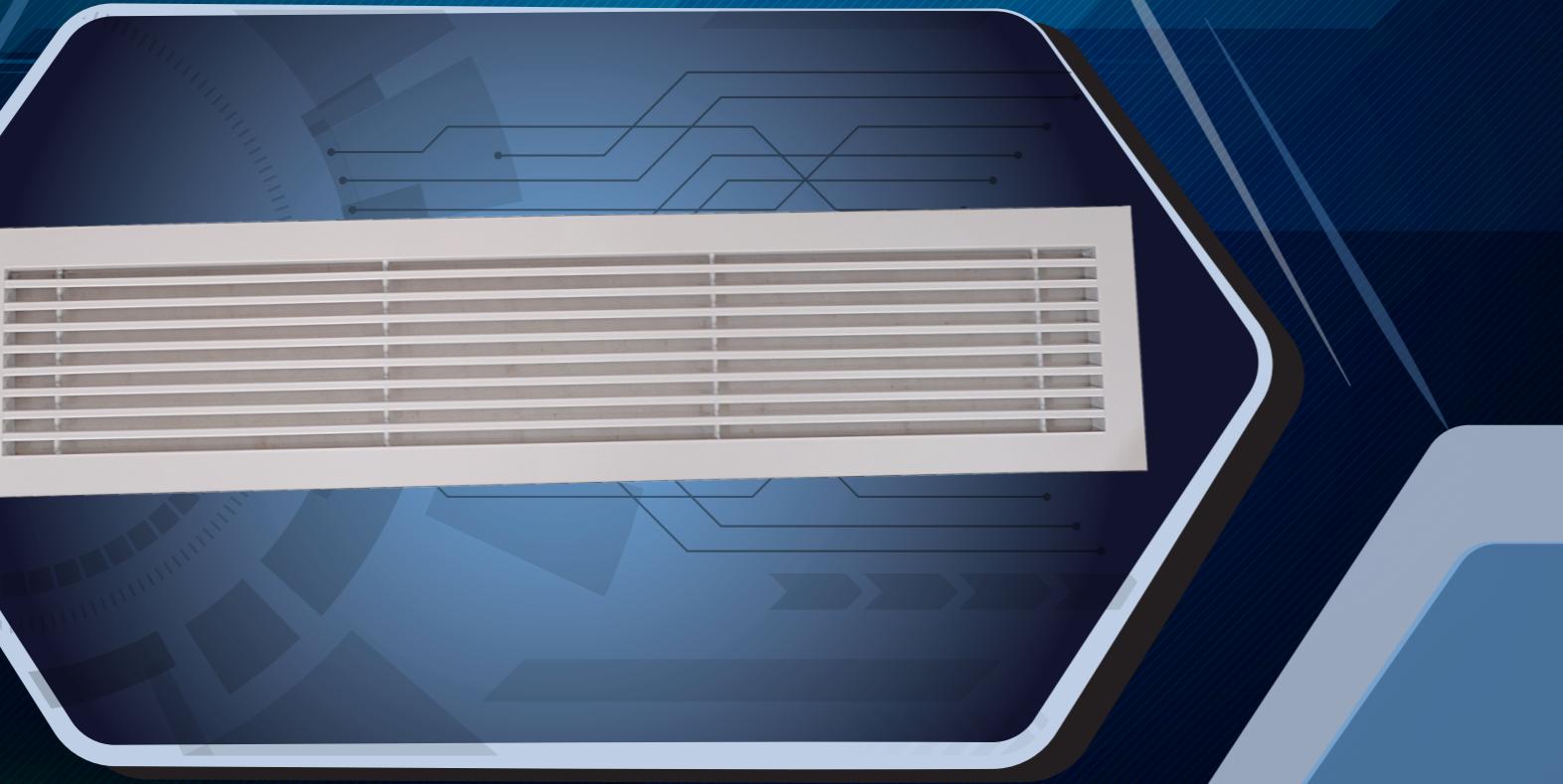




Makkah
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LINEAR BAR GRILLE

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LINEAR BAR GRILLE

INTRODUCTION:

Linear Bar Grilles with its high capacity as well as its pleasant aesthetic appearance are commonly used along sides of relatively large spaces with double void areas such as Domes, open lobbies, malls, atriums and building entrances, where both aesthetics and high capacity air volumes are required. It can be supplied in both straight and curved shapes to suit the interior geometry of the served space. The maximum 75% free area and the choice of any of blades means both supply and extract capability is assured.

CONSTRUCTION:

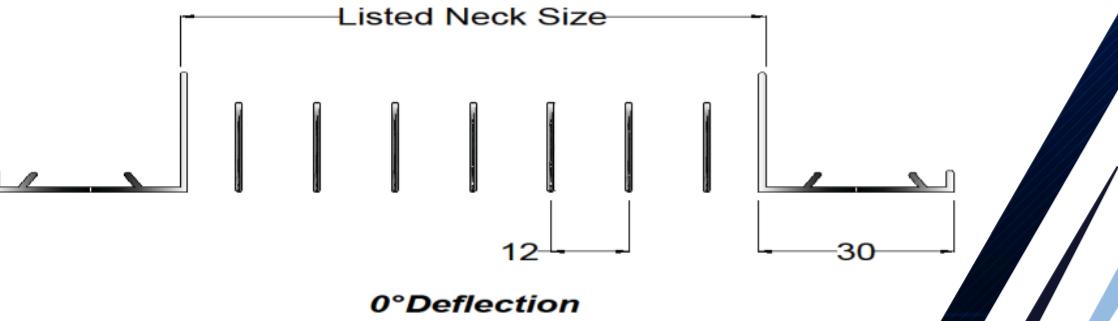
Extruded aluminum frame holds in place a number of horizontal fixed bars which direct the air flow. The bars are of extruded aluminum with different deflection angles in order to get the required air pattern. The linear bar grilles may be used for supply or exhaust applications, and for each application it may be classified in the beginning according to the deflection angles. The arrangement distance of the blades is called the pitch, the bars pitch is 1/2" space.



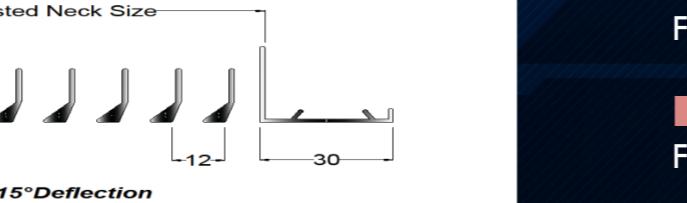
CLASSIFICATIONS:

According to the deflection angles:

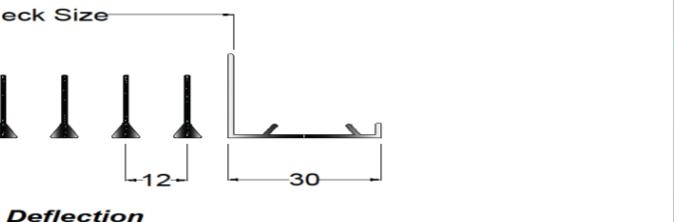
0°Deflection



15°Deflection



**Two - way
Deflection**



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D - Grille with Damper

For grille with damper, add 2 dB to the tabulated NC.

E - Return Grille

For return grille, add 4 dB to the tabulated NC.

F- Non Listed Widths

For non - listed widths, we can calculate CFM as following:

CFM = AK X active length X average velocity

$$AK= (W - 0.85)/24$$

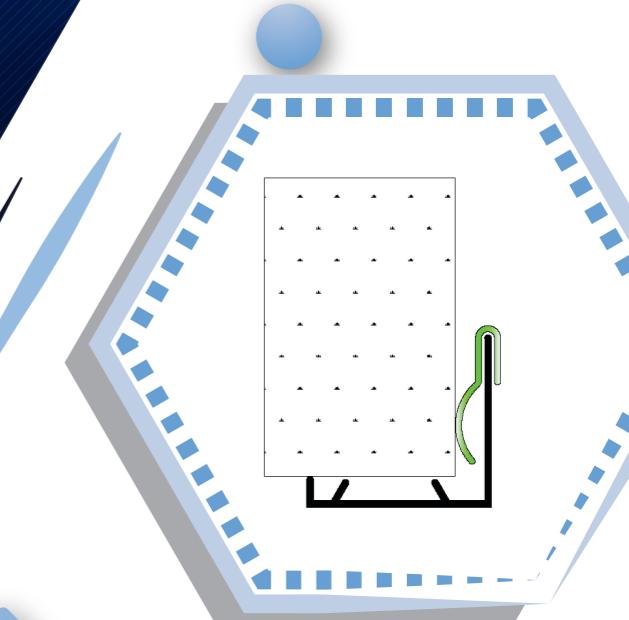
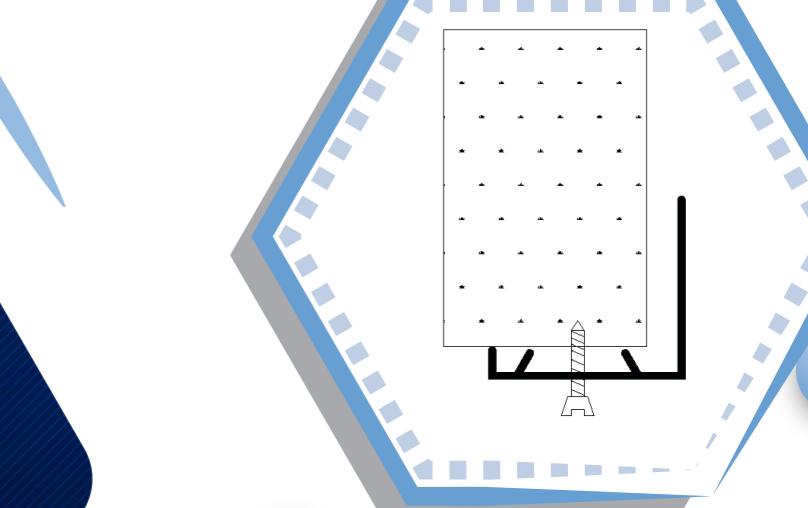
Where;

AK: effective area in ft² per foot length.

W: width in inches.

INSTALLATION:

A - SPRING CLIP B - SCREW FIXING



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2-TWO DEFLECTION - SUPPLY			
1000	1200	1400	1600
0.064	0.088	0.12	0.157
129	155	181	206
20 - 32	24 - 40	27 - 43	30 - 47
24	28	32	36
209	251	292	335
27 - 44	30 - 48	34 - 53	38 - 57
26	31	34	38
298	359	419	478
27 - 44	31 - 49	35 - 52	39 - 58
27	32	36	40
379	455	530	607
30 - 45	33 - 49	37 - 54	40 - 59
29	33	37	41
459	551	643	735
31 - 45	35 - 50	39 - 55	43 - 62
31	34	38	42

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* Ak : effective area factor in ft² per foot length. ** CFM : cubic feet per minute per foot length. *** Throw is in feet and calculated for 8' long supply grille without damper, for 100 and 50 fpm terminal velocity respectively.

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cording to the required applications

According to the desired interiors, the Linear Bar Grille can be classified as.

Mitered Corner

The Linear Bar Grille as mentioned before could be extended to long lengths, and also to be involved within the decoration of the cooled space, therefore it may constructed to suit certain angles. 90 and 135 degrees are the most common used angles.

Mitered Corner 90°

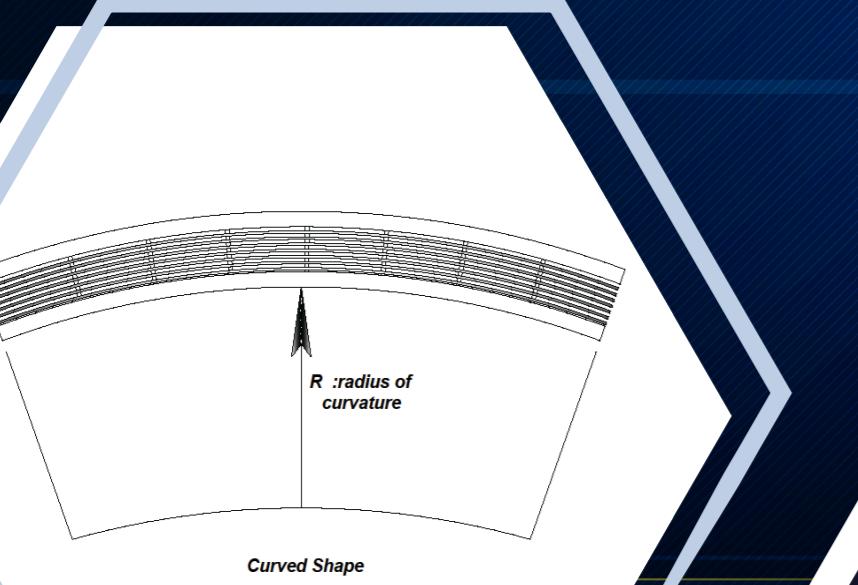
Mitered Corner 135°

Mitered Corner 90° Special Application

3



CURVED SHAPES



4

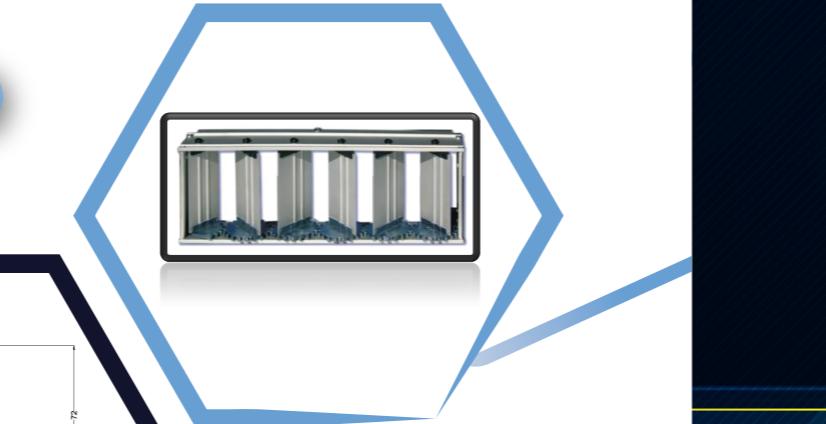
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OPTIONS:

The linear bar grille, and according to the application may be ordered as an exhaust or return grille or as supply one. For supply linear bar grille, it is delivered with:

OPPOSED BLADE DAMPER:

An extruded aluminum construction of frame involving the extruded opposed blades, to be fixed on the grille back side by a mean of clips. The opposed blade damper can be easily adjusted from the face of the grille by a mean of screw driver.



Linear Bar Grille with opposed Blade Damper



C- TWO WAY DEFLECTION - SUPPLY

2-TWO DEFLECTION - SUPPLY

Nominal Neck Size (inches)	Area Factor Ak(ft ²)	Velocity (fpm) 400	Total pressure (inch W.G)			
			500	600	700	800
10	0.4	151	189	227	265	303
		15 - 22	16 - 22	19 - 29	22 - 35	25 - 38
		<20	<20	20	22	25
12	0.48	183	229	275	321	367
		17 - 24	19 - 27	20 - 30	24 - 35	37 - 39
		<20	<20	21	23	26
		CFM THROW				
		NC				
		CFM THROW				
		NC				

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C- TWO WAY DEFLECTION - SUPPLY

2-TWO DEFLECTION - SUPPLY

Nominal Neck Size (inches)	Area Factor Ak(ft ²)	Velocity (fpm) 400 500 600 700 800	Total pressure (inch W.G) 0.001 0.018 0.025 0.032 0.044				
			CFM THROW	NC	CFM THROW	NC	CFM THROW
4	0.145	CFM THROW	51 7 - 13	64 9 - 16	77 11 - 20	90 14 - 23	103 16 - 26
		NC	<20	<20	<20	<20	20
6	0.22	CFM THROW	83 11 - 17	104 13 - 22	125 16 - 27	146 20 - 33	176 22 - 37
		NC	<20	<20	<20	20	22
8	0.3	CFM THROW	119 13 - 19	149 14 - 24	179 18 - 28	208 22 - 34	239 24 - 38
		NC	<20	<20	<20	21	23

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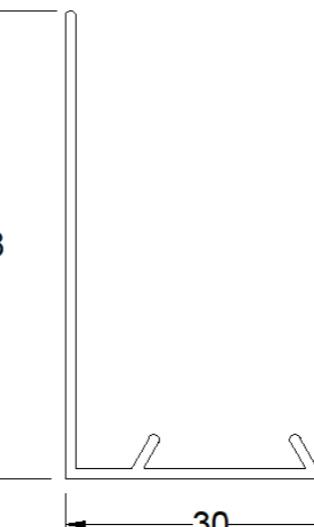
12



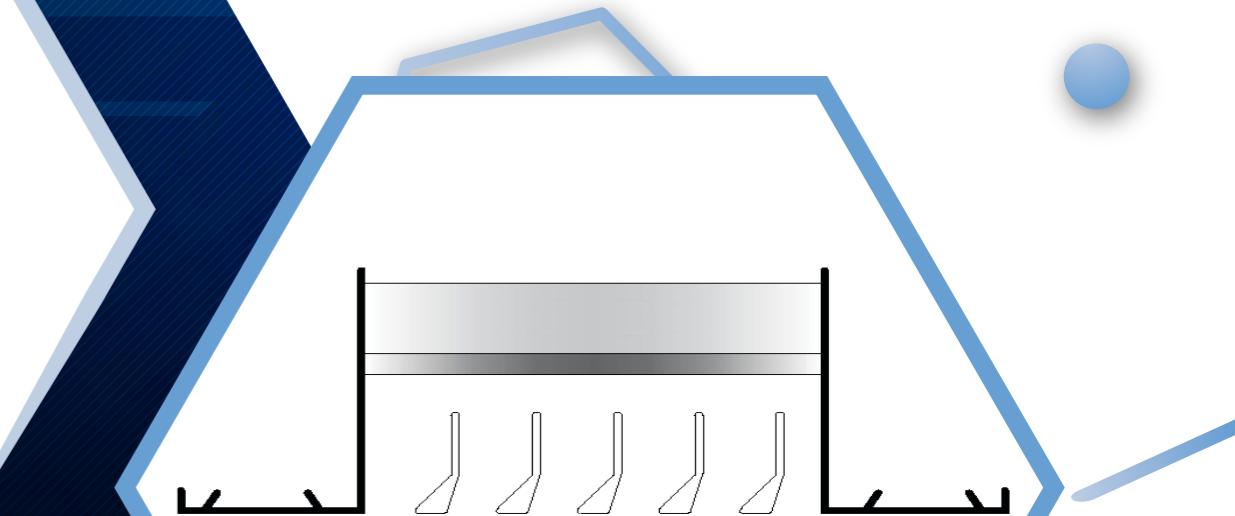
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BACK BLADE:

According to application and to get more efficient air pattern, we could use the linear bar grille with vertical rear blades with nylon bush mounting and individually operated. We call these rear blades back blade type.

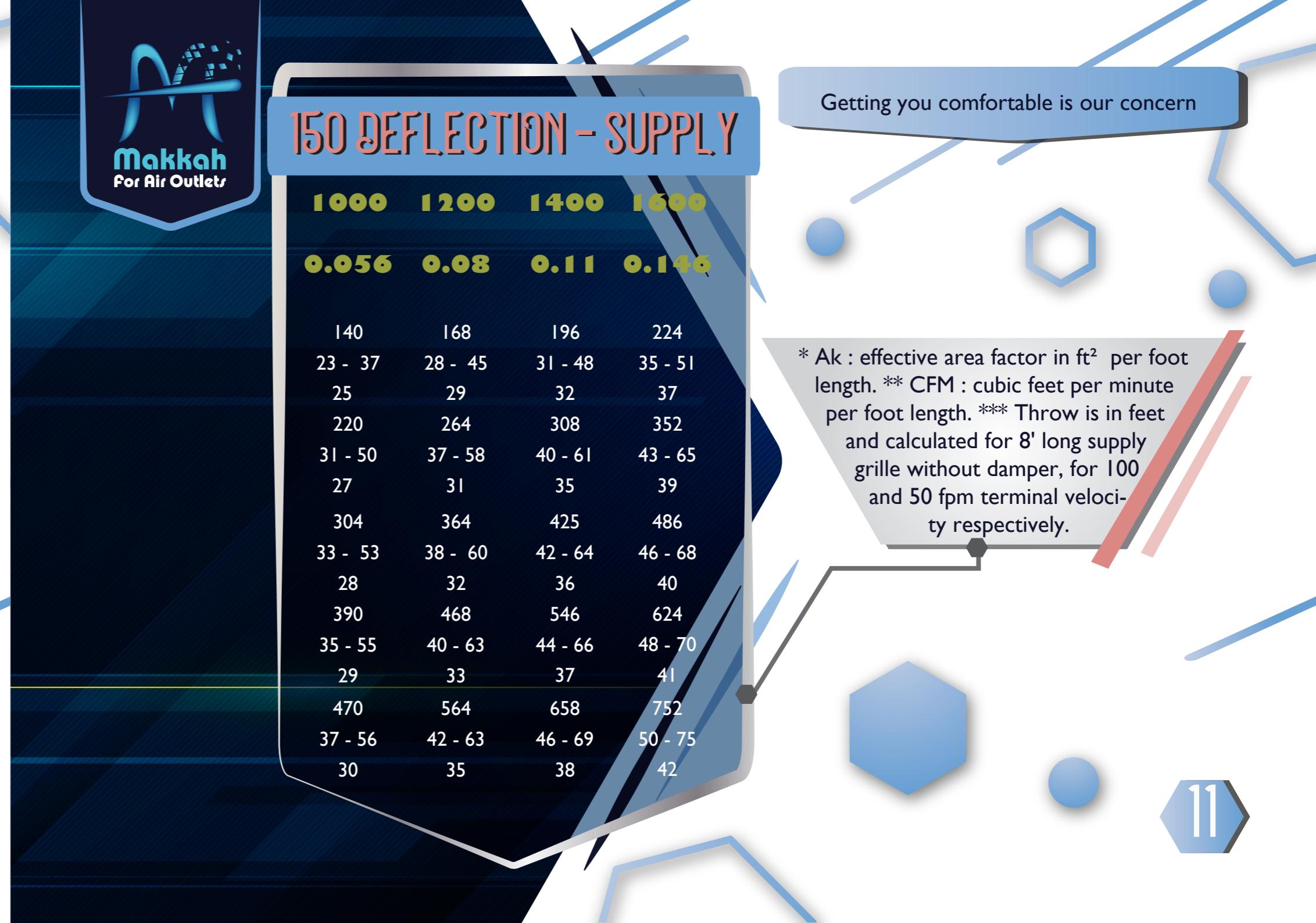
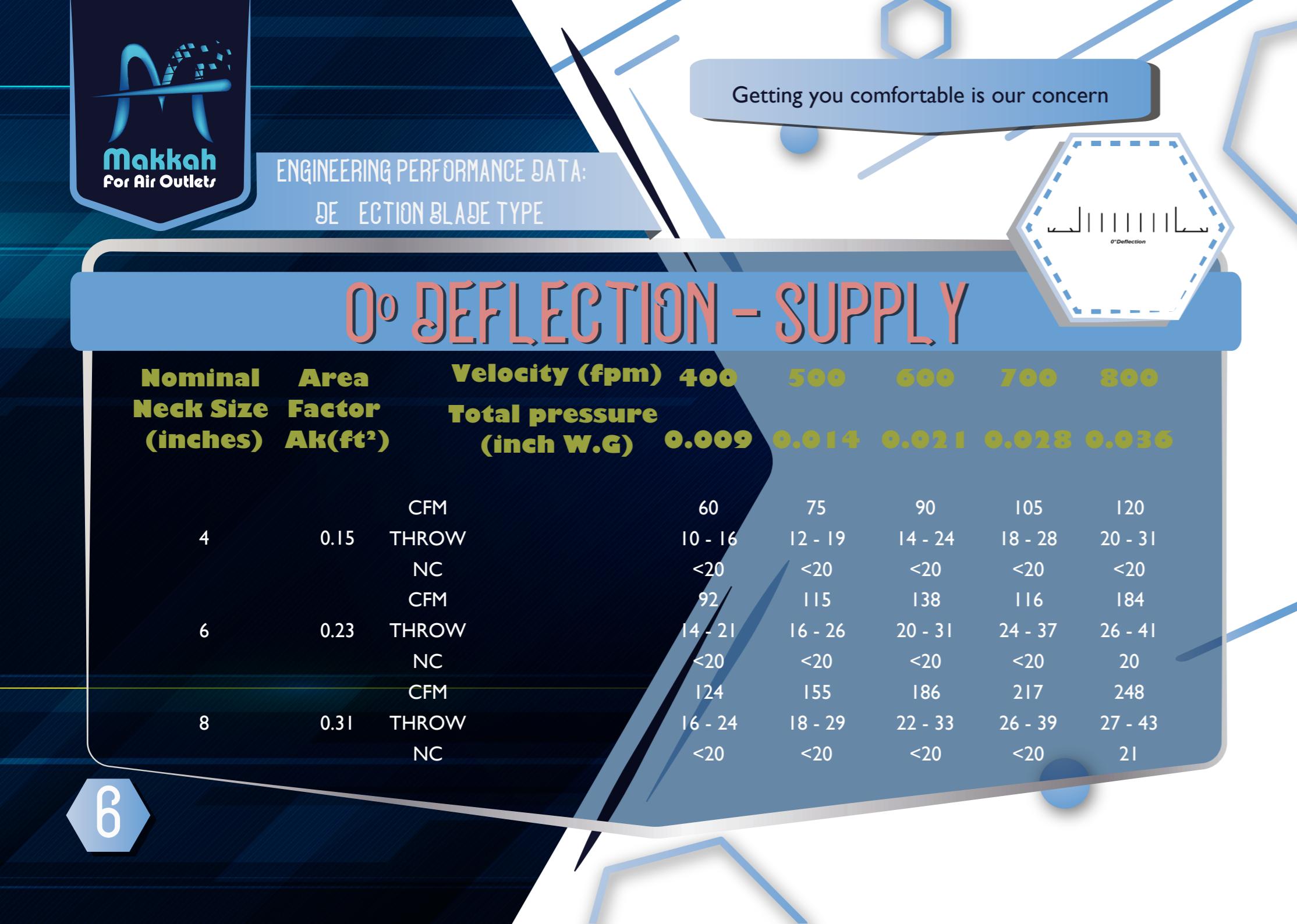


Frame for Back Blade Type



Back Blade Linear Bar Grille Type

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B - 15° DEFLECTION BLADE TYPE - SUPPLY

15° DEFLECTION - SUPPLY

Nominal Neck Size (inches)	Area Factor $A_k(\text{ft}^2)$	Velocity (fpm)	400	500	600	700	800
			Total pressure (inch w.g.)	0.009	0.014	0.021	0.028
10	0.39	CFM	156	195	234	273	312
		THROW	17 - 26	19 - 30	24 - 34	27 - 40	28 - 43
		NC	<20	<20	<20	21	24
12	0.47	CFM	188	235	282	329	376
		THROW	19 - 28	21 - 32	24 - 36	29 - 42	30 - 46
		NC	<20	<20	20	22	25

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ENGINEERING PERFORMANCE DATA:
DEFLECTION BLADE TYPE

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0° DEFLECTION - SUPPLY

Nominal Neck Size (inches)	Area Factor $A_k(\text{ft}^2)$	Velocity (fpm)	400	500	600	700	800
			Total pressure (inch w.g.)	0.009	0.014	0.021	0.028
10	0.4	CFM	160	200	240	280	320
		THROW	18 - 28	20 - 32	24 - 36	28 - 42	29 - 45
		NC	<20	<20	<20	<20	22
12	0.48	CFM	192	240	288	336	384
		THROW	20 - 30	22 - 35	26 - 39	30 - 45	39 - 61
		NC	<20	<20	<20	20	29

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0° DEFLECTION - SUPPLY			
1000	1200	1400	1600
0.056	0.08	0.11	0.146
150	180	210	240
25 - 40	30 - 47	33 - 50	37 - 54
26	29	33	36
230	276	322	368
32 - 52	39 - 62	43	46 - 69
26	30	34	38
310	372	434	496
35 - 55	41 - 65	46 - 69	50 - 73
27	31	35	39
400	240	560	640
37 - 58	43 - 68	48 - 74	51 - 76
28	32	36	40
480	576	672	768
39 - 61	45 - 69	50 - 78	55 - 80
29	33	37	40

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