



ALSHARQA



GRILLES & REGISTERS

AIR OUTLETS
TECHNICAL CATALOGUE



Air Conditioning and Industries

المصرية الخليجية لأعمال التكييف - الشارقة
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GRILLES & REGISTERS

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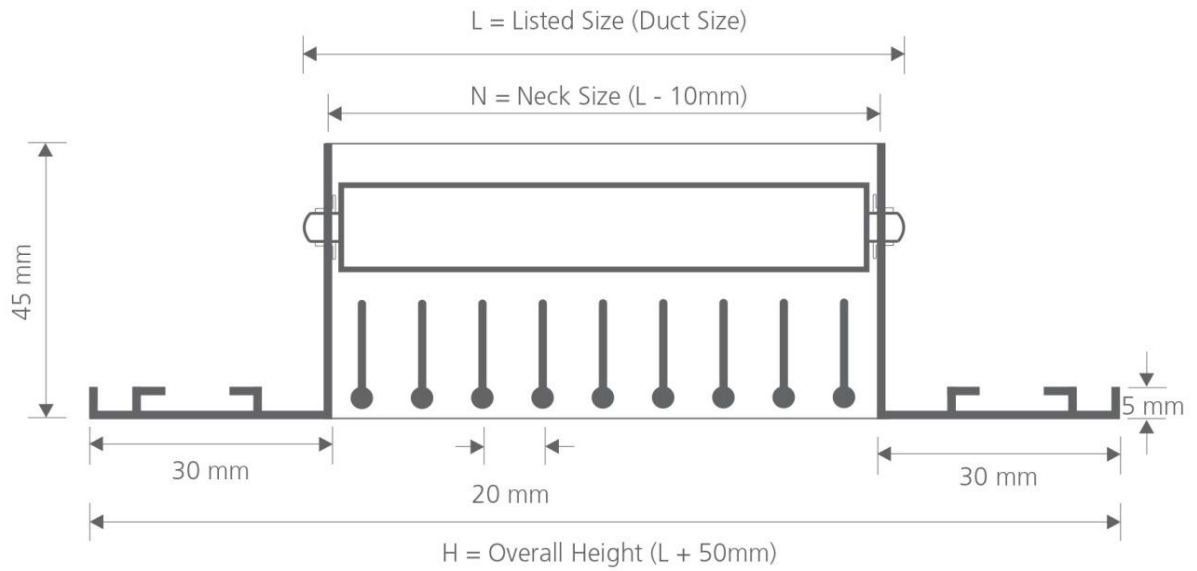
INTRODUCTION

Grilles/Registers have broad range of applications fulfilling complete choice and engineering flexibility with robust construction and fine finish. With best architectural and engineering precision these are considered, to be the most frequently used devices in any heating, ventilating and cooling systems. This type of air outlet is best suited for high-wall applications, residential buildings, bed rooms and exposed duct applications.

They come with horizontal as well as vertical adjustable blades. They offer low pressure drop and low noise levels to the ambience. Standard finish is in white coated under electrostatic polyester powder coating system. Other colors also available on request. Highest quality polyester powder coating enhances its appearance.

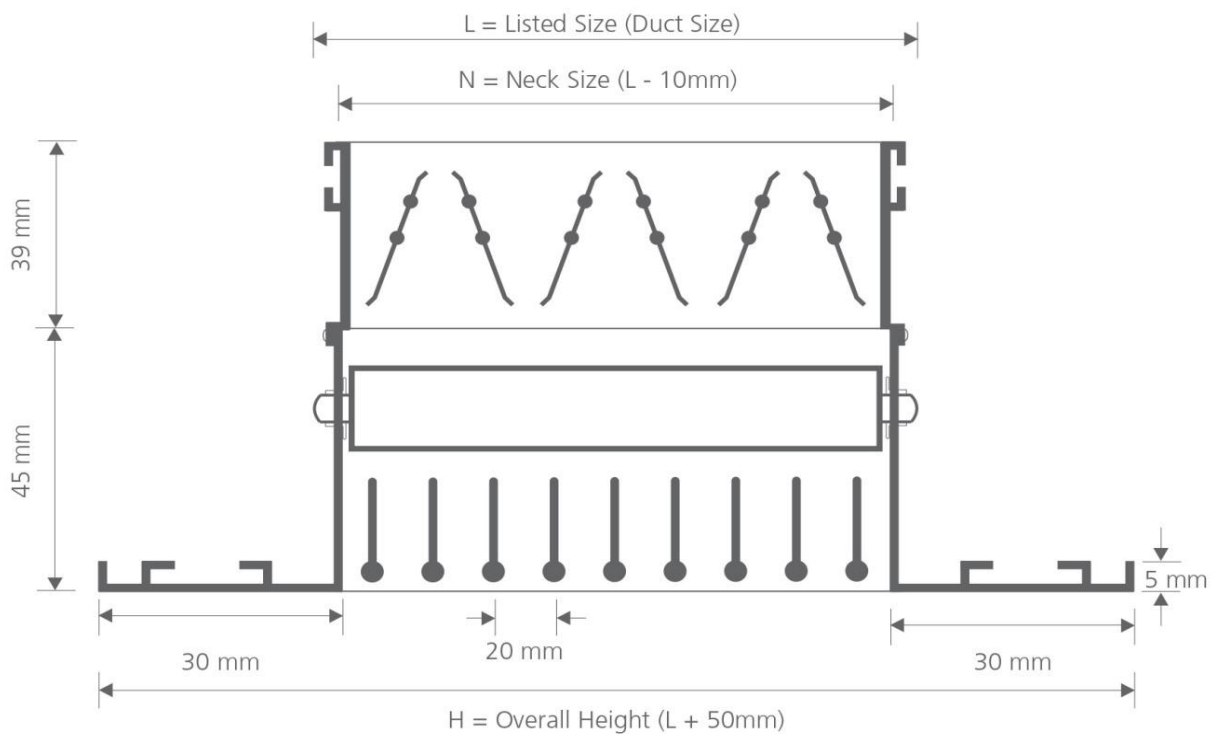
Supply Air Grille (SAG)

MODEL: SAG - DD



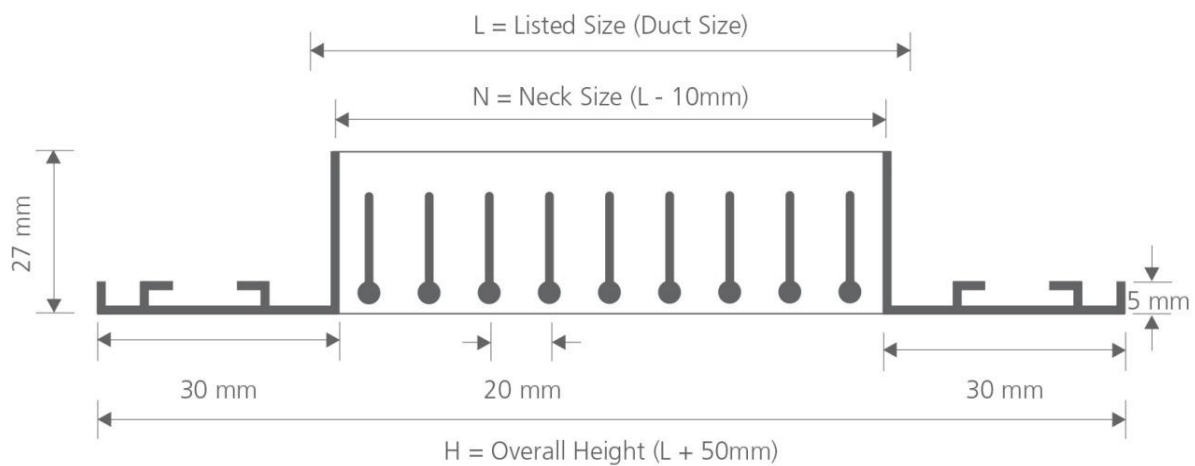
Supply Air Register (SAR)

MODEL: SAR - DD

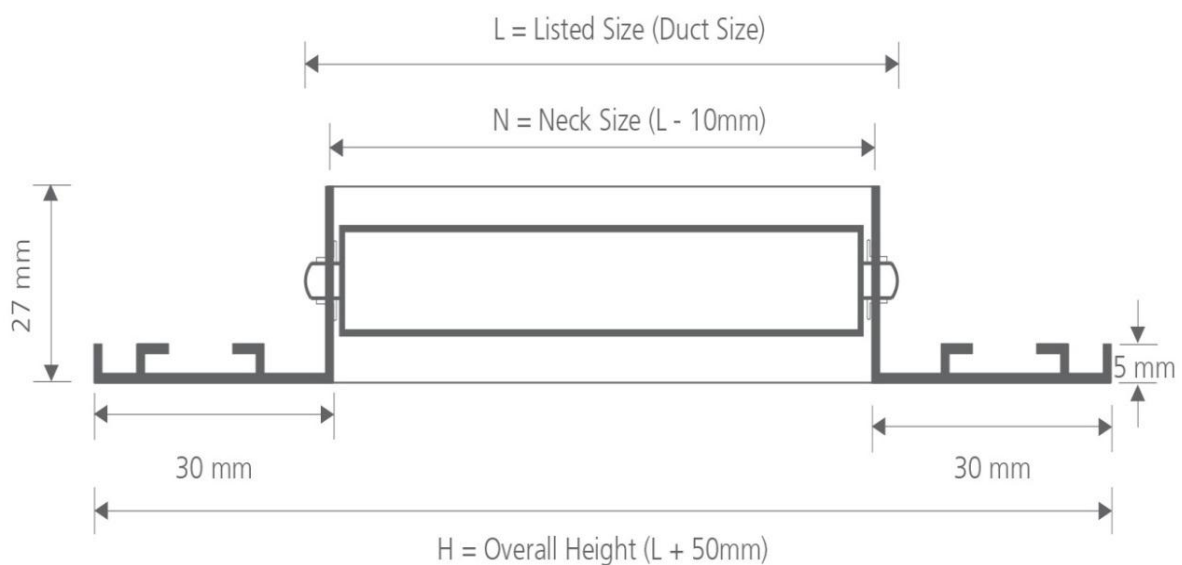


Return Air Grille (RAG/EAG)

MODEL: RAG HB-SD or EAG HB-SD

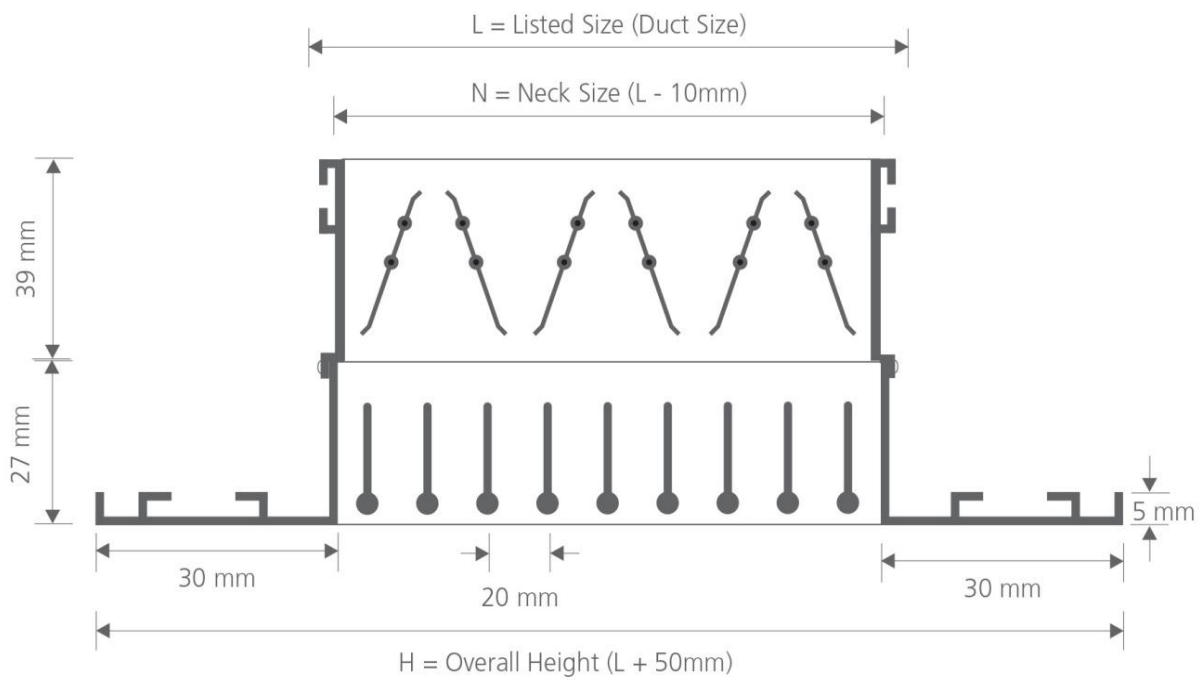


MODEL: RAG VB-SD or EAG VB-SD

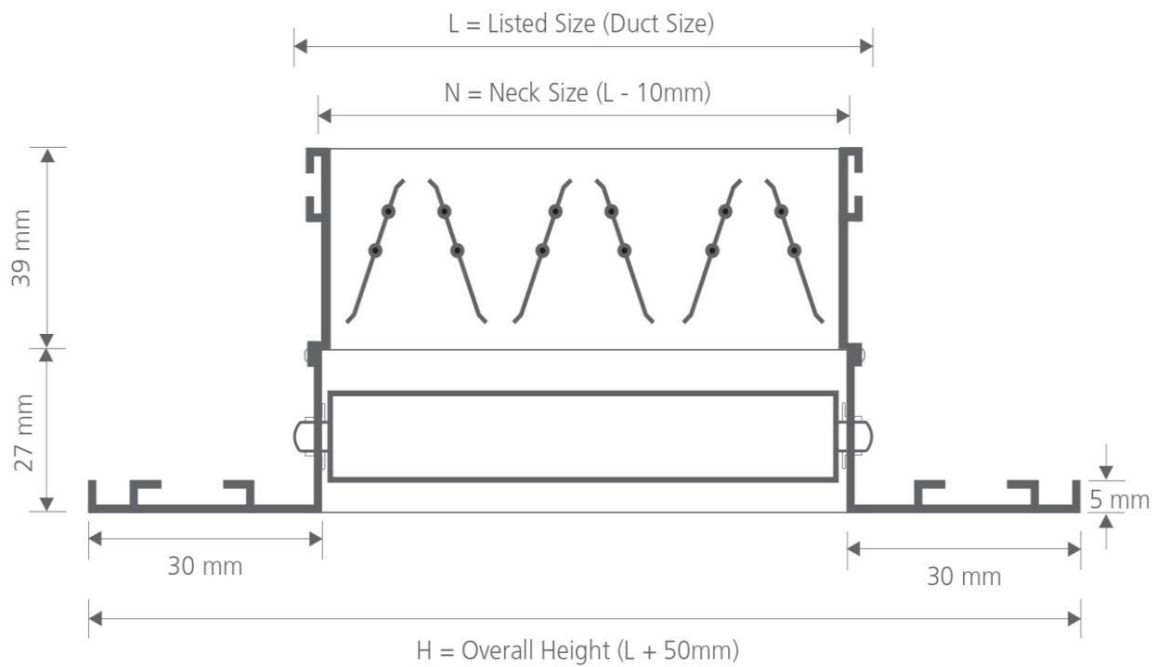


Return Air Register (RAR/EAR)

MODEL: RAR HB-SD or EAR HB-SD



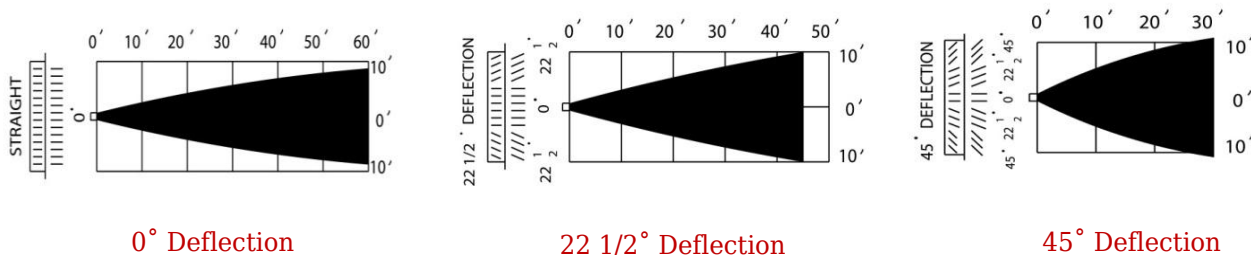
MODEL: RAR VB-SD or EAR VB-SD



DEFINITIONS

- Velocity pressure (Pd) (Dynamic pressure) :The forward moving force of an air stream within a duct measured in mm (inch) W.G. of water.
- Static pressure (Ps) :The outward force within a duct measured in mm (inch)W.G. of water.
- Total pressure (Pt) :The sum of the velocity and static pressure in mm (Inch) W.G. of water.
- Outlet velocity (Vk) :Discharge or intake velocity of an outlet or inlet in m/s (fpm) measured with an approved calibrated velometer at specified locations relative to the face of the outlet or inlet.
- Terminal velocity :From an outlet, in m/s (fpm), is the highest sustained velocity in the mixed air stream arbitrarily specified and used to determine throw.
- Throw :Of an outlet, in m (feet),is the distance from the center of the outlet to a point in the mixed air stream where the highest sustained velocity of the mixed air stream has been reduced to a specified level.
- Drop :The vertical distance , in m (feet), to the point in a horizontally project air stream when the highest sustained velocity of the mixed air stream has been reduced to a specified level.
- Spread :The maximum total width in m (feet) of the air pattern at the point of terminal velocity.
- Aspect ratio :Ratio of the length / width of a rectangular air outlet or inlet
- Area factor Ak :Of an outlet or inlet which is also a flow factor determined from the discharge or intake² velocity (Vk) and the volume flow rate.
 $Ak = Q / V_k$ in m or ft.

DEFLECTION SETTINGS



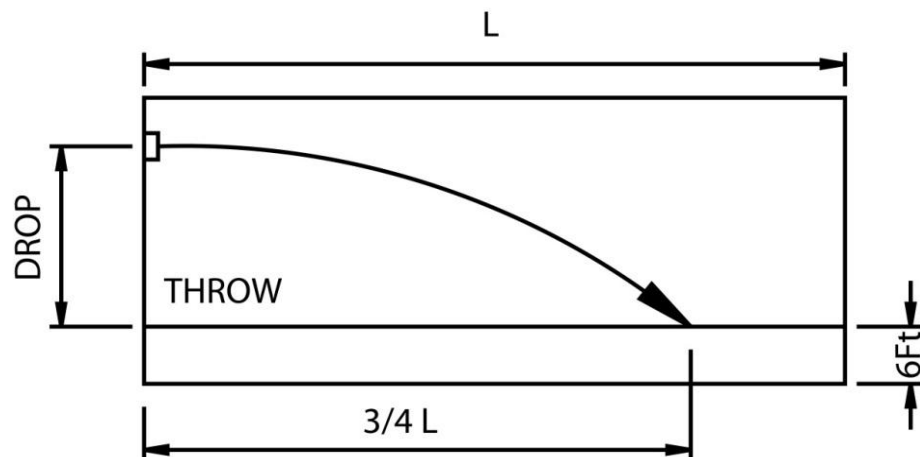
The figures above show the air pattern of different blade settings. It is noted that the throw and drop will decrease as the angle of deflection increased.

GRILLES & REGISTERS

SPREAD REQUIREMENTS

The vane angle adjustment of grilles will affect the spread as follows:

- 1) For 0° deflection angle, the total spread of the air stream is one-third of the throw.
- 2) For 22.5° deflection angle, the total spread of the air stream is about 45 percent of the throw
- 3) For 45° deflection angle, the total spread of the air stream is two-third of the throw.



The total drop of an air stream is the sum of drop due to throw and drop due to temperature difference of air in the room and air at the grille.

$$\text{Drop.}(D) = D_{\text{throw}} + D_{\text{dt}}$$

NOISE CRITERIA

APPLICATION	Recommended Delivery Velocities (m/s)
Broadcasting studios, sound and recording studios.	1.5-2.5
Concert halls, auditoriums, library, classrooms	2.5-3.5
Apartments, residences, hotel bedrooms, theatres , private offices, hospitals , churches.	2.5-4.5
Large offices, restaurants, hotels, dining-rooms, public buildings	3.5 – 5.5
Corridors, computer-rooms, cafeterias, washrooms , department stores.	4.5 –6
Factories, workshops, garages, warehouses.	5 - 10

The recommended delivery velocities for different applications (ASHRAE GUIDE)

APPLICATION	NC Level
Concert halls, studios opera halls	20 to 25
Offices, board rooms, private relaxation rooms.	20 to 30
Conference rooms, private rooms, theaters, houses, villas.	25 to 35
Lecture halls, reception rooms, planetarium, and study halls.	30 to 35
Libraries, hotels individual rooms, court rooms.	30 to 40
Post offices, restaurants, reception hall	35 to 45
Kitchens and toilets, halls and corridors, cafeterias, supermarkets	35 to 55
Accounting offices, computation rooms.	40 to 60
Foundries, factories, heavy machinery room.	55 to 75

The recommended NC level for different applications (ASHRAE GUIDE)

GRILLES & REGISTERS

AVAILABLE SIZES & CFM RANGE

Size (inch)	CFM range	Size (inch)	CFM range
12 x 6	100 - 300	12 x 8	150 - 400
16 x 6	150 - 350	16 x 8	175 - 500
18 x 6	200 - 400	18 x 8	200 - 550
20 x 6	200 - 450	20 x 8	225 - 625
24 x 6	225 - 525	24 x 8	250 - 750
30 x 6	300 - 700	30 x 8	325 - 950
36 x 6	350 - 900	36 x 8	400 - 1150
Size (inch)	CFM range	Size (inch)	CFM range
12 x 10	150 - 450	12 x 12	200 - 550
16 x 10	200 - 600	16 x 12	250 - 750
18 x 10	250 - 700	18 x 12	300 - 850
20 x 10	275 - 800	20 x 12	325 - 925
24 x 10	325 - 1000	24 x 12	400 - 1150
30 x 10	400 - 1200	30 x 12	500 - 1400
36 x 10	500 - 1400	36 x 12	600 - 1700
Size (inch)	CFM range	Size (inch)	CFM range
16 x 14	300 - 850	24 x 18	600 - 1650
18 x 14	350 - 950	30 x 18	750 - 2100
20 x 14	400 - 1050	36 x 18	900 - 2500
24 x 14	450 - 1200	24 x 24	800 - 2300
30 x 14	550 - 1600	30 x 24	1000 - 2800
36 x 14	700 - 2000	36 x 24	1200 - 3200
20 x 18	500 - 1400		

BASIC PERFORMANCE DATA

SUPPLY AIR GRILLES & REGISTERS

Size (inch)	Velocity (fpm)		200	300	400	500	600	700	800
	Static Pressure ("WG)	0°	0.0065	0.014	0.025	0.041	0.056	0.08	0.105
22.5°		0.0085	0.018	0.033	0.053	0.077	0.104	0.136	
45°		0.0105	0.023	0.041	0.066	0.095	0.13	0.17	
16 x 12 20 x 10 24 x 8 (Ak=1.0 ft) ²	CFM		278	417	556	694	833	972	1111
	NC		< 20	< 20	< 20	< 20	20	26	32
	Throw (Ft.)	0°	19	24	32	39	45	49	54
		22.5°	14	20	27	32	37	43	45
45°		12	17	23	26	30	34	37	
16 x 14 18 x 12 36 x 6 (Ak=1.14 ft) ²	CFM		300	450	600	750	900	1050	1200
	NC		< 20	< 20	< 20	< 20	23	28	33
	Throw (Ft.)	0°	19	24	32	39	46	51	55
		22.5°	14	20	27	32	37	43	45
45°		12	17	23	26	30	34	37	
18 x 14 20 x 12 24 x 10 30 x 8 (Ak=1.18 ft) ²	CFM		333	500	667	833	1000	1167	1333
	NC		< 20	< 20	20	23	28	33	38
	Throw (Ft.)	0°	21	26	34	41	48	53	56
		22.5°	15	21	28	33	34	44	45
45°		13	18	23	27	31	34	37	
20 x 14 24 x 12 36 x 8 (Ak=1.41 ft) ²	CFM		400	600	800	1000	1200	1400	1600
	NC		< 20	< 20	23	28	33	38	43
	Throw (Ft.)	0°	20	28	38	47	54	59	62
		22.5°	14	23	32	38	42	50	51
45°		12	19	27	33	38	42	44	
30 x 10 (Ak=1.41 ft) ²	CFM		417	625	833	1042	1250	1458	1667
	NC		< 20	< 20	23	28	33	38	43
	Throw (Ft.)	0°	20	28	38	47	54	59	62
		22.5°	14	23	32	38	42	50	51
45°		12	19	27	33	38	42	44	
24 x 14 (Ak=1.65 ft) ²	CFM		467	700	933	1167	1400	1633	1867
	NC		< 20	< 20	23	28	34	39	44
	Throw (Ft.)	0°	21	30	38	48	54	59	61
		22.5°	14	25	32	38	43	49	51
45°		12	21	26	33	38	41	43	
20 x 18 30 x 12 36 x 10 (Ak=1.80 ft) ²	CFM		600	750	1000	1250	1500	1750	2000
	NC		< 20	< 20	23	28	34	39	44
	Throw (Ft.)	0°	23	33	41	49	58	64	66
		22.5°	15	28	33	40	46	53	56
45°		13	23	27	33	39	44	46	

GRILLES & REGISTERS

BASIC PERFORMANCE DATA

SUPPLY AIR GRILLES & REGISTERS

Size (inch)	Velocity (fpm)		200	300	400	500	600	700	800
	Static Pressure ("WG)	0°	0.0065	0.014	0.025	0.041	0.056	0.08	0.105
		22.5°	0.0085	0.018	0.033	0.053	0.077	0.104	0.136
		45°	0.0105	0.023	0.041	0.066	0.095	0.13	0.17
16 x 12 20 x 10 24 x 8 (Ak=1.0 ft) ²	CFM		278	417	556	694	833	972	1111
	NC		< 20	< 20	< 20	< 20	20	26	32
	Throw (Ft.)	0°	19	24	32	39	45	49	54
		22.5°	14	20	27	32	37	43	45
45°		12	17	23	26	30	34	37	
16 x 14 18 x 12 36 x 6 (Ak=1.14 ft) ²	CFM		300	450	600	750	900	1050	1200
	NC		< 20	< 20	< 20	< 20	23	28	33
	Throw (Ft.)	0°	19	24	32	39	46	51	55
		22.5°	14	20	27	32	37	43	45
45°		12	17	23	26	30	34	37	
18 x 14 20 x 12 24 x 10 30 x 8 (Ak=1.18 ft) ²	CFM		333	500	667	833	1000	1167	1333
	NC		< 20	< 20	20	23	28	33	38
	Throw (Ft.)	0°	21	26	34	41	48	53	56
		22.5°	15	21	28	33	34	44	45
45°		13	18	23	27	31	34	37	
20 x 14 24 x 12 36 x 8 (Ak=1.41 ft) ²	CFM		400	600	800	1000	1200	1400	1600
	NC		< 20	< 20	23	28	33	38	43
	Throw (Ft.)	0°	20	28	38	47	54	59	62
		22.5°	14	23	32	38	42	50	51
45°		12	19	27	33	38	42	44	
30 x 10 (Ak=1.41 ft) ²	CFM		417	625	833	1042	1250	1458	1667
	NC		< 20	< 20	23	28	33	38	43
	Throw (Ft.)	0°	20	28	38	47	54	59	62
		22.5°	14	23	32	38	42	50	51
45°		12	19	27	33	38	42	44	
24 x 14 (Ak=1.65 ft) ²	CFM		467	700	933	1167	1400	1633	1867
	NC		< 20	< 20	23	28	34	39	44
	Throw (Ft.)	0°	21	30	38	48	54	59	61
		22.5°	14	25	32	38	43	49	51
45°		12	21	26	33	38	41	43	
20 x 18 30 x 12 36 x 10 (Ak=1.80 ft) ²	CFM		600	750	1000	1250	1500	1750	2000
	NC		< 20	< 20	23	28	34	39	44
	Throw (Ft.)	0°	23	33	41	49	58	64	66
		22.5°	15	28	33	40	46	53	56
45°		13	23	27	33	39	44	46	

BASIC PERFORMANCE DATA

SUPPLY AIR GRILLES & REGISTERS

Size (inch)	Velocity (fpm)		200	300	400	500	600	700	800
	Static Pressure ("WG)	0°	0.0065	0.014	0.025	0.041	0.056	0.08	0.105
22.5°		0.0085	0.018	0.033	0.053	0.077	0.104	0.136	
45°		0.0105	0.023	0.041	0.066	0.095	0.13	0.17	
24 x 18 30 x 14 36 x 12 (Ak=2.18 ft) ²	CFM		600	900	1200	1500	1800	2100	2400
	NC		< 20	< 20	24	29	34	39	44
	Throw (Ft.)	0°	26	36	44	51	59	65	68
		22.5°	17	30	37	43	46	53	56
45°		15	25	31	34	39	44	46	
36 x 14 (Ak=2.5 ft) ²	CFM		700	1050	1400	1750	2100	2450	2800
	NC		< 20	< 20	24	29	35	40	45
	Throw (Ft.)	0°	30	40	49	56	64	69	71
		22.5°	24	33	41	47	50	56	58
45°		21	28	35	38	43	47	48	
30 x 18 (Ak=2.55 ft) ²	CFM		750	1125	1500	1875	2250	2625	3000
	NC		< 20	< 20	24	29	35	40	45
	Throw (Ft.)	0°	30	40	50	57	65	70	72
		22.5°	24	33	41	47	50	56	58
45°		21	28	35	38	43	47	48	
24 x 24 (Ak=2.6 ft) ²	CFM		800	1200	1600	2000	2400	2800	3200
	NC		< 20	< 20	24	29	35	40	45
	Throw (Ft.)	0°	31	41	51	38	66	71	73
		22.5°	25	34	42	48	51	57	59
45°		21	28	35	39	44	48	49	
36 x 18 (Ak=2.9 ft) ²	CFM		900	1350	1800	2250	2700	3150	3600
	NC		< 20	< 20	24	29	35	40	45
	Throw (Ft.)	0°	34	44	55	62	70	74	76
		22.5°	29	38	46	52	55	59	61
45°		24	32	38	42	47	50	51	
30 x 24 (Ak=3.2 ft) ²	CFM		1000	1500	2000	2500	3000	3500	4000
	NC		< 20	20	25	30	35	41	46
	Throw (Ft.)	0°	35	45	56	64	72	75	77
		22.5°	29	38	47	53	56	59	61
45°		24	32	38	42	47	50	51	
36 x 24 (Ak=3.9 ft) ²	CFM		1200	1800	2400	3000	3600	4200	4800
	NC		< 20	21	26	31	36	41	46
	Throw (Ft.)	0°	40	50	60	70	78	85	90
		22.5°	34	42	50	60	67	74	79
45°		28	35	40	49	56	62	66	

GRILLES & REGISTERS

NOTES

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