

**SARAVEL**

AIR CONDITIONING, REFRIGERATION  
HEATING & VENTILATING



*Different  
Colors*

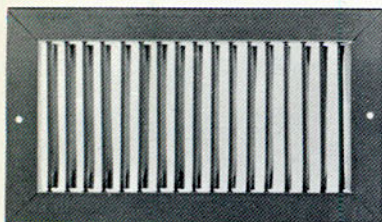
*In Baked Enamel Finishing*

*Different  
Styles*



## SG SUPPLY GRILLES

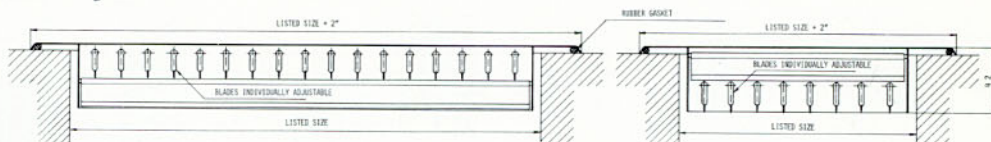
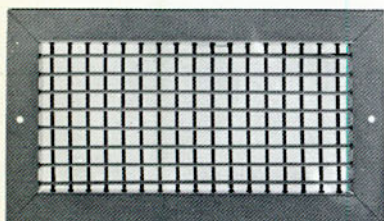
### SINGLE DEFLECTION



SG-1-V GRILLE, VERTICAL FACE BARS  
SG-1-H GRILLE, HORIZONTAL FACE BARS

These single deflection grilles are attractively designed and provide a maximum control of air deflection. Single row of individually adjustable face bars are pivoted at the front to provide uniformity of appearance, regardless of angle of setting. The grilles are especially suited to low ceiling rooms, where a minimum drop of air stream is desired and volume control is unnecessary. Equipped with rubber gaskets to prevent leakage.

### DOUBLE DEFLECTION

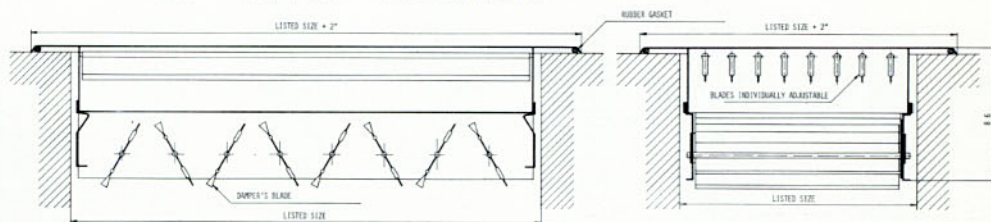
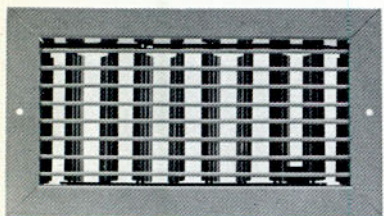


SG-2-V GRILLE, VERTICAL FACE BARS  
SG-2-H GRILLE, HORIZONTAL FACE BARS

These grilles offer maximum flexibility with two rows of individually adjustable bars that are designed to direct the air flow in both the vertical and horizontal planes. Rubber gaskets prevent leakage.

## SR SUPPLY REGISTERS

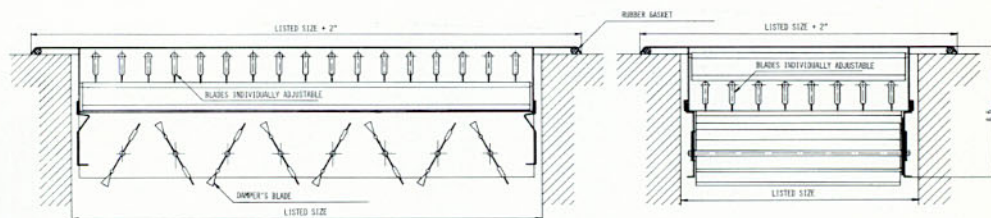
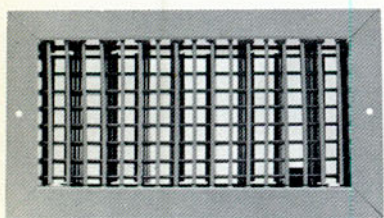
### SINGLE DEFLECTION WITH DAMPER



SR-1-V REGISTER, VERTICAL FACE BARS, VERTICAL DAMPERS  
SR-1-H REGISTER, HORIZONTAL FACE BARS, VERTICAL DAMPERS

Ideal for installations in which air flow in either direction, horizontal or vertical, is required—the registers of this series have a single row of individually adjustable face bars and opposed damper valve.

### DOUBLE DEFLECTION WITH DAMPER



SR-2-V REGISTER, VERTICAL FACE BARS, VERTICAL DAMPERS  
SR-2-H REGISTER, HORIZONTAL FACE BARS, VERTICAL DAMPERS

Double deflection registers have two rows of face bars individually adjustable to provide any desired air flow in both the vertical and horizontal planes. The opposed damper valve distributes the air flow evenly to the entire face, and provides accurate volume control.

NOTE: ALL DIMENSIONS ARE IN MM. EXCEPT MENTIONED.  
FOR SIZE SELECTION, SEE PAGE 6,7,8 AND 9.

GRILLE DIMENSIONS IN INCHES  
WIDTH X HEIGHT (NOMINAL)

AIR VOLUME  
THROW IN METERS

SIZE SELECTION CHART

SIZE	CFM	TH
12x4	85	3.6
		3.0
		2.5
		1.9

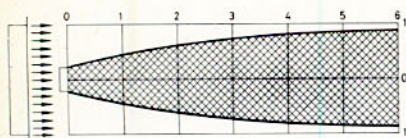
A Deflection setting  
B Deflection setting  
C Deflection setting  
D Deflection setting

VELOCITY FPM	400	500	600	700	800	900	1000	1100	1200	1300
TOTAL PRESSURE	.001"	.015"	.022"	.031"	.040"	.051"	.062"	.075"	.090"	.105"
SIZE	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.
4 x 4	25 2.1 1.7 1.4 1.1	35 2.7 2.3 1.9 1.5	45 3.3 2.7 2.3 1.8	55 3.8 3.2 2.7 2.1	60 4.2 3.6 3.0 2.3	70 4.8 4.1 3.4 2.7	80 5.3 4.6 3.8 3.0	90 5.8 5.1 4.2 3.2	95 6.4 5.5 4.6 3.6	105 7.0 6.0 5.0 3.9
5 x 4	35 2.3 1.9 1.6 1.5	45 3.0 2.6 2.1 1.6	55 3.6 3.0 2.5 1.9	65 3.9 3.5 2.9 2.3	75 4.5 3.9 3.2 2.6	85 5.1 4.5 3.6 2.8	90 5.8 5.0 4.1 3.2	105 6.4 5.6 4.6 3.6	115 6.9 5.9 4.9 3.9	120 7.6 6.4 5.3 4.1
6 x 4	40 2.6 2.3 1.9 1.5	55 3.3 2.6 2.2 1.7	65 3.8 3.2 2.6 2.0	75 4.4 3.8 3.1 2.4	85 4.9 4.2 3.5 2.8	100 5.6 4.9 4.0 3.1	110 6.4 5.4 4.5 3.5	120 6.9 5.9 5.0 3.9	130 7.6 6.4 5.3 4.1	140 8.2 7.2 5.9 4.5
8 x 4	55 3.0 2.6 2.0 1.6	65 3.6 3.1 2.6 1.9	85 4.2 3.6 3.0 2.3	95 4.9 4.3 3.5 2.7	110 5.6 4.9 3.9 3.1	125 6.3 5.3 4.4 3.5	140 7.1 6.1 5.0 3.9	155 7.9 6.6 5.6 4.3	170 8.5 7.4 6.0 4.7	185 9.2 7.9 6.6 5.1
10 x 4	70 3.9 3.5 2.8 2.2	90 4.8 4.1 3.4 2.7	105 5.4 4.8 3.9 3.1	125 6.3 5.3 4.5 3.5	140 7.3 6.1 5.1 3.9	160 8.7 7.9 6.7 4.3	175 9.7 8.7 7.5 4.9	195 10.5 9.7 8.3 5.3	215 11.6 10.5 9.1 5.8	230 12.6 11.6 9.8 6.3
12 x 4	85 3.6 3.0 2.5 1.9	110 4.3 3.8 3.1 2.4	125 5.1 4.5 3.6 2.8	150 6.1 5.2 4.3 3.3	170 7.1 6.0 5.0 3.8	185 7.9 7.9 6.6 4.3	210 8.7 8.7 7.8 4.8	230 9.6 9.6 8.3 5.3	250 10.5 10.5 9.0 5.8	270 11.5 11.5 9.8 6.3
14 x 4	110 3.9 3.4 2.8 2.2	135 4.9 4.3 3.5 2.7	160 5.8 4.9 4.1 3.2	190 6.8 6.1 5.0 3.8	215 7.9 6.6 5.6 4.3	240 8.9 7.8 6.2 4.7	270 9.8 8.5 7.1 5.4	300 10.8 9.2 7.8 6.0	325 11.8 9.9 8.3 6.5	350 12.6 10.8 9.1 7.0
16 x 4	125 4.3 3.7 3.0 2.3	155 5.2 4.5 3.7 2.9	185 6.3 5.3 4.5 3.5	215 7.3 6.3 4.9 4.0	245 8.2 7.3 6.3 4.6	275 9.2 7.9 6.4 4.9	310 10.8 9.1 7.5 5.7	345 11.6 9.9 8.3 6.3	370 12.5 10.8 8.9 7.0	400 13.8 11.8 9.8 7.7
20 x 4	155 4.7 4.0 3.3 2.6	190 5.8 5.1 4.1 3.2	225 7.1 6.0 5.0 3.9	265 8.1 7.1 5.8 4.5	300 9.2 8.0 6.6 5.2	340 10.5 9.2 7.5 5.8	380 12.0 10.0 8.2 6.5	420 13.0 11.2 9.1 7.2	460 14.0 12.1 10.0 7.7	500 15.1 13.0 11.0 8.5
24 x 4	185 5.1 4.4 3.6 2.8	230 6.2 5.4 4.5 3.5	270 7.5 6.4 5.3 4.2	320 8.8 7.6 6.3 4.9	360 10.0 8.7 7.3 5.6	405 11.6 9.9 8.4 6.5	450 12.8 11.0 9.1 7.1	500 14.0 12.2 10.2 8.1	540 14.5 12.6 10.5 8.5	590 15.0 13.0 11.0 9.0
5 x 5	40 2.6 2.3 1.9 1.5	55 3.3 2.6 2.2 1.7	65 3.8 3.2 2.6 2.0	75 4.4 3.8 3.1 2.4	85 4.9 4.2 3.5 2.8	100 5.6 4.9 4.0 3.1	110 6.4 5.4 4.5 3.5	120 6.9 5.9 5.0 3.9	130 7.6 6.4 5.3 4.1	140 8.2 7.2 5.9 4.5
6 x 5	55 3.0 2.6 2.0 1.6	65 3.6 3.1 2.6 1.9	85 4.2 3.6 3.0 2.3	95 4.9 4.3 3.5 2.7	110 5.6 4.9 3.9 3.1	125 6.3 5.3 4.4 3.5	140 7.1 6.1 5.0 3.9	155 7.9 6.6 5.6 4.3	170 8.5 7.4 6.0 4.7	185 9.2 7.9 6.6 5.1
8 x 5	70 3.9 3.5 2.8 2.2	90 4.8 4.1 3.4 2.7	105 5.4 4.8 3.9 3.1	125 6.3 5.3 4.5 3.5	140 7.3 6.1 5.1 3.9	160 8.7 7.7 6.7 4.3	175 9.7 8.7 7.5 4.9	195 10.5 9.7 8.3 5.3	215 11.6 10.5 9.1 5.8	230 12.6 11.6 9.8 6.3

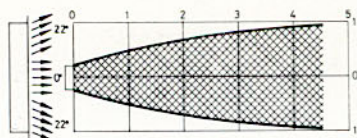
RECOMMENDED DELIVERY VELOCITIES. By selecting outlets of the proper size, the velocities through the device will not add any appreciable noise to the sound level already existing in the ductwork behind the outlet. The following are recommended outlet velocities for various applications.

Broadcasting studios 500 FPM. Residences, apartments, churches, hotel

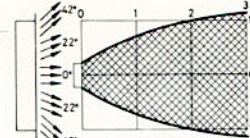
# DEFLECTION SETTINGS AND AIR PATTERNS



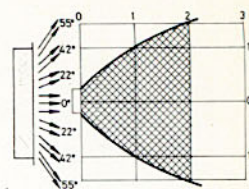
DEFLECTION SETTING A



DEFLECTION SETTING B



DEFLECTION SETTING C



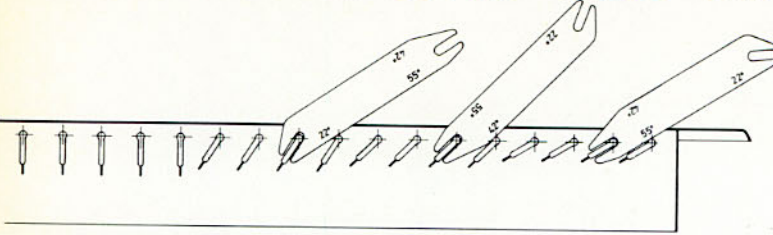
DEFLECTION SETTING D

VELOCITY FPM	400		500		600		700		800		900		1000		1100		1200		1300	
TOTAL PRESSURE	.001"		.015"		.022"		.031"		.040"		.051"		.062"		.075"		.090"		.105"	
SIZE	CFM	TH.	CFM	TH.	CFM	TH.	CFM	TH.	CFM	TH.	CFM	TH.	CFM	TH.	CFM	TH.	CFM	TH.	CFM	TH.
10 x 5	85	3.6 3.0 2.5 1.9	110	4.3 3.8 3.1 2.4	125	5.1 4.5 3.6 2.8	150	6.1 5.2 4.3 3.3	170	7.1 6.0 5.0 3.8	185	7.9 6.6 5.6 4.3	210	8.7 7.8 6.2 4.8	230	9.6 8.3 6.7 5.3	250	10.5 9.0 7.4 5.8	270	11.5 9.8 8.1 6.3
12 x 5	110	3.9 3.4 2.8 2.2	135	4.9 4.3 3.5 2.7	160	5.8 4.9 4.1 3.2	190	6.8 6.1 5.0 3.8	215	7.9 6.6 5.6 4.3	240	8.9 7.8 6.2 4.7	270	9.8 8.5 7.1 5.4	300	10.8 9.2 7.8 6.0	325	11.8 9.9 8.3 6.5	350	12.6 10.8 9.1 7.0
14 x 5	135	4.3 3.4 3.0 2.3	165	5.3 4.6 3.8 3.0	195	6.2 5.4 4.4 3.4	225	7.5 6.4 5.3 4.2	255	8.5 7.4 6.0 4.7	290	9.6 8.2 6.8 5.2	330	10.8 9.2 7.7 6.0	360	12.0 10.5 8.5 6.6	390	12.5 11.0 9.3 7.3	420	13.5 12.0 10.0 7.8
16 x 5	155	4.7 4.0 3.3 2.6	190	5.8 5.1 4.1 3.2	225	7.1 6.0 5.0 3.9	265	8.1 7.1 5.8 4.5	300	9.2 8.0 6.6 5.2	340	10.5 9.2 7.5 5.8	380	12.0 10.0 8.2 6.5	420	13.0 11.2 9.1 7.2	460	14.0 12.1 10.0 7.7	500	15.1 13.0 11.0 8.5
20 x 5	185	5.1 4.4 3.6 2.8	230	6.2 5.4 4.5 3.5	270	7.5 6.4 5.3 4.2	320	8.8 7.6 6.3 4.9	360	10.0 8.7 7.3 5.6	405	11.6 9.9 8.4 6.5	450	12.8 11.0 9.1 7.1	500	14.0 12.2 10.2 8.1	540	14.5 12.6 10.5 8.5	590	15.0 13.0 11.0 9.0
24 x 5	225	5.6 4.9 4.0 3.1	275	7.1 6.1 5.1 3.9	325	8.2 7.2 6.0 4.6	380	9.8 8.4 7.1 5.3	435	11.0 9.4 8.0 6.0	500	12.6 10.8 9.0 7.0	560	14.1 12.2 10.5 7.8	610	15.6 13.2 11.5 8.8	670	16.8 14.4 12.4 9.4	720	18.1 15.5 13.2 10.1
6 x 6	60	3.2 2.6 2.1 1.6	80	3.8 3.2 2.6 2.0	95	4.6 3.9 3.1 2.5	115	5.2 4.6 3.8 3.0	130	6.0 5.2 4.3 3.3	145	6.8 6.1 5.0 3.9	160	7.8 6.6 5.5 4.3	180	8.4 7.4 6.0 4.7	195	9.2 7.9 6.5 5.0	210	9.9 8.6 7.1 5.4
8 x 6	85	3.6 3.0 2.5 1.9	110	4.3 3.8 3.1 2.4	125	5.1 4.5 3.6 2.8	150	6.1 5.2 4.3 3.3	170	7.1 6.0 5.0 3.8	185	7.9 6.6 5.6 4.3	210	8.7 7.8 6.2 4.8	230	9.6 8.3 6.7 5.3	250	10.5 9.0 7.4 5.8	270	11.5 9.8 8.1 6.3
10 x 6	110	3.9 3.4 2.8 2.2	135	4.9 4.3 3.5 2.7	160	5.8 4.9 4.1 3.2	190	6.8 6.1 5.0 3.8	215	7.9 6.6 5.6 4.3	240	8.9 7.8 6.2 4.7	270	9.8 8.5 7.1 5.4	300	10.8 9.2 7.8 6.0	325	11.8 9.9 8.3 6.5	350	12.6 10.8 9.1 7.0
12 x 6	135	4.3 3.4 3.0 2.3	165	5.3 4.6 3.8 3.0	195	6.2 5.4 4.4 3.4	225	7.5 6.4 5.3 4.2	255	8.5 7.4 6.0 4.7	290	9.6 8.2 6.8 5.2	330	10.8 9.2 7.7 6.0	360	12.0 10.5 8.5 6.6	390	12.5 11.0 9.3 7.3	420	13.5 12.0 10.0 7.8
14 x 6	155	4.7 4.0 3.3 2.6	190	5.8 5.1 4.1 3.2	225	7.1 6.0 5.0 3.9	265	8.1 7.1 5.8 4.5	300	9.2 8.0 6.6 5.2	340	10.5 9.2 7.5 5.8	380	12.0 10.0 8.2 6.5	420	13.0 11.2 9.1 7.2	460	14.0 12.1 10.0 7.7	500	15.1 13.0 11.0 8.5
16 x 6	185	5.1 4.4 3.6 2.8	230	6.2 5.4 4.5 3.5	270	7.5 6.4 5.3 4.2	320	8.8 7.6 6.3 4.9	360	10.0 8.7 7.3 5.6	405	11.6 9.9 8.4 6.5	450	12.8 11.0 9.1 7.1	500	14.0 12.2 10.2 8.1	540	14.5 12.6 10.5 8.5	590	15.0 13.0 11.0 9.0
20 x 6	225	5.6 4.9 4.0 3.1	275	7.1 6.1 5.1 3.9	325	8.2 7.2 6.0 4.6	380	9.8 8.4 7.1 5.3	435	11.0 9.4 8.0 6.0	500	12.6 10.8 9.0 7.0	560	14.1 12.2 10.5 7.8	610	15.6 13.2 11.5 8.8	670	16.8 14.4 12.4 9.4	720	18.1 15.5 13.2 10.1

bedrooms, 500 to 750 FPM. Legitimate theatres, private offices, acoustically treated, 500 to 1000 FPM. Motion picture theatres, private offices, not treated 1000 to 1250 FPM. General offices 1250 to 1500 FPM. Stores: Upper floors, main floors, 1500 FPM. Industrial buildings 1500 to 2000 FPM. NOTE: FOR VELOCITIES ABOVE 1300 FPM PLEASE CONTACT FACTORY.

# INSTRUCTION FOR SETTING GRILLE BARS

DETERMINE CORRECT DEFLECTION SETTING OF GRILLE BARS FROM THE VARIOUS SETTINGS AS INDICATED ON PAGE 7. USING PROPER ANGLE AS INDICATED ON DEFLECTING KEY, PLACE KEY OVER BAR AND TURN UNTIL KEY CONTACTS NEXT BAR. REPEAT OPERATION UNTIL ALL BARS CORRESPOND TO SETTING DESIRED. KEY MAY ALSO BE USED FOR SETTING REAR BARS THROUGH GRILLE FACE.



VELOCITY FPM	400	500	600	700	800	900	1000	1100	1200	1300
TOTAL PRESSURE	.001"	.015"	.022"	.031"	.040"	.051"	.062"	.075"	.090"	.105"
SIZE	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.
24 x 6	275 6.2 5.4 4.4 3.5	340 8.2 7.2 5.9 4.6	400 9.2 7.9 6.4 5.1	475 11.1 9.4 7.9 6.1	540 14.0 12.0 10.2 7.8	600 15.6 13.2 11.4 8.8	680 17.2 14.6 12.5 9.4	750 18.5 15.7 13.6 10.3	820 19.8 17.2 14.6 11.2	880 21.4 18.5 15.7 12.1
30 x 6	340 7.2 6.1 5.1 3.9	425 8.7 7.8 6.2 4.8	505 10.6 9.1 7.5 5.7	580 12.2 10.5 8.9 6.6	675 13.8 11.8 10.2 7.6	760 15.8 13.2 11.4 8.8	835 17.2 14.7 12.8 9.8	920 19.0 16.2 14.1 10.7	1000 20.5 18.1 15.2 11.5	1080 19.2 16.2 12.4 12.4
8 x 8	115 4.0 3.6 3.0 2.3	145 5.1 4.4 3.6 2.8	170 6.0 5.2 4.4 3.4	200 7.1 6.1 5.1 3.9	225 8.1 6.9 5.8 4.4	250 9.1 7.7 6.4 4.9	280 10.2 8.6 7.3 5.5	315 11.3 9.4 7.9 6.0	345 12.4 10.4 8.6 6.6	370 13.2 11.4 9.3 7.3
10 x 8	140 4.6 4.0 3.2 2.5	175 5.6 4.9 3.9 3.2	210 6.6 5.8 4.7 3.5	245 7.9 6.7 5.6 4.3	275 8.9 7.7 6.3 4.9	315 10.0 8.6 7.0 5.5	350 11.4 9.7 8.2 6.3	385 12.7 10.9 8.9 6.9	420 13.6 11.7 9.8 7.8	455 14.7 12.6 10.6 8.2
12 x 8	185 5.1 4.4 3.6 2.8	230 6.2 5.4 4.5 3.5	270 7.5 6.6 5.3 4.2	320 8.8 7.6 6.3 4.9	360 10.0 8.7 7.3 5.6	405 11.6 9.9 8.4 6.5	450 12.8 11.0 9.1 7.1	500 14.0 12.2 10.2 8.1	540 14.5 12.6 10.5 8.5	590 15.0 13.0 11.0 9.0
14 x 8	210 5.5 4.8 3.9 3.0	260 6.8 5.9 4.9 3.8	310 8.1 7.1 5.8 4.5	360 9.4 8.2 6.8 5.4	410 11.1 9.6 7.9 6.1	465 12.5 10.6 8.9 6.8	515 13.8 11.7 9.9 7.5	580 15.0 12.9 11.0 8.3	625 16.2 13.9 12.0 9.1	680 17.6 14.9 12.9 9.8
16 x 8	235 5.9 5.1 4.1 3.2	290 7.3 6.2 5.2 3.9	350 8.7 7.5 6.1 4.9	405 9.9 8.7 7.1 5.6	460 11.5 9.7 8.2 6.2	525 13.0 11.2 9.6 7.2	590 14.5 12.5 10.8 8.2	655 16.0 13.7 11.7 9.0	720 17.4 14.8 12.6 9.6	775 18.8 16.0 13.7 10.4
20 x 8	310 6.6 5.7 4.8 3.7	385 8.2 7.2 5.9 4.5	455 9.7 8.6 7.1 5.5	525 11.4 9.9 8.3 6.3	600 13.1 11.4 9.6 7.2	690 14.8 12.8 10.9 8.1	760 16.4 14.1 12.1 9.0	835 18.1 15.4 13.2 9.2	905 19.7 16.8 14.3 10.9	985 20.8 18.0 15.4 11.6
24 x 8	370 7.3 6.2 5.1 3.9	460 9.1 7.7 6.4 4.9	540 10.6 9.1 7.6 5.8	630 12.5 10.9 9.2 6.9	720 14.5 12.4 10.5 7.9	810 16.2 13.7 11.9 9.1	900 18.2 15.3 13.1 9.9	1000 19.8 17.2 14.7 11.1	1090 21.5 18.5 15.7 12.1	1180 24.5 21.5 16.8 12.9
30 x 8	460 8.1 6.9 5.7 4.4	560 9.9 8.4 7.3 5.5	680 12.1 10.3 8.8 6.6	790 13.9 12.1 10.3 7.9	900 16.0 13.6 11.5 8.9	1050 18.1 15.4 13.2 9.9	1150 19.8 17.0 14.5 11.1	1235 22.6 19.1 16.2 12.5	1355 23.0 19.1 16.2 13.2	1465 25.0 20.5 17.5 14.6
36 x 8	570 8.9 7.7 6.5 5.0	610 11.2 9.6 8.0 6.1	850 13.2 11.4 9.6 7.3	990 15.4 13.2 11.4 8.8	1130 18.1 15.3 13.1 9.9	1270 19.8 17.0 14.6 11.1	1410 22.6 19.4 16.3 12.5	1570 26.6 21.1 18.1 13.9	1710 28.1 21.1 19.5 14.9	1830 30.6 24.9 20.6 15.7
10 x 10	185 5.1 4.4 3.6 2.8	230 6.2 5.4 4.5 3.5	270 7.5 6.4 5.3 4.2	320 8.8 7.6 6.3 4.9	360 10.0 8.7 7.3 5.6	405 11.6 9.9 8.4 6.5	450 12.8 11.0 9.1 7.1	500 14.0 12.2 10.2 8.1	540 15.6 14.4 12.6 8.5	590 18.1 16.8 14.5 9.0
12 x 10	225 5.6 4.9 4.0 3.1	275 7.1 6.1 5.1 3.9	325 8.2 7.2 6.0 4.6	380 9.8 8.4 7.1 5.3	435 11.0 9.4 8.0 6.0	500 12.6 10.8 9.0 7.0	560 14.1 12.2 10.5 7.8	610 15.6 13.2 11.5 8.8	670 16.8 14.4 12.4 9.4	720 18.1 15.5 13.2 10.1

INSTRUCTION FOR USE OF TABLES: 1- Choose the recommended jet velocity. 2- Select the required CFM, or the next nearest quantity above, in the chosen velocities column. 3- For selecting the size of registers and grilles refer to the size column on the left of the chosen CFM. 4- For long throws use "A" or "B" deflection. For shorter throws use "C" or "D" deflection setting. For average conditions use a "B" deflection setting. 5- To determine the exact jet

GRILLE DIMENSIONS IN INCHES  
WIDTH X HEIGHT (NOMINAL)

AIR VOLUME  
THROW IN METERS

SIZE SELECTION CHART

SIZE	CFM	TH.
36 x10	710	9.9
		8.4
		7.3
		5.4

A Deflection setting  
B Deflection setting  
C Deflection setting  
D deflection setting

VELOCITY FPM	400	500	600	700	800	900	1000	1100	1200	1300
TOTAL PRESSURE	.001"	.015"	.022"	.031"	.040"	.051"	.062"	.075"	.090"	.105"
SIZE	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.	CFM TH.
14x10	250 6.0 5.2 4.3 3.3	315 7.6 6.4 5.3 4.1	375 8.9 7.7 6.3 4.9	440 10.5 8.9 7.4 5.6	500 11.9 10.1 8.3 6.3	560 13.2 11.5 9.6 7.4	620 14.8 12.8 10.9 8.2	690 16.3 14.2 12.2 9.3	750 17.9 15.2 13.0 9.9	800 19.1 16.3 13.9 10.5
16x10	310 6.6 5.7 4.8 3.7	385 8.2 7.2 5.9 4.5	455 9.7 8.6 7.1 5.5	525 11.4 9.9 8.3 6.3	600 13.1 11.4 9.6 7.2	690 14.8 12.8 10.9 8.1	760 16.4 14.1 12.1 9.0	835 18.1 15.4 13.2 9.9	905 19.7 16.8 14.3 10.9	985 20.8 18.0 15.4 11.6
20x10	375 7.4 6.3 5.2 4.0	465 9.2 7.8 6.5 5.0	545 10.7 9.2 7.7 5.9	635 12.6 11.0 9.3 7.0	725 14.6 12.5 10.6 8.0	815 16.3 13.8 12.0 9.2	910 18.3 15.4 13.2 10.0	1010 19.9 17.3 14.8 11.2	1100 21.6 18.6 15.8 12.2	1190 24.6 21.6 16.9 13.0
24x10	460 8.1 6.9 5.7 4.4	560 9.9 8.4 7.3 5.5	680 12.1 10.3 8.8 6.6	790 13.9 12.1 10.3 7.9	900 16.0 13.6 11.5 8.9	1050 18.1 15.4 13.2 9.9	1150 19.8 17.0 14.5 11.1	1235 23.0 19.1 16.2 12.5	1355 — 20.5 17.5 13.2	1465 — — 19.1 14.6
30x10	580 9.0 7.8 6.6 5.1	620 11.3 9.7 8.1 6.2	860 13.3 11.5 9.7 7.4	1000 15.5 13.3 11.5 8.9	1140 18.2 15.4 13.2 10.0	1280 19.9 17.1 14.7 11.2	1420 22.7 19.5 16.4 12.6	1580 — 21.2 18.2 14.0	1720 — — 19.6 15.0	1840 — — 20.7 15.8
36x10	710 9.9 8.4 7.3 5.4	880 12.5 10.9 9.2 7.1	1050 14.8 12.7 10.9 8.2	1220 17.2 14.6 12.5 9.4	1400 19.7 17.0 14.5 11.1	1580 21.5 19.0 16.1 12.4	1750 — 21.6 18.1 13.8	1940 — 19.7 15.0	2090 — 21.6 16.0	2240 — — 17.8
12x12	250 6.0 5.2 4.3 3.3	315 7.6 6.4 5.3 4.1	375 8.9 7.7 6.3 4.9	440 10.5 8.9 7.4 5.6	500 11.9 10.1 8.3 6.3	560 13.2 11.5 9.6 7.4	620 14.8 12.8 10.9 8.2	690 16.3 14.2 12.2 9.3	750 17.9 15.2 13.0 9.9	800 19.1 16.3 13.9 10.5
14x12	310 6.6 5.7 4.8 3.7	385 8.2 7.2 5.9 4.5	455 9.7 8.6 7.1 5.5	525 11.4 9.9 8.3 6.3	600 13.1 11.4 9.6 7.2	690 14.8 12.8 10.9 8.1	760 16.4 14.1 12.1 9.0	835 18.1 15.4 13.2 9.9	905 19.7 16.8 14.3 10.9	985 20.8 18.0 15.4 11.6
16x12	370 7.3 6.2 5.1 3.9	460 9.1 7.7 6.4 4.9	540 10.6 9.1 7.6 5.8	630 12.5 10.9 9.2 6.9	720 14.5 12.4 10.5 7.9	810 16.2 13.7 11.9 9.1	900 18.2 15.3 13.1 9.9	1000 19.8 17.2 14.7 11.1	1090 21.5 18.5 15.7 12.1	1180 24.5 21.5 16.8 12.9
20x12	460 8.1 6.9 5.7 4.4	560 9.8 8.4 7.3 5.5	680 12.1 10.3 8.8 6.6	790 13.9 12.1 10.3 7.9	900 16.0 13.6 11.5 8.9	1050 18.1 15.4 13.2 9.9	1150 19.8 17.0 14.5 11.1	1235 23.0 19.1 16.2 12.5	1355 — 20.5 17.5 13.2	1465 — — 19.1 14.6
24x12	570 8.9 7.7 6.5 5.0	610 11.2 9.6 8.0 6.1	850 13.2 11.4 9.6 7.3	990 15.4 13.2 11.4 8.8	1130 18.1 15.3 13.1 9.9	1270 19.8 17.0 14.6 11.1	1410 22.6 19.4 16.3 12.5	1570 — 21.1 18.1 13.9	1710 — — 19.5 14.9	1830 — — 20.6 15.7
30x12	710 9.9 8.4 7.3 5.4	880 12.5 10.9 9.2 7.1	1050 14.8 12.7 10.9 8.2	1220 17.2 14.6 12.5 9.4	1400 19.7 17.0 14.5 11.1	1580 21.5 19.0 16.1 12.4	1750 — 21.6 18.1 13.8	1940 — 19.7 15.0	2090 — 21.6 16.0	2240 — — 17.8
36x12	860 11.2 9.4 7.9 6.1	1060 13.6 11.6 9.9 7.8	1270 16.3 14.0 12.0 9.2	1480 19.1 16.2 13.8 10.8	1690 21.6 18.6 15.7 12.1	1900 — 20.6 17.9 13.4	2120 — — 19.8 15.1	2340 — — 21.6 16.5	2550 — — — —	2770 — — — 19.1

velocity and total pressure for other deflections, multiply the jet velocity and total pressure shown on the table by the following factors:  
"A"deflection, 0.9;"B"deflection,1.0;"C"deflection,1.1;"D"deflection,1.2.  
EXAMPLE: For 300 CFM. 600 FPM. Jet velocity and 5 meters distance the following sizes can be chosen. 24x5 D.S."C", 20x6 D.S."C", 14x8 D.S."C", 12x10 D.S."C". So any of the above sizes can be selected.

FOR THROW DROPS AFTER EJECTION FROM A GRILLE REFER TO PAGE 10

# DROP CHART

FOR SUPPLY GRILLES  
AND REGISTERS

Air drops after ejection from a grille because of :

- 1- Expansion of the air stream after it leaves a grille.
- 2- Temperature differential between the primary and secondary air.

Failure to analyze what the drop will be may result in unsatisfactory distribution. If it is found that the air stream will fall into the occupied zone before the end of the throw, horizontal rear bars should be selected so that the air stream can be arched above the occupied zone. If such a procedure is not possible, or where drop is exorbitant, another grille layout should be considered.

## INSTRUCTIONS FOR USE OF CHART.

A 20" X 6" grille with 600 FPM jet velocity and "B" deflection has been selected to discharge 325 CFM with an 7.20 meters throw.

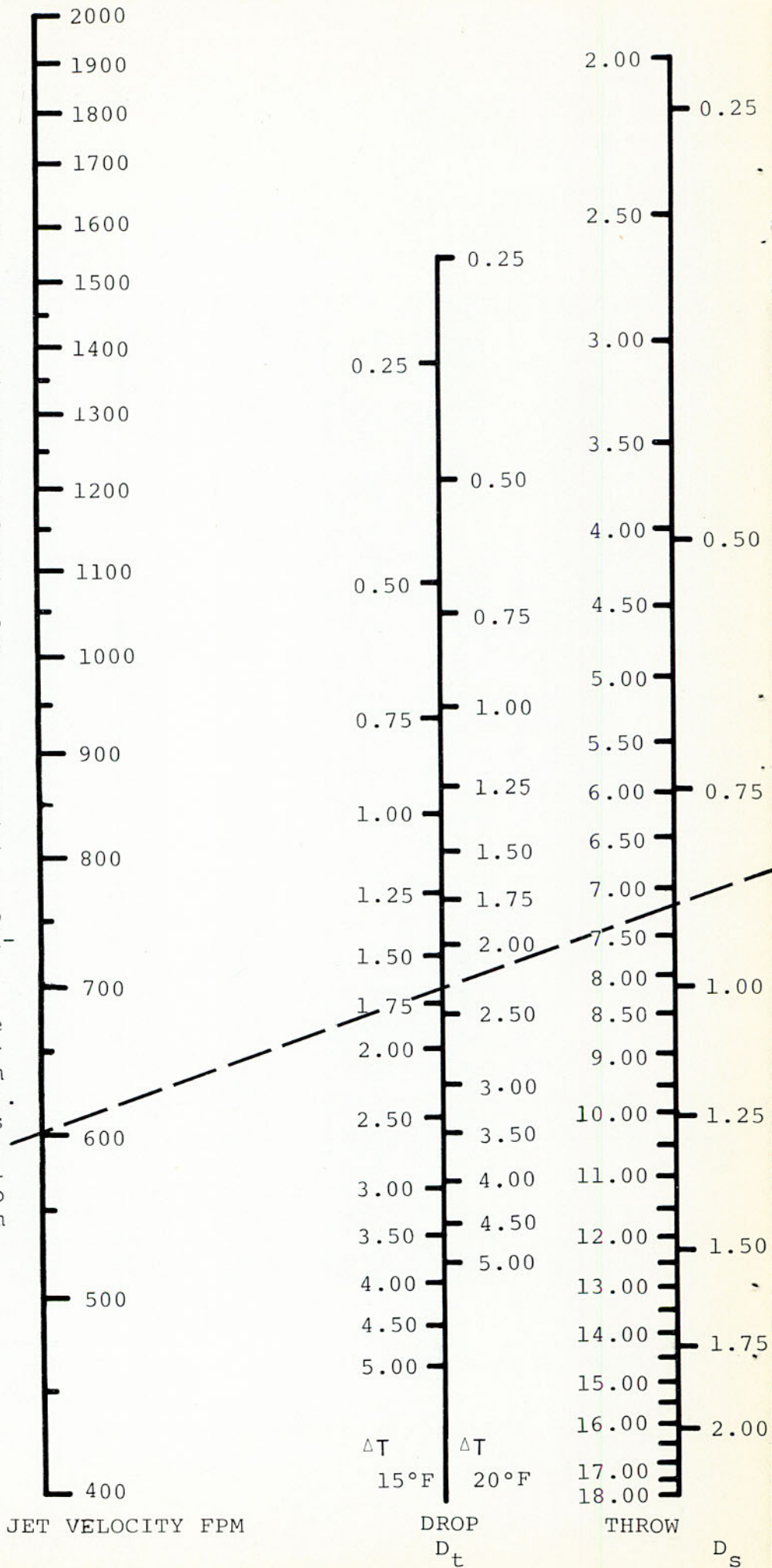
**PROBLEM :** Determine the drop at 20°F temperature differential.

**SOLUTION :** Lay straight edge on throw and velocity ordinates connecting values from example (shown by dotted line). Total drop of air stream is found by adding drop due to temperature differential ( $D_t$  scale) and drop due to spread of the air stream ( $D_s$  scale).

$$D_t = 2.35$$

$$D_s = 0.90$$

$$D_{total} = 2.35 + 0.90 = 3.25$$





# CHART FOR SELECTING ALTERNATE SIZES

GRILLE WIDTH  
IN INCHES

TURNING LINE

GRILLE HEIGHT  
IN INCHES

60  
58  
56  
54  
52  
50  
48  
46  
44  
42  
40  
38  
36  
34  
32  
30  
28  
26  
24  
22  
20  
18  
16  
14  
12  
10  
8

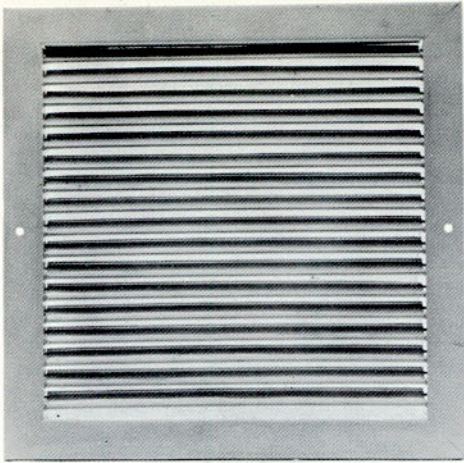
Extensive tests indicate that by varying dimensions of a grille there is no appreciable effect on the air throw, provided the same area is maintained. To change the dimensions of a grille, place a straight edge across the width and height scales on dimensions as selected from tables on pages 6,7,8, and 9. Place a pointer at the crossing point on the turning line and rotate the straight edge around this point until it crosses width and height scale at dimensions desired.

Note: Grille sizes determined from this chart are the nominal or duct dimensions.

24  
22  
20  
18  
16  
14  
12  
10  
8  
6  
5  
4

6  
5  
4

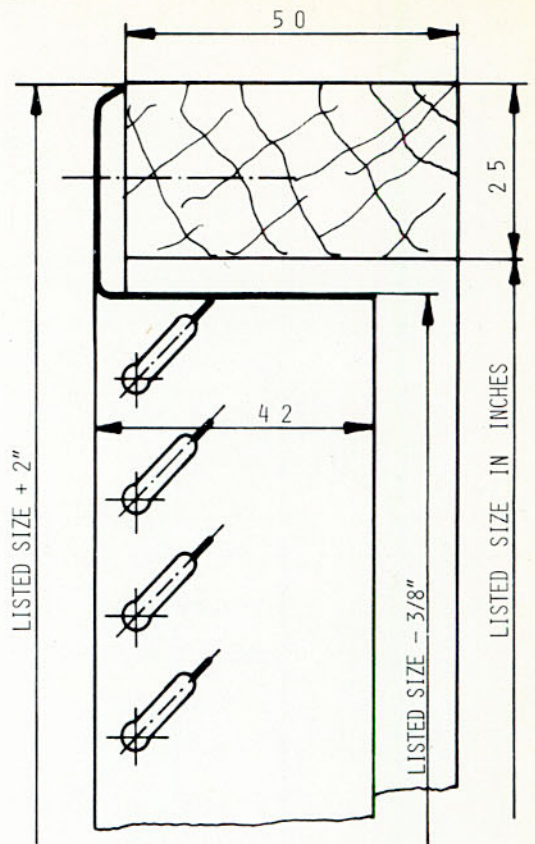
# RAG RETURN GRILLES



Designed for maximum effectiveness and pleasing appearance, the RAG series provides a wide range of application for return air grille.

For size selection, see below:

12" X 3" special size for fan & coils fresh air inlet.



VERTICAL CROSS SECTION  
THRU RAG GRILLE

## SIZE SELECTION TABLE

Return grille are usually selected on the basis of anemometer velocities, generally through a range of 300 to 800 fpm for quiet operation. The table below gives the capacity in cfm for various sizes and anemometer velocities. The table at the bottom of the page relates negative static pressure requirements to anemometer velocity for the 0.666" bar spacings available.

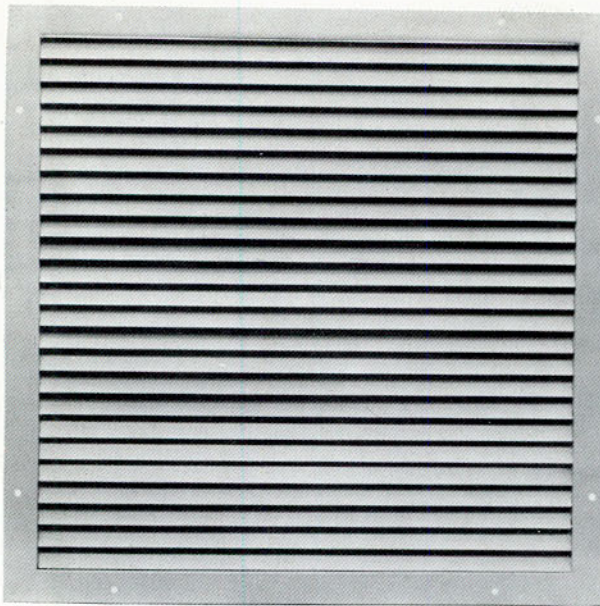
SIZE	ANEMOMETER EFFECTIVE AREA IN Sq. Ft.	AIR CAPACITIES IN CFM							
		300FPM	400FPM	500FPM	600FPM	700FPM	800FPM	900FPM	1000FPM
10 X 6	0.22	65	90	110	135	155	175	200	220
12 X 6	0.25	75	100	125	150	175	200	225	250
10 X 8	0.28	85	115	140	170	195	225	250	280
12 X 8	0.35	105	140	175	210	245	280	315	350
18 X 6	0.40	120	160	200	240	280	320	360	400
12 X 12	0.50	180	240	300	360	420	480	540	600
18 X 12	0.85	255	340	425	510	590	680	765	850
24 X 12	1.20	360	480	600	720	840	960	1080	1200
18 X 18	1.30	390	520	650	780	910	1040	1170	1300
30 X 12	1.50	450	600	750	900	1050	1200	1350	1500
24 X 18	1.65	490	660	825	990	1155	1320	1490	1650
30 X 18	2.00	600	800	1000	1200	1400	1600	1800	2000
24 X 24	2.15	645	860	1075	1290	1505	1720	1935	2150
36 X 18	2.40	720	960	1200	1440	1680	1920	2160	2400
30 X 24	2.70	810	1080	1350	1620	1890	2160	2430	2700
36 X 24	3.20	960	1280	1600	1920	2240	2560	2880	3200
36 X 30	4.00	1200	1600	2000	2400	2800	3200	3600	4000
48 X 24	4.30	1290	1720	2150	2580	3010	3440	3860	4300
48 X 30	5.30	1590	2120	2650	3180	3710	4240	4760	5300
48 X 36	7.30	2190	2920	3650	4380	5110	5840	6560	7300

### NEGATIVE STATIC PRESSURE (IN INCHES W.G.)

0.666" BAR SPACING	0.014	0.023	0.036	0.051	0.070	0.092	0.114	0.140
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Note: All dimensions in millimeters except mentioned.  
Wall or door opening to be listed size.

# RDG RETURN AIR AND DOOR GRILLES



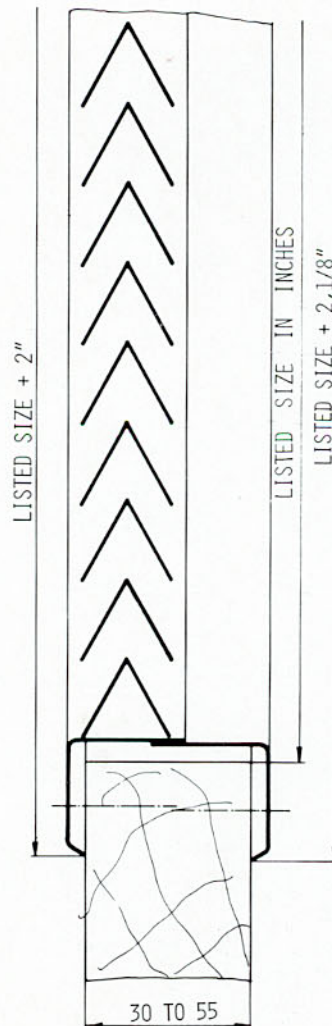
Designed for maximum effectiveness and pleasing appearance, the RDG Series provides a wide range of application for return air and door grille use where a sight-tight feature is desired.

These grilles may be installed with molding strips (RDG-3), and with a flanged frame on both sides (RDG-2), and with a flanged frame on one side and molding strip on other side (RDG-1).

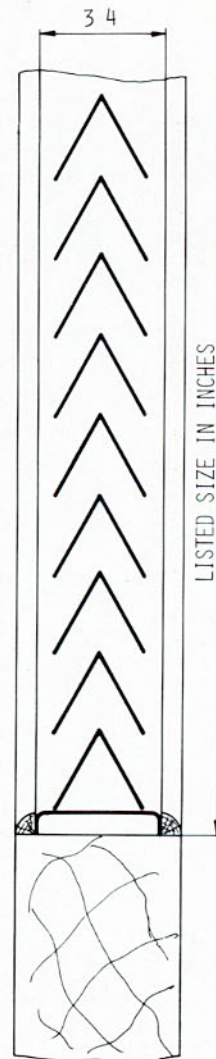
For selection data and additional information, see page 11, and dimensional drawings of all types are shown below.



RDG-1



RDG-2



RDG-3

Note: All dimensions in millimeters except mentioned.  
Wall or door opening to be listed size.

## AIR CAPACITIES

A free area rating of a V-bar grille is of little use in determining capacity since it does not include consideration of the coefficients of entry and discharge, and the change in direction of the air flow caused by the shape of the blades. All of these factors decrease the capacity of any grille which uses a completely sight-proof type of louver.

Under such conditions, static pressure differentials across the grille under specific air volume flow rates are the only realistic

determination of relative capacity. The following table gives pressure differentials for various anemometer velocities and air volumes. The anemometer area multiplied by the anemometer velocity gives actual air volumes for field balancing purposes.

Grilles used as transfer units in doors and partitions should be sized at a pressure differential of 0.025". Grilles connected to ductwork can be sized at pressure differentials of 0.04"– 0.22" to return or exhaust air quietly.

SIZE	ANEMOMETER EFFECTIVE AREA IN Sq. Ft.	AIR CAPACITIES IN CFM							
		200FPM	300FPM	400FPM	500FPM	600FPM	700FPM	800FPM	900FPM
12 X 6	0.18	40	55	75	90	110	125	145	165
12 X 8	0.24	50	75	95	120	145	170	190	215
18 X 6	0.28	60	85	110	140	170	195	225	250
12 X 10	0.33	70	100	130	165	200	230	265	295
24 X 6	0.37	75	110	150	185	220	260	295	335
18 X 8	0.37	75	110	150	185	220	260	295	335
12 X 12	0.37	75	110	150	185	220	260	295	335
18 X 10	0.45	90	135	180	225	270	315	360	405
24 X 8	0.50	100	150	200	250	300	350	400	450
18 X 12	0.64	130	190	255	320	385	450	510	575
24 X 10	0.67	135	200	270	335	400	470	540	605
24 X 12	0.82	165	245	330	410	495	575	655	740
18 X 16	0.82	165	245	330	410	495	575	655	740
30 X 10	0.88	180	265	355	440	530	615	705	790
30 X 12	1.09	220	325	435	545	650	765	870	980
24 X 16	1.16	235	350	465	580	700	810	930	1045
36 X 12	1.29	260	390	515	645	770	900	1035	1155
30 X 16	1.46	290	440	585	730	875	1020	1170	1315
24 X 20	1.46	290	440	585	730	875	1020	1170	1315
36 X 16	1.76	350	530	705	880	1055	1230	1410	1585
24 X 24	1.76	350	530	705	880	1055	1230	1410	1585
30 X 20	1.85	370	555	740	925	1110	1300	1480	1665
36 X 20	2.24	450	675	900	1125	1350	1570	1795	2015
30 X 24	2.24	450	675	900	1125	1350	1570	1795	2015
36 X 24	2.72	545	815	1090	1350	1630	1900	2175	2450
48 X 20	2.96	590	890	1190	1480	1775	2065	2365	2660
48 X 24	3.63	725	1090	1450	1815	2180	2540	2910	3260
36 X 36	4.11	825	1215	1650	2055	2470	2875	3290	3700
42 X 36	4.81	965	1445	1930	2400	2890	3365	3855	4335
48 X 36	5.51	1100	1655	2210	2755	3300	3860	4415	4960

## NEGATIVE STATIC PRESSURE

IN INCHES W.G.	0.020	0.040	0.070	0.105	0.155	0.220	0.280	0.350
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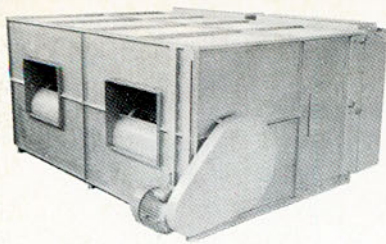
*Beautiful*



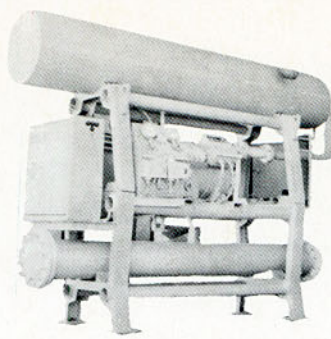
*Elegant*



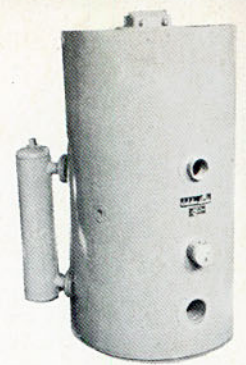
*Durable*



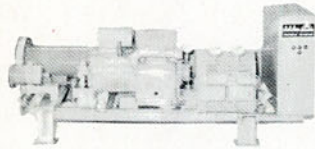
AIR HANDLING UNIT



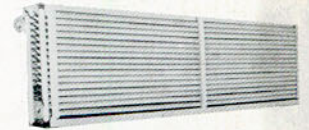
PACKAGED CHILLER



STEAM & HOT WATER BOILER



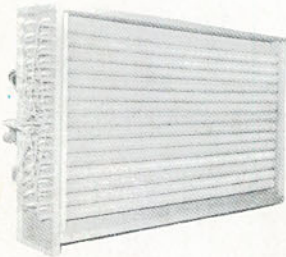
CONDENSING UNIT



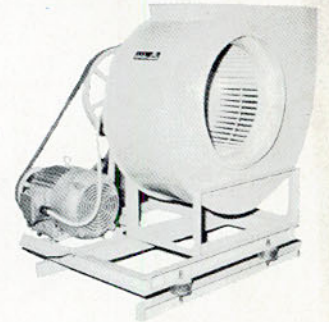
STEAM & HOT WATER COIL

# SARAVEL PRODUCT

COVERS



DIRECT EXPANSION COIL



CENTRIFUGAL FAN  
(SINGLE INLET)

# ENTIRE RANGE

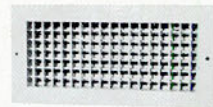
OF

# AIR CONDITIONING EQUIPMENT

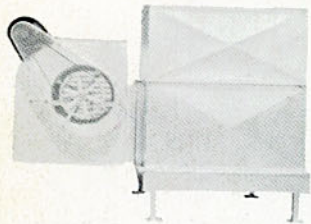
**SARAVEL MANUFACTURING CO.**

Villa - Damghan No. 6

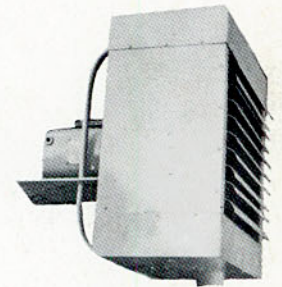
Teheran : Tel. 612229  
43952



REGISTERS & DIFUSERS



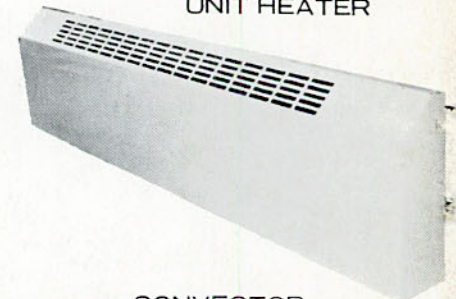
COOLING TOWER



STEAM & HOT WATER  
UNIT HEATER



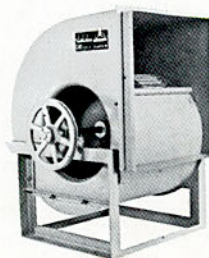
AIR HANDLING UNIT  
VERTICAL TYPE



CONVECTOR



ROOF EXHAUST FAN



CENTRIFUGAL FAN  
(DOUBLE INLET)



HEAT EXCHANGER