

**Grille Model RAWA**

**Register Model RNWA**

**Application:**

This model serves well in any area where the air volume is large and very long throws are called for, as in gymnasiums, auditoriums, malls, factories and large lobbies.

**Standard Features:**

- Construction is of 6063-T5 extruded aluminum throughout.
- The drum is adjustable 30° up or down from centerline for a full 60° angular adjustment.
- Vanes are individually adjustable to control the spread of the airstream.
- Long throw design enables use of less ductwork.
- Units can be mounted vertically or horizontally.
- Standard finish is #20 mill finish. Other finishes are available on request.
- Register model RNW uses model RXEA opposed blade damper for fine balancing.

**Performance Note:**

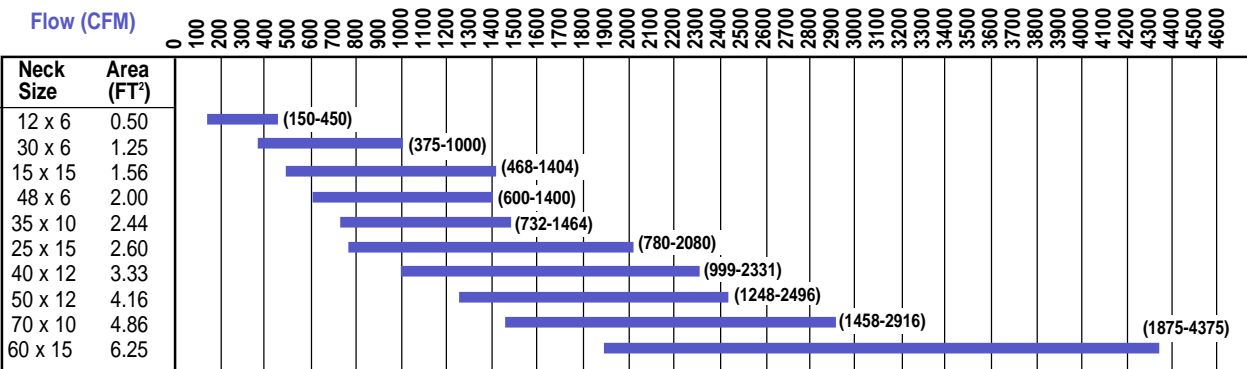
If the static pressure across the drum louver exceeds .25 w.g., the damper is ineffective and its use is not recommended.

Nominal Height	Dimensions				
	A	B	C	D	E
6"	8-5/16"	3"	3-5/16"	1-3/8"	3-7/8"
10"	12-3/8"	3"	5-7/8"	2-11/16"	5-15/16"
12"	14-3/8"	3"	7-7/8"	2-11/16"	5-15/16"
15"	16-7/8"	3"	9-3/16"	3-3/4"	8-3/8"

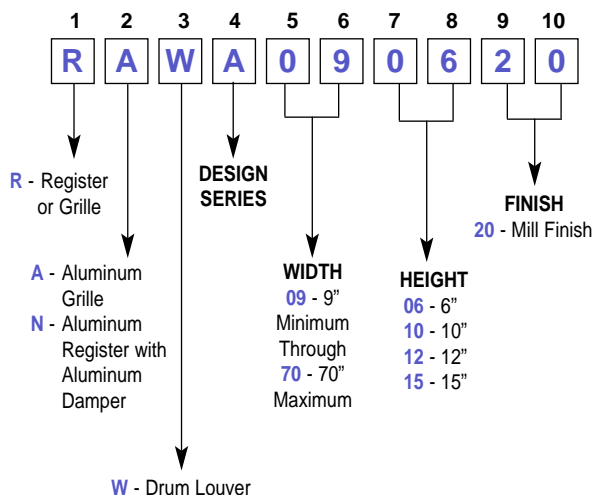
**Quick Select Chart**

Selecting from this chart will result in a unit with:

- A Maximum NC of 35.
- A minimum face velocity of 300 FPM.



**Model Numbering System — Drum Louver Supply Register & Grille (RAW, RNW)**



Neck Velocity (fpm)		300	400	500	600	700	800	900	1000
Static Press. (w.g.)		0.032	0.055	0.084	0.122	0.164	0.214	0.278	0.331
Size (WxH) Total Press (w.g.)		0.038	0.065	0.100	0.145	0.195	0.255	0.330	0.395
9" x 6" (.375 ft <sup>2</sup> )	Flow (cfm)	113	150	187	225	263	300	338	375
	Sound (NC)	<30	<30	<30	<30	<30	<30	<35	<35
	Throw (ft)	6-7-13	8-11-14	10-14-23	12-17-26	14-19-29	16-21-32	17-23-35	19-24-38
12" x 6" (.5 ft <sup>2</sup> )	Flow (cfm)	150	200	250	300	350	400	450	500
	Sound (NC)	<30	<30	<30	<30	<30	<30	<35	<40
	Throw (ft)	8-10-18	10-15-24	12-17-27	14-18-30	15-20-33	17-22-37	18-23-41	20-25-44
18" x 6" (.75 ft <sup>2</sup> )	Flow (cfm)	225	300	375	450	525	600	675	750
	Sound (NC)	<30	<30	<30	<30	<30	<35	<35	<40
	Throw (ft)	10-14-23	13-18-30	15-20-34	18-23-38	20-26-43	23-30-48	25-32-52	27-34-57
24" x 6" (1.0 ft <sup>2</sup> )	Flow (cfm)	300	400	500	600	700	800	900	1000
	Sound (NC)	<30	<30	<30	<30	<30	<35	<40	<40
	Throw (ft)	12-17-28	16-21-35	19-25-40	22-29-45	24-33-51	27-36-56	30-38-61	33-41-67
30" x 6" (1.25 ft <sup>2</sup> )	Flow (cfm)	375	500	625	750	875	1000	1125	1250
	Sound (NC)	<30	<30	<30	<30	<35	<35	<40	>40
	Throw (ft)	15-20-33	18-24-39	22-28-44	25-32-50	27-37-56	30-40-61	33-43-66	34-45-72
20" x 10" (1.39 ft <sup>2</sup> )	Flow (cfm)	417	556	695	834	973	1112	1251	1390
	Sound (NC)	<30	<30	<30	<30	<35	<40	>40	>40
	Throw (ft)	19-22-33	23-27-40	26-31-46	29-35-53	32-39-58	35-42-64	38-46-69	41-49-74
36" x 6" (1.5 ft <sup>2</sup> )	Flow (cfm)	450	600	750	900	1050	1200	1350	1500
	Sound (NC)	<30	<30	<30	<30	<35	<40	<40	>40
	Throw	17-23-37	20-26-43	24-30-47	28-35-54	31-40-60	34-44-65	37-46-72	40-48-79
15" x 15" (1.56 ft <sup>2</sup> )	Flow (cfm)	468	624	780	936	1092	1248	1404	1560
	Sound (NC)	<30	<30	<30	<30	<30	<35	<35	<40
	Throw (ft)	3-10-28	9-18-36	14-24-36	21-27-50	24-30-56	25-32-58	29-38-69	38-42-75
20" x 12" (1.67 ft <sup>2</sup> )	Flow (cfm)	501	668	835	1002	1169	1336	1503	1670
	Sound (NC)	<30	<30	<30	<30	<35	<40	>40	>40
	Throw (ft)	10-20-35	18-25-43	23-31-51	26-35-58	29-39-64	33-44-71	36-49-78	40-52-84
25" x 10" (1.74 ft <sup>2</sup> )	Flow (cfm)	552	696	870	1044	1218	1392	1566	1740
	Sound (NC)	<30	<30	<30	<30	<35	>40	>40	>40
	Throw (ft)	21-24-38	25-29-46	28-34-53	32-39-60	35-42-66	38-46-73	41-50-79	44-53-85
48" x 6" (2.0 ft <sup>2</sup> )	Flow (cfm)	600	800	1000	1200	1400	1600	1800	2000
	Sound (NC)	<30	<30	<30	<30	<35	<40	>40	>40
	Throw (ft)	20-26-41	23-29-47	26-35-55	32-41-62	36-45-66	40-49-72	44-53-78	47-56-88
30" x 10" (2.08 ft <sup>2</sup> )	Flow (cfm)	624	832	1040	1248	1456	1664	1872	2080
	Sound (NC)	<30	<30	<30	<35	<40	>40	>40	>40
	Throw (ft)	22-25-41	27-31-51	31-36-58	35-41-66	39-46-74	42-50-81	46-54-88	49-59-94
35" x 10" (2.44 ft <sup>2</sup> )	Flow (cfm)	732	976	1220	1464	1708	1952	2196	2440
	Sound (NC)	<30	<30	<30	<35	<40	>40	>40	>40
	Throw (ft)	22-27-43	28-33-53	32-39-62	37-45-71	41-50-81	45-54-89	49-59-98	54-64-106
60" x 6" (2.5 ft <sup>2</sup> )	Flow (cfm)	750	1000	1250	1500	1750	2000	2250	2500
	Sound (NC)	<30	<30	<30	<35	<40	<40	>40	>40
	Throw (ft)	22-29-45	25-32-52	29-39-61	36-46-70	41-50-79	46-54-86	49-59-96	52-63-104

**Performance Data Notes:**

1. Throws are given for terminal velocities of 150, 100 & 50 fpm respectively.
2. Sound levels are based on a room absorption of 8db re 10<sup>-12</sup> watts.
3. Actual performance in the field may vary.
4. The data above assumes the blades are spread to 15°. For performance at 0° or 30° spreads, apply the corrections shown at right.
5. Tests were conducted under isothermal conditions.
6. Performance data is based on tests conducted in accordance with ANSI/ASHRAE Standard 70-1991. Actual performance in the field may vary.

Blade Setting ->	0°	30°
Throw (Multiply)	1.2	0.8
Ttl Press. (Multiply)	0.795	1.43
Sound (Add)	-4	5

Neck Velocity (fpm)		300	400	500	600	700	800	900	1000
Static Press. (w.g.)		0.032	0.055	0.084	0.122	0.164	0.214	0.278	0.331
Size (WxH) Total Press (w.g.)		0.038	0.065	0.100	0.145	0.195	0.255	0.330	0.395
30" x 12" (2.5 ft <sup>2</sup> )	Flow (cfm)	750	1000	1250	1500	1750	2000	2250	2500
	Sound (NC)	<30	<30	<30	<30	<35	<40	>40	>40
	Throw (ft)	17-25-42	24-32-53	28-38-63	33-43-72	38-49-81	43-55-90	48-60-99	52-65-107
25" x 15" (2.60 ft <sup>2</sup> )	Flow (cfm)	780	1040	1300	1560	1820	2080	2340	2600
	Sound (NC)	<30	<30	<30	<35	<30	<35	<40	>40
	Throw (ft)	13-21-38	21-26-48	25-32-58	29-38-68	34-43-77	38-48-86	42-54-95	46-59-105
40" x 10" (2.78 ft <sup>2</sup> )	Flow (cfm)	834	1112	1390	1668	1946	2224	2502	2780
	Sound (NC)	<30	<30	<30	<35	<40	>40	>40	>40
	Throw (ft)	23-28-47	28-34-58	34-41-69	39-48-79	44-53-88	48-59-96	53-65-105	58-70-115
30" x 15" (3.12 ft <sup>2</sup> )	Flow (cfm)	936	1248	1560	1872	2184	2496	2808	3120
	Sound (NC)	<30	<30	<30	<35	<35	<35	>40	>40
	Throw (ft)	14-23-42	22-28-54	27-35-64	32-41-76	37-47-86	41-54-97	46-59-107	51-66-118
40" x 12" (3.33 ft <sup>2</sup> )	Flow (cfm)	999	1332	1665	1998	2331	2664	2997	3330
	Sound (NC)	<30	<30	<30	<30	<35	<40	>40	>40
	Throw (ft)	20-28-49	27-36-62	32-43-74	38-50-86	44-57-97	49-64-107	55-61-120	60-77-130
50" x 10" (3.47 ft <sup>2</sup> )	Flow (cfm)	1041	1388	1735	2082	2429	2776	3123	4860
	Sound (NC)	<30	<30	<30	<35	<40	>40	>40	>40
	Throw (ft)	25-31-52	31-39-63	37-46-74	44-53-82	48-59-91	54-65-100	60-72-110	80-95-163
50" x 12" (4.16 ft <sup>2</sup> )	Flow (cfm)	1248	1664	2080	2496	2912	3328	3744	4160
	Sound (NC)	<30	<30	<30	<35	<40	<40	>40	>40
	Throw (ft)	22-29-56	29-39-71	37-48-85	44-56-99	51-64-117	58-73-127	64-81-138	71-89-156
60" x 10" (4.17 ft <sup>2</sup> )	Flow (cfm)	1251	1668	2085	2502	2919	3336	3753	4170
	Sound (NC)	<30	<30	<30	<35	<40	>40	>40	>40
	Throw (ft)	25-33-59	33-42-73	40-50-84	47-58-95	54-65-108	61-74-118	68-81-128	75-88-139
40" x 15" (4.17 ft <sup>2</sup> )	Flow (cfm)	1251	1668	2085	2502	2919	3336	3753	4170
	Sound (NC)	<30	<30	<30	<30	<35	<40	>40	>40
	Throw (ft)	19-25-48	27-35-66	34-43-79	39-50-93	45-58-105	51-65-118	57-72-130	53-80-143
70" x 10" (4.86 ft <sup>2</sup> )	Flow (cfm)	1458	1944	2430	2916	3402	3888	4374	4860
	Sound (NC)	<30	<30	<30	<35	>40	>40	>40	>40
	Throw (ft)	28-36-62	35-46-78	43-54-93	50-63-108	58-71-123	65-79-135	72-87-147	80-95-163
60" x 12" (5.0 ft <sup>2</sup> )	Flow (cfm)	1500	2000	2500	3000	3500	4000	4500	5000
	Sound (NC)	<30	<30	<30	<35	<40	<40	>40	>40
	Throw (ft)	25-33-61	33-44-78	42-53-94	49-63-110	58-74-125	66-83-140	75-92-155	83-103-167
50" x 15" (5.21 ft <sup>2</sup> )	Flow (cfm)	1563	2084	2605	3126	2647	4168	4689	5210
	Sound (NC)	<30	<30	<30	<30	<35	<40	<40	>40
	Throw (ft)	24-30-61	31-40-78	38-48-96	45-58-114	52-66-130	58-75-145	65-83-163	71-91-175
70" x 12" (5.83 ft <sup>2</sup> )	Flow (cfm)	1749	2332	2914	3498	4081	4664	5247	5830
	Sound (NC)	<30	<30	<30	<35	<40	>40	>40	>40
	Throw (ft)	28-37-68	37-49-87	47-61-107	57-73-125	67-86-142	76-97-160	86-110-180	97-123-195
60" x 15" (6.25 ft <sup>2</sup> )	Flow (cfm)	1875	2500	3125	3750	4375	5000	5625	6250
	Sound (NC)	<30	<30	<30	<30	<35	<40	>40	>40
	Throw (ft)	27-34-68	35-56-88	43-58-106	52-68-125	60-70-143	68-89-160	76-100-178	84-111-195
70" x 15" (7.30 ft <sup>2</sup> )	Flow (cfm)	2190	2920	3650	4380	5110	5840	6570	7300
	Sound (NC)	<30	<30	<30	<30	<35	<40	>40	>40
	Throw (ft)	29-380-72	40-51-95	40-64-118	60-76-140	71-89-160	81-101-184	90-112-195	100-128-210

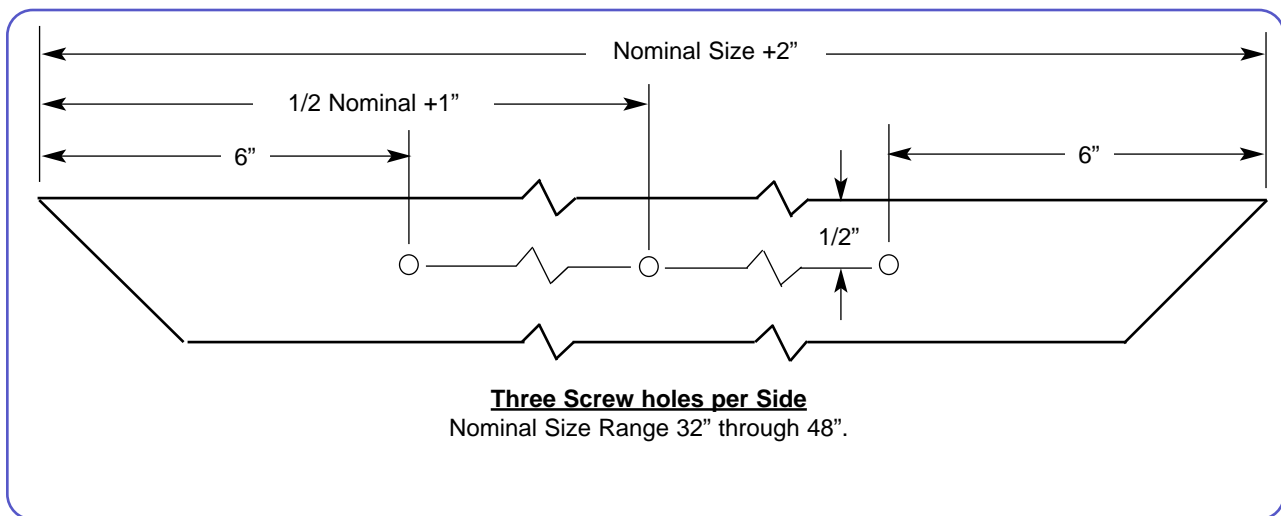
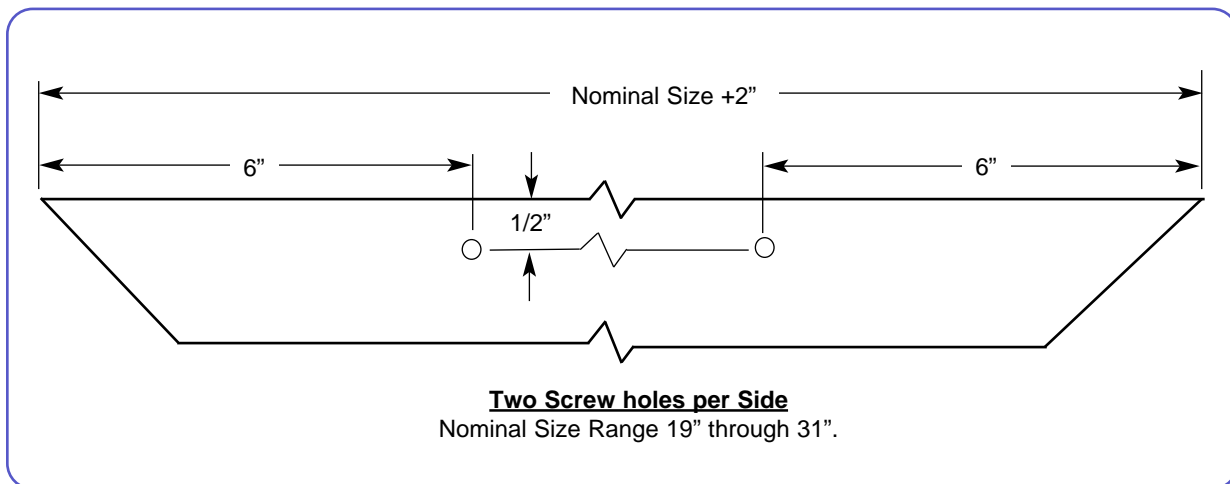
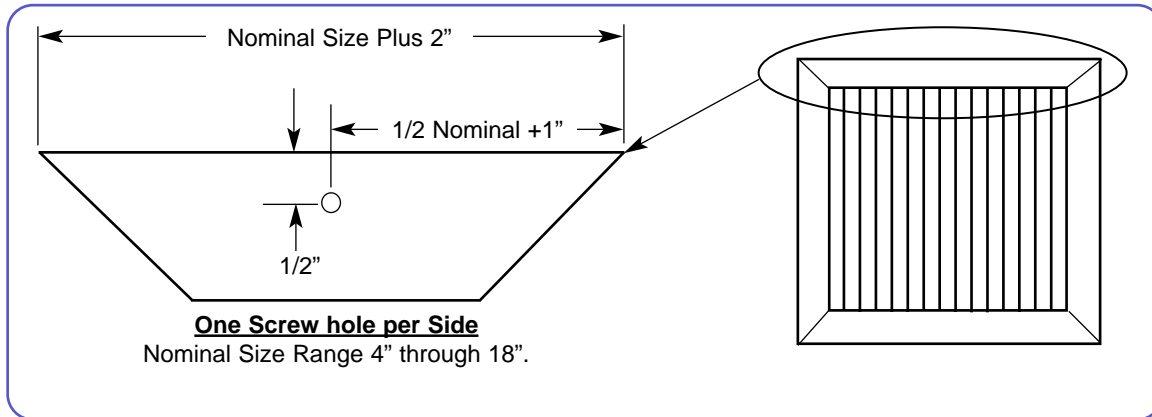
**Performance Data Notes:**

1. Throws are given for terminal velocities of 150, 100 & 50 fpm respectively.
2. Sound levels are based on a room absorption of 8db re 10<sup>-12</sup> watts.
3. Actual performance in the field may vary.
4. The data above assumes the blades are spread to 15°. For performance at 0° or 30° spreads, apply the corrections shown at right.
5. Tests were conducted under isothermal conditions.
6. Performance data is based on tests conducted in accordance with ANSI/ASHRAE Standard 70-1991. Actual performance in the field may vary.

Blade Setting ->	0°	30°
Throw (Multiply)	1.2	0.8
Ttl Press. (Multiply)	0.795	1.43
Sound (Add)	-4	5

## Screw Hole Location on Steel Registers and Grilles

- 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.
- The screw hole is 5/32" in diameter, counter sunk.
- Each Register or Grille is provided with the appropriate number of screws as standard.
- The standard screw is a #8 x 1-1/4" counter sunk screw, with a flat blade head.
- Tamper-proof screws are available as an option.

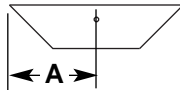


**Screw Hole Location for the following Registers & Grilles**

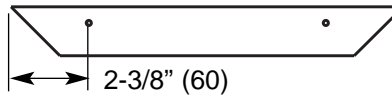
40° Return RSHA, RTHA  
 0° Return RSEA, RTEA

**Hole location for long side (if grille is rectangular) or opposite sides (if grille is square).**

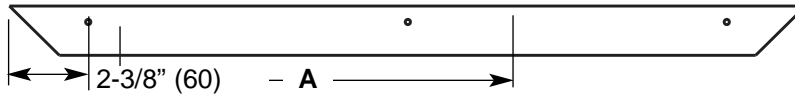
Nominal Size ->	4" (102)	6" (152)	8" (203)
Dim. "A" ->	3" (76)	4" (102)	5" (127)



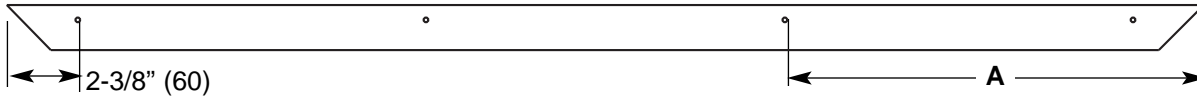
Nominal Size ->	10" (254)	12" (305)	14" (356)	16" (406)	18" (457)	20" (508)
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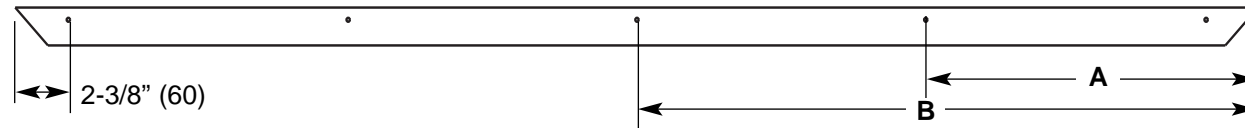
Nominal Size ->	22" (559)	24" (610)	26" (660)	28" (711)	30" (762)	32" (813)	34" (864)	36" (914)
Dim. "A" ->	12" (305)	13" (330)	14" (356)	15" (381)	16" (406)	17" (432)	18" (457)	19" (483)



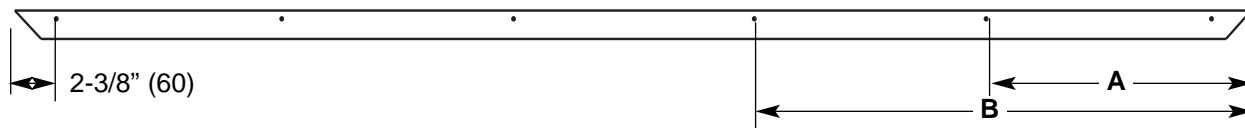
Nominal Size ->	38" (965)	40" (1016)	42" (1067)	44" (1118)	46" (1168)	48" (1219)	50" (1270)	52" (1321)
Dim. "A" ->	14" (356)	15" (381)	15 1/2" (394)	16" (406)	17" (432)	17 1/2" (445)	18" (457)	19" (483)



Nominal Size ->	54" (1372)	56" (1422)	58" (1473)	60" (1524)	62" (1575)	64" (1626)	66" (1676)	68" (1727)
Dim. "A" ->	15" (381)	15 1/2" (394)	16" (406)	16 1/2" (419)	17" (432)	17 1/2" (445)	18" (457)	18 1/2" (470)
Dim. "B" ->	28" (711)	29" (737)	30" (762)	31" (787)	32" (813)	33" (838)	34" (864)	35" (889)



Nominal Size ->	70" (1778)	72" (1829)
Dim. "A" ->	15 1/2" (394)	16" (406)
Dim. "B" ->	29" (737)	30" (762)

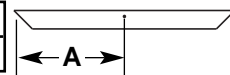


**Hole Location for other sides.**

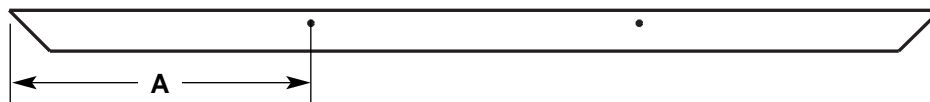
Nominal Size ->	4" (102)	6" (152)	8" (203)	10" (254)	12" (305)	14" (356)
	No Screw Holes					



Nominal Size ->	16" (406)	18" (457)	20" (508)	22" (559)	24" (610)	26" (660)	28" (711)	30" (762)
Dim. "A" ->	9" (229)	10" (254)	11" (279)	12" (305)	13" (330)	14" (356)	15" (381)	16" (406)



Nominal Size ->	32" (813)	34" (864)	36" (914)	38" (965)	40" (1016)	42" (1067)	44" (1118)	46" (1168)	48" (1219)
Dim. "A" ->	11" (279)	12" (305)	13" (330)	13" (330)	14" (356)	15" (381)	16" (406)	16" (406)	17" (432)



**Notes:**

- Standard screws are #8 x 1-1/4" (32) Phillips head sheet metal screws.
- Holes are countersunk for flush appearance.
- Hole center is placed 1/2" (13) in from outside edge.
- Metric (SI) dimensions are given in millimeters.



**Panel for T-bar Ceiling (Option T)**

**Application**

This option is used when the grille is to mount in a suspended ceiling, but is too small to lay in by itself. The grille is set in a panel that will lay into the appropriate size and type of ceiling.

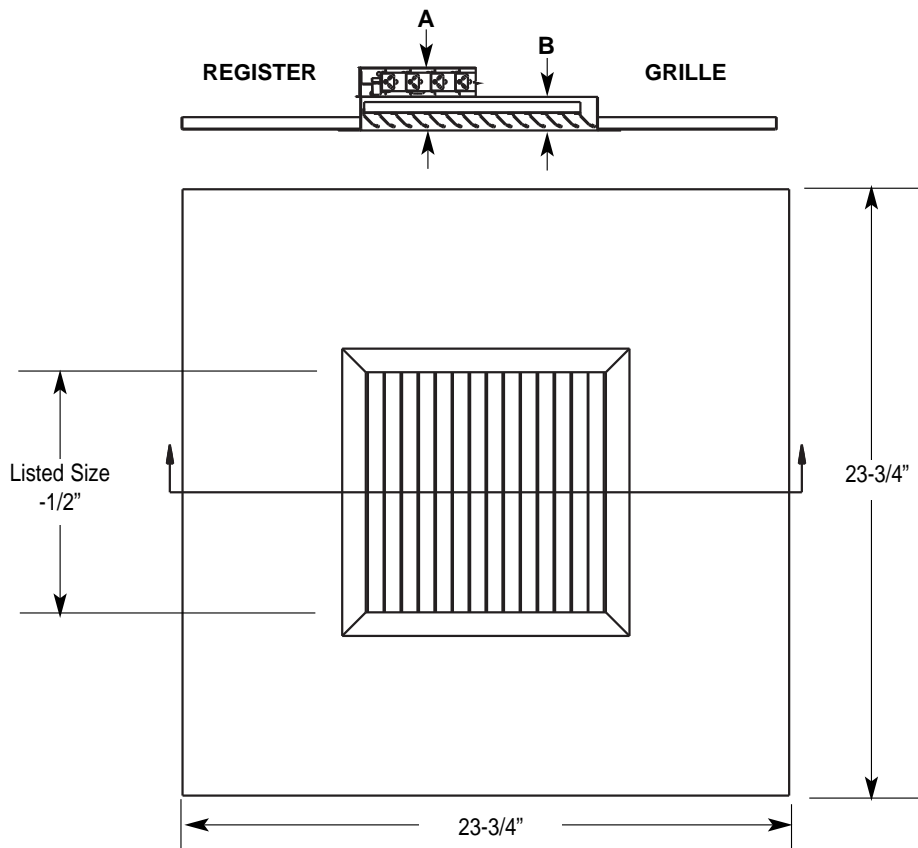
**Features**

The largest grille in this catalog that will fit in the following T-bar grid sizes is as follows:

T-bar Grid	Maximum Grille Nominal Size
12" x 12"	8" x 8"
12" x 24"	8" x 20"
24" x 24"	20" x 20"
24" x 48"	20" x 44" (Louvered and Perforated Face Returns)
24" x 48"	20" x 36" (Single and Double Deflection Supplies, and 0° and 45° Returns)

**Sizing Note:**

Carnes offers all steel, stainless steel and B-series aluminum grilles in a nominal 21-3/4" x 21-3/4" size that lays into standard 15/16" flat face T-bar with no need for Option T.



**Sheared Frame for T-bar (Option S)**

**Application**

This option is used when the grille is sized to lay into a suspended ceiling, and the design requires the largest possible grille for the opening.

**Features**

When this option is specified on the following sizes, Carnes shears the grille frame down to the following face outside diameters for layin ceilings.

Grille Nominal Size	Normal Face O. D.	Sheared Face O. D.
10" x 10"	12" x 12"	11-3/4" x 11-3/4"
10" x 22"	12" x 24"	11-3/4" x 23-3/4"
22" x 22"	24" x 24"	23-3/4" x 23-3/4"
22" x 46"	24" x 48"	23-3/4" x 47-3/4"

(Note: This size is only available on steel and B-series aluminum louvered and perforated face returns)

**Sizing Note:**

Carnes offers all steel, stainless steel and B-series aluminum grilles in a nominal 21-3/4" x 21-3/4" size that lays into standard 15/16" flat face T-bar with no need for Option S.

**No Screw Holes (Option N)**

**Application**

This option is used when the grille is sized to lay into a suspended ceiling, and screw holes are therefore not needed, or when the installation requires custom placement of the screw holes.

**Features**

When this option is specified, Carnes manufactures the grille with no screw holes in the face.

**Tamper-Proof Screws (Option B)**

**Application**

This option is used to prevent casual access to the duct.

**Features**

- The screw used is Holt-Head Type A tamper-proof screw, size #8 x 1-1/4".
- Hand drivers, service drivers and power driver tips are available from Carnes.

**Z-Clips for Spline Ceiling (Option Z)**

**Application**

This is used to mount certain grille sizes in concealed spline ceilings.

**Features**

The option is applied to any of the steel, stainless steel and B-series aluminum grilles in the following nominal sizes to mount in the following concealed spline ceiling sizes:

<u>Grille Nominal Size</u>	<u>Spline Ceiling Size</u>
10" x 10"	12" x 12"
10" x 22"	12" x 24"
22" x 22"	24" x 24"

**Sizing Note:**

- Screw holes are automatically deleted when Option Z is specified.
- For grille sizes smaller than shown, custom mounting panels are available on request.

**W-Clips for Snap-in Metal Pan Ceiling (Option U)**

**Application**

This option is used to mount certain grille sizes in snap-in metal pan ceilings.

**Features**

This option is applied to any of the steel, stainless steel and B-series aluminum grilles in the following nominal sizes to mount in the following snap-in metal pan ceilings.

<u>Grille Nominal Size</u>	<u>Snap-in Metal Pan Ceiling Size</u>
22" x 22"	24" x 24"
10" x 22"	12" x 24"

- Screw holes are automatically deleted when Option U is specified.
- For grille sizes smaller than shown, custom mounting panels are available on request.

**NOTES:**



**Debris Screen (Option 1)**

**Application**

This option is used to prevent insects from getting through the grille, either into the duct or into the room.

**Features**

- The material used is 1814 insect screen.
- This option is available on both grilles and registers.

**Concealed Hangers (Option C)**

**Application**

This option is used to provide concealed mounting and tools-free duct access.

**Features**

- It requires that the duct be made 1" larger than the nominal grille size.
- If the duct is already installed, as in retro-fits, sizing the grille down by 1" will accomplish the same thing.
- Screw holes are automatically deleted when Option C is specified.
- A spring is factory-mounted on the back of the flange, and this spring snaps into a mounting bracket that is field mounted in the duct opening.

**Pull Cord Damper Operator (Options P and A)**

**Application**

This option allows balancing when the damper is mounted upstream of the grille, and the only access to the damper is through the grille.

**Features**

- Heavy duty cord is permanently mounted to damper.
- Cord ends are tucked behind grille face after balancing.
- Option P is used when the damper is mounted parallel to the floor.
- Option A is used when the damper is mounted perpendicular to the floor.

**Lever Operator (Option V)**

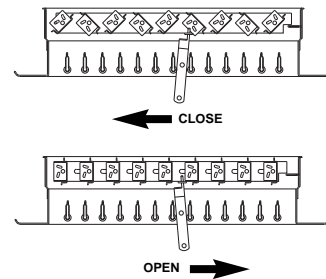
**Application**

This option allows tools-free balancing from the face of the register.

**Features**

- Lever is permanently mounted to register.
- Option V is available on these models:

	<u>Steel</u>	<u>Aluminum</u>	<u>Stainless Steel</u>
Single Deflection Supply	RTSB	RNSM	RMSB
Double Deflection Supply	RTDB	RNDM	RMDB
0° Fixed Return	RTRB	RNRM	RMRB
45° Fixed Return	RTAB	RNAM	RMAB



**Fusible Link for Register (Option F)**

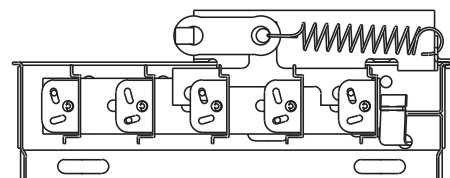
**Application**

Fusible links are general used in hazardous locations to prevent the possible spread of fire or reduce updrafts in case of fire. They are not UL-listed as fire dampers.

**Features**

- The link melts at approximately 160° Fahrenheit, activating a spring which pulls the damper closed.
- A link is mounted to each damper in a multi-damper assembly.
- The link does not interfere with the normal setting of the damper, but requires one inch of added depth in the duct.

Square/Rectangular Damper Model RXEA shown with Fusible Link installed.



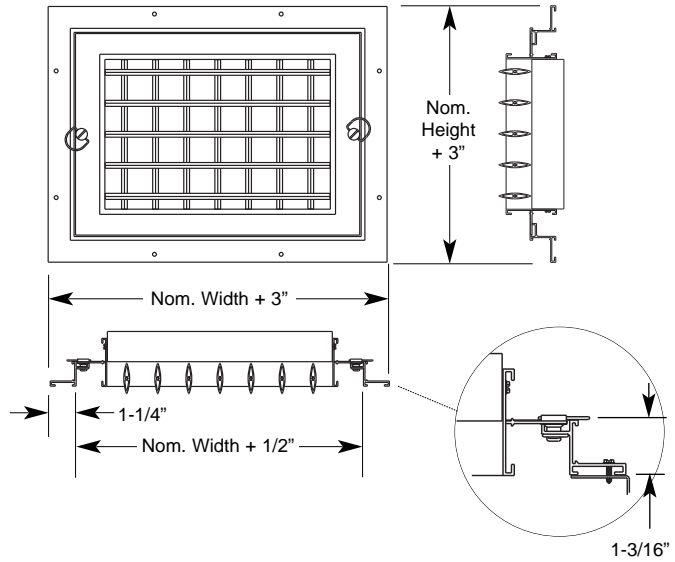
Option "M" for 1-1/2" Double Deflection  
Supply Grille Model R&G

**Application:**

Use with the Double Deflection 1-1/2" Supply Grille when frequent or regular removal is required, either for cleaning or periodic alteration of the discharge.

**Standard Features:**

- All extruded aluminum construction
- Grille is held to frame by 1/4-turn fasteners.
- Standard finish is #20 mill finish.



**NOTES:**