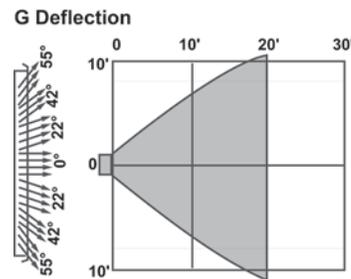
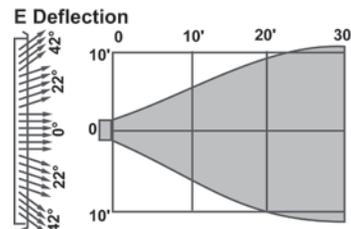
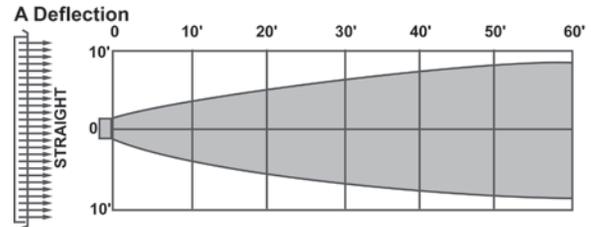


Recommended NC Criteria

	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



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"	CFM	45	60	70	85	100	115	130	145	175	200
Ak .144	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
	CFM	80	105	130	155	180	210
AK .260	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		4.5		5		5.5		5.5	
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		4.5		5		5.5		6*	
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		4.5		5		5.5		6*		6*	
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		3.5		4.5		5.5		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		5		5.5		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		5		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		5.5		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		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		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.