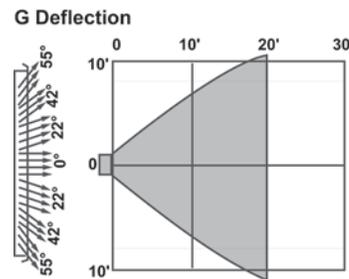
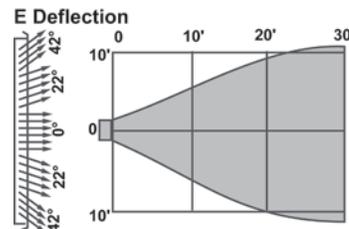
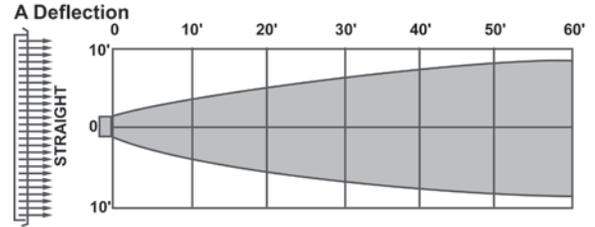


Recommended NC Criteria

	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



825 Return Floor Grille

Average Face Velocity*		400	500	600	700	800	900	1000
4 x 12	CFM	120	150	175	205	235	265	295
Ak .295	Pt	.011	.017	.024	.033	.043	.054	.065
4 x 14	CFM	135	170	200	235	270	300	335
Ak .335	Pt	.011	.016	.023	.032	.042	.052	.064
6 x 10	CFM	150	185	220	260	295	335	370
Ak .37	Pt	.010	.016	.022	.031	.041	.051	.063
6 x 12	CFM	180	225	265	310	355	400	445
Ak .445	Pt	.010	.015	.021	.030	.039	.049	.060
8 x 10	CFM	195	245	295	345	390	440	490
Ak .49	Pt	.010	.015	.021	.029	.038	.047	.059
6 x 14	CFM	205	255	305	355	410	460	510
Ak .51	Pt	.010	.015	.020	.029	.038	.047	.058
8 x 12	CFM	235	295	350	410	470	525	585
Ak .565	Pt	.009	.014	.020	.028	.036	.046	.057
8 x 14	CFM	270	340	410	475	545	610	680
Ak .68	Pt	.009	.014	.019	.027	.035	.044	.055
10 x 12	CFM	290	360	430	505	575	650	720
Ak .72	Pt	.009	.014	.019	.027	.035	.043	.054
12 x 12 and 6 x 24	CFM	340	425	510	595	680	765	850
Ak .85	Pt	.009	.013	.019	.026	.033	.042	.053
6 x 30	CFM	410	515	620	720	825	925	1030
Ak 1.03	Pt	.008	.012	.018	.024	.032	.040	.049
8 x 24	CFM	445	555	665	775	890	1000	1110
Ak 1.11	Pt	.008	.012	.018	.024	.031	.039	.048
14 x 14	CFM	460	575	690	805	920	1035	1150
Ak 1.15	Pt	.008	.012	.018	.024	.031	.039	.048
8 x 30	CFM	540	675	810	945	1080	1215	1350
Ak 1.35	Pt	.008	.012	.017	.023	.030	.037	.046
14 x 20	CFM	630	790	950	1105	1265	1420	1580
Ak 1.58	Pt	.007	.011	.016	.022	.029	.036	.045
12 x 24	CFM	655	820	985	1150	1310	1475	1690
Ak 1.64	Pt	.007	.011	.016	.022	.029	.036	.044
10 x 30	CFM	670	840	1010	1175	1345	1510	1680
Ak 1.68	Pt	.007	.011	.016	.022	.029	.036	.044
18 x 18	CFM	720	900	1080	1260	1440	1620	1800
Ak 1.80	Pt	.007	.011	.015	.021	.028	.035	.043
14 x 24	CFM	750	935	1120	1310	1495	1685	1870
Ak 1.87	Pt	.007	.011	.015	.021	.028	.035	.043
12 x 30	CFM	800	1000	1200	1400	1600	1800	2000
Ak 2.00	Pt	.007	.011	.015	.021	.027	.034	.042
14 x 30	CFM	940	1175	1410	1645	1880	2115	2350
Ak 2.35	Pt	.007	.010	.015	.020	.026	.033	.040
24 x 24	CFM	1240	1550	1860	2170	2480	2790	3100
Ak 3.10	Pt	.006	.010	.014	.019	.024	.031	.038
30 x 30	CFM	1880	2350	2820	3290	3760	4230	4700
Ak 4.70	Pt	.006	.009	.012	.017	.022	.028	.034

*Velocity measured 1" from face

850 Deluxe Floor Register

Face Velocity		300	400	500	600	700	800	900	1000
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062
2 1/4 x 10	CFM	25	35	45	55	60	70	80	90
Ak .09	Spread	3.0	4.0	5.0	6.5	7.5	9.0	10.0	11.0
	Throw	2.0	2.5	3.0	4.0	4.5	5.0	6.0	6.5
2 1/4 x 12	CFM	35	45	55	65	75	90	100	110
Ak .11	Spread	3.0	4.5	6.0	7.0	8.5	9.5	11.0	12.0
	Throw	2.0	3.0	3.5	4.0	5.0	6.0	6.5	7.0
2 1/4 x 14	CFM	40	50	65	80	90	105	115	130
Ak .13	Spread	3.5	5.0	7.0	8.0	9.5	10.5	12.0	13.0
	Throw	2.5	3.0	4.0	4.5	5.5	6.5	7.0	8.0
4 x 10	CFM	50	70	85	100	120	135	155	170
Ak .17	Spread	4.0	6.0	7.5	9.0	11.0	12.0	13.5	15.5
	Throw	3.0	3.5	4.5	5.5	6.5	7.0	8.0	9.0
4 x 12	CFM	65	85	105	125	145	170	190	210
Ak .21	Spread	5.0	7.0	8.5	10.0	12.0	13.5	15.5	17.0
	Throw	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
4 x 14	CFM	75	100	125	150	175	200	225	250
Ak .25	Spread	5.5	7.5	9.5	11.0	13.0	15.0	17.0	18.5
	Throw	3.5	4.5	5.5	6.5	7.5	9.0	10.0	11.0
6 x 10	CFM	80	110	135	160	190	215	245	270
Ak .27	Spread	6.0	8.0	10.0	11.5	13.5	15.5	17.5	19.5
	Throw	3.5	4.5	6.0	7.0	8.0	9.0	10.5	11.5
6 x 12	CFM	100	130	165	200	230	265	295	330
Ak .33	Spread	6.5	8.5	11.0	13.0	15.0	17.0	19.5	21.5
	Throw	4.0	5.0	6.5	7.5	9.0	10.0	11.5	12.5
6 x 14	CFM	115	155	195	235	275	310	350	390
Ak .39	Spread	7.5	9.5	12.0	14.0	17.0	19.0	21.5	23.5
	Throw	4.5	5.5	7.0	8.5	10.0	11.0	12.5	14.0

Terminal Velocity of 50 FPM

830 Floor Register

Face Velocity		300	400	500	600	700	800	900	1000
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062
4 x 10	CFM	60	80	100	120	140	160	180	200
Ak .20	Throw	8	11	13	16	19	22	24	26
4 x 12 and 6 x 8	CFM	75	100	125	150	175	200	225	250
Ak .25	Throw	9	12	15	18	21	25	28	31
4 x 14	CFM	85	110	140	170	195	225	250	280
Ak .28	Throw	6	10	15	19	22	25	28	32
6 x 10 and 8 x 8	CFM	95	130	160	190	225	255	290	320
Ak .32	Throw	10	14	17	21	24	27	31	34
6 x 12	CFM	115	150	190	230	265	305	340	380
Ak .38	Throw	12	15	19	23	26	30	34	38
8 x 10	CFM	125	170	210	250	295	335	380	420
Ak .42	Throw	12	15	18	24	28	32	37	41
6 x 14	CFM	130	175	220	265	310	350	395	440
Ak .44	Throw	13	16	20	24	28	32	36	41
6 x 16	CFM	145	195	245	295	345	390	440	490
Ak .49	Throw	11	16	21	25	30	35	39	44
8 x 12 and 10 x 10	CFM	160	210	265	320	370	425	475	530
Ak .53	Throw	12	17	21	26	32	37	43	48
9 x 12 and 8 x 14	CFM	180	240	300	360	420	480	540	600
Ak .60	Throw	14	20	24	29	34	39	44	50
10 x 12	CFM	195	260	325	390	455	520	585	650
Ak .65	Throw	14	18	24	30	35	41	46	51
8 x 16 and 9 x 14	CFM	205	275	345	415	485	550	620	690
Ak .69	Throw	15	21	27	32	37	42	48	53
10 x 14 and 12 x 12	CFM	235	310	390	470	545	625	700	780
Ak .78	Throw	14	21	28	34	40	46	51	56
10 x 16	CFM	265	350	440	530	615	705	790	880
Ak .88	Throw	17	23	30	36	41	48	53	60
12 x 14	CFM	280	370	465	560	650	745	835	930
Ak .93	Throw	18	24	30	37	43	50	56	62
12 x 16 and 14 x 14	CFM	320	430	535	640	750	855	965	1070
Ak 1.07	Throw	20	26	32	39	46	53	59	64
12 x 18 and 14 x 16	CFM	365	490	610	730	855	975	1100	1220
Ak 1.22	Throw	21	28	34	42	49	56	62	68
14 x 18 and 16 x 16	CFM	425	570	710	850	995	1135	1280	1420
Ak 1.42	Throw	22	30	37	45	52	58	63	68
12 x 24 and 14 x 20	CFM	475	635	795	955	1115	1270	1430	1590
Ak 1.59	Throw	23	31	39	46	52	59	65	71

Terminal Velocity of 50 FPM

800 Stamped Floor Register
875 Toe-Space Grille

Face Velocity		300	400	500	600	700	800	900	1000
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062
2 x 10	CFM	35	45	50	60	70	75	85	95
Ak .085	Spread	3.0	5.0	5.0	6.0	7.0	8.0	8.0	8.0
	Throw	4.0	4.5	6.0	7.0	8.0	9.0	10.0	10.0
2 x 12	CFM	30	40	50	60	70	80	90	100
Ak .100	Spread	3.0	4.0	4.5	5.5	6.5	7.0	8.0	9.0
	Throw	3.5	4.5	5.5	7.0	8.0	9.0	10.0	11.0
2 x 14	CFM	35	45	60	70	80	90	105	115
Ak .115	Spread	3.5	4.0	5.0	7.0	7.0	8.0	9.0	10.0
	Throw								