26	32	38	43	50	56	62								
3-Way Throw (ft)	17	23	28	33	38	43	48	53	17	23	29	34	40	44	50	55								
4-Way Throw (ft)	16	21	26	31	35	40	44	50	16	21	27	32	36	41	46	51								
Noise Criteria	<30	30	37	42	44	48	54	57	<30	31	37	42	45	49	56	59	<30	33	38	44	49	53	57	61
<b>18" Width</b>																								
CFM	525	700	875	1050	1225	1400	1575	1750	600	800	1000	1200	1400	1600	1800	2000	675	900	1125	1350	1575	1800	2025	2250
1-Way Throw (ft)	23	31	38	44	51	59	67	78	24	32	39	46	53	61	69	82	25	32	40	47	55	63	72	86
2-Way Throw (ft)	20	26	31	38	43	49	55	62	21	27	33	39	45	51	57	63	21	27	34	40	46	52	60	67
3-Way Throw (ft)	17	23	28	34	40	44	50	55	18	24	30	35	41	46	52	57	18	25	30	36	41	47	52	60
4-Way Throw (ft)	16	22	27	31	36	41	46	51	17	22	28	33	38	41	48	52	17	23	28	34	39	43	50	54
Noise Criteria	<30	31	38	43	46	50	55	57	<30	31	38	43	47	51	56	59	<30	32	38	45	49	53	56	60
<b>20" Width</b>																								
CFM	584	779	973	1170	1360	1550	1750	1945	668	890	1110	1335	1560	1780	2000	2220	750	1000	1250	1500	1750	2000	2250	2500
1-Way Throw (ft)	24	32	39	46	53	61	70	81	25	32	40	47	55	63	72	86	26	33	41	49	56	65	76	90
2-Way Throw (ft)	20	27	32	39	44	51	57	63	20	27	34	40	46	53	60	67	22	28	35	41	47	53	61	69
3-Way Throw (ft)	18	24	30	35	40	45	52	57	18	25	30	36	42	47	53	59	19	26	31	37	42	48	54	61
4-Way Throw (ft)	17	22	28	32	37	41	47	52	17	23	29	34	39	42	50	54	18	24	29	35	40	45	51	56
Noise Criteria	<30	31	38	43	47	51	56	59	<30	31	38	44	47	51	57	-	<30	34	39	46	52	56	60	-
<b>24" Width</b>																								
CFM	700	934	1170	1400	1634	1870	2100	2334	800	1070	1335	1600	1870	2135	2400	2665	900	1200	1500	1800	2100	2400	2700	3000
1-Way Throw (ft)	26	33	41	48	56	64	73	88	26	34	41	50	58	67	78	92	27	35	43	51	60	69	82	98
2-Way Throw (ft)	21	28	34	41	46	53	60	67	22	28	35	41	48	55	63	72	23	29	36	43	50	58	65	73
3-Way Throw (ft)	19	25	31	37	42	48	53	60	20	26	32	37	43	50	56	63	20	27	33	39	44	51	57	65
4-Way Throw (ft)	17	23	29	34	40	43	50	55	18	24	30	35	40	45	51	57	19	25	31	36	41	47	52	59
Noise Criteria	<30	31	39	44	48	52	57	-	<30	32	40	44	49	53	59	-	<30	32	40	45	49	55	-	-
<b>30" Width</b>																								
CFM	875	1170	1460	1750	2040	2330	2625	2915	1000	1335	1670	2000	2335	2670	3000	3335	1125	1500	1875	2250	2625	3000	3355	3750
1-Way Throw (ft)	27	35	42	51	60	69	81	98	27	36	43	52	61	72	85	105	28	37	46	53	63	75	90	100
2-Way Throw (ft)	23	29	36	43	49	56	63	73	23	30	37	43	51	58	67	77	24	31	38	46	52	61	70	80
3-Way Throw (ft)	20	26	32	39	44	50	56	63	21	27	33	40	46	52	59	67	21	28	35	41	48	53	61	70
4-Way Throw (ft)	18	25	30	36	41	46	52	58	19	25	31	37	42	48	53	61	20	26	32	38	43	50	55	62
Noise Criteria	<30	32	40	45	48	53	58	-	<30	33	40	45	50	56	-	-	<30	33	41	46	51	57	-	-
<b>36" Width</b>																								
CFM	1050	1400	1750	2100	2450	2800	3150	3500	1200	1600	2000	2400	2800	3200	3600	4000	1350	1800	2250	2700	3150	3600	4050	4500
1-Way Throw (ft)	28	36	44	52	62	73	86	110	26	37	46	55	66	77	93	118	30	38	47	57	67	81	100	130
2-Way Throw (ft)	24	30	38	45	52	60	68	78	25	32	39	46	53	62	72	82	25	32	40	47	56	64	73	85
3-Way Throw (ft)	21	27	34	41	47	52	60	68	22	28	35	41	48	54	62	70	22	29	36	43	50	57	65	74
4-Way Throw (ft)	19	26	32	37	42	49	54	62	2	26	32	39	43	51	56	63	21	27	33	40	45	52	59	67
Noise Criteria	<30	33	42	46	51	57	-	-	<30	33	42	46	51	58	-	-	<30	34	43	47	52	58	-	-
<b>48" Width</b>																								
CFM	1400	1870	2330	2800	3265	3730	4200	4660	1600	2135	2670	3200	3740	4260	4800	5340	1800	2400	3000	3600	4200	4800	5400	6000
1-Way Throw (ft)	30	39	48	58	68	82	100	130	31	40	45	60	72	86	110	143	32	41	51	61	74	91	118	155
2-Way Throw (ft)	26	32	40	48	56	65	75	87	27	34	42	50	58	68	78	85	27	35	43	51	60	70	82	98
3-Way Throw (ft)	23	30	37	43	50	57	65	75	23	31	37	44	52	60	67	80	25	32	38	46	53	61	72	83
4-Way Throw (ft)	21	27	34	40	46	52	60	67	22	28	35	41	48	53	61	70	22	29	36	42	50	56	64	73



# PERFORMANCE DATA—LIGHT COMMERCIAL

## Models 291, 292, 293, 294

	20" Height								24" Height								30" Height							
	.033	.055	.088	.130	.173	.224	.287	.355	.033	.055	.088	.130	.173	.224	.287	.355	.033	.055	.088	.130	.173	.224	.287	.355
Static Pressure in H <sub>2</sub> O Neck Velocity (FPM)	300	400	500	600	700	800	900	1000	300	400	500	600	700	800	900	1000	300	400	500	600	700	800	900	1000
<b>Noise Criteria</b>	<30	34	39	46	51	55	58	61	<30	35	41	47	53	58	60	-	<30	35	42	48	54	60	-	-
<b>20" Width</b>																								
CFM	835	1110	1390	1670	1945	2220	2500	2780																
1-Way Throw (ft)	26	34	42	50	59	67	80	95																
2-Way Throw (ft)	22	29	35	42	49	56	63	72																
3-Way Throw (ft)	20	26	32	38	43	50	56	63																
4-Way Throw (ft)	18	25	30	35	41	47	51	58																
<b>Noise Criteria</b>	<30	34	39	46	52	56	60	-	<30	35	41	47	53	58	60	-	<30	35	42	48	54	60	-	-
<b>24" Width</b>																								
CFM	1000	1335	1670	2000	2340	2665	3000	3330	1200	1600	2000	2400	2800	3200	3600	4000								
1-Way Throw (ft)	27	36	43	52	61	72	86	105	28	37	46	55	66	77	93	118								
2-Way Throw (ft)	23	30	37	43	51	59	67	77	25	32	39	46	53	62	72	82								
3-Way Throw (ft)	21	27	33	40	46	52	59	67	22	28	35	41	48	54	62	71								
4-Way Throw (ft)	19	26	31	37	42	49	53	61	21	26	33	39	44	50	56	63								
<b>Noise Criteria</b>	<30	33	41	47	52	58	-	-	<30	33	41	47	52	59	-	-	<30	35	42	49	55	60	-	-
<b>30" Width</b>																								
CFM	1250	1670	2080	2500	2920	3340	3750	4170	1500	2000	2500	3000	3500	4000	4500	5000	1875	2500	3125	3750	4375	5000	5625	6250
1-Way Throw (ft)	29	38	46	56	66	79	95	120	30	40	48	59	70	85	105	140	32	42	52	62	76	93	120	153
2-Way Throw (ft)	25	32	40	46	54	62	72	83	26	33	41	48	57	66	77	90	27	35	43	52	60	72	83	100
3-Way Throw (ft)	22	28	36	42	49	55	63	72	23	30	37	43	51	58	67	77	25	32	39	46	53	62	72	83
4-Way Throw (ft)	20	27	33	39	44	51	57	65	22	28	35	41	47	52	61	68	22	30	36	42	50	57	65	75
<b>Noise Criteria</b>	<30	34	41	47	52	58	-	-	<30	34	42	48	53	60	-	-	<30	35	42	49	55	60	-	-
<b>36" Width</b>																								
CFM	1500	2000	2500	3000	3500	4000	4500	5000	1800	2400	3000	3600	4200	4800	5400	6000	2250	3000	3750	4500	5250	6000	6750	7500
1-Way Throw (ft)	30	40	48	59	70	84	105	140	32	41	51	62	74	91	118	155	33	43	54	67	81	103	138	180
2-Way Throw (ft)	26	33	41	48	57	65	76	90	27	35	43	51	60	70	82	98	28	37	45	54	64	76	90	110
3-Way Throw (ft)	23	30	37	43	51	58	66	76	25	31	38	46	53	61	72	83	26	33	41	48	57	66	76	90
4-Way Throw (ft)	21	28	35	41	47	53	61	68	23	29	36	42	50	55	64	73	23	31	38	44	52	60	68	80
<b>Noise Criteria</b>	<30	34	43	47	53	60	-	-	<30	35	44	48	54	60	-	-	<30	36	45	49	54	62	-	-
<b>48" Width</b>																								
CFM	2000	2670	3330	4000	4670	5330	6000	6660	2400	3200	4000	4800	5600	6400	7200	8000	3000	4000	5000	6000	7000	8000	9000	10000
1-Way Throw (ft)	32	42	53	63	77	95	125	165	34	44	55	68	83	108	144	187	36	47	59	72	90	122	165	210
2-Way Throw (ft)	28	36	44	53	62	72	85	103	28	37	46	55	65	77	92	118	30	40	48	59	70	83	104	140
3-Way Throw (ft)	25	32	40	47	54	63	73	85	26	33	42	50	57	67	80	92	27	36	43	52	62	72	86	105
4-Way Throw (ft)	23	30	37	43	51	58	65	77	25	31	39	45	52	61	70	83	26	33	41	48	56	65	75	90
<b>Static Pressure in H<sub>2</sub>O Neck Velocity (FPM)</b>	.033	.055	.088	.130	.173	.224	.287	.355	.033	.055	.088	.130	.173	.224	.287	.355								
<b>Noise Criteria</b>	<30	36	43	50	56	62	-	-	<30	37	47	58	58	67	-	-								
<b>36" Width</b>																								
CFM	2700	3600	4500	5400	6300	7200	8100	9000																
1-Way Throw (ft)	35	46	57	70	86	115	155	200																
2-Way Throw (ft)	30	38	47	57	68	81	98	128																
3-Way Throw (ft)	27	35	42	51	60	70	83	98																
4-Way Throw (ft)	25	32	40	47	54	62	71	86																
<b>Noise Criteria</b>	<30	36	46	55	57	65	-	-	<30	37	47	58	58	67	-	-								
<b>48" Width</b>																								
CFM	3600	4800	6000	7200	8400	9600	10800	12000	4800	6400	8000	9600	11200	12800	14400	16000								
1-Way Throw (ft)	38	50	63	77	100	140	185	240	40	53	68	87	120	165	220	300								
2-Way Throw (ft)	32	42	51	62	77	92	120	155	33	44	55	68	83	108	145	188								
3-Way Throw (ft)	28	37	45	54	66	78	92	116	31	40	50	60	72	86	108	145								
4-Way Throw (ft)	27	35	41	51	59	68	81	95	28	37	45	53	63	74	90	115								

The 290 Series grille has many applications for any heating or cooling requirement either on ceiling or sidewall installation. You can create practically any pattern necessary. The easy and quick individual adjustment of the curved-blade louvers can be accomplished without removing the grilles from the wall or ceiling. Ideal for overhead duct systems where air conditioning is being installed. Correct the air pattern problem in remodeling installations where air outlets are located at baseboard; direct the air where it is most desirable.





1230 – Perforated Return

Neck Velocity		200	300	400	500	600	700	800
- Ps		.01	.02	.03	.05	.07	.10	.12
6"								
An .20	cfm	40	60	80	100	120	140	160
8"								
An .35	cfm	70	105	140	175	210	245	280
10"								
An .54	cfm	110	165	220	275	330	385	440
12"								
An .78	cfm	160	240	320	395	475	550	630
14"								
An 1.07	cfm	215	320	430	535	640	750	855

**NOTE:** The use of a balancing hood is recommended to balance the system.  
 An = Neck Area in square feet  
 - Ps = Negative Static Pressure Loss in inches of water

1234 Curved-Blade Perforated Diffuser

One-Way Supply

Neck Size	Neck Velocity - V <sub>N</sub>								
	300	400	500	600	700	800	1000	1200	
6"	CFM	60	80	100	120	140	160	200	240
	Ps	.060	.080	.100	.150	.200	.260	.400	.580
	Throw	2.5-4.0-5.0	3.5-5.0-6.0	4.0-6.0-7.0	4.5-7.0-8.5	5.5-8.0-9.5	6.5-9.5-11.5	8.0-12.0-14.5	9.5-14.0-17.0
	NC	<20	<20	<20	22	26	30	40	>45
8"	CFM	105	140	175	210	245	280	350	420
	Ps	.080	.110	.160	.240	.320	.420	.650	.930
	Throw	4.0-6.0-7.0	5.5-8.0-9.5	6.5-10.0-12.0	8.0-12.0-14.5	7.5-14.0-17.0	10.5-10.6-19.0	13.5-20.0-24.0	16.0-24.0-29.0
	NC	<20	<20	21	26	31	39	>45	>45
10"	CFM	165	220	275	325	380	435	545	650
	Ps	.080	.110	.170	.250	.320	.430	.660	.940
	Throw	4.5-7.0-8.5	6.5-9.5-11.5	8.0-12.0-14.5	9.5-14.5-17.5	11.0-16.5-20.0	12.5-19.0-23.0	16.0-24.0-29.0	19.0-28.5-34.0
	NC	<20	<20	23	26	34	40	>45	>45
12"	CFM	235	315	395	470	550	630	790	940
	Ps	.080	.110	.170	.250	.340	.440	.690	.980
	Throw	5.5-8.5-10.0	7.5-11.0-13.5	9.5-14.0-17.0	11.0-16.5-20.0	13.0-19.5-26.5	14.5-22.0-26.5	18.5-27.5-33.0	22.0-33.0-39.5
	NC	<20	20	25	33	40	45	>45	>45
14"	CFM	325	430	535	640	750	860	1075	1275
	Ps	.110	.140	.210	.300	.420	.550	.860	1.200
	Throw	4.5-7.0-8.5	6.5-9.5-11.5	8.0-12.0-14.5	9.5-14.5-17.5	11.5-17.0-20.5	13.0-17.5-23.5	16.5-24.5-29.5	19.5-29.0-35.0
	NC	<20	20	25	30	38	44	>45	>45
16"	CFM	420	560	700	840	980	1120	1400	1680
	Ps	.020	.040	.060	.080	.110	.140	.220	.260
	Throw	5.0-8.0-10.0	7.0-10.0-12.0	10.0-13.0-16.0	12.0-15.0-18.0	13.0-18.0-21.0	14.0-19.0-24.0	18.0-26.0-30.0	20.0-31.0-36.0
	NC	<20	<20	26	34	39	43	>45	>45



### 1234 Curved-Blade Perforated Diffuser

#### Two-Way Supply

Neck Size	Neck Velocity - V <sub>N</sub>								
	300	400	500	600	700	800	1000	1200	
6"	CFM	60	80	100	120	140	160	200	240
	Ps	.050	.070	.090	.130	.170	.220	.340	.500
	Throw	2.0-3.0-3.5	2.5-3.5-4.5	3.5-5.0-6.0	4.0-5.5-6.5	4.5-6.5-8.0	5.0-7.5-9.0	6.5-9.5-11.5	7.5-11.5-13.5
	NC	<20	<20	<20	20	24	28	37	44
8"	CFM	105	140	175	210	245	280	350	420
	Ps	.400	.054	.084	.120	.165	.215	.330	.480
	Throw	3.0-4.5-5.5	3.5-5.5-6.5	4.5-7.0-8.5	5.5-8.5-10.0	6.5-9.5-11.5	7.5-11.0-13.0	9.5-14.0-17.0	11.0-16.5-20.0
	NC	<20	<20	<20	23	29	36	43	>45
10"	CFM	165	220	275	325	380	435	545	650
	Ps	.060	.080	.130	.180	.250	.310	.510	.730
	Throw	4.5-6.5-7.5	5.5-8.5-10.0	7.0-10.5-12.5	8.5-12.5-15.0	9.5-14.5-17.5	11.0-16.5-20.0	14.0-21.0-25.0	16.5-25.0-30.0
	NC	<20	<20	<20	25	29	37	45	>45
12"	CFM	235	315	395	470	550	630	790	940
	Ps	.050	.070	.110	.150	.210	.270	.430	.600
	Throw	4.5-6.5-7.5	5.5-8.5-10.0	7.0-10.5-12.5	8.5-12.5-15.0	10.0-15.0-18.0	11.5-17.0-20.5	14.5-21.5-26.0	17.0-25.5-30.5
	NC	<20	<20	23	30	37	43	>45	>45
14"	CFM	325	430	535	640	750	860	1075	1275
	Ps	.050	.070	.100	.150	.200	.260	.410	.570
	Throw	3.5-5.5-6.5	4.5-7.0-8.5	6.0-9.0-11.0	7.0-10.5-12.5	8.5-12.5-15.0	9.5-14.0-17.0	11.5-17.5-21.0	14.0-21.0-25.0
	NC	<20	<20	22	28	35	40	>45	>45
16"	CFM	420	560	700	840	980	1120	1400	1680
	Ps	.020	.040	.060	.080	.110	.140	.220	.260
	Throw	4.0-6.0-8.0	5.0-8.0-9.0	7.0-10.0-12.0	9.0-11.0-13.0	10.0-14.0-16.0	11.0-16.0-19.0	13.0-19.0-24.0	16.0-22.0-27.0
	NC	<20	<20	26	34	39	43	>45	>45

#### Three-Way Supply

Neck Size	Neck Velocity - V <sub>N</sub>								
	300	400	500	600	700	800	1000	1200	
6"	CFM	60	80	100	120	140	160	200	240
	Ps	.020	.030	.040	.060	.080	.100	.150	.230
	Throw	2.5-3.5-4.5	3.0-4.5-5.5	3.5-5.5-6.5	4.5-6.5-8.0	5.0-7.5-9.0	5.5-8.5-10.5	7.5-11.0-13.5	8.5-13.0-15.5
	NC	<20	<20	<20	<20	23	25	34	40
8"	CFM	105	140	175	210	245	280	350	420
	Ps	.020	.030	.040	.060	.080	.100	.160	.220
	Throw	3.0-4.0-5.0	4.0-5.5-6.5	4.5-7.0-8.5	5.5-8.0-9.5	6.5-9.5-11.5	7.5-11.0-13.5	9.0-13.5-16.0	11.0-16.5-20.0
	NC	<20	<20	<20	21	26	33	39	44
10"	CFM	165	220	275	325	380	435	545	650
	Ps	.030	.040	.060	.090	.120	.150	.240	.340
	Throw	4.5-6.5-8.0	5.5-8.5-10.5	7.0-10.5-12.5	8.5-12.5-15.0	9.5-14.5-17.5	11.5-17.0-20.5	14.0-21.0-25.0	17.0-25.0-30.0
	NC	<20	<20	<20	21	26	34	41	>45
12"	CFM	235	315	395	470	550	630	790	940
	Ps	.020	.030	.050	.070	.100	.130	.200	.290
	Throw	4.5-6.5-8.0	5.5-8.5-10.0	7.0-10.5-12.5	8.5-12.5-15.0	10.0-14.5-17.5	11.0-16.5-20.0	13.5-20.5-24.5	16.5-24.5-29.5
	NC	<20	<20	21	27	34	39	44	>45
14"	CFM	325	430	535	640	750	860	1075	1275
	Ps	.020	.030	.050	.070	.100	.130	.200	.280
	Throw	4.0-5.0-7.0	5.5-8.0-9.5	6.0-9.0-11.0	8.0-12.0-14.5	9.5-14.0-17.0	10.5-16.0-19.5	13.5-20.0-24.0	15.5-23.5-28.0
	NC	<20	<20	20	25	32	37	44	>45
16"	CFM	420	560	700	840	980	1120	1400	1680
	Ps	.020	.040	.060	.080	.110	.140	.220	.260
	Throw	5.0-6.0-8.0	6.0-9.0-10.0	7.0-9.0-12.0	9.0-13.0-15.0	10.0-13.0-16.0	11.0-15.0-18.0	12.0-18.0-21.0	15.0-21.0-26.0
	NC	<20	<20	26	34	39	43	>45	>45

#### Four-Way Supply

Neck Size	Neck Velocity - V <sub>N</sub>								
	300	400	500	600	700	800	1000	1200	
6"	CFM	60	80	100	120	140	160	200	240
	Ps	<.010	.010	.020	.030	.040	.050	.080	.120
	Throw	1.5-2.0-2.5	1.5-2.5-3.0	2.0-3.0-4.0	2.5-3.5-4.5	3.0-4.5-5.5	3.5-5.0-6.0	4.0-6.0-7.0	5.0-7.5-9.0
	NC	<20	<20	<20	<20	21	24	32	38
8"	CFM	105	140	175	210	245	280	350	420
	Ps	<.010	.010	.020	.030	.040	.060	.090	.120
	Throw	1.5-2.5-3.0	2.0-3.0-4.0	2.5-4.0-5.0	3.5-5.0-6.0	4.0-5.5-7.0	4.5-6.5-8.0	5.5-8.0-10.0	6.5-9.5-11.5
	NC	<20	<20	<20	<20	25	31	37	42
10"	CFM	165	220	275	325	380	435	545	650
	Ps	0.01	.020	.030	.040	.060	.070	.110	.160
	Throw	3.0-4.0-5.0	3.5-5.5-6.5	4.5-6.5-8.0	5.5-8.0-10.0	6.0-9.0-11.0	7.0-10.5-12.5	9.0-13.0-15.5	10.5-15.5-18.5
	NC	<20	<20	<20	20	27	32	39	44
12"	CFM	235	315	395	470	550	630	790	940
	Ps	.010	.020	.030	.040	.060	.080	.120	.170
	Throw	2.5-3.5-4.0	3.0-4.5-5.5	3.5-5.5-6.5	4.5-7.0-8.5	5.5-8.0-9.5	6.0-7.0-11.0	7.5-11.5-14.0	9.0-13.5-16.0
	NC	<20	<20	20	26	32	37	42	>45
14"	CFM	325	430	535	640	750	860	1075	1275
	Ps	.010	.020	.030	.050	.060	.080	.130	.180
	Throw	2.0-3.0-3.5	2.5-4.0-5.0	3.5-5.0-6.0	4.0-6.0-7.0	4.5-7.0-8.5	5.5-8.0-10.0	6.5-10.0-12.0	7.5-11.5-14.0
	NC	<20	<20	<20	24	30	35	42	>45
16"	CFM	420	560	700	840	980	1120	1400	1680
	Ps	.020	.040	.060	.080	.110	.140	.220	.260
	Throw	3.0-4.0-5.0	4.0-6.0-7.0	5.0-8.0-11.0	6.0-9.0-12.0	8.0-11.0-14.0	9.0-13.0-16.0	10.0-15.0-19.0	12.0-17.0-22.0
	NC	<20	<20	26	34	39	43	>45	>45

**Notes:**

1. P<sub>s</sub> is static Pressure Loss in inches of H<sub>2</sub>O.
2. NC is based on 10dB room attenuation (RE: 10<sup>-12</sup> watts).
3. Throw is isothermal air at 150, 100, 75 FPM terminal velocities.
4. The use of a balancing hood is recommended to balance the system.



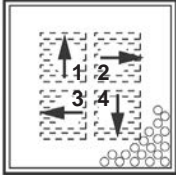
**1102, 1121**  
Step-Down Ceiling Diffusers

N.V.	100		150		200		250		300		350		400		450		500		550		600		700		800	
S.P.	.004		.005		.015		.019		.029		.039		.048		.063		.077		.092		.106		.150		.194	
SIZE	CFM	TH	CFM	TH	CFM	TH	CFM	TH	CFM	TH	CFM	TH	CFM	TH	CFM	TH	CFM	TH	CFM	TH	CFM	TH	CFM	TH	CFM	TH
8 x 8					90	5	110	7	135	8	155	9	180	11	200	12	220	13	245	15	265	16	310	19	335	22
9 x 9			85	5	110	6	140	8	170	9	195	11	225	12	255	14	280	15	310	17	335	18	395	21	450	24
10 x 10			105	5	140	7	175	8	210	10	245	12	280	13	315	15	350	17	380	18	415	20	485	23	555	27
12 x 12	100	4	150	6	200	8	250	10	300	12	350	14	400	16	450	18	500	20	55	21	600	23	700	27	800	31
14 x 14	135	4	205	7	270	9	340	11	410	13	475	15	545	17	610	20	680	22	750	24	815	26	950	30	1090	35
15 x 15	155	5	235	7	315	9	390	12	470	14	545	16	624	19	705	21	780	23	860	26	940	28	1095	33	1250	38
16 x 16	180	5	265	7	355	10	445	12	535	14	625	17	710	19	800	22	890	24	980	26	1070	29	1245	34	1425	38
18 x 18	225	5	340	7	450	11	565	14	675	16	790	19	900	22	1015	24	1125	24	980	26	1070	29	1245	34	1425	38
20 x 20	280	6	415	9	555	12	695	15	835	18	975	20	1110	23	1250	26	1390	29	1530	32	1670	35	1945	41	2225	47
21 x 21	305	6	460	9	615	12	765	15	920	18	1070	21	1225	25	1380	28	1530	31	1685	34	1840	37	2145	43	2450	49
22 x 22	335	6	505	10	670	13	840	16	1010	19	1175	22	1345	26	1510	29	1680	32	1850	35	2015	38	2350	45	2690	51
24 x 24	400	7	600	10	800	14	1000	17	1200	20	1400	24	1600	27	1800	31	2000	34	2200	37	2400	41	2800	48	3200	54
26 x 26	470	8	705	11	940	15	1175	19	1410	23	1645	26	1880	30	2110	34	2345	38	2580	41	2815	45	3285	53	3755	60
27 x 27	505	8	760	11	1010	15	1265	19	1520	23	1770	27	2025	30	2280	34	2530	38	2785	42	3035	46	3545	53	4050	61
28 x 28	545	8	815	12	1090	16	1360	20	1635	24	1905	28	2180	32	2450	36	2720	40	2995	44	3265	50	3810	56	4355	64
30 x 30	625	8	940	13	1250	17	1565	21	1875	25	2190	30	2500	34	2815	38	3125	42	3440	46	3750	51	4375	59	5000	68
32 x 32	710	9	1065	13	1420	18	1780	22	2135	27	2490	31	2845	36	3200	40	3555	44	3910	49	4265	53	4980	62	5690	71
33 x 33	755	9	1135	14	1515	18	1890	23	2270	27	2645	32	3025	37	3405	41	3780	46	4160	50	4540	55	5295	64	6050	73
34 x 34	805	9	1205	14	1605	18	2005	23	2410	27	2810	32	3210	37	3615	41	4015	46	4415	50	4815	55	5620	64	6425	73
36 x 36	900	10	1350	15	1800	20	2250	25	2700	29	3150	34	3600	39	4050	44	4500	49	4950	54	5400	59	6300	69	7200	78

**Ak Factors for Model 1102**

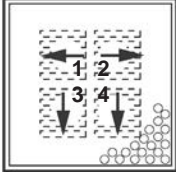
Size	Ak	Size	Ak
7 x 7	.14	22X22	1.8
8 x 8	.18	24X24	2.2
9 x 9	.24	26X26	2.7
10 x 10	.30	27X27	2.9
12 x 12	.45	28X28	3.1
14 x 14	.64	30X30	3.7
15 x 15	.75	32X32	4.3
16 x 16	.93	33X33	4.6
18 x 18	1.2	34X34	5.1
20 x 20	1.5	36X36	5.6
21 x 21	1.6		

### 1235 Perforated Supply



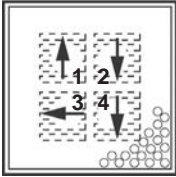
**Four-Way (Short Throw)**

- For throw in all four directions, use short throw data.



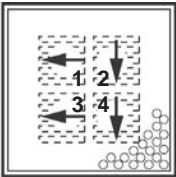
**Three-Way (Short Throw)**

- For throw in all three directions, use short throw data.



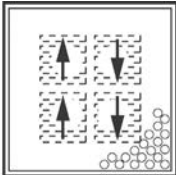
**Three-Way (Short Throw)**

- For throw in the #2 and #4 directions, use long throw data.
- For throw in the #1 and #3 directions, use short throw data.



**Two-Way Corner (Long and Short)**

- For throw in the #2 and #4 directions, use long throw data.
- For throw in the #1 and #3 directions, use short throw data.

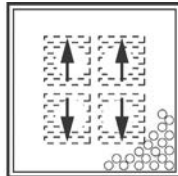


**Two-Way (Long Throw)**

- For throw in both directions, use long throw data.

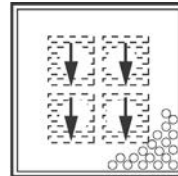
Neck Velocity		300	400	500	600	700	800	900	1000	1200	1400
Velocity Pressure		.006	.010	.016	.022	.031	.040	.051	.062	.090	.122
6" Diameter	CFM	60	80	100	120	140	160	180	200	240	280
	Total Pressure	.005	.008	.013	.025	.025	.032	.041	.050	.027	.098
	Short Horizontal Throw	2-1-1	2-1-1	3-1-1	3-2-1	4-2-1	4-2-1	5-2-2	5-3-2	6-3-2	7-4-2
	Long Horizontal Throw	3-1-1	4-2-1	5-2-2	6-3-2	7-3-2	8-4-3	9-4-3	10-5-3	12-6-4	14-7-5
	Noise Criteria	<20	<20	<20	<20	<20	22	24	26	31	37
8" Diameter	CFM	105	140	175	210	245	280	315	350	420	490
	Total Pressure	.009	.015	.024	.034	.046	.061	.077	.095	.136	.185
	Short Horizontal Throw	3-1-1	4-2-1	5-2-2	6-4-3	7-3-2	8-4-3	9-4-3	10-5-3	12-6-4	14-7-5
	Long Horizontal Throw	5-3-2	7-4-2	9-5-3	11-5-4	13-6-4	15-7-5	16-8-5	18-9-6	22-11-7	25-13-8
	Noise Criteria	<20	<20	<20	<20	20	25	30	34	39	44
10" Diameter	CFM	165	220	275	330	385	440	495	550	660	770
	Total Pressure	.013	.023	.036	.052	.071	.092	.117	.144	.208	.283
	Short Horizontal Throw	5-2-2	6-3-2	8-4-3	10-5-3	11-6-4	13-6-4	14-7-5	16-8-5	19-10-6	23-11-8
	Long Horizontal Throw	9-5-3	12-6-4	15-8-5	18-9-6	21-11-7	24-12-8	27-14-9	30-15-10	36-18-12	42-21-14
	Noise Criteria	<20	<20	<20	22	25	28	33	36	41	47
12" Diameter	CFM	240	320	400	480	560	640	720	800	960	1120
	Total Pressure	.017	.030	.047	.068	.093	.121	.153	.189	.273	.371
	Short Horizontal Throw	7-4-2	10-5-3	12-6-4	15-7-5	17-9-6	20-10-7	22-11-7	25-12-8	30-15-10	35-17-12
	Long Horizontal Throw	14-7-5	19-9-6	23-12-8	28-14-9	33-16-11	37-19-12	42-21-14	47-23-16	56-28-19	65-33-22
	Noise Criteria	<20	<20	21	25	29	32	35	38	44	50
14" Diameter	CFM	330	440	550	660	770	880	990	1100	1320	1540
	Total Pressure	.020	.036	.057	.081	.111	.145	.183	.226	.326	.443
	Short Horizontal Throw	11-6-4	15-7-5	18-9-6	22-11-7	26-13-9	29-15-10	33-17-11	37-18-12	44-22-15	52-26-17
	Long Horizontal Throw	21-10-7	28-14-9	34-17-11	41-21-14	48-24-16	55-28-18	62-31-21	69-34-23	83-41-28	97-48-32
	Noise Criteria	<20	<20	25	31	36	40	43	45	48	53

**Notes:** Tests conducted in accordance with ANSI/ASHRAE 70-1991 at isothermal conditions. Tests conducted with a straight rigid inlet condition. Other inlet conditions may alter performance. Unit of measure: Neck Velocity = FPM; Velocity Pressure = in. w.c.; Airflow Rate = CFM; Total Pressure = in. w.c.; Throw = ft at 50, 100, and 150 FPM terminal velocity. Noise Criteria (NC) is based upon 10dB room absorption (Re: 10<sup>-12</sup> watts) evaluated at 125 thru 4000 Hz octave bands. Flow hoods are recommended for system balancing.



**Two-Way (Short Throw)**

- For throw in both directions, use short throw data.



**One-Way (Long Throw)**

- For throw, use long throw data.



## Models 1274, 12P, 12PFF, 12PFFI Return Air Grille Balancing Data

### Neck Area

The cross-sectional area (sq. ft.) of the duct at the point where the diffuser is attached, all dimensions are nominal.

### Neck Velocity

Airflow Rate (CFM) divided by Neck Area (sq. ft.) equals Neck Velocity (FPM).

### Static Pressure

Static Pressure Drop is given in inches of W.G.

### To Determine CFM:

1. Use an ALNOR Velometer with No. 2220 or 2220A Tip or a 4" rotating vane anemometer. If a 4" rotating vane anemometer is used, place dial face against perforated plate, and sample in a random manner for at least 1 minute.

2. Select proper Ak from Table by unit size and instrument used for measuring velocity.
3. Determine CFM by the following equation:  $CFM = Ak \times \text{Average Velocity}$ .

### Sample Problem

Determine Return Airflow Rate (CFM) through a 10 x 10, using an ALNOR Velometer with Tip No. 2220 or 2220A.

### Solution

1. Assume the average of 6 velocity readings taken with an ALNOR Velometer is 2000 FPM.
2. From Table, the Area Factor for a 10 x 10 using an ALNOR Velometer is  $Ak = .39$  sq. ft.
3.  $CFM = Ak \times \text{Average Velocity} = .39 \text{ sq. ft.} \times 2000 \text{ FPM} = 780 \text{ CFM}$

Neck Velocity			200	300	400	500	600	650	700	750	800	900
S.P. Drop w/OBD			.012	.027	.049	.078	.110	.130	.150	.170	.190	.240
Size	Ak ALNOR	Ak 4" ROT. Vane	Air Capacities - CFM									
10 x 10	.39	.55	140	210	285	350	415	450	485	520	555	625
12 x 12	.46	.79	200	300	400	500	600	650	700	750	800	900
14 x 14	.62	1.07	270	410	545	680	815	885	955	1020	1090	1225
10 x 22	.71	1.21	305	460	610	765	915	995	1070	1150	1220	1375
16 x 16	.82	1.40	355	530	710	890	1065	1155	1245	1335	1425	1600
18 x 18	1.05	1.77	450	675	900	1125	1350	1460	1575	1690	1800	2030
20 x 20	1.28	2.25	555	835	1110	1390	1665	1805	1945	2080	2220	2500
22 x 22	1.55	2.70	670	1010	1345	1680	2020	2180	2350	2520	2690	3020

## Model 4250

Neck Velocity		300	400	500	600	700	800	900	1000	1200	
6"	CFM	60	80	100	120	135	155	175	195	235	
	Ps	.007	.013	.020	.029	.037	.048	.062	.076	.110	
	NC	<20	<20	<20	20	21	24	28	33	37	
	1-Way Throw	4.0	6.0	7.0	8.0	10.0	11.0	13.0	14.0	16.0	
An .200	2- and 3-Way Throw	3.5	4.5	6.0	7.0	8.0	9.5	10.5	11.5	13.0	
	4-Way Throw	2.5	3.5	4.5	5.0	6.0	7.0	7.5	8.0	9.0	
	8"	CFM	105	140	175	210	245	280	315	350	420
		Ps	.011	.019	.030	.043	.059	.077	.097	.120	.173
NC		<20	<20	<20	20	22	27	31	35	40	
1-Way Throw		6.0	8.0	10.0	11.5	13.0	14.5	16.0	18.0	21.0	
An .350	2- and 3-Way Throw	5.0	7.0	8.5	10.5	12.0	13.5	14.5	16.0	19.0	
	4-Way Throw	4.0	5.0	6.5	7.5	9.0	10.0	11.5	12.5	14.0	
	10"	CFM	165	220	275	325	380	435	490	545	655
		Ps	.015	.026	.040	.046	.076	.100	.125	.115	.225
NC		<20	<20	<20	21	27	33	37	40	45	
1-Way Throw		8.5	11.0	14.0	16.5	19.0	22.0	25.0	27.0	30.0	
An .540	2- and 3-Way Throw	7.5	10.0	12.5	14.5	17.0	19.5	22.0	24.0	27.0	
	4-Way Throw	5.0	7.0	8.5	10.5	12.0	14.0	15.5	17.0	20.0	
	12"	CFM	235	315	395	470	550	630	705	785	940
		Ps	.016	.029	.045	.068	.086	.113	.140	.170	.250
NC		<20	<20	<20	20	25	32	35	38	44	
1-Way Throw		10.0	13.0	16.5	19.5	22.0	25.0	27.0	30.0	34.0	
An .780	2- and 3-Way Throw	8.5	11.5	14.5	17.5	20.0	22.0	25.0	27.0	30.0	
	4-Way Throw	6.0	8.0	10.0	12.0	14.0	16.5	18.0	20.0	23.0	
	14"	CFM	320	430	535	640	750	855	960	1070	1285
		Ps	.021	.037	.057	.082	.112	.145	.180	.225	.320
NC		<20	<20	20	26	31	36	40	44	49	
1-Way Throw		11.0	15.0	19.0	22.5	26.0	29.0	32.0	35.0	39.0	
An 1.070	2- and 3-Way Throw	10.0	13.5	17.0	20.0	23.0	26.0	28.0	31.0	35.0	
	4-Way Throw	7.0	10.0	12.0	14.4	17.0	19.0	21.0	23.0	27.0	

Notes: The use of a balancing hood is recommended to balance the system.

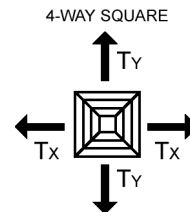
NC is based on 10dB room attenuation (Re:  $10^{-12}$  watts) ASHRAE 36-72.

Terminal Velocity of 75 FPM

### Series 1400/AL1400 Square/Rectangular Ceiling Diffuser

#### Four-Way Square

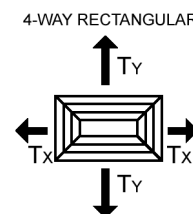
Face Velocity	500	600	700	800	900	1000	1200	1400	1600	1800	2000	
<b>Pressure Loss</b>	.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250	
6 x 6	CFM	50	60	70	80	90	100	120	140	160	180	200
Ak .100	Throw X/Y	2-3/2-3	2-3/2-3	2-4/2-4	2-4/2-4	3-5/3-5	3-5/3-5	4-6/4-6	4-8/4-8	5-9/5-8	5-9/5-9	6-11/6-11
9 x 9	CFM	110	135	155	180	205	225	270	315	360	410	450
Ak .220	Throw X/Y	2-4/2-4	2-4/2-4	3-5/3-5	3-5/3-5	4-6/4-6	5-8/5-8	5-9/5-9	6-11/6-11	6-12/6-12	7-13/7-13	8-14/8-14
12 x 12	CFM	200	240	280	320	360	400	480	560	640	725	800
Ak .400	Throw X/Y	3-5/3-5	4-6/4-6	4-8/4-8	5-8/5-8	5-9/5-9	6-11/6-11	6-12/6-12	7-13/7-13	8-15/8-15	9-17/9-17	10-19/10-19
15 x 15	CFM	310	375	440	500	565	625	750	875	1000	1125	1250
Ak .620	Throw X/Y	4-6/4-6	4-8/4-8	5-9/5-9	6-11/6-11	6-11/6-11	6-12/6-12	8-15/8-15	10-18/10-18	10-19/10-19	12-21/12-21	13-23/13-23
18 x 18	CFM	450	540	630	720	810	900	1080	1260	1440	1620	1800
Ak .900	Throw X/Y	4-8/4-8	5-9/5-9	5-11/5-11	6-12/6-12	7-13/7-13	8-15/8-15	10-17/10-17	11-20/11-20	13-23/13-23	15-27/15-27	16-30/16-30
21 x 21	CFM	615	740	860	985	1110	1230	1475	1725	1970	2220	2460
Ak 1.230	Throw X/Y	5-9/5-9	6-11/6-11	7-13/7-13	8-14/8-14	9-15/9-15	9-17/9-17	11-21/11-21	13-25/13-25	15-29/15-29	17-31/17-31	19-35/19-35
24 x 24	CFM	800	960	1120	1275	1440	1600	1925	2240	2570	2890	3200
Ak 1.600	Throw X/Y	5-11/5-11	7-13/7-13	7-14/7-14	8-15/8-15	9-17/9-17	10-19/10-19	12-23/12-23	14-29/14-29	16-31/16-31	18-35/18-35	20-39/20-39
27 x 27	CFM	1010	1215	1420	1615	1820	2020	2430	2840	3240	3650	4040
Ak 2.020	Throw X/Y	6-12/6-12	7-13/7-13	8-15/8-15	10-18/10-18	10-19/10-19	12-22/12-22	14-27/14-27	16-32/16-32	18-35/18-35	20-38/20-38	23-42/23-42
33 x 33	CFM	1370	1650	1925	2200	2470	2750	3300	3850	4400	4950	5500
Ak 2.750	Throw X/Y	7-13/7-13	9-16/9-16	10-18/10-18	21-21/12-21	14-24/14-24	16-27/16-27	18-33/18-33	19-37/19-37	23-41/23-41	27-46/27-46	31-50/31-50



**Note:** The minimum Throw Dimension is based on a terminal velocity of 200 FPM. The maximum Throw Dimension is based on a terminal velocity of 100 FPM.

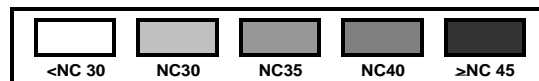
#### Four-Way Rectangular

Face Velocity	500	600	700	800	900	1000	1200	1400	1600	1800	2000	
<b>Pressure Loss</b>	.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250	
9 x 6	CFM	75	90	105	120	135	150	180	210	240	270	300
Ak .150	Throw X/Y	1-3/2-4	1-3/3-5	2-4/3-5	2-4/4-6	3-5/4-6	3-5/4-8	4-6/5-9	4-6/5-9	4-8/7-13	5-9/8-15	6-11/8-15
12 x 6	CFM	100	120	140	160	180	200	240	280	320	360	400
Ak .200	Throw X/Y	1-3/3-5	1-3/4-6	2-4/4-8	2-4/4-8	2-4/5-9	3-5/6-11	4-6/7-13	4-8/8-15	4-8/8-15	5-9/10-18	6-11/11-21
12 x 9	CFM	150	180	210	240	270	300	360	420	480	540	600
Ak .300	Throw X/Y	2-4/3-5	2-4/3-5	3-5/4-6	4-6/4-8	4-7/5-10	4-8/6-11	5-9/6-12	6-11/7-13	7-13/9-17	7-13/10-18	8-14/11-19
15 x 9	CFM	185	225	265	300	340	375	450	525	600	675	750
Ak .370	Throw X/Y	2-4/4-6	2-4/4-6	3-5/5-9	4-6/6-11	4-6/6-12	4-8/8-14	5-9/8-15	5-9/9-17	6-12/11-21	7-13/13-25	7-13/13-25
18 x 9	CFM	225	270	315	360	405	450	540	630	720	810	900
Ak 450	Throw X/Y	2-4/4-6	2-4/5-9	3-5/6-11	4-6/6-12	4-6/8-14	4-8/8-15	5-9/10-19	5-10/11-23	6-12/13-25	8-14/15-29	10-17/17-32
21 x 9	CFM	265	320	370	425	475	530	635	740	850	955	1060
Ak .530	Throw X/Y	2-4/5-9	2-4/6-11	3-5/8-14	4-6/8-15	4-8/10-18	4-8/10-19	5-9/11-21	6-17/13-25	8-13/16-31	9-15/19-35	10-17/21-38
15 x 12	CFM	250	300	350	400	450	500	600	700	800	900	1000
Ak .500	Throw X/Y	3-5/4-6	3-5/4-8	4-6/5-9	4-8/6-11	5-9/6-12	6-11/7-13	6-12/8-15	7-13/10-18	8-15/11-21	10-18/13-23	12-21/14-27
18 x 12	CFM	295	355	415	475	535	595	715	835	950	1070	1190
Ak .590	Throw X/Y	2-4/4-8	3-5/5-9	4-6/6-11	4-8/7-13	5-9/8-14	6-11/8-15	6-12/10-18	8-14/11-21	9-16/13-23	10-18/15-27	12-21/17-31
21 x 12	CFM	345	415	485	555	625	690	830	970	1100	1240	1375
Ak .690	Throw X/Y	3-5/5-9	3-5/6-11	4-6/7-13	4-8/8-14	4-8/8-15	5-9/10-18	6-11/11-21	7-13/14-26	8-15/16-29	9-17/17-31	10-19/19-35
24 x 12	CFM	400	480	560	640	720	800	960	1140	1280	1440	1600
Ak .800	Throw X/Y	2-4/6-11	4-6/7-13	4-6/8-14	4-8/9-16	4-8/10-18	5-9/11-21	6-12/14-26	8-14/15-29	9-17/17-31	10-19/19-35	10-19/21-39
18 x 15	CFM	375	450	525	600	675	750	900	1050	1200	1350	1500
Ak .75	Throw X/Y	4-6/4-8	4-8/5-9	5-9/6-11	6-11/6-12	6-12/8-14	7-13/8-15	8-15/10-18	9-17/10-19	10-19/13-23	12-22/15-26	14-25/17-29
24 x 15	CFM	500	600	700	800	900	1000	1200	1400	1600	1800	2000
Ak 1.000	Throw X/Y	4-6/6-11	4-8/6-12	5-9/8-14	6-11/9-17	6-12/10-18	7-13/11-21	8-15/13-25	10-18/15-29	11-21/17-32	13-23/20-36	15-27/22-39
24 x 18	CFM	600	720	840	960	1080	1200	1440	1680	1920	2160	2400
Ak 1.200	Throw X/Y	4-8/6-11	5-9/6-12	6-11/7-14	6-12/8-15	7-14/10-19	8-15/11-21	10-18/13-23	11-21/15-27	13-25/18-34	15-30/21-37	16-32/23-41
33 x 21	CFM	960	1150	1340	1530	1725	1920	2300	2690	3070	3450	3840
Ak 1.920	Throw X/Y	4-8/8-15	6-11/10-18	7-13/12-22	8-14/13-25	8-15/15-29	10-18/17-31	12-21/21-35	14-26/24-39	16-29/26-43	17-31/29-47	21-39/35-56
30 x 24	CFM	1000	1200	1400	1600	1800	2000	2400	2800	3200	3600	4000
Ak 2.000	Throw X/Y	6-11/7-13	6-12/8-15	8-14/10-18	8-15/11-21	10-18/13-23	10-19/14-26	12-23/16-29	15-28/19-35	16-31/21-39	19-35/24-43	22-40/29-51



**Note:** The minimum Throw Dimension is based on a terminal velocity of 200 FPM. The maximum Throw Dimension is based on a terminal velocity of 100 FPM.

Ceiling Height in Feet	Max. Rec. Cooling Temp. Differential	Max. Rec. CFM Per Diff.			
		1400/AL1400			
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500



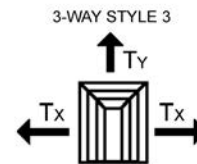
See Description of NC Criteria on page 96.



Series 1400/AL1400 Square/Rectangular Ceiling Diffuser

Three-Way Style 3

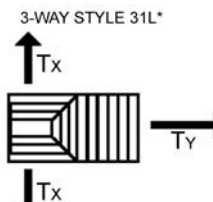
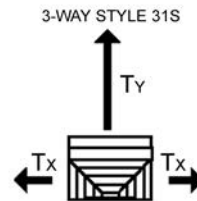
Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6	CFM	50	60	70	80	90	100	120	140	160	180	200
Ak .100	Throw X/Y	2-4/1-2	2-4/1-2	3-5/2-3	3-5/2-3	4-7/2-4	4-7/2-4	5-9/3-6	6-10/3-6	6-11/4-7	6-11/4-7	7-13/4-8
9 x 9	CFM	110	135	155	180	205	225	270	315	360	410	450
Ak .220	Throw X/Y	2-4/2-3	3-6/2-3	4-7/2-4	4-8/2-4	5-9/3-6	5-9/3-6	6-12/4-7	7-13/5-9	9-15/6-10	10-18/6-11	11-20/7-12
12 x 12	CFM	200	240	280	320	360	400	480	560	640	725	800
Ak .400	Throw X/Y	4-7/2-5	5-9/3-6	6-10/4-7	6-10/4-7	6-11/4-8	7-13/5-9	9-16/6-10	12-21/7-12	13-22/8-13	14-24/8-14	16-27/9-15
15 x 15	CFM	310	375	440	500	565	625	750	875	1000	1125	1250
Ak .620	Throw X/Y	4-8/2-4	6-11/4-7	7-13/4-7	8-14/4-8	8-15/5-9	9-16/6-10	11-19/7-12	13-23/9-15	15-26/10-18	17-29/11-20	19-33/12-21
18 x 18	CFM	450	540	630	720	810	900	1080	1260	1440	1620	1800
Ak .900	Throw X/Y	4-9/3-5	6-11/4-7	7-13/5-9	9-15/6-10	10-18/6-11	11-20/7-12	13-24/9-15	15-26/10-18	18-32/11-20	20-35/12-22	23-40/14-25
21 x 21	CFM	615	740	860	985	1110	1230	1475	1725	1970	2220	2460
Ak 1.230	Throw X/Y	5-11/3-6	7-13/4-8	11-19/6-11	11-20/7-12	12-21/8-13	13-23/8-14	16-29/10-17	19-34/11-20	21-39/14-23	24-42/16-25	27-45/18-29
24 x 24	CFM	800	960	1120	1275	1440	1600	1925	2240	2570	2890	3200
Ak 1.600	Throw X/Y	7-14/5-9	9-16/6-11	11-19/7-13	13-21/8-14	14-24/9-15	16-27/9-16	17-31/11-19	21-35/14-24	25-39/16-27	28-43/18-31	32-47/20-33
27 x 27	CFM	1010	1215	1420	1615	1820	2020	2430	2840	3240	3650	4040
Ak 2.020	Throw X/Y	7-13/4-9	9-16/6-11	11-20/7-13	13-23/9-15	14-25/9-16	15-27/10-18	18-31/12-21	22-37/14-25	25-41/18-30	28-46/19-33	31-50/21-36



Note: The minimum Throw Dimension is based on a terminal velocity of 170 FPM. The maximum Throw Dimension is based on a terminal velocity of 85 FPM.

Three-Way Style 31S and Style 31L\*

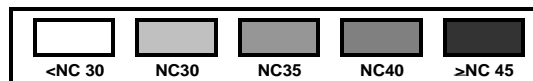
Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	75	90	105	120	135	150	180	210	240	270	300
Ak .150	Throw X/Y	2-3/4-7	2-3/4-7	2-3/4-7	2-4/4-8	3-5/5-8	3-6/5-9	4-7/6-11	4-8/7-12	6-10/9-15	6-11/10-17	6-11/11-19
9 x 9*	CFM	115	135	155	180	200	225	270	315	360	405	450
Ak .220	Throw X/Y	1-3/4-7	2-3/5-9	2-3/6-11	2-4/7-12	3-6/8-14	3-6/9-16	4-7/10-18	4-8/12-21	5-9/14-24	6-10/16-28	6-11/18-32
12 x 9	CFM	150	180	210	240	270	300	360	420	480	540	600
Ak .300	Throw X/Y	2-3/4-8	2-4/5-9	3-6/6-10	4-7/7-12	4-8/8-14	4-8/8-14	5-9/9-16	6-10/11-20	7-12/14-24	8-13/15-26	9-15/16-28
12 x 12*	CFM	200	240	280	320	360	400	480	560	640	720	800
Ak .40	Throw X/Y	2-3/5-11	2-4/7-13	3-6/9-15	3-6/10-17	4-7/11-19	4-8/12-21	6-10/15-26	6-11/18-32	7-12/20-34	7-13/21-36	8-14/24-42
15 x 15*	CFM	310	375	440	500	565	625	750	875	1000	1125	1250
Ak .620	Throw X/Y	2-4/7-13	3-6/10-18	4-7/11-20	4-8/12-21	5-9/14-25	5-9/14-25	6-11/19-34	7-13/22-38	8-14/25-43	9-16/27-44	10-18/30-45
18 x 15	CFM	375	450	525	600	675	750	900	1050	1200	1350	1500
Ak .750	Throw X/Y	3-6/7-13	4-7/9-15	4-8/9-16	5-9/11-20	6-10/13-23	6-11/15-26	7-13/17-30	9-16/19-35	10-18/22-39	11-20/27-40	13-25/30-46
21 x 18	CFM	525	630	735	840	945	1050	1260	1475	1680	1890	2100
Ak 1.050	Throw X/Y	4-7/8-14	4-8/10-18	5-9/11-20	6-10/18-23	6-11/14-25	7-12/16-28	9-15/19-34	10-18/22-39	11-20/27-40	13-23/29-46	15-26/33-51
21 x 21*	CFM	615	740	860	985	1110	1230	1475	1725	1970	2210	2460
Ak 1.230	Throw X/Y	3-6/9-17	4-8/12-21	5-9/16-27	6-10/17-30	7-11/19-32	7-12/21-36	9-15/26-40	11-19/30-45	13-22/34-51	15-25/39-56	17-28/43-60
27 x 21	CFM	780	940	1080	1250	1400	1560	1870	2180	2500	2800	3120
Ak 1.560	Throw X/Y	5-9/10-18	5-9/11-20	6-10/13-22	7-12/15-26	8-14/18-32	9-16/21-36	11-19/23-40	13-21/25-44	15-24/29-47	17-29/34-53	19-33/38-59
30 x 24	CFM	1000	1200	1400	1600	1800	2000	2400	2800	3200	3500	4000
Ak 2.000	Throw X/Y	5-9/11-20	6-11/13-23	7-13/16-27	8-14/17-31	9-16/20-35	10-18/22-40	12-21/25-44	14-25/31-48	16-29/34-53	18-32/38-57	20-35/43-61
33 x 27	CFM	1230	1475	1725	1970	2220	2460	2950	3450	3925	4425	4920
Ak 2.460	Throw X/Y	6-10/13-23	7-13/17-28	8-14/19-33	9-16/21-35	11-18/23-39	12-20/25-44	14-25/29-47	16-29/33-51	18-33/37-56	22-37/42-59	25-41/47-64



\*Style 31L not available in square configuration

Note: The minimum Throw Dimension is based on a terminal velocity of 170 FPM. The maximum Throw Dimension is based on a terminal velocity of 85 FPM.

Ceiling Height in Feet	Max. Rec. Cooling Temp. Differential	Max. Rec. CFM Per Diff.			
		1400/AL1400			
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500



See Description of NC Criteria on page 96.

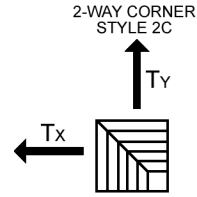


**PERFORMANCE DATA—LIGHT COMMERCIAL**

**Series 1400/AL1400 Square/Rectangular Ceiling Diffuser**

**Two-Way Corner Style 2C**

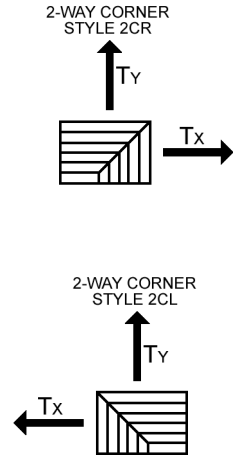
Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6	CFM	45	55	60	70	80	90	105	125	140	160	180
Ak .090	Throw X/Y	1-3/1-3	2-5/2-5	2-5/2-5	3-7/3-7	3-7/3-7	5-8/5-8	5-8/5-8	6-11/6-11	7-12/7-12	8-13/8-13	9-14/9-14
9 x 9	CFM	95	115	135	155	175	195	235	275	315	350	390
Ak .190	Throw X/Y	4-6/4-6	4-6/4-6	5-7/5-7	5-8/5-8	6-10/6-10	6-11/6-11	8-13/8-13	9-14/9-14	10-16/10-16	13-20/13-20	14-22/14-22
12 x 12	CFM	175	210	245	280	315	350	420	480	560	635	700
Ak .350	Throw X/Y	5-7/5-7	5-8/5-8	6-11/6-11	8-13/8-13	8-13/8-13	9-14/9-14	10-16/10-16	13-19/13-19	14-22/14-22	16-26/16-26	19-29/19-29
15 x 15	CFM	275	330	385	440	495	550	660	775	885	995	1100
Ak .550	Throw X/Y	5-9/5-9	7-12/7-12	8-13/8-13	9-14/9-14	10-16/10-16	11-18/11-18	13-21/13-21	15-25/15-25	19-29/19-29	21-33/21-33	23-36/23-36
18 x 18	CFM	390	470	545	625	700	780	935	1090	1250	1410	1560
Ak .780	Throw X/Y	7-12/7-12	9-14/9-14	10-15/10-15	10-16/10-16	12-19/12-19	14-22/14-22	16-25/16-25	18-29/18-29	21-33/21-33	25-38/25-38	28-42/28-42
21 x 21	CFM	540	650	760	865	975	1080	1300	1515	1730	1945	2160
Ak 1.080	Throw X/Y	8-13/8-13	10-15/10-15	12-18/12-18	13-21/13-21	15-23/15-23	17-28/17-28	20-32/20-32	22-35/22-35	25-39/25-39	29-43/29-43	32-47/32-47
24 x 24	CFM	705	845	990	1130	1270	1410	1690	1950	2250	2540	2820
Ak 1.410	Throw X/Y	9-16/9-16	11-18/11-18	13-21/13-21	15-24/15-24	17-27/17-27	19-29/19-29	22-34/22-34	25-38/25-38	29-42/29-42	33-47/33-47	37-51/37-51
27 x 27	CFM	880	1055	1230	1410	1585	1760	2110	2470	2820	3170	3520
Ak 1.760	Throw X/Y	10-17/10-17	12-19/12-19	14-22/14-22	16-26/16-26	19-29/19-29	21-33/21-33	24-37/24-37	28-41/28-41	32-46/32-46	35-50/35-50	39-55/39-55



Note: The minimum Throw Dimension is based on a terminal velocity of 135 FPM. The maximum Throw Dimension is based on a terminal velocity of 65 FPM.

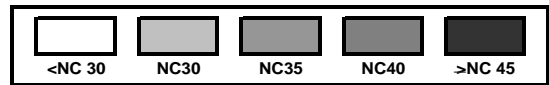
**Two-Way Corner Style 2CR**

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	65	80	95	105	120	130	160	185	210	240	260
Ak .130	Throw X/Y	2-4/3-5	3-5/4-7	4-6/5-8	4-6/5-8	5-7/6-11	5-7/6-11	6-9/8-13	6-10/9-14	7-12/11-16	8-13/13-21	10-16/16-25
12 x 6	CFM	90	105	120	140	160	175	210	245	280	315	350
Ak .170	Throw X/Y	2-4/3-6	3-5/5-8	3-5/6-11	4-6/7-12	5-7/8-13	5-7/9-14	5-8/10-15	6-11/13-20	7-12/15-24	8-13/17-26	10-15/19-29
15 x 6	CFM	110	130	155	175	200	220	265	310	350	395	440
Ak .220	Throw X/Y	2-4/5-8	3-5/6-10	3-5/7-12	4-6/8-13	5-7/10-15	5-8/11-17	6-9/13-20	6-10/15-24	8-12/17-27	10-14/20-30	11-17/22-34
12 x 9	CFM	130	155	180	210	235	260	310	365	415	470	520
Ak .260	Throw X/Y	4-6/5-7	4-6/5-8	5-7/6-10	5-8/6-11	6-10/8-12	6-11/9-14	8-13/10-16	11-17/14-21	19-19/16-24	13-20/17-26	14-23/19-30
15 x 9	CFM	165	195	230	260	295	325	390	460	525	590	650
Ak .320	Throw X/Y	4-6/6-10	5-7/6-11	6-8/8-12	6-9/10-14	6-11/10-16	7-12/12-19	9-14/14-22	10-15/16-25	12-17/19-29	13-20/21-33	14-22/23-35
18 x 9	CFM	195	235	275	310	350	390	470	545	625	700	780
Ak .390	Throw X/Y	4-6/6-11	5-7/8-13	5-7/9-14	5-8/10-15	6-10/11-18	7-12/13-21	8-13/16-25	9-15/19-29	11-17/22-33	12-20/23-35	14-22/26-39
21 x 9	CFM	230	275	320	365	410	455	545	635	730	820	910
Ak .450	Throw X/Y	4-6/8-13	5-7/10-15	6-8/11-17	6-9/12-19	6-10/13-21	6-11/15-24	8-13/18-29	10-15/22-34	12-18/24-38	13-21/26-42	15-25/30-47
15 x 12	CFM	220	260	305	350	390	435	525	610	700	785	870
Ak .430	Throw X/Y	5-7/5-8	5-8/6-11	6-10/8-13	7-12/9-14	8-13/10-16	9-14/12-19	11-18/14-22	13-20/16-25	15-24/19-29	16-26/21-32	18-29/24-37
18 x 12	CFM	260	315	370	420	475	525	630	735	840	945	1050
Ak .520	Throw X/Y	4-7/6-11	5-8/8-13	6-10/9-14	7-12/11-17	9-14/13-21	10-15/14-22	12-18/17-26	14-20/21-30	16-24/23-34	18-27/27-38	21-31/29-42
21 x 15	CFM	380	455	530	605	685	760	915	1060	1220	1370	1520
Ak .760	Throw X/Y	6-10/8-13	6-11/9-14	8-13/11-18	9-14/13-20	10-16/15-24	12-19/16-26	13-21/19-29	15-26/22-33	18-29/25-38	21-33/29-44	25-38/32-49
24 x 15	CFM	440	525	615	700	790	875	1050	1225	1400	1575	1750
Ak .870	Throw X/Y	4-9/8-14	6-11/10-16	8-13/13-20	9-14/15-24	10-16/16-26	12-19/19-29	14-22/22-34	16-25/25-38	19-29/29-44	21-32/33-48	25-37/37-52
21 x 18	CFM	460	550	640	735	825	915	1100	1280	1465	1645	1830
Ak .980	Throw X/Y	6-11/8-13	8-13/10-15	10-15/11-18	11-17/12-20	12-19/14-22	13-21/16-25	16-26/19-29	19-30/22-34	22-34/26-39	25-38/29-43	27-42/32-48
27 x 21	CFM	690	830	965	1100	1245	1380	1655	1935	2210	2490	2760
Ak 1.380	Throw X/Y	8-13/10-17	10-15/13-20	12-19/15-24	14-21/17-27	15-23/19-30	16-26/21-33	20-30/25-37	24-36/29-42	28-41/33-46	30-46/37-51	34-51/42-56



Note: The minimum Throw Dimension is based on a terminal velocity of 135 FPM. The maximum Throw Dimension is based on a terminal velocity of 65 FPM.

Ceiling Height in Feet	Max. Rec. Cooling Temp. Differential	Max. Rec. CFM Per Diff.			
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500



See Description of NC Criteria on page 96.

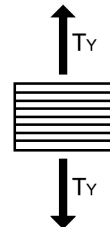


## Series 1400/AL1400 Square/Rectangular Ceiling Diffuser

### Two-Way Style 2L

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	65	80	95	105	120	130	160	185	210	240	260
Ak .130	Throw Y	3-5	3-5	5-7	6-8	7-10	7-10	8-12	10-14	11-17	14-20	16-23
12 x 6	CFM	90	105	120	140	160	175	210	245	280	315	350
Ak .170	Throw Y	3-5	5-7	6-8	6-9	7-10	8-12	10-14	12-18	15-21	16-23	17-25
15 x 6	CFM	110	130	155	175	200	220	265	310	350	395	440
Ak .220	Throw Y	4-6	6-8	6-9	7-10	9-13	10-14	10-15	13-19	15-21	18-26	21-30
12 x 9	CFM	130	155	180	210	235	260	310	365	415	470	520
Ak .260	Throw Y	5-7	6-8	6-9	8-12	10-14	10-14	11-17	14-21	16-24	19-27	20-31
15 x 9	CFM	165	195	230	260	295	325	390	460	525	590	650
Ak .320	Throw Y	6-8	7-10	8-12	9-13	10-15	12-18	14-20	16-24	18-26	21-31	24-35
18 x 9	CFM	195	235	275	310	350	390	470	545	625	700	780
Ak .390	Throw Y	6-9	8-12	9-13	10-14	11-17	13-19	15-21	17-25	19-29	22-33	25-39
21 x 9	CFM	230	275	320	365	410	455	545	635	730	820	910
Ak .450	Throw Y	7-10	8-12	9-13	11-16	12-18	14-20	16-24	19-27	22-32	25-36	29-41
15 x 12	CFM	220	260	305	350	390	435	525	610	700	785	870
Ak .430	Throw Y	6-9	8-12	10-14	10-15	12-18	14-20	15-24	18-27	22-32	24-36	28-41
18 x 12	CFM	260	315	370	420	475	525	630	735	840	945	1050
Ak .520	Throw Y	7-11	9-13	11-15	12-18	13-19	15-21	18-26	20-29	23-34	27-39	31-42
21 x 15	CFM	380	455	530	605	685	760	915	1060	1220	1370	1520
Ak .760	Throw Y	9-13	10-15	12-18	14-20	15-23	17-25	20-30	23-34	27-40	31-44	34-48
24 x 15	CFM	440	525	615	700	790	875	1050	1225	1400	1575	1750
Ak .870	Throw Y	8-14	11-16	13-19	15-21	17-25	19-29	22-33	25-38	29-42	33-48	38-54
21 x 18	CFM	460	550	640	735	825	915	1100	1280	1465	1645	1830
Ak .910	Throw Y	10-15	11-17	13-19	16-22	19-25	20-28	23-33	26-38	29-42	34-46	38-51
27 x 21	CFM	690	830	965	1100	1245	1380	1655	1935	2210	2490	2760
Ak 1.300	Throw Y	11-17	14-20	17-24	19-27	21-31	23-35	27-40	34-46	38-51	42-56	47-61

2-WAY STYLE 2L



Note: The minimum Throw Dimension is based on a terminal velocity of 135 FPM. The maximum Throw Dimension is based on a terminal velocity of 65 FPM.

### Two-Way Style 2S

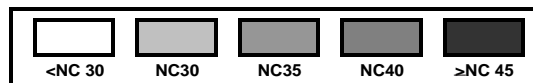
Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	65	80	95	105	120	130	160	185	210	240	265
Ak .130	Throw X	3-6	4-7	5-8	6-9	8-12	9-13	10-14	11-17	13-19	15-23	17-26
12 x 6	CFM	90	105	120	140	160	175	210	245	280	315	350
Ak .170	Throw X	4-7	6-8	7-10	8-12	9-13	10-14	11-17	14-20	15-23	17-25	19-29
15 x 6	CFM	110	130	155	175	200	220	265	310	350	395	440
Ak .220	Throw X	5-7	6-9	7-10	9-13	10-15	11-17	13-19	15-23	18-26	21-30	23-34
12 x 9	CFM	130	155	180	210	235	260	310	365	415	470	520
Ak .260	Throw X	6-8	6-9	7-10	9-13	9-13	10-15	13-19	15-21	17-25	19-29	21-31
15 x 9	CFM	165	195	230	260	295	325	390	460	525	590	650
Ak .320	Throw X	7-10	8-12	9-13	10-14	12-18	14-20	16-24	18-26	19-29	23-33	27-39
18 x 9	CFM	195	235	275	310	350	390	470	545	625	700	780
Ak .390	Throw X	7-10	9-13	11-17	12-18	13-19	15-23	18-27	20-30	22-32	25-38	29-43
21 x 9	CFM	230	275	320	365	410	455	545	635	730	820	910
Ak .450	Throw X	9-13	9-14	10-15	12-18	15-21	16-24	19-29	22-33	26-38	29-42	32-47
15 x 12	CFM	220	260	305	350	390	435	525	610	700	785	870
Ak .430	Throw X	7-10	8-12	10-14	11-17	13-19	15-21	16-24	19-27	22-33	25-38	29-42
18 x 12	CFM	260	315	370	420	475	525	630	735	840	945	1050
Ak .520	Throw X	8-11	10-14	10-15	12-18	14-20	15-23	18-27	23-33	25-37	29-42	32-47
21 x 15	CFM	380	455	530	605	685	760	915	1060	1220	1370	1520
Ak .760	Throw X	10-15	11-17	14-20	15-23	18-26	20-29	22-33	26-38	29-42	35-46	39-51
24 x 15	CFM	440	525	615	700	790	875	1050	1225	1400	1575	1750
Ak .870	Throw X	9-14	11-17	15-21	17-25	19-29	22-32	25-37	28-41	33-45	38-51	43-56
21 x 18	CFM	460	550	640	735	825	915	1100	1280	1465	1645	1830
Ak .910	Throw X	11-17	12-18	14-20	16-24	19-27	20-29	23-34	27-40	32-45	37-49	40-55
27 x 21	CFM	690	830	965	1100	1245	1380	1655	1935	2210	2490	2760
Ak 1.300	Throw X	12-18	15-21	18-25	21-29	23-33	25-37	29-43	33-48	38-53	43-59	49-63

2-WAY STYLE 2S



Note: The minimum Throw Dimension is based on a terminal velocity of 135 FPM. The maximum Throw Dimension is based on a terminal velocity of 65 FPM.

Ceiling Height in Feet	Max. Rec. Cooling Temp. Differential	Max. Rec. CFM Per Diff.			
		1400/AL1400			
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500



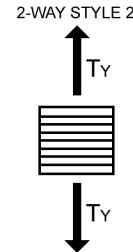
See Description of NC Criteria on page 96.



## Series 1400/AL1400 Square/Rectangular Ceiling Diffuser

### Two-Way Style 2

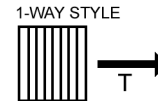
Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6	CFM	45	55	60	70	80	90	105	125	140	160	180
Ak .090	Throw Y	3-5	3-5	4-7	4-7	5-8	5-8	6-9	9-13	10-15	11-17	12-18
9 x 9	CFM	95	115	135	155	175	195	235	275	315	350	390
Ak .190	Throw Y	5-7	6-8	6-8	6-9	8-12	9-13	11-17	12-18	14-20	16-24	18-26
12 x 12	CFM	175	210	245	280	315	350	420	480	560	635	700
Ak .350	Throw Y	4-7	6-9	9-13	10-15	11-17	12-18	14-20	17-23	18-27	21-31	23-35
15 x 15	CFM	275	330	385	440	495	550	660	775	885	995	1100
Ak .550	Throw Y	8-12	10-14	10-15	12-18	14-20	15-23	18-27	22-32	24-36	26-39	29-43
18 x 18	CFM	390	470	545	625	700	780	935	1090	1250	1410	1560
Ak .780	Throw Y	9-15	11-17	12-18	14-20	15-23	18-26	20-30	24-36	27-42	31-45	36-51
21 x 21	CFM	540	650	760	865	975	1080	1300	1515	1730	1945	2160
Ak 1.080	Throw Y	11-17	14-20	15-23	18-26	19-29	23-35	26-40	29-44	34-49	38-54	43-59
24 x 24	CFM	705	845	990	1130	1270	1410	1690	1950	2250	2540	2820
Ak 1.410	Throw Y	12-19	14-22	17-25	20-30	21-33	23-35	27-40	34-46	39-51	42-56	46-60
27 x 27	CFM	880	1055	1230	1410	1585	1760	2110	2470	2820	3170	3520
Ak 1.760	Throw Y	12-20	15-23	18-26	21-31	24-36	26-40	30-45	35-50	39-56	43-61	48-66



**Note:** The minimum Throw Dimension is based on a terminal velocity of 135 FPM. The maximum Throw Dimension is based on a terminal velocity of 65 FPM.

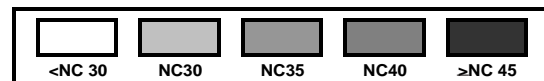
### One-Way Style

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6	CFM	45	55	60	70	80	90	105	125	140	160	180
Ak .090	Throw	3-5	4-7	5-8	6-9	8-10	9-12	10-14	12-18	14-20	15-22	16-24
9 x 9	CFM	95	115	135	155	175	195	235	275	315	350	390
Ak .190	Throw	6-9	7-10	9-13	10-14	11-17	13-19	15-21	18-26	19-29	22-33	25-38
12 x 12	CFM	175	210	245	280	315	350	420	480	560	635	700
Ak .350	Throw	8-12	10-14	12-18	13-19	15-21	18-26	21-31	24-36	27-40	30-43	33-45
15 x 15	CFM	275	330	385	440	495	550	660	775	885	995	1100
Ak .550	Throw	10-16	13-19	14-22	18-26	19-29	21-31	25-37	30-43	35-46	38-50	42-56
18 x 18	CFM	390	470	545	625	700	780	935	1090	1250	1410	1560
Ak .780	Throw	13-21	15-23	18-26	19-29	22-33	25-38	29-42	35-46	42-49	44-52	49-56
21 x 21	CFM	540	650	760	865	975	1080	1300	1515	1730	1945	2160
Ak 1.080	Throw	14-23	17-25	21-30	24-36	27-40	30-43	34-48	39-54	44-60	48-64	53-68
24 x 24	CFM	705	845	990	1130	1270	1410	1690	1950	2250	2540	2820
Ak 1.410	Throw	20-29	23-33	24-36	27-40	30-44	35-48	39-54	43-60	48-65	52-69	56-74
27 x 27	CFM	880	1055	1230	1410	1585	1760	2110	2470	2820	3170	3520
Ak 1.760	Throw	19-27	22-31	25-38	28-42	33-47	36-53	43-58	49-63	54-68	60-73	65-77



**Note:** The minimum Throw Dimension is based on a terminal velocity of 135 FPM. The maximum Throw Dimension is based on a terminal velocity of 65 FPM.

Ceiling Height in Feet	Max. Rec. Cooling Temp. Differential	Max. Rec. CFM Per Diff. 1400/AL1400			
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500

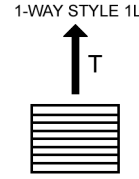


See Description of NC Criteria on page 96.

Series 1400/AL1400 Square/Rectangular Ceiling Diffuser

One-Way Style 1L

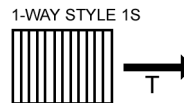
Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	65	80	95	105	120	130	160	185	210	240	265
Ak .130	Throw	5-8	6-9	7-11	8-12	9-13	10-15	12-18	15-21	16-24	19-29	21-32
12 x 6	CFM	90	105	120	140	160	175	210	245	280	315	350
Ak .170	Throw	5-8	6-9	6-13	9-14	10-15	12-18	14-20	17-25	18-27	20-30	23-35
15 x 6	CFM	110	130	155	175	200	220	265	310	350	395	440
Ak .220	Throw	5-8	7-10	9-13	10-15	12-18	14-20	16-24	18-27	21-31	24-36	28-41
12 x 9	CFM	130	155	180	210	235	260	310	365	415	470	520
Ak .260	Throw	7-10	8-12	10-14	11-17	12-18	14-20	17-25	19-29	22-23	25-37	28-41
15 x 9	CFM	165	195	230	260	295	325	390	460	525	590	650
Ak .320	Throw	9-13	10-14	11-17	12-18	15-23	17-25	20-30	22-33	25-37	29-42	32-45
18 x 9	CFM	195	235	275	310	350	390	470	545	625	700	780
Ak .390	Throw	9-13	10-15	12-18	14-20	16-24	18-26	20-30	25-37	27-40	31-44	36-48
15 x 12	CFM	220	260	305	350	390	435	525	610	700	785	870
Ak .430	Throw	10-14	11-17	13-19	15-23	18-26	19-29	22-32	26-39	30-43	35-48	39-54
18 x 12	CFM	260	315	370	420	475	525	630	735	840	945	1050
Ak .520	Throw	10-15	12-18	14-20	17-25	19-27	21-30	25-36	29-41	32-45	36-49	42-54
21 x 15	CFM	380	455	530	605	685	760	915	1060	1220	1370	1520
Ak .760	Throw	13-19	15-21	18-26	19-29	22-34	25-38	29-42	34-46	38-51	43-56	48-61
24 x 15	CFM	440	525	615	700	790	875	1050	1225	1400	1575	1750
Ak .870	Throw	14-22	16-24	18-27	21-31	24-36	27-40	30-43	35-47	41-52	46-57	53-61
21 x 18	CFM	460	550	640	735	825	915	1100	1280	1465	1645	1830
Ak .910	Throw	14-20	16-24	19-29	22-32	24-36	26-39	30-43	35-47	41-51	45-56	49-62
27 x 21	CFM	690	830	965	1100	1245	1380	1655	1935	2210	2490	2760
Ak 1.380	Throw	17-27	19-29	23-35	26-40	30-45	34-49	38-54	43-60	48-67	54-72	59-80



Note: The minimum Throw Dimension is based on a terminal velocity of 135 FPM. The maximum Throw Dimension is based on a terminal velocity of 65 FPM.

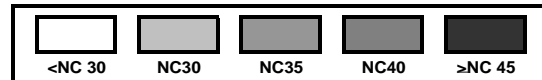
One-Way Style 1S

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	65	80	95	105	120	130	160	185	210	240	265
Ak .130	Throw	4-7	5-9	7-11	9-13	11-17	13-19	15-21	16-24	18-27	21-32	23-35
12 x 6	CFM	90	105	120	140	160	175	210	245	280	315	350
Ak .170	Throw	6-10	8-12	10-15	12-17	14-19	15-21	17-25	21-31	23-35	25-37	29-44
15 x 6	CFM	110	130	155	175	200	220	265	310	350	395	440
Ak .220	Throw	9-12	10-14	12-18	14-20	16-24	18-26	21-31	23-35	27-40	31-45	35-51
12 x 9	CFM	130	155	180	210	235	260	310	365	415	470	520
Ak .260	Throw	8-12	10-14	10-15	12-18	14-20	16-24	18-27	23-33	24-37	28-42	30-44
15 x 9	CFM	165	195	230	260	295	325	390	460	525	590	650
Ak .320	Throw	10-15	12-18	13-19	15-21	18-26	22-32	23-35	26-39	30-43	35-46	38-47
18 x 9	CFM	195	235	275	310	350	390	470	545	625	700	780
Ak .390	Throw	11-17	13-19	15-23	17-25	20-30	22-33	25-38	31-44	34-45	38-47	42-51
15 x 12	CFM	220	260	305	350	390	435	525	610	700	785	870
Ak .430	Throw	11-16	12-18	15-21	17-25	19-29	22-32	25-38	28-44	33-45	36-49	42-54
18 x 12	CFM	260	315	370	420	475	525	630	735	840	945	1050
Ak .520	Throw	12-18	14-20	16-24	19-27	21-31	22-33	27-40	32-45	37-47	42-50	45-56
21 x 15	CFM	380	455	530	605	685	760	915	1060	1220	1370	1520
Ak .760	Throw	14-20	16-24	19-29	22-32	24-37	28-41	33-45	39-48	43-52	48-58	54-63
24 x 15	CFM	440	525	615	700	790	875	1050	1225	1400	1575	1750
Ak .870	Throw	16-23	18-26	22-32	25-37	28-41	32-45	37-47	44-54	49-59	54-66	59-71
21 x 18	CFM	460	550	640	735	825	915	1100	1280	1465	1645	1830
Ak .910	Throw	18-24	18-26	21-31	24-33	26-38	28-41	33-47	39-53	44-58	48-63	54-69
27 x 21	CFM	690	830	965	1100	1245	1380	1655	1935	2210	2490	2760
Ak 1.380	Throw	19-29	21-32	25-38	31-44	37-49	40-51	42-55	46-61	51-66	56-71	61-77



Note: The minimum Throw Dimension is based on a terminal velocity of 135 FPM. The maximum Throw Dimension is based on a terminal velocity of 65 FPM.

Ceiling Height in Feet	Max. Rec. Cooling Temp. Differential	Max. Rec. CFM Per Diff.			
		1400/AL1400			
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500



See Description of NC Criteria on page 96.

**1444, AL1444 Modular Core**

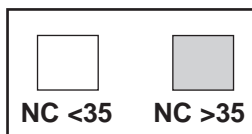
Neck Size	6 x 6	8 x 8	10 x 10	12 x 12	14x14	16x16	18x18	20x20		
No. of Blades per Module	6 x 6	8 x 8	10 x 10	12 x 12	14x14	16x16	18x18	20x20		
Effective Area (Ak) in Sq. Ft.	.100	.178	.278	.400	.544	.711	.900	1.111	Jet Velocity	Neck Velocity
CFM	75	133	208	300	408	533	675	833		
4-way throw in feet	8	10	13	15	18	21	23	26	750	300
Noise Criteria	<20	<20	<20	<20	<20	<20	<20	<20		
Static Press inches wc	.005	.008	.010	.014	.018	.023	.029	.035		
CFM	100	178	278	400	544	711	900	1111	1000	400
4-way throw in feet	9	12	15	18	21	24	27	30		
Noise Criteria	<20	<20	<20	<20	<20	<25	<25	<25		
Static Press inches wc	.009	.013	.019	.025	.033	.042	.052	.063		
CFM	125	222	347	500	681	889	1125	1389	1250	500
4-way throw in feet	10	13	17	20	23	27	30	33		
Noise Criteria	<20	<20	<20	20	<25	<30	<30	<30		
Static Press inches wc	.014	.020	.029	.039	.051	.065	.081	.098		
CFM	150	267	417	600	817	1067	1350	1667	1500	600
4-way throw in feet	11	15	18	22	25	29	33	36		
Noise Criteria	<20	<20	<25	25	<30	<35	<35	35		
Static Press inches wc	.021	.031	.043	.057	.075	.095	.117	.143		
CFM	175	311	486	700	953	1244	1575	1944	1750	700
4-way throw in feet	12	16	20	24	28	31	35	39		
Noise Criteria	<20	<25	<30	<30	<35	35	<40	<40		
Static Press inches wc	.028	.040	.057	.077	.101	.128	.159	.193		
CFM	200	356	556	800	1089	1422	1800	2222	2000	800
4-way throw in feet	13	17	21	25	29	34	38	42		
Noise Criteria	<20	25	<30	<35	<40	<40	<45	<45		
Static Press inches wc	.037	.053	.075	.101	.132	.167	.208	.253		

Throw is at 50 fpm terminal velocity  
NC is based on 10dB room attenuation (10<sup>-12</sup> watts)

**Step-Down Diffusers 1500 / 1520 / AL1520 1530 / 1540 / 1540D / 1560 / 1570****1600 Adjustable Round Diffuser**

Neck Velocity		400	500	600	700	800	900	1000	1200	1400
6" Ak .160	CFM	80	100	120	140	160	180	200	235	275
	Ps	<.010	<.010	<.010	<.010	0.014	0.02	0.02	0.03	0.03
	Throw	2.00	2.00	2.0	3.0	3.0	4.0	4.0	5.0	6.0
8" Ak .280	CFM	140	175	210	245	280	315	350	420	490
	Ps	<.010	<.010	<.010	<.010	0.01	0.02	0.02	0.03	0.04
	Throw	3.5	3.0	3.0	4.0	4.0	5.0	5.0	7.0	8.0
10" Ak .440	CFM	218	273	327	382	436	491	545	654	763
	Ps	<.010	<.010	<.010	0.01	0.01	0.02	0.02	0.03	0.04
	Throw	3.0	3.0	4.0	5.0	5.0	6.0	7.0	8.0	10.0
12" Ak .660	CFM	315	390	470	550	630	705	785	940	1100
	Ps	<.010	<.010	<.010	0.01	0.01	0.02	0.02	0.03	0.04
	Throw	3.0	4.0	5.0	6.0	7.0	7.0	8.0	10.0	11.0
14" Ak .910	CFM	425	530	635	745	850	955	1060	1270	1490
	Ps	<.010	<.010	<.010	0.01	0.01	0.02	0.02	0.03	0.04
	Throw	4.0	5.0	6.0	7.0	8.0	8.0	9.0	11.0	13.0
16" Ak 1.200	CFM	560	700	840	980	1120	1260	1400	1680	1960
	Ps	<.010	<.010	<.010	0.01	0.01	0.02	0.02	0.03	0.04
	Throw	4.0	5.0	7.0	8.0	9.0	10.0	11.0	13.0	15.0
18" Ak 1.500	CFM	710	885	1060	1240	1420	1590	1770	2120	2480
	Ps	<.010	<.010	<.010	0.01	0.01	0.02	0.02	0.03	0.04
	Throw	5.0	6.0	7.0	9.0	10.0	11.0	12.0	15.0	17.0

**Note:** Core in "out" position. Terminal velocity of 100 FPM  
When diffusers are used on an exposed duct, multiply throw by 0.7.



Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
6"	CFM	80	100	120	135	155	175	195	235	275	315
	Ps	.008	.012	.017	.021	.028	.035	.043	.063	.086	.112
	NC	<20	<20	<20	<20	<20	<20	20	25	30	35
	Throw	2.0	3.0	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0
8"	CFM	140	175	210	245	280	315	350	420	490	560
	Ps	.010	.015	.022	.029	.038	.049	.060	.086	.117	.150
	NC	<20	<20	<20	<20	20	25	30	35	40	45
	Throw	3.5	4.5	5.5	6.5	7.0	8.0	9.0	10.5	12.5	14.5
10"	CFM	220	270	325	380	435	490	545	655	765	870
	Ps	.014	.021	.030	.041	.054	.068	.084	.122	.167	.212
	NC	<20	<20	<20	20	25	30	35	40	45	45
	Throw	5.5	7.0	8.5	10.0	11.0	12.5	14.0	17.0	19.5	22.0
12"	CFM	315	390	470	550	630	705	785	940	1100	1255
	Ps	.015	.023	.033	.045	.060	.072	.094	.132	.180	.230
	NC	<20	<20	20	25	30	35	40	45	45	45
	Throw	6.0	7.5	9.0	10.5	12.0	13.5	15.0	18.0	21.0	24.0
14"	CFM	430	535	640	750	855	960	1070	1285	1500	1710
	Ps	.023	.036	.051	.071	.093	.115	.140	.205	.277	.350
	NC	<20	<20	20	25	30	35	40	40	45	45
	Throw	6.5	8.0	9.5	11.5	13.0	14.5	16.0	19.0	22.5	25.0

Terminal Velocity of 75 FPM  
An = Neck Area in square feet  
AK = Effective Area in square feet  
Ps = Static Pressure Loss in inches of water  
NC = Noise Criteria, based on a 10dB room attenuation (RE: 10<sup>-12</sup> watts) ASHRAE 36-72  
**Note:** The use of a balancing hood is recommended to balance the system.

**1580/1590/AL1580 T-Bar Plate Diffuser**

Neck Velocity		300	400	500	600	700	800	900	1000	1200	1400	1600
6"	CFM	60	80	100	120	135	155	175	195	235	275	315
	Ps	.004	.006	.010	.014	.018	.023	.030	.037	.054	.073	.096
	NC	<20	<20	<20	<20	<20	<20	20	25	30	35	40
	Throw	1.0	1.0	1.5	1.5	2.0	2.0	2.5	2.5	3.0	3.5	4.0
8"	CFM	105	140	175	210	245	280	315	350	420	490	560
	Ps	.010	.010	.015	.022	.029	.038	.049	.060	.086	.117	.150
	NC	<20	<20	<20	<20	20	25	30	35	40	45	45
	Throw	1.5	2.0	2.0	2.5	3.0	3.5	4.0	4.5	5.5	6.5	7.0
10"	CFM	165	220	275	325	380	435	490	545	655	765	875
	Ps	.014	.014	.021	.030	.041	.054	.068	.084	.122	.167	.212
	NC	<20	<20	<20	<20	20	25	30	35	40	45	50
	Throw	2.0	3.0	3.5	4.0	5.0	5.5	6.5	7.0	8.5	10.0	10.5
12"	CFM	235	315	395	470	550	630	705	785	945	1100	1260
	Ps	.015	.015	.023	.033	.045	.060	.072	.094	.132	.180	.230
	NC	<20	<20	<20	20	25	30	35	40	45	50	50
	Throw	3.0	4.0	5.0	6.0	7.0	8.0	8.5	9.5	11.5	13.5	14.0
14"	CFM	320	430	535	640	750	855	960	1070	1280	1500	1710
	Ps	.023	.023	.036	.051	.071	.093	.115	.140	.205	.277	.350
	NC	<20	<20	<20	20	25	30	35	40	45	50	55
	Throw	5.0	7.0	8.5	10.5	12.0	13.5	15.5	17.0	20.5	24.0	24.5

Terminal Velocity of 75 FPM  
An = Neck Area in Sq. Ft.  
NC = Noise Criteria, based on a 10dB room attenuation (RE: 10<sup>-12</sup> watts) ASHRAE 36-72



### 1520-12 Step-Down Diffusers

Neck Velocity		400	500	600	700	800	1000	1200	1400	1600
6" An .200	CFM	80	100	120	135	155	195	235	275	315
	Ps	.008	.012	.019	.025	.033	.052	.074	.101	.131
	NC	<20	<20	<20	<20	<20	25	30	35	40
	Throw	4	5	5	6	7	8	9	10	11
7" An .275	CFM	107	134	160	187	214	267	321	374	428
	Ps	.01	.015	.023	.031	.041	.064	.091	.125	.162
	NC	<20	<20	<20	<20	20	30	35	40	45
	Throw	4	5	6	7	8	10	11	12	13
8" An .350	CFM	140	175	210	245	280	350	420	490	560
	Ps	.012	.019	.028	.038	.05	.078	.112	.153	.199
	NC	<20	<20	<20	<20	20	30	35	40	45
	Throw	5	6	7	8	9	11	12	14	15

Terminal Velocity of 75 FPM

An = Neck Area in Sq. Ft.

NC = Noise Criteria based on 10dB room absorption (Re: 10<sup>-12</sup> watts).

### Model 1580-12

Neck Velocity		400	500	600	700	800	900	1000	1200	1400
6" An .200 Ak .279	CFM Ps NC	80	100	120	135	155	175	195	235	275
	Throw	.006	.010	.014	.018	.023	.030	.037	.054	.073
	NC	<20	<20	<20	<20	<20	20	25	30	35
	Throw	1.0	2.0	2.0	2.5	3.0	3.5	4.0	4.5	5.5
7" An .267 Ak .298	CFM Ps NC	107	134	160	187	214	240	267	320	374
	Throw	.007	.011	.016	.024	.029	.041	.053	.073	.103
	NC	<20	<20	<20	20	25	30	30	35	40
	Throw	2.5	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0
8" An .350 Ak .354	CFM Ps NC	140	175	210	245	280	315	350	420	490
	Throw	.010	.015	.022	.029	.038	.049	.060	.086	.117
	NC	<20	<20	<20	20	25	30	30	35	40
	Throw	2.5	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0

Terminal Velocity of 75 FPM

An = Neck Area in Sq. Ft.

NC = Noise Criteria based on 10dB room absorption (Re: 10<sup>-12</sup> watts).

### Series AL2900 Drum Louver

2906 = 6 inches

Standard Finish: Satin Aluminum

Size (in x in)	Area Factors	Neck Area (Ft <sup>2</sup> )	Outlet* Velocity		800	1000	1200	1400	1600	1800	2100
			Velocity Pressure	.007	.010	.015	.025	.030	.040	.052	
Total Pressure			.039	.065	.100	.147	.194	.254	.330		
9 x 6	0.16	0.375	CFM	128	160	192	224	256	288	336	
			Throw	6-7-13	8-11-14	10-14-23	12-17-26	4-19-29	16-21-32	17-23-35	
12 x 6	0.21	0.500	CFM	168	210	252	294	336	378	441	
			Throw	8-10-18	10-15-24	12-17-27	14-18-30	15-20-33	17-22-37	18-23-41	
18 x 6	0.32	0.750	CFM	256	320	384	448	512	576	672	
			Throw	10-14-23	13-18-30	15-20-34	18-23-38	20-26-43	23-30-48	25-32-52	
24 x 6	0.41	1.000	CFM	328	410	492	574	656	738	861	
			Throw	12-17-28	16-21-35	19-25-40	22-29-45	24-33-51	27-36-56	30-38-61	
30 x 6	0.52	1.250	CFM	416	520	624	728	832	936	1092	
			Throw	15-20-33	18-24-39	22-28-44	25-32-50	27-37-56	30-40-61	33-43-66	
36 x 6	0.62	1.500	CFM	496	620	744	868	992	1116	1302	
			Throw	17-23-37	20-26-43	24-30-47	28-35-54	31-40-60	34-44-65	37-46-72	
48 x 6	0.83	2.000	CFM	664	830	996	1162	1328	1494	1743	
			Throw	20-26-41	23-29-47	26-35-55	32-41-62	36-45-66	40-49-72	44-53-78	
60 x 6	1.05	2.500	CFM	840	1000	1260	1470	1680	1890	2205	
			Throw	22-29-45	25-32-52	29-39-61	36-46-70	41-50-79	46-54-86	49-59-96	

\*Outlet velocity and Ak based on 15° deflection.

### Series AL2900 Drum Louver

2910 = 10 inches

Standard Finish: Satin Aluminum

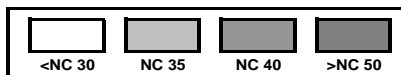
Size (in x in)	Area Factors	Neck Area (Ft <sup>2</sup> )	Outlet* Velocity		800	1000	1200	1400	1600	1800	2100
			Velocity Pressure	.007	.010	.015	.025	.030	.040	.052	
Total Pressure			.039	.065	.100	.147	.194	.254	.330		
20 x 10	0.60	1.390	CFM	480	600	720	840		1080	1260	
			Throw	19-23-33	23-27-40	26-31-46	29-35-53		35-42-64	38-46-69	
25 x 10	0.75	1.740	CFM	600	750	900	1050		1350	1575	
			Throw	21-24-38	25-29-46	28-34-53	32-38-60		38-46-73	41-50-79	
30 x 10	0.90	2.080	CFM	720	900	1080	1260	1440	1620	1890	
			Throw	22-25-41	27-31-51	31-36-58	35-41-66	39-46-74	42-50-81	46-54-88	
35 x 10	1.05	2.440	CFM	840	1050	1260	1470	1680	1890	2205	
			Throw	22-27-43	27-33-53	32-39-62	37-45-71	41-50-81	45-54-89	49-59-98	
40 x 10	1.20	2.780	CFM	960	1200	1440	1680	1920	2160	2520	
			Throw	23-28-47	28-34-58	34-41-69	39-48-79	44-59-88	48-59-96	53-65-105	
50 x 10	1.50	3.470	CFM	1200	1500	1800	2100	2400	2700	3150	
			Throw	25-31-52	31-39-63	37-46-74	44-53-82	48-59-91	54-65-100	60-72-110	
60 x 10	1.85	4.170	CFM	1480	1850	2220	2590	2960	3330	3885	
			Throw	25-33-59	33-42-73	40-50-84	47-58-95	54-55-108	61-74-118	68-81-128	
70 x 10	2.15	4.860	CFM	1720	2150	2580	3010	3440	3870	4515	
			Throw	38-36-62	35-46-78	43-54-93	50-63-108	58-71-123	65-79-135	72-87-147	

\*Outlet velocity and Ak based on 15° deflection.

Throw data is based on Terminal Velocities of 150 FPM, 100 FPM and 50 FPM, respectively.

Throw, NC and Total Pressure are based on 15° blade deflection. For 0° or 30° deflection, the following correction factors should be applied to the table values.

Deflection	Throw	Total Pressure	NC
0°	1.2	0.795	- 4
30°	0.8	1.430	+5





### Series AL2900 Drum Louver

2912 = 12 inches  
Standard Finish: Satin Aluminum

Size (in x in)	Area Factors	Neck Area (Ft <sup>2</sup> )	Outlet* Velocity	800	1000	1200	1400	1600	1800	2100
			Velocity Pressure	.007	.010	.015	.025	.030	.040	.052
			Total Pressure	.039	.065	.100	.147	.194	.254	.330
20 x 12	0.70	1.670	CFM	560	700	840	980	1120	1260	1470
			Throw	10-20-35	18-25-43	23-31-51	26-35-58	29-39-64	33-44-71	36-48-78
30 x 12	1.05	2.500	CFM	840	1050	1260	1470	1680	1890	2205
			Throw	17-25-42	24-32-53	28-38-63	33-43-72	38-49-81	43-55-90	48-60-99
40 x 12	1.40	3.330	CFM	1120	1400	1680	1960	2240	2520	2940
			Throw	20-28-49	27-36-62	32-43-74	38-50-86	44-57-97	49-64-107	55-61-120
50 x 12	1.75	4.160	CFM	1400	1750	2100	2450	2800	3150	3675
			Throw	22-29-56	29-39-71	37-48-85	44-56-99	51-64-117	58-73-127	64-81-138
60 x 12	2.15	5.000	CFM	1720	2150	2580	3010	3440	3870	4515
			Throw	25-33-61	33-44-78	42-53-94	49-63-110	58-74-125	66-83-140	75-92-155
70 x 12	2.50	5.830	CFM	2000	2500	3000	3500	4000	4500	5250
			Throw	28-37-68	37-49-87	47-61-107	57-73-125	67-86-142	76-97-160	86-110-180

\*Outlet velocity and Ak based on 15° deflection.

### Series AL2900 Drum Louver

2915 = 15 inches  
Standard Finish: Satin Aluminum

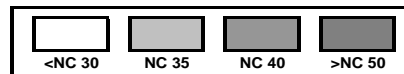
Size (in x in)	Area Factors	Neck Area (Ft <sup>2</sup> )	Outlet* Velocity	800	1000	1200	1400	1600	1800	2100
			Velocity Pressure	.007	.010	.015	.025	.030	.040	.052
			Total Pressure	.039	.065	.100	.147	.194	.254	.330
15 x 15	0.75	1.560	CFM	600	750	900	1050	1200	1350	1575
			Throw	3-10-28	9-18-36	14-24-36	21-27-50	24-30-56	25-32-58	29-38-69
20 x 15	1.00	2.080	CFM	800	1000	1200	1400	1600	1800	2100
			Throw	9-17-35	17-24-43	22-28-52	25-32-60	29-37-68	31-40-72	35-44-80
25 x 15	1.25	2.600	CFM	1000	1250	1500	1750	2000	2250	2625
			Throw	13-21-38	21-26-48	25-32-58	29-38-68	34-43-77	38-48-86	42-54-95
30 x 15	1.55	3.120	CFM	1240	1550	1860	2170	2480	2790	3255
			Throw	14-23-42	22-28-54	27-35-65	32-41-76	37-47-86	41-54-97	46-59-107
40 x 15	2.05	4.170	CFM	1640	2050	2460	2870	3280	3690	4305
			Throw	19-25-48	27-35-66	34-43-79	39-50-93	45-58-105	51-65-118	57-72-130
50 x 15	2.55	5.210	CFM	2040	2550	3060	3570	4080	4590	5355
			Throw	24-30-61	31-40-78	38-48-96	45-58-114	52-66-130	58-75-145	65-83-163
60 x 15	3.00	6.250	CFM	2400	3000	3600	4200	4800	5400	6300
			Throw	27-34-68	35-46-88	43-58-106	52-68-125	60-79-143	68-89-160	76-100-176
70 x 15	3.50	7.300	CFM	2800	3500	4200	4900	5600	6300	7350
			Throw	29-38-72	40-51-95	50-64-118	60-76-140	71-89-160	81-101-184	90-112-195

\*Outlet velocity and Ak based on 15° deflection.

Throw data is based on Terminal Velocities of 150 FPM, 100 FPM and 50 FPM, respectively.

Throw, NC and Total Pressure are based on 15° blade deflection. For 0° or 30° deflection, the following correction factors should be applied to the table values.

Deflection	Throw	Total Pressure	NC
0°	1.2	0.795	- 4
30°	0.8	1.430	+5







**PERFORMANCE DATA—LIGHT COMMERCIAL**

**ALSDV, ALSDVH  
Spiral Diffuser**

**UALSDV, UALSDVH  
Universal Spiral Diffuser**

Face Velocity		300	400	500	600	700	800	1000	1200
Total Pressure		.016	.029	.046	.066	.090	.117	.183	.263
10 x 3 Ak .14	CFM	42	56	70	84	98	112	140	168
	Horizontal Throw	7-3	8-4	9-5	10-6	11-7	12-8	13-9	14-10
	Noise Criteria	-	-	-	-	-	23	29	35
12 x 3 Ak .18	CFM	54	72	90	108	126	144	180	216
	Horizontal Throw	8-5	9-6	10-7	11-8	12-8	13-9	14-10	16-11
	Noise Criteria	-	-	-	-	20	24	31	36
10 x 4 14 x 3 Ak .21	CFM	63	84	105	126	147	168	210	252
	Horizontal Throw	8-5	10-7	11-8	12-8	13-9	14-10	16-11	17-12
	Noise Criteria	-	-	-	-	21	25	31	37
16 x 3 12 x 4 Ak .25	CFM	75	100	125	150	175	200	250	300
	Horizontal Throw	9-5	11-7	12-8	13-9	14-10	15-11	17-12	19-13
	Noise Criteria	-	-	-	-	21	25	32	37
24 x 3 12 x 6 Ak .39	CFM	117	156	195	234	273	312	390	468
	Horizontal Throw	12-7	13-9	15-10	17-11	18-12	19-13	21-15	24-16
	Noise Criteria	-	-	-	-	23	27	34	39
24 x 4 16 x 6 Ak .52	CFM	156	208	260	312	364	416	520	624
	Horizontal Throw	13-8	16-11	18-12	19-13	21-14	22-15	25-17	27-19
	Noise Criteria	-	-	-	20	24	28	35	40
14 x 8 18 x 6 Ak .63	CFM	189	252	315	378	441	504	630	756
	Horizontal Throw	15-8	17-12	19-13	21-14	23-16	24-17	27-19	30-20
	Noise Criteria	-	-	-	20	25	29	36	41
20 x 6 Ak .66	CFM	198	264	330	396	462	528	660	792
	Horizontal Throw	15-9	18-12	20-13	22-15	24-16	25-17	28-19	31-21
	Noise Criteria	-	-	-	21	25	29	36	41
16 x 8 Ak .71	CFM	213	284	355	426	497	568	710	852
	Horizontal Throw	16-9	18-13	20-14	23-15	24-17	26-18	30-20	35-22
	Noise Criteria	-	-	-	21	26	30	36	42
24 x 6 18 x 8 Ak .88	CFM	264	352	440	528	616	704	880	1056
	Horizontal Throw	18-10	20-14	23-16	25-17	27-18	29-20	32-22	36-24
	Noise Criteria	-	-	-	22	26	30	37	43
20 x 8 16 x 10 Ak .98	CFM	294	392	490	588	686	784	980	1176
	Horizontal Throw	19-10	21-15	24-17	26-18	28-19	30-21	34-23	38-25
	Noise Criteria	-	-	-	23	27	31	38	44
18 x 10 Ak 1.11	CFM	333	444	555	666	777	888	1110	1332
	Horizontal Throw	20-11	23-16	25-18	28-19	30-21	32-22	36-25	40-27
	Noise Criteria	-	-	-	23	27	31	38	44
36 x 6 18 x 12 Ak 1.35	CFM	405	540	675	810	945	1080	1350	1620
	Horizontal Throw	22-12	25-17	28-19	31-21	34-23	36-24	40-27	44-30
	Noise Criteria	-	-	-	24	28	32	39	44
24 x 10 20 x 12 Ak 1.49	CFM	447	596	745	894	1043	1192	1490	1788
	Horizontal Throw	23-13	26-18	30-20	32-22	35-24	37-26	42-29	46-31
	Noise Criteria	-	-	-	24	29	33	39	45
24 x 12 Ak 1.82	CFM	546	728	910	1092	1274	1456	1820	2184
	Horizontal Throw	25-14	30-20	33-22	36-25	39-27	42-28	47-32	51-35
	Noise Criteria	-	-	-	25	30	34	40	46
36 x 10 30 x 12 Ak 2.29	CFM	687	916	1145	1374	1603	1832	2290	2748
	Horizontal Throw	29-16	33-22	37-25	41-28	44-30	47-32	53-36	61-42
	Noise Criteria	-	-	20	26	30	34	41	47
36 x 12 Ak 2.75	CFM	825	1100	1375	1650	1925	2200	2750	3300
	Horizontal Throw	31-18	36-25	41-28	44-30	48-33	51-35	57-39	63-43
	Noise Criteria	-	-	21	27	31	35	42	47

Terminal Velocity of 75 and 150 FPM, respectively

**Notes:**

1. Total Pressure in inches water column.
2. Throw data are in feet at terminal velocities of 75 and 150 FPM, respectively.
3. Noise Criteria based on a 10 dB room attenuation (Re: 10<sup>-12</sup> watts).





### 1280 Filter Grille

Average Face Velocity		300	400	500	600
659T Ak 2.440	CFM	730	975	1220	1465
	-Ps	.017	.030	.047	.067
PFT Ak 2.740	CFM	820	1095	1370	1645
	-Ps	.028	.050	.078	.113
659-TI w/12" collar Ak 2.230	CFM	670	890	1115	1340
	-Ps	.084	.147	.230	.330
w/14" collar Ak 2.260	CFM	680	905	1130	1355
	-Ps	.060	.105	.165	.240
w/16" collar Ak 2.320	CFM	695	930	1160	1390
	-Ps	.039	.068	.106	.155
PFTI w/12" collar Ak 2.320	CFM	770	1025	1280	1535
	-Ps	.098	.170	.265	.380
w/14" collar Ak 2.590	CFM	775	1035	1295	1555
	-Ps	.076	.125	.200	.283
w/16" collar Ak 2.630	CFM	790	1050	1315	1580
	-Ps	.055	.094	.145	.210

**Note:** Tested without filters. Typical capacity is 2 CFM per square inch of nominal filter area. Recommended face velocity is 300-450 FPM. Velocities higher will decrease filter performance, increase flow resistance, and possibly be of noise concern. Velocity measured 1" from face.

### 4230 Perforated Return

Neck Velocity		200	300	400	500	600	700	800
6" Diameter	CFM	40	60	80	100	120	135	155
	-Ps	.003	.007	.012	.019	.027	.034	.044
8" Diameter	CFM	70	105	140	175	210	245	380
	-Ps	.004	.010	.017	.026	.037	.051	.068
10" Diameter	CFM	110	165	220	275	325	380	435
	-Ps	.005	.011	.020	.030	.043	.058	.076
12" Diameter	CFM	155	235	315	395	470	550	630
	-Ps	.005	.012	.021	.033	.046	.063	.083
14" Diameter	CFM	215	320	430	535	640	750	855
	-Ps	.006	.013	.023	.035	.050	.069	.090
16" Diameter	CFM	280	420	560	700	840	975	1115
	-Ps	.008	.018	.031	.048	.070	.094	.120
18" Diameter	CFM	355	530	705	885	1060	1235	1415
	-Ps	.008	.018	.031	.049	.070	.092	.125
24" x 24"	CFM	735	1100	1470	1835	2200	2570	2935
	-Ps	.008	.018	.032	.050	.070	.095	.130

### 4235 Perforated Supply

Neck Velocity		300	400	500	600	700	800	900	1000	1100
6" Diameter An .200	CFM	60	80	100	120	140	160	180	200	220
	Ps	.008	.011	.017	.024	.032	.042	.054	.066	.080
	NC	<20	<20	<20	<20	24	27	32	36	38
	Throw	1.0	2.0	3.0	3.0	4.0	4.0	5.0	5.0	6.0
8" Diameter An .350	CFM	105	140	175	210	245	280	310	350	385
	Ps	.008	.011	.017	.024	.034	.043	.054	.068	.083
	NC	<20	<20	<20	20	24	27	30	34	38
	Throw	2.0	3.0	4.0	4.0	5.0	6.0	7.0	8.0	8.5
10" Diameter An .540	CFM	165	220	270	325	385	430	490	550	600
	Ps	.008	.012	.017	.024	.032	.043	.056	.068	.082
	NC	<20	<20	20	24	29	33	36	39	42
	Throw	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	9.0
12" Diameter An .780	CFM	230	310	390	470	550	610	700	780	870
	Ps	.009	.016	.026	.037	.050	.065	.080	.100	.125
	NC	<20	<20	20	23	26	31	34	37	40
	Throw	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
14" Diameter An 1.070	CFM	315	430	535	640	750	855	960	1090	1200
	Ps	.009	.016	.026	.037	.050	.065	.083	.125	.150
	NC	<20	20	25	30	35	39	43	45	48
	Throw	3.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0

**Note:** The use of a balancing hood is recommended to balance the system.  
 NC is based on 10dB room attenuation (Re: 10<sup>-12</sup> watts) ASHRAE 36-72.  
 Terminal Velocity of 75 FPM An = Neck Area in Sq. Ft.

### AL440 Supply Diffuser

Neck Velocity		250	350	450	550	650	750	850	1000	1200	
6" Diameter	CFM	50	70	90	110	130	145	165	195	235	
	Ps	.004	.009	.014	.021	.029	.036	.046	.055	.064	
	NC	<20	<20	<20	<20	<20	23	27	31	35	
	Throw	3.0	3.5	4.5	5.0	6.0	7.5	8.0	9.0	11.0	
Ak .430	444 Throw	3.0/4.0	3.5/5.0	4.5/6.5	6.0/8.0	7.5/10.0	8.0/11.0	9.0/13.0	11.0/15.0	12.0/17.0	
	442 Throw	4.0	5.0	6.5	8.0	10.0	11.0	13.0	15.0	17.0	
	8" Diameter	CFM	85	120	155	190	225	260	295	350	420
		Ps	.006	.012	.019	.029	.040	.054	.070	.088	.110
NC		<20	<20	<20	<20	21	26	31	34	37	
Throw		4.0	5.0	6.5	8.0	9.5	11.0	13.0	15.0	17.0	
Ak .530	444 Throw	4.0/5.5	5.0/7.0	6.5/9.0	8.0/11.0	9.5/14.0	11.0/16.0	13.0/19.0	15.0/21.0	17.0/23.0	
	442 Throw	5.5	7.0	9.0	11.0	14.0	16.0	19.0	21.0	23.0	
	10" Diameter	CFM	135	190	245	300	355	410	465	545	655
		Ps	.009	.017	.028	.043	.069	.078	.102	.140	.205
NC		<20	<20	<20	22	29	35	38	42	46	
Throw		4.0	6.0	8.0	10.0	12.0	13.0	15.0	18.0	19.0	
Ak .620	444 Throw	4.0/6.0	6.0/8.0	8.0/11.0	10.0/14.0	12.0/17.0	13.0/19.0	15.0/21.0	18.0/25.0	19.0/26.0	
	442 Throw	6.0	8.0	11.0	14.0	17.0	19.0	21.0	25.0	26.0	
	12" Diameter	CFM	190	245	355	450	530	590	670	785	940
		Ps	.012	.024	.040	.059	.082	.110	.142	.195	.275
NC		<20	<20	22	28	35	39	44	47	52	
Throw		5.0/8.5	7.5/11.0	10.0/14.0	11.5/17.0	14.0/19.0	16.0/23.0	18.0/25.0	19.0/26.0	20.0/27.0	
Ak .700	444 Throw	5.0/8.5	7.5/11.0	10.0/14.0	11.5/17.0	14.0/19.0	16.0/23.0	18.0/25.0	19.0/26.0	20.0/27.0	
	442 Throw	8.5	11.0	14.0	17.0	19.0	23.0	25.0	26.0	27.0	
	14" Diameter	CFM	285	375	480	590	695	800	910	1070	1285
		Ps	.015	.031	.050	.075	.105	.137	.177	.245	.350
NC		<20	21	27	31	36	40	45	48	53	
Throw		6.0/8.5	9.0/13.0	11.0/16.0	14.0/20.0	17.0/24.0	19.0/26.0	20.0/27.0	22.0/28.0	24.0/29.0	
Ak .750	444 Throw	6.0/8.5	9.0/13.0	11.0/16.0	14.0/20.0	17.0/24.0	19.0/26.0	20.0/27.0	22.0/28.0	24.0/29.0	
	442 Throw	8.5	13.0	16.0	20.0	24.0	26.0	27.0	28.0	29.0	

**Note:** The use of a balancing hood is recommended to balance the system.  
 NC is based on 10dB room attenuation (Re: 10<sup>-12</sup> watts) ASHRAE 36-72.  
 Terminal Velocity of 75 FPM

### AL4240 Ceiling Supply

Neck Velocity		180	220	300	350	400	450	500	580	650	700
6" Diameter Ak .430	CFM	35	45	60	70	80	90	100	115	130	140
	Ps	.002	.003	.004	.006	.008	.010	.012	.015	.020	.022
	NC	<20	<20	<20	<20	<20	<20	20	22	26	30
	Throw	3.0	3.5	4.5	5.5	6.5	7.5	8.0	9.0	11.0	11.0
8" Diameter Ak .530	CFM	65	75	105	120	140	155	175	200	225	245
	Ps	.002	.003	.006	.008	.010	.013	.016	.021	.027	.032
	NC	<20	<20	<20	<20	<20	22	25	25	35	38
	Throw	4.0	5.0	6.0	7.0	8.5	9.5	11.0	11.0	13.0	15.0
10" Diameter Ak .620	CFM	100	120	165	190	220	245	275	315	355	380
	Ps	.003	.005	.009	.011	.015	.019	.024	.031	.040	.045
	NC	<20	<20	<20	<20	20	23	27	33	35	39
	Throw	4.0	5.5	7.0	8.0	9.5	11.0	12.0	13.0	15.0	16.0
12" Diameter Ak .700	CFM	140	175	235	275	315	355	395	455	510	550
	Ps	.005	.007	.013	.018	.023	.029	.036	.048	.061	.071
	NC	<20	<20	<20	<20	21	24	27	33	36	40
	Throw	4.5	5.5	7.0	8.0	10.0	11.0	12.0	14.0	15.0	17.0
14" Diameter Ak .750	CFM	190	235	320	375	430	480	535	620	695	750
	Ps	.007	.011	.020	.027	.036	.044	.055	.074	.094	.107
	NC	<20	<20	<20	<20	20	24	28	32	35	40
	Throw	4.5	5.5	7.0	8.5	10.0	11.0	12.0	14.0	16.0	17.0

Termination Velocity of 75 FPM  
**Note:** The use of a balancing hood is recommended to balance the system.  
 Ak = Effective Area in square feet.  
 Ps = Static Pressure Loss in inches of water  
 NC = Noise Criteria, based on a 10dB room attenuation (Re: 10<sup>-12</sup> watts) ASHRAE 36-72.



**4205FF**  
**Eggcrate Return Filter Grille**

6" Diameter Inlet Ak .840	CFM	100	150	200	225	250	275	300
	NC	<20	<20	<20	22	25	28	32
	Static Pressure	-.040	-.091	-.162	-.205	-.253	-.306	-.364
8" Diameter Inlet Ak .930	CFM	150	200	250	300	400	500	600
	NC	<20	<20	<20	<20	24	30	36
	Static Pressure	-.029	-.051	-.080	-.115	-.205	-.320	-.460
10" Diameter Inlet Ak 1.035	CFM	400	500	600	700	800	900	1000
	NC	<20	<20	23	27	31	35	39
	Static Pressure	-.084	-.131	-.189	-.257	-.335	-.424	-.524
12" Diameter Inlet Ak 1.175	CFM	500	600	700	800	1000	1200	1400
	NC	<20	<20	<20	22	27	32	38
	Static Pressure	-.063	-.091	-.124	-.162	-.253	-.364	-.495
14" Diameter Inlet Ak 1.330	CFM	800	900	1000	1200	1400	1600	1800
	NC	<20	<20	20	24	27	31	35
	Static Pressure	-.087	-.110	-.136	-.196	-.267	-.349	-.442
16" Diameter Inlet Ak 1.520	CFM	800	1000	1200	1400	1800	2200	2600
	NC	<20	<20	<20	21	27	33	39
	Static Pressure	-.051	-.080	-.115	-.157	-.259	-.387	-.540

**4260FF**  
**Stamped-Face Return Filter Grille**

6" Diameter Inlet Ak .730	CFM	100	150	200	225	250	275	300
	NC	<20	<20	21	24	27	30	32
	Static Pressure	-.057	-.127	-.226	-.287	-.354	-.428	-.509
8" Diameter Inlet Ak .795	CFM	150	200	250	300	400	500	550
	NC	<20	<20	<20	<20	25	31	36
	Static Pressure	-.040	-.072	-.112	-.161	-.287	-.448	-.542
10" Diameter Inlet Ak .880	CFM	300	400	500	600	700	800	850
	NC	<20	<20	<20	24	28	33	35
	Static Pressure	-.066	-.117	-.183	-.264	-.359	-.469	-.530
12" Diameter Inlet Ak .980	CFM	400	500	600	700	800	1000	1200
	NC	<20	<20	<20	<20	22	28	34
	Static Pressure	-.057	-.088	-.127	-.173	-.226	-.354	-.509
14" Diameter Inlet Ak 1.105	CFM	600	700	800	1000	1200	1400	1600
	NC	<20	<20	<20	20	24	28	34
	Static Pressure	-.069	-.094	-.122	-.191	-.275	-.374	-.489
16" Diameter Inlet Ak 1.240	CFM	800	1000	1200	1600	1800	2000	2200
	NC	<20	<20	<20	25	28	31	36
	Static Pressure	-.072	-.112	-.161	-.287	-.363	-.448	-.542

**Notes:**

1. All performance was determined from testing in accordance with ASHRAE Standard 70-1991 in an ADC-certified testing laboratory.
2. Total and static pressures are given in inch w.c.
3. NC values are given for a typical office (12 feet wide x 12 feet long x 9 feet high) as determined from the octave band sound power levels in accordance with ARI Standard 885.
4. Throw distances (measured in feet) are listed for isothermal conditions with terminal velocities of 150 FPM, 100 FPM and 50 FPM, respectively.
5. Area factor (Ak) determined with an Alnor 2220 probe.
6. Data based on units without opposed-blade dampers.
7. Return filter grille tests performed with standard 1-inch fiberglass filter (by others) in place.



Series AL2000

IP/METRIC DATA: 1/2" SLOT WIDTH, CONTINUOUS SLOT

	IP Data				NC	Metric Data				Octave Band, dB						
	Air Flow	Press Ps	1-Way Throw	2-Way Throw		Air Flow	Press Ps	1-Way Throw	2-Way Throw	2	3	4	5	6	7	
	CFM/ft	"WG	ft	ft		L/s/m	Pa	m	m							
1 Slot	5	0.004	1 - 2 - 7		-	8	1.1	0.2 - 0.6 - 2.2		37	24	24	12	-	-	
	13	0.030	6 - 9 - 18		26	20	7.4	1.7 - 2.8 - 5.4		48	44	42	33	26	23	
	17	0.051	8 - 12 - 20		32	26	12.7	2.5 - 3.7 - 6.2		51	49	47	39	32	28	
	21	0.078	10 - 15 - 23		36	33	19.3	3.0 - 4.5 - 6.8		53	53	51	44	37	32	
	29	0.148	14 - 19 - 26		43	45	36.9	4.2 - 5.7 - 8.0		57	60	57	51	44	38	
2 Slots	10	0.004	2 - 4 - 12	1 - 3 - 8	10	15	1.1	0.5 - 1.2 - 3.5	0.4 - 0.9 - 2.5	40	27	27	15	-	-	
	22	0.021	9 - 13 - 23	6 - 9 - 16	26	34	5.3	2.6 - 3.9 - 7.0	1.8 - 2.8 - 5.0	49	43	42	33	25	23	
	28	0.035	11 - 16 - 26	8 - 12 - 18	31	43	8.6	3.3 - 5.0 - 7.9	2.3 - 3.5 - 5.6	51	48	46	38	31	27	
	34	0.051	13 - 20 - 29	9 - 14 - 20	35	53	12.7	4.0 - 6.0 - 8.7	2.8 - 4.3 - 6.2	54	52	50	42	35	31	
	46	0.093	18 - 24 - 33	13 - 17 - 24	41	71	23.2	5.4 - 7.2 - 10.1	3.8 - 5.1 - 7.2	57	58	55	49	42	36	
3 Slots	15	0.004	3 - 6 - 15		12	23	1.1	0.8 - 1.8 - 4.6		37	21	21	-	-	-	
	31	0.019	10 - 16 - 27		27	48	4.7	3.2 - 4.8 - 8.3		50	44	42	33	25	23	
	39	0.030	13 - 20 - 31		31	60	7.4	4.0 - 6.0 - 9.3		52	48	46	38	31	28	
	47	0.043	16 - 24 - 34		35	73	10.8	4.8 - 7.2 - 10.2		54	52	50	42	35	31	
	63	0.078	21 - 28 - 39		41	98	19.3	6.5 - 8.4 - 11.9		58	58	55	49	42	36	
4 Slots	20	0.004	3 - 8 - 18	2 - 5 - 13	13	31	1.1	1.0 - 2.3 - 5.5	0.7 - 1.6 - 3.9	43	30	30	18	-	11	
	40	0.018	12 - 18 - 31	9 - 13 - 22	27	62	4.4	3.7 - 5.5 - 9.4	2.6 - 3.9 - 6.7	51	44	43	34	26	24	
	50	0.028	15 - 23 - 35	11 - 16 - 25	32	77	6.9	4.6 - 6.9 - 10.6	3.3 - 4.9 - 7.5	53	49	47	39	31	28	
	60	0.040	18 - 27 - 38	13 - 19 - 27	36	93	9.9	5.5 - 8.2 - 11.6	3.9 - 5.8 - 8.2	55	52	50	43	35	32	
	80	0.070	24 - 31 - 44	17 - 22 - 31	41	124	17.5	7.4 - 9.4 - 13.4	5.2 - 6.7 - 9.4	58	58	56	49	42	37	
5 Slots	25	0.004	4 - 9 - 21		14	39	1.1	1.2 - 2.8 - 6.3		44	31	31	19	11	12	
	49	0.017	14 - 20 - 34		28	76	4.2	4.1 - 6.2 - 10.5		51	45	43	34	26	25	
	61	0.026	17 - 25 - 38		32	94	6.5	5.1 - 7.7 - 11.7		54	49	47	39	31	29	
	73	0.038	20 - 30 - 42		36	113	9.4	6.1 - 9.0 - 12.8		56	53	51	43	36	32	
	97	0.066	27 - 34 - 48		42	150	16.5	8.1 - 10.4 - 14.7		59	59	56	49	42	37	
6 Slots	30	0.004	5 - 10 - 23	3 - 7 - 16	15	46	1.1	1.4 - 3.2 - 7.0	1.0 - 2.2 - 5.0	45	32	32	20	12	13	
	58	0.016	15 - 22 - 37	10 - 16 - 26	28	90	4.1	4.5 - 6.8 - 11.4	3.2 - 4.8 - 8.0	52	45	44	35	27	25	
	72	0.025	18 - 28 - 42	13 - 20 - 29	33	111	6.3	5.6 - 8.4 - 12.7	4.0 - 5.9 - 9.0	54	50	48	39	32	29	
	86	0.036	22 - 32 - 46	16 - 23 - 32	37	133	9.0	6.7 - 9.8 - 13.9	4.7 - 6.9 - 9.8	56	53	51	43	36	32	
	114	0.064	29 - 37 - 52	21 - 26 - 37	42	177	15.8	8.9 - 11.3 - 16.0	6.3 - 8.0 - 11.3	60	59	57	50	42	38	
7 Slots	35	0.004	5 - 12 - 25		16	54	1.1	1.6 - 3.5 - 7.6		44	29	29	17	-	11	
	65	0.015	16 - 23 - 40		28	101	3.8	4.7 - 7.1 - 12.0		52	45	44	34	27	25	
	80	0.023	19 - 29 - 44		33	124	5.7	5.8 - 8.7 - 13.4		55	49	48	39	31	29	
	95	0.032	23 - 34 - 48		36	147	8.1	6.9 - 10.3 - 14.6		57	53	51	43	35	32	
	125	0.056	30 - 39 - 55		42	194	14.0	9.1 - 11.8 - 16.7		60	58	56	49	42	37	
8 Slots	40	0.004	6 - 13 - 27	4 - 9 - 19	16	62	1.1	1.7 - 3.9 - 8.2	1.2 - 2.7 - 5.8	46	33	33	21	13	14	
	74	0.015	17 - 25 - 42	12 - 18 - 30	29	115	3.8	5.1 - 7.6 - 12.9	3.6 - 5.4 - 9.1	53	46	44	35	27	26	
	91	0.023	21 - 31 - 47	15 - 22 - 33	33	141	5.7	6.3 - 9.4 - 14.3	4.4 - 6.6 - 10.1	55	50	48	39	32	29	
	108	0.032	24 - 36 - 51	17 - 26 - 36	37	167	8.0	7.4 - 11.0 - 15.5	5.2 - 7.8 - 11.0	57	53	51	43	36	33	
	142	0.056	32 - 41 - 59	23 - 29 - 41	42	220	13.8	9.8 - 12.6 - 17.8	6.9 - 8.9 - 12.6	60	59	57	49	42	38	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10<sup>-12</sup> Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. Odd numbered slots for 2-Way data have been intentionally left blank. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8



# PERFORMANCE DATA—LIGHT COMMERCIAL

## Series AL2000

IP/METRIC DATA: 1/2" SLOT WIDTH, CONTINUOUS SLOT

	IP Data				NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw			Air Flow	Press Ps	Vertical Throw	2	3	4	5	6	7	
	CFM/ft	"WG	ft			L/s/m	Pa	m							
1 Slot	5	0.003	1 - 2 - 5	-	8	0.6	0.3 - 0.6 - 1.5	-	-	-	-	-	-		
	35	0.127	12 - 14 - 20	15	54	31.5	3.5 - 4.3 - 6.1	43	39	30	16	11	-		
	50	0.259	14 - 17 - 24	24	78	64.4	4.2 - 5.2 - 7.3	50	46	39	22	17	-		
	65	0.437	16 - 19 - 27	30	101	108.8	4.8 - 5.9 - 8.3	54	52	45	27	21	14		
	95	0.933	19 - 23 - 33	40	147	232.4	5.8 - 7.1 - 10.0	61	60	54	34	27	20		
2 Slots	10	0.003	1 - 3 - 7	-	16	0.6	0.4 - 1.0 - 2.3	-	-	-	-	-	-		
	60	0.093	15 - 19 - 26	14	93	23.2	4.5 - 5.6 - 8.0	43	38	30	16	12	-		
	85	0.187	18 - 22 - 31	23	132	46.5	5.5 - 6.7 - 9.5	50	46	38	23	17	-		
	110	0.313	21 - 25 - 36	30	171	77.9	6.2 - 7.6 - 10.8	54	51	44	27	21	14		
	160	0.662	25 - 30 - 43	39	248	164.8	7.5 - 9.2 - 13.0	61	59	53	34	27	20		
3 Slots	15	0.003	2 - 4 - 9	-	23	0.6	0.5 - 1.2 - 2.8	-	-	-	-	-	-		
	85	0.083	17 - 22 - 31	15	132	20.7	5.3 - 6.7 - 9.5	44	39	30	17	13	-		
	120	0.165	21 - 26 - 37	24	186	41.2	6.5 - 8.0 - 11.3	50	46	38	23	18	11		
	155	0.276	24 - 30 - 42	30	241	68.7	7.4 - 9.1 - 12.8	55	52	44	28	22	15		
	225	0.582	29 - 36 - 51	39	349	144.8	8.9 - 10.9 - 15.5	62	59	53	34	28	21		
4 Slots	20	0.003	2 - 5 - 11	-	31	0.6	0.6 - 1.4 - 3.2	13	-	-	-	-	-		
	110	0.078	20 - 25 - 36	16	171	19.5	6.0 - 7.6 - 10.8	45	39	31	18	13	-		
	155	0.155	24 - 30 - 42	24	241	38.7	7.4 - 9.1 - 12.8	51	47	39	24	19	12		
	200	0.259	28 - 34 - 48	31	310	64.4	8.4 - 10.3 - 14.6	56	52	45	28	23	16		
	290	0.544	33 - 41 - 58	40	450	135.3	10.1 - 12.4 - 17.6	62	60	53	35	28	21		
5 Slots	25	0.003	2 - 5 - 12	-	39	0.6	0.7 - 1.6 - 3.6	14	-	-	-	-	-		
	125	0.065	20 - 27 - 38	15	194	16.1	6.1 - 8.1 - 11.5	44	38	30	17	13	-		
	175	0.127	26 - 32 - 45	23	272	31.5	7.9 - 9.6 - 13.6	50	46	37	23	18	11		
	225	0.209	29 - 36 - 51	29	349	52.1	8.9 - 10.9 - 15.5	55	51	43	28	22	15		
	325	0.437	35 - 43 - 61	39	505	108.8	10.7 - 13.1 - 18.6	61	59	52	34	28	21		
6 Slots	30	0.003	3 - 6 - 13	-	47	0.6	0.8 - 1.8 - 4.0	15	-	-	-	-	-		
	150	0.065	22 - 29 - 42	16	233	16.1	6.7 - 8.9 - 12.6	45	39	30	18	14	-		
	210	0.127	28 - 35 - 49	24	326	31.5	8.6 - 10.6 - 14.9	51	46	38	24	19	12		
	270	0.209	32 - 39 - 56	30	419	52.1	9.8 - 12.0 - 16.9	55	52	44	28	23	16		
	390	0.437	39 - 47 - 67	39	605	108.8	11.8 - 14.4 - 20.4	62	59	53	35	29	22		
7 Slots	35	0.003	3 - 6 - 14	-	54	0.6	0.9 - 1.9 - 4.3	13	-	-	-	-	-		
	185	0.072	25 - 33 - 46	18	287	18.0	7.6 - 9.9 - 14.0	46	41	32	19	15	-		
	260	0.143	32 - 39 - 55	26	404	35.5	9.6 - 11.8 - 16.6	53	48	40	26	21	14		
	335	0.237	36 - 44 - 62	33	520	59.0	10.9 - 13.3 - 18.9	57	54	46	30	24	17		
	485	0.496	43 - 53 - 75	42	753	123.6	13.1 - 16.0 - 22.7	64	61	55	37	30	23		
8 Slots	40	0.003	3 - 7 - 15	-	62	0.6	0.9 - 2.1 - 4.6	16	-	-	-	-	-		
	200	0.065	25 - 34 - 48	17	310	16.1	7.7 - 10.3 - 14.6	46	40	32	19	15	-		
	280	0.127	33 - 40 - 57	25	435	31.5	10.0 - 12.2 - 17.2	52	48	40	25	20	13		
	360	0.209	37 - 45 - 64	32	559	52.1	11.3 - 13.8 - 19.6	57	53	45	30	24	17		
	520	0.437	45 - 55 - 77	41	807	108.8	13.6 - 16.6 - 23.5	63	61	54	36	30	23		

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10<sup>-12</sup> Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8



## Series AL2000

IP/METRIC DATA: 1/2" SLOT WIDTH, CONTINUOUS SLOT

	IP Data			NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw		Air Flow	Press Ps	Vertical Throw	2	3	4	5	6	7	
	CFM/ft	"WG	ft		L/s/m	Pa	m							
1 Slot	5	0.001	0 - 1 - 3	-	8	0.3	0.1 - 0.3 - 1.0	-	-	-	-	-	-	
	55	0.162	11 - 14 - 20	18	85	40.3	3.5 - 4.2 - 6.0	48	38	34	20	-	-	
	80	0.342	14 - 17 - 24	26	124	85.2	4.2 - 5.1 - 7.2	55	45	41	26	15	-	
	105	0.590	16 - 19 - 27	32	163	146.8	4.8 - 5.8 - 8.3	60	49	46	30	19	11	
	155	1.285	19 - 23 - 33	41	240	320.0	5.8 - 7.1 - 10.0	67	56	53	36	25	17	
2 Slots	10	0.001	1 - 2 - 5	-	15	0.3	0.2 - 0.5 - 1.6	-	-	-	-	-	-	
	90	0.108	15 - 18 - 25	17	139	27.0	4.4 - 5.4 - 7.7	48	38	34	20	-	-	
	130	0.226	17 - 21 - 30	25	201	56.3	5.3 - 6.5 - 9.2	54	44	40	26	15	-	
	170	0.386	20 - 24 - 35	31	263	96.2	6.1 - 7.4 - 10.5	59	49	45	30	19	12	
	250	0.836	24 - 30 - 42	40	387	208.1	7.4 - 9.0 - 12.8	66	55	52	36	24	17	
3 Slots	15	0.001	1 - 2 - 7	-	23	0.3	0.3 - 0.7 - 2.1	-	-	-	-	-	-	
	115	0.079	16 - 20 - 28	16	178	19.6	5.0 - 6.1 - 8.7	47	37	33	19	-	-	
	165	0.162	20 - 24 - 34	24	255	40.3	6.0 - 7.3 - 10.4	53	43	39	25	14	-	
	215	0.275	22 - 28 - 39	30	333	68.4	6.8 - 8.4 - 11.8	58	48	44	29	18	11	
	315	0.590	27 - 33 - 47	39	488	146.8	8.3 - 10.1 - 14.3	65	54	51	35	24	16	
4 Slots	20	0.001	1 - 3 - 8	-	31	0.3	0.4 - 0.8 - 2.4	11	-	-	-	-	-	
	150	0.075	19 - 23 - 33	17	232	18.7	5.7 - 7.0 - 9.9	47	38	33	20	-	-	
	215	0.155	22 - 28 - 39	25	333	38.5	6.8 - 8.4 - 11.8	54	44	40	26	15	-	
	280	0.262	26 - 31 - 44	31	434	65.3	7.8 - 9.5 - 13.5	59	49	45	30	19	12	
	410	0.562	31 - 38 - 54	40	635	139.9	9.4 - 11.6 - 16.3	66	55	52	36	25	17	
5 Slots	25	0.001	1 - 3 - 9	-	39	0.3	0.4 - 1.0 - 2.7	12	-	-	-	-	-	
	185	0.073	21 - 26 - 36	18	286	18.2	6.3 - 7.8 - 11.0	48	39	34	21	11	-	
	265	0.150	25 - 31 - 43	26	410	37.4	7.6 - 9.3 - 13.1	55	45	41	26	16	-	
	345	0.255	28 - 35 - 49	32	534	63.4	8.7 - 10.6 - 15.0	59	49	45	31	20	13	
	505	0.546	34 - 42 - 60	40	782	135.9	10.5 - 12.8 - 18.1	66	56	52	36	25	18	
6 Slots	30	0.001	2 - 4 - 10	-	46	0.3	0.5 - 1.1 - 3.0	13	-	-	-	-	-	
	210	0.066	22 - 27 - 38	18	325	16.3	6.8 - 8.3 - 11.7	48	39	34	21	11	-	
	300	0.134	27 - 33 - 46	25	465	33.3	8.1 - 9.9 - 14.0	54	45	40	26	16	-	
	390	0.226	30 - 37 - 52	31	604	56.3	9.2 - 11.3 - 15.9	59	49	45	30	20	13	
	570	0.483	37 - 45 - 63	40	883	120.2	11.1 - 13.6 - 19.3	66	55	52	36	25	18	
7 Slots	35	0.001	2 - 4 - 11	-	54	0.3	0.5 - 1.2 - 3.3	11	-	-	-	-	-	
	235	0.060	23 - 29 - 41	18	364	15.0	7.1 - 8.7 - 12.4	48	39	34	21	11	-	
	335	0.123	28 - 34 - 49	25	519	30.5	8.5 - 10.4 - 14.8	54	45	40	26	16	-	
	435	0.207	32 - 39 - 55	31	674	51.4	9.7 - 11.9 - 16.8	59	49	45	30	20	13	
	635	0.440	39 - 47 - 67	40	983	109.6	11.7 - 14.4 - 20.3	66	55	52	36	25	18	
8 Slots	40	0.001	2 - 4 - 12	-	62	0.3	0.6 - 1.3 - 3.5	14	-	-	-	-	-	
	260	0.057	25 - 30 - 43	18	403	14.1	7.5 - 9.2 - 13.0	48	39	34	21	11	-	
	370	0.114	29 - 36 - 51	25	573	28.5	9.0 - 11.0 - 15.5	54	45	40	26	16	-	
	480	0.193	34 - 41 - 58	31	743	47.9	10.2 - 12.5 - 17.7	59	49	45	30	20	13	
	700	0.410	41 - 50 - 70	40	1084	102.0	12.3 - 15.1 - 21.3	66	55	52	36	25	18	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10<sup>-12</sup> Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8



# PERFORMANCE DATA—LIGHT COMMERCIAL

## Series AL2000

IP/METRIC DATA: 3/4" SLOT WIDTH, CONTINUOUS SLOT

	IP Data					NC	Metric Data				Octave Band, dB						
	Air Flow	Press Ps	1-Way Throw	2-Way Throw			Air Flow	Press Ps	1-Way Throw	2-Way Throw	2	3	4	5	6	7	
	CFM/ft	"WG	ft	ft			L/s/m	Pa	m	m							
1 Slot	5	0.003	1 - 1 - 6			-	8	0.8	0.2 - 0.4 - 1.7		26	12	-	-	-	-	
	15	0.030	6 - 10 - 19			14	23	7.4	1.7 - 3.0 - 5.8		40	34	31	19	-	-	
	20	0.053	9 - 13 - 22			21	31	13.2	2.6 - 4.0 - 6.7		43	40	37	28	19	14	
	25	0.083	11 - 16 - 25			27	39	20.7	3.3 - 4.9 - 7.5		46	45	43	34	26	19	
	35	0.163	15 - 21 - 29			35	54	40.5	4.6 - 6.2 - 8.8		50	52	50	44	36	27	
2 Slots	10	0.003	1 - 3 - 10	1 - 2 - 7		-	16	0.8	0.4 - 0.9 - 3.2	0.3 - 0.6 - 2.2	29	15	-	-	-	-	
	30	0.030	10 - 16 - 27	7 - 11 - 19		17	47	7.4	3.2 - 4.7 - 8.2	2.2 - 3.4 - 5.8	43	37	34	22	13	11	
	40	0.053	14 - 21 - 31	10 - 15 - 22		25	62	13.2	4.2 - 6.3 - 9.4	3.0 - 4.5 - 6.7	46	43	40	31	22	17	
	50	0.083	17 - 25 - 35	12 - 17 - 25		30	78	20.7	5.3 - 7.5 - 10.6	3.7 - 5.3 - 7.5	49	48	46	37	29	22	
	70	0.163	24 - 29 - 41	17 - 21 - 29		39	109	40.5	7.2 - 8.8 - 12.5	5.1 - 6.2 - 8.8	53	55	53	47	39	30	
3 Slots	15	0.003	2 - 4 - 13			-	23	0.8	0.6 - 1.2 - 4.1		26	-	-	-	-	-	
	45	0.030	13 - 20 - 33			19	70	7.4	4.1 - 6.1 - 10.0		45	39	36	24	15	12	
	60	0.053	18 - 27 - 38			27	93	13.2	5.4 - 8.1 - 11.6		48	45	42	33	24	19	
	75	0.083	22 - 30 - 43			32	116	20.7	6.8 - 9.1 - 12.9		51	50	47	39	31	24	
	105	0.163	29 - 36 - 50			41	163	40.5	8.8 - 10.8 - 15.3		55	56	55	49	41	32	
4 Slots	20	0.003	2 - 5 - 16	2 - 4 - 11		-	31	0.8	0.7 - 1.6 - 4.8	0.5 - 1.1 - 3.4	32	18	12	-	-	-	
	60	0.030	16 - 24 - 38	11 - 17 - 27		21	93	7.4	4.8 - 7.2 - 11.6	3.4 - 5.1 - 8.2	46	40	37	25	17	14	
	80	0.053	21 - 31 - 44	15 - 22 - 31		28	124	13.2	6.4 - 9.4 - 13.4	4.6 - 6.7 - 9.4	49	46	43	34	25	20	
	100	0.083	26 - 35 - 49	19 - 25 - 35		34	155	20.7	8.0 - 10.6 - 14.9	5.7 - 7.5 - 10.6	52	51	49	40	32	25	
	140	0.163	34 - 41 - 58	24 - 29 - 41		42	217	40.5	10.2 - 12.5 - 17.7	7.2 - 8.8 - 12.5	56	58	56	50	42	33	
5 Slots	25	0.003	3 - 6 - 18			-	39	0.8	0.8 - 1.8 - 5.5		33	19	13	-	-	-	
	75	0.030	18 - 27 - 43			22	116	7.4	5.5 - 8.2 - 12.9		47	41	38	26	17	15	
	100	0.053	24 - 35 - 49			29	155	13.2	7.3 - 10.6 - 14.9		50	47	44	35	26	21	
	125	0.083	30 - 39 - 55			35	194	20.7	9.1 - 11.8 - 16.7		53	52	50	41	33	26	
	175	0.163	38 - 46 - 65			43	272	40.5	11.4 - 14.0 - 19.8		57	59	57	51	43	34	
6 Slots	30	0.003	3 - 7 - 20	2 - 5 - 14		-	47	0.8	0.9 - 2.1 - 6.1	0.7 - 1.5 - 4.3	34	19	13	-	-	-	
	90	0.030	20 - 30 - 47	14 - 21 - 33		23	140	7.4	6.1 - 9.1 - 14.2	4.3 - 6.4 - 10.0	48	42	39	27	18	15	
	120	0.053	27 - 38 - 54	19 - 27 - 38		30	186	13.2	8.1 - 11.6 - 16.4	5.7 - 8.2 - 11.6	51	48	45	36	27	22	
	150	0.083	33 - 43 - 60	24 - 30 - 43		35	233	20.7	10.1 - 12.9 - 18.3	7.2 - 9.1 - 12.9	54	53	50	42	34	27	
	210	0.163	41 - 50 - 71	29 - 36 - 50		44	326	40.5	12.5 - 15.3 - 21.6	8.8 - 10.8 - 15.3	58	59	58	52	44	35	
7 Slots	35	0.003	3 - 8 - 22			-	54	0.8	1.0 - 2.3 - 6.6		33	17	-	-	-	-	
	101	0.028	21 - 31 - 49			22	157	6.9	6.4 - 9.6 - 15.0		48	42	38	27	18	15	
	134	0.049	28 - 40 - 57			30	208	12.1	8.5 - 12.2 - 17.3		51	48	45	35	26	22	
	167	0.076	35 - 45 - 64			35	259	18.8	10.5 - 13.7 - 19.3		54	52	50	41	33	27	
	233	0.147	43 - 53 - 75			43	362	36.6	13.2 - 16.1 - 22.8		58	59	58	51	43	34	
8 Slots	40	0.003	4 - 8 - 23	3 - 6 - 17		-	62	0.8	1.1 - 2.5 - 7.1	0.8 - 1.8 - 5.0	35	21	15	-	-	-	
	112	0.026	22 - 33 - 52	15 - 23 - 37		22	174	6.5	6.6 - 10.0 - 15.8	4.7 - 7.1 - 11.2	48	42	38	26	17	15	
	148	0.045	29 - 42 - 60	20 - 30 - 42		29	230	11.3	8.8 - 12.9 - 18.2	6.2 - 9.1 - 12.8	51	48	45	35	26	21	
	184	0.070	36 - 47 - 67	25 - 33 - 47		35	286	17.5	10.9 - 14.3 - 20.3	7.7 - 10.1 - 14.3	54	52	50	41	32	26	
	256	0.136	45 - 56 - 79	32 - 39 - 56		43	397	33.8	13.8 - 16.9 - 23.9	9.8 - 11.9 - 16.9	58	59	57	50	42	34	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10<sup>-12</sup> Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. Odd numbered slots for 2-Way data have been intentionally left blank. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8



Series AL2000

IP/METRIC DATA: 3/4" SLOT WIDTH, CONTINUOUS SLOT

	IP Data			NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw		Air Flow	Press Ps	Vertical Throw	2	3	4	5	6	7	
	CFM/ft	"WG	ft		L/s/m	Pa	m							
1 Slot	20	0.032	6 - 10 - 15	-	31	8.1	1.9 - 2.9 - 4.6	28	23	18	12	-	-	
	70	0.397	16 - 20 - 28	22	109	99.0	5.0 - 6.1 - 8.6	50	45	37	28	21	14	
	95	0.732	19 - 23 - 33	28	147	182.3	5.8 - 7.1 - 10.0	55	50	42	32	24	18	
	120	1.168	21 - 26 - 37	33	186	290.8	6.5 - 8.0 - 11.3	59	54	46	35	27	20	
	170	2.344	26 - 31 - 44	40	264	583.7	7.8 - 9.5 - 13.4	65	60	51	40	31	24	
2 Slots	30	0.018	7 - 10 - 19	-	47	4.5	2.1 - 3.1 - 5.6	26	21	16	11	-	-	
	110	0.245	21 - 25 - 36	21	171	61.1	6.2 - 7.6 - 10.8	48	43	37	28	21	14	
	150	0.456	24 - 29 - 42	27	233	113.6	7.3 - 8.9 - 12.6	54	49	42	32	24	18	
	190	0.732	27 - 33 - 47	32	295	182.3	8.2 - 10.0 - 14.2	58	53	45	35	27	21	
	270	1.478	32 - 39 - 56	39	419	368.1	9.8 - 12.0 - 16.9	64	59	51	40	31	25	
3 Slots	40	0.014	8 - 11 - 21	-	62	3.6	2.3 - 3.5 - 6.5	21	15	11	-	-	-	
	160	0.231	25 - 30 - 43	22	248	57.5	7.5 - 9.2 - 13.0	50	45	38	29	22	16	
	220	0.436	29 - 36 - 50	28	342	108.6	8.8 - 10.8 - 15.3	55	50	43	34	26	19	
	280	0.707	33 - 40 - 57	33	435	175.9	10.0 - 12.2 - 17.2	59	54	47	37	29	22	
	400	1.442	39 - 48 - 68	41	621	359.1	11.9 - 14.6 - 20.6	65	61	52	42	33	26	
4 Slots	50	0.013	8 - 12 - 24	-	78	3.2	2.5 - 3.8 - 7.3	26	21	16	11	-	-	
	200	0.203	28 - 34 - 48	22	310	50.5	8.4 - 10.3 - 14.6	50	45	38	30	23	16	
	275	0.383	32 - 40 - 56	29	427	95.5	9.9 - 12.1 - 17.1	55	50	43	34	26	20	
	350	0.621	37 - 45 - 63	34	543	154.6	11.1 - 13.6 - 19.3	59	54	47	37	29	23	
	500	1.267	44 - 54 - 76	41	776	315.6	13.3 - 16.3 - 23.0	66	61	53	42	33	27	
5 Slots	60	0.018	9 - 13 - 26	-	93	4.5	2.7 - 4.0 - 8.0	26	21	17	12	-	-	
	240	0.292	30 - 37 - 53	23	373	72.7	9.2 - 11.3 - 16.0	50	45	38	30	23	17	
	330	0.552	36 - 44 - 62	29	512	137.5	10.8 - 13.2 - 18.7	56	51	44	34	27	20	
	420	0.894	40 - 49 - 69	34	652	222.7	12.2 - 14.9 - 21.1	60	55	47	38	30	23	
	600	1.825	48 - 59 - 83	41	931	454.4	14.6 - 17.9 - 25.2	66	61	53	42	34	27	
6 Slots	70	0.011	9 - 14 - 28	-	109	2.8	2.9 - 4.3 - 8.6	26	21	17	12	-	-	
	270	0.164	32 - 39 - 56	22	419	40.9	9.8 - 12.0 - 16.9	50	45	38	30	23	17	
	370	0.308	38 - 46 - 65	28	574	76.8	11.4 - 14.0 - 19.8	55	50	43	34	27	20	
	470	0.498	42 - 52 - 74	33	730	123.9	12.9 - 15.8 - 22.3	59	54	47	38	30	23	
	670	1.011	51 - 62 - 88	41	1040	251.9	15.4 - 18.9 - 26.7	65	60	53	42	34	27	
7 Slots	80	0.011	10 - 15 - 30	-	124	2.6	3.0 - 4.6 - 9.1	24	19	15	11	-	-	
	310	0.159	34 - 42 - 60	23	481	39.6	10.5 - 12.8 - 18.1	50	45	39	31	24	17	
	425	0.299	40 - 49 - 70	29	660	74.5	12.3 - 15.0 - 21.2	56	51	44	35	27	21	
	540	0.483	45 - 56 - 79	34	838	120.2	13.8 - 16.9 - 24.0	60	55	47	38	30	24	
	770	0.982	54 - 67 - 94	41	1195	244.4	16.5 - 20.2 - 28.6	66	61	53	43	34	28	
8 Slots	90	0.010	11 - 16 - 32	-	140	2.6	3.2 - 4.8 - 9.6	27	22	18	13	-	-	
	330	0.138	36 - 44 - 62	22	512	34.4	10.8 - 13.2 - 18.7	49	44	38	30	24	17	
	450	0.257	42 - 51 - 72	28	699	63.9	12.6 - 15.5 - 21.9	55	50	43	34	27	21	
	570	0.412	47 - 57 - 81	33	885	102.5	14.2 - 17.4 - 24.6	59	54	47	38	30	23	
	810	0.832	56 - 68 - 96	40	1257	207.1	16.9 - 20.7 - 29.3	65	60	52	42	34	27	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10<sup>-12</sup> Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8



Series AL2000

IP/METRIC DATA: 3/4" SLOT WIDTH, CONTINUOUS SLOT

	IP Data			NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw		Air Flow	Press Ps	Vertical Throw	2	3	4	5	6	7	
	CFM/ft	"WG	ft		L/s/m	Pa	m							
1 Slot	10	0.002	1 - 1 - 5	-	16	0.5	0.2 - 0.4 - 1.5	-	-	-	-	-	-	
	70	0.100	12 - 16 - 22	16	109	25.0	3.6 - 4.8 - 6.8	46	37	32	25	17	-	
	100	0.205	15 - 19 - 27	23	155	51.1	4.7 - 5.7 - 8.1	53	44	38	30	20	11	
	130	0.347	17 - 21 - 30	30	202	86.3	5.3 - 6.5 - 9.2	58	49	42	33	23	14	
	190	0.740	21 - 26 - 37	39	295	184.3	6.4 - 7.9 - 11.1	65	56	49	38	27	18	
2 Slots	20	0.002	1 - 3 - 8	-	31	0.5	0.4 - 1.0 - 2.5	13	-	-	-	-	-	
	130	0.087	17 - 21 - 30	18	202	21.6	5.3 - 6.5 - 9.2	48	39	34	27	19	-	
	185	0.175	21 - 26 - 36	25	287	43.7	6.3 - 7.8 - 11.0	55	46	40	32	23	13	
	240	0.295	24 - 29 - 41	32	373	73.5	7.2 - 8.8 - 12.5	59	50	44	35	25	16	
	350	0.628	29 - 35 - 50	41	543	156.4	8.7 - 10.7 - 15.1	66	57	50	40	29	20	
3 Slots	30	0.002	2 - 5 - 11	-	47	0.5	0.6 - 1.4 - 3.3	-	-	-	-	-	-	
	180	0.074	21 - 25 - 36	18	279	18.4	6.3 - 7.7 - 10.8	48	39	35	28	20	-	
	255	0.148	24 - 30 - 42	26	396	36.9	7.4 - 9.1 - 12.9	55	46	40	32	23	14	
	330	0.248	28 - 34 - 48	32	512	61.8	8.5 - 10.4 - 14.7	60	50	44	36	26	17	
	480	0.525	34 - 41 - 58	41	745	130.7	10.2 - 12.5 - 17.7	66	57	51	41	30	21	
4 Slots	40	0.002	3 - 6 - 13	-	62	0.5	0.8 - 1.8 - 3.9	16	-	-	-	-	-	
	210	0.057	22 - 27 - 38	17	326	14.1	6.8 - 8.3 - 11.7	47	38	34	27	20	-	
	295	0.112	26 - 32 - 46	24	458	27.8	8.0 - 9.8 - 13.9	53	44	39	32	23	14	
	380	0.185	30 - 37 - 52	30	590	46.1	9.1 - 11.1 - 15.7	58	49	43	35	26	17	
	550	0.388	36 - 44 - 62	39	854	96.5	10.9 - 13.4 - 18.9	65	56	49	40	30	21	
5 Slots	50	0.002	3 - 7 - 15	-	78	0.5	0.9 - 2.1 - 4.5	17	-	-	-	-	-	
	270	0.060	25 - 31 - 44	19	419	14.9	7.7 - 9.4 - 13.3	49	40	35	28	21	11	
	380	0.118	30 - 37 - 52	26	590	29.5	9.1 - 11.1 - 15.7	55	46	41	33	24	15	
	490	0.197	34 - 42 - 59	32	761	49.0	10.3 - 12.6 - 17.9	60	51	45	36	27	18	
	710	0.413	41 - 50 - 71	41	1102	103.0	12.4 - 15.2 - 21.5	66	57	51	41	31	22	
6 Slots	60	0.002	4 - 8 - 16	-	93	0.5	1.1 - 2.4 - 5.0	18	-	-	-	-	-	
	300	0.051	27 - 33 - 46	18	466	12.8	8.1 - 9.9 - 14.0	48	39	35	28	21	11	
	420	0.100	31 - 38 - 54	25	652	25.0	9.5 - 11.7 - 16.5	54	45	40	33	24	15	
	540	0.166	36 - 44 - 62	31	838	41.4	10.8 - 13.3 - 18.8	59	50	44	36	27	18	
	780	0.347	43 - 52 - 74	40	1211	86.3	13.0 - 15.9 - 22.5	66	56	50	41	31	22	
7 Slots	70	0.002	4 - 9 - 18	-	109	0.5	1.2 - 2.7 - 5.4	16	-	-	-	-	-	
	350	0.051	29 - 35 - 50	19	543	12.8	8.7 - 10.7 - 15.1	49	40	35	29	21	12	
	490	0.100	34 - 42 - 59	26	761	25.0	10.3 - 12.6 - 17.9	55	46	41	33	25	16	
	630	0.166	38 - 47 - 67	32	978	41.4	11.7 - 14.3 - 20.3	59	50	45	37	28	18	
	910	0.347	46 - 57 - 80	40	1413	86.3	14.1 - 17.2 - 24.3	66	57	51	41	32	22	
8 Slots	80	0.002	4 - 10 - 19	-	124	0.5	1.3 - 2.9 - 5.9	19	11	-	-	-	-	
	380	0.046	30 - 37 - 52	19	590	11.5	9.1 - 11.1 - 15.7	48	39	35	29	21	12	
	530	0.090	35 - 43 - 61	25	823	22.4	10.7 - 13.1 - 18.6	54	46	41	33	25	16	
	680	0.148	40 - 49 - 69	31	1056	36.9	12.1 - 14.9 - 21.0	59	50	45	36	28	18	
	980	0.308	48 - 59 - 83	40	1521	76.6	14.6 - 17.9 - 25.3	66	57	50	41	32	22	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10<sup>-12</sup> Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8





Series AL2000

IP/METRIC DATA: 1" SLOT WIDTH, CONTINUOUS SLOT

	IP Data				NC	Metric Data				Octave Band, dB						
	Air Flow	Press Ps	1-Way Throw	2-Way Throw		Air Flow	Press Ps	1-Way Throw	2-Way Throw	2	3	4	5	6	7	
	CFM/ft	"WG	ft	ft		L/s/m	Pa	m	m							
1 Slot	5	0.003	0 - 1 - 4		-	8	0.7	0.1 - 0.3 - 1.3		17	-	-	-	-	-	
	25	0.066	10 - 15 - 25		17	39	16.3	3.0 - 4.6 - 7.5		40	36	33	24	14	-	
	35	0.129	14 - 21 - 29		25	54	32.0	4.3 - 6.2 - 8.8		44	42	41	33	24	16	
	45	0.213	18 - 23 - 33		31	70	52.9	5.5 - 7.1 - 10.0		48	47	46	39	32	23	
	65	0.444	23 - 28 - 40		40	101	110.4	7.0 - 8.5 - 12.0		53	55	55	49	43	33	
2 Slots	10	0.003	1 - 2 - 9	1 - 2 - 6	-	16	0.7	0.3 - 0.7 - 2.6	0.2 - 0.5 - 1.9	20	-	-	-	-	-	
	44	0.051	14 - 21 - 33	10 - 15 - 23	17	68	12.7	4.2 - 6.3 - 9.9	3.0 - 4.5 - 7.0	41	36	33	23	13	-	
	61	0.098	19 - 27 - 38	14 - 19 - 27	25	95	24.3	5.8 - 8.3 - 11.7	4.1 - 5.8 - 8.2	46	43	41	32	23	16	
	78	0.160	25 - 31 - 43	17 - 22 - 31	31	121	39.8	7.5 - 9.3 - 13.2	5.3 - 6.6 - 9.3	49	47	46	38	31	22	
	112	0.329	30 - 37 - 52	21 - 26 - 37	40	174	82.0	9.1 - 11.2 - 15.8	6.5 - 7.9 - 11.2	54	55	54	48	42	32	
3 Slots	15	0.003	1 - 3 - 12		-	23	0.7	0.4 - 0.9 - 3.6		17	-	-	-	-	-	
	65	0.049	17 - 26 - 40		18	101	12.3	5.3 - 7.9 - 12.0		43	37	34	24	15	-	
	90	0.094	24 - 33 - 47		26	140	23.5	7.3 - 10.0 - 14.2		47	44	42	33	24	17	
	115	0.154	30 - 37 - 53		32	179	38.4	9.2 - 11.3 - 16.0		50	49	48	40	32	24	
	165	0.318	36 - 45 - 63		41	256	79.1	11.1 - 13.6 - 19.2		55	56	56	49	43	33	
4 Slots	20	0.003	2 - 4 - 14	1 - 3 - 10	-	31	0.7	0.5 - 1.1 - 4.3	0.4 - 0.8 - 3.1	23	-	-	-	-	-	
	80	0.042	19 - 28 - 44	13 - 20 - 31	18	124	10.5	5.8 - 8.7 - 13.4	4.1 - 6.1 - 9.4	43	37	34	24	13	-	
	110	0.079	26 - 36 - 52	18 - 26 - 36	25	171	19.8	7.9 - 11.1 - 15.7	5.6 - 7.8 - 11.1	47	43	41	32	23	16	
	140	0.129	33 - 41 - 58	23 - 29 - 41	31	217	32.0	10.1 - 12.5 - 17.7	7.1 - 8.8 - 12.5	50	48	47	39	30	23	
	200	0.262	40 - 49 - 69	28 - 35 - 49	40	310	65.3	12.2 - 14.9 - 21.1	8.6 - 10.6 - 14.9	55	55	55	48	41	32	
5 Slots	25	0.003	2 - 4 - 16		-	39	0.7	0.6 - 1.3 - 4.9		24	-	-	-	-	-	
	95	0.038	20 - 31 - 48		17	147	9.4	6.2 - 9.3 - 14.6		43	37	34	23	13	-	
	130	0.071	28 - 40 - 56		25	202	17.7	8.5 - 12.0 - 17.0		47	43	41	32	22	16	
	165	0.114	36 - 45 - 63		31	256	28.5	10.8 - 13.6 - 19.2		51	48	46	38	30	22	
	235	0.232	43 - 53 - 75		40	365	57.7	13.2 - 16.2 - 22.9		56	55	54	47	40	31	
6 Slots	30	0.003	2 - 5 - 18	2 - 3 - 13	-	47	0.7	0.7 - 1.5 - 5.4	0.5 - 1.0 - 3.8	25	11	-	-	-	-	
	110	0.035	22 - 33 - 52	15 - 23 - 36	17	171	8.8	6.6 - 9.9 - 15.7	4.7 - 7.0 - 11.1	43	37	34	23	13	-	
	150	0.066	30 - 43 - 60	21 - 30 - 43	25	233	16.3	9.0 - 12.9 - 18.3	6.4 - 9.1 - 12.9	48	43	41	31	22	15	
	190	0.105	38 - 48 - 68	27 - 34 - 48	31	295	26.2	11.5 - 14.6 - 20.6	8.1 - 10.3 - 14.6	51	48	46	38	29	22	
	270	0.213	47 - 57 - 81	33 - 40 - 57	40	419	52.9	14.2 - 17.4 - 24.5	10.0 - 12.3 - 17.4	56	55	54	47	40	31	
7 Slots	35	0.003	2 - 5 - 19		-	54	0.7	0.7 - 1.6 - 5.9		24	-	-	-	-	-	
	125	0.033	23 - 35 - 55		17	194	8.3	7.0 - 10.5 - 16.7		44	37	34	23	12	-	
	170	0.062	31 - 45 - 64		25	264	15.4	9.6 - 13.8 - 19.5		48	43	41	31	22	15	
	215	0.099	40 - 51 - 72		31	334	24.7	12.1 - 15.5 - 21.9		51	48	46	38	29	21	
	305	0.199	50 - 61 - 86		40	473	49.6	15.1 - 18.4 - 26.1		56	55	54	47	39	31	
8 Slots	40	0.003	3 - 6 - 21	2 - 4 - 15	-	62	0.7	0.8 - 1.8 - 6.3	0.6 - 1.2 - 4.5	26	12	-	-	-	-	
	140	0.032	24 - 37 - 58	17 - 26 - 41	18	217	8.0	7.4 - 11.1 - 17.7	5.2 - 7.8 - 12.5	44	37	34	23	12	-	
	190	0.059	33 - 48 - 68	23 - 34 - 48	25	295	14.7	10.0 - 14.6 - 20.6	7.1 - 10.3 - 14.6	48	44	41	31	22	15	
	240	0.094	42 - 54 - 76	29 - 38 - 54	31	373	23.5	12.7 - 16.4 - 23.1	9.0 - 11.6 - 16.4	51	48	46	37	29	21	
	340	0.190	52 - 64 - 91	37 - 45 - 64	40	528	47.2	15.9 - 19.5 - 27.5	11.2 - 13.8 - 19.5	56	55	54	47	39	31	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10<sup>-12</sup> Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. Odd numbered slots for 2-Way data have been intentionally left blank. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8



# PERFORMANCE DATA—LIGHT COMMERCIAL

## Series AL2000

IP/METRIC DATA: 1" SLOT WIDTH, CONTINUOUS SLOT

	IP Data				NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw			Air Flow	Press Ps	Vertical Throw	2	3	4	5	6	7	
	CFM/ft	"WG	ft			L/s/m	Pa	m							
1 Slot	5	0.002	1 - 1 - 4	-	8	0.4	0.2 - 0.4 - 1.4	-	-	-	-	-	-		
	75	0.339	17 - 21 - 29	19	116	84.4	5.2 - 6.3 - 8.9	47	41	36	29	22	12		
	110	0.729	21 - 25 - 36	26	171	181.5	6.2 - 7.6 - 10.8	54	48	42	34	26	17		
	145	1.266	24 - 29 - 41	32	225	315.3	7.2 - 8.8 - 12.4	59	53	46	38	29	20		
	215	2.784	29 - 35 - 50	40	334	693.3	8.7 - 10.7 - 15.1	66	60	52	43	34	24		
2 Slots	10	0.002	1 - 2 - 6	-	16	0.4	0.3 - 0.6 - 2.0	-	-	-	-	-	-		
	130	0.254	22 - 27 - 39	20	202	63.4	6.8 - 8.3 - 11.8	47	41	36	30	23	14		
	190	0.544	27 - 33 - 47	27	295	135.4	8.2 - 10.0 - 14.2	54	48	42	35	28	18		
	250	0.941	31 - 38 - 54	32	388	234.3	9.4 - 11.5 - 16.3	59	53	47	39	31	21		
	370	2.061	38 - 46 - 65	40	574	513.3	11.4 - 14.0 - 19.8	66	60	53	44	35	26		
3 Slots	15	0.002	1 - 3 - 8	-	23	0.4	0.4 - 0.8 - 2.4	-	-	-	-	-	-		
	175	0.205	26 - 32 - 45	20	272	51.0	7.9 - 9.6 - 13.6	47	41	36	31	24	14		
	255	0.435	31 - 38 - 54	27	396	108.4	9.5 - 11.6 - 16.5	54	48	42	36	28	18		
	335	0.751	36 - 44 - 62	32	520	187.0	10.9 - 13.3 - 18.9	59	53	47	39	31	21		
	495	1.640	44 - 53 - 75	40	768	408.3	13.2 - 16.2 - 22.9	66	60	53	44	36	26		
4 Slots	20	0.002	1 - 3 - 9	-	31	0.4	0.4 - 0.9 - 2.8	-	-	-	-	-	-		
	220	0.182	29 - 36 - 50	20	342	45.4	8.8 - 10.8 - 15.3	47	41	37	31	24	15		
	320	0.385	35 - 43 - 61	27	497	96.0	10.6 - 13.0 - 18.4	54	48	43	36	29	19		
	420	0.664	40 - 49 - 69	32	652	165.3	12.2 - 14.9 - 21.1	59	53	47	40	32	22		
	620	1.447	49 - 60 - 84	40	963	360.3	14.8 - 18.1 - 25.7	66	60	53	45	36	27		
5 Slots	25	0.002	2 - 3 - 10	-	39	0.4	0.5 - 1.1 - 3.2	-	-	-	-	-	-		
	265	0.169	32 - 39 - 55	21	411	42.1	9.7 - 11.9 - 16.8	47	42	37	32	25	15		
	385	0.357	38 - 47 - 67	27	598	88.9	11.7 - 14.3 - 20.2	54	48	43	37	29	19		
	505	0.614	44 - 54 - 76	32	784	153.0	13.4 - 16.4 - 23.2	59	53	47	40	32	23		
	745	1.337	53 - 65 - 93	40	1157	333.0	16.2 - 19.9 - 28.1	66	60	53	45	37	27		
6 Slots	30	0.002	2 - 4 - 11	-	47	0.4	0.5 - 1.2 - 3.5	-	-	-	-	-	-		
	300	0.151	34 - 42 - 59	21	466	37.5	10.3 - 12.6 - 17.9	47	41	37	32	25	15		
	435	0.317	41 - 50 - 71	27	675	78.8	12.4 - 15.2 - 21.5	54	48	43	37	29	20		
	570	0.544	47 - 57 - 81	32	885	135.4	14.2 - 17.4 - 24.6	59	53	47	40	32	23		
	840	1.181	57 - 69 - 98	40	1304	293.9	17.2 - 21.1 - 29.9	66	60	53	45	37	27		
7 Slots	35	0.002	2 - 4 - 12	-	54	0.4	0.6 - 1.3 - 3.8	-	-	-	-	-	-		
	345	0.146	36 - 45 - 63	21	536	36.4	11.1 - 13.5 - 19.1	48	42	37	32	25	16		
	500	0.307	44 - 54 - 76	28	776	76.5	13.3 - 16.3 - 23.0	54	48	43	37	30	20		
	655	0.527	50 - 61 - 87	32	1017	131.3	15.2 - 18.7 - 26.4	59	53	47	41	33	23		
	965	1.145	61 - 74 - 105	40	1498	285.0	18.5 - 22.6 - 32.0	66	60	54	46	37	28		
8 Slots	40	0.002	2 - 4 - 13	-	62	0.4	0.6 - 1.4 - 4.0	-	-	-	-	-	-		
	380	0.136	38 - 47 - 66	21	590	33.8	11.6 - 14.2 - 20.1	47	42	37	32	26	16		
	550	0.285	46 - 56 - 80	28	854	70.9	14.0 - 17.1 - 24.2	54	48	43	37	30	20		
	720	0.488	53 - 64 - 91	32	1118	121.5	16.0 - 19.6 - 27.7	59	53	47	41	33	23		
	1060	1.057	64 - 78 - 110	40	1646	263.3	19.4 - 23.7 - 33.6	66	60	54	46	37	28		

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10<sup>-12</sup> Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8



Series AL2000

IP/METRIC DATA: 1" SLOT WIDTH, CONTINUOUS SLOT

	IP Data			NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw		Air Flow	Press Ps	Vertical Throw	2	3	4	5	6	7	
	CFM/ft	"WG	ft		L/s/m	Pa	m							
1 Slot	5	0.000	0 - 0 - 1	-	8	0.1	0.0 - 0.1 - 0.4	-	-	-	-	-	-	
	85	0.082	14 - 17 - 24	15	132	20.5	4.2 - 5.1 - 7.2	46	37	32	23	13	-	
	125	0.178	17 - 20 - 29	23	194	44.3	5.0 - 6.2 - 8.7	53	44	37	29	17	-	
	165	0.310	19 - 23 - 33	30	256	77.2	5.8 - 7.1 - 10.0	58	49	42	32	20	11	
	245	0.684	23 - 28 - 40	39	380	170.2	7.1 - 8.7 - 12.2	65	56	48	38	24	15	
2 Slots	10	0.000	0 - 1 - 3	-	16	0.1	0.1 - 0.2 - 0.9	-	-	-	-	-	-	
	150	0.064	18 - 22 - 31	16	233	16.0	5.5 - 6.8 - 9.6	47	38	33	25	14	-	
	220	0.138	22 - 27 - 38	24	342	34.3	6.7 - 8.2 - 11.6	54	45	38	30	19	-	
	290	0.239	25 - 31 - 44	31	450	59.6	7.7 - 9.4 - 13.3	59	49	43	34	22	12	
	430	0.527	31 - 38 - 53	40	668	131.1	9.4 - 11.5 - 16.2	66	56	49	39	26	16	
3 Slots	15	0.000	1 - 1 - 5	-	23	0.1	0.2 - 0.4 - 1.5	-	-	-	-	-	-	
	205	0.053	21 - 26 - 37	17	318	13.2	6.5 - 7.9 - 11.2	47	38	33	25	15	-	
	300	0.114	26 - 31 - 45	24	466	28.4	7.8 - 9.6 - 13.5	54	45	39	30	19	-	
	395	0.197	30 - 36 - 51	31	613	49.2	9.0 - 11.0 - 15.5	59	49	43	34	22	13	
	585	0.433	36 - 44 - 62	40	908	107.8	10.9 - 13.4 - 18.9	66	56	49	40	27	17	
4 Slots	20	0.000	1 - 2 - 6	-	31	0.1	0.2 - 0.5 - 2.0	-	-	-	-	-	-	
	260	0.048	24 - 29 - 41	17	404	12.0	7.3 - 8.9 - 12.6	47	38	34	26	16	-	
	380	0.103	29 - 35 - 50	25	590	25.6	8.8 - 10.8 - 15.2	54	45	39	31	20	-	
	500	0.178	33 - 41 - 58	31	776	44.3	10.1 - 12.4 - 17.5	59	50	43	35	23	13	
	740	0.390	40 - 49 - 70	40	1149	97.1	12.3 - 15.0 - 21.3	66	57	49	40	27	18	
5 Slots	25	0.000	1 - 2 - 8	-	39	0.1	0.3 - 0.6 - 2.4	-	-	-	-	-	-	
	305	0.042	26 - 32 - 45	17	473	10.6	7.9 - 9.7 - 13.7	47	38	34	26	16	-	
	445	0.090	31 - 38 - 54	24	691	22.5	9.5 - 11.7 - 16.5	54	45	39	31	20	11	
	585	0.156	36 - 44 - 62	31	908	38.8	10.9 - 13.4 - 18.9	59	50	43	35	23	14	
	865	0.341	44 - 53 - 76	40	1343	84.9	13.3 - 16.3 - 23.0	66	56	49	40	27	18	
6 Slots	30	0.000	1 - 2 - 9	-	47	0.1	0.3 - 0.7 - 2.8	-	-	-	-	-	-	
	350	0.039	28 - 34 - 48	17	543	9.7	8.4 - 10.3 - 14.6	47	38	34	26	16	-	
	510	0.082	34 - 41 - 58	24	792	20.5	10.2 - 12.5 - 17.7	54	45	39	31	21	11	
	670	0.142	38 - 47 - 67	31	1040	35.4	11.7 - 14.3 - 20.2	59	50	43	35	23	14	
	990	0.310	47 - 57 - 81	40	1537	77.2	14.2 - 17.4 - 24.6	66	56	49	40	28	18	
7 Slots	35	0.000	1 - 3 - 10	-	54	0.1	0.3 - 0.8 - 3.1	-	-	-	-	-	-	
	395	0.036	30 - 36 - 51	17	613	9.0	9.0 - 11.0 - 15.5	47	38	34	26	17	-	
	575	0.077	36 - 44 - 62	24	893	19.1	10.8 - 13.3 - 18.7	54	45	39	31	21	11	
	755	0.133	41 - 50 - 71	31	1172	33.0	12.4 - 15.2 - 21.5	59	50	44	35	24	14	
	1115	0.289	50 - 61 - 86	40	1731	72.0	15.1 - 18.5 - 26.1	66	56	50	40	28	19	
8 Slots	40	0.000	1 - 3 - 11	-	62	0.1	0.4 - 0.9 - 3.5	-	-	-	-	-	-	
	440	0.034	31 - 38 - 54	18	683	8.6	9.5 - 11.6 - 16.4	47	38	34	26	17	-	
	640	0.073	38 - 46 - 65	24	994	18.2	11.4 - 14.0 - 19.8	54	45	40	32	21	12	
	840	0.126	43 - 53 - 75	31	1304	31.3	13.1 - 16.0 - 22.7	59	50	44	35	24	15	
	1240	0.274	52 - 64 - 91	40	1925	68.1	15.9 - 19.5 - 27.5	66	57	50	41	28	19	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10<sup>-12</sup> Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8



Series AL2500 / ALFZ2500

Table 1 - Supply Air

CFM per Foot	Listed Width in Inches	Min. P <sub>s</sub> in H <sub>2</sub> O		Face Velocity (V <sub>k</sub> ) FPM		Throw (T) in Feet		Minimum Ceiling Height in Feet				
		Bar Style		Bar Style		Sidewall	Sill/Floor					
		00 and 15	30 and 01	00 and 15	30 and 01	Min.-Max.	Min.-Max.	@ -18F ΔT	@ -25F ΔT	NC		
20	1½	.01	.01	500	575	6-9	1-2	8	9	<20		
30	1½	.03	.04	750	865	7-10	2-3	9	10	25		
	2	.01	.01	475	545	6-9	1-2			20		
40	1½	.05	.07	1000	1150	9-13	3-5	9	11	30		
	2	.02	.03	635	730	8-11	2-4			25		
	2½	.01	.01	460	530	7-10	2-3			20		
50	1½	.03	.12	1250	1440	11-16	4-9	9½	11	30		
	2	.03	.04	790	910	10-14	3-7			25		
	2½	.02	.03	575	660	9-13	2-6			20		
	3	<.01	.01	440	505	8-12	2-5			<20		
60	2	.05	.07	950	1090	12-18	5-11	9½	12	30		
	2½	.02	.03	690	795	11-16	4-9			25		
	3	.01	.01	530	610	10-14	3-7			20		
	4	<.01	.01	370	425	8-12	2-5			<20		
70	2	.06	.08	1110	1275	14-20	7-13	10	12	30		
	2½	.03	.04	810	935	13-19	6-12			30		
	3	.02	.03	660	760	11-16	4-9			25		
	4	<.01	.01	435	500	10-14	3-7			<20		
80	2	.08	.10	1275	1450	16-23	9-16	10½	12½	30		
	2½	.04	.05	920	1060	15-21	8-14			30		
	3	.03	.04	700	805	13-18	6-11			25		
	4	.01	.01	495	570	11-16	4-9			20		
90	2½	.05	.07	1030	1185	17-24	10-17	11	13	30		
	3	.04	.05	785	905	15-21	8-14			30		
	4	.01	.02	550	635	13-18	6-11			25		
	5	<.01	.01	450	520	11-16	4-9			20		
	2½	.06	.08	1150	1325	19-27	12-20			11	13	30
3	.04	.05	875	1010	16-23	9-16	30					
4	.02	.03	620	715	14-20	7-13	25					
100	5	.01	.01	500	575	12-18	5-11	11	13	20		
	3	.06	.08	1050	1210	19-28	11-20			11½	13	30
	4	.03	.04	745	855	17-24	9-16					30
	5	.02	.03	600	680	15-22	7-14					25
120	6	<.01	.01	480	550	13-19	5-11	11½	13			20
	3	.08	.11	1220	1410	22-32	14-24			11½	14	35
	4	.04	.05	870	1000	19-28	11-20					30
	5	.02	.03	700	810	17-25	9-17					25
140	6	.01	.01	560	645	15-22	7-14	11½	14			20
	4	.05	.07	990	1140	22-32	13-23			12	15	35
	5	.03	.04	800	925	19-29	10-20					30
	6	.02	.03	640	735	18-26	9-17					25
160	8	.01	.01	460	530	15-22	6-13	12	15			20
	4	.07	.09	1110	1275	25-36	16-27			12	15	35
	5	.04	.05	900	1035	22-33	13-24					30
	6	.03	.04	725	835	20-30	11-21					25
180	8	.02	.03	520	600	17-25	8-16	12	15			20
	4	.08	.11	1240	1425	28-41	-			12	15	40
	5	.05	.07	1000	1150	24-36	-					35
	6	.04	.05	800	925	23-33	-					30
200	8	.02	.03	575	665	20-28	-	12	15			25
	5	.08	.11	1250	1440	30-46	-			13	15	40
	6	.05	.07	1000	1150	27-39	-					35
	8	.03	.04	720	830	25-35	-					30
250	10	.01	.01	550	625	21-32	-	13	15			25
	6	.07	.09	1200	1375	33-48	-			13	15	40
	8	.04	.05	865	1000	29-42	-					35
	10	.02	.03	665	765	25-39	-					30
300	12	.01	.01	545	630	23-33	-	13	15			25
	8	.05	.08	1020	1175	34-48	-			13	15	40
	10	.03	.04	780	900	29-45	-					35
	12	.02	.03	640	735	26-38	-					30
350	8	.05	.08	1020	1175	34-48	-	13	15			40
	10	.03	.04	780	900	29-45	-			35		
	12	.02	.03	640	735	26-38	-			30		
400	8	.08	.11	1170	1350	40-55	-	14	16	45		
	10	.04	.05	890	1025	33-50	-			40		
	12	.03	.04	730	845	33-44	-			35		

Symbols:

- V<sub>t</sub> Terminal Velocity in FPM
- V<sub>r</sub> Room Velocity in FPM
- V<sub>k</sub> Face Velocity in FPM
- A<sub>k</sub> Outlet Area in Square Feet
- A<sub>n</sub> Neck Area in Square Feet
- P<sub>s</sub> Static Pressure in H<sub>2</sub>O
- NC 18dB Room Attenuation
- T Throw in Feet; see Note 6.
- ΔT Temperature Differential

Notes:

1. Table 1 based on 4-foot grille length. For longer lengths, correct throw and NC per **Table 2**.
2. When using continuous grille lengths with alternate active and inactive sections, a reduction in throw can be obtained by omitting the factors contained in **Table 2**.
3. Bar style 30 and 0  
Increase **Table 1** NC + 5 NC
4. Supply air temperature effect on horizontal throw is shown in **Table 3**. Vertical down-throw at varying supply temperatures is shown in **Table 4**.
5. When spreading the air path with a horizontal deflection of 22° per side in grille lengths up to 4 feet:  
Multiply **Table 1** Throw x .75  
Increase **Table 1** NC + 5 NC  
Multiply **Table 1** P<sub>s</sub> x 1.20  
Multiply **Table 5** A<sub>k</sub> x .90
6. Terminal velocities (V<sub>t</sub>) at the minimum and maximum throw (T) values are rated at 125 FPM and 75 FPM, respectively, with corresponding room velocities (V<sub>r</sub>) of 50 FPM and 35 FPM.

**Series AL2500 / ALFZ2500**

**Table 2 - Continuous Grille Length Factors**

Modify <b>Table 1</b> by listed values for grille lengths above 4 feet.			
Grille Length in Feet	Throw (T)		NC
	Sidewall Min.-Max.	Sill/Floor Min.-Max.	
4-6	No Change		+0
7-20	T x 1.10		+5
21-100	T x 1.15		+10

**Table 3 - Supply Air Temperature Factors**

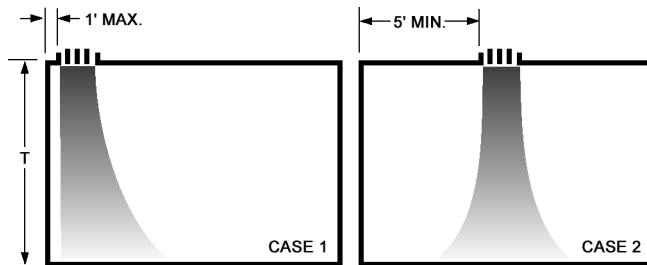
Multiply Throw in <b>Table 1</b> (or factor in <b>Table 2</b> if used) by listed value.			
Sidewall Sill/Floor	@-20F ΔT	@ 0F ΔT	@+25F ΔT
	T x 1.00	T x 1.10	T x 1.20

**Table 4 - Vertical Down-Throw and Supply Air Temperature Factors**

Multiply Throw-Sidewall in <b>Table 1</b> (or factor in <b>Table 2</b> if used) by listed value.			
Case	@-20F ΔT Cooling	@ 0F ΔT Ventilating	@+25F ΔT Heating
Case 1	T x 1.00	T x .90	T x .60
Case 2	T x .70	T x .60	T x .40

**Table 5 - Supply Grille Areas (per foot of length)**

Listed Width in Inches																	
	1½	2	2½	3	4	5	6	8	10	12	14	16	18	20	24	30	36
A <sub>n</sub>	.13	.17	.21	.25	.33	.42	.50	.67	.84	1.00	1.20	1.30	1.50	1.70	2.00	2.50	3.00
00 and 15 Bar Styles																	
A <sub>k</sub>	.04	.06	.09	.11	.16	.20	.25	.35	.45	.55	.68	.79	.90	1.00	1.30	1.60	2.10
30 and 01 Bar Styles																	
A <sub>k</sub>	.03	.05	.08	.09	.14	.17	.21	.30	.38	.47	.58	.67	.77	.85	1.10	1.40	1.80





AL2810 Supply with OBD

Table 1a

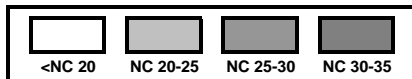
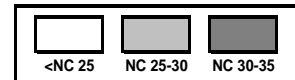
Face Velocity (FPM)	300	400	500	600	700	800	900	1000	
Static Pressure Loss (inches W.G.)	.02	.03	.05	.07	.09				
Size	Effective Area (square feet)	Air Capacities (CFM)							
		80	105	130	155	180	210	235	260
8 x 4	0.26	80	105	130	155	180	210	235	260
8 x 6	0.34	100	135	170	205	240	270	305	340
10 x 6	0.42	125	170	210	250	295	335	380	420
16 x 4									
12 x 6	0.50	150	200	250	300	350	400	450	500
18 x 4									
14 x 8	0.76	230	305	380	455	530	610	685	760
18 x 6									
18 x 8	0.89	265	355	445	535	625	710	800	890
24 x 6									
12 x 12	1.10	330	440	550	660	770	880	990	1100
24 x 8									
30 x 6	1.50	450	600	750	900	1050	1200	1350	1500
18 x 10									
22 x 10	1.80	540	720	900	1080	1260	1440	1620	1800
28 x 8									
36 x 6	2.40	720	960	1200	1440	1680	1920	2160	2400
20 x 12									
24 x 12	2.70	810	1080	1350	1620	1890	2160	2430	2700
30 x 10									
30 x 10	4.10	1230	1640	2050	2460	2870	3280	3690	4100
36 x 8									
48 x 6	5.20	1560	2080	2600	3120	3640	4160	4680	5200
28 x 12									
34 x 16	7.40	2200	2960	3700	4440	5180	5920	6660	7400
42 x 8									
34 x 12									
40 x 10									
20 x 20									

AL2815 Supply with OBD

Table 1b

Face Velocity (FPM)	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600		
Static Pressure Loss (inches W.G.)	.010	.015	.020	.030	.040	.050	.060	.080	.090	.110	.120	.140	.160		
Size	Outlet Area (square feet)		Air Capacities (CFM)												
			40	50	60	70	80	90	100	110	120	130	140	150	160
6 x 4	0.10	CFM	40	50	60	70	80	90	100	110	120	130	140	150	160
		Throw	6	7	9	11	12	13	15	16	18	19	20	22	24
10 x 4	0.15	CFM	60	75	90	105	120	135	150	165	180	195	210	225	240
6 x 6		Throw	8	9	10	12	14	16	18	20	22	24	26	28	30
12 x 4	0.20	CFM	80	100	120	140	160	180	200	220	240	260	280	300	320
8 x 6		Throw	9	10	11	13	15	17	19	21	23	25	27	29	31
12 x 6	0.30	CFM	120	150	180	210	240	270	300	330	360	390	420	450	480
10 x 8		Throw	11	12	13	16	18	20	22	24	27	29	32	34	37
16 x 6	0.40	CFM	160	200	240	280	320	360	400	440	480	520	560	600	640
12 x 8		Throw	13	15	17	19	21	23	25	28	31	34	37	40	43
16 x 8	0.50	CFM	200	250	300	350	400	450	500	550	600	650	700	750	800
12 x 10		Throw	14	16	19	21	23	27	29	32	35	37	40	43	46
18 x 8	0.60	CFM	240	300	360	420	480	540	600	660	720	780	840	900	960
12 x 12		Throw	15	17	20	23	25	29	31	34	37	40	43	46	49
18 x 10	0.72	CFM	300	372	450	525	600	675	750	825	900	975	1050	1125	1200
14 x 12		Throw	17	19	22	25	28	31	34	37	40	43	46	49	52
24 x 10	1.00	CFM	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
18 x 14		Throw	19	22	26	31	33	36	39	43	46	50	55	60	65
30 x 12	1.50	CFM	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100		
26 x 14		Throw	22	26	30	35	39	43	46	50	55	61	64		
34 x 14	2.00	CFM	800	1000	1200	1400	1600	1800	2000	2200	2400				
24 x 20		Throw	25	30	35	40	45	50	55	60	65				
36 x 20	3.00	CFM	200	1500	4800	2100	2400	2700	3000	3300					
30 x 24		Throw	130	36	43	49	56	61	67	74					
48 x 20	4.00	CFM	600	2000	2400	2800	3200	3600							
40 x 24		Throw	136	42	48	55	64	72							
48 x 24	5.00	CFM	2000	2500	3000	3500	4000								
40 x 30		Throw	41	47	54	63	74								
48 x 30	6.00	CFM	2400	3000	3600	4200									
40 x 36		Throw	45	55	64	75									

Side Spread Deflection



Face Velocity and Effective Area are based on 4" rotating vane anemometer.  
 CFM = Effective Area x Face Velocity.  
 NC re 8dB room attenuation.  
 10<sup>-12</sup> watts reference.

Table 2

Multiply Table 1a and 1b Data By Factor For Various Spread Angles At Listed CFM

Spread Angle	Throw	V <sub>k</sub>	A <sub>x</sub>	NC	P <sub>T</sub>
20°	.85	1.03	.97	+0	1.2
40°	.70	1.06	.94	+3	1.5

Position the Vertical Rear Vanes to obtain the air patterns shown. Determine change in T, P<sub>T</sub>, A<sub>k</sub>, and V<sub>k</sub> from Table 2.

Symbols:

- V<sub>T</sub> Terminal Velocity of 75 FPM
- V<sub>k</sub> Outlet Velocity in FPM
- NC re 8db room attenuation 10<sup>-12</sup> watts reference
- T Throw in Feet
- A<sub>k</sub> Outlet Area in Sq. Ft.
- P<sub>T</sub> Total Pressure in H<sub>2</sub>O
- CFM - A<sub>k</sub> x V<sub>k</sub>



### ALEC5, ALEC 10, ALEC15, ALEC5FF Eggcrate Exhaust Grille

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nominal Duct Size (in.)	Nominal Duct Area sq. ft	Core Area sq. ft	Core Velocity Velocity Pressure 1x1x1 Neg. Ps 1/2x1/2x1/2 Neg. Ps	300			400			500			600			700			800			1000			1200			1400		
				<b>0.006</b>	<b>0.013</b>	<b>0.013</b>	<b>0.01</b>	<b>0.024</b>	<b>0.024</b>	<b>0.016</b>	<b>0.037</b>	<b>0.037</b>	<b>0.022</b>	<b>0.054</b>	<b>0.054</b>	<b>0.031</b>	<b>0.073</b>	<b>0.073</b>	<b>0.04</b>	<b>0.096</b>	<b>0.096</b>	<b>0.062</b>	<b>0.15</b>	<b>0.15</b>	<b>0.09</b>	<b>0.216</b>	<b>0.216</b>	<b>0.122</b>	<b>0.294</b>	<b>0.294</b>
<b>6x6</b>	0.25	0.19	Airflow, cfm NC	57	76	95	114	133	152	190	228	266	31	39	45	190	228	266	31	39	45	312	39	45	364	45				
<b>8x6</b>	0.33	0.26	Airflow, cfm NC	78	104	130	156	182	208	260	312	364	31	39	45	260	312	364	31	39	45	408	39	45	476	46				
<b>10x6</b>	0.42	0.34	Airflow, cfm NC	102	136	170	204	238	272	340	408	476	32	39	46	340	408	476	32	39	46	444	39	46	518	46				
<b>8x8</b>	0.44	0.37	Airflow, cfm NC	111	148	185	222	259	296	370	444	518	32	39	46	370	444	518	32	39	46	492	40	46	574	46				
<b>12x6</b>	0.50	0.41	Airflow, cfm NC	123	164	205	246	287	328	410	492	574	32	40	46	410	492	574	32	40	46	576	40	46	672	46				
<b>14x6</b>	0.58	0.48	Airflow, cfm NC	144	192	240	288	336	384	480	576	672	32	40	46	480	576	672	32	40	46	684	40	46	798	46				
<b>16x6</b> <b>12x8</b>	0.67	0.57	Airflow, cfm NC	171	228	285	342	399	456	570	684	798	32	40	46	570	684	798	32	40	46	708	40	46	826	46				
<b>10x10</b>	0.69	0.59	Airflow, cfm NC	177	236	295	354	413	472	590	708	826	33	40	46	590	708	826	33	40	46	756	40	46	882	46				
<b>18x6</b>	0.75	0.63	Airflow, cfm NC	189	252	315	378	441	504	630	756	882	33	40	46	630	756	882	33	40	46	864	40	46	1008	46				
<b>20x6</b> <b>12x10</b>	0.83	0.72	Airflow, cfm NC	216	288	360	432	504	576	720	864	1008	33	40	46	720	864	1008	33	40	46	924	40	46	1078	47				
<b>22x6</b>	0.92	0.77	Airflow, cfm NC	231	308	385	462	539	616	770	924	1078	33	40	47	770	924	1078	33	40	47	1078	40	47	1232	47				
<b>24x6</b> <b>12x12</b>	1.00	0.88	Airflow, cfm NC	264	352	440	528	616	704	880	1056	1232	33	40	47	880	1056	1232	33	40	47	1170	40	47	1332	47				
<b>30x6</b> <b>18x10</b>	1.25	1.11	Airflow, cfm NC	333	444	555	666	777	888	1110	1332	1554	34	41	47	1110	1332	1554	34	41	47	1464	41	47	1708	47				
<b>14x14</b>	1.36	1.22	Airflow, cfm NC	366	488	610	732	854	976	1220	1464	1708	34	41	47	1220	1464	1708	34	41	47	1644	41	47	1918	47				
<b>36x6</b> <b>18x12</b>	1.50	1.35	Airflow, cfm NC	405	540	675	810	945	1080	1350	1620	1890	34	41	47	1350	1620	1890	34	41	47	1890	41	47	2187	47				
<b>22x10</b>	1.53	1.37	Airflow, cfm NC	411	548	685	822	959	1096	1370	1644	1918	34	41	47	1370	1644	1918	34	41	47	1918	41	47	2226	47				
<b>30x8</b> <b>24x10</b>	1.67	1.49	Airflow, cfm NC	447	596	745	894	1043	1192	1490	1788	2086	34	41	47	1490	1788	2086	34	41	47	2086	41	47	2382	47				
<b>42x6</b> <b>18x14</b>	1.75	1.59	Airflow, cfm NC	477	636	795	954	1113	1272	1590	1908	2226	34	41	47	1590	1908	2226	34	41	47	2226	41	47	2544	47				
<b>16x16</b>	1.78	1.62	Airflow, cfm NC	486	648	810	972	1134	1296	1620	1944	2268	34	41	48	1620	1944	2268	34	41	48	2268	41	48	2616	48				
<b>24x12</b> <b>18x16</b>	2.00	1.82	Airflow, cfm NC	546	728	910	1092	1274	1456	1820	2184	2548	34	41	48	1820	2184	2548	34	41	48	2548	41	48	2916	48				
<b>18x18</b>	2.25	2.07	Airflow, cfm NC	621	828	1035	1242	1449	1656	2070	2484	2898	34	41	48	2070	2484	2898	34	41	48	2898	41	48	3366	48				
<b>24x14</b>	2.33	2.14	Airflow, cfm NC	642	856	1070	1284	1498	1712	2140	2568	2996	34	42	48	2140	2568	2996	34	42	48	2996	42	48	3444	48				
<b>30x12</b>	2.50	2.29	Airflow, cfm NC	687	916	1145	1374	1603	1832	2290	2748	3206	34	42	48	2290	2748	3206	34	42	48	3206	42	48	3684	48				
<b>24x16</b>	2.67	2.46	Airflow, cfm NC	738	984	1230	1476	1722	1968	2460	2952	3444	34	42	48	2460	2952	3444	34	42	48	3444	42	48	3960	48				
<b>20x20</b>	2.78	2.57	Airflow, cfm NC	771	1028	1285	1542	1799	2056	2570	3084	3598	34	42	48	2570	3084	3598	34	42	48	3598	42	48	4116	48				
<b>36x12</b>	3.00	2.75	Airflow, cfm NC	825	1100	1375	1650	1925	2200	2750	3300	3850	34	42	48	2750	3300	3850	34	42	48	3850	42	48	4500	48				
<b>30x16</b> <b>24x20</b>	3.33	3.11	Airflow, cfm NC	933	1244	1555	1866	2177	2488	3110	3732	4354	35	42	48	3110	3732	4354	35	42	48	4354	42	48	5166	48				
<b>22x22</b>	3.36	3.14	Airflow, cfm NC	942	1256	1570	1884	2198	2512	3140	3768	4396	35	42	48	3140	3768	4396	35	42	48	4396	42	48	5214	48				
<b>42x12</b> <b>36x14</b>	3.50	3.22	Airflow, cfm NC	966	1288	1610	1932	2254	2576	3220	3864	4508	35	42	48	3220	3864	4508	35	42	48	4508	42	48	5364	48				
<b>24x22</b>	3.67	3.43	Airflow, cfm NC	1029	1372	1715	2058	2401	2744	3430	4116	4802	35	42	48	3430	4116	4802	35	42	48	4802	42	48	5654	48				
<b>30x18</b>	3.75	3.50	Airflow, cfm NC	1050	1400	1750	2100	2450	2800	3500	4200	4900	35	42	48	3500	4200	4900	35	42	48	4900	42	48	5750	48				

• Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

• NC based on room absorption of 10dB, re 10<sup>-12</sup> watts, measured per ANSI/ASHRAE Standard 70-2006



**PERFORMANCE DATA—LIGHT COMMERCIAL**

**ALEC5, ALEC 10, ALEC15, ALEC5FF Eggcrate Exhaust Grille**

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nominal Duct Size (in.)	Nominal Duct Area sq. ft	Core Area sq. ft	Core Velocity Velocity Pressure 1x1x1 Neg. Ps ½x½x½ Neg. Ps	NC 20 NC 30 NC 40								
				300 0.006 0.013 0.013	400 0.01 0.024 0.024	500 0.016 0.037 0.037	600 0.022 0.054 0.053	700 0.031 0.073 0.073	800 0.04 0.096 0.095	1000 0.062 0.15 0.148	1200 0.09 0.216 0.213	1400 0.122 0.294 0.29
48x12 <b>24x24</b>	4.00	3.75	Airflow, cfm NC	1125 -	1500 -	1875 -	2250 14	2625 20	3000 26	3750 35	4500 42	5250 49
<b>36x18</b>	4.50	4.22	Airflow, cfm NC	1266 -	1688 -	2110 -	2532 14	2954 20	3376 26	4220 35	5064 42	5908 49
<b>36x20</b> 30x24	5.00	4.71	Airflow, cfm NC	1413 -	1884 -	2355 -	2826 14	3297 21	3768 26	4710 35	5652 43	6594 49
<b>42x18</b>	5.25	4.94	Airflow, cfm NC	1482 -	1976 -	2470 -	2964 14	3458 21	3952 26	4940 35	5928 43	6916 49
<b>28x28</b>	5.44	5.16	Airflow, cfm NC	1548 -	2064 -	2580 -	3096 14	3612 21	4128 26	5160 35	6192 43	7224 49
<b>42x20</b> 30x28	5.83	5.51	Airflow, cfm NC	1653 -	2204 -	2755 -	3306 14	3857 21	4408 26	5510 35	6612 43	7714 49
<b>48x18</b> 36x24	6.00	5.66	Airflow, cfm NC	1698 -	2264 -	2830 -	3396 14	3962 21	4528 26	5660 35	6792 43	7924 49
30x30	6.25	5.94	Airflow, cfm NC	1782 -	2376 -	2970 -	3564 15	4158 21	4752 26	5940 35	7128 43	8316 49
<b>42x24</b> 36x28	7.00	6.66	Airflow, cfm NC	1998 -	2664 -	3330 -	3996 15	4662 21	5328 26	6660 36	7992 43	9324 49
<b>46x22</b>	7.03	6.68	Airflow, cfm NC	2004 -	2672 -	3340 -	4008 15	4676 21	5344 26	6680 36	8016 43	9352 49
<b>32x32</b>	7.11	6.78	Airflow, cfm NC	2034 -	2712 -	3390 -	4068 15	4746 21	5424 27	6780 36	8136 43	9492 49
<b>36x30</b>	7.50	7.16	Airflow, cfm NC	2148 -	2864 -	3580 -	4296 15	5012 21	5728 27	7160 36	8592 43	10024 49
<b>48x24</b> 36x32	8.00	7.63	Airflow, cfm NC	2289 -	3052 -	3815 -	4578 15	5341 21	6104 27	7630 36	9156 43	10682 49
<b>34x34</b>	8.03	7.68	Airflow, cfm NC	2304 -	3072 -	3840 -	4608 15	5376 21	6144 27	7680 36	9216 43	10752 49
<b>36x34</b>	8.50	8.14	Airflow, cfm NC	2442 -	3256 -	4070 -	4884 15	5698 21	6512 27	8140 36	9768 43	11396 50
<b>42x30</b>	8.75	8.38	Airflow, cfm NC	2514 -	3352 -	4190 -	5028 15	5866 21	6704 27	8380 36	10056 43	11732 50
<b>36x36</b>	9.00	8.63	Airflow, cfm NC	2589 -	3452 -	4315 -	5178 15	6041 21	6904 27	8630 36	10356 43	12082 50
42x34 <b>48x30</b>	10.00	9.60	Airflow, cfm NC	2880 -	3840 -	4800 -	5760 15	6720 21	7680 27	9600 36	11520 43	13440 50
<b>38x38</b>	10.03	9.64	Airflow, cfm NC	2892 -	3856 -	4820 -	5784 15	6748 21	7712 27	9640 36	11568 43	13496 50
<b>42x36</b>	10.50	10.10	Airflow, cfm NC	3030 -	4040 -	5050 -	6060 15	7070 22	8080 27	10100 36	12120 44	14140 50
<b>46x34</b>	10.86	10.45	Airflow, cfm NC	3135 -	4180 -	5225 -	6270 15	7315 22	8360 27	10450 36	12540 44	14630 50
<b>42x38</b>	11.08	10.67	Airflow, cfm NC	3201 -	4268 -	5335 -	6402 15	7469 22	8536 27	10670 36	12804 44	14938 50
<b>40x40</b>	11.11	10.70	Airflow, cfm NC	3210 -	4280 -	5350 -	6420 15	7490 22	8560 27	10700 36	12840 44	14980 50
<b>48x36</b>	12.00	11.57	Airflow, cfm NC	3471 -	4628 -	5785 -	6942 15	8099 22	9256 27	11570 36	13884 44	16198 50
<b>42x42</b>	12.25	11.82	Airflow, cfm NC	3546 -	4728 -	5910 -	7092 15	8274 22	9456 27	11820 36	14184 44	16548 50
<b>44x44</b>	13.44	12.99	Airflow, cfm NC	3897 -	5196 -	6495 -	7794 16	9093 22	10392 27	12990 36	15588 44	18186 50
<b>48x42</b>	14.00	13.54	Airflow, cfm NC	4062 -	5416 -	6770 -	8124 16	9478 22	10832 27	13540 37	16248 44	18956 50
<b>46x46</b>	14.69	14.22	Airflow, cfm NC	4266 -	5688 -	7110 -	8532 16	9954 22	11376 27	14220 37	17064 44	19908 50
<b>48x46</b>	15.33	14.85	Airflow, cfm NC	4455 -	5940 -	7425 -	8910 16	10395 22	11880 27	14850 37	17820 44	20790 50
<b>48x48</b>	16.00	15.50	Airflow, cfm NC	4650 -	6200 -	7750 -	9300 16	10850 22	12400 28	15500 37	18600 44	21700 50

• Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

• NC based on room absorption of 10dB, re 10<sup>-12</sup> watts, measured per ANSI/ASHRAE Standard 70-2006





700/AL700 Nonvision Door Grille

PERFORMANCE BASED ON NOMINAL SIZES SHOWN IN BOLD

Nominal Duct Size (in)	Nominal Duct Area sq. ft	Core Area sq. ft	Core Velocity Velocity Pressure CT-700 Static Pressure T-700 Static Pressure	NC 20				NC 30				NC 40										
				200	250	300	350	400	450	500	550	600	0.003	0.004	0.006	0.008	0.010	0.013	0.016	0.019	0.022	
				<b>0.028</b>	<b>0.044</b>	<b>0.063</b>	<b>0.086</b>	<b>0.113</b>	<b>0.143</b>	<b>0.176</b>	<b>0.213</b>	<b>0.254</b>	<b>0.027</b>	<b>0.043</b>	<b>0.062</b>	<b>0.084</b>	<b>0.110</b>	<b>0.139</b>	<b>0.172</b>	<b>0.208</b>	<b>0.247</b>	
<b>6x6</b>	<b>0.25</b>	<b>0.19</b>	Airflow, cfm	38	48	57	67	76	86	95	105	114	NC (Noise Criteria)	15	20	24	27	30	32	34	36	38
<b>8x6</b>	<b>0.33</b>	<b>0.26</b>	Airflow, cfm	52	65	78	91	104	117	160	143	156	NC (Noise Criteria)	16	21	25	28	31	33	36	38	39
<b>10x6</b>	<b>0.42</b>	<b>0.34</b>	Airflow, cfm	88	85	102	119	136	153	170	187	204	NC (Noise Criteria)	18	22	26	29	32	35	37	39	41
<b>8x8</b>	<b>0.44</b>	<b>0.37</b>	Airflow, cfm	74	93	111	130	148	167	185	204	222	NC (Noise Criteria)	18	23	26	30	32	35	37	39	41
<b>12x6</b>	<b>0.50</b>	<b>0.41</b>	Airflow, cfm	82	103	123	144	164	185	205	226	246	NC (Noise Criteria)	18	23	27	30	33	35	38	40	41
<b>14x6</b>	<b>0.58</b>	<b>0.48</b>	Airflow, cfm	96	120	144	168	192	216	240	264	288	NC (Noise Criteria)	19	24	28	32	34	37	39	41	43
<b>16x6</b>	<b>0.67</b>	<b>0.57</b>	Airflow, cfm	114	143	171	200	228	257	285	314	342	NC (Noise Criteria)	20	24	28	31	34	36	38	40	42
<b>10x10</b>	<b>0.69</b>	<b>0.59</b>	Airflow, cfm	118	148	177	207	236	266	295	325	354	NC (Noise Criteria)	20	25	28	32	34	37	39	41	43
<b>18x6</b>	<b>0.75</b>	<b>0.63</b>	Airflow, cfm	126	158	189	221	252	284	315	347	378	NC (Noise Criteria)	20	25	29	32	35	37	39	41	43
<b>20x6</b>	<b>0.83</b>	<b>0.72</b>	Airflow, cfm	144	180	216	252	288	324	360	396	432	NC (Noise Criteria)	21	25	29	33	35	38	40	42	44
<b>22x6</b>	<b>0.92</b>	<b>0.77</b>	Airflow, cfm	154	193	231	270	308	347	385	424	462	NC (Noise Criteria)	21	26	30	33	36	38	40	42	44
<b>24x6</b>	<b>1.00</b>	<b>0.88</b>	Airflow, cfm	176	220	264	308	352	396	440	484	528	NC (Noise Criteria)	22	26	30	33	36	39	41	43	45
<b>30x6</b>	<b>1.25</b>	<b>1.11</b>	Airflow, cfm	222	278	333	389	444	500	555	611	666	NC (Noise Criteria)	23	27	31	34	37	40	42	44	46
<b>14x14</b>	<b>1.36</b>	<b>1.22</b>	Airflow, cfm	244	305	366	437	488	549	610	671	732	NC (Noise Criteria)	23	28	32	358	38	40	42	44	46
<b>18x12</b>	<b>1.50</b>	<b>1.35</b>	Airflow, cfm	270	338	405	473	540	608	675	743	810	NC (Noise Criteria)	24	28	32	35	38	41	43	45	47
<b>22x10</b>	<b>1.53</b>	<b>1.37</b>	Airflow, cfm	274	343	411	480	548	617	685	754	822	NC (Noise Criteria)	24	28	32	35	38	41	43	45	47
<b>30x8</b>	<b>1.67</b>	<b>1.49</b>	Airflow, cfm	298	373	447	522	596	671	745	820	894	NC (Noise Criteria)	24	28	32	35	38	41	43	45	47
<b>42x6</b>	<b>1.75</b>	<b>1.59</b>	Airflow, cfm	318	398	477	557	636	716	795	875	954	NC (Noise Criteria)	24	29	33	36	39	41	43	45	47
<b>18x16</b>	<b>1.78</b>	<b>1.62</b>	Airflow, cfm	324	405	486	567	648	729	810	891	972	NC (Noise Criteria)	24	29	33	36	39	41	44	46	47
<b>24x12</b>	<b>2.00</b>	<b>1.82</b>	Airflow, cfm	364	455	546	637	728	819	910	1001	1092	NC (Noise Criteria)	25	30	33	37	39	42	44	46	48
<b>16x18</b>	<b>2.25</b>	<b>2.07</b>	Airflow, cfm	414	518	621	725	828	932	1035	1139	1242	NC (Noise Criteria)	25	30	34	37	40	42	45	47	48
<b>24x14</b>	<b>2.33</b>	<b>2.14</b>	Airflow, cfm	428	535	642	749	856	963	1070	1177	1284	NC (Noise Criteria)	26	30	34	37	40	42	45	47	49
<b>30x12</b>	<b>2.50</b>	<b>2.29</b>	Airflow, cfm	458	573	687	802	916	1031	1145	1260	1374	NC (Noise Criteria)	26	31	34	38	40	43	45	47	49
<b>24x16</b>	<b>2.67</b>	<b>2.46</b>	Airflow, cfm	493	615	738	861	984	1107	1230	1353	1476	NC (Noise Criteria)	26	31	35	38	41	43	45	47	49
<b>20x20</b>	<b>2.78</b>	<b>2.57</b>	Airflow, cfm	514	643	771	900	1028	1157	1285	1414	1542	NC (Noise Criteria)	26	31	35	38	41	43	46	48	49
<b>30x16</b>	<b>3.33</b>	<b>3.11</b>	Airflow, cfm	622	778	933	1089	1244	1400	1555	1711	1866	NC (Noise Criteria)	27	32	36	39	42	44	46	48	50
<b>24x20</b>	<b>3.36</b>	<b>3.14</b>	Airflow, cfm	628	785	942	1099	1256	1413	1570	1727	1884	NC (Noise Criteria)	27	32	36	39	42	44	46	48	50
<b>24x22</b>	<b>3.67</b>	<b>3.43</b>	Airflow, cfm	686	858	1029	1201	1372	1544	1715	1887	2058	NC (Noise Criteria)	28	32	36	39	42	45	47	49	51
<b>30x18</b>	<b>3.75</b>	<b>3.50</b>	Airflow, cfm	700	875	1050	1225	1400	1575	1750	1925	2100	NC (Noise Criteria)	28	32	36	39	42	45	47	49	51
<b>24x24</b>	<b>4.00</b>	<b>3.75</b>	Airflow, cfm	750	938	1125	1313	1500	1688	1875	2063	2250	NC (Noise Criteria)	28	33	36	40	43	45	47	49	51
<b>30x24</b>	<b>5.00</b>	<b>4.71</b>	Airflow, cfm	942	1178	1413	1649	1884	2120	2355	2591	2826	NC (Noise Criteria)	29	34	37	41	43	46	48	50	52
<b>28x28</b>	<b>5.44</b>	<b>5.16</b>	Airflow, cfm	1032	1290	1548	1806	2064	2322	2580	2838	3096	NC (Noise Criteria)	29	34	38	41	44	46	49	51	52
<b>30x28</b>	<b>5.83</b>	<b>5.51</b>	Airflow, cfm	1102	1378	1653	1929	2204	2480	2755	3031	3306	NC (Noise Criteria)	30	34	38	41	44	47	49	51	53
<b>30x30</b>	<b>6.25</b>	<b>5.94</b>	Airflow, cfm	1188	1485	1782	2079	2376	2673	2970	3267	3564	NC (Noise Criteria)	30	35	38	42	44	47	49	51	53

- Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006
- NC based on room absorption of 10dB, re 10<sup>-12</sup> watts, measured per ANSI/ASHRAE Standard 70-2006







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