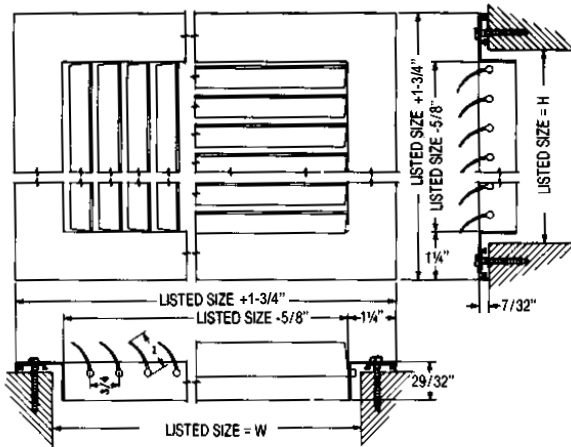


1, 2, 3 and 4-WAY AIR PATTERNS

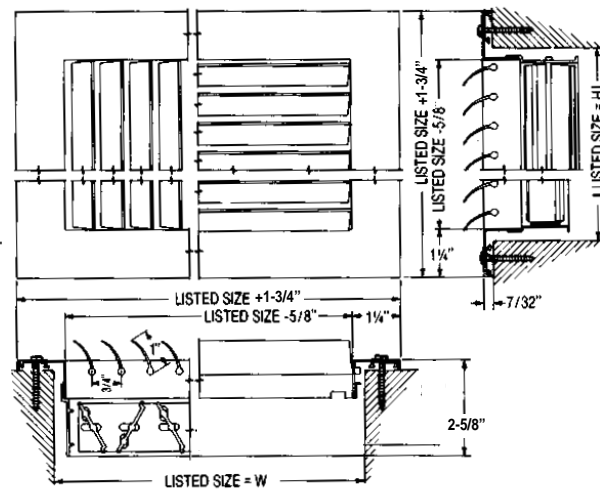
The curved blade grille is constructed from extruded aluminum extrusions. The frame is flat with sharp square edges to harmonize with modern aesthetical designs. The blades are curved and individually adjustable to permit any degree of deflection of the primary air stream. This curved blade outlet can be used equally as well on side wall or ceiling installations.

The curved blade register is a combination of a grille and an opposed blade damper. The damper blades are gang operated with a key that can be removed after balancing. The opposed blade damper assures even distribution of air across the entire face of the outlet as well as positive volume control. Gaskets are provided to prevent leakage around the frame.

GRILLE DIMENSIONS

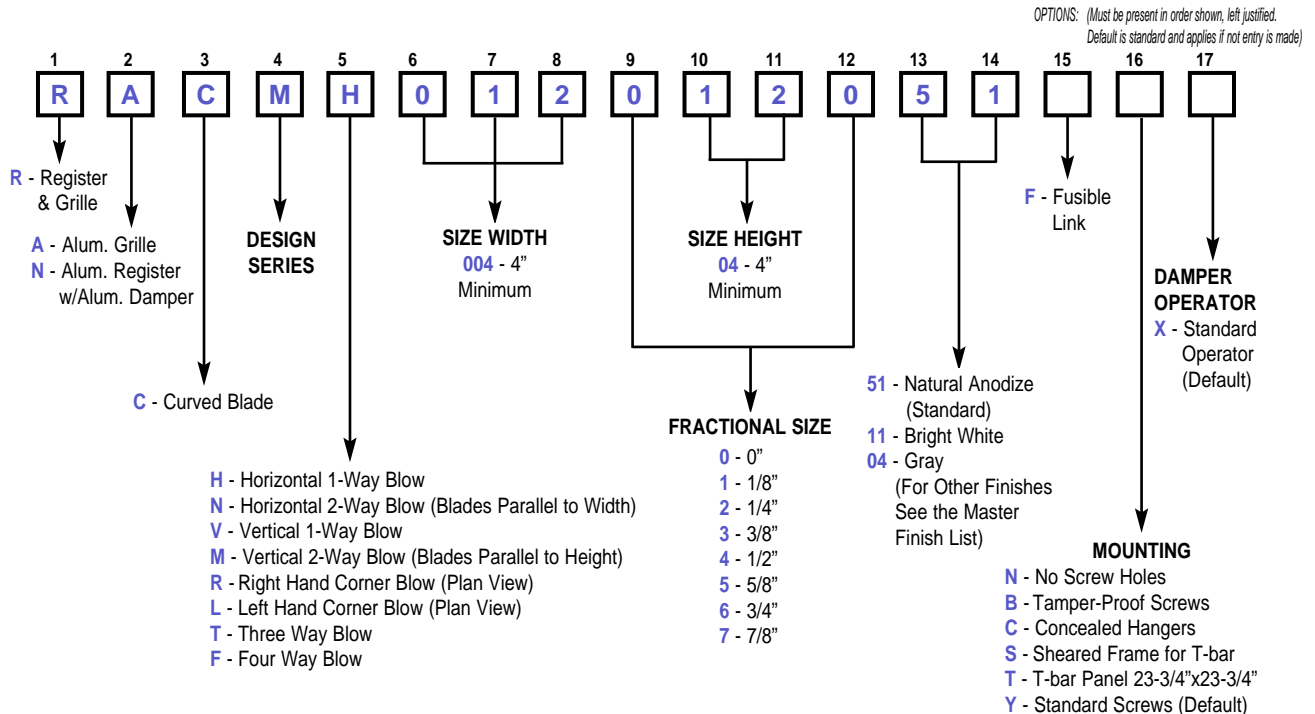


REGISTER DIMENSIONS



**REGISTER MODELS
RNCM**

▼ MODEL NUMBERING SYSTEM - Curved Blade Registers and Grilles



Sq. & Rect. Registers & Grilles

Nominal Neck Size	Neck Area	Neck Vel.	200	300	400	500	600	700	800	900	1000
		Static Pr.	0.017	0.039	0.070	0.109	0.158	0.214	0.285	0.359	0.448
		Total Pr.	0.020	0.045	0.080	0.125	0.180	0.245	0.325	0.410	0.510
6 x 4	0.167	CFM	33	50	67	83	100	117	133	150	167
		NC	~	14	23	28	33	37	41	44	47
		Throw 4 way	3 5 8	5 7 12	6 9 15	8 12 19	9 14 22	11 16 26	12 18 29	14 21 33	15 22 36
		3 way	4 6 9	5 8 13	7 10 16	9 13 21	10 15 24	12 17 28	13 19 31	15 22 36	16 24 39
		2 way	4 6 10	6 9 14	7 11 18	10 14 23	11 16 26	13 19 31	14 22 35	16 25 40	18 27 43
		1 way	5 7 12	7 11 17	9 14 22	12 17 28	13 20 32	16 24 38	17 26 42	20 30 48	21 32 52
10 x 4 6 x 6	0.278	CFM	56	83	111	139	167	194	222	250	278
		NC	~	15	24	29	34	38	42	45	48
		Throw 4 way	4 6 9	5 8 13	7 11 17	9 13 21	10 16 25	12 18 29	14 21 33	15 22 36	16 25 40
		3 way	4 6 10	6 9 14	7 11 18	10 14 23	11 17 27	13 19 31	15 22 36	16 24 39	18 27 43
		2 way	5 7 11	7 10 16	8 12 20	10 16 25	12 19 30	14 22 35	16 25 40	18 27 43	20 30 48
		1 way	5 8 13	8 12 19	10 16 25	12 19 30	15 22 36	17 26 42	20 30 48	21 32 52	24 36 58
14 x 4	0.389	CFM	78	117	156	194	233	272	311	350	389
		NC	~	16	25	30	35	39	42	46	48
		Throw 4 way	4 6 9	6 9 14	7 11 18	9 14 22	11 16 26	12 19 30	14 21 34	16 24 38	17 26 42
		3 way	4 6 10	6 9 15	8 12 19	10 15 24	12 17 28	13 20 32	15 23 37	17 26 41	19 28 45
		2 way	5 7 11	7 11 17	9 14 22	11 16 26	13 19 31	15 22 36	17 26 41	19 29 46	21 31 50
		1 way	5 8 13	8 12 20	11 16 26	13 20 32	16 24 38	18 27 43	20 31 49	23 34 55	25 38 61
18 x 4 12 x 6	0.50	CFM	100	150	200	250	300	350	400	450	500
		NC	~	17	25	31	35	39	43	46	49
		Throw 4 way	4 6 10	6 9 14	8 12 19	10 14 23	11 17 27	13 19 31	15 22 36	16 25 40	18 27 44
		3 way	5 7 11	6 9 15	9 13 21	10 16 25	12 18 29	14 21 33	16 24 39	18 27 43	19 29 47
		2 way	5 7 12	7 11 17	10 14 23	12 17 28	13 20 32	15 23 37	18 27 43	20 30 48	22 33 53
		1 way	6 9 14	8 12 20	12 17 28	14 21 33	16 24 39	19 28 45	21 32 52	24 36 58	26 40 64
18 x 6 10 x 10	0.75	CFM	150	225	300	375	450	525	600	675	750
		NC	~	18	26	31	36	40	44	47	50
		Throw 4 way	5 7 11	6 9 15	8 12 20	10 16 25	12 18 29	14 21 34	16 24 39	18 27 43	20 30 48
		3 way	5 7 12	7 10 16	9 14 22	11 17 27	13 19 31	15 23 37	17 26 42	19 29 46	21 32 52
		2 way	5 8 13	7 11 18	10 15 24	12 19 30	14 22 35	17 26 41	19 29 47	21 32 52	24 36 58
		1 way	7 10 16	9 14 22	12 18 29	15 22 36	17 26 42	20 31 49	23 35 56	26 39 62	29 44 70

Notes on Performance Data

- Performance data is based on tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.
- Actual performance in the field may vary.
- Tests were conducted in isothermal conditions.
- Sound levels are based on a room absorption of 10db re 10⁻¹² watts.

Notes on Units of Measure Used

- Air flow is given in cubic feet per minute (CFM).
- Static Pressure is given in inches of water (w.g.).
- Sound data is given in both NC and RC. NC is the first with RC second, separated by a slash.
- Throws are given in feet to terminal velocities of 150, 100 and 50 fpm, respectively.

Nominal Neck Size	Neck Area	Neck Vel.	200	300	400	500	600	700	800	900	1000
		Static Pr.	0.017	0.039	0.070	0.109	0.158	0.214	0.285	0.359	0.448
		Total Pr.	0.020	0.045	0.080	0.125	0.180	0.245	0.325	0.410	0.510
18 x 8 12 x 12	1.0	CFM	200	300	400	500	600	700	800	900	1000
		NC	~	19	27	32	37	41	45	48	51
		Throw 4 way	5 7 11	7 10 16	9 13 21	11 16 26	13 19 31	15 22 36	17 26 41	19 29 46	21 32 51
		3 way	5 7 12	7 11 17	10 14 23	12 17 28	14 21 33	16 24 39	18 27 44	21 31 50	23 34 55
		2 way	5 8 13	8 12 19	10 16 25	13 19 31	15 23 37	18 27 43	20 31 49	23 34 55	25 38 61
		1 way	7 10 16	10 14 23	12 19 30	16 24 38	19 28 45	21 32 52	24 37 59	28 42 67	30 46 74
36 x 6 20 x 10 14 x 14	1.5	CFM	300	450	600	750	900	1050	1200	1350	1500
		NC	10	20	28	33	38	42	46	49	52
		Throw 4 way	5 7 12	7 11 17	10 14 23	12 18 29	14 21 34	16 25 40	19 28 45	21 32 51	23 35 56
		3 way	5 8 13	7 11 18	10 16 25	13 19 31	15 23 37	18 27 43	20 31 49	23 34 55	25 37 60
		2 way	6 9 14	8 12 20	12 17 28	14 22 35	17 26 41	20 30 48	22 34 54	25 38 61	28 42 67
		1 way	7 11 17	10 16 25	14 21 33	17 26 42	20 31 49	24 36 58	27 41 65	30 46 74	33 51 81
36 x 8 30 x 10 24 x 12 20 x 14 18 x 16	2.0	CFM	400	600	800	1000	1200	1400	1600	1800	2000
		NC	11	21	29	34	39	43	47	50	53
		Throw 4 way	5 8 13	7 11 18	10 15 24	12 19 30	15 22 36	17 26 42	19 29 47	22 33 53	24 36 58
		3 way	6 9 14	8 12 19	11 16 26	13 20 32	16 24 39	19 28 45	21 32 51	23 36 57	26 39 63
		2 way	7 10 16	9 14 22	12 18 29	15 22 36	18 27 43	21 31 50	23 35 56	26 40 64	29 44 70
		1 way	8 12 19	11 16 26	14 22 35	18 27 43	21 32 52	25 38 61	28 42 68	32 48 77	35 52 84
36 x 12 30 x 14 24 x 18 20 x 20	3.0	CFM	600	900	1200	1500	1800	2100	2400	2700	3000
		NC	12	22	29	34	39	43	47	50	53
		Throw 4 way	6 9 14	9 13 21	12 17 28	14 21 34	17 26 41	19 29 47	22 34 54	25 37 60	27 41 66
		3 way	6 9 15	10 14 23	12 19 30	15 23 37	18 27 44	21 32 51	24 36 58	27 41 65	29 44 71
		2 way	7 11 17	10 16 25	14 21 34	17 26 41	20 31 49	23 35 56	27 41 65	30 45 72	32 49 79
		1 way	8 12 20	12 19 30	17 26 41	20 31 49	24 37 59	28 42 68	32 49 78	36 54 87	40 60 96
36 x 16 30 x 18 24 x 24	4.0	CFM	800	1200	1600	2000	2400	2800	3200	3600	4000
		NC	13	23	30	35	40	44	48	51	54
		Throw 4 way	6 9 15	9 14 22	12 18 29	15 22 36	18 27 43	20 31 49	23 35 56	26 39 63	29 44 70
		3 way	7 10 16	10 15 24	13 19 31	16 24 39	19 29 46	22 33 53	25 37 60	28 42 68	31 47 76
		2 way	7 11 18	11 16 26	14 22 35	18 27 43	21 32 52	24 37 59	28 42 67	31 47 76	35 52 84
		1 way	9 14 22	13 20 32	17 26 42	21 32 52	26 39 62	29 44 71	33 51 81	37 57 91	42 64 101

Notes on Performance Data

- Performance data is based on tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.
- Actual performance in the field may vary.
- Tests were conducted in isothermal conditions.
- Sound levels are based on a room absorption of 10db re 10⁻¹² watts.

Notes on Units of Measure Used

- Air flow is given in cubic feet per minute (CFM).
- Static Pressure is given in inches of water (w.g.).
- Sound data is given in both NC and RC. NC is the first with RC second, separated by a slash.
- Throws are given in feet to terminal velocities of 150, 100 and 50 fpm, respectively.

Nominal Neck Size	Neck Area	Neck Vel.	200	300	400	500	600	700	800	900	1000
		Static Pr.	0.017	0.039	0.070	0.109	0.158	0.214	0.285	0.359	0.448
		Total Pr.	0.020	0.045	0.080	0.125	0.180	0.245	0.325	0.410	0.510
36 x 20 30 x 24	5.0	Cfm	1000	1500	2000	2500	3000	3500	4000	4500	5000
		NC	13	24	30	36	41	45	49	52	55
		Throw 4 way	6 9 15	10 14 23	12 19 30	15 23 37	18 27 44	21 32 52	24 37 59	27 41 65	30 45 72
		3 way	7 10 16	10 16 25	13 20 32	16 25 40	19 29 47	23 35 56	28 40 64	29 44 70	32 49 78
		2 way	7 11 18	12 17 28	15 22 36	18 27 44	22 33 53	25 39 62	29 44 71	32 49 78	35 54 86
		1 way	9 14 22	14 21 33	18 27 43	22 34 54	28 40 64	31 47 75	35 53 85	39 59 94	43 65 104
36 x 24 30 x 30	6.0	Cfm	1200	1800	2400	3000	3600	4200	4800	5400	6000
		NC	14	24	31	37	42	46	50	53	56
		Throw 4 way	7 10 16	10 15 24	13 19 31	16 24 38	19 28 45	22 33 53	25 37 60	28 42 67	30 46 74
		3 way	7 11 17	11 16 26	14 21 33	17 26 41	20 31 49	23 36 57	27 41 65	30 45 72	33 50 80
		2 way	8 12 19	12 18 29	15 23 37	19 29 46	22 34 54	26 40 64	30 45 72	33 50 80	37 56 89
		1 way	10 14 23	14 22 35	19 28 45	23 34 55	27 41 65	32 48 77	36 54 87	40 61 97	44 67 107
36 x 30	7.5	Cfm	1500	2250	3000	3750	4500	5250	6000	6750	7500
		NC	14	25	32	38	43	47	51	54	57
		Throw 4 way	7 11 17	10 16 25	14 21 33	17 26 41	20 31 49	23 35 56	26 40 64	29 44 71	33 49 79
		3 way	7 11 18	11 17 27	15 22 36	18 27 44	22 33 53	25 37 60	28 43 69	32 48 77	35 53 85
		2 way	8 12 20	12 19 30	16 25 40	20 31 49	24 37 59	28 42 67	32 48 77	38 54 84	39 59 95
		1 way	10 16 25	15 22 36	20 30 48	24 37 59	29 44 71	33 51 81	38 58 93	42 64 103	47 71 114
36 x 36	9.0	Cfm	1800	2700	3600	4500	5400	6300	7200	8100	9000
		NC	15	26	33	39	44	48	52	55	58
		Throw 4 way	7 11 18	11 16 26	14 21 34	18 27 43	21 32 51	24 37 59	28 42 67	30 46 74	34 51 82
		3 way	8 12 19	12 17 28	15 23 37	19 29 46	23 34 55	26 40 64	30 45 72	33 50 80	36 55 88
		2 way	9 14 22	13 19 31	17 26 41	21 32 52	25 38 61	29 44 71	33 50 80	37 56 89	40 61 98
		1 way	11 16 26	16 24 38	20 31 49	23 39 62	30 46 74	35 53 85	40 61 97	44 67 107	49 74 119

The following describes the procedure to determine the quantity of air through the curved blade grille.

- Determine the AK (effective free area) by multiplying the length of the blade by the sum of the perpendicular dimension between blades and by the value of 0069.
 Example: Grille size 8" x 8"
 Blades set at 3/8" open
 Length of blades 7-3/8"
 Number of blades 10
- Measure velocities through grille at a number of points with Alnor velometer equipped with 2220 or 2220A jet. Average these readings.
- Multiply the Ak (Step 1) by the average velocity (Step 2) to secure the CFM.

$Ak = 3/8" \times 7-3/8" \times 10 \times .0069 = .19$

Notes on Performance Data

- Performance data is based on tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.
- Actual performance in the field may vary.
- Tests were conducted in isothermal conditions.
- Sound levels are based on a room absorption of 10db re 10⁻¹² watts.

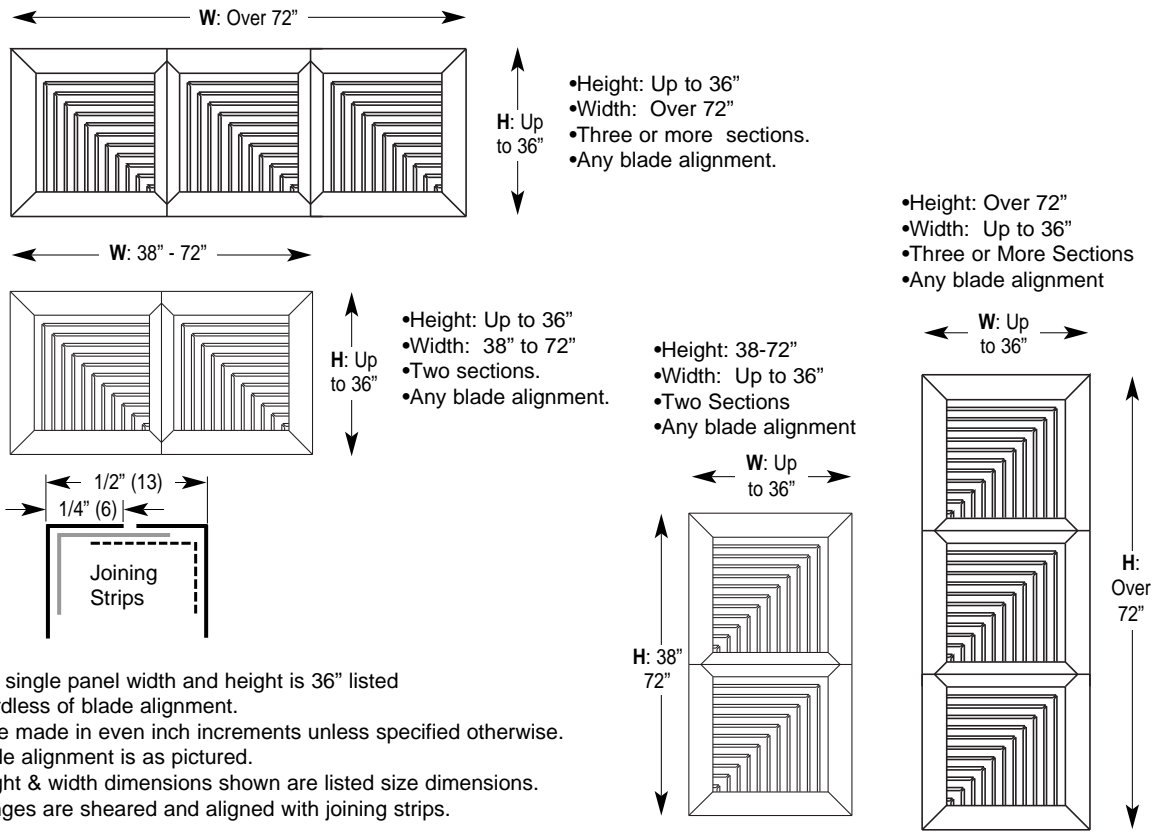
Notes on Units of Measure Used

- Air flow is given in cubic feet per minute (CFM).
- Static Pressure is given in inches of water (w.g.).
- Sound data is given in both NC and RC. NC is the first with RC second, separated by a slash.
- Throws are given in feet to terminal velocities of 150, 100 and 50 fpm, respectively.

Multi-Panel Construction for the following Registers & Grilles

	Steel	Stainless Steel	Aluminum
Single Deflection	RSSB, RTSB	RLSB, RMSB, RKSB	RASM, RNSM
Double Deflection	RSDB, RTDB	RLDB, RMDB, RKDB	RADM, RNDM
0° Fixed Return	RSRB, RTRB	RLRB, RMRB, RKRB	RARM, RNRM
45° Fixed Return	RSAB, RTAB	RLAB, RMAB, RKAB	RAAM, RNAM

In-line Construction



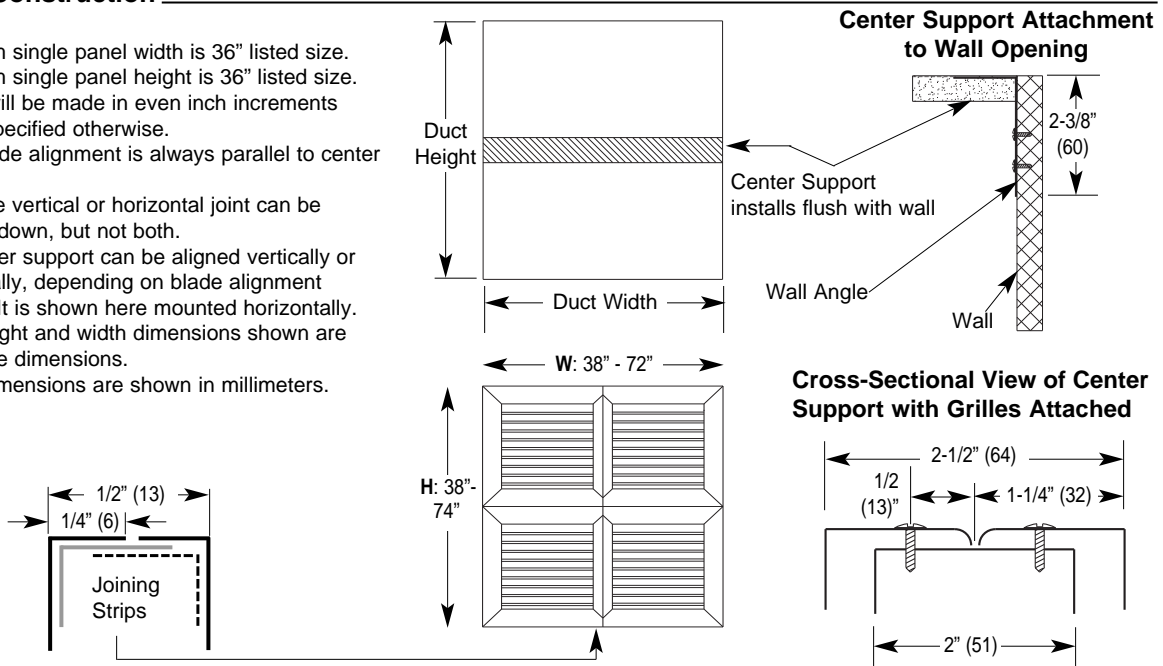
Notes:

1. Maximum single panel width and height is 36" listed size regardless of blade alignment.
2. Panels are made in even inch increments unless specified otherwise.
3. Front blade alignment is as pictured.
4. Grille height & width dimensions shown are listed size dimensions.
5. Panel flanges are sheared and aligned with joining strips.

Ganged Construction

Notes:

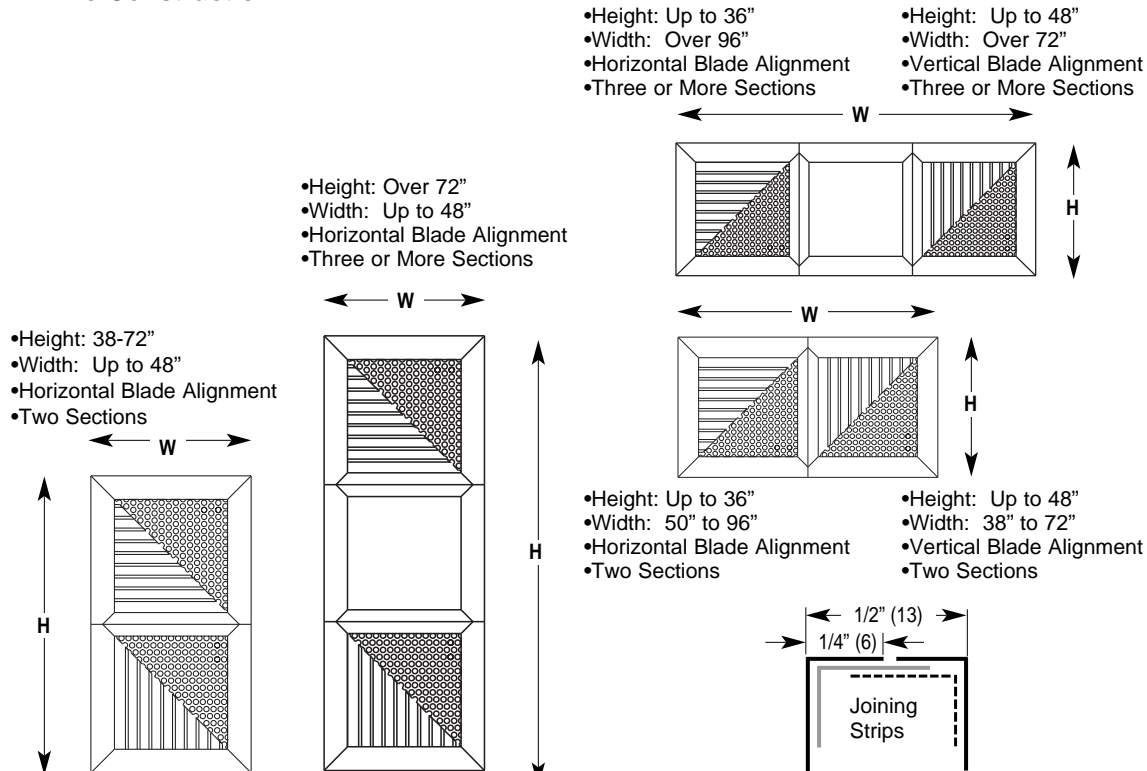
1. Maximum single panel width is 36" listed size.
2. Maximum single panel height is 36" listed size.
3. Panels will be made in even inch increments unless specified otherwise.
4. Front blade alignment is always parallel to center support.
5. Either the vertical or horizontal joint can be sheared down, but not both.
6. The center support can be aligned vertically or horizontally, depending on blade alignment desired. It is shown here mounted horizontally.
7. Grille height and width dimensions shown are listed size dimensions.
8. Metric dimensions are shown in millimeters.



Multi-Panel Construction for the following Registers & Grilles

Steel
 Louvered Return RSLA, RTLA
 Perforated Return RSFA, RTFA

In-Line Construction



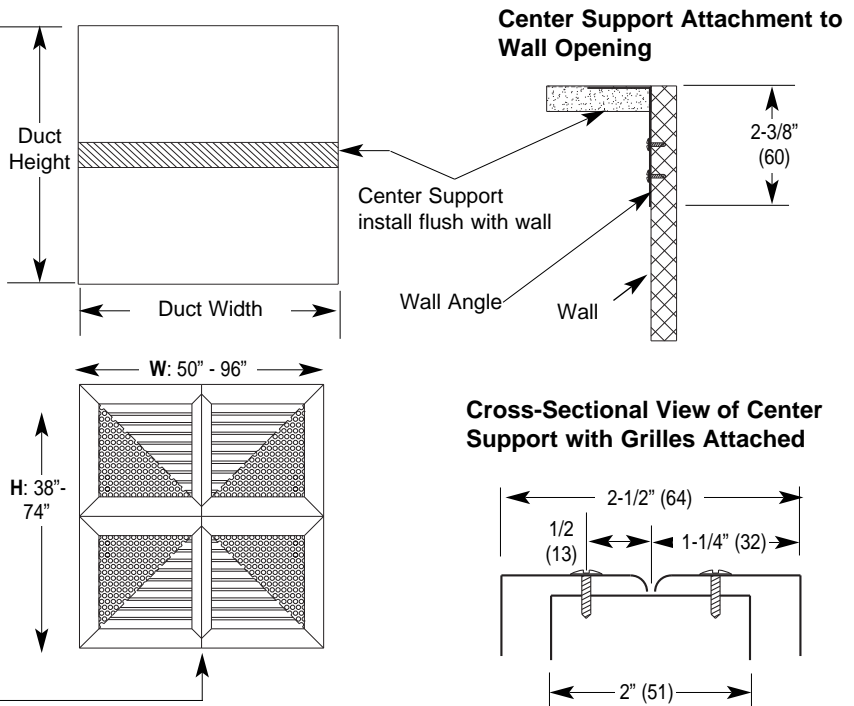
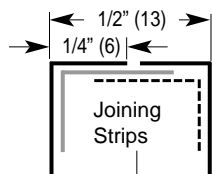
Notes:

1. Panels will be made in even inch increments unless specified otherwise.
2. Dimensions shown are listed size dimensions.
3. Max. blade length on louvered face models is nominal 48".
4. Panels are sheared and aligned with joining strips.

Ganged Construction

Notes:

1. Either the vertical or horizontal joint can be sheared down, but not both.
2. Maximum single panel width is 48" listed size.
3. Maximum blade length on louvered face models is listed size 48".
4. Maximum single panel height is 36" listed size.
5. Panels are made in even inch increments unless specified otherwise.
6. Blade alignment is always parallel to center support.
7. The center support can be aligned vertically or horizontally, depending on the blade alignment desired. It is shown here mounted horizontally.
8. Grille dimensions shown are listed size dimensions.

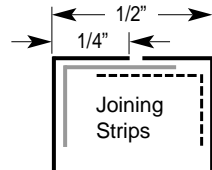
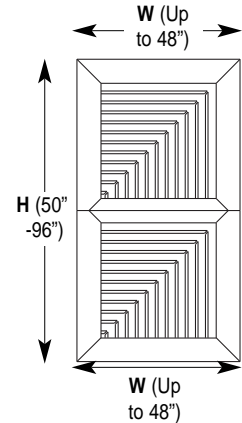


Multi-Panel In-Line Construction

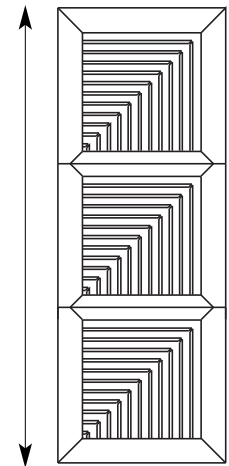
Notes:

1. Maximum single panel width and height is 48" nominal size, regardless of blade alignment.
2. Panels are made in even inch increments unless specified otherwise.
3. Front blade alignment is as pictured.
4. Grille dimensions shown are nominal dimensions.
5. Panel flanges are sheared and aligned with joining strips.

- Height: 50-96"
- Width: Up to 48"
- Two Sections
- Any Blade Alignment

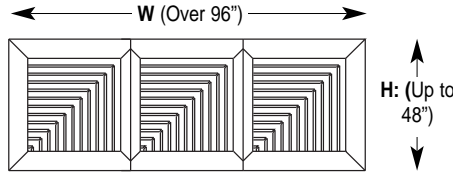
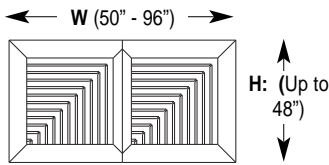


- Height: Over 96"
- Width: Up to 48"
- Three or more Sections
- Any Blade Alignment



- Height: Up to 48"
- Width: 50" - 96"
- (Two Sections)
- Any Blade Alignment

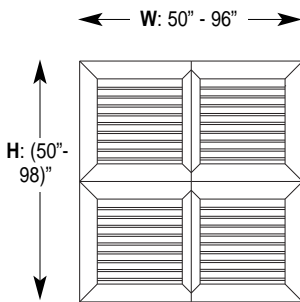
- Height: Up to 48"
- Width: Over 96"
- Three or more Sections
- Any Blade Alignment



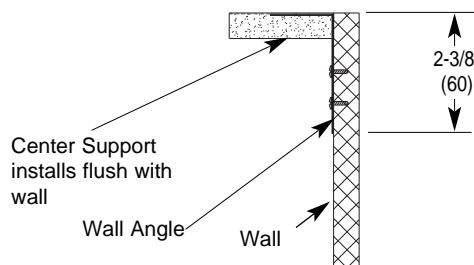
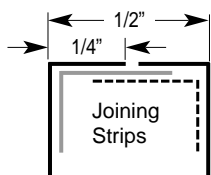
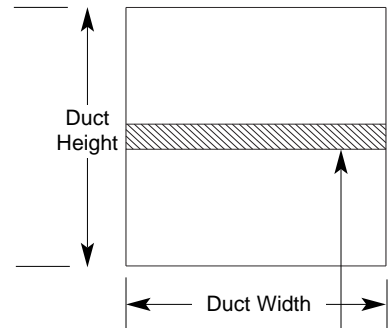
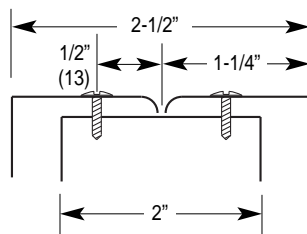
Multi-Panel Ganged Construction

Notes:

1. Maximum single panel width and height are 48" nominal size.
2. Panels are made in even inch increments unless specified otherwise.
3. Front blade alignment is always parallel to center support.
4. Either the vertical or horizontal joint can be sheared down, but not both.
5. The center support can be aligned vertically or horizontally, depending on blade alignment desired.
6. Grille dimensions shown are nominal dimensions.



Cross-Sectional View of Center Support



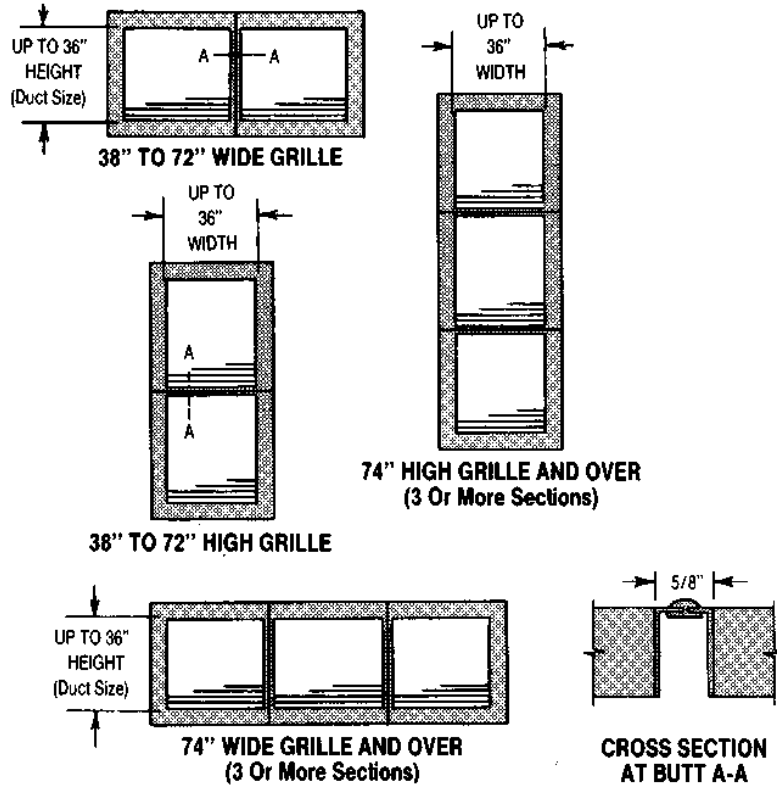
Center Support Mounted flush with wall (Shown aligned horizontally).

Sq. & Rect. Registers & Grilles

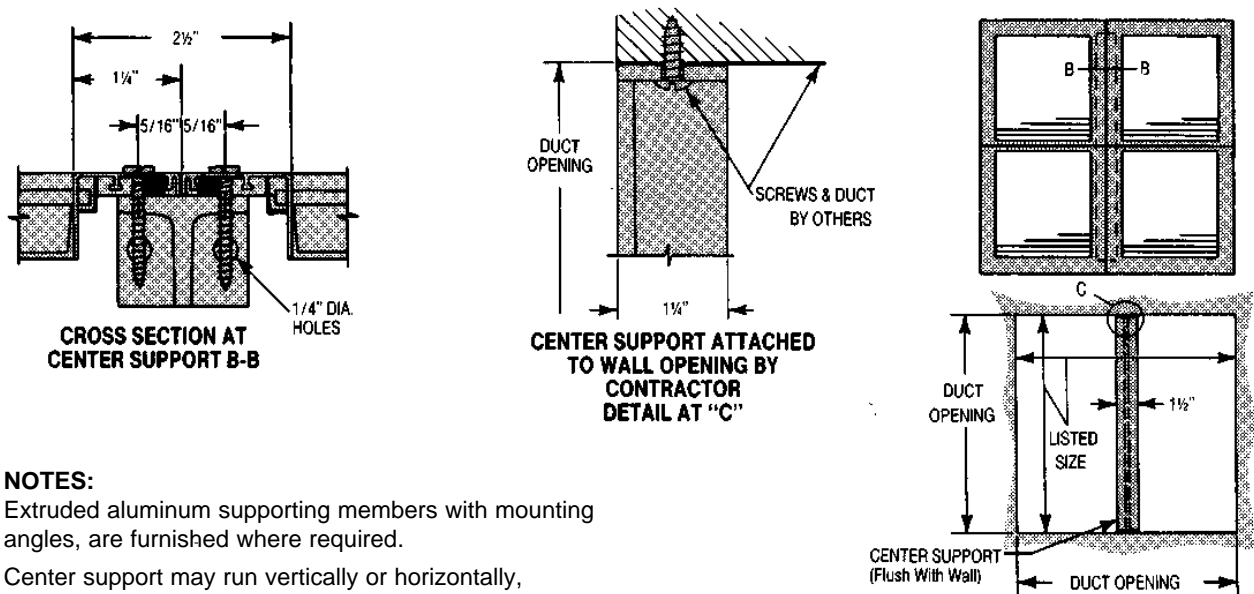
All Sections of Butted Grilles or Registers will be made in Listed Sizes as Standard.

STANDARD REGISTERS AND GRILLES

Applies to all models except louvered return air registers and grilles and door partition grilles.
Registers and grilles over 36" x 36" butting two or more grilles together.



GRILLES AND REGISTERS HAVING FOUR SECTIONS AND OVER



NOTES:

Extruded aluminum supporting members with mounting angles, are furnished where required.

Center support may run vertically or horizontally, depending upon combination of grilles used.

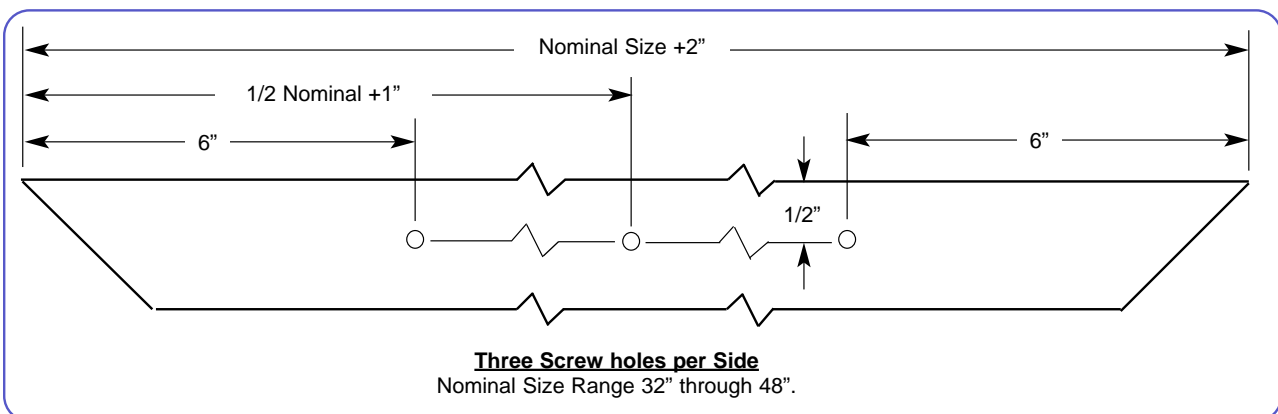
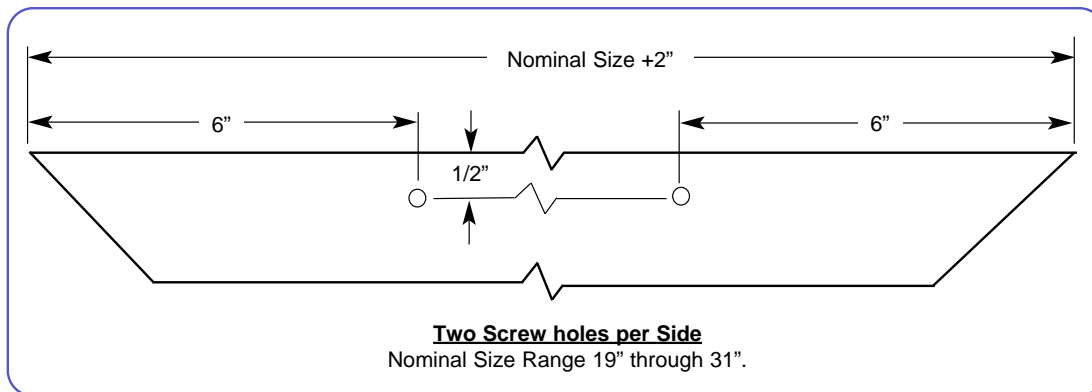
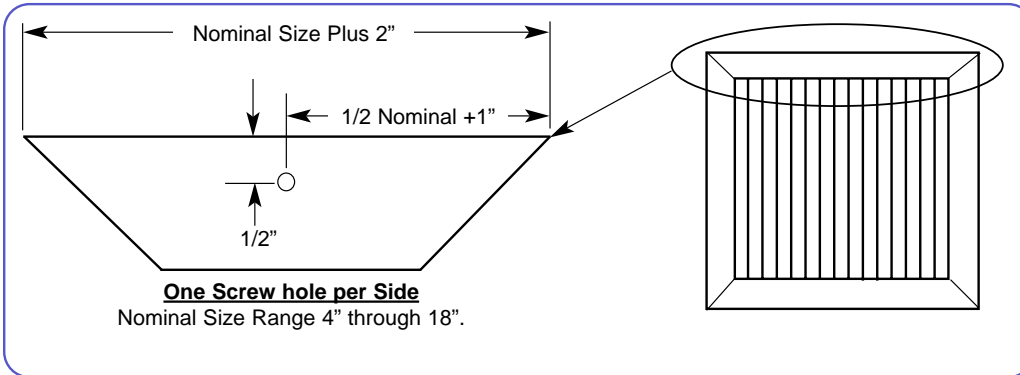
Combination of panels will be furnished to fit duct opening with satisfactory clearance.

Screw Hole Location for the following Registers & Grilles

	<u>Steel</u>	<u>Aluminum</u>	<u>Stainless Steel</u>
Single Deflection	RSSB, RTSB	RASM, RNSM	RLSB, RMSB, RKSB
Double Deflection	RSDB, RTDB	RADM, RNDM	RLDB, RMDB, RKDB
0° Fixed Return	RSRB, RTRB	RARM, RNRM	RLRB, RMRB, RKRB
45° Fixed Return	RSAB, RTAB	RAAM, RNAM	RLAB, RMAB, RKAB
Louvered Return	RSLA, RTLA	-----	-----
Perforated Return	RSFA, RTFA	RAFM, RNFM	-----

Notes:

- Screw holes on the face are standard on Registers and Grilles.
- Steel R&G can be ordered without screw holes, for use with concealed hangers (Opt. N).
- The screw holes is 5/32" in diameter.
- Each Register or Grille is provided with the appropriate number of screws as standard.
- The standard screw is #8 x 1-1/4" pan head screw, with a flat blade head.
- Tamper-proof screws are available as an option (Opt. B).



Sq. & Rect. Registers & Grilles