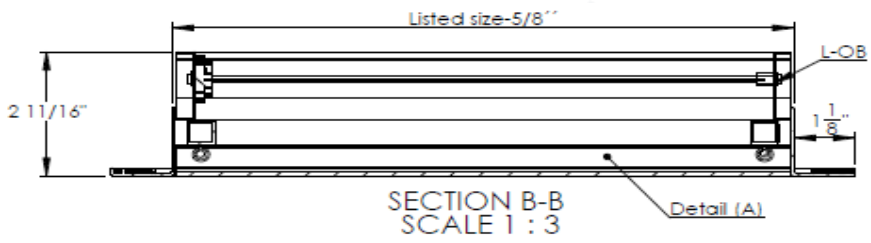
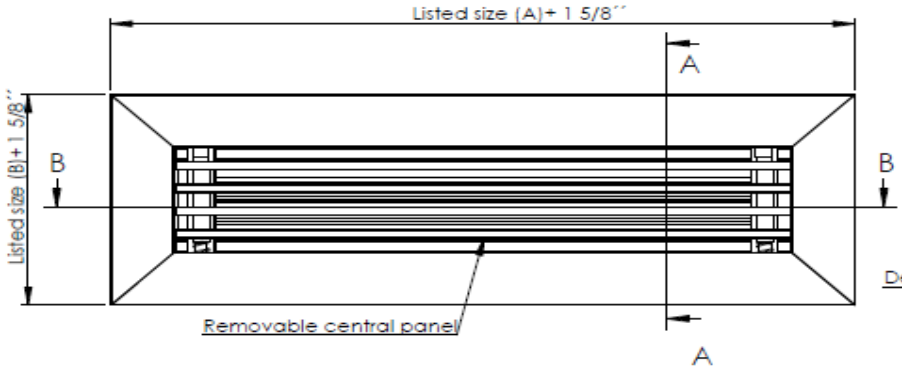
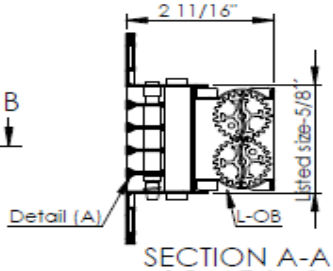
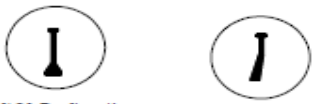
L-BG(°)-OB- FEATURES



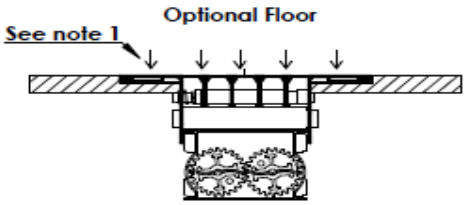




BLADE DETAIL (A)



(✱)0° Deflection ( )15° Deflection



NUMBER OF BLADE PER LISTED SIZE

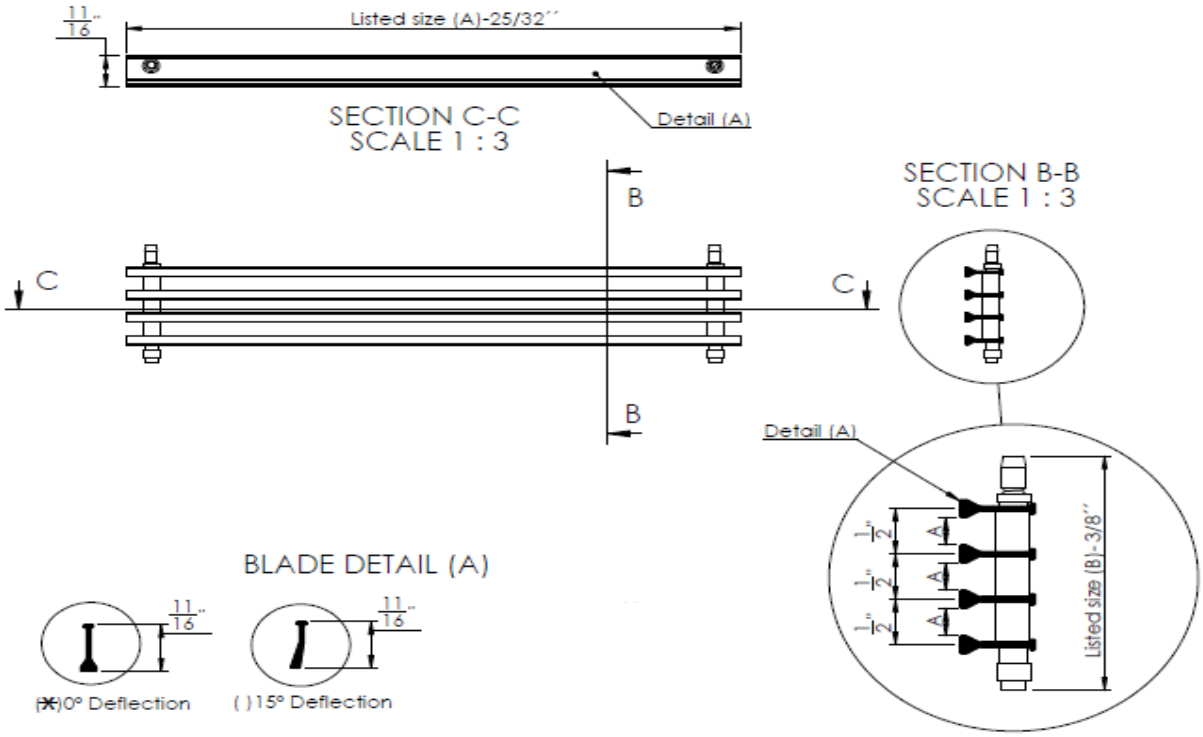
Listed size (inches)	1½	2	2½	3	3½	4	5	6	8	10	12
Number of blade	1	2	3	4	5	6	8	10	14	18	22

Finish
White (Standard)
Other colors (Optional)

Note 1: maximum load 50 l/fp2
standard according to Colombian NSR 2010

Note 2: Minimum size12´´ x 3´´ / maximum size 72´´x12´´

CENTRAL PATTERN L-BG-FEATURES



BLADE DETAIL (A)

(✱)0° Deflection ( )15° Deflection

NUMBER OF BLADE PER LISTED SIZE

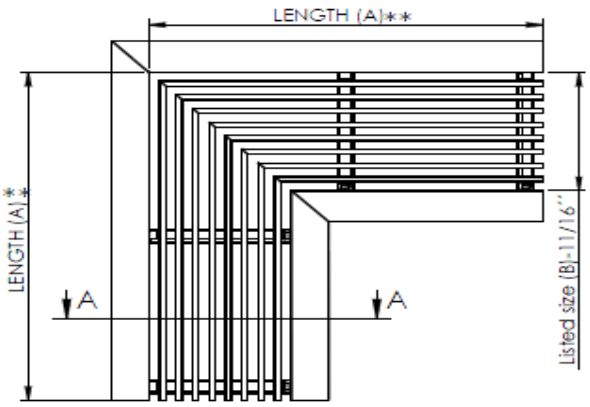
Listed size (inches)	1½	2	2½	3	3½	4	5	6	8	10	12
Number of blade	1	2	3	4	5	6	8	10	14	18	22

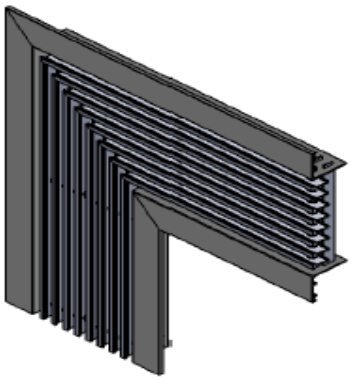
Finish
White (Standard)
Other colors (Optional)

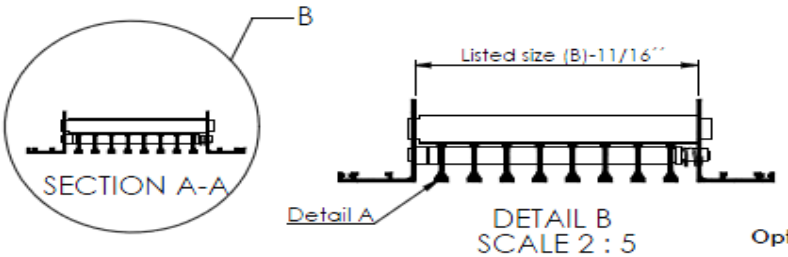
	BLADE		
	0° Deflectión	15° Deflectión	30° Deflectión
A	7,7mm	9,8mm	8,9mm

Note 2: Minimum size12'' x 2'' / maximum size 72''x12''

CORNER BEAD-90°V-L-BG-FEATURES



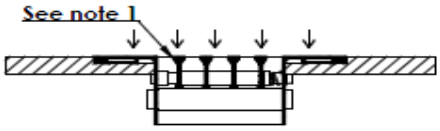




BLADE DETAIL (A)

(*)0° Deflection ( )15° Deflection

Optional Floor Mountaing



NUMBER OF BLADE PER LISTED SIZE

Listed size (inches)	1½	2	2½	3	3½	4	5	6	8	10	12
Number of blade	1	2	3	4	5	6	8	10	14	18	22

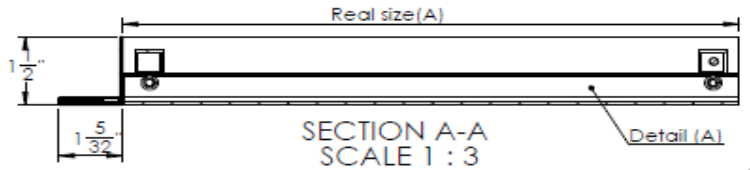
Finish
White (Standard)
Other colors (Optional)

**(A)=12''
(A)=24''

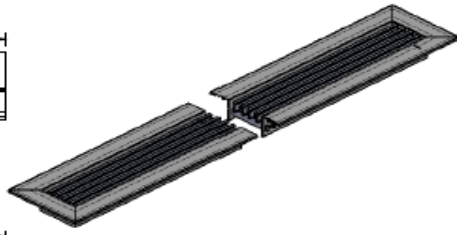
Note 1: Avaliable in size (A) 12'' x (B) 1'' to 6''
Avaliable in size (A) 24'' x (B) 6 1/2'' to 12''

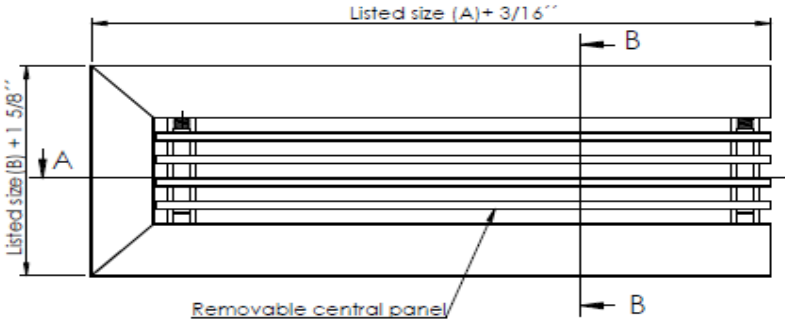
Note 2: maximum load 50 l/fp2
according to Colombian NSR 2010

LATERAL L-BG-FEATURES

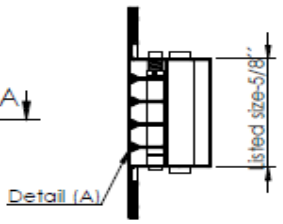


SECTION A-A
SCALE 1 : 3





BLADE DETAIL (A)



SECTION B-B
SCALE 1 : 3

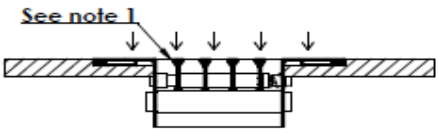
(✱)0° Deflection

( )15° Deflection

NUMBER OF BLADE PER LISTED SIZE

Listed size (inches)	1½	2	2½	3	3½	4	5	6	8	10	12
Number of blade	1	2	3	4	5	6	8	10	14	18	22

Optional Floor Mountaing



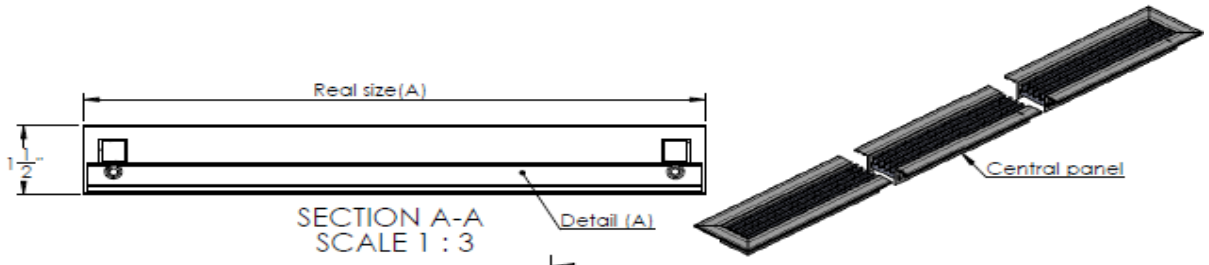
SECTION C-C
SCALE 1 : 3

Finish
White (Standard)
Other colors (Optional)

Note 1: maximum load 50 l/fp2
according to Colombian NSR 2010

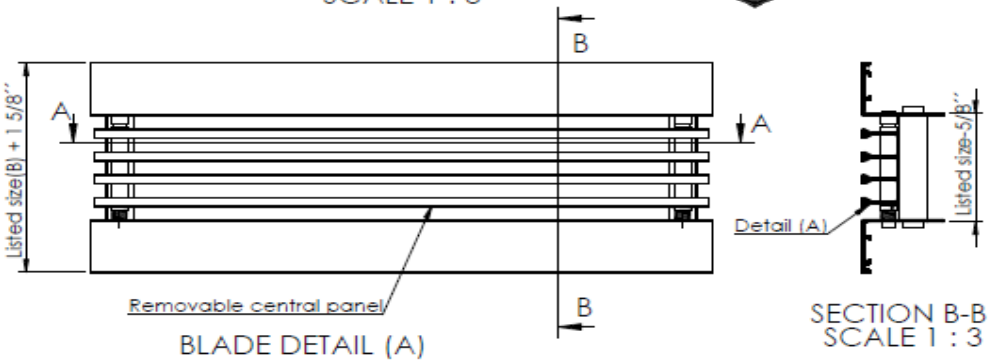
Note 2: Minimum size12'' x 2'' / maximum size 72''x12''

CENTAL PANEL L-BG-FEATURES



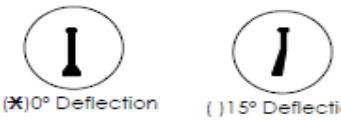
SECTION A-A
SCALE 1 : 3

Detail (A)



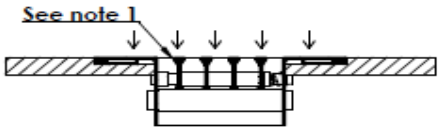
BLADE DETAIL (A)

SECTION B-B
SCALE 1 : 3



(✱)0° Deflection ( )15° Deflection

Optional Floor Mountaing



SECTION AA-AA
SCALE 1 : 3

NUMBER OF BLADE PER LISTED SIZE

Listed size (inches)	1½	2	2½	3	3½	4	5	6	8	10	12
Number of blade	1	2	3	4	5	6	8	10	14	18	22

Finish
White (Standard)
Other colors (Optional)

Note 1: maximum load 50 l/fp2
accoraing to Colombian NSR 2010

Note 2: Minimum size12´´ x 2´´ / maximum size 72´´x12´´

L-BG

LINEAR BAR GRILLES & REGISTERS

SERIES ROUND DIFFUSERS

Series L-BG Linear Bar Grilles and Registers are engineered for supply and return air distribution in heating, and ventilating applications, and are designed for sidewall, floor, sill, and ceiling installation.

MATERIAL: Linear Bar Grilles are made exclusively of high grade aluminum extrusions (6063-T5 alloy) for maximum strength, corrosion resistance, and dimensional stability. Floor grilles are additionally reinforced.

CONSTRUCTION: Face bars of natural anodized extruded aluminum are mechanically interlocked into heavy gauge cross bars to produce straight, rigid, and blemish free core sections. Placed on ½ inch centers, the bars, which measure 7/32 inch by ¾ inch, are available in three angles of deflection: 0°, 15°, 30° Floor and sill cores are removable, and are secured by coated steel retaining clips. Wall and ceiling cores are permanently attached to their frames.
Bar grille frames are made of extruded aluminum and are available in two border widths: 1 inch and ¾ inch. Steel snap-in friction springs are used as the standard mounting method for floor, sill and sidewall applications, especially where specifications call for concealed installation.

PERFORMANCE: Multiple applications of series L-BG including sidewall, sill floor, and ceiling installations make separate performance data necessary.

SIZE AVAILABILITY: L-B6 Bar Grilles are available in different widths ranging from inches, with floor mounted units limited to a maximum width of 12 inches. Stand to a maximum width of 12 inches. Standard widths include: 2”, 2 ½”, 3”, 3 ½”, 4”, 5”, 6”, 8”, 10”, 12”, Bar grilles are available in virtually any length above a minimum length of 6 inches, but one place lengths are limited to 6 feet. Longer Series L-BG, are formed by butting multiple grille sections together with alignment strips at the frame borders, resulting in hairline joints and a smooth unbroken face appearance.

FINISH: Standard finish for all L-BG Bar Grilles and Registers are Natural Anodized or powder coating paint white.

HOW TO SELECT

STEP 1. The grilles selected should deliver the necessary CFM for the area to be conditioned.

STEP 2. The throw (in feet) should extend at least 75% of the distance from the face of the grille to the wall opposite the outlet. The throw contained in the performance data is based on a terminal velocity of 50 feet per minute. See performance data notes for further application details regarding throws, pressure, noise, etc.

STEP 3. The velocity at the neck shall be based upon the recommended N.C. values in the chart (at right).

HOW TO SPECIFY

All L –BG grilles/diffusers shall be L –BG Grille and damper constructed entirely of tempered extruded aluminum, using mechanically – joined comers on the frame and a mechanically–swedged blade-to-mullion construction for the core.

NOISE CRITERIA RECOMMENDATION CHART

APPLICATION	COMMENTS	N.C.RANGE
Broadcast studios Concert halls Music rooms	extremely quiet, suitable to pick up low sound levels.	Below 25
Residences Theaters Libraries Executive offices	Very quiet	30
Private offices Hotel rooms Courtrooms Churches Hospital rooms Schools	quiet office Voice level will be heard up to 30 feet	35
Dining rooms Labs General Offices Lounges	voice level will be heard up to 12 feet	40
Retail stores Lobbies Reception areas Drafting- engineering Offices	allows isolation of conversation voice level will be heard up to 6 feet	45
Machinery rooms Computer rooms Factories	high background sound, voice level will be heard up to 3 feet, phone conversation difficult	50

PERFORMANCE DATA L-BG

Linear bar grilles & REGISTERS

Table 1 Supply Air Performance 0' and 15' Deflection

Listed Width (in inches) And AK Area Per foot	Outlet Velocity (vk) Total Pressure (pl) Static Pressure (ps) NC	500 ,016 ,012 -	700 ,031 ,024 15	900 ,051 ,040 20	1000 ,062 ,050 23	1100 ,075 ,060 26	1200 ,090 ,072 29	1300 ,105 ,084 31
1 1/2	**Flow CFM/Ft.**	**31**	**44**	**56**	**63**	**69**	**75**	**81**
	Throw, Sill of Floor	6 9	9 13	10 14	11 16	13 18	13 19	14 20
0,062	ft. Side Wall	8 11	11 16	13 18	14 20	15 22	17 24	17 25
2	**Flow CFM/Ft.**	**43**	**60**	**77**	**85**	**94**	**102**	**111**
	Throw, Sill of Floor	5 8	8 12	10 14	11 16	13 18	13 19	14 20
0,086	ft. Side Wall	7 10	10 15	13 18	14 20	15 22	17 24	17 25
2 1/2	**Flow CFM/Ft.**	**55**	**77**	**99**	**110**	**121**	**132**	**143**
	Throw, Sill of Floor	6 9	9 13	11 16	13 18	13 19	15 21	15 22
0,11	ft. Side Wall	8 11	11 16	14 20	16 23	17 24	18 26	20 28
3	**Flow CFM/Ft.**	**65**	**91**	**117**	**130**	**43**	**156**	**169**
	Throw, Sill of Floor	7 10	10 14	13 18	14 20	15 21	15 22	17 24
0,13	ft. Side Wall	8 12	13 18	15 22	17 25	18 26	20 28	21 30
3 1/2	**Flow CFM/Ft.**	**76**	**107**	**137**	**153**	**168**	**183**	**198**
	Throw, Sill of Floor	7 10	10 15	13 18	15 21	15 22	17 24	18 26
0,152	ft. Side Wall	9 13	13 19	16 23	18 26	20 28	21 30	22 32
4	**Flow CFM/Ft.**	**88**	**123**	**158**	**175**	**193**	**210**	**228**
	Throw, Sill of Floor	8 11	13 18	14 20	16 23	18 26	19 27	20 29
0,176	ft. Side Wall	10 14	15 22	17 25	20 29	22 32	24 34	25 26
5	**Flow CFM/Ft.**	**110**	**154**	**198**	**220**	**242**	**264**	**286**
	Throw, Sill of Floor	8 12	13 18	15 21	17 24	18 26	19 27	21 30
0,22	ft. Side Wall	10 15	15 22	18 26	21 30	22 32	24 34	26 37
6	**Flow CFM/Ft.**	**133**	**186**	**239**	**265**	**292**	**318**	**345**
	Throw, Sill of Floor	8 12	13 18	15 22	17 25	18 26	20 28	21 30
0,265	ft. Side Wall	10 15	15 22	19 27	22 31	23 33	24 35	27 38
7	**Flow CFM/Ft.**	**155**	**217**	**279**	**310**	**339**	**372**	
	Throw, Sill of Floor	9 13	13 18	15 22	17 25	18 27		
0,3278	ft. Side Wall	11 16	16 23	19 27	23 33	24 34		
8	**Flow CFM/Ft.**	**178**	**249**	**320**	**355**	**391**		
	Throw, Sill of Floor	10 14	13 19	15 22	18 26	19 27		
0,356	ft. Side Wall	12 17	17 24	20 28	23 33	24 34		
9	**Flow CFM/Ft.**	**200**	**280**	**360**	**400**	**443**		
	Throw, Sill of Floor	10 15	14 21	17 24	20 29	20 30		
0,400	ft. Side Wall	12 18	18 26	22 31	25 35	26 36		
10	**Flow CFM/Ft.**	**223**	**312**	**401**	**445**			
	Throw, Sill of Floor	10 15	15 22	18 26	21 30			
0,446	ft. Side Wall	13 19	20 28	23 33	26 37			
12	**Flow CFM/Ft.**	**268**	**375**	**482**				
	Throw, Sill of Floor	12 17	22 31	21 30				
0,536	ft. Side Wall	15 21	24 35	27 38				

For application of performance data shown in table 1, please refer to the Engineering Notes, Throw and NC values in Table 1 are based on a 4 foot active Grille length. For Grille lengths other than 4 feet.

PERFORMANCE DATA L-BG

Linear bar grilles & REGISTERS

Table 1 Supply Air Performance 0' and 15' Deflection

Listed Width (in inches) And AK Area Per foot	Outlet Velocity (vk) / Total Pressure (pl) / Static Pressure (ps) / NC	500 ,016 ,012 23	700 ,031 ,024 26	900 ,051 ,040 29	1000 ,062 ,050	1100 ,075 ,060	1200 ,090 ,072	1300 ,105 ,084
13	**Flow CFM/Ft.**	**291**	**406**	**522**				
	Throw, Sill of Floor	12 17	22 31	22 32				
0,580	ft. Side Wall	16 22	25 36	29 40				
14	**Flow CFM/Ft.**	**313**	**438**	**563**				
	Throw, Sill of Floor	13 19	23 31	23 32				
0,625	ft. Side Wall	18 24	26 37	30 41				
16	**Flow CFM/Ft.**	**358**	**501**	**644**				
	Throw, Sill of Floor	14 20	25 33	25 32				
0,715	ft. Side Wall	20 25	29 39	33 42				
18	**Flow CFM/Ft.**	**403**	**564**	**725**				
	Throw, Sill of Floor	16 22	27 35	27 32				
0,805	ft. Side Wall	21 27	31 41	35 44				
20	**Flow CFM/Ft.**	**448**	**627**	**806**				
	Throw, Sill of Floor	18 25	29 37	29 32				
0,895	ft. Side Wall	23 29	32 43	37 45				
21	**Flow CFM/Ft.**	**471**	**658**	**847**				
	Throw, Sill of Floor	21 27	30 40	30 32				
0,940	ft. Side Wall	25 31	33 45	38 47				
22	**Flow CFM/Ft.**	**493**	**690**	**887**				
	Throw, Sill of Floor	23 28	32 43	33 32				
0,985	ft. Side Wall	27 34	35 49	41 49				

For application of performance data shown in table 1, please refer to the Engineering Notes, Throw and NC values in Table 1 are based on a 4 foot active Grille length. For Grille lengths other than 4 feet.

Table 3 Return Air Performance 0" and 15" Deflection									
Listed Width in inches	Ak Effective Area Per Linear Foot	NC							
		10	15	20	25	28	31	35	45
		Ps Static Pressure Inches H_2O							
		-,02	-,03	-,04	-,06	-,08	-,10	-,12	-,15
1 1/2	,13	20	25	30	35	40	45	50	55
2	,18	30	40	45	55	65	70	80	90
2 1/2	,23	45	55	60	75	85	95	105	115
3	,27	55	70	80	90	110	125	135	150
3 1/2	,30	65	80	90	110	125	140	155	170
4	,34	80	100	110	130	150	170	185	205
5	,41	100	125	140	175	200	225	245	275
6	,46	120	150	175	215	245	275	305	340
8	,57	165	200	235	290	330	380		
10	,68	215	260	315	375	430	495		
12	,76	265	325	375	455	525			

Table 3 Return Air Performance 0" and 15" Deflection									
Listed Width in inches	Ak Effective Area Per Linear Foot	NC							
		10	15	20	25	28	31	35	45
		Ps Static Pressure Inches H_2O							
		-,02	-,03	-,04	-,06	-,08	-,10	-,16	-,20
1 1/2	,12	15	20	25	30	35	40	50	55
2	,17	25	35	40	48	55	63	78	88
2 1/2	,22	35	45	50	60	70	80	100	110
3	,25	45	55	65	75	90	100	130	145
3 1/2	,29	50	65	75	90	105	120	150	165
4	,33	60	75	90	110	125	140	175	200
5	,39	80	100	120	140	160	180	225	255
6	,44	100	120	140	170	200	220	280	315
8	,54	135	165	200	240	270	305	380	
10	,64	175	215	250	300	350	390	500	
12	,72	210	260	300	380	425	475		

For application of performance data shown in table 1, please refer to the Engineering Notes, Throw and NC values in Table 1 are based on a 4 foot active Grille length. For Grille lengths other than 4 feet.

PERFORMANCE DATA L-BG

NUMBER OF BLADES PER LISTED SIZE

Listed size (inches) 2 2½ 3 3½ 4 5 6 8 10 12
Number of Bars 2 3 4 5 6 8 10 14 18 22

PRESSURE:

Total pressure readings are in inches water gauge at the horizontal air pattern. This pressure refers to any length of diffuser rather than a per-foot basis when product is used in a return application, the – P, Negative Static Pressure Will be 0.80 x the P, shown.

THROW:

Throws indicated are based on total number of feet of projected air when a terminal velocity of 50 feet per minute is reached. Throws are based on a 9' ceiling height. For each additional foot in ceiling height, reduce the throw rating by approximately one foot (for horizontal air flow patterns). The throw ratings at 100 and 150 feet per minute are approximately as follows.

CORRECTION FACTOR FOR THROW DATA @ 50 FPM V, AS SHOWN IN CHARTS FOR O-DEGREE DE FLECTION UNITS HORIZONTAL THROW CORRECTION ONLY

When Pt=	,040	,060	,120	,180	,200
Throw @ 100fmp Vt	5'less	6'less	6'less	8'less	8'less
Throw @ 150fpm Vt	8'less	10'less	12'less	15'less	15' less

The length of tested diffusers was 4' listed size. When other lengths are required, use the following correction factors:

THROW CORRECTION FOR VARIOUS CONTINUOUS LENGTHS

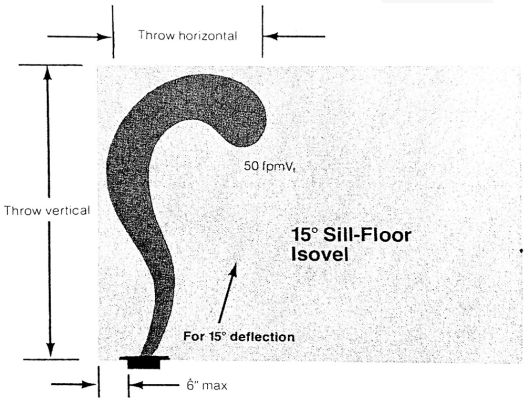
Active length	1"	4"	6"	8"	10"	15"	20"	up to 100"
Sidewall throw x	,8	1,0	1,0	1,1	1,1	1,15	1,15	1,20
Sill-floor throw x	,8	1,0	1,0	1,1	1,1	1,15	1,15	1,20

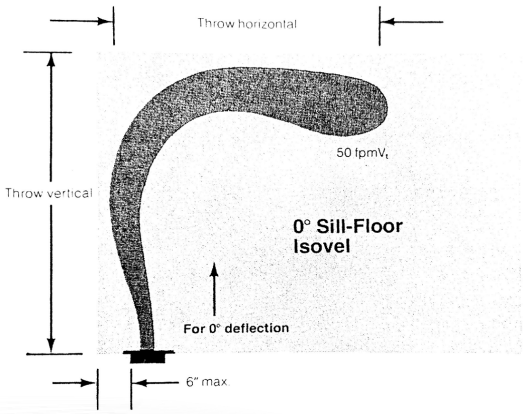
THROW TEMPERATURE CORRECTION FACTORS

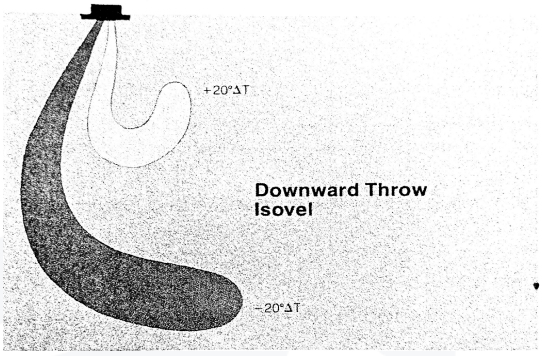
ΔT°F	-20°FΔT	0°FΔT	+20°FΔT
Throw corrections	correct as shown	x 11	x 12

Sill/floor Throw: Sill and floor throw given in the data charts are the sum of the vertical and horizontal projection from the outlet (based on the 9'high test chamber). Al test data is for units mounted adjacent to the wall or ceiling to create the COANDA (ceiling effect and/or wall effect) EFFECT See Diagrams.

When outlet is located in floor, be sure that throw at least equals ceiling height. It is a known condition that the area beyond the horizontal throw area (in above figures) of up to 20' (Throw plus 20') will be conditioned satisfactorily.







Ceiling Downward Throw: This technique has certain drawbacks to consider. Cold ΔT primary air will tend to have a further downward projection than would a warm ΔT. Drafts may occur at the more vulnerable "ankle level" of the occupied zone. The following data will determine proper selection.

CEILING DOWNWARD VERTICAL THROW
CORRECTION FACTORS TO USE ON THE SIDEWALL
THROW VALUES

Location	6" From Sidewall	5' or more from sidewall
–20˚FΔT	x 1.00	x 0.70
0˚FΔT	x 0-90	x 0.60
+25˚FΔT	x 0.60	x 0.40

DROP: Drop of a horizontal air stream is dependent primarily on the CFM and its ΔT. The larger the CFM delivered, the greater the drop from the ceiling. Also. The cooler the air, the greater the drop. Drop can be reduced by dividing the CFM total into multiple outlets with smaller quantities of air. In linear bar-tipe grilles, this may be accomplished by dividing the linear diffuser into active and inactive sections. Typical drop at - 20˚FΔT is shown in the ISOVEL DIAGRAM. When dividing these sections, a certain number of inactive sections in- between should be used.

Nº of inactive 4' to 6' sections	1	5	10 up
Nº of inactive 4' to 6' sections Needed to effect separation	1	2	3

Drop may also be reduced by using a greater degree of deflection (such as 30˚ upward), locating bar grille further down the wall, and arching the throw in upward plane angle.

Outlet velocity: The outlet velocity is based upon the total pressure and is the measurement at face of the grille.

TOTAL PRESSURE P_t										
,02	,02	,03	,04	,05	,06	,09	,12	,16	,20	,25
OUTLET VELOCITY (Feet per minute)										
500	600	700	800	900	1000	1200	1400	1600	1800	2000

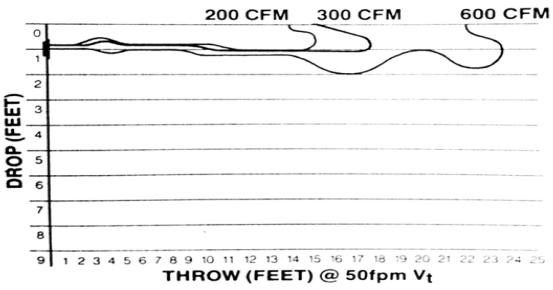
Sound data: The N.C. Values are based upon room absorption of 8Db re 10^{-12} watts, The symbol " – " indicates less than 20 Db. N.C. rating Dampering for "fine balancing" up to 25% of the cfm volume will result in an increase in N.C. of 6 Db. Greater dampering will result in increased noise levels, and millaire recommends remote – located balancing dampers upstream from the branch duct. Data shown is for 10- foot active length. Correct as follows for other lengths:

N.C. CORRECTION CHART

Active length	1"	2"	3"	4"	6"	8"	10"	15"	20"	25"	30"
Db. CORRECTION	-10	-7	-5	-4	-2	-1	0	+2	+3	+4	+5

Return applications have an increased N.C. of + 4 Db.

Thermal expansion: Installation of continuous runs should allow 1/32" space between 6' segments for systems using a + 40˚ FΔT. Add an extra 1/64" for every additional + 20˚ FΔT to the space. This allows for expansion of the metal when heated, and avoids possible ceiling damage.

Dampering correction factors.
Data shown is or non- dampered units. To determine the changes for adding an opposed-blade damper, use the following chart:

THROW	TOTAL PRESSURE	N.C.
X 92	X 1.05	+ 2 Db.