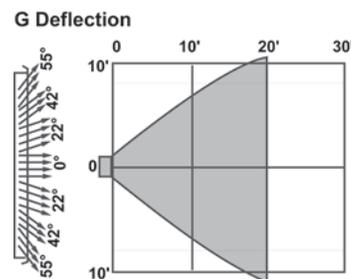
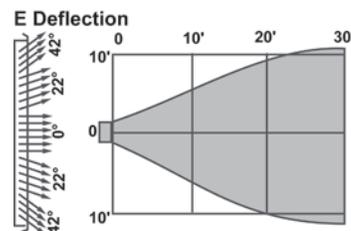
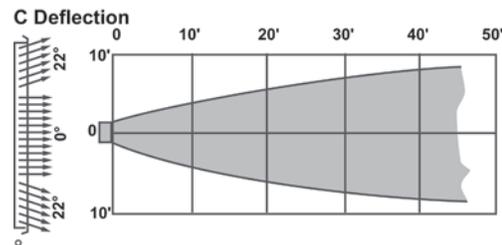
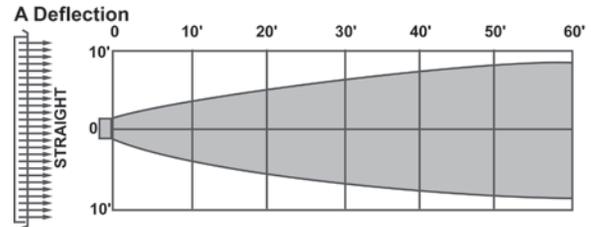


Recommended NC Criteria

	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



652 / 671 Baseboard Return Grille

827 Toe-Space Grille

Average Face Velocity*		300	400	500	600	700
10 x 6	CFM	115	150	190	225	265
Ak .38	Pt	.013	.023	.037	.052	.072
12 x 6	CFM	135	180	230	280	320
Ak .46	Pt	.013	.022	.035	.051	.070
10 x 8	CFM	150	205	255	305	355
Ak .51	Pt	.012	.022	.035	.050	.068
14 x 6	CFM	160	210	265	320	370
Ak .53	Pt	.012	.022	.035	.050	.068
12 x 8	CFM	180	245	305	365	430
Ak .61	Pt	.012	.022	.034	.049	.066
14 x 8	CFM	215	288	360	430	505
Ak .72	Pt	.012	.021	.033	.047	.065
20 x 6	CFM	225	300	375	450	525
Ak .75	Pt	.012	.021	.033	.047	.064
16 x 8	CFM	250	330	415	500	580
Ak .83	Pt	.012	.021	.033	.046	.063
14 x 10 and 24 x 6	CFM	275	365	460	550	640
Ak .92	Pt	.011	.020	.032	.045	.062
14 x 12	CFM	320	430	540	650	755
Ak 1.08	Pt	.011	.020	.031	.045	.060
30 x 6	CFM	335	445	560	670	780
Ak 1.12	Pt	.011	.020	.031	.044	.060
24 x 8	CFM	365	485	605	730	850
Ak 1.21	Pt	.011	.020	.031	.044	.059
20 x 10	CFM	375	500	630	750	880
Ak 1.25	Pt	.011	.019	.030	.043	.059
24 x 10 and 30 x 8	CFM	450	600	750	890	1040
Ak 1.50	Pt	.011	.019	.030	.042	.057
24 x 12	CFM	550	730	910	1100	1270
Ak 1.82	Pt	.010	.018	.029	.041	.056
30 x 10	CFM	575	760	960	1150	1330
Ak 1.91	Pt	.010	.018	.029	.041	.055
30 x 12	CFM	680	900	1130	1350	1570
Ak 2.25	Pt	.010	.018	.028	.040	.054

*Velocity measured 1" from face

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
Ak .085	Spread		3.0	5.0	5.0	6.0	7.0	8.0	9.0
	Throw		4.0	4.5	6.0	7.0	8.0	9.0	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	3.5	4.5	6.0	8.0	8.0	9.5	10.5	12.0
4 x 8	CFM	40	50	65	80	90	105	115	130
Ak .130	Spread	4.0	4.0	5.0	6.5	7.5	8.5	9.5	11.0
	Throw	4.0	4.5	6.0	7.5	8.5	10.0	11.0	13.0
4 x 10	CFM	50	70	85	100	120	135	155	170
Ak .170	Spread	4.5	5.0	6.5	7.5	9.0	10.0	11.5	13.0
	Throw	4.0	6.0	8.0	10.0	11.0	12.5	14.0	15.5
4 x 12	CFM	60	80	100	120	140	160	175	195
Ak .195	Spread	5.0	6.5	8.0	9.5	11.5	13.0	14.5	16.0
	Throw	4.0	5.5	7.0	8.0	9.5	11.0	12.0	13.0
4 x 14	CFM	70	90	115	140	160	185	205	230
Ak .230	Spread	5.5	7.0	8.5	10.0	12.0	13.5	15.5	17.0
	Throw	4.5	5.5	7.0	8.5	10.0	11.5	12.5	14.0
6 x 10	CFM	70	95	120	145	170	190	215	240
Ak .240	Spread	5.5	7.0	8.0	10.0	12.0	14.0	15.0	17.0
	Throw	4.0	5.5	7.0	8.5	10.0	11.0	12.5	14.0
6 x 12	CFM	85	115	140	170	200	230	255	285
Ak .285	Spread	6.0	7.5	9.0	11.0	13.0	15.0	17.0	19.0
	Throw	4.5	6.0	7.5	9.0	10.0	12.0	14.0	16.0
6 x 14	CFM	100	130	165	200	230	265	300	330
Ak .330	Spread	6.5	8.0	9.0	12.0	14.0	16.5	18.0	20.0
	Throw	4.5	6.5	8.0	9.5	11.0	13.0	15.0	17.0

Terminal Velocity of 50 FPM

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

Face Velocity*		300	400	500	600	700
6 x 4	CFM	34	45	56	68	79
Ak .110	Ps	.020	.035	.054	.079	.108
6 x 6	CFM	50	67	84	101	117
Ak .170	Ps	.019	.035	.054	.079	.107
8 x 4	CFM	45	60	75	90	105
Ak .150	Ps	.019	.035	.054	.079	.108
8 x 6	CFM	67	89	111	134	156
Ak .220	Ps	.019	.035	.054	.079	.107
8 x 8	CFM	89	118	148	178	207
Ak .300	Ps	.019	.035	.054	.078	.107
10 x 4	CFM	56	74	93	112	130
Ak .190	Ps	.019	.035	.054	.079	.107
10 x 6	CFM	83	111	139	167	194
Ak .280	Ps	.019	.035	.054	.078	.107
10 x 8	CFM	111	147	184	221	258
Ak .370	Ps	.019	.034	.054	.078	.106
10 x 10	CFM	138	184	230	276	322
Ak .460	Ps	.019	.034	.054	.078	.106
12 x 6	CFM	100	133	166	199	233
Ak .330	Ps	.019	.034	.054	.078	.106
12 x 8	CFM	132	177	221	265	309
Ak .440	Ps	.019	.034	.054	.078	.106
12 x 10	CFM	165	220	275	330	385
Ak .550	Ps	.019	.034	.053	.077	.105
12 x 12	CFM	197	263	329	395	461
Ak .660	Ps	.019	.034	.053	.077	.104
12 x 18	CFM	294	392	491	589	687
Ak .980	Ps	.019	.034	.053	.075	.102
14 x 6	CFM	116	155	193	232	271
Ak .390	Ps	.019	.034	.054	.078	.106
14 x 8	CFM	154	205	257	308	360
Ak .510	Ps	.019	.034	.053	.077	.105
14 x 10	CFM	192	256	320	384	448
Ak .640	Ps	.019	.034	.053	.077	.104
14 x 12	CFM	230	306	383	460	536
Ak .770	Ps	.019	.034	.053	.076	.103
14 x 14	CFM	267	357	446	535	624
Ak .890	Ps	.019	.034	.053	.075	.103

Face Velocity*		300	400	500	600	700
14 x 18	CFM	343	457	571	685	800
Ak 1.140	Ps	.019	.033	.052	.074	.101
16 x 6	CFM	132	177	221	265	309
Ak .440	Ps	.019	.034	.054	.078	.106
16 x 8	CFM	176	234	293	352	410
Ak .590	Ps	.019	.034	.053	.077	.105
16 x 10	CFM	219	292	365	438	511
Ak .730	Ps	.019	.034	.053	.076	.104
16 x 12	CFM	262	349	437	524	612
Ak .870	Ps	.019	.034	.053	.076	.103
16 x 14	CFM	305	407	509	610	712
Ak 1.020	Ps	.019	.034	.052	.075	.102
16 x 16	CFM	348	464	580	696	812
Ak 1.160	Ps	.019	.033	.052	.074	.101
16 x 24	CFM	519	692	865	1038	1211
Ak 1.730	Ps	.018	.033	.051	.071	.097
16 x 25	CFM	540	720	900	1081	1261
Ak 1.800	Ps	.018	.033	.051	.071	.097
18 x 6	CFM	149	198	248	297	347
Ak .500	Ps	.019	.034	.054	.077	.105
18 x 18	CFM	439	585	732	878	1024
Ak 1.460	Ps	.019	.033	.052	.073	.099
18 x 24	CFM	583	777	971	1166	1360
Ak 1.940	Ps	.018	.032	.051	.070	.096
20 x 6	CFM	165	220	275	330	385
Ak .550	Ps	.019	.034	.053	.077	.105
20 x 10	CFM	273	364	455	546	637
Ak .910	Ps	.019	.034	.053	.075	.103
20 x 12	CFM	327	435	544	653	762
Ak 1.090	Ps	.019	.033	.052	.074	.101
20 x 14	CFM	380	507	634	760	887
Ak 1.270	Ps	.019	.033	.052	.074	.100
20 x 20	CFM	540	720	900	1081	1261
Ak 1.800	Ps	.018	.033	.051	.071	.097
20 x 24	CFM	647	862	1078	1293	1509
Ak 2.160	Ps	.018	.032	.050	.069	.094
20 x 25	CFM	673	898	1122	1346	1571
Ak 2.240	Ps	.018	.032	.050	.069	.094

Face Velocity*		300	400	500	600	700
24 x 4	CFM	132	177	221	265	309
Ak .440	Ps	.019	.034	.054	.078	.106
24 x 6	CFM	197	263	329	395	461
Ak .660	Ps	.019	.034	.053	.077	.104
24 x 8	CFM	262	349	437	524	612
Ak .870	Ps	.019	.034	.053	.076	.103
24 x 10	CFM	327	435	544	653	762
Ak 1.090	Ps	.019	.033	.052	.074	.101
24 x 12	CFM	391	521	651	782	912
Ak 1.300	Ps	.019	.033	.052	.073	.100
24 x 14	CFM	455	607	758	910	1062
Ak 1.520	Ps	.019	.033	.051	.072	.098
24 x 24	CFM	774	1032	1290	1548	1806
Ak 2.580	Ps	.018	.032	.049	.067	.091
30 x 4	CFM	165	220	275	330	385
Ak .550	Ps	.019	.034	.053	.077	.105
30 x 6	CFM	246	328	410	492	574
Ak .820	Ps	.019	.034	.053	.076	.103
30 x 8	CFM	327	435	544	653	762
Ak 1.090	Ps	.019	.033	.052	.074	.101
30 x 10	CFM	407	543	678	814	949
Ak 1.360	Ps	.019	.033	.052	.073	.100
30 x 12	CFM	487	649	812	974	1136
Ak 1.620	Ps	.018	.033	.051	.072	.098
30 x 14	CFM	567	756	945	1134	1323
Ak 1.890	Ps	.018	.032	.051	.071	.096
30 x 18	CFM	726	968	1210	1452	1694
Ak 2.420	Ps	.018	.032	.050	.068	.092
30 x 20	CFM	806	1074	1343	1611	1880
Ak 2.690	Ps	.018	.031	.049	.067	.091
30 x 24	CFM	964	1286	1607	1928	2250
Ak 3.210	Ps	.017	.031	.048	.064	.0