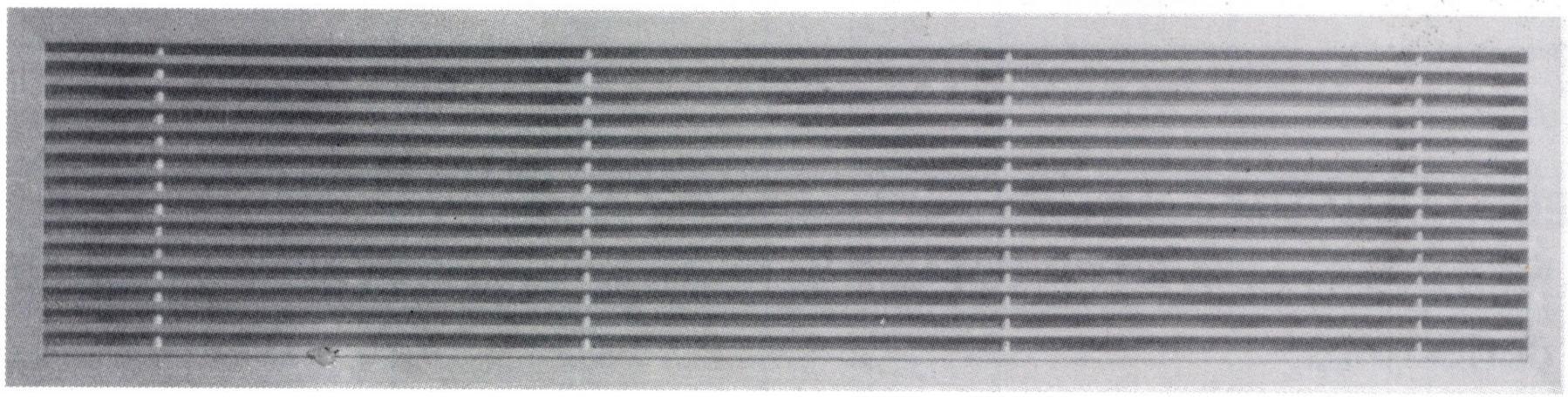
Air Quality Products

Zamzam

Engineering Industries

ALUMINUM LINEAR GRILLE



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LINEAR GRILLE (LG)

Linear Grilles are designed for installation in the sidewall, sill, floor and ceiling, and are recommended for supplying heated, ventilated or cooled air and for returning or exhausting room air. Their reliable performance assures confident use of cooling temperature differentials up to 25° F at predicted low air motion (35 fpm) in the zone of occupancy.

Linear Grilles provide a horizontal pattern above the occupied zone. Core deflections of 15 to direct the air path upward to overcome the drop effect resulting from cool primary air. Use of the deflected cores also improves sight-rightness of the grille face.

When installed in the top of the sill or enclosure **linear grilles** provide a vertical up pattern which is effective in overcoming uncomfortable cold down drafts and off setting the radiant effect of glass surfaces. Core deflection of 0 to 15 directed towards the glass surface provide upward airflow to the ceiling toward the interior zone.

When installed in the ceiling, **linear grilles** provide a vertical downward air pattern which is effective in projection heating and cooling the building perimeter ceiling heights above 12-15 feet. Applications of down flow primary air should be limited in volume to insure against excessive drafts at the end of the throw. Core deflection of 0, 15 direct the air path angularly downward as required.

Linear Grilles are fabricated of high quality aluminum extrusions and are available in white enamel or stain anodized finish. Components are mechanically interlocked blemish-free appearance keyways and splice plate facilitate hairline butting of 6-feet sections to form continuous lengths. Volume dampers are integrally fastened to **linear grilles,** adjustable control grids provide spread pattern deflection to shorten the throw. Friction spring fasteners on margins hold grilles to duct collar in sill for sidewall and ceiling installations. Debris screens can be integrally attached. 90 mitered corner sections are furnished in one piece. Blank-off baffles are furnished behind inactive sections of continuous grille lengths. Invisible pivoting access door within grille facilitates its use as an outlet over a fan coil unit and provides access to a thermostat or control valve.

Features:

- EXTRUDED ALUMINUM constructions and mechanical assembly.
- SATIN ANODIZED or WHITE ENAMEL finish other colors are available on request.
- 0, 15 bar deflections.
- FLUSH AND OVER LAPPING MARGINS for use with plaster frames.
- AVAILABLE BUTTS in continuous lengths with keyway splices for linear grilles and frames. Factory cut lengths for precise installation.
- CANCELED FASTENERS with positive holding spring latches.
- ACCESSORIES available to support job requirements.

Accessories:

- Damper.
- Mitered corner sections.
- Control grid.
- Blank-off baffles.
- Hinged access door.
- Debris screen.

ENGINEERING PERFORMANCE DATA

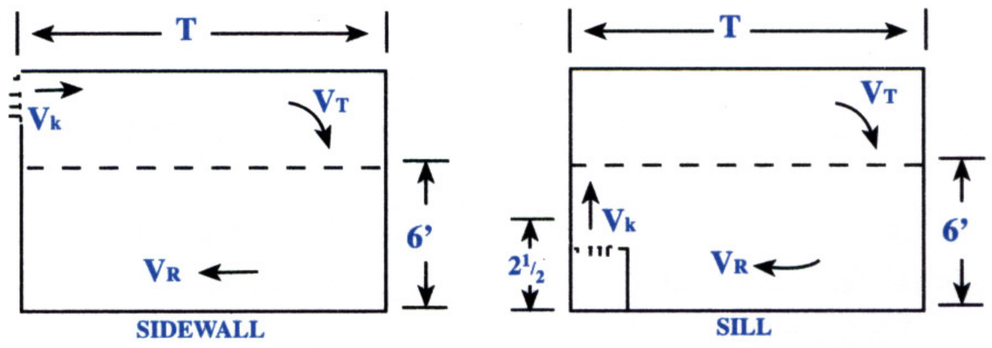

Table 1- Supply Air*

CFM Per Foot	Listed Height in Inches	Min. Ps In. H_20	Face Velocity (V_k) FPM	Throw (T) in Feet		Minimum Ceiling Height in Feet		NC
		Bar Style	Bar Style	Sidewall	Sill			
		00 and 15	00 and 15	Min. - Max.	Min. - Max.	@ - 18F ΔT	@ - 25F ΔT	
20	1 1/2	.01	500	6-9	1-2	8	9	<20
30	1 1/2 2	.03 .01	750 475	7-10 6-9	2-3 1-2	9	10	25 20
40	1 1/2 2 2 1/2	.05 .02 .01	1000 635 460	9-13 8-11 7-10	3-5 2-4 2-3	9	11	30 25 20
50	1 1/2 2 2 1/2 3	.09 .03 .02 <.01	1250 790 575 440	11-16 10-14 9-13 8-12	4-9 3-7 2-6 2-5	9 1/2	11	30 25 20 <20
60	2 2 1/2 3 4	.05 .02 .01 <.01	950 690 530 370	12-18 11-16 10-14 8-12	5-11 4-9 3-7 2-5	9 1/2	12	30 25 20 <20
70	2 2 1/2 3 4	.06 .03 .02 <.01	1110 810 660 435	14-20 13-19 11-16 10-14	7-13 6-12 4-9 3-7	10	12	30 30 25 <20
80	2 2 1/2 3 4	.08 .04 .03 .01	1275 920 700 495	16-23 15-21 13-18 11-16	9-16 8-14 6-11 4-9	10 1/2	12 1/2	30 30 25 20
90	2 1/2 3 4 5	.05 .04 .01 <.01	1030 785 550 450	17-24 15-21 13-18 11-16	10-17 8-14 6-11 4-9	11	13	30 30 25 20
100	2 1/2 3 4 5	.06 .04 .02 .01	1150 875 620 500	19-27 16-23 14-20 12-18	12-20 9-16 7-13 5-11	11	13	30 30 25 20
120	3 4 5 6	.06 .03 .02 <.01	1050 745 600 480	19-28 17-24 15-22 13-19	11-20 9-16 7-14 5-11	11 1/2	13	30 30 25 20
140	3 4 5 6	.08 .04 .02 .01	1220 870 700 560	22-32 19-28 17-25 15-22	14-24 11-20 9-17 7-14	11 1/2	14	35 30 25 20
160	4 5 6 8	.05 .03 .02 .01	990 800 640 460	22-32 19-29 18-26 15-22	13-23 10-20 9-17 6-13	12	15	35 30 25 20
180	4 5 6 8	.07 .04 .03 .02	1110 900 725 520	25-36 22-33 20-30 17-25	16-27 13-24 11-21 8-16	12	15	35 30 25 20
200	4 5 6 8	.08 .05 .04 .02	1240 1000 800 575	28-41 24-36 23-33 20-28	-	12	15	40 35 30 25
250	5 6 8 10	.08 .05 .03 .01	1250 1000 720 550	30-46 27-39 25-35 21-32	-	13	15	40 35 30 25
300	6 8 10 12	.07 .04 .02 .01	1200 865 665 545	33-48 29-42 25-39 23-33	-	13	15	40 35 30 25
350	8 10 12	.05 .03 .02	1020 780 640	34-48 29-45 26-38	-	13	15	40 35 30
400	8 10 12	.08 .04 .03	1170 890 730	40-55 33-50 30-44	-	14	16	45 40 35

Symbols : V_t Terminal Velocity in FPM; V_r Room Velocity in FPM; V_K Pace Velocity in FPM; A_K Outlet Area in Sq. Ft.; A_n Neck Area in Sq. Ft.; P_S Static Pressure inches H_20.; N_C re 18db Room Attenuation; T Throw in Feet, see note f.; ΔT Temperature Differential

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ENGINEERING PERFORMANCE DATA

NOTES:

a. Table 1 based on 4-foot grille. For longer lengths, correct throw and NC per Table 2.

b. When using grille lengths with alternate active and inactive sections, a reduction in throw can be obtained by omitting the factors contained in Table 2.

c. Supply air temperature effect on horizontal throw is shown in Table 3. Vertical throw at varying supply air temperatures is shown in Table 4.

d. When spreading the air path with a horizontal deflection of 22° per side in grille lengths up to 4 feet:

Multiple	Table 1	Throw x .75
Increase	Table 1	NC - 5 NC
Multiple	Table 1	Ps x 1.20
Multiple	Table 5	A_k x .90

f. Terminal velocities (V_t) at the minimum and maximum throw (T) positions are rated at 125 fpm and 75 fpm respectively with corresponding room velocities (V_r) of 50 fpm and 35 fpm.

Table 2 - Continuous Grille Length Factors

Modify Table 1 by listed values for grille lengths above 4 feet			
Grille Length	THROW (T)		NC
	Sidewall Min.-Max.	Sill Min.-Max.	
4'-6'	No Change		+ 0
7'-20'	T x 1.10		+ 5
21'-100'	T x 1.15		+ 10

Table 3 - Supply Air Temperature Factors

Multiple Throw Table 1 (or factor in Table 2 if used) by listed value			
	@ - 20F ΔT	@ 0F ΔT	@ + 25F ΔT
Sidewall Sill	T x 1.0	T x 1.1	T x 1.2

Table 4 - Vertical Down-Throw and Supply Air Temperature Factors

Multiply Throw-Sidewall in Table 1 (or factor in Table 2 if used) by listed value			
	@ - 20F ΔT Cooling	@ 0F ΔT Ventilating	@ + 25F ΔT Heating
Case 1	T x 1.0	T x .90	T x .60
Case 2	T x .70	T x .60	T x .4 0

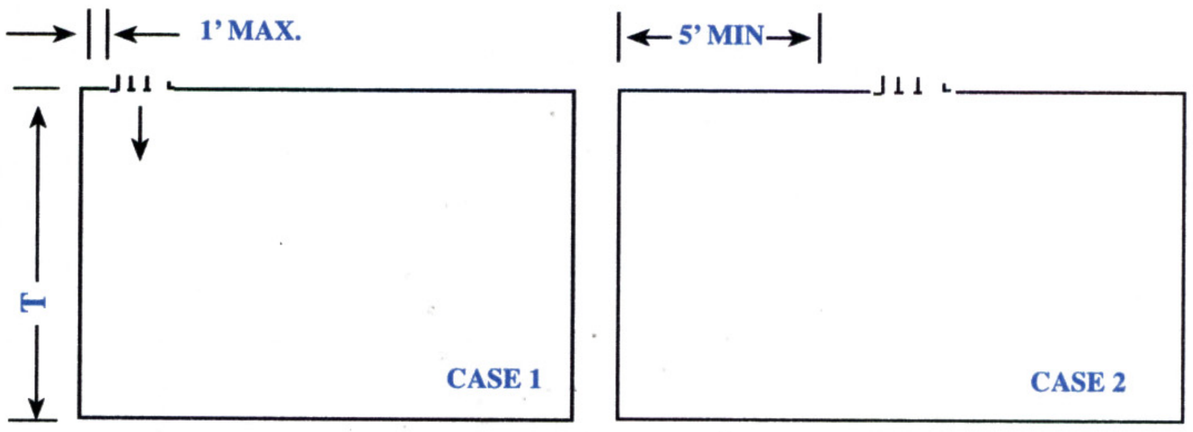

Table 5 - Supply Grille Areas Per Foot of Length

Listed Width in Inches																	
	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	30	36
A_n	.13	.17	.21	.25	.33	.42	.50	.67	.84	1.0	1.2	1.3	1.5	1.7	2.0	2.5	3.0
00 and 15 Bar Styles																	
A_k	.04	.06	.09	.11	.16	.20	.25	.35	.45	.55	.68	.79	.90	1.0	1.3	1.6	2.1

CFM = A_k x Length in Feet x V_k

Outlet Velocity (V_k) FPM										
500	600	700	800	900	1000	1200	1400	1600	1800	2000
Total Pressure (P_t) in H_20										
.02	.02	.03	.04	.05	.06	.09	.12	.16	.20	.25

Air Measurement

Supply	Return
	1''

6070 Velometer probe to measure V_k

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Table 6 - Return Air CFM Per Foot of Length

Listed Height In Inches	A_K Area	Bar Style	NC 20-25 Non-Ducted		NC 30 Ducted		NC 35-40 Ducted	
			-.02" Ps	-.03" Ps	-.08" Ps	-.10" Ps	-.15" Ps	-.20" Ps
			CFM	CFM	CFM	CFM	CFM	CFM
1 1/2	.13	00 15	20	25	40	45	55	65
2	.18	00 15	30	40	65	70	90	100
2 1/2	.23	00 15	45	50	85	95	115	135
3	.27	00 15	55	65	105	120	145	165
4	.34	00 15	75	90	150	165	205	235
5	.41	00 15	95	120	190	215	260	305
6	.46	00 15	120	145	240	265	325	375
8	.57	00 15	160	200	325	360	445	515
10	.68	00 15	210	255	415	465	570	655
12	.76	00 15	255	310	510	565	695	800
16	.93	00 15	350	430	700	785	960	1100
20	1.1	00 15	445	545	885	990	1220	1410
24	1.25	00 15	540	660	1080	1210	1475	1710
30	1.45	00 15	670	820	1335	1495	1825	2110
36	1.65	00 15	820	1010	1645	1835	2250	2600

Symbols :
- A_K Outlet Area in Aq. Ft.
- P_S Static pressure in H_20
- NC re 18db Room Attenuation

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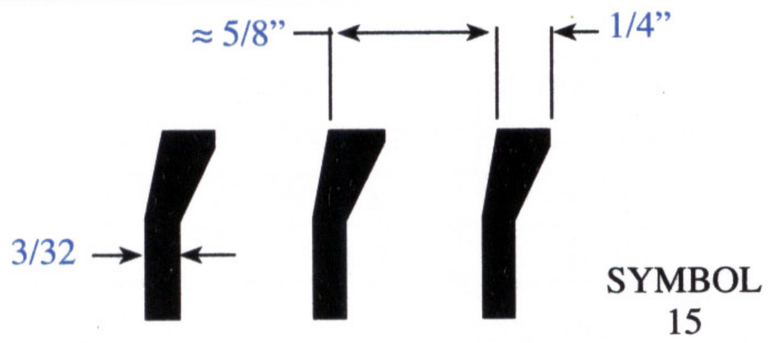
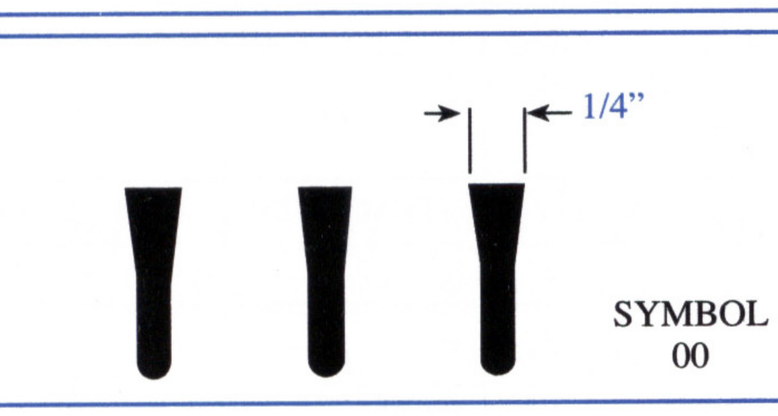
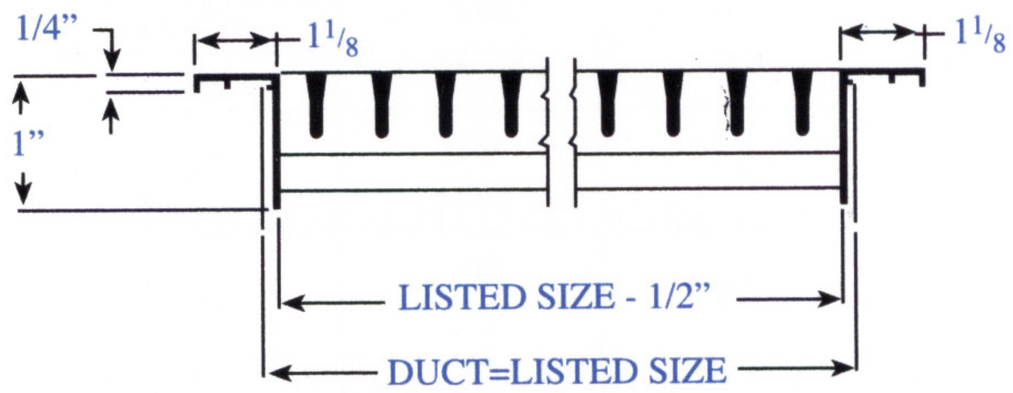
BAR STYLES

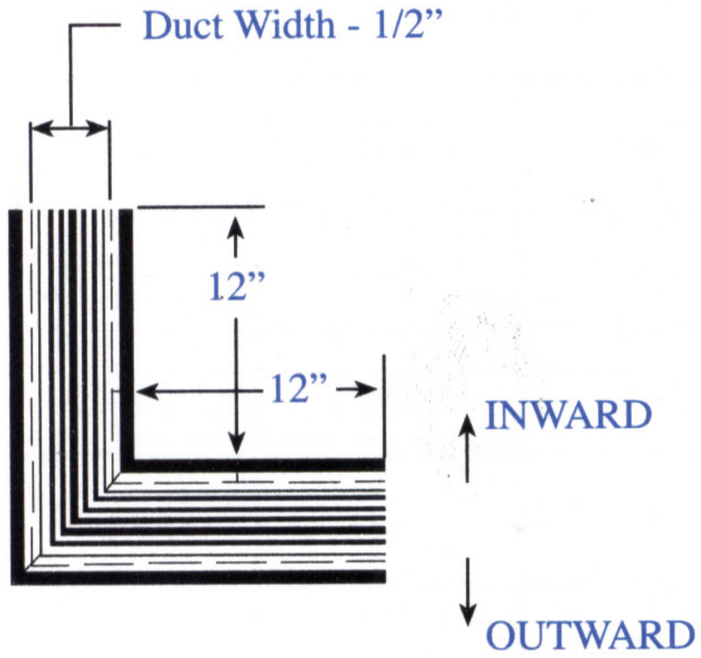




BARS ON ≈ 5/8 INCH CENTERS

GRILLE ONLY





MITERED CORNER

HOW TO SPECIFY

LG 43 00 1 24 X 4 SA

- LG — Model 1
- 43 — Grille Only
  - 40 - Grille Only
  - 41 - Grille W/Control Grid
  - 42 - Grille W/Damper
  - 43 - Grille W/Control Grid & Damper
  - 44 - Grille W/Debris Screen
- 00 — Bar Style
  - 00 - Straight
  - 15 - 15° Deflection
- 1 — Mounting Style
  - 0 - No Instaliation Frame
  - 1 - Hanger Bracket
- 24 X 4 — Size, Length x Height (inches)
- SA — Finish
  - SA - Satin Anodized
  - W - Painted White

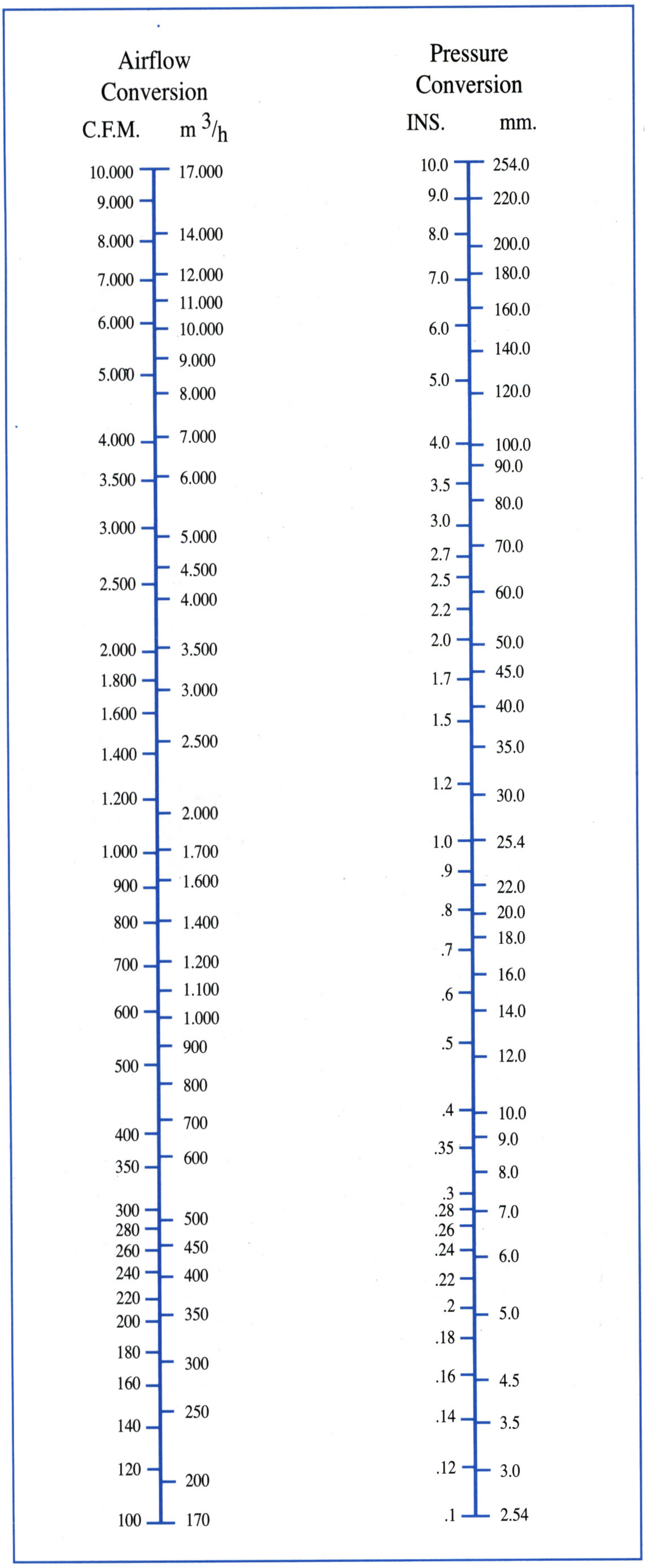
LISTED SIZES AVAILABLE

Minimum LxH	MAX. LxH
4x1 1/2	72x36

Sizes longer than maximum will be furnished in multiple sections for field butting

All Dimensions in Inches.

AIRFLOW-/PRESSURE CONVERSION CHART



RECOMMENDED AIR CHANGES PER HOUR (FOR VENTILATION)

Assembly rooms	4 - 8
Bakeries	20 - 30
banks / building societies	4 - 8
Bathrooms	6 - 10
Bedrooms	2 - 4
■ Billiard rooms	6 - 8
Boiler rooms	15 - 30
Cafes and coffee bars	10 - 12
Canteens	8 - 12
Cellars	3 - 10
Churches	1 - 3
■ Cinemas and theatres	10 - 15
Club rooms	12 minimum
Compressor rooms	10 - 12
Conference rooms	8 - 12
Dance halls	12 minimum
Electroplating shops	10 - 12
Engine rooms	15 - 30
Entrance halls, corridors	3 - 5
Factories and workshops	8 - 10
Foundries	15 - 30
Garages	6 - 8
Glasshouses	25 - 60
Gymnasiums	6 minimum
Hairdressing salons	10 - 15
Hospitals - sterilising	15 - 25
Kitchens - domestic	15 - 20
- commercial	30 minimum
Laboratories	6 - 15
Laundries	10 - 30
Lavatories	6 - 15
Lecture theatres	5 - 8
Libraries	3 - 5
Living rooms	3 - 6
Offices	6 - 10
Paint shops (not cellulose)	10 - 20
Photo and X-ray darkrooms	10 - 15
Public house bars	12 minimum
Recording control rooms	15 - 25
Recording studios	10 - 12
Restaurants	8 - 12
Schoolrooms	5 - 7
Shops and supermarkets	8 - 15
Shower baths	15 - 20
Stores and warehouses	3 - 6
Squash courts	4 minimum
Swimming baths	10 - 15
Utility rooms	15 - 20
Welding shops	15 - 30

■ Increase by 50% where heavy smoking occurs or if the room is underground.