

Application:

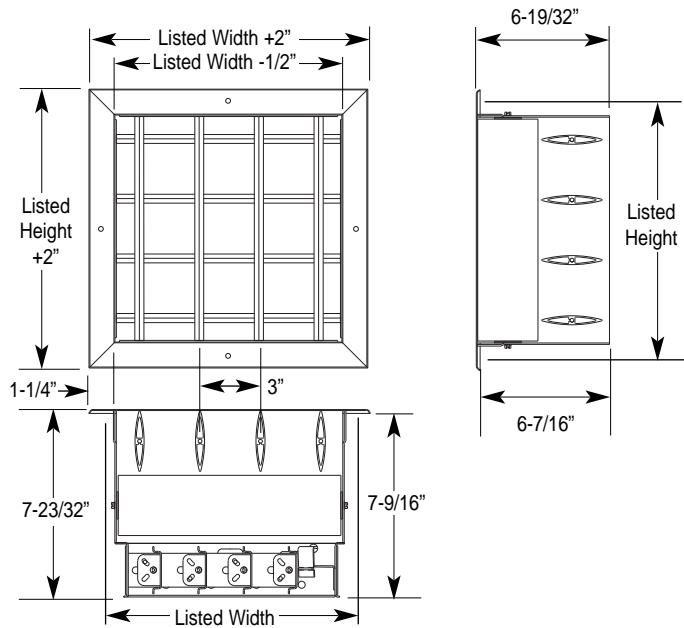
This model serves well in any area where the air volume is large, and a durable double deflection supply grille or register is called for.

Standard Features:

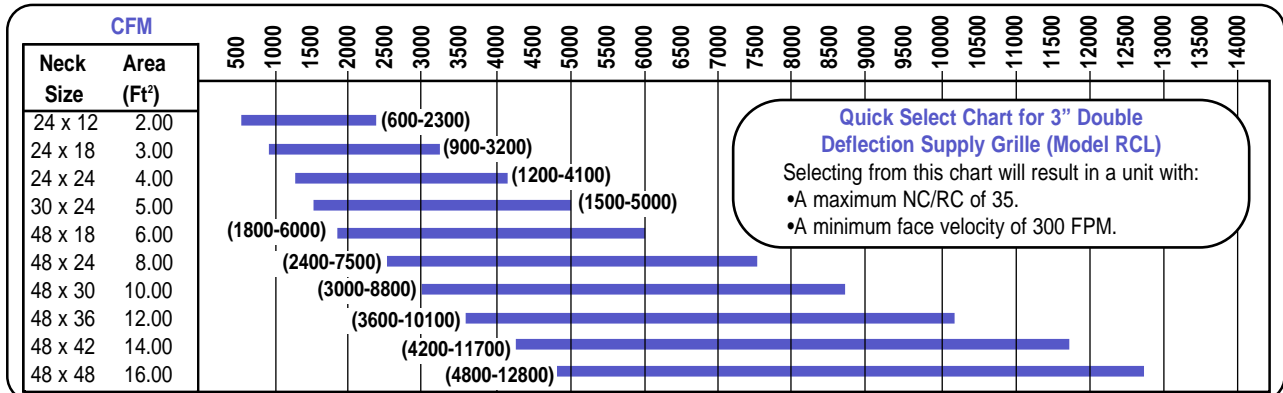
- Construction is of extruded aluminum airfoil blades with 20 gauge steel frame.
- Core is double deflection.
- Blades are 3" deep, on 3" centers.
- Front blades can be aligned horizontally or vertically.
- Polyurethane foam gasket at edge of frame to prevent leakage.
- Standard finish is electrocoat acrylic baked enamel. Other finishes are available on request.
- Standard color is #11 bright white. Other colors are available on request.
- Register model REL uses model RXEA opposed blade damper, which is adjustable from the face via flat blade screwdriver (p. A437).

Optional Features:

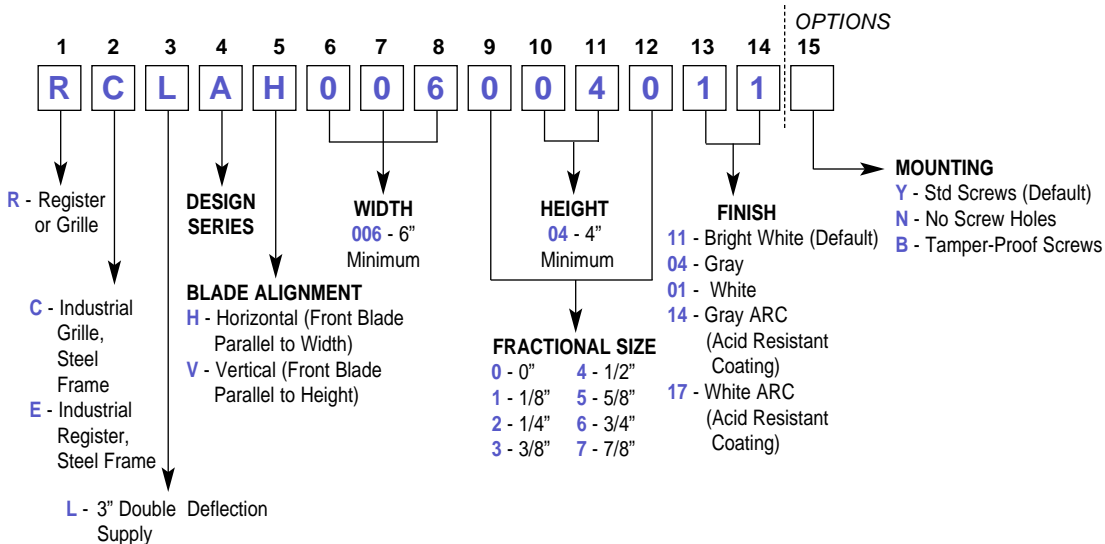
- "No screw holes" can be specified for custom installations.
- Holt-head #8 x 1-1/2" screws (Opt. B) can be specified to minimize tampering.
- Fusible link (p. A343).



**Model RELA
(Register)**



Model Numbering System — Industrial R&G 3" Double Deflection Supply (Models RCL, REL)



Duct	Velocity	300	400	500	600	700	800	1000	1200	1400	1600	
		Velocity	Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
Nom. Size (in.)	Total	0°	0.008	0.014	0.022	0.032	0.045	0.058	0.091	0.131	0.182	0.238
	Press.	22.5°	0.010	0.019	0.029	0.043	0.058	0.077	0.119	0.172	0.236	0.307
	(w.g.)	45°	0.016	0.028	0.044	0.064	0.087	0.114	0.177	0.252	0.348	0.454
18 x 12 1.50 ft ²	Flow (CFM)		450	600	750	900	1050	1200	1500	1800	2100	2400
	0°	Throw	14-24-36	19-29-42	24-32-46	27-36-51	29-39-55	31-42-59	35-46-65	38-51-72	41-55-78	45-59-82
	Sound		---/---	---/---	---/---	---/---	16/17H	19/19N	28/28N	35/36N	40/41N	43/43N
18 x 14 1.75 ft ²	Flow (CFM)		525	700	875	1050	1225	1400	1750	2100	2450	2800
	0°	Throw	15-26-39	20-32-45	26-35-50	29-39-55	31-42-60	33-45-63	37-50-71	41-56-78	44-59-83	47-63-89
	Sound		---/---	---/---	---/---	10/10H	17/18H	20/20N	29/29N	36/37N	41/42N	44/44N
24 x 12 2.00 ft ²	Flow (CFM)		600	800	1000	1200	1400	1600	2000	2400	2800	3200
	0°	Throw	16-27-42	22-34-48	27-38-54	31-42-59	33-45-63	36-48-68	40-54-76	45-60-82	46-63-89	51-67-96
	Sound		---/---	---/---	---/---	11/11H	17/18H	21/21N	29/29N	37/38N	41/42N	45/45N
18 x 18 2.25 ft ²	Flow (CFM)		675	900	1125	1350	1575	1800	2250	2700	3150	3600
	0°	Throw	17-28-45	23-36-51	28-40-57	33-44-63	36-47-67	38-51-72	43-57-80	46-63-87	50-66-95	54-72-101
	Sound		---/---	---/---	---/---	12/12H	18/19H	22/22N	30/30N	38/39N	42/43N	45/45N
30 x 12 2.50 ft ²	Flow (CFM)		750	1000	1250	1500	1750	2000	2500	3000	3500	4000
	0°	Throw	18-30-46	25-38-54	30-42-61	35-46-65	38-50-71	40-54-76	45-61-84	49-66-92	52-70-100	57-75-107
	Sound		---/---	---/---	---/---	13/13H	19/20H	23/23N	31/31N	38/39N	42/43N	46/46N
24 x 18 3.00 ft ²	Flow (CFM)		900	1200	1500	1800	2100	2400	3000	3600	4200	4800
	0°	Throw	20-33-51	27-42-59	33-46-66	38-50-72	41-55-78	44-59-83	48-66-92	54-72-101	57-77-109	63-82-117
	Sound		---/---	---/---	---/---	14/14H	20/21H	24/24N	32/32N	39/40N	43/44N	46/46N
42 x 12 3.50 ft ²	Flow (CFM)		1050	1400	1750	2100	2450	2800	3500	4200	4900	5600
	0°	Throw	21-36-55	28-45-63	36-50-71	41-55-78	45-60-84	47-63-90	52-71-100	58-78-110	62-83-118	67-89-126
	Sound		---/---	---/---	---/---	15/13H	21/21H	25/26N	33/32N	40/40N	44/45N	47/47N
30 x 18 3.75 ft ²	Flow (CFM)		1125	1500	1875	2250	2625	3000	3750	4500	5250	6000
	0°	Throw	22-37-57	29-46-66	37-51-74	43-57-81	45-62-87	48-66-94	54-74-103	60-81-113	63-86-121	69-92-131
	Sound		---/---	---/---	---/---	15/13H	21/21H	25/26N	33/32N	41/41N	45/46N	47/47N
24 x 24 4.00 ft ²	Flow (CFM)		1200	1600	2000	2400	2800	3200	4000	4800	5600	6400
	0°	Throw	23-38-59	31-48-68	38-53-76	44-59-83	47-63-90	50-68-97	56-76-107	63-83-117	66-89-126	72-96-135
	Sound		---/---	---/---	---/---	16/14H	21/21H	26/27N	34/33N	41/41N	45/46N	47/47N
	Flow (CFM)		1200	1600	2000	2400	2800	3200	4000	4800	5600	6400
	22.5°	Throw	18-30-47	25-39-55	30-42-61	35-47-67	38-51-72	40-55-77	45-61-86	50-67-94	53-71-101	58-77-108
	Sound		---/---	---/---	---/---	12/12H	16/18H	22/23N	33/33N	43/43N	51/51N	55/55N
	Flow (CFM)		1200	1600	2000	2400	2800	3200	4000	4800	5600	6400
	45°	Throw	11-18-28	15-23-33	18-25-36	21-28-40	23-30-43	24-33-46	27-36-51	30-40-56	32-43-60	35-46-65
	Sound		17/17H	26/27H	34/33N	39/39N	43/43N	47/47N	54/54N	58/58N	62/62N	65/65N

- 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.
 - Testing was conducted in isothermal conditions.
 - Sound level values are based on a room absorption of 10db re 10⁻¹² watts.
 - A "----" indicates an NC value less than 10.

- Units of Measure Used:**
- Velocity is given in Feet per Minute (fpm).
 - Pressure is given in inches of Water (w.g.)
 - Flows are given in Cubic Feet per Minute (CFM).
 - Throws are given in feet to terminal velocities of 150, 100 and 50 fpm, respectively.
 - Sound data is given in both NC and RC. NC is first with RC second, separated by a slash.

Nom. Size (in.)	Duct Velocity	Velocity Press.	300	400	500	600	700	800	1000	1200	1400	1600
			0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122	0.160
36 x 36 9.00 ft ²	0°	Throw	0.008	0.014	0.022	0.032	0.045	0.058	0.091	0.131	0.182	0.238
		Sound	0.010	0.019	0.029	0.043	0.058	0.077	0.119	0.172	0.236	0.307
		45°	0.016	0.028	0.044	0.064	0.087	0.114	0.177	0.252	0.348	0.454
48 x 30 10.00 ft ²	0°	Throw	2700	3600	4500	5400	6300	7200	9000	10800	12600	14400
		Sound	34-58-88	46-72-102	58-80-114	65-87-125	71-95-135	76-102-144	84-115-161	93-125-175	99-134-190	107-143-203
		45°	16-28-42	22-35-49	28-38-55	31-42-60	34-45-65	36-49-69	40-55-77	45-60-84	47-64-91	51-69-97
42 x 36 10.50 ft ²	0°	Throw	3000	4000	5000	6000	7000	8000	10000	12000	14000	16000
		Sound	36-61-93	48-76-108	61-83-120	69-93-131	75-99-142	80-107-153	89-120-169	98-132-186	104-140-200	114-150-214
		45°	17-29-45	23-36-52	29-40-58	33-45-63	36-48-68	38-51-73	43-58-81	47-63-89	50-67-96	55-72-103
40 x 40 11.11 ft ²	0°	Throw	3333	4444	5556	6667	7778	8889	11111	13333	15556	17778
		Sound	38-63-98	51-80-114	63-88-127	73-98-139	79-106-151	83-114-161	94-127-177	103-140-196	111-149-210	120-158-224
		45°	18-30-45	24-37-53	30-41-59	34-45-65	37-49-70	39-53-75	44-59-83	48-65-91	51-69-99	56-74-105
48 x 36 12.00 ft ²	0°	Throw	3675	4900	6125	7350	8575	9800	12250	14700	17150	19600
		Sound	40-66-101	53-83-117	66-92-132	76-101-144	82-110-155	87-117-167	98-132-185	108-145-203	115-154-219	124-165-234
		45°	19-32-49	25-40-56	32-44-63	36-49-69	40-53-75	42-56-80	47-63-89	52-70-97	55-74-105	60-79-112
48 x 42 14.00 ft ²	0°	Throw	4200	5600	7000	8400	9800	11200	14000	16800	19600	22400
		Sound	43-72-110	58-90-127	72-99-142	82-110-155	89-118-169	95-127-180	105-142-200	117-156-219	123-167-236	135-178-253
		45°	20-35-53	28-43-61	35-48-68	40-53-75	43-57-81	45-61-86	50-68-96	56-75-105	59-80-113	65-85-121
48 x 46 15.33 ft ²	0°	Throw	4600	6133	7667	9200	10733	12267	15333	18400	21467	24533
		Sound	45-75-116	61-95-134	75-104-156	86-115-163	93-124-176	99-134-188	110-150-208	121-164-228	129-174-247	140-187-264
		45°	21-36-55	29-45-64	36-50-72	41-55-78	45-60-85	47-64-90	53-72-100	58-79-110	62-84-119	67-90-127
48 x 48 16.00 ft ²	0°	Throw	4800	6400	8000	9600	11200	12800	16000	19200	22400	25600
		Sound	45-77-117	62-96-135	77-106-152	87-117-166	95-127-180	100-136-192	112-153-213	124-168-233	132-178-252	144-190-271
		45°	22-37-56	30-46-65	37-51-73	42-56-80	45-61-86	48-65-92	54-73-102	60-80-112	63-85-121	69-91-130

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.
- Testing was conducted in isothermal conditions.
- Sound level values are based on a room absorption of 10db re 10⁻¹² watts.
- A "...." indicates an NC value less than 10.

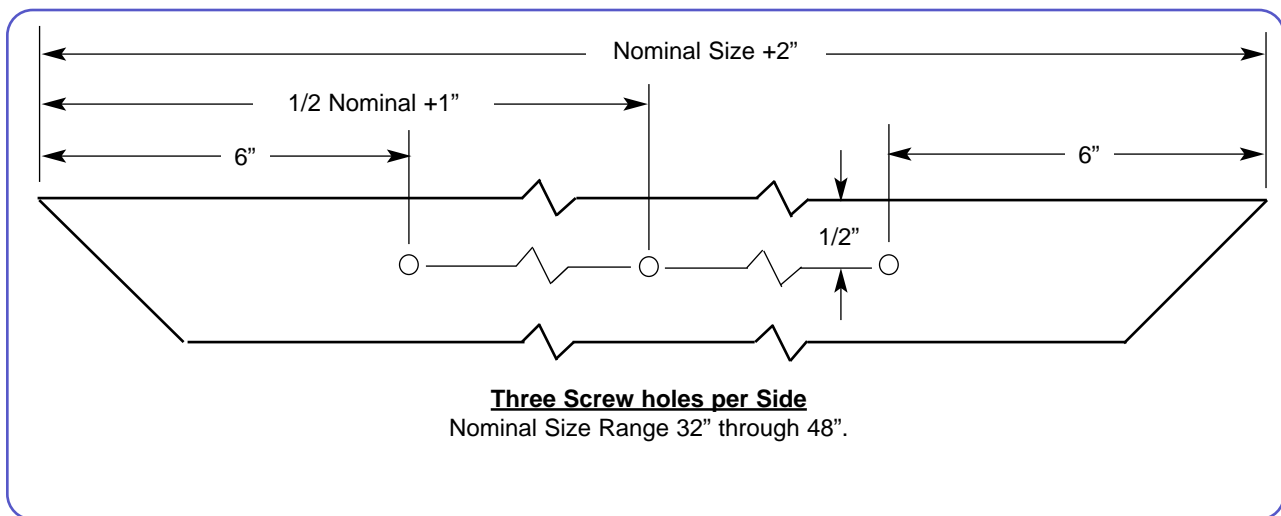
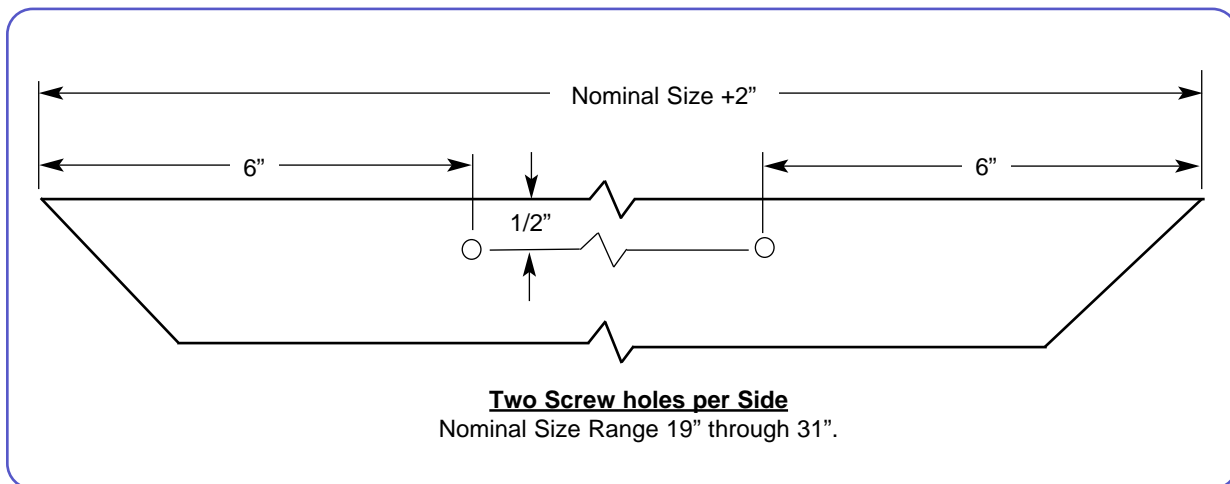
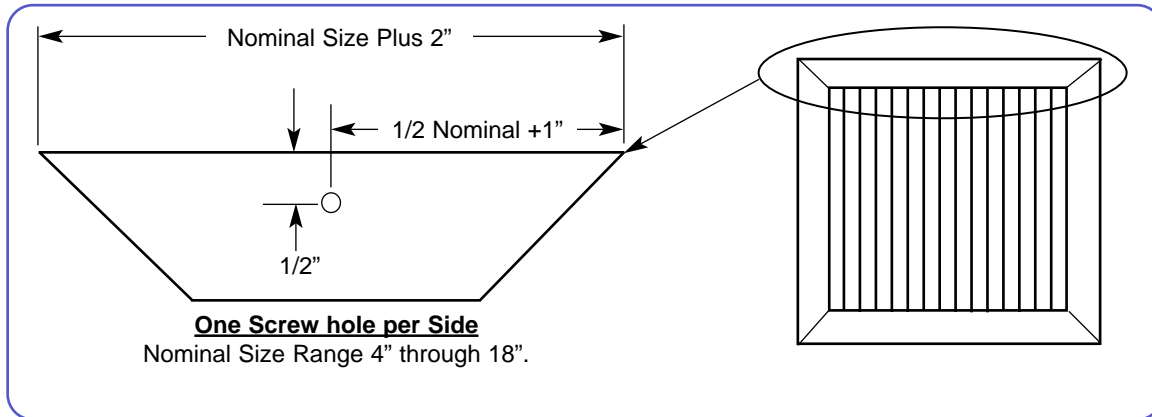
Units of

Measure Used:

- Velocity is given in Feet per Minute (fpm).
- Pressure is given in inches of Water (w.g.)
- Flows are given in Cubic Feet per Minute (CFM).
- Throws are given in feet to terminal velocities of 150, 100 and 50 fpm, respectively.
- Sound data is given in both NC and RC. NC is first with RC second, separated by a slash.

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.

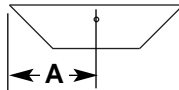


Screw Hole Location for the following Registers & Grilles

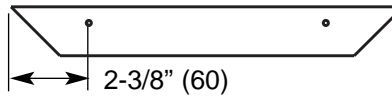
40° Return RSHA, RTHA
 0° Return RSEA, RTEA

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

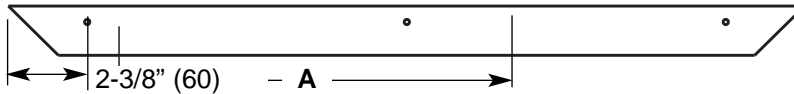
Nominal Size ->	4" (102)	6" (152)	8" (203)
Dim. "A" ->	3" (76)	4" (102)	5" (127)



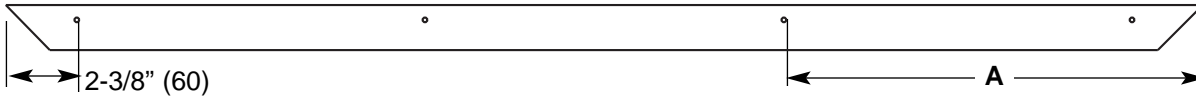
Nominal Size ->	10" (254)	12" (305)	14" (356)	16" (406)	18" (457)	20" (508)
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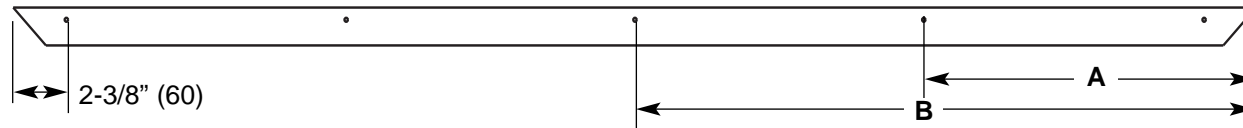
Nominal Size ->	22" (559)	24" (610)	26" (660)	28" (711)	30" (762)	32" (813)	34" (864)	36" (914)
Dim. "A" ->	12" (305)	13" (330)	14" (356)	15" (381)	16" (406)	17" (432)	18" (457)	19" (483)



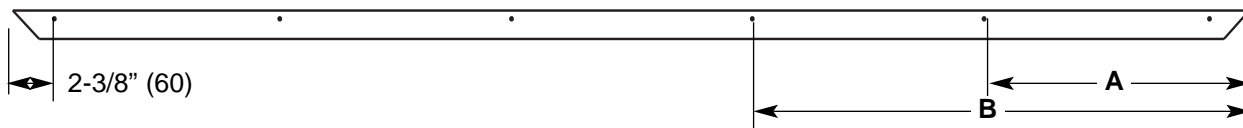
Nominal Size ->	38" (965)	40" (1016)	42" (1067)	44" (1118)	46" (1168)	48" (1219)	50" (1270)	52" (1321)
Dim. "A" ->	14" (356)	15" (381)	15 1/2" (394)	16" (406)	17" (432)	17 1/2" (445)	18" (457)	19" (483)



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)

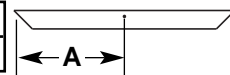


Hole Location for other sides.

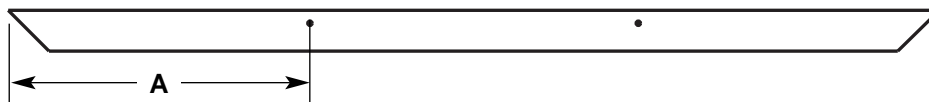
Nominal Size ->	4" (102)	6" (152)	8" (203)	10" (254)	12" (305)	14" (356)
	No Screw Holes					



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.

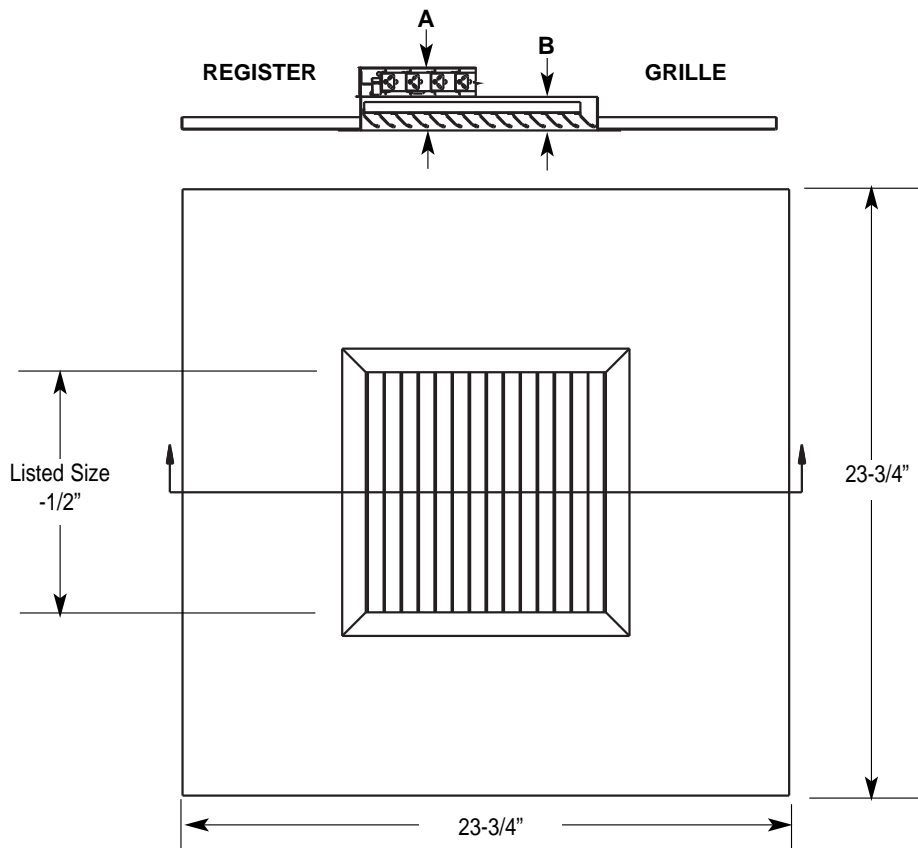
Features

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.

Heavy Duty Registers & Grilles

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)

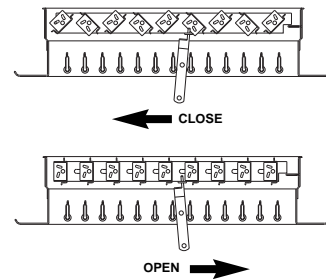
Application

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)

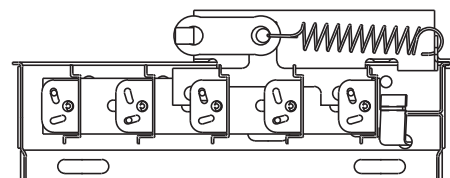
Application

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.



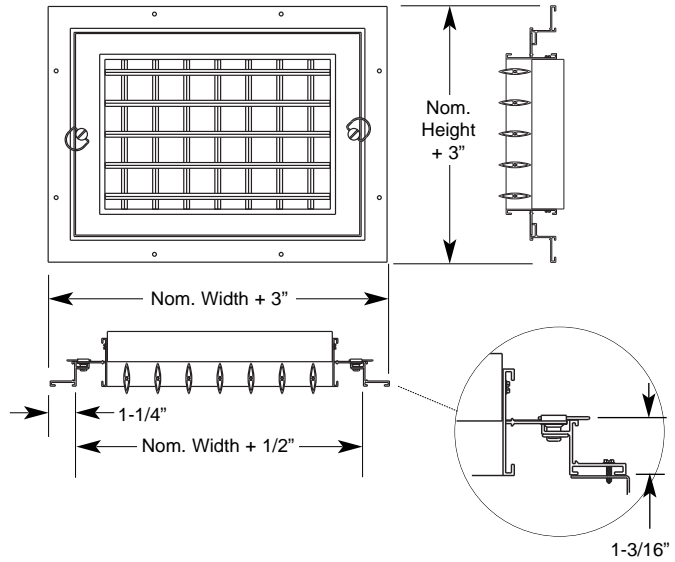
Option "M" for 1-1/2" Double Deflection
Supply Grille Model R&G

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: