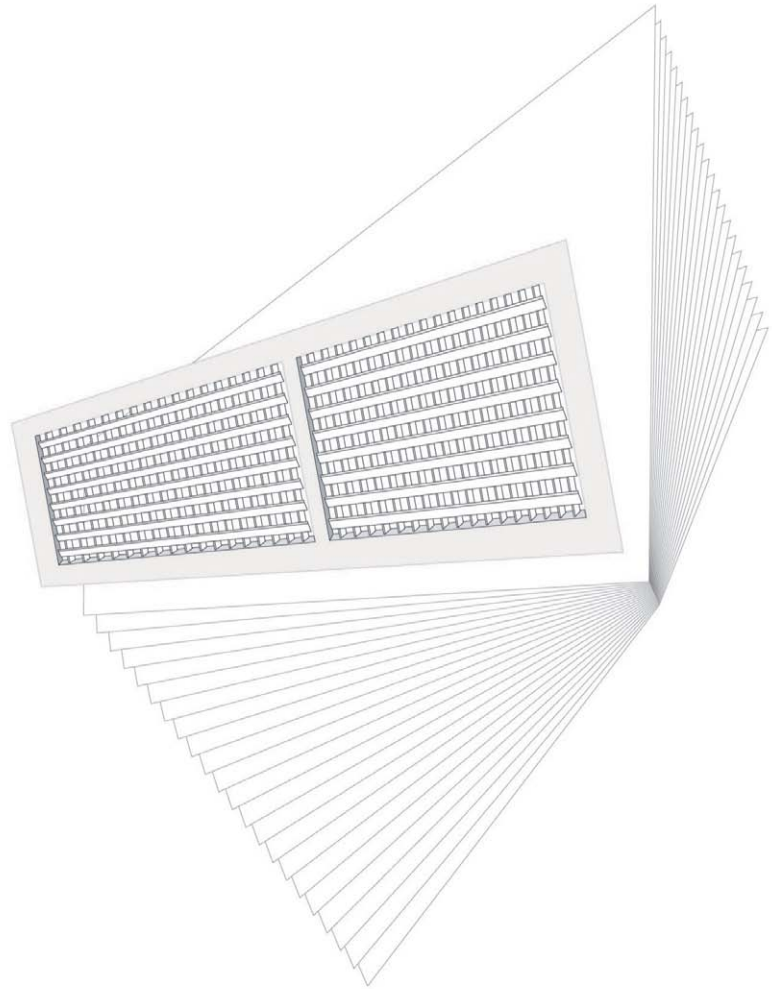


## WE SHAPE AIR



**BETA**  
industrial  
PRODUCTS CATALOGUE

PRODUCT BULLETIN

1





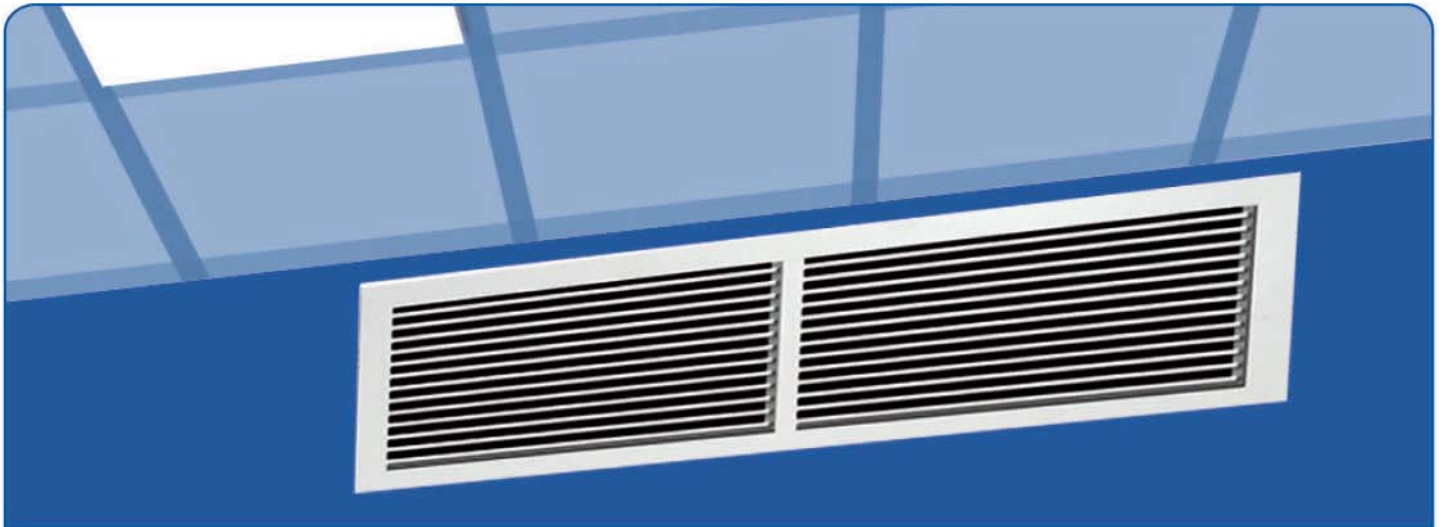


**BETA**  
i n d u s t r i a l

# index

>>	<b>SINGLE DEFLECTION AIR GRILLES AND REGISTERS</b>	<b>01 - 02</b>
>>	<b>DOUBLE DEFLECTION AIR GRILLES AND REGISTERS</b>	<b>03 - 04</b>
>>	<b>PERFORATED AIR GRILLES AND REGISTERS</b>	<b>05</b>
>>	<b>FIXED BLADE RETURN AIR GRILLES AND REGISTERS</b>	<b>06</b>
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>>	<b>FRESH AIR GRILLES - HINGED TYPE</b>	<b>09 - 10</b>
>>	<b>FRESH AIR GRILLES</b>	<b>11</b>
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>> The single deflection air grille is composed of a set of deflecting blades mounted on a rectangular shaped frames.

>> The blades are mounted either horizontally or vertically.

>> The single deflection air grilles are wall mounted air terminal devices manufactured from extruded aluminium bars. Carefully designed to meet the demand for high quality and reliability.

>> Insulating gasket is fixed on request around the back of the frame to prevent infiltration between the frame and the wall.

>> Available with easily removable GI/ extruded aluminium opposed blade damper attached to the frame by means of (S) clips to ensure tight attachment & maximum flexibility. The damper is made of extruded aluminum & opening of the damper is easily adjusted by means of control lever that is driven by a screw driver from the front face of the register.

## FINISH

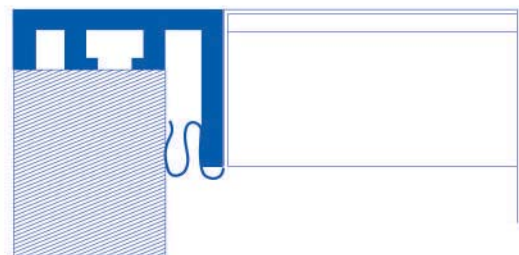
>> Natural anodized aluminium finish

>> Powder coated to RAL codes

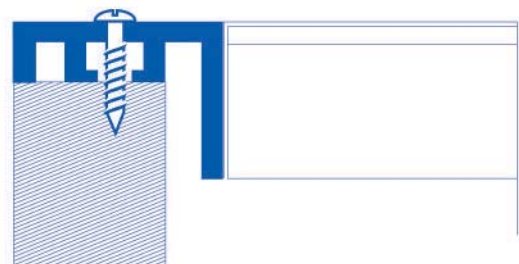
## FIXING

Types of Fixing:

### 1. Concealed type fixing (wall only)



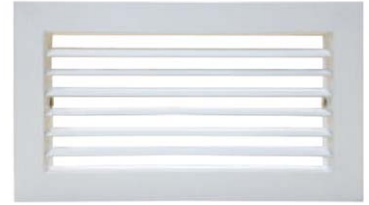
### 2. Visible screw fixing





WITHOUT DAMPER

TYPE: RAG



RAG A X B - H (Standard)



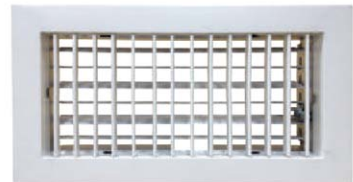
RAG A X B - V

WITH DAMPER

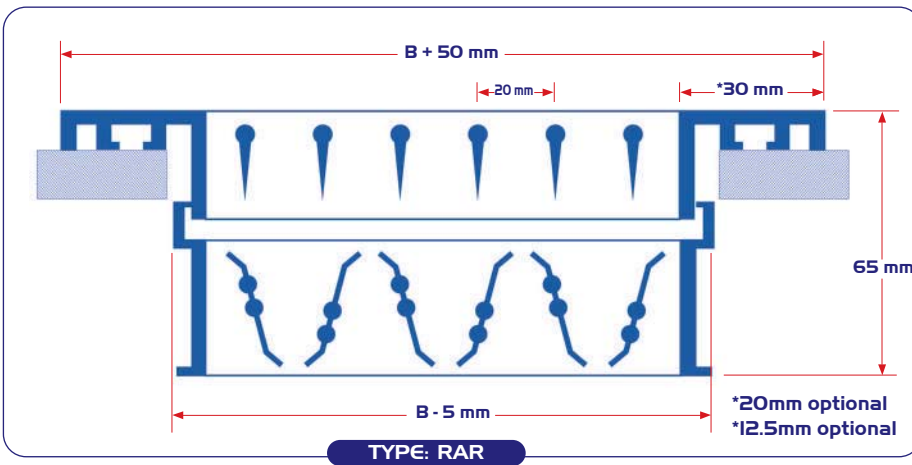
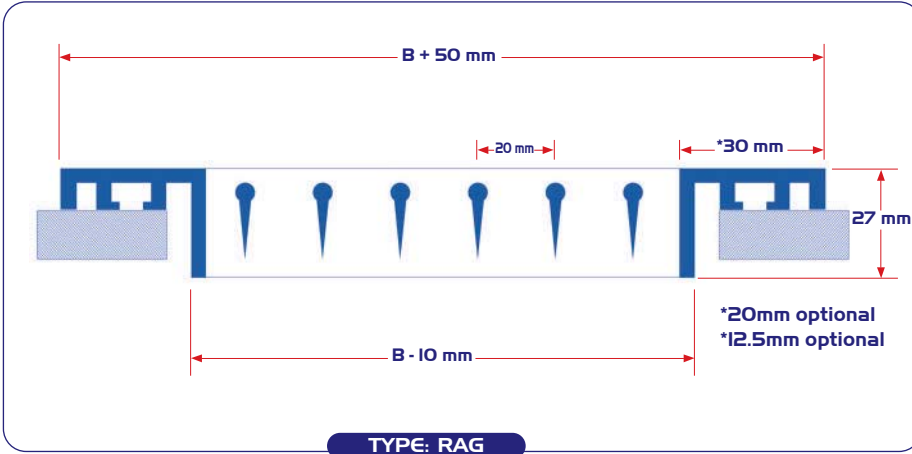
TYPE: RAR



RAR A X B - H (Standard)



RAR A X B - V



Ordering Key:

R	A	R	B	FLANGE	SIZE	H
RAR: SINGLE DEFLECTION REGISTER (WITH OBD) RAG: SINGLE DEFLECTION GRILLE (WITHOUT OBD) RAR/RAG: COMBINED						
-: WITHOUT OBD B: WITH BLACK OBD M: WITH MILL FINISH OBD						
-: 30MM FLANGE 20: 20MM FLANGE 12.5: 12.5MM FLANGE						
SIZE: WIDTH X HEIGHT						
H: HORIZONTAL BLADES (STANDARD) V: VERTICAL BLADES						





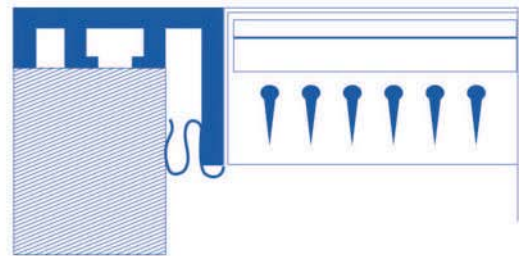
**FINISH**

- >> Natural anodized aluminium finish
- >> Powder coated to RAL codes

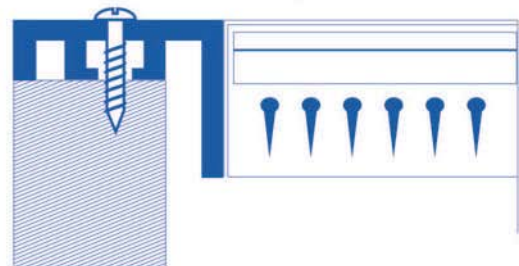
**FIXING**

Types of Fixing:

1. Concealed type fixing (wall only)



2. Visible screw fixing



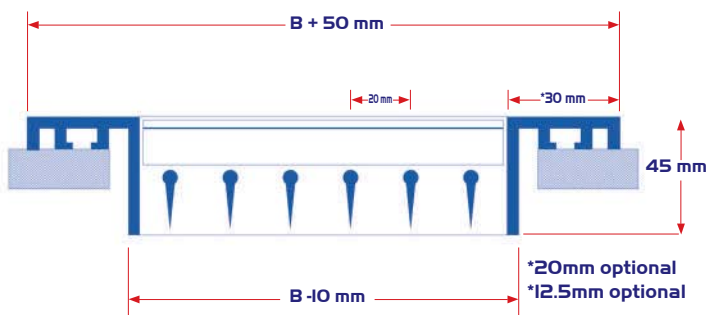
>> The double deflection air grille is composed of two sets of deflecting blades mounted in two adjacent planes. The two sets of deflecting blades are mounted in such a way that one set is vertically mounted and the other set is horizontally mounted.

>> The double deflection air grilles are wall mounted air terminal devices, manufactured from extruded aluminium bars and carefully designed to meet the demand for high quality and reliability.

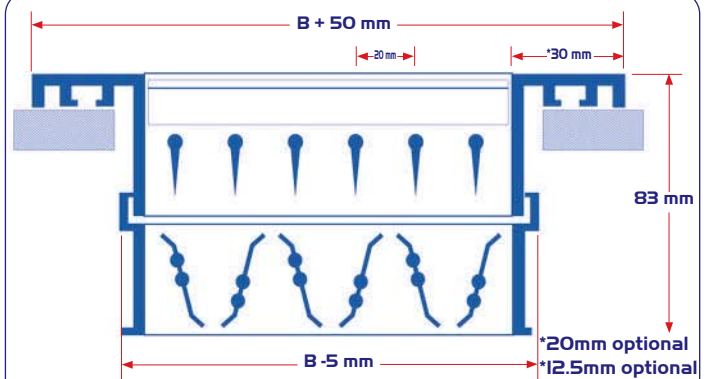
>> The double deflection air grilles are used for cooling, heating or air ventilation.

>> Available with easily removable GI/ Extruded aluminium opposed blades damper, attached to the frame by means of (S) clips to ensure tight attachment and maximum flexibility. The damper is made of extruded aluminium and opening of the damper is easily adjusted by means of controllever that is driven by a screw driver from the front face of the register.

>> Insulating gasket is fixed on request around the back of the frame to prevent infiltration between the frame and the wall.



**TYPE: SAG**



**TYPE: SAR**



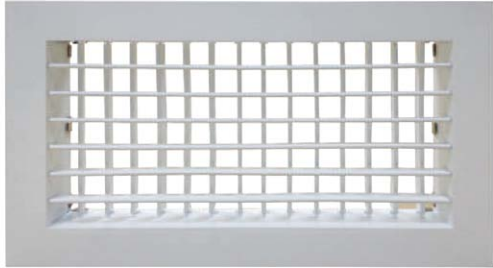


GRILLES & REGISTERS

WITHOUT DAMPER

WITH DAMPER

SAG



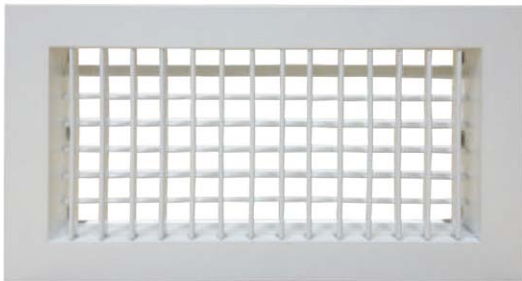
SAG A X B - H (Standard)

SAR



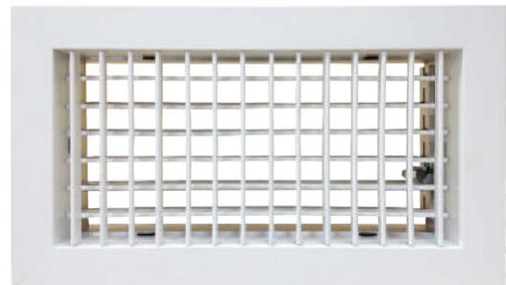
SAR A X B - H (Standard)

SAG



SAG A X B - V

SAR



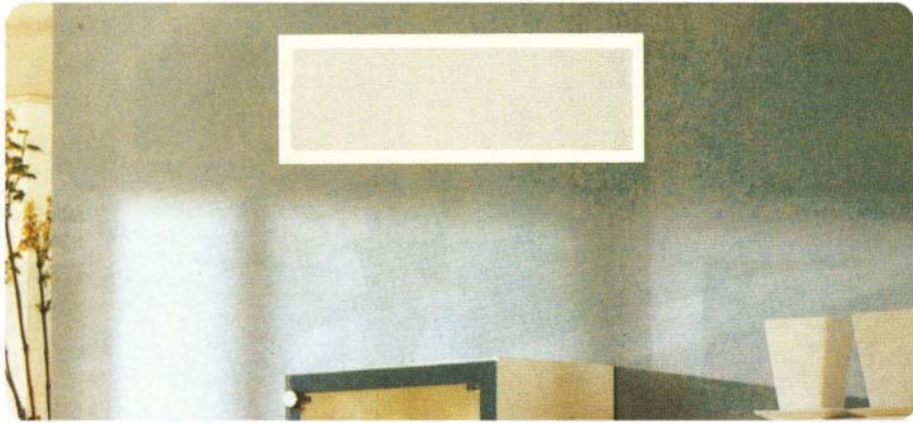
SAR A X B - V

Ordering Key:

S	A	R	B	FLANGE	SIZE	H
SAR: DOUBLE DEFLECTION REGISTER (WITH OBD) SAG: DOUBLE DEFLECTION GRILLE (WITHOUT OBD) SAR/SAG: COMBINED						
-: WITHOUT OBD B: WITH BLACK OBD M: WITH MILL FINISH OBD						
-: 30MM FLANGE 20: 20MM FLANGE 12.5: 12.5MM FLANGE						
SIZE: WIDTH X HEIGHT						
H: HORIZONTAL BLADES (STANDARD) V: VERTICAL BLADES						

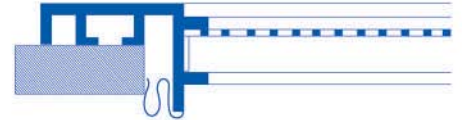




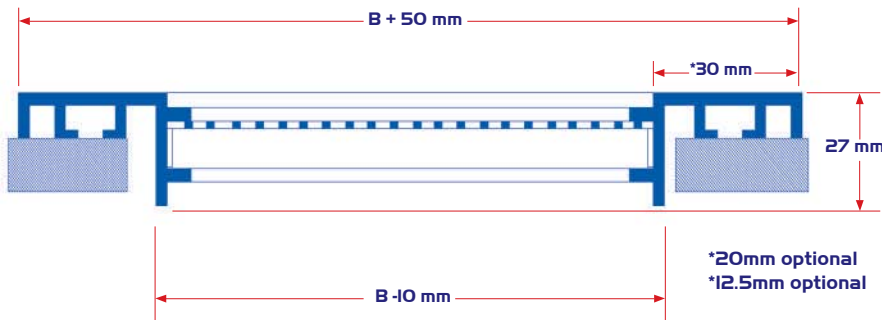
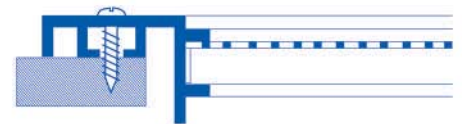


**FIXING**

1) CONCEALED TYPE FIXING  
(WALL ONLY)

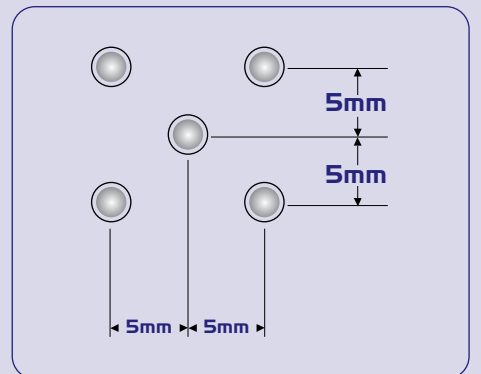


2) VISIBLE SCREW FIXING



**TYPE: PAG**

- >> The perforated air grille is a wall/ceiling mounted air terminal device that is composed of perforated sheet fixed of a frame.
- >> The perforated sheet is made of galvanized steel 0.7 mm thickness.
- >> The frame is made of extruded aluminium bars.
- >> Perforated face has 3mm diameter holes in a staggered pattern as per shown drawing >>>
- >> The perforated air grilles are used in cooling, heating and air ventilation. They are usually used as return grilles.
- >> Insulating gasket is fixed on request around the back of the frame to prevent infiltration between the frame and the wall.



3mm diameter holes in a staggered pattern

**FINISH**

>> POWDER COATED TO RAL CODES

**Ordering Key:**

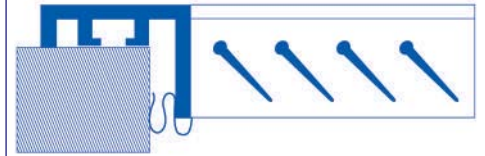
P	A	R	B	FLANGE	SIZE
PAR: PERFORATED AIR REGISTER (WITH OBD) PAG: PERFORATED AIR GRILLE (WITHOUT OBD) PAR/PAG: COMBINED					
-: WITHOUT OBD B: WITH BLACK OBD M: WITH MILL FINISH OBD					
-: 30MM FLANGE 20: 20MM FLANGE 12.5: 12.5MM FLANGE					
SIZE: WIDTH X HEIGHT					



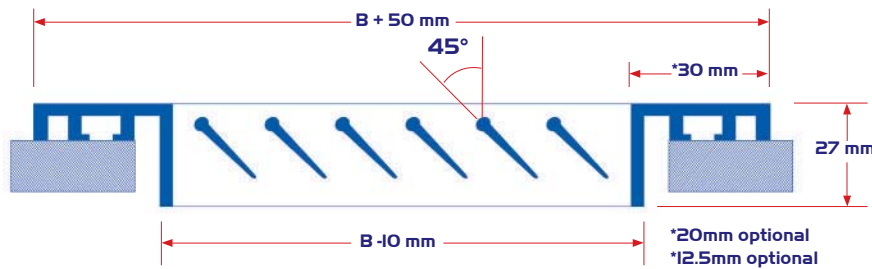


**FIXING**

**1) CONCEALED TYPE FIXING (WALL ONLY)**



**2) VISIBLE SCREW FIXING**



**TYPE: RAG - 45**

- >> The fixed blade return air grille is a wall mounted return air terminal device. It is composed of a set of horizontal blades fixed at an angle of 45°.
- >> The fixed blade return air grilles are manufactured from high grade aluminium extruded bars.
- >> Insulating gasket is fixed on request around the back of the frame to prevent infiltration between the frame and the wall.
- >> The fixed blade return air grilles are used in cooling, heating and air ventilation.
- >> Available with easily removable GI/ Extruded aluminium opposed blades damper, attached to the frame by means of (S) clips to ensure tight attachment and maximum flexibility. The damper is made of extruded aluminum bars and opening of the damper is easily adjusted by means of control lever that is driven by a screw driver from the front face of the register.

**FINISH**

- >> NATURAL ANODIZED ALUMINIUM FINISH
- >> POWDER COATED TO RAL CODES

**Ordering Key:**

R	A	R	B	FLANGE	45	SIZE
RAR45: SINGLE DEFLECTION REGISTER (WITH OBD) RAG45: SINGLE DEFLECTION GRILLE (WITHOUT OBD) RAR45/RAG45: COMBINED						
-: WITHOUT OBD B: WITH BLACK OBD M: WITH MILL FINISH OBD						
-: 30MM FLANGE 20: 20MM FLANGE 12.5: 12.5MM FLANGE						
45: BLADES ARE FIXED AT 45°						
SIZE: WIDTH X HEIGHT						





>> The egg crate grilles are either ceiling mounted or wall mounted air terminal devices used as exhaust air grilles for domestic and industrial applications.

>> The relatively large effective area of the egg crate grille permits better performance in the return stages. The effective area is 90 percent of the nominal area. This generates low pressure drop and low noise level.

>> The core of the egg crate grille is made of aluminum strips assembled to form equally distributed and sized square cells.

>> The frame of the egg crate grille is made of extruded aluminum bars.

>> Insulating gasket is fixed on request around the back of the frame to prevent infiltration between the frame and the wall.

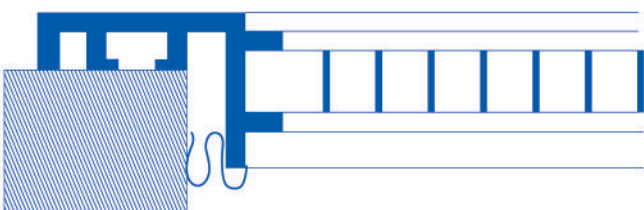
### FINISH

>> NATURAL ANODIZED ALUMINIUM FINISH

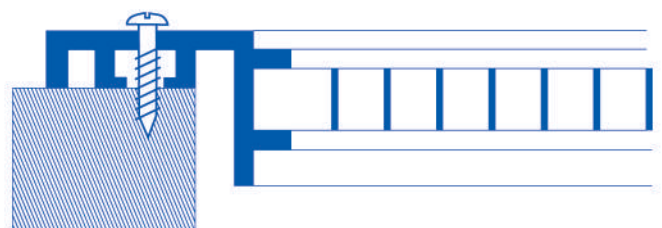
>> POWDER COATED TO RAL CODES

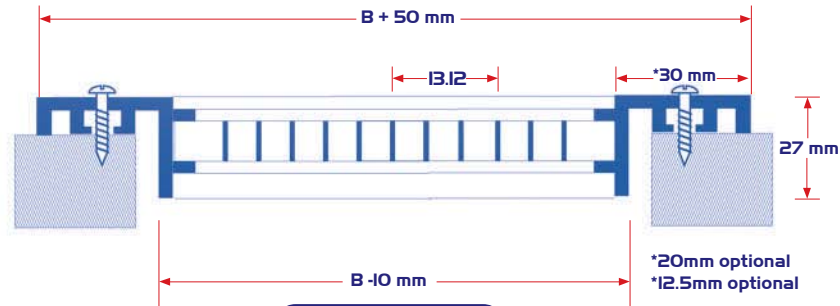
### FIXING

#### 1) CONCEALED TYPE FIXING (WALL ONLY)

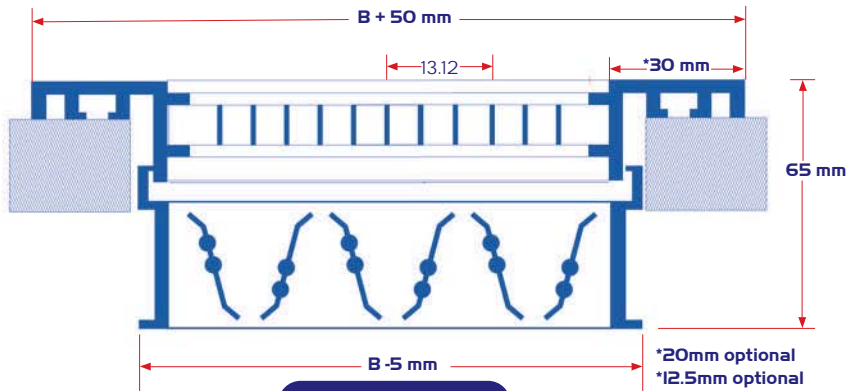


#### 2) VISIBLE SCREW FIXING

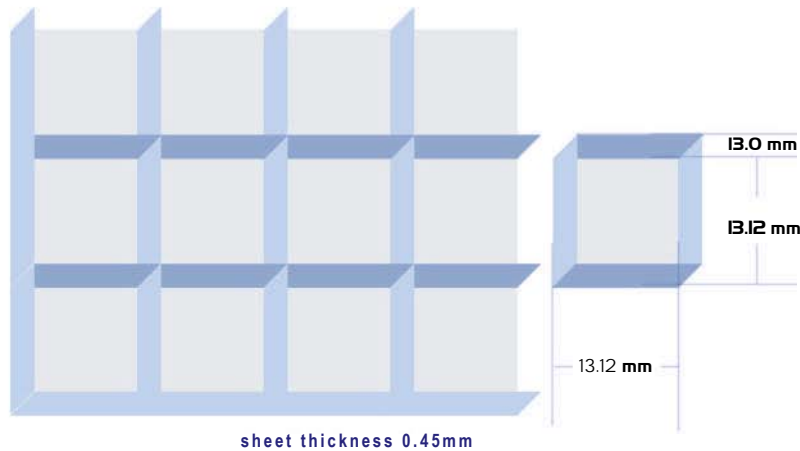




TYPE: ECG



TYPE: ECR



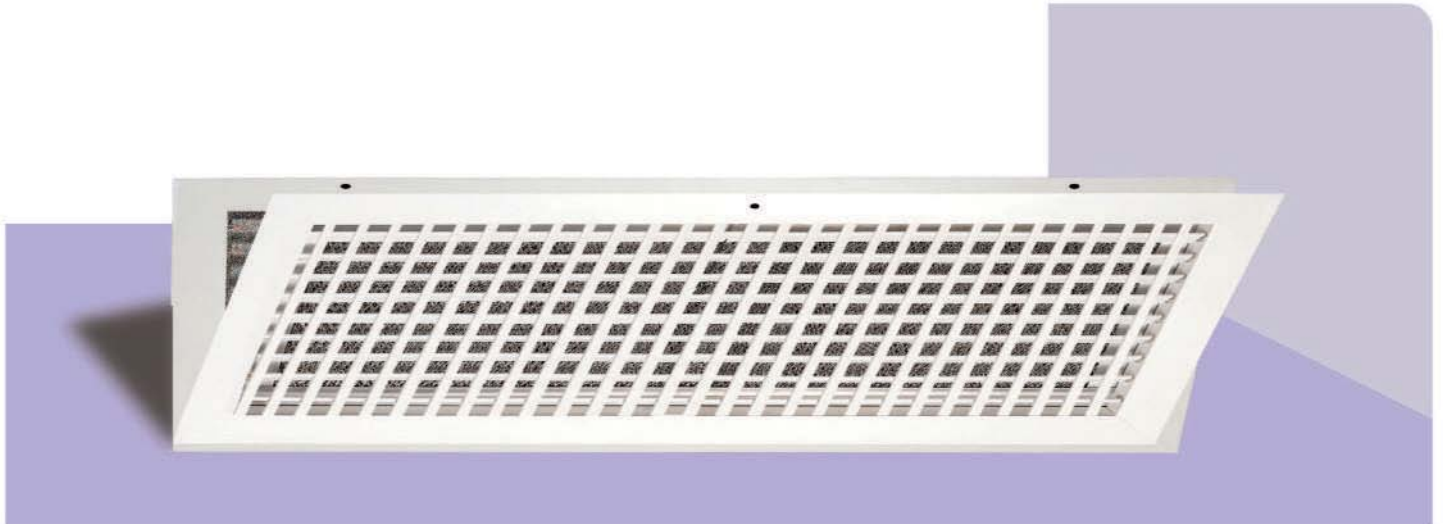
sheet thickness 0.45mm

EGG CRATE GRID

Ordering Key:

E	C	R	B	FLANGE	SIZE
ECR: EGG CRATE REGISTER (WITH OBD) ECG: EGG CRATE GRILLE (WITHOUT OBD) ECR/ECG: COMBINED					
-: WITHOUT OBD B: WITH BLACK OBD M: WITH MILL FINISH OBD					
-: 30MM FLANGE 20: 20MM FLANGE 12.5: 12.5MM FLANGE					
SIZE: WIDTH X HEIGHT					





>> The fresh air grille is composed of a return grille that is either an egg crate grille or fixed blade grille which is fixed to a frame that contains a filter by means of steel hinges.

>> The frame and the return grille are made of extruded aluminum bars.

>> The filter is made of washable aluminum media. It is fixed at the back of the grille and is easily removable. The aluminum filter is 25mm thick.

>> The fresh air grille can be opened like an ordinary door to give flexibility to access the filter for either cleaning or changing.

>> Insulating gasket is fixed around the back of the frame to prevent infiltration between the frame and the wall.

>> The fresh air grilles are used in cooling and ventilation applications. The existence of a filter provides the entrance of clean air that does not contain dust or unwanted objects.

### FINISH

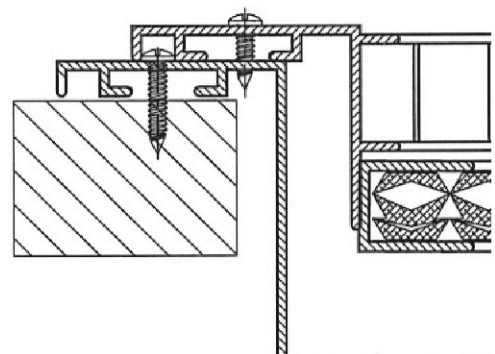
>> Natural anodized aluminium finish

>> Powder coated to RAL codes

### FIXING

Types of Fixing:

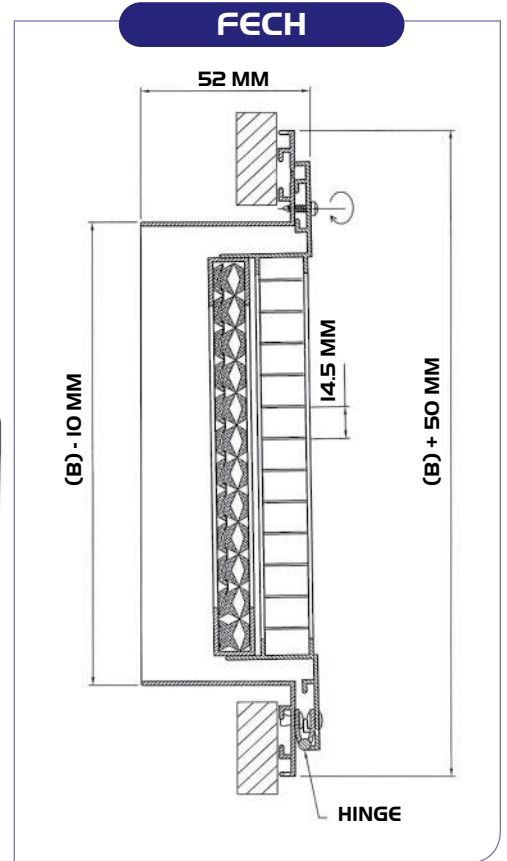
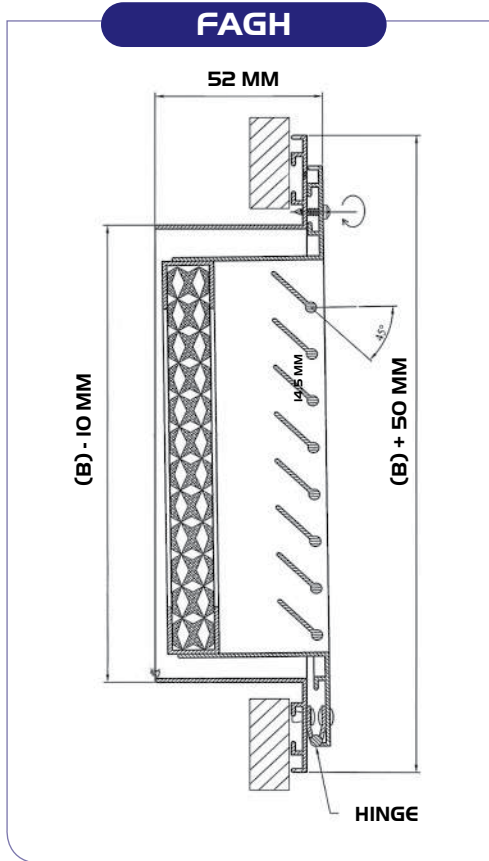
Visible screw fixing





1) Filter Grille with Fixed Blade Core :  
The core of this type of filter grille is composed of a set of blades that are fixed at 45° angle.

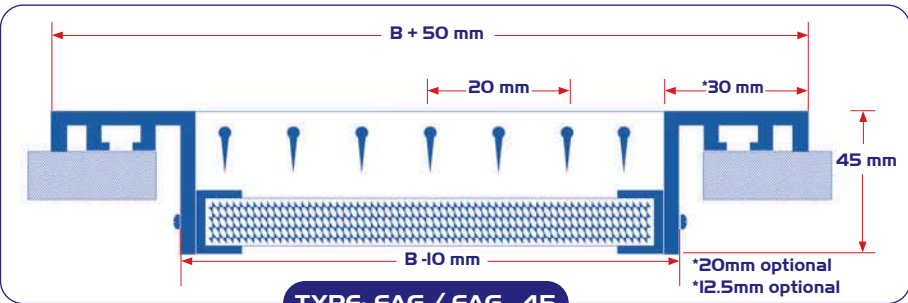
2) Filter Grille with egg Crate Core:  
This type has an advantage of providing a free area of about 90 percent. The egg crate core is made as 0.45 mm thick aluminium strips.  
The size of the cells is 14.5 mm x 14.5 mm.



**Ordering Key:**

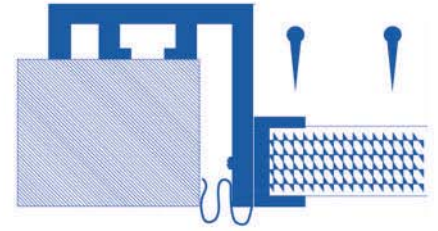
F	A	G	H	45	SIZE
FAGH45: HINGED 45° SINGLE DEFLECTION GRILLE WITH ALUMINIUM FILTER					
FAGH: HINGED SINGLE DEFLECTION GRILLE WITH ALUMINIUM FILTER					
FECH: FRESH EGG CRATE HINGED WITH ALUMINIUM FILTER					
45: BLADES ARE FIXED AT 45°					
SIZE: WIDTH X HEIGHT					



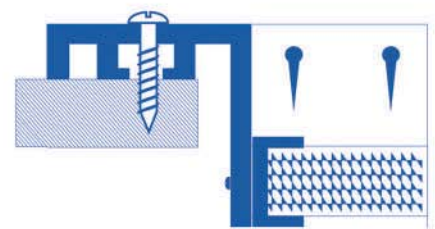


**FIXING**

**01 >> CONCEALED TYPE FIXING (WALL ONLY)**



**02 >> VISIBLE SCREW FIXING**



- >> The fresh air grille is a simple form of filter grille. It is composed of a single deflection grille with an aluminium filter fixed at the back.
- >> The fresh air grilles are used to supply fresh clean air to the air handling units.
- >> The filter is made from washable aluminium media and is fixed on the back of the grille.
- >> Insulating gasket is fixed on request around the back of the frame to prevent infiltration between the frame and the wall.
- >> The front horizontal blades can be adjustable or fixed at 45°

**FINISHING**

- >> Natural anodized aluminium finish.>>
- Powder coated to RAL codes

**Ordering Key:**

F	A	G	45	FLANGE	SIZE
FAG45: FRESH AIR GRILLE WITH ALUMINIUM FILTER - BLADES ARE FIXED AT 45°					
FAG: FRESH AIR GRILLE WITH ALUMINIUM FILTER - ADJUSTABLE BLADES					
-: 30MM FLANGE					
20: 20MM FLANGE					
12.5: 12.5MM FLANGE					
SIZE: WIDTH X HEIGHT					





- >> Flush mounted, non vision door or partition grille.
- >> Used to allow for air movement between two conditioned spaces while preventing vision.
- >> Constructed of V shape inverted blades assembled horizontally one above the other, with fixed spacing to a frame called the fixed frame.
- >> Fixed frame is installed at one side of the partition, while a sliding frame is fixed on the other side.
- >> Sliding frame enables the use of the door grille to suit different thickness of the partition.

- >> Minimum partition thickness : 25 mm
- >> Maximum partition thickness : 55 mm

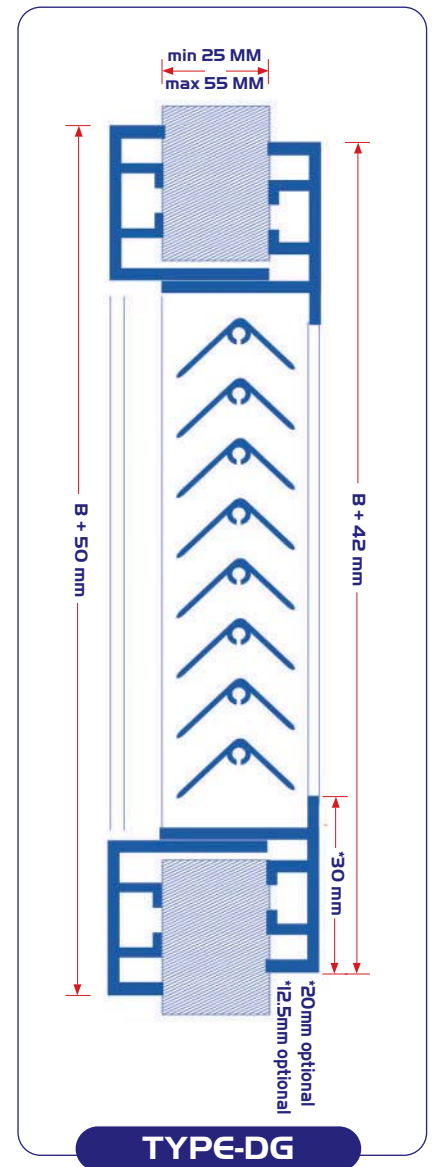
**FIXING**

- >> Visible screw fixing



**FINISHING**

- >> NATURAL ANODIZED ALUMINIUM FINISH.
- >> POWDER COATED TO RAL CODES



**TYPE-DG**

**Ordering Key:**

D	G	FLANGE	SIZE
DG: DOOR TRANSFER GRILLE			
-: 30MM FLANGE			
20: 20MM FLANGE			
12.5: 12.5MM FLANGE			
SIZE: WIDTH X HEIGHT			

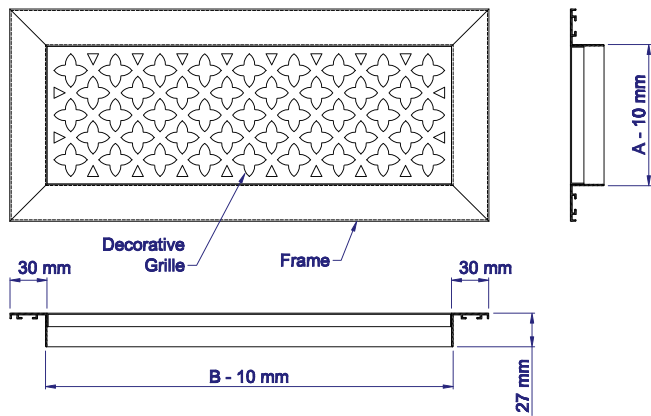
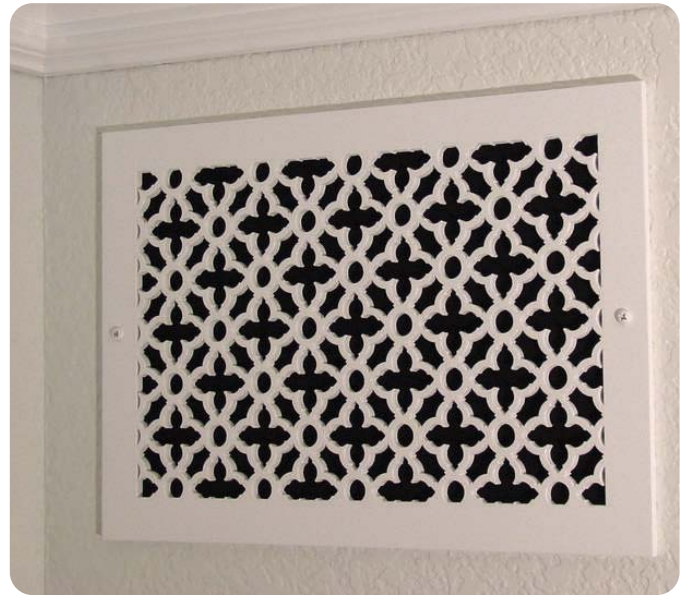




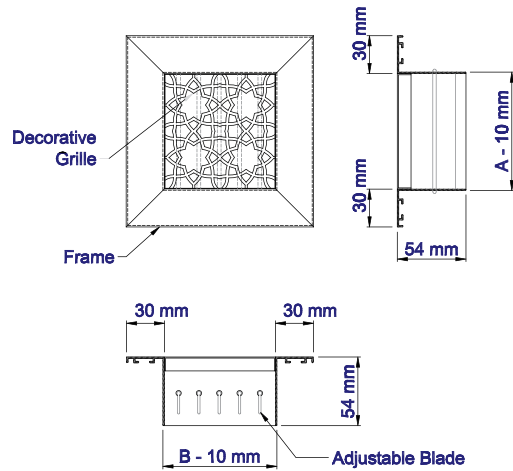


**Description:**

- Decorative grilles (architectural grilles) are available in several materials, gauges, colors and patterns/designs.
- Can be with rear set of blades for air deflection.
- Can be equipped with GI/ Extruded aluminium black opposed blade damper OBD for air flow fine tuning.



**DECORATIVE GRILLE WITHOUT DEFLECTION BLADES**



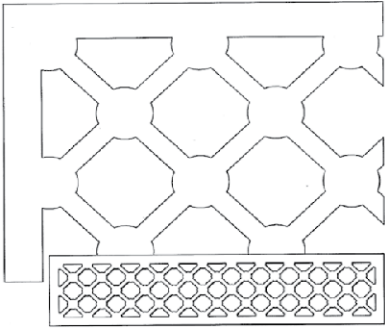
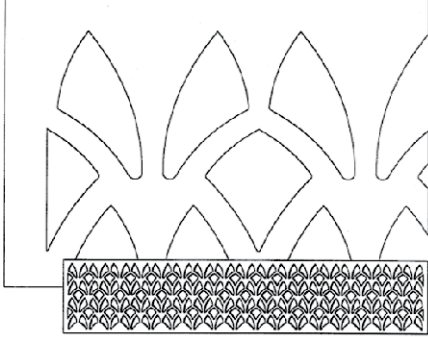
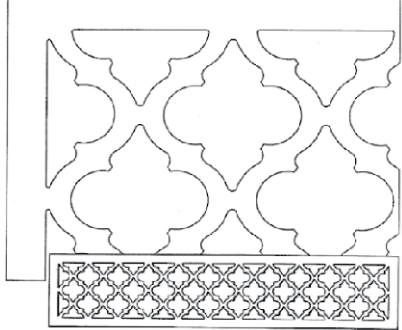
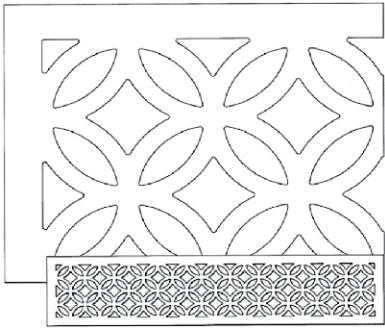
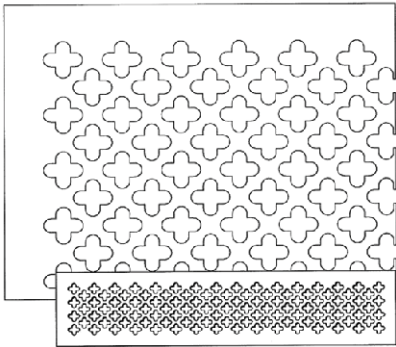
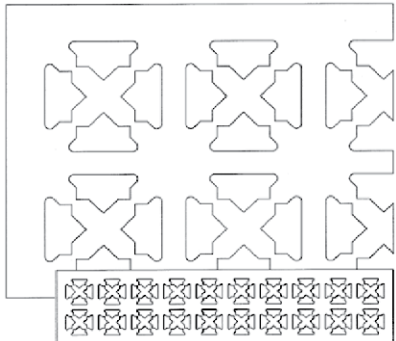
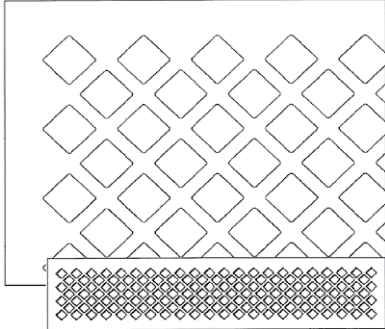
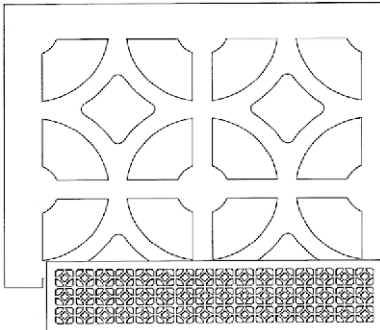
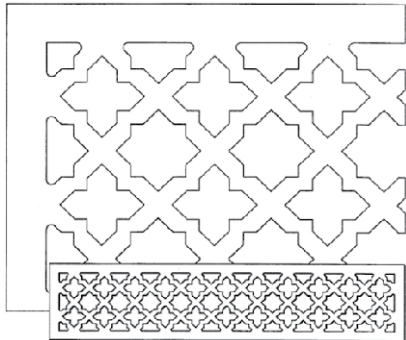
**DECORATIVE GRILLE WITH SINGLE DEFLECTION BLADES SET**

**Ordering Key:**

DEC	PI	A	I	G	S	SIZE
DECORATIVE						
Pn: PATTERN/DESIGN NO. (1 - 18)						
PO: PATTERN/DESIGN BY CUSTOMER						
A: AL DECORATIVE SHEET						
G: GI DECORATIVE SHEET						
THICKNESS OF DECORATIVE SHEET: 1, 2 OR 3MM						
G: GRILLE (WITHOUT OBD)						
R: REGISTER (WITH OBD)						
-: WITHOUT DEFLECTION BLADES						
S: WITH SINGLE DEFLECTION						
SIZE: WIDTH X HEIGHT						

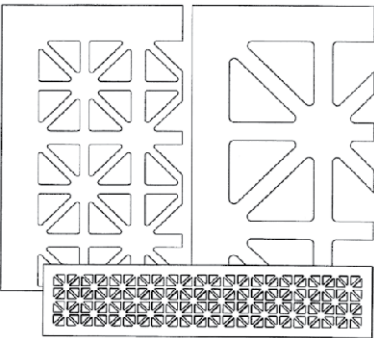
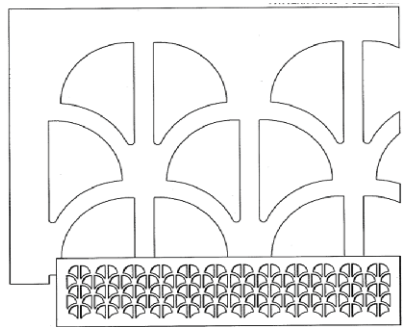
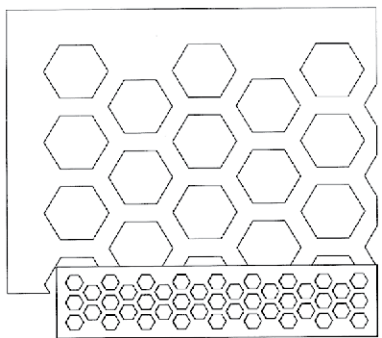
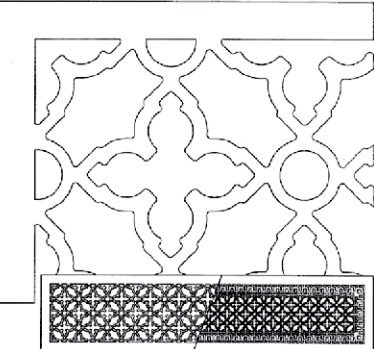
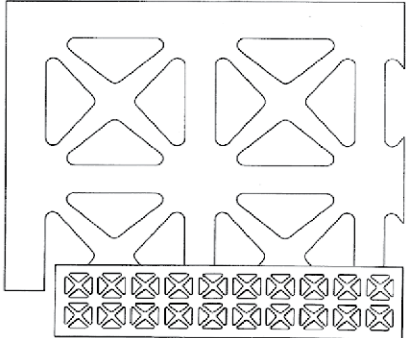
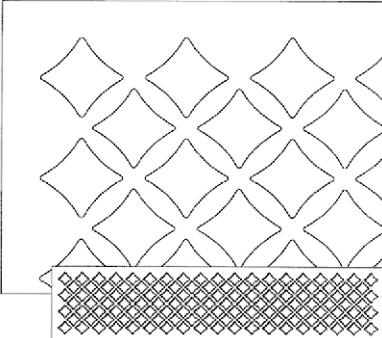
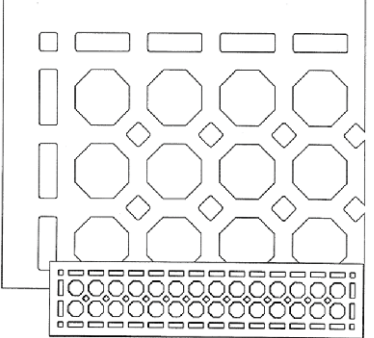
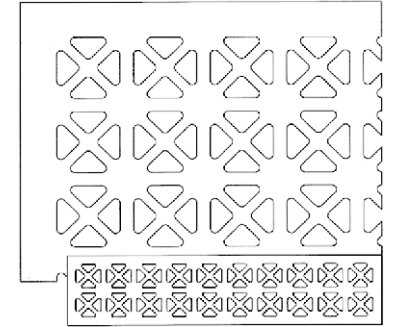
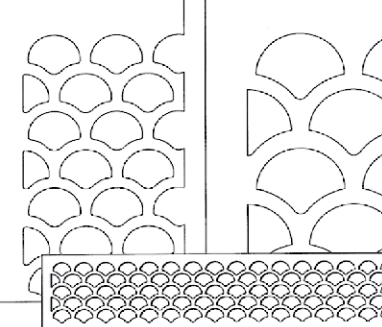




 <p><b>PATTERN 1</b> 58% OPEN</p>	 <p><b>PATTERN 2</b> 57% OPEN</p>	 <p><b>PATTERN 3</b> 72% OPEN</p>
 <p><b>PATTERN 4</b> 40% OPEN <b>PATTERN 4A</b> 65% OPEN</p>	 <p><b>PATTERN 5</b> 51% OPEN <b>PATTERN 5A</b> 50% OPEN</p>	 <p><b>PATTERN 6</b> 45% OPEN <b>PATTERN 6A</b> 45% OPEN</p>
 <p><b>PATTERN 7</b> 53% OPEN <b>PATTERN 7A</b> 56% OPEN <b>PATTERN 7B</b> 64% OPEN</p>	 <p><b>PATTERN 8</b> 42% OPEN <b>PATTERN 8A</b> 55% OPEN</p>	 <p><b>PATTERN 9</b> 58% OPEN <b>PATTERN 9A</b> 58% OPEN</p>





 <p><b>PATTERN 10</b> 40% OPEN</p> <p><b>PATTERN 10A</b> 49% OPEN</p> <p><b>PATTERN 10B</b> 50% OPEN</p>	 <p><b>PATTERN 11</b> 58% OPEN</p> <p><b>PATTERN 11A</b> 72% OPEN</p>	 <p><b>PATTERN 12</b> 56% OPEN</p>
 <p><b>PATTERN 13</b> 64% OPEN</p>	 <p><b>PATTERN 14</b> 41% OPEN</p>	 <p><b>PATTERN 15</b> 54% OPEN</p>
 <p><b>PATTERN 16</b> 55% OPEN</p> <p><b>PATTERN 16A</b> 53% OPEN</p>	 <p><b>PATTERN 17</b> 28% OPEN</p> <p><b>PATTERN 17A</b> 37% OPEN</p> <p><b>PATTERN 17B</b> 50% OPEN</p>	 <p><b>PATTERN 18</b> 59% OPEN</p> <p><b>PATTERN 18 A</b> 56% OPEN</p>





**PRODUCTS TESTING >>**

The following tables include the results of tests conducted on three double deflection air registers. The test results include noise criteria (NC), static pressure versus Airflow, throw and Ak. Extrapolation was used to obtain the performance for other sizes and other parameters within the range of products mentioned above.

**TEST METHOD >>**

The registers were tested in accordance with the Air Diffusion Council test code for grilles, registers and diffusers No. ADC 1062:GRD-84. The registers were tested in the ETL Testing LABORATORIES, Inc.



The 470m<sup>2</sup> reverberation room was used to conduct the test. Quiet test air was provided by a variable volume air supply. Air volume was measured by the use of calibrated orifice metering station while the static pressure was measured employing a dwyer model 166-12,1/8" diameter standard pitot tube and read on a dwyer manometer model 424-5.

Acoustical data was obtained employing a Bruel and Kjaer digital frequency analyzer type 2131 and analyzed by a computer. The reference sound source used for this test as a calibrated ILG Fan Serial No. 17-05-066A. The octave band sound power levels were plotted on a graph of Noise Criteria Curves which is in the ADC test code.

**NOTES :**

Area with horizontal dashed lines for notes.





**NOTES :**

A series of horizontal dashed red lines for writing notes.





REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

L/S	SIZE	300 x 150		300 x 200		450 x 150		500 x 150		600 x 150		750 X 150		600 X 200					
								300 x 250		450 x 250		500 x 200		450 X 250					
		DEFLECTION		0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°		
		Ac		0.041		0.055		0.062		0.069		0.083		0.093		0.105			
		Ak		0.023	0.019	0.030	0.025	0.033	0.028	0.036	0.030	0.049	0.041	0.057	0.048	0.067	0.056	0.073	0.061
94		Vc		2.32		1.71		1.53		1.36		1.13		1.01		0.90		0.84	
		Pv		3.32		0.421	0.774	0.312	0.570	0.150	0.271	0.082	0.147	0.057	0.102	0.039	0.070	0.031	0.056
		Pt		4.32		0.614	0.969	0.445	0.699	0.229	0.346	0.132	0.193	0.096	0.138	0.068	0.096	0.055	0.077
		Th.		3.4-4.0-6.1	1.8-2.7-4.3	3.1-3.7-5.8	1.5-2.4-4.0	2.8-3.4-5.5	1.2-2.1-3.7	2.5-3.1-5.2	0.9-1.8-3.4	2.3-2.9-5.0	0.8-1.7-3.2	2.2-2.8-4.9	0.7-1.5-3.1	2.1-2.6-4.7	0.6-1.4-2.9	2.0-2.6-4.6	0.6-1.3-2.9
		NC		16	22	<15	<15	<15	>15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
118		Vc		2.9		2.1		1.9		1.7		1.4		1.3		1.1		1.1	
		Pv		1.300	2.360	0.660	1.220	0.493	0.897	0.240	0.438	0.132	0.242	0.093	0.171	0.064	0.118	0.052	0.095
		Pt		1.800	2.870	0.910	1.470	0.702	1.102	0.350	0.542	0.196	0.301	0.140	0.213	0.097	0.148	0.079	0.119
		Th.		3.7-4.9-6.7	2.1-3.6-4.9	3.7-4.6-6.7	2.1-3.0-4.9	3.7-4.3-6.4	2.1-3.4-4.9	3.6-4.2-6.4	2.0-3.1-4.6	3.4-4.0-6.3	1.9-3.0-4.4	3.2-3.9-6.3	1.8-2.9-4.3	3.0-3.7-6.2	1.6-2.8-4.2	2.9-3.7-6.2	1.5-2.8-4.1
		NC		23	29	<15	19	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
142		Vc		3.5		2.6		2.3		2.1		1.7		1.5		1.4		1.3	
		Pv		1.880	3.400	0.970	1.750	0.710	1.300	0.345	0.637	0.189	0.353	0.133	0.249	0.092	0.173	0.074	0.139
		Pt		2.640	4.170	1.470	2.260	0.970	1.550	0.461	0.744	0.249	0.405	0.174	0.283	0.119	0.194	0.094	0.155
		Th.		4.3-5.2-7.3	2.7-4.0-5.2	4.3-4.9-7.3	2.4-3.7-5.5	4.0-4.9-7.0	2.4-3.7-5.2	3.8-4.7-6.8	2.2-3.5-5.0	3.6-4.5-6.6	2.0-3.3-4.8	3.5-4.4-6.5	2.0-3.2-4.7	3.4-4.3-6.4	1.9-3.1-4.6	3.4-4.3-6.3	1.8-3.1-4.6
		NC		29	35	19	25	<15	20	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
165		Vc		4.1		3.0		2.7		2.4		2.0		1.8		1.6		1.5	
		Pv		2.570	4.620	1.320	2.390	0.970	1.750	0.760	1.400	0.258	0.469	0.182	0.331	0.125	0.228	0.101	0.183
		Pt		3.580	5.640	1.830	2.900	1.470	2.260	1.020	1.650	0.439	0.654	0.319	0.470	0.227	0.332	0.185	0.270
		Th.		4.6-5.8-7.9	3.0-4.3-5.8	4.6-5.8-7.9	2.7-4.0-5.8	4.3-5.5-7.6	2.7-4.0-5.5	4.3-5.5-7.6	2.7-4.0-5.2	4.2-5.4-7.5	2.5-3.8-5.2	4.1-5.3-7.4	2.5-3.8-5.1	4.1-5.3-7.4	2.4-3.7-4.9	4.0-5.2-7.3	2.4-3.7-4.9
		NC		34	40	24	30	19	25	16	22	<15	19	<15	16	<15	<15	<15	<15
189		Vc		4.7		3.4		3.1		2.7		2.3		2.0		1.8		1.7	
		Pv		3.330	6.050	1.730	3.120	1.270	2.290	0.990	1.800	0.343	0.613	0.242	0.432	0.168	0.298	0.135	0.239
		Pt		4.600	7.320	2.490	3.890	1.78	2.790	1.500	2.310	0.491	0.754	0.349	0.533	0.243	0.369	0.196	0.296
		Th.		4.9-6.1-8.5	3.7-4.6-6.1	4.9-6.1-8.5	3.4-4.3-6.1	4.6-5.8-8.2	3.4-4.3-5.8	4.6-5.8-7.9	3.1-4.3-5.8	4.5-5.7-7.9	3.0-4.1-5.7	4.4-5.6-7.8	2.9-4.1-5.6	4.4-5.6-7.6	2.8-4.0-5.6	4.3-5.5-7.6	2.8-4.0-5.5
		NC		38	45	28	34	23	29	20	26	<15	16	<15	<15	<15	<15	<15	<15
212		Vc		5.2		3.8		3.4		3.1		2.5		2.3		2.0		1.9	
		Pv		4.220	7.670	2.180	3.960	1.600	2.900	1.270	2.290	0.580	1.070	0.114	0.216	0.068	0.130	0.050	0.096
		Pt		5.740	9.190	2.950	4.720	2.360	3.660	1.780	2.790	0.840	1.320	0.185	0.280	0.113	0.170	0.084	0.126
		Th.		5.2-6.4-8.8	4.0-5.2-6.7	5.2-6.4-8.8	3.7-4.9-6.4	4.9-6.1-8.5	3.7-4.9-6.4	4.9-6.1-8.5	3.4-4.6-6.1	4.6-5.8-8.5	3.1-4.6-6.1	4.6-5.8-8.4	3.1-4.5-6.0	4.5-5.7-8.3	2.9-4.4-5.9	4.5-5.7-8.3	2.9-4.3-5.8
		NC		42	48	31	38	27	33	24	30	<15	18	<15	<15	<15	<15	<15	<15
236		Vc				4.3		3.8		3.4		2.8		2.5		2.3		2.1	
		Pv				2.690	4.880	1.980	3.580	1.550	2.820	0.740	1.320	0.199	0.368	0.112	0.208	0.079	0.148
		Pt				3.710	5.890	2.740	4.340	2.310	3.580	1.240	1.830	0.401	0.566	0.244	0.337	0.182	0.247
		Th.				5.5-6.7-9.4	4.0-5.2-6.7	5.5-6.7-9.4	4.0-5.2-6.4	5.2-6.4-9.1	4.0-4.3-6.1	4.9-6.4-9.1	3.7-4.9-6.4	4.8-6.3-9.0	3.7-4.5-6.2	4.6-6.2-8.9	3.6-4.4-6.1	4.5-6.1-8.8	3.6-4.4-6.0
		NC				35	41	30	37	27	33	16	22	<15	<15	<15	<15	<15	<15
260		Vc				4.7		4.2		3.8		3.1		2.8		2.5		2.3	
		Pv				3.250	5.890	2.390	4.340	1.880	3.430	0.890	1.600	0.610	1.120	0.034	0.056	0.020	0.034
		Pt				4.520	7.160	3.400	5.360	2.640	4.190	1.400	2.110	1.120	1.630	0.083	0.116	0.054	0.074
		Th.				5.8-7.0-10.1	4.3-5.5-7.3	5.8-7.0-9.8	4.3-5.5-7.0	5.5-6.7-9.8	4.3-5.2-6.7	5.2-6.7-9.5	4.0-5.2-6.7	5.2-6.4-9.5	4.0-5.2-6.7	5.0-6.3-9.3	3.9-5.1-6.5	4.9-6.3-9.2	3.9-5.0-6.4
		NC				38	44	33	40	30	36	19	25	<15	19	<15	<15	<15	<15





REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

\*SI UNITS

		900 x 150				1050 x 150				900 x 200				1050 x 200				900 x 250				1050 x 200				900 x 300				1050 x 300			
500 x 250		450 x 300				500 x 300				600 x 300				750 x 250				900 x 250				1050 x 200				1050 x 300							
0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°						
0.118		0.126		0.141		0.146		0.170		0.178		0.198		0.214		0.228		0.302															
0.077	0.064	0.085	0.071	0.097	0.081	0.103	0.086	0.121	0.100	0.126	0.105	0.144	0.120	0.156	0.130	0.190	0.158	0.228	0.189														
1.0																																	
0.044	0.081																																
0.068	0.102																																
29-3.6-6.1	15-27-4.0																																
<15	<15																																
1.2																																	
0.063	0.119																																
0.081	0.133																																
33-4.2-6.3	18-30-4.5																																
<15	<15																																
1.4																																	
0.086	0.157																																
0.161	0.234																																
40-5.2-7.3	24-37-4.8																																
<15	<15																																
1.6																																	
0.116	0.205																																
0.169	0.255																																
43-5.5-7.5	27-40-5.5																																
<15	<15																																
1.8		1.7																															
0.041	0.077	0.030	0.057																														
0.069	0.103	0.051	0.076																														
44-5.6-8.3	28-43-5.8	44-5.6-8.3	28-42-5.7																														
<15	<15	<15	<15																														
2.0		1.9		1.7																													
0.063	0.117	0.044	0.083	0.025	0.047																												
0.149	0.200	0.110	0.146	0.068	0.088																												
44-6.1-8.8	35-43-6.0	43-6.0-8.7	35-42-6.0	42-5.9-8.6	34-4.1-5.9																												
<15	<15	<15	<15	<15	<15																												
2.2		2.1		1.8		1.8		1.5																									
0.014	0.024	0.008	0.014	0.004	0.006	0.003	0.005	0.001	0.002																								
0.040	0.054	0.026	0.034	0.013	0.016	0.011	0.013	0.004	0.005																								
49-6.2-9.2	38-5.0-6.4	48-6.2-9.1	38-5.0-6.3	4.6-6.0-9.0	3.7-4.9-6.2	4.6-6.0-9.0	3.7-4.9-6.2	4.4-5.9-8.8	3.6-4.8-6.0																								
<15	<15	<15	<15	<15	<15	<15	<15	<15	<15																								





REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

L/S	SIZE	300 x 150		300 x 200		450 x 150		500 x 150		600 x 150		750 X 150		600 X 200	
								300 x 250				450 X 250			
	DEFLECTION	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°
	Ac	0.041		0.055		0.062		0.069		0.083		0.093		0.105	
	Ak	0.023	0.019	0.030	0.025	0.033	0.028	0.036	0.030	0.049	0.041	0.057	0.048	0.067	0.056
	Vc	5.1		4.6		4.1		3.4		3.0		2.7		2.5	
283	Pv			3.860	7.040	3.100	5.160	2.240	4.060	1.040	1.910	0.740	1.320	0.510	0.910
	Pt			5.380	8.560	4.370	6.430	3.250	5.080	1.800	2.670	1.240	1.830	1.020	1.420
	Th.			61-73-104	46-58-76	61-73-101	46-55-73	58-70-101	46-55-70	58-70-98	43-55-70	55-67-98	43-55-70	55-67-94	43-53-70
	NC			41	4.7	36	42	33	39	22	28	16	22	<15	16
	Vc			5.4		4.8		4.0		3.5		3.2		2.9	
330	Pv					3.860	7.040	3.050	5.540	1.420	2.590	0.990	1.800	0.690	1.240
	Pt					5.380	8.560	4.320	6.810	2.440	3.610	1.750	2.570	0.190	1.750
	Th.					64-76-104	49-61-76	64-73-101	49-58-73	61-73-101	46-58-73	58-70-101	46-58-73	58-70-97	46-55-73
	NC					41	47	38	44	26	33	20	27	<15	21
	Vc			5.5		4.5		4.1		3.6		3.4		3.4	
378	Pv							3.990	7.240	1.880	3.380	1.290	2.360	0.910	1.630
	Pt							5.510	8.760	3.150	4.650	2.310	3.380	1.680	2.390
	Th.							64-76-107	52-61-79	64-76-107	52-61-76	61-73-104	49-61-76	61-73-100	49-58-76
	NC							42	48	31	37	25	31	19	25
	Vc			5.1		4.6		4.1		3.8		3.8		3.8	
425	Pv							2.360	4.290	1.650	3.000	1.140	2.080	0.940	1.680
	Pt							3.890	5.820	2.920	4.270	2.160	3.100	1.700	2.440
	Th.							70-82-116	55-67-82	70-82-113	52-64-79	67-79-113	52-61-79	64-76-110	
	NC							34	41	28	35	22	29	19	25
	Vc			5.7		5.1		4.5		4.2		4.2		4.2	
472	Pv							2.920	5.280	2.030	3.680	1.400	2.570	1.140	2.080
	Pt							4.700	7.060	3.560	5.210	2.670	3.840	2.160	3.100
	Th.							76-92-125	58-70-85	76-92-122	58-67-82	73-88-119	55-64-82	70-85-116	
	NC							38	44	32	38	26	32	23	29
	Vc			6.8		6.1		5.4		5.0		5.0		5.0	
566	Pv							4.190	7.620	2.920	5.310	2.030	3.680	1.650	3.000
	Pt							6.730	10.160	4.950	7.340	3.560	5.210	3.180	4.520
	Th.							82-113-140	64-76-92	82-101-137	64-73-89	82-98-134	58-70-85	79-94-128	
	NC							43	50	36	44	32	38	28	35
	Vc			7.1		6.3		5.9		5.9		5.9		5.9	
661	Pv									3.610	7.240	2.770	5.000	2.260	4.100
	Pt									6.400	10.030	4.800	7.040	4.290	6.120
	Th.									98-119-158	70-79-94	94-113-146	64-76-91	91-110-149	
	NC									41	49	36	43	33	40
	Vc			7.2		6.7		6.7		6.7		6.7		6.7	
755	Pv											3.610	6.550	2.950	5.330
	Pt											6.400	9.350	5.470	7.870
	Th.											98-119-158	67-82-98	98-119-155	
	NC											41	47	37	44







REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

\*SI UNITS

Table with columns for dimensions (900 x 150, 750 x 200, 1050 X 150, 900 x 200, 1050 x 200) and angles (0°, 45°). Rows include performance metrics like 0.118, 0.077, 0.018, etc., and various alphanumeric codes.





REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

\*SI UNITS

L/S	SIZE	300 x 150		300 x 200		450 x 150		500 x 150		600 x 150		750 x 150		600 x 200		500 x 250			
								300 x 250				450 x 250				500 x 250			
	DEFLECTION	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°		
	Ac	0.041		0.055		0.062		0.069		0.083		0.093		0.105		0.112		0.118	
	Ak	0.023	0.019	0.030	0.025	0.033	0.028	0.036	0.030	0.049	0.041	0.057	0.048	0.067	0.056	0.073	0.061	0.077	0.064
850	Vc	7.6																7.2	
	Pv															3.710	6.760	3.300	5.970
	Pt															6.760	9.800	6.350	9.020
	Th.															10.4-12.8-16.5	7.3-8.5-10.1	10.1-12.8-16.2	7.3-8.2-9.4
	NC															41	48	39	46
944	Vc	8.0																	
	Pv																	4.060	7.370
	Pt																	7.870	11.180
	Th.																	10.7-13.4-17.1	7.9-8.8-10.1
	NC																	43	49
1133	Vc																		
	Pv																		
	Pt																		
	Th.																		
	NC																		
1322	Vc																		
	Pv																		
	Pt																		
	Th.																		
	NC																		
1511	Vc																		
	Pv																		
	Pt																		
	Th.																		
	NC																		
1699	Vc																		
	Pv																		
	Pt																		
	Th.																		
	NC																		

SYMBOLS:

Deflection: The Angle of deflection of the face blades

L/Sec : Air volume in Litres Per second

A<sub>c</sub> : Core Area in square meter

A<sub>k</sub> : Effective face area in square meter square per 1000mm length

V<sub>c</sub> : Core Velocity in meter per second

Pt : Total Pressure in mm water gauge

Th : Throw in meters

CONDITIONS

\* Supply

\* With Ceiling effect

\* Noise Criteria values are based on (10 dB) room attenuation

\* Damper is fully open





REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

\* SI UNITS

Table with 18 columns and 40 rows of performance data for various grille and register sizes (900x150, 750x200, 1050x150, 900x200, 1050x200, 450x300, 500x300, 600x300, 750x250, 900x250, 1050x200, 750x300, 900x300, 1050x300) at 0 and 45 degrees. Values include static pressure, noise criteria, and area factor.

NOTES

- \* The large throw values are based on the minimum terminal velocity of 0.25m/sec.
\* The middle throw values are based on the middle terminal velocity of 0.50 m/sec.
\* The small throw values are based on the maximum terminal velocity of 0.75m/sec.

CORRECTION FOR FLOW WITHOUT CEILING EFFECT:

- 1. Noise Criteria No correction required
2. Static pressure No correction required
3. Area Factor No correction required
4. Throw and drop some work has been done to show that the throw will be reduced by approximately 15-20% and the drop increased by 5-15%.





**REGISTERS & GRILLES**  
PERFORMANCE DATA - RETURN

**SAR, SAG, RAR, RAG**

\*SI UNITS

L/S	SIZE	300 x 150		450 x 150		500 x 150		600 x 150		750 x 150		900 x 150		1050 x 150		1060 x 200				
		300 x 200	300 x 250	450 x 200	450 x 250	500 x 200	500 x 250	600 x 200	600 x 250	750 x 200	750 x 250	900 x 200	900 x 250	1050 x 200	1050 x 250	1060 x 300	1060 x 300			
94	Ac	0.041	0.055	0.062	0.069	0.083	0.093	0.105	0.112	0.118	0.126	0.141	0.146	0.170	0.178	0.198	0.214	0.228	0.302	
	Vc	2.315	1.660	1.485	1.323	1.096														
	Pv	0.331	0.166	0.133	0.106	0.073														
	Ps	0.760	0.575	0.533	0.469	0.405														
	NC	<15	<15	<15	<15	<15														
118	Vc	2.906	2.142	1.856	1.654	1.370	1.228													
	Pv	0.521	0.283	0.208	0.165	0.113	0.091													
	Ps	1.020	0.760	0.649	0.582	0.488	0.440													
	NC	<15	<15	<15	<15	<15	<15													
142	Vc	3.498	2.577	2.227	1.985	1.644	1.473	1.311	1.224											
	Pv	0.755	0.410	0.299	0.238	0.163	0.131	0.104	0.090											
	Ps	1.520	1.020	0.805	0.691	0.538	0.465	0.398	0.363											
	NC	15	<15	<15	<15	<15	<15	<15	<15											
165	Vc	4.064	2.995	2.598	2.316	1.918	1.719	1.530	1.427	1.361	1.269									
	Pv	1.019	0.553	0.408	0.324	0.222	0.178	0.141	0.123	0.112	0.097									
	Ps	2.030	1.270	1.107	0.927	0.694	0.586	0.490	0.440	0.409	0.367									
	NC	24	16	<15	<15	<15	<15	<15	<15	<15	<15									
189	Vc	4.655	3.430	3.068	2.647	2.192	1.964	1.748	1.631	1.555	1.450	1.293	1.256							
	Pv	1.337	0.726	0.581	0.423	0.290	0.233	0.185	0.161	0.146	0.127	0.101	0.095							
	Ps	2.540	1.780	1.020	1.197	0.824	0.663	0.527	0.459	0.418	0.364	0.290	0.274							
	NC	27	19	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15							
212	Vc	5.222	3.848	3.442	3.068	2.466	2.210	1.967	1.835	1.749	1.632	1.455	1.413	1.210						
	Pv	1.682	0.913	0.731	0.581	0.367	0.295	0.234	0.203	0.185	0.161	0.128	0.121	0.088						
	Ps	3.300	2.290	1.270	1.020	0.564	0.440	0.339	0.290	0.260	0.222	0.172	0.161	0.113						
	NC	29	22	16	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15						
236	Vc	5.813	4.283	3.831	3.415	2.830	2.456	2.186	2.039	1.944	1.813	1.616	1.570	1.344	1.287	1.157				
	Pv	2.084	1.132	0.905	0.720	0.494	0.364	0.288	0.251	0.228	0.198	0.158	0.149	0.109	0.100	0.081				
	Ps	4.060	2.790	1.520	1.270	1.020	0.722	0.567	0.491	0.445	0.385	0.304	0.286	0.207	0.190	0.152				
	NC	31	25	20	15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15				





**REGISTERS & GRILLES**

**PERFORMANCE DATA - RETURN**

**SAR, SAG, RAR, RAG**

\*SI UNITS

L/S	SIZE	450 x 150	500 x 150	600 x 150	750 x 150	600 x 200	900 x 150	1050 x 150	900 x 200	1050 x 200	900 x 250	1050 x 250	900 x 300	1050 x 300					
		300 x 200	300 x 250	450 x 200	450 x 250	500 x 200	500 x 250	450 x 300	600 x 250	600 x 300	750 x 250	750 x 300	900 x 300	1050 x 300					
260	Ac	0.041	0.055	0.062	0.069	0.083	0.093	0.105	0.112	0.118	0.126	0.141	0.146	0.178	0.198	0.214	0.228	0.302	
	Vc	6.404	4.719	4.221	3.763	3.118	2.701	2.404	2.243	2.138	1.994	1.778	1.727	1.416	1.273				
	Pv	2.530	1.374	1.099	0.873	0.600	0.441	0.349	0.304	0.304	0.276	0.240	0.191	0.180	0.121	0.098			
	Ps	4.830	3.300	2.030	1.780	1.270	0.879	0.702	0.615	0.615	0.561	0.490	0.393	0.372	0.254	0.207			
	NC	34	29	24	20	17	15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	
283	Vc	6.970	5.136	4.594	4.096	3.393	3.040	2.623	2.447	2.333	2.175	1.940	1.884	1.545	1.388	1.281			
	Pv	2.997	1.627	1.302	1.035	0.710	0.570	0.415	0.362	0.329	0.286	0.227	0.214	0.144	0.116	0.099			
	Ps	5.840	3.810	2.290	2.030	1.520	1.020	0.832	0.721	0.653	0.565	0.445	0.419	0.304	0.223	0.189			
	NC	38	33	28	25	22	16	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	
	Vc	8.128	5.989	5.357	4.776	3.957	3.545	3.155	2.855	2.721	2.538	2.263	2.198	1.802	1.620	1.495	1.261		
330	Pv	4.075	2.213	1.770	1.407	0.966	0.775	0.614	0.492	0.447	0.389	0.309	0.292	0.196	0.158	0.135	0.096		
	Ps	7.870	5.330	3.050	2.790	2.030	1.520	1.020	1.041	0.940	0.811	0.635	0.597	0.392	0.312	0.263	0.183		
	NC	41	37	33	31	29	21	15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	
	Vc	9.310	6.860	6.136	5.470	4.532	4.060	3.614	3.372	3.214	2.901	2.586	2.512	2.150	1.851	1.708	1.441	1.213	
	Pv	5.347	2.903	2.323	1.846	1.267	1.017	0.806	0.701	0.637	0.508	0.404	0.381	0.279	0.256	0.207	0.176	0.125	0.089
378	Ps	10.410	7.110	4.060	3.560	2.790	2.030	1.520	1.270	1.020	1.066	0.833	0.782	0.560	0.406	0.341	0.237	0.163	
	NC	45	40	37	35	32	25	20	15	<15	<15	<15	<15	<15	<15	<15	<15	<15	
	Vc	7.713	6.899	6.151	5.096	4.565	4.063	3.614	3.372	3.214	2.901	2.586	2.512	2.150	1.851	1.708	1.441	1.213	
	Pv	3.670	2.936	2.334	1.602	1.286	1.018	0.806	0.887	0.806	0.643	0.511	0.482	0.353	0.324	0.262	0.223	0.159	0.112
	Ps	8.890	5.330	4.830	3.560	2.540	1.780	1.520	1.520	1.520	1.159	0.893	0.836	0.588	0.533	0.418	0.349	0.237	0.160
425	NC	45	40	38	36	36	31	24	20	16	<15	<15	<15	<15	<15	<15	<15	<15	
	Vc	7.662	6.831	6.151	5.096	4.565	4.063	3.614	3.372	3.214	2.901	2.586	2.512	2.150	1.851	1.708	1.441	1.213	
	Pv	3.622	2.878	2.334	1.602	1.286	1.018	0.806	0.887	0.806	0.643	0.511	0.482	0.353	0.324	0.262	0.223	0.159	0.112
	Ps	6.600	5.840	4.320	3.050	2.290	1.780	1.520	1.780	1.780	1.270	1.020	0.937	0.650	0.587	0.456	0.378	0.253	0.169
	NC	44	43	40	40	36	30	22	26	22	16	<15	<15	<15	<15	<15	<15	<15	<15
472	Vc	8.191	6.787	6.079	5.411	4.813	4.489	4.003	3.887	3.225	2.688	2.314	2.135	1.801	1.516				
	Pv	4.139	2.841	2.280	1.806	1.573	1.429	1.243	0.988	0.932	0.628	0.576	0.466	0.397	0.282	0.200			
	Ps	8.380	6.350	4.320	3.300	2.790	2.540	2.030	1.520	1.520	1.270	0.955	0.856	0.653	0.533	0.346	0.224		
	NC	48	45	39	35	30	27	21	18	15	15	<15	<15	<15	<15	<15	<15	<15	
	Vc	8.191	6.787	6.079	5.411	4.813	4.489	4.003	3.887	3.225	2.688	2.314	2.135	1.801	1.516				
566	Pv	4.139	2.841	2.280	1.806	1.573	1.429	1.243	0.988	0.932	0.628	0.576	0.466	0.397	0.282	0.200			
	Ps	8.380	6.350	4.320	3.300	2.790	2.540	2.030	1.520	1.520	1.270	0.955	0.856	0.653	0.533	0.346	0.224		
	NC	48	45	39	35	30	27	21	18	15	15	<15	<15	<15	<15	<15	<15	<15	
	Vc	8.191	6.787	6.079	5.411	4.813	4.489	4.003	3.887	3.225	2.688	2.314	2.135	1.801	1.516				
	Pv	4.139	2.841	2.280	1.806	1.573	1.429	1.243	0.988	0.932	0.628	0.576	0.466	0.397	0.282	0.200			





**REGISTERS & GRILLES**  
PERFORMANCE DATA - RETURN

**SAR, SAG, RAR, RAG**

\*SI UNITS

L/S	SIZE	300 x 150		450 x 150		500 x 150		600 x 150		750 x 150		900 x 150		1050 x 150		900 x 200		1050 x 200			
		300 x 200	300 x 250	450 x 200	450 x 250	500 x 200	500 x 250	600 x 200	600 x 250	750 x 200	750 x 250	900 x 200	900 x 250	1050 x 200	1050 x 250	900 x 250	900 x 300	1050 x 300	1050 x 300		
661	Ac	0.041	0.055	0.062	0.069	0.083	0.093	0.105	0.112	0.118	0.126	0.141	0.146	0.170	0.178	0.198	0.214	0.228	0.302		
	Vc				7.100		7.100	6.319	5.897	5.621	5.242	4.675	4.540	3.886	3.722	3.239	2.990	2.521	2.122		
	Pv				3.110		3.110	2.463	2.145	1.949	1.695	1.348	1.271	0.932	0.854	0.634	0.540	0.384	0.272		
	Ps				6.100		6.100	4.320	3.810	3.560	2.790	2.290	2.030	1.520	1.270	0.863	0.716	0.481	0.322		
755	NC				44		44	39	34	31	27	23	18	15	<15	<15	<15	<15	<15		
	Vc						7.218	6.735	6.420	5.987	5.339	5.185	4.439	4.251	3.821	3.526	2.882	2.425			
	Pv						3.214	2.798	2.543	2.211	1.759	1.659	1.215	1.115	0.901	0.767	0.502	0.365			
	Ps						5.840	4.830	4.570	3.560	2.790	2.540	1.780	1.780	1.270	1.020	0.652	0.432			
850	NC						42	38	35	31	27	23	18	15	<15	<15	<15	<15	<15		
	Vc						8.126	7.583	7.228	6.741	6.011	5.838	4.997	4.786	4.302	3.970	3.730	2.729			
	Pv						4.074	3.547	3.223	2.803	2.229	2.102	1.540	1.413	1.141	0.972	0.858	0.450			
	Ps						7.370	6.100	5.590	4.570	3.560	3.050	2.290	2.030	1.780	1.520	1.020	0.783			
944	NC						47	43	40	36	32	29	22	22	17	15	<15	<15	<15		
	Vc							8.421	8.027	7.486	6.676	6.484	5.550	5.315	4.777	4.490	4.142	3.130			
	Pv							4.374	3.975	3.457	2.749	2.593	1.900	1.743	1.408	1.199	1.058	0.604			
	Ps							7.620	7.110	5.590	4.570	3.810	2.790	2.540	2.030	1.780	1.270	0.760			
1133	NC							48	44	40	37	34	27	27	22	18	15	<15	<15		
	Vc							8.985	8.013	7.782	6.661	6.661	5.550	5.315	4.777	4.490	4.142	3.130			
	Pv							4.980	3.961	3.735	2.737	2.511	2.028	1.728	1.525	0.871					
	Ps							8.130	6.600	5.590	4.060	3.810	3.050	2.540	2.030	1.780	1.270	0.760			
1322	NC							45	42	37	31	28	24	24	18	15	<15	<15	<15		
	Vc								9.349	9.080	7.772	7.444	6.690	6.175	5.801	4.383					
	Pv								5.392	5.086	3.726	3.418	2.761	2.352	2.076	1.185					
	Ps								8.890	7.620	5.590	5.080	4.060	3.560	2.290	1.520					
1510	NC								46	41	35	33	29	29	23	17	15				
	Vc								8.877	8.502	7.642	7.053	6.626	5.007							
	Pv								4.861	4.459	3.602	3.068	2.708	1.546							
	Ps								7.370	6.600	5.330	4.570	3.050	2.030							
	NC								39	37	33	29	21	17							





## REGISTERS & GRILLES PERFORMANCE DATA - RETURN

### SAR, SAG, RAR, RAG

\*SI UNITS

L/S	SIZE	300 x 150	450 x 150	500 x 150	600 x 150	750 x 150	900 x 150	1050 x 150		1050 x 200	*SI UNITS								
		300 x 200	300 x 250	450 x 200	500 x 200	450 x 250	500 x 250	600 x 200	600 x 250	750 x 200		900 x 200							
1699	Ac	0.041	0.055	0.062	0.069	0.083	0.083	0.105	0.112	0.118	0.126	0.141	0.146	0.170	0.178	0.198	0.214	0.228	0.302
	Vc															8.598	7.936	7.455	5.633
	Pv															4.560	3.885	3.428	1.958
	Ps															6.860	5.590	3.810	2.790
1888	NC															38	34	26	20
	Vc															8.818	8.284	7.455	6.260
	Pv															4.797	4.234	2.417	
	Ps															7.110	4.830	3.300	
2077	NC															39	32	24	
	Vc															9.114	6.887		
	Pv															5.124	2.926		
	Ps															5.840	4.060		
2266	NC																36	28	
	Vc																		7.513
	Pv																		3.482
	Ps																		4.830

#### SYMBOLS:

L/Sec : Air volume in Litres Per second

A<sub>c</sub> : Core Area in square meter

V<sub>c</sub> : Core Velocity in meter per second

Pv : Velocity Pressure in millimeter water gauge

Ps : Negative static pressure in millimeters water gauge

NC : Noise criteria

#### CONDITIONS

\* Return

\* Damper is fully open

\* Noise Criteria is based on (10 dB) room attenuation.





REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

\*IMPERIAL UNITS

CFM	SIZE	12 x 6		12 x 8		18 x 6		20 x 6		24 x 6		30 x 6		24 x 8		20 x 10			
								12 x 10		18 x 8		20 x 8		18 x 10					
		DEFLECTION		0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°
	Ac	0.451		0.612		0.684		0.768		0.927		1.034		1.162		1.246		1.307	
	Ak	0.2430	0.2020	0.3200	0.2660	0.3600	0.2990	0.3920	0.3250	0.5290	0.4390	0.6180	0.5130	0.7240	0.6010	0.7880	0.6540	0.8300	0.6890
200	Vc	443		327		292		260		216		193		172		161			
	Pv	0.0330	0.0610	0.0166	0.0305	0.0123	0.0224	0.0059	0.0107	0.0032	0.0058	0.0023	0.0040	0.0015	0.0027	0.0012	0.0022		
	Pt	0.0430	0.0710	0.0242	0.0382	0.0175	0.0275	0.0090	0.0136	0.0052	0.0076	0.0038	0.0054	0.0027	0.0038	0.0022	0.0030		
	Th.	11-13-20	6-9-14	10-12-19	5-8-13	9-11-18	4-7-12	8-10-17	3-6-11	8-10-17	3-5-11	7-9-16	2-5-10	7-9-15	2-5-10	7-8-15	2-4-9		
	NC	16	22	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15		
250	Vc	554		408		365		326		270		242		215		201		191	
	Pv	0.0510	0.0930	0.0260	0.0480	0.0194	0.0353	0.0095	0.0173	0.0052	0.0095	0.0037	0.0067	0.0025	0.0046	0.0020	0.0037	0.0017	0.0032
	Pt	0.0710	0.1130	0.0360	0.0580	0.0277	0.0434	0.0138	0.0213	0.0077	0.0118	0.0055	0.0084	0.0038	0.0058	0.0031	0.0047	0.0027	0.0040
	Th.	12-16-22	7-11-16	12-15-22	7-10-16	12-14-21	7-11-16	12-14-21	7-10-15	11-13-21	6-10-14	11-13-21	6-10-14	10-12-20	5-9-14	10-12-20	5-9-13	10-12-20	5-9-13
	NC	23	29	<15	19	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
300	Vc	665		490		438		391		324		290		258		241		230	
	Pv	0.0740	0.1340	0.0380	0.0690	0.0280	0.0510	0.0136	0.0251	0.0075	0.0139	0.0052	0.0098	0.0036	0.0068	0.0029	0.0055	0.0025	0.0047
	Pt	0.1040	0.1640	0.0580	0.0890	0.0380	0.0610	0.0182	0.0293	0.0098	0.0159	0.0068	0.0111	0.0047	0.0076	0.0037	0.0061	0.0032	0.0052
	Th.	14-17-24	9-13-17	14-16-24	8-12-18	13-16-23	8-12-17	12-15-22	7-11-16	12-15-22	7-11-16	12-15-21	6-11-16	11-14-21	6-10-15	11-14-21	6-10-15	11-14-21	6-10-15
	NC	29	35	19	25	<15	20	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
350	Vc	776		572		511		456		378		338		301		281		268	
	Pv	0.1010	0.1820	0.0520	0.0940	0.0380	0.0690	0.0300	0.0550	0.0102	0.0185	0.0072	0.0130	0.0049	0.0090	0.0040	0.0072	0.0034	0.0062
	Pt	0.1410	0.2220	0.0720	0.1140	0.0580	0.0890	0.0400	0.0650	0.0173	0.0257	0.0125	0.0185	0.0089	0.0131	0.0073	0.0106	0.0063	0.0092
	Th.	15-19-26	10-14-19	15-19-26	9-13-19	14-18-25	9-13-18	14-18-25	9-13-17	14-18-25	8-13-17	14-18-24	8-12-17	13-17-24	8-12-16	13-17-24	8-12-16	13-17-24	8-12-16
	NC	34	40	24	30	19	25	16	22	<15	19	<15	16	<15	<15	<15	<15	<15	<15
400	Vc	887		653		584		521		431		387		344		321		306	
	Pv	0.1310	0.2380	0.0680	0.1230	0.0500	0.0900	0.0390	0.0710	0.0135	0.0241	0.0095	0.0170	0.0066	0.0117	0.0053	0.0094	0.0046	0.0081
	Pt	0.1810	0.2880	0.0980	0.1530	0.0700	0.1100	0.0590	0.0910	0.0193	0.0297	0.0137	0.0210	0.0096	0.0145	0.0077	0.0117	0.0066	0.0100
	Th.	16-20-28	12-15-20	16-20-28	11-14-20	15-19-27	11-14-19	15-19-26	10-14-19	15-19-26	10-14-19	15-19-25	10-13-19	14-18-25	9-13-18	14-18-25	9-13-18	14-18-25	9-13-18
	NC	38	45	28	34	23	29	20	26	<15	16	<15	<15	<15	<15	<15	<15	<15	<15
450	Vc	998		735		658		586		485		435		387		361		344	
	Pv	0.1660	0.3020	0.0860	0.1560	0.0630	0.1140	0.0500	0.0900	0.0230	0.0420	0.0045	0.0085	0.0027	0.0051	0.0020	0.0038	0.0016	0.0030
	Pt	0.2260	0.3620	0.1160	0.1860	0.0930	0.1440	0.0700	0.1100	0.0330	0.0520	0.0073	0.0110	0.0044	0.0067	0.0033	0.0050	0.0027	0.0040
	Th.	17-21-29	13-17-22	17-21-29	12-16-21	16-20-28	12-16-21	16-20-28	11-15-20	15-19-28	10-15-20	15-19-28	10-15-20	15-19-27	10-14-19	15-19-27	9-14-19	15-18-27	9-14-19
	NC	42	48	31	38	27	33	24	30	<15	18	<15	<15	<15	<15	<15	<15	<15	<15
500	Vc			817		731		651		539		483		430		401		383	
	Pv			0.1060	0.1920	0.0780	0.1410	0.0610	0.1110	0.0290	0.0520	0.0078	0.0145	0.0044	0.0082	0.0031	0.0058	0.0025	0.0046
	Pt			0.1460	0.2320	0.1080	0.1710	0.0910	0.1410	0.0490	0.0720	0.0158	0.0223	0.0096	0.0133	0.0072	0.0097	0.0058	0.0079
	Th.			18-22-31	13-17-22	18-22-31	13-17-21	17-21-30	13-16-20	16-21-30	12-16-21	16-21-30	12-15-20	15-20-29	12-15-20	15-20-29	12-14-20	15-20-29	12-14-20
	NC			35	41	30	37	27	33	16	22	<15	<15	<15	<15	<15	<15	<15	<15
550	Vc			898		804		716		593		532		473		442		421	
	Pv			0.1280	0.2320	0.0940	0.1710	0.0740	0.1350	0.0350	0.0630	0.0240	0.0441	0.0013	0.0022	0.0008	0.0013	0.0006	0.0009
	Pt			0.1780	0.2820	0.1340	0.2110	0.1040	0.1650	0.0550	0.0830	0.0440	0.0642	0.0032	0.0046	0.0021	0.0029	0.0016	0.0021
	Th.			19-23-33	14-18-24	19-23-32	14-18-23	18-22-32	14-17-22	17-22-31	13-17-22	17-21-31	13-17-22	16-21-31	13-17-21	16-21-30	13-17-21	16-20-30	13-16-21
	NC			38	44	33	40	30	36	19	25	<15	19	<15	<15	<15	<15	<15	<15









REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

\*IMPERIAL UNITS

CFM	SIZE	12 x 6		12 x 8		18 x 6		20 x 6		24 x 6		30 x 6		24 x 8		20 x 10			
		12 x 10		12 x 12		18 x 10		24 x 8		20 x 10		18 x 10		24 x 8		20 x 10			
	DEFLECTION	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°		
	Ac	0.4511		0.6122		0.6844		0.7678		0.927		1.0344		1.1622		1.3067			
	Ak	0.243	0.202	0.320	0.266	0.360	0.299	0.392	0.325	0.529	0.439	0.618	0.5130	0.724	0.601	0.788	0.654	0.830	0.689
600	Vc	980		877		781		647		580		516		482		459			
	Pv			0.1520	0.2770	0.1220	0.2030	0.0880	0.1600	0.0410	0.0750	0.0290	0.0520	0.0200	0.0360	0.0010	0.0015	0.0007	0.0011
	Pt			0.2120	0.3370	0.1720	0.2530	0.1280	0.2000	0.0710	0.1050	0.0490	0.0720	0.0400	0.0560	0.0016	0.0022	0.0012	0.0016
	Th.			20-24-34	15-19-25	20-24-33	15-18-24	19-23-33	15-18-23	19-23-32	14-18-23	18-22-32	14-18-23	18-22-31	14-19-23	18-22-31	14-17-22	18-22-31	14-17-22
	NC			41	47	36	42	33	39	22	28	16	22	<15	16	<15	<15	<15	<15
700	Vc			1023		912		755		677		602		562		536			
	Pv					0.1520	0.2770	0.1200	0.2180	0.0560	0.1020	0.0390	0.0710	0.0270	0.049	0.0220	0.0400	0.0200	0.0360
	Pt					0.2120	0.3370	0.1700	0.2680	0.0960	0.1420	0.0690	0.1012	0.0470	0.069	0.0400	0.0600	0.0400	0.0560
	Th.					21-25-34	16-20-25	21-24-33	16-19-24	20-24-33	15-19-24	19-23-33	15-19-24	19-23-32	15-18-24	18-22-32	15-18-23	18-21-31	15-18-23
	NC					41	47	38	44	26	33	20	27	<15	21	<15	17	<15	15
800	Vc			1042		863		773		688		642		612					
	Pv					0.1570	0.2850	0.0740	0.1330	0.0510	0.0930	0.0360	0.0640	0.0290	0.0520	0.0260	0.0460		
	Pt					0.2170	0.3450	0.1240	0.1830	0.0910	0.1331	0.0660	0.0940	0.0490	0.0720	0.0460	0.0466		
	Th.					22-25-35	17-20-26	21-25-35	17-20-25	20-24-34	16-20-25	20-24-33	16-19-25	19-24-33	16-19-24	19-23-32	16-19-24		
	NC					42	48	31	37	25	31	19	25	15	22	<15	20		
900	Vc			971		870		774		723		689							
	Pv					0.0930	0.1690	0.0650	0.1180	0.0450	0.0820	0.0370	0.0660	0.0320	0.0590				
	Pt					0.1530	0.2290	0.1150	0.1681	0.0850	0.1220	0.0670	0.0960	0.0620	0.0890				
	Th.					23-27-38	18-22-27	23-27-37	17-21-26	22-26-37	17-20-26	21-25-36	17-20-25	21-24-36	17-20-25				
	NC					34	41	28	35	22	29	19	25	17	23				
1000	Vc			1079		967		860		803		765							
	Pv					0.1150	0.2080	0.0800	0.1450	0.0550	0.1010	0.0450	0.0820	0.0400	0.0730				
	Pt					0.1850	0.2780	0.1400	0.2051	0.1050	0.1510	0.0850	0.1220	0.0800	0.1130				
	Th.					25-30-41	19-23-28	25-30-40	19-22-27	24-29-29	18-21-27	23-28-38	18-21-26	23-27-38	17-21-26				
	NC					38	44	32	38	26	32	23	29	21	27				
1200	Vc			1294		1160		1033		963		918							
	Pv					0.1680	0.3000	0.1150	0.2090	0.0800	0.1450	0.0650	0.1180	0.0580	0.1040				
	Pt					0.2650	0.4000	0.1950	0.2890	0.1400	0.2050	0.1250	0.1780	0.1080	0.1540				
	Th.					27-37-46	21-25-30	27-33-45	21-24-29	27-32-48	19-23-28	26-31-42	19-23-27	26-30-41	18-23-27				
	NC					43	50	36	44	36	38	28	35	26	33				
1400	Vc			1353		1205		1124		1071									
	Pv					0.1420	0.2850	0.1090	0.1970	0.0890	0.1610	0.0780	0.1420						
	Pt					0.2520	0.3949	0.1890	0.2770	0.1690	0.2410	0.1480	0.2120						
	Th.					32-39-52	23-26-31	31-37-48	21-25-30	30-36-49	21-25-30	30-35-46	20-25-29						
	NC					41	49	36	43	33	40	31	38						
1600	Vc			1377		1285		1224											
	Pv					0.1420	0.2580	0.1160	0.2100	0.1020	0.1860								
	Pt					0.2520	0.3680	0.2160	0.3100	0.2020	0.2860								
	Th.					32-39-52	22-27-32	32-36-51	22-27-31	31-38-50	22-26-30								
	NC					41	47	37	44	35	42								





REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

\*IMPERIAL UNITS

Table with 18 columns and 30 rows of performance data for various grille and register models. Columns include model numbers and performance metrics at 0 and 45 degrees.





REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

\*IMPERIAL UNITS

CFM	SIZE	12 x 6		12 x 8		18 x 6		20 x 6		24 x 6		30 x 6		24 x 8		20 x 10			
	DEFLECTION	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°	0°	45°		
	Ac	0.451		0.612		0.684		0.768		0.927		1.034		1.162		1.307			
	AK	0.243	0.202	0.320	0.266	0.360	0.299	0.392	0.325	0.529	0.439	0.618	0.5130	0.724	0.601	0.788	0.654	0.830	0.689
1800	Vc	1445																1378	
	Pv															0.1460	0.2660	0.1300	0.2350
	Pt															0.2660	0.3860	0.2500	0.3550
	Th.															34-42-54	24-28-33	33-42-56	24-27-31
	NC															41	48	39	46
2000	Vc	1531																	
	Pv																	0.1600	0.2900
	Pt																	0.3100	0.4400
	Th.																	35-44-56	26-29-33
	NC																	43	49
2400	Vc																		
	Pv																		
	Pt																		
	Th.																		
	NC																		
2800	Vc																		
	Pv																		
	Pt																		
	Th.																		
	NC																		
3200	Vc																		
	Pv																		
	Pt																		
	Th.																		
	NC																		
3600	Vc																		
	Pv																		
	Pt																		
	Th.																		
	NC																		

SYMBOLS:

Deflection: The Angle of deflection of the face blades

CFM : Air volume in Cubic Foot Per Minute

A<sub>c</sub> : Core Area in square foot

A<sub>k</sub> : Effective face area in square foot

V<sub>c</sub> : Core Velocity in foot per minute

P<sub>v</sub> : Velocity Pressure in inch water gauge

P<sub>t</sub> : Total Pressure in inch water gauge

Th : Throw in feet

NC : Noise Criteria

CONDITIONS

\* Supply

\* With Ceiling effect

\* Noise Criteria values are based on (10 dB)

\*room attenuation

\* Damper is fully open





REGISTERS & GRILLES

PERFORMANCE DATA - SUPPLY

SAR, SAG, RAR, RAG

IMPERIAL UNITS

Table with multiple columns and rows containing performance data for various grille and register models. Columns include model numbers (e.g., 36 X 6, 30 X 8, 42 X 6) and performance metrics (e.g., 0.1401, 1.572, 1.618). Rows are organized by model size and include specific throw/drop values.

NOTES

- \* The large throw values are based on the minimum terminal velocity of 50 fpm
\* The middle throw values are based on the middle terminal velocity of 100 fpm
\* The small throw values are based on the maximum terminal velocity of 150 fpm

CORRECTION FOR FLOW WITHOUT CEILING EFFECT:

- 1. Noise Criteria No correction required
2. Static pressure No correction required
3. Area Factor No correction required
4. Throw and drop some work has been done to show that the throw will be reduced by approximately 15-20% and the drop increased by 5-15%.





REGISTERS & GRILLES

PERFORMANCE DATA - RETURN

SAR, SAG, RAR, RAG

\*IMPERIAL UNITS

CFM	SIZE	DEFLECTION	12 X 6	12 X 8	18 X 6	20 X 6	24 X 6	20 X 8	30 X 6	24 X 8	20 X 10	36 X 6	30 X 8	42 X 6	36 X 8	30 X 10	42 X 8	36 X 10	42 X 10	30 X 12	36 X 12	42 X 12
			0.451	0.612	0.684	0.768	0.927	1.034	1.162	1.246	1.307	1.401	1.572	1.618	1.890	1.973	2.196	2.379	2.821	3.351		
200	Ac																					
	Vc	443	327	292	260	216																
	Pv	0.012	0.007	0.005	0.004	0.003																
	Ps	0.030	0.023	0.021	0.019	0.016																
250	NC	<15	<15	<15	<15	<15																
	Vc	554	408	365	326	270	242															
	Pv	0.019	0.010	0.008	0.007	0.005	0.004															
	Ps	0.040	0.030	0.026	0.023	0.020	0.018															
300	NC	<15	<15	<15	<15	<15	<15															
	Vc	665	490	438	391	324	290	258	241													
	Pv	0.028	0.015	0.012	0.010	0.007	0.005	0.004	0.004													
	Ps	0.0600	0.0400	0.0322	0.0276	0.0215	0.0186	0.0159	0.0145													
350	NC	15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
	Vc	776	572	511	456	378	338	301	281	268	250											
	Pv	0.038	0.020	0.016	0.013	0.009	0.007	0.006	0.005	0.004	0.004											
	Ps	0.0800	0.0500	0.0443	0.0371	0.0278	0.0234	0.0196	0.0176	0.0164	0.0147											
400	NC	24	16	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
	Vc	887	653	584	521	431	387	344	321	306	285	255	247									
	Pv	0.049	0.027	0.021	0.017	0.012	0.009	0.007	0.006	0.006	0.006	0.005	0.004	0.004								
	Ps	0.100	0.070	0.040	0.048	0.033	0.027	0.021	0.018	0.017	0.015	0.015	0.012	0.11								
450	NC	27	19	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
	Vc	998	735	658	586	485	435	387	361	344	321	286	278	238								
	Pv	0.062	0.034	0.027	0.021	0.015	0.012	0.009	0.008	0.007	0.006	0.006	0.005	0.004	0.005	0.004						
	Ps	0.130	0.090	0.050	0.040	0.023	0.018	0.014	0.012	0.010	0.009	0.009	0.007	0.006	0.006	0.005						
500	NC	29	22	16	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
	Vc	1108	817	731	651	539	483	430	401	383	357	318	309	265	253	228						
	Pv	0.077	0.042	0.033	0.026	0.018	0.015	0.012	0.010	0.009	0.008	0.008	0.006	0.004	0.004	0.004	0.003					
	Ps	0.160	0.110	0.060	0.050	0.040	0.029	0.023	0.020	0.018	0.015	0.015	0.012	0.011	0.008	0.008	0.006	0.006	0.006	0.006	0.006	0.006





**REGISTERS & GRILLES**

**PERFORMANCE DATA - RETURN**

**SAR, SAG, RAR, RAG**

\*IMPERIAL UNITS

CFM	SIZE	12 X 6	18 X 6	20 X 6	24 X 6	30 X 6	36 X 6	42 X 6	36 X 8	30 X 10	42 X 8	36 X 10	30 X 12	42 X 12
		12 X 8	18 X 8	20 X 8	24 X 8	30 X 8	36 X 8	42 X 8						
550	Ac	0.451	0.612	0.768	0.927	1.034	1.307	1.618	1.890	1.973	2.196	2.379	2.821	3.351
	Vc	1219	898	716	593	473	421	340	291	279	251			
	Pv	0.093	0.050	0.032	0.022	0.018	0.011	0.007	0.005	0.005	0.004			
	Ps	0.190	0.130	0.080	0.050	0.035	0.022	0.015	0.010	0.011	0.010			
	NC	34	29	24	17	15	<15	<15	<15	<15	<15	<15	<15	<15
600	Vc	1330	980	781	647	516	459	371	317	304	273	252		
	Pv	0.110	0.060	0.038	0.026	0.017	0.013	0.009	0.006	0.006	0.005	0.004		
	Ps	0.230	0.150	0.090	0.060	0.040	0.026	0.023	0.018	0.012	0.009	0.008		
	NC	38	33	28	22	16	<15	<15	<15	<15	<15	<15	<15	<15
	Vc	1552	1143	912	755	602	536	445	370	355	319	294	248	
700	Pv	0.150	0.082	0.052	0.036	0.023	0.018	0.012	0.009	0.008	0.006	0.005	0.004	
	Ps	0.310	0.210	0.110	0.080	0.060	0.038	0.032	0.025	0.017	0.012	0.011	0.007	
	NC	41	37	31	29	15	<15	<15	<15	<15	<15	<15	<15	<15
	Vc	1773	1307	1042	863	688	612	571	494	423	405	364	336	284
	Pv	0.196	0.106	0.068	0.046	0.037	0.023	0.020	0.015	0.011	0.010	0.008	0.007	0.005
800	Ps	0.410	0.208	0.140	0.110	0.080	0.040	0.043	0.033	0.020	0.016	0.014	0.009	0.007
	NC	45	40	35	32	20	<15	<15	<15	<15	<15	<15	<15	<15
	Vc	1470	1315	1172	971	774	689	642	556	476	456	410	378	319
	Pv	0.135	0.108	0.086	0.059	0.037	0.030	0.026	0.019	0.014	0.010	0.009	0.006	0.004
	Ps	0.350	0.210	0.190	0.140	0.100	0.060	0.046	0.036	0.024	0.021	0.017	0.014	0.009
900	NC	45	40	38	36	24	16	<15	<15	<15	<15	<15	<15	<15
	Vc	1461	1302	1079	863	688	612	571	494	423	405	364	336	284
	Pv	0.133	0.106	0.073	0.058	0.046	0.037	0.032	0.024	0.017	0.013	0.010	0.008	0.006
	Ps	0.260	0.230	0.170	0.120	0.090	0.070	0.050	0.037	0.026	0.023	0.018	0.015	0.010
	NC	44	43	40	36	30	22	16	<15	<15	<15	<15	<15	<15
1000	Vc	1563	1294	1160	963	764	689	642	556	476	456	410	378	319
	Pv	0.152	0.104	0.084	0.066	0.053	0.037	0.032	0.025	0.017	0.013	0.010	0.008	0.006
	Ps	0.330	0.250	0.170	0.130	0.100	0.060	0.046	0.036	0.024	0.021	0.017	0.014	0.009
	NC	48	45	39	30	27	21	18	15	<15	<15	<15	<15	<15
	Vc	1563	1294	1160	963	764	689	642	556	476	456	410	378	319
1200	Pv	0.152	0.104	0.084	0.066	0.053	0.037	0.032	0.025	0.017	0.013	0.010	0.008	0.006
	Ps	0.330	0.250	0.170	0.130	0.100	0.060	0.046	0.036	0.024	0.021	0.017	0.014	0.009
	NC	48	45	39	30	27	21	18	15	<15	<15	<15	<15	<15
	Vc	1563	1294	1160	963	764	689	642	556	476	456	410	378	319
	Pv	0.152	0.104	0.084	0.066	0.053	0.037	0.032	0.025	0.017	0.013	0.010	0.008	0.006





REGISTERS & GRILLES

PERFORMANCE DATA - RETURN

SAR, SAG, RAR, RAG

\*IMPERIAL UNITS

CFM	SIZE	12 X 6	18 X 6	20 X 6	24 X 6	30 X 6	24 X 8	20 X 10	36 X 6	30 X 8	42 X 6	36 X 8	30 X 10	42 X 8	36 X 10	42 X 10	36 X 12	42 X 12
		12 X 8	12 X 10	18 X 8	12 X 12	18 X 10	20 X 8	18 X 12	20 X 10	24 X 10	20 X 12	1.618	24 X 12	1.973				
1400	Ac	0.451	0.612	0.684	0.768	1.034	1.246	1.307	1.401	1.572	1.618	1.890	1.973	2.196	2.379	2.821	3.351	418
	Vc					1353	1124	1071	999	891	865	741	709	638	589	496	418	
	Pv					0.114	0.079	0.072	0.062	0.049	0.047	0.034	0.031	0.025	0.022	0.015	0.011	
	Ps					0.240	0.150	0.140	0.110	0.090	0.080	0.060	0.050	0.035	0.029	0.019	0.013	
1600	NC					44	34	31	27	23	18	15	<15	<15	<15	<15	<15	
	Vc					1377	1285	1224	1142	1018	989	847	811	729	673	567	477	
	Pv					0.118	0.103	0.093	0.081	0.065	0.061	0.045	0.041	0.033	0.028	0.020	0.014	
	Ps					0.230	0.190	0.180	0.140	0.110	0.100	0.070	0.070	0.050	0.040	0.026	0.017	
1800	NC					42	38	35	31	27	23	18	<15	<15	<15	<15	<15	
	Vc					1549	1445	1378	1285	1145	1113	952	912	820	757	638	537	
	Pv					0.150	0.130	0.118	0.103	0.082	0.077	0.057	0.052	0.042	0.036	0.025	0.018	
	Ps					0.290	0.240	0.220	0.180	0.140	0.120	0.090	0.080	0.070	0.060	0.040	0.031	
2000	NC					47	43	40	36	32	29	22	17	15	<15	<15	<15	
	Vc					1606	1531	1427	1427	1273	1236	1058	1014	911	841	709	597	
	Pv					0.161	0.146	0.146	0.127	0.101	0.095	0.070	0.064	0.052	0.044	0.031	0.022	
	Ps					0.300	0.280	0.280	0.220	0.180	0.150	0.110	0.100	0.080	0.070	0.050	0.030	
2400	NC					48	48	44	40	37	34	27	22	18	15	<15	<15	
	Vc					1713	1527	1483	1483	1270	1236	1058	1014	911	841	709	597	
	Pv					0.183	0.145	0.137	0.137	0.101	0.095	0.070	0.064	0.052	0.044	0.031	0.022	
	Ps					0.320	0.260	0.220	0.180	0.140	0.120	0.090	0.080	0.070	0.060	0.040	0.031	
2800	NC					45	42	37	31	28	24	18	15	<15	<15	<15	<15	
	Vc					1782	1731	1481	1481	1270	1236	1058	1014	911	841	709	597	
	Pv					0.198	0.187	0.137	0.137	0.101	0.095	0.070	0.064	0.052	0.044	0.031	0.022	
	Ps					0.350	0.300	0.220	0.220	0.180	0.150	0.110	0.100	0.080	0.070	0.050	0.030	
3200	NC					46	41	35	35	33	29	23	17	15	<15	<15	<15	
	Vc					1693	1622	1457	1457	1270	1236	1058	1014	911	841	709	597	
	Pv					0.179	0.164	0.132	0.132	0.101	0.095	0.070	0.064	0.052	0.044	0.031	0.022	
	Ps					0.290	0.260	0.210	0.210	0.180	0.150	0.110	0.100	0.080	0.070	0.050	0.030	







**REGISTERS & GRILLES**

**PERFORMANCE DATA - RETURN**

**SAR, SAG, RAR, RAG**

\*IMPERIAL UNITS

CFM	SIZE		12 X 6	12 X 8	18 X 6	20 X 6	24 X 6	18 X 8	20 X 8	30 X 6	24 X 8	36 X 6	30 X 8	42 X 6	36 X 8	30 X 10	42 X 8	36 X 10	42 X 10	30 X 12	36 X 12	42 X 12
	Ac	Vc	0.451	0.612	0.684	0.768	0.927	1.034	1.034	1.162	1.246	1.307	1.401	1.572	1.618	1.890	1.973	2.196	2.379	2.821	3.351	
3600	Vc																					
	Pv																					
	Ps																					
	NC																					
4000	Vc																					
	Pv																					
	Ps																					
	NC																					
4400	Vc																					
	Pv																					
	Ps																					
	NC																					
4800	Vc																					
	Pv																					
	Ps																					
	NC																					

**SYMBOLS:**

CFM : Air volume in Cubic Foot Per Minute

Ac : Core Area in square foot

Vc : Core Velocity in foot per minute

Pv : Velocity Pressure in inch water gauge

Ps : Negative Static Pressure in inch water gauge

NC : Noise Criteria

**CONDITIONS**

\* Return

\* Damper is fully open.

\* Noise Criteria is based on (10-dB) room attenuation.





PERFORATED REGISTERS & GRILLES

PERFORMANCE DATA - RETURN

PAG,PAR

\*SI UNITS

L/S	SIZE	300 x 100	300 x 150	300 x 200	300 x 250	300 x 300	400 x 300	450 x 200	450 x 250	450 x 300	600 x 200	600 x 250	600 x 300	750 x 200	750 x 300	750 x 350	900 x 200	
		150 x 150	200 x 150	250 x 150	200 x 200	300 x 250	300 x 300	400 x 300	450 x 200	450 x 250	450 x 300	600 x 200	600 x 250	600 x 300	750 x 200	750 x 300	750 x 350	900 x 200
Ac		0.020	0.027	0.035	0.037	0.071	0.086	0.108	0.116	0.146	0.176	0.183	0.200	0.222	0.274	0.359		
94	Vc	4.67	3.47	2.72	2.53	1.32	1.10	0.87	0.81									
	Pv	1.419	0.768	0.464	0.400	0.104	0.070	0.044	0.038									
	Ps	10.480	5.804	3.572	3.095	0.847	0.581	0.370	0.319									
	NC	37	28	22	21	11	9	7	7									
118	Vc		4.34	3.40	3.17	1.65	1.37	1.09	1.02	0.81								
	Pv		1.220	0.737	0.635	0.165	0.112	0.070	0.060	0.037								
	Ps		9.062	5.578	4.833	1.322	0.907	0.578	0.499	0.316								
	NC		34	27	25	14	11	9	9	7								
142	Vc		5.21	4.08	3.80	1.98	1.64	1.31	1.22	0.97	0.81							
	Pv		1.781	1.076	0.927	0.241	0.163	0.102	0.088	0.055	0.037							
	Ps		13.042	8.027	6.955	1.902	1.306	0.831	0.718	0.455	0.315							
	NC		41	32	30	16	14	11	10	8	7							
165	Vc		6.07	4.76	4.43	2.32	1.92	1.53	1.42	1.13	0.94							
	Pv		2.451	1.481	1.276	0.332	0.225	0.140	0.121	0.075	0.051							
	Ps		17.743	10.921	9.462	2.588	1.776	1.131	0.976	0.619	0.428							
	NC		47	38	35	19	16	13	12	10	8							
189	Vc			5.44	5.07	2.65	2.19	1.75	1.62	1.29	1.08	1.03						
	Pv			1.953	1.683	0.438	0.296	0.185	0.159	0.099	0.068	0.062						
	Ps			14.257	12.354	3.379	2.319	1.476	1.274	0.808	0.559	0.513						
	NC			43	40	21	18	14	13	11	9	9						
212	Vc			6.12	5.70	2.98	2.47	1.97	1.83	1.45	1.21	1.16						
	Pv			2.494	2.149	0.559	0.378	0.237	0.203	0.127	0.086	0.079						
	Ps			18.038	15.629	4.275	2.934	1.868	1.612	1.023	0.707	0.649						
	NC			48	45	24	20	16	15	12	10	10						
236	Vc				6.33	3.31	2.74	2.19	2.03	1.62	1.34	1.29						
	Pv				2.673	0.696	0.470	0.294	0.253	0.157	0.107	0.098						
	Ps				19.289	5.276	3.621	2.305	1.990	1.262	0.873	0.801						
	NC				49	27	22	18	17	13	11	11						
260	Vc				6.97	3.64	3.01	2.40	2.23	1.78	1.48	1.42	1.30					
	Pv				3.258	0.848	0.573	0.359	0.308	0.192	0.131	0.120	0.100					
	Ps				23.332	6.382	4.380	2.789	2.407	1.527	1.056	0.969	0.816					
	NC				54	29	24	20	18	15	12	12	11					
283	Vc				7.60	3.97	3.29	2.62	2.44	1.94	1.61	1.54	1.42	1.28				
	Pv				3.902	1.015	0.687	0.430	0.369	0.230	0.157	0.143	0.120	0.097				
	Ps				27.760	7.593	5.211	3.318	2.864	1.816	1.257	1.153	0.970	0.790				
	NC				59	32	26	21	20	16	13	13	12	11				
330	Vc					4.63	3.84	3.06	2.84	2.26	1.88	1.80	1.65	1.49				
	Pv					1.398	0.945	0.591	0.508	0.316	0.216	0.197	0.165	0.133				
	Ps					10.329	7.089	4.514	3.896	2.471	1.709	1.568	1.320	1.075				
	NC					37	31	25	23	18	15	15	14	12				
378	Vc					5.29	4.38	3.50	3.25	2.59	2.15	2.06	1.89	1.70	1.38			
	Pv					1.843	1.247	0.780	0.670	0.417	0.285	0.260	0.218	0.176	0.113			
	Ps					13.485	9.255	5.893	5.086	3.226	2.232	2.048	1.724	1.403	0.919			
	NC					42	35	28	26	21	18	17	16	14	11			





**PERFORATED REGISTERS & GRILLES**

PERFORMANCE DATA - RETURN

**PAG, PAR**

\*SI UNITS

L/S	SIZE	300 x 100		500 x 150		600 x 150		750 x 150		900 x 200		750 x 200		600 x 200		450 x 200		
		150 x 150	200 x 150	250 x 150	300 x 250	300 x 250	450 x 250	450 x 250	600 x 200	750 x 200	900 x 200	600 x 250	750 x 250	450 x 450	750 x 300	525 x 525	600 x 600	
		Ac	0.020	0.027	0.035	0.037	0.071	0.086	0.108	0.116	0.146	0.176	0.183	0.200	0.222	0.274	0.359	
425	Vc					5.95	4.93	3.93	3.65	2.91	2.42	2.32	2.13	1.92	1.55			
	Pv					2.354	1.592	0.996	0.855	0.533	0.363	0.332	0.278	0.224	0.145			
	Ps					17.061	11.709	7.455	6.435	4.082	2.824	2.590	2.181	1.775	1.163			
	NC					47	39	31	29	23	20	19	17	16	13			
472	Vc						5.48	4.37	4.06	3.23	2.69	2.57	2.36	2.13	1.72	1.31		
	Pv						1.981	1.239	1.064	0.663	0.452	0.413	0.346	0.279	0.180	0.102		
	Ps						14.451	9.201	7.942	5.037	3.485	3.197	2.691	2.191	1.435	0.834		
	NC						43	35	32	26	22	21	19	17	14	11		
566	Vc						6.58	5.25	4.87	3.88	3.23	3.09	2.83	2.56	2.07	1.58		
	Pv						2.891	1.809	1.552	0.968	0.660	0.603	0.505	0.408	0.263	0.149		
	Ps						20.798	13.242	11.430	7.250	5.015	4.601	3.873	3.153	2.066	1.200		
	NC						51	41	38	31	26	25	23	21	17	13		
661	Vc							6.12	5.68	4.53	3.76	3.60	3.31	2.98	2.41	1.84		
	Pv							2.490	2.137	1.332	0.908	0.831	0.695	0.561	0.362	0.206		
	Ps							18.015	15.549	9.863	6.823	6.259	5.269	4.290	2.810	1.633		
	NC							48	45	36	30	29	27	24	20	15		
755	Vc							6.99	6.50	5.17	4.30	4.12	3.78	3.41	2.76	2.10		
	Pv							3.285	2.819	1.757	1.198	1.096	0.916	0.740	0.477	0.271		
	Ps							23.519	20.301	12.877	8.907	8.172	6.879	5.600	3.669	2.132		
	NC							54	51	41	34	33	30	27	22	17		
849	Vc								7.31	5.82	4.84	4.63	4.25	3.83	3.10	2.36		
	Pv								3.599	2.243	1.530	1.399	1.170	0.945	0.609	0.346		
	Ps								25.683	16.291	11.269	10.339	8.703	7.085	4.642	2.697		
	NC								57	46	38	37	34	31	25	19		
944	Vc									6.47	5.38	5.15	4.72	4.26	3.45	2.63		
	Pv									2.791	1.903	1.741	1.455	1.176	0.758	0.431		
	Ps									20.105	13.908	12.760	10.741	8.745	5.729	3.329		
	NC									50	42	41	37	34	28	21		
1133	Vc										6.45	6.18	5.67	5.11	4.14	3.15		
	Pv										2.778	2.540	2.124	1.716	1.106	0.629		
	Ps										20.016	18.363	15.458	12.585	8.245	4.790		
	NC										50	48	44	40	33	25		

**SYMBOLS:**

- L/S : Air volume in Litre per second
- A<sub>c</sub> : Core Area in square meter
- V<sub>c</sub> : Core Velocity in meter per second
- P<sub>v</sub> : Velocity Pressure in mm water gauge
- P<sub>s</sub> : Negative Static Pressure in mm water gauge
- NC : Noise Criteria

**CONDITIONS**

- \* Return
- \* Damper is fully open.
- \* Noise Criteria is based on (10-dB) room attenuation.





**PERFORATED REGISTERS & GRILLES**

PERFORMANCE DATA - RETURN

PAG, PAR

\*IMPERIAL UNITS

CFM	SIZE	PERFORMANCE DATA - RETURN															
		12 x 4				20 x 6				24 x 6				30 x 6			
		6 x 6	8 x 6	10 x 6	8 x 8	12 x 10	18 x 8	18 x 10	24 x 8	30 x 8	36 x 8	30 x 10	18 x 18	30 x 12	21 x 21	24 x 24	
		Ac	0.218	0.293	0.373	0.401	0.768	0.927	1.162	1.251	1.571	1.890	1.973	2.151	2.384	2.947	3.868
200	Vc	918	683	536	499	260	216	172	160								
	Pv	0.056	0.030	0.018	0.016	0.004	0.003	0.002	0.001								
	Ps	0.413	0.228	0.141	0.122	0.033	0.023	0.015	0.013								
	NC	37	28	22	21	11	9	7	7								
250	Vc		854	670	623	326	270	215	200	159							
	Pv		0.048	0.029	0.025	0.007	0.004	0.003	0.002	0.001							
	Ps		0.357	0.220	0.190	0.052	0.036	0.023	0.020	0.012							
	NC		34	27	25	14	11	9	9	7							
300	Vc		1025	804	748	391	324	258	240	191	159						
	Pv		0.070	0.042	0.036	0.009	0.006	0.004	0.003	0.002	0.001						
	Ps		0.513	0.316	0.274	0.075	0.051	0.033	0.028	0.018	0.012						
	NC		41	32	30	16	14	11	10	8	7						
350	Vc		1195	938	873	456	378	301	280	223	185						
	Pv		0.097	0.058	0.050	0.013	0.009	0.006	0.005	0.003	0.002						
	Ps		0.699	0.430	0.373	0.102	0.070	0.045	0.038	0.024	0.017						
	NC		47	38	35	19	16	13	12	10	8						
400	Vc			1071	997	521	431	344	320	255	212	203					
	Pv			0.077	0.066	0.017	0.012	0.007	0.006	0.004	0.003	0.002					
	Ps			0.561	0.486	0.133	0.091	0.058	0.050	0.032	0.022	0.020					
	NC			43	40	21	18	14	13	11	9	9					
450	Vc			1205	1122	586	485	387	360	286	238	228					
	Pv			0.098	0.085	0.022	0.015	0.009	0.008	0.005	0.003	0.003					
	Ps			0.710	0.615	0.168	0.116	0.074	0.063	0.040	0.028	0.026					
	NC			48	45	24	20	16	15	12	10	10					
500	Vc				1247	651	539	430	400	318	265	253					
	Pv				0.105	0.027	0.019	0.012	0.010	0.006	0.004	0.004					
	Ps				0.759	0.208	0.143	0.091	0.078	0.050	0.034	0.032					
	NC				49	27	22	18	17	13	11	11					
550	Vc				1371	716	593	473	440	350	291	279	256				
	Pv				0.128	0.033	0.023	0.014	0.012	0.008	0.005	0.005	0.004				
	Ps				0.919	0.251	0.172	0.110	0.095	0.060	0.042	0.038	0.032				
	NC				54	29	24	20	18	15	12	12	11				
600	Vc				1496	781	647	516	480	382	317	304	279	252			
	Pv				0.154	0.040	0.027	0.017	0.015	0.009	0.006	0.006	0.005	0.004			
	Ps				1.093	0.299	0.205	0.131	0.113	0.072	0.049	0.045	0.038	0.031			
	NC				59	32	26	21	20	16	13	13	12	11			
700	Vc					912	755	602	560	445	370	355	325	294			
	Pv					0.055	0.037	0.023	0.020	0.012	0.008	0.008	0.006	0.005			
	Ps					0.407	0.279	0.178	0.153	0.097	0.067	0.062	0.052	0.042			
	NC					37	31	25	23	18	15	15	14	12			
800	Vc					1042	863	688	639	509	423	405	372	336	271		
	Pv					0.073	0.049	0.031	0.026	0.016	0.011	0.010	0.009	0.007	0.004		
	Ps					0.531	0.364	0.232	0.200	0.127	0.088	0.081	0.068	0.055	0.036		
	NC					42	35	28	26	21	18	17	16	14	11		





PERFORATED REGISTERS & GRILLES

PERFORMANCE DATA - RETURN

PAR,PAG

\*IMPERIAL UNITS

CFM	SIZE	12 x 4				20 x 6	24 x 6	30 x 6								
		6 x 6	8 x 6	10 x 6			18 x 8			24 x 8	30 x 8	36 x 8				
					8 x 8	12 x 10		18 x 10		24 x 10		30 x 10				
	Ac	0.218	0.293	0.373	0.401	0.768	0.927	1.162	1.251	1.571	1.890	1.973	2.151	2.384	2.947	3.868
900	Vc					1172	971	774	719	573	476	456	418	377	305	
	Pv					0.093	0.063	0.039	0.034	0.021	0.014	0.013	0.011	0.009	0.006	
	Ps					0.672	0.461	0.294	0.253	0.161	0.111	0.102	0.086	0.070	0.046	
	NC					47	39	31	29	23	20	19	17	16	13	
1000	Vc						1079	860	799	636	529	507	465	419	339	259
	Pv						0.078	0.049	0.042	0.026	0.018	0.016	0.014	0.011	0.007	0.004
	Ps						0.569	0.362	0.313	0.198	0.137	0.126	0.106	0.086	0.057	0.033
	NC						43	35	32	26	22	21	19	17	14	11
1200	Vc						1294	1033	959	764	635	608	558	503	407	310
	Pv						0.114	0.071	0.061	0.038	0.026	0.024	0.020	0.016	0.010	0.006
	Ps						0.819	0.521	0.450	0.285	0.197	0.181	0.152	0.124	0.081	0.047
	NC						51	41	38	31	26	25	23	21	17	13
1400	Vc							1205	1119	891	741	709	651	587	475	362
	Pv							0.098	0.084	0.052	0.036	0.033	0.027	0.022	0.014	0.008
	Ps							0.709	0.612	0.388	0.269	0.246	0.207	0.169	0.111	0.064
	NC							48	45	36	30	29	27	24	20	15
1600	Vc							1377	1279	1018	847	811	744	671	543	414
	Pv							0.129	0.111	0.069	0.047	0.043	0.036	0.029	0.019	0.011
	Ps							0.926	0.799	0.507	0.351	0.322	0.271	0.220	0.144	0.084
	NC							54	51	41	34	33	30	27	22	17
1800	Vc								1439	1145	952	912	837	755	611	465
	Pv								0.142	0.088	0.060	0.055	0.046	0.037	0.024	0.014
	Ps								1.011	0.641	0.444	0.407	0.343	0.279	0.183	0.106
	NC								57	46	38	37	34	31	25	19
2000	Vc									1273	1058	1014	930	839	679	517
	Pv									0.110	0.075	0.069	0.057	0.046	0.030	0.017
	Ps									0.792	0.548	0.502	0.423	0.344	0.226	0.131
	NC									50	42	41	37	34	28	21
2400	Vc										1270	1216	1116	1007	814	621
	Pv										0.109	0.100	0.084	0.068	0.044	0.025
	Ps										0.788	0.723	0.609	0.495	0.325	0.189
	NC										50	48	44	40	33	25

SYMBOLS:

- CFM : Air volume in Cubic Feet Per Minute
- A<sub>c</sub> : Core Area in square foot
- V<sub>c</sub> : Core Velocity in foot per minute
- P<sub>v</sub> : Velocity Pressure in inches water gauge
- P<sub>s</sub> : Negative Static Pressure in inches water gauge
- NC : Noise Criteria

CONDITIONS

- \* Return
- \* Damper is fully open.
- \* Noise Criteria is based on (10-dB) room attenuation.





**EGG CRATE REGISTERS & GRILLES**

PERFORMANCE DATA - RETURN

**ECR, ECG**

\*SI UNITS

L/S	SIZE	300 x 100	200 x 150	250 x 150	200 x 200	300 x 250	300 x 300	450 x 250	400 x 300	600 x 200	750 x 200	900 x 200	750 x 250	450 x 450	750 x 300	525 x 525	600 x 600
		150 x 150	200 x 150	250 x 150	300 x 150	450 x 200	600 x 200	750 x 200	900 x 200	450 x 450	750 x 300	525 x 525	600 x 600				
	Ac	0.020	0.027	0.035	0.037	0.071	0.086	0.108	0.116	0.146	0.176	0.183	0.200	0.222	0.274	0.359	
94	Vc	4.7	3.5	2.7	2.5	1.3	1.1	0.9	0.8								
	Pv	1.423	0.783	0.491	0.426	0.118	0.082	0.052	0.045								
	Ps	2.871	1.568	0.955	0.824	0.219	0.149	0.094	0.081								
	NC	29	21	16	15	<15	<15	<15	<15								
118	Vc		4.3	3.4	3.2	1.7	1.4	1.1	1.0	0.8							
	Pv		1.232	0.763	0.662	0.184	0.127	0.081	0.070	0.045							
	Ps		2.474	1.506	1.300	0.345	0.235	0.148	0.127	0.080							
	NC		27	21	19	<15	<15	<15	<15	<15							
142	Vc		5.2	4.1	3.8	2.0	1.6	1.3	1.2	1.0	0.8						
	Pv		1.766	1.093	0.949	0.264	0.182	0.116	0.101	0.064	0.045						
	Ps		3.591	2.185	1.887	0.501	0.341	0.215	0.185	0.116	0.080						
	NC		33	25	23	<15	<15	<15	<15	<15	<15						
165	Vc		6.1	4.8	4.4	2.3	1.9	1.5	1.4	1.1	0.9						
	Pv		2.393	1.482	1.286	0.357	0.246	0.158	0.136	0.087	0.060						
	Ps		39	2.994	2.586	0.686	0.467	0.294	0.253	0.159	0.109						
	NC			30	28	<15	<15	<15	<15	<15	<15						
189	Vc			5.4	5.1	2.6	2.2	1.7	1.6	1.3	1.1	1.0					
	Pv			1.928	1.674	0.465	0.321	0.205	0.177	0.113	0.079	0.072					
	Ps			3.933	3.397	0.902	0.613	0.387	0.333	0.209	0.143	0.131					
	NC			35	32	16	<15	<15	<15	<15	<15	<15					
212	Vc			6.1	5.7	3.0	2.5	2.0	1.8	1.5	1.2	1.2					
	Pv			2.432	2.111	0.587	0.404	0.259	0.224	0.143	0.099	0.091					
	Ps			5.003	4.321	1.147	0.780	0.492	0.423	0.265	0.182	0.167					
	NC			39	36	18	15	<15	<15	<15	<15	<15					
236	Vc				6.3	3.3	2.7	2.2	2.0	1.6	1.3	1.3					
	Pv				2.599	0.722	0.498	0.319	0.276	0.176	0.122	0.112					
	Ps				5.359	1.422	0.968	0.610	0.525	0.329	0.226	0.207					
	NC				41	20	17	<15	<15	<15	<15	<15					
260	Vc				7.0	3.6	3.0	2.4	2.2	1.8	1.5	1.4	1.3				
	Pv				3.137	0.871	0.601	0.385	0.333	0.212	0.147	0.135	0.114				
	Ps				6.510	1.728	1.176	0.741	0.637	0.400	0.274	0.251	0.211				
	NC				45	22	18	<15	<15	<15	<15	<15	<15				
283	Vc				7.6	4.0	3.3	2.6	2.4	1.9	1.6	1.5	1.4	1.3			
	Pv				3.724	1.035	0.713	0.457	0.395	0.252	0.175	0.161	0.136	0.111			
	Ps				7.777	2.064	1.405	0.885	0.761	0.478	0.328	0.300	0.252	0.204			
	NC				49	25	20	16	15	<15	<15	<15	<15	7			
330	Vc					4.6	3.8	3.1	2.8	2.3	1.9	1.8	1.7	1.5			
	Pv					1.402	0.967	0.619	0.535	0.341	0.237	0.218	0.184	0.150			
	Ps					2.828	1.924	1.213	1.043	0.655	0.449	0.411	0.345	0.279			
	NC					29	24	19	17	<15	<15	<15	<15	<15			
378	Vc					5.3	4.4	3.5	3.2	2.6	2.2	2.1	1.9	1.7	1.4		
	Pv					1.825	1.258	0.805	0.696	0.444	0.309	0.283	0.239	0.195	0.129		
	Ps					3.716	2.528	1.593	1.370	0.860	0.590	0.540	0.453	0.367	0.238		
	NC					34	27	21	20	16	<15	<15	<15	<15	<15		





**EGG CRATE REGISTERS & GRILLES**

PERFORMANCE DATA - RETURN

ECR, ECG

\*SI UNITS

L/S	SIZE	300 x 100		500 x 150		600 x 150		750 x 150		900 x 200		750 x 200		600 x 200		450 x 200		
		150 x 150	200 x 150	250 x 150	300 x 250	300 x 250	450 x 250	450 x 250	600 x 200	750 x 200	900 x 200	600 x 250	750 x 250	450 x 450	750 x 300	525 x 525	600 x 600	
		Ac	0.020	0.027	0.035	0.037	0.071	0.086	0.108	0.116	0.146	0.176	0.183	0.200	0.222	0.274	0.359	
425	Vc					6.0	4.9	3.9	3.7	2.9	2.4	2.3	2.1	1.9	1.6			
	Pv					2.302	1.587	1.016	0.879	0.560	0.389	0.358	0.302	0.246	0.162			
	Ps					4.726	3.216	2.026	1.743	1.094	0.750	0.687	0.576	0.467	0.303			
	NC					38	31	24	23	18	<15	<15	<15	<15	<15			
472	Vc						5.5	4.4	4.1	3.2	2.7	2.6	2.4	2.1	1.7	1.3		
	Pv						1.954	1.251	1.082	0.690	0.479	0.440	0.371	0.303	0.200	0.117		
	Ps						3.988	2.513	2.162	1.357	0.931	0.852	0.714	0.579	0.376	0.215		
	NC						35	27	25	20	16	15	<15	<15	<15	<15		
566	Vc						6.6	5.2	4.9	3.9	3.2	3.1	2.8	2.6	2.1	1.6		
	Pv						2.800	1.792	1.550	0.988	0.687	0.631	0.532	0.434	0.286	0.167		
	Ps						5.788	3.647	3.137	1.969	1.351	1.237	1.037	0.840	0.545	0.313		
	NC						42	33	31	24	20	19	17	15	<15	<15		
661	Vc							6.1	5.7	4.5	3.8	3.6	3.3	3.0	2.4	1.8		
	Pv							2.429	2.101	1.340	0.931	0.855	0.721	0.589	0.388	0.227		
	Ps							4.997	4.298	2.698	1.850	1.694	1.421	1.151	0.747	0.428		
	NC							39	36	28	23	22	20	18	<15	<15		
755	Vc							7.0	6.5	5.2	4.3	4.1	3.8	3.4	2.8	2.1		
	Pv							3.162	2.734	1.744	1.211	1.113	0.939	0.766	0.504	0.295		
	Ps							6.564	5.646	3.544	2.431	2.226	1.866	1.512	0.981	0.563		
	NC							45	42	33	27	26	23	21	17	<15		
849	Vc								7.3	5.8	4.8	4.6	4.3	3.8	3.1	2.4		
	Pv								3.449	2.200	1.528	1.404	1.184	0.966	0.636	0.372		
	Ps								7.182	4.508	3.092	2.831	2.374	1.923	1.248	0.716		
	NC								47	37	30	29	26	24	19	<15		
944	Vc									6.5	5.4	5.1	4.7	4.3	3.4	2.6		
	Pv									2.708	1.881	1.728	1.458	1.190	0.783	0.458		
	Ps									5.591	3.835	3.511	2.944	2.385	1.547	0.888		
	NC									42	34	33	30	27	21	16		
1133	Vc										6.5	6.2	5.7	5.1	4.1	3.2		
	Pv										2.696	2.476	2.088	1.704	1.122	0.656		
	Ps										5.565	5.096	4.272	3.462	2.246	1.289		
	NC										41	40	36	32	26	19		

**SYMBOLS:**

- L/S : Air volume in Litre per second
- A<sub>c</sub> : Core Area in square meter
- V<sub>c</sub> : Core Velocity in meter per second
- P<sub>v</sub> : Velocity Pressure in mm water gauge
- P<sub>s</sub> : Negative Static Pressure in mm water gauge
- NC : Noise Criteria

**CONDITIONS**

- \* Return
- \* Damper is fully open.
- \* Noise Criteria is based on (10-dB) room attenuation.





EGG CRATE REGISTERS & GRILLES

PERFORMANCE DATA - RETURN

ECR, ECG

\*IMPERIAL UNITS

CFM	SIZE	12 x 4				20 x 6	24 x 6	30 x 6									
		6 x 6	8 x 6	10 x 6			18 x 8		24 x 8	30 x 8	36 x 8						
					8 x 8	12 x 10		18 x 10		24 x 10		30 x 10					
							12 x 12		16 x 12	20 x 12	24 x 12		18 x 18	30 x 12	21 x 21	24 x 24	
	Ac	0.218	0.293	0.373	0.401	0.768	0.927	1.162	1.251	1.571	1.890	1.973	2.151	2.384	2.947	3.868	
200	Vc	918	683	536	499	260	216	172	160								
	Pv	0.056	0.031	0.019	0.017	0.005	0.003	0.002	0.002								
	Ps	0.113	0.062	0.038	0.032	0.009	0.006	0.004	0.003								
	NC	29	21	16	15	<15	<15	<15	<15								
250	Vc		854	670	623	326	270	215	200	159							
	Pv		0.049	0.030	0.026	0.007	0.005	0.003	0.003	0.002							
	Ps		0.097	0.059	0.051	0.014	0.009	0.006	0.005	0.003							
	NC		27	21	19	<15	<15	<15	<15	<15							
300	Vc		1025	804	748	391	324	258	240	191	159						
	Pv		0.070	0.043	0.037	0.010	0.007	0.005	0.004	0.003	0.002						
	Ps		0.141	0.086	0.074	0.020	0.013	0.008	0.007	0.005	0.003						
	NC		33	25	23	<15	<15	<15	<15	<15	<15						
350	Vc		1195	938	873	456	378	301	280	223	185						
	Pv		0.094	0.058	0.051	0.014	0.010	0.006	0.005	0.003	0.002						
	Ps		0.194	0.118	0.102	0.027	0.018	0.012	0.010	0.006	0.004						
	NC		39	30	28	<15	<15	<15	<15	<15	<15						
400	Vc			1071	997	521	431	344	320	255	212	203					
	Pv			0.076	0.066	0.018	0.013	0.008	0.007	0.004	0.003	0.003					
	Ps			0.155	0.134	0.035	0.024	0.015	0.013	0.008	0.006	0.005					
	NC			35	32	16	<15	<15	<15	<15	<15	<15					
450	Vc			1205	1122	586	485	387	360	286	238	228					
	Pv			0.096	0.083	0.023	0.016	0.010	0.009	0.006	0.004	0.004					
	Ps			0.197	0.170	0.045	0.031	0.019	0.017	0.010	0.007	0.007					
	NC			39	36	18	15	<15	<15	<15	<15	<15					
500	Vc				1247	651	539	430	400	318	265	253					
	Pv				0.102	0.028	0.020	0.013	0.011	0.007	0.005	0.004					
	Ps				0.211	0.056	0.038	0.024	0.021	0.013	0.009	0.008					
	NC				41	20	17	<15	<15	<15	<15	<15					
550	Vc				1371	716	593	473	440	350	291	279	256				
	Pv				0.123	0.034	0.024	0.015	0.013	0.008	0.006	0.005	0.004				
	Ps				0.256	0.068	0.046	0.029	0.025	0.016	0.011	0.010	0.008				
	NC				45	22	18	<15	<15	<15	<15	<15	<15				
600	Vc				1496	781	647	516	480	382	317	304	279	252			
	Pv				0.147	0.041	0.028	0.018	0.016	0.010	0.007	0.006	0.005	0.004			
	Ps				0.306	0.081	0.055	0.035	0.030	0.019	0.013	0.012	0.010	0.008			
	NC				49	25	20	16	15	<15	<15	<15	<15	7			
700	Vc					912	755	602	560	445	370	355	325	294			
	Pv					0.055	0.038	0.024	0.021	0.013	0.009	0.009	0.007	0.006			
	Ps					0.111	0.076	0.048	0.041	0.026	0.018	0.016	0.014	0.011			
	NC					29	24	19	17	<15	<15	<15	<15	<15			
800	Vc					1042	863	688	639	509	423	405	372	336	271		
	Pv					0.072	0.050	0.032	0.027	0.017	0.012	0.011	0.009	0.008	0.005		
	Ps					0.146	0.100	0.063	0.054	0.034	0.023	0.021	0.018	0.014	0.009		
	NC					34	27	21	20	16	<15	<15	<15	<15	<15		







**EGG CRATE REGISTERS & GRILLES**

PERFORMANCE DATA - RETURN

**ECR, ECG**

**\*IMPERIAL UNITS**

CFM	SIZE	12 x 4				20 x 6		24 x 6		30 x 6								
		6 x 6	8 x 6	10 x 6			8 x 8	12 x 10		18 x 8		18 x 10		24 x 8	30 x 8	36 x 8		
	Ac	0.218	0.293	0.373	0.401	0.768	0.927	1.162	1.251	1.571	1.890	1.973	2.151	2.384	2.947	3.868		
900	Vc					1172	971	774	719	573	476	456	418	377	305			
	Pv					0.091	0.062	0.040	0.035	0.022	0.015	0.014	0.012	0.010	0.006			
	Ps					0.186	0.127	0.080	0.069	0.043	0.030	0.027	0.023	0.018	0.012			
	NC					38	31	24	23	18	<15	<15	<15	<15	<15			
1000	Vc						1079	860	799	636	529	507	465	419	339	259		
	Pv						0.077	0.049	0.043	0.027	0.019	0.017	0.015	0.012	0.008	0.005		
	Ps						0.157	0.099	0.085	0.053	0.037	0.034	0.028	0.023	0.015	0.008		
	NC						35	27	25	20	16	15	<15	<15	<15	<15		
1200	Vc						1294	1033	959	764	635	608	558	503	407	310		
	Pv						0.110	0.071	0.061	0.039	0.027	0.025	0.021	0.017	0.011	0.007		
	Ps						0.228	0.144	0.124	0.078	0.053	0.049	0.041	0.033	0.021	0.012		
	NC						42	33	31	24	20	19	17	15	<15	<15		
1400	Vc							1205	1119	891	741	709	651	587	475	362		
	Pv							0.096	0.083	0.053	0.037	0.034	0.028	0.023	0.015	0.009		
	Ps							0.197	0.169	0.106	0.073	0.067	0.056	0.045	0.029	0.017		
	NC							39	36	28	23	22	20	18	<15	<15		
1600	Vc							1377	1279	1018	847	811	744	671	543	414		
	Pv							0.124	0.108	0.069	0.048	0.044	0.037	0.030	0.020	0.012		
	Ps							0.258	0.222	0.140	0.096	0.088	0.073	0.060	0.039	0.022		
	NC							45	42	33	27	26	23	21	17	<15		
1800	Vc								1439	1145	952	912	837	755	611	465		
	Pv								0.136	0.087	0.060	0.055	0.047	0.038	0.025	0.015		
	Ps								0.283	0.177	0.122	0.111	0.093	0.076	0.049	0.028		
	NC								47	37	30	29	26	24	19	<15		
2000	Vc									1273	1058	1014	930	839	679	517		
	Pv									0.107	0.074	0.068	0.057	0.047	0.031	0.018		
	Ps									0.220	0.151	0.138	0.116	0.094	0.061	0.035		
	NC									42	34	33	30	27	21	16		
2400	Vc										1270	1216	1116	1007	814	621		
	Pv										0.106	0.097	0.082	0.067	0.044	0.026		
	Ps										0.219	0.201	0.168	0.136	0.088	0.051		
	NC										41	40	36	32	26	19		

**SYMBOLS:**

- CFM** : Air volume in cubic Feet per minute
- A<sub>c</sub>** : Core Area in foot square
- V<sub>c</sub>** : Core Velocity in foot per minute
- P<sub>v</sub>** : Velocity Pressure in inches water gauge
- P<sub>s</sub>** : Negative Static Pressure in inches water gauge
- NC** : Noise Criteria

**CONDITIONS**

- \* Return
- \* Damper is fully open.
- \* Noise Criteria is based on (10-dB) room attenuation.





## DOOR GRILLES PERFORMANCE DATA

DG

\*SI UNITS

A <sub>c</sub> M <sup>2</sup>	NOMINAL SIZE MM	VC M/S	0.508	0.762	1.016	1.27	1.524	1.778	2.032
		PVMMWG	0.015	0.035	0.0625	0.0975	0.14	0.19	0.250
		PSMMWG	0.275	0.65	1.15	1.825	2.6	3.525	4.65
0.02	250x100	L/S	10	15	20	25	30	35	40
		NC	-	-	-	-	-	16	19
0.05	400x150	L/S	26	40	53	66	79	92	106
		NC	-	-	17	24	28	31	35
0.07	500x150,400x200	L/S	35	52	70	87	105	122	140
		NC	-	-	19	25	30	33	36
0.09	700x150,500x200,400x250	L/S	47	70	93	117	140	164	187
		NC	-	15	23	29	32	36	40
0.14	750x200,600x250,500x300,400x350	L/S	69	104	139	173	208	243	277
		NC	-	19	26	31	37	41	44
0.19	800x250,650x300,550x350,500x400	L/S	94	142	189	236	283	330	378
		NC	-	24	31	37	42	46	49
0.23	800x300,700x350,600x400,550x450	L/S	118	177	236	295	354	413	472
		NC	16	27	34	40	44	48	52
0.29	850x350,750x400,650x450,600x500	L/S	145	218	291	363	436	509	581
		NC	19	30	37	43	47	51	55
0.35	850x400,750x450,700x500,600x550	L/S	178	267	356	445	534	623	712
		NC	22	32	40	46	50	54	58
0.40	850x450,800x500,700x550,650x600	L/S	204	306	409	511	613	715	817
		NC	24	34	42	47	52	56	60
0.44	850x500,800x550,700x600,650x650	L/S	224	336	447	559	671	783	895
		NC	24	35	42	48	52	57	62
0.50	850x550,800x600,750x650,700x700	L/S	252	379	505	631	757	884	1010
		NC	26	36	44	50	55	58	63

## SYMBOLS:

L/S	: Air volume in litre per second
A <sub>c</sub>	: Core Area in meter square
V <sub>c</sub>	: Core Velocity in meter per second
NC	: Noise Criteria
P <sub>v</sub>	: Velocity Pressure in mm water gauge
P <sub>s</sub>	: Static Pressure in mm water gauge





## DOOR GRILLES

## PERFORMANCE DATA

DG

\*IMPERIAL UNITS

A <sub>c</sub> FT <sup>2</sup>	NOMINAL SIZE INCH	VC FPM	100	150	200	250	300	350	400
		PVIWG	0.0006	0.0014	0.0025	0.0039	0.0056	0.0076	0.010
		PSIWG	0.011	0.026	0.046	0.073	0.104	0.141	0.186
0.21	10 x 4	CFM	21	32	42	53	63	74	84
		NC	-	-	-	-	-	16	19
0.56	16 x 6	CFM	56	84	112	140	168	196	224
		NC	-	-	17	24	28	31	35
0.74	20x6, 6x8	CFM	74	111	148	185	222	259	296
		NC	-	-	19	25	30	33	36
0.99	28x6, 20x8, 16x10	CFM	99	149	198	248	297	347	396
		NC	-	15	23	29	32	36	40
1.47	30x8, 20x12, 24x10, 16x14	CFM	147	221	294	368	441	515	588
		NC	-	19	26	31	37	41	44
2.00	32x10, 26x12, 22x14, 20x16	CFM	200	300	400	500	600	700	800
		NC	-	24	31	37	42	46	49
2.50	32x12, 28x14, 24x16, 22x18	CFM	250	375	500	625	750	875	1000
		NC	16	27	34	40	44	48	52
3.08	34x14, 30x16, 26x18, 24x20	CFM	308	462	616	770	924	1078	1232
		NC	19	30	37	43	47	51	55
3.77	34x16, 30x18, 28x20, 24x22	CFM	377	566	754	943	1131	1320	1508
		NC	22	32	40	46	50	54	58
4.33	34x18, 32x20, 28x22, 26x24	CFM	433	650	866	1083	1299	1516	1732
		NC	24	34	42	47	52	56	60
4.74	34x20, 32x22, 28x24, 26x26	CFM	474	711	948	1185	1422	1659	1896
		NC	24	35	42	48	52	57	62
5.35	34x22, 32x24, 30x26, 28x28	CFM	535	803	1070	1338	1605	1873	2140
		NC	26	36	44	50	55	58	63

## SYMBOLS:

- CFM** : Air volume in cubic foot per minute  
**A<sub>c</sub>** : Core Area in feet square  
**V<sub>c</sub>** : Core Velocity in feet per minute  
**NC** : Noise Criteria  
**P<sub>v</sub>** : Velocity Pressure in inches water gauge  
**P<sub>s</sub>** : Static Pressure in inches water gauge





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