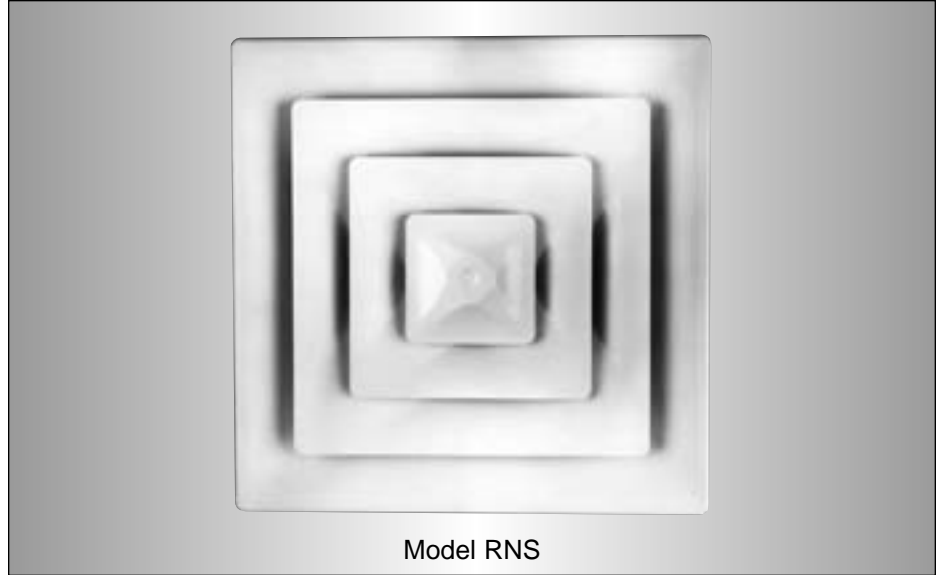


## STAMPED SQUARE CEILING DIFFUSERS

- FIXED AIR PATTERN
- HIGH PERFORMANCE
- SQUARE FACE
- ROUND NECK

### Models:

- RNS Steel  
ARNS Aluminum



Model RNS

The **Nailor RNS Series Square Ceiling Air Diffusers** have been specially designed to provide an extremely cost effective, value engineered product. They offer both the unobtrusive appearance required for architectural excellence and the 360° diffusion pattern at minimum NC levels required for high engineering performance. For these reasons the **RNS Series** diffuser is the most popular choice for general applications.

The stamped one-piece cones eliminate mitered corners and the die-formed curves provide consistent quality and performance. The stepped down core design increases capacity and minimizes streaking and smudging of the ceiling.

The diffusers provide stable diffusion and mixing patterns under constant and changing load conditions and are particularly suitable for variable air volume systems.

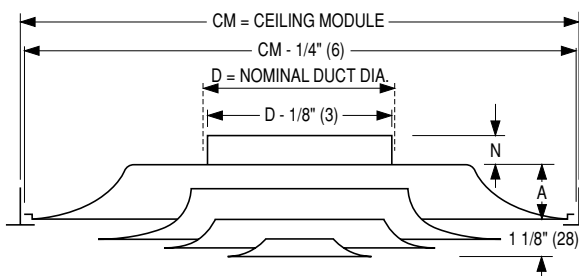
The diffusers are available with various frame/border designs to suit many ceiling systems including surface mount, T-Bar lay-in, and panel applications. Standard finish is a high quality baked enamel for long life and easy cleaning. A variety of neck sizes are available to suit your system design. The collar is a full 1 1/4" (32) in height for easy, secure connection. Steel models are available in all size and frame type combinations. Aluminum models are available in a 24" x 24" (610 x 610) and a 20" x 20" (508 x 508) full face Type L frame module and 12" x 12" (305 x 305) modules with a full face Type L or Type S frame.

### FEATURES:

- Spring loaded core is securely held in position and is removable without the use of tools.
  - Engineered air diffusion pattern.
  - Steel stamped shapes for uniformity.
  - High neck collars for solid connection.
  - All 12" x 12" (305 x 305) and 24" x 24" (610 x 610) modules feature four cones in all neck sizes, providing a uniform and balanced appearance. The 20" x 20" (508 x 508) module has three cones.
  - Screwdriver adjustment of the optional balancing damper is achieved through the inner cone assembly.
  - Optional QB Quadrant Blanks for 1, 2 and 3-way blow.
- Material:** Heavy gauge, corrosion-resistant steel or aluminum with miscellaneous steel components.
- Finish:** AW Appliance White baked enamel finish is standard. Other finishes are available.

### Type L Lay-in, T-Bar Frame

12 x 12 (300 x 300) and 24 x 24 (600 x 600) modules



### Dimensional Data

Ceiling Module CM		Imperial Units (inches)				Metric Units (mm)					
Imperial Modules	Metric Modules	Duct Size D	N	A	B	F	Duct Size D	N	A	B	F
12 x 12	300 x 300	4 *	3 1/4	1	11	13	102	83	25	279	330
		5, 6, 7, 8	1 1/4				127, 152, 178, 203	32			
24 x 24	600 x 600	6, 8, 10, 12, 14, 15	1 1/4	2 5/16	22	24 3/4	152, 203, 254, 305, 356, 381	32	59	559	629

\* Supplied with a reducer.

## Dimensional Data and Frame Types Models RNS and ARNS

### Type L Lay-in T-Bar

20" x 20" (500 x 500) module

CM		Imperial Units (inches)		Metric Units (mm)	
Imperial Modules	Metric Modules	Duct Size D	B	Duct Size D	B
20 x 20	500 x 500	6, 8, 10	18 1/2	152, 203, 254	470

The 20 x 20 (500 x 500) module is only available in this frame style.

### Type PL Panel Mounted Lay-in T-Bar

CM		Imperial Units (inches)				Metric Units (mm)			
Imperial Modules	Metric Modules	Face Size	Duct Size D	N	A	Face Size	Duct Size D	N	A
24 x 24	600 x 600	12	4 *	3 1/4	1	300	102	83	25
24 x 12	600 x 300	x	5, 6, 7, 8	1 1/4		x	127, 152, 178, 203	32	
20 x 20	500 x 500	x				x			
30 x 30	x	24	6, 8, 10, 12, 14, 15	1 1/4	2 5/16	600	152, 203, 254, 305, 356, 381	32	59
48 x 24	x	24	6, 8, 10, 12, 14, 15	1 1/4	2 5/16	600	152, 203, 254, 305, 356, 381	32	59

\* Supplied with a reducer.

### Type L Surface Mount

CM = CEILING MODULE  
CEILING OPENING = B

Hard duct connection recommended.

### Type L Surface Mount with DFA

CEILING OPENING = CM + 1/4" (6)  
CM = CEILING MODULE  
CM - 1/4" (6)

Drywall/Plaster Frame. Recommended for flexible duct and ceiling access.

### Type S Surface Mount

CM = CEILING MODULE  
CEILING OPENING = CM - 1" (25)

Hard duct connection recommended.

### Type F Finline®

CM = CEILING MODULE  
CM - 1/4" (6)

### Type M Metal Pan (Snap-in)

CM = CEILING MODULE

### Type SP Spline

CM = CEILING MODULE

For one directional exposed T-bar or fully concealed grid. One spline on two opposite sides, steel lift bracket on others.

D  
CEILING DIFFUSERS

## HOW TO SPECIFY OR TO ORDER

(Show complete Model Number and Size, unless "Default" is desired).

### Stamped Square Ceiling Diffusers – Models RNS and ARNS

**RNS - 08 - 24 x 24 - L - AW - -**

#### MODEL

- Steel, Fixed Pattern RNS
- Aluminum, Fixed Pattern ARNS

#### NECK SIZE (inches)

- 04, 05, 06, 07, 08
- 10, 12, 14, 15

#### CEILING MODULE SIZE

Imperial (inches)	Metric (mm)
- 12 x 12	300 x 300
- 20 x 20	500 x 500
- 24 x 12 (PL only)	600 x 300 (PL only)
- 24 x 24	600 x 600
- 30 x 30 (PL only)	750 x 750 (PL only)
- 48 x 24 (PL only)	1200 x 600 (PL only)

#### FRAME STYLE

- T-Bar Lay-in L
- Surface Mount S
- Panel T-Bar Lay-in PL
- Spline SP
- Metal Pan Snap-In M
- Fineline® F

#### ACCESSORIES

- None (default) —
- External Foil Back Insulation EX
- Earthquake Tabs EQT
- Quadrant Blanks
  - 3-Way Blow QB3
  - 2-Way Opposite Blow QB2
  - 2-Way Corner Blow QC2
  - 1-Way Blow QB1

#### AIR BALANCING DEVICES

- Radial Sliding Blade Damper 4250
- Radial Opposed Blade Damper 4275
- Butterfly Damper 4675
- Equalizing Grid EGR
- Damper/Equalizing Grid DEGR

#### FINISH

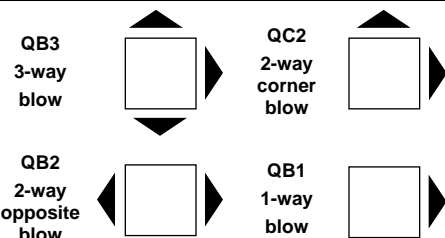
- Appliance White (default) AW
- Aluminum AL
- Special Custom Color SP

**D**  
CEILING DIFFUSERS

#### Notes:

1. Face sizes 12" x 12" (300 x 300) and 24" x 12" (600 x 300) are available in a 4" (102) through 8" (203) neck, 20" x 20" (500 x 500) face size is available in a 6", 8" or 10" (152, 203 or 254) neck and 24" x 24" (600 x 600) face size is available in a 6" (152) through 15" (381) neck.
2. Face size 20" x 20" (500 x 500) is available only in frame style L.
3. Consult text as to limitations of material, module size and frame style combinations.

#### BLOW PATTERNS WITH OPTIONAL FACTORY INSTALLED QUADRANT BLANKS.



#### SUGGESTED SPECIFICATION:

##### RNS – Steel Construction

Furnish and install **Nailor Model RNS Stamped Square Ceiling Diffusers** of the sizes and capacities as shown on the plans and air distribution schedules. The diffuser shall be manufactured from corrosion-resistant steel and have four die-formed concentric cones in all sizes, except the 20" x 20" (500 x 500) module size which will consist of three cones. The inner cone assembly is to be removable using a spring clip arrangement that permits quick, easy installation and removal. The diffuser shall have a removable plug for screwdriver adjustment of the optional damper without removing the inner core. The finish shall be AW Appliance White baked enamel (optional finishes are available).

The manufacturer shall provide published performance data for the diffuser, which shall be tested in accordance with ANSI/ASHRAE Standard 70 – 1991.

##### ARNS – Aluminum Construction

Furnish and install **Nailor Model ARNS Stamped Square Ceiling Diffusers** of the sizes and capacities as shown on the plans and air distribution schedules. The diffuser shall have four die-formed aluminum concentric cones in all sizes, except the 20" x 20" (500 x 500) module size which will consist of three cones. The inner cone assembly is to be removable using a spring clip arrangement that permits quick, easy installation and removal. The diffuser shall have a removable plug for screwdriver adjustment of the optional damper without removing the inner core. The finish shall be AW Appliance White baked enamel (optional finishes are available).

The manufacturer shall provide published performance data for the diffuser, which shall be tested in accordance with ANSI/ASHRAE Standard 70 – 1991.

## Performance Data

### Models RNS and ARNS • 12 x 12 (300 x 300) Face Size

Nominal Neck Size	Neck Velocity, FPM	400	500	600	700	800	900	1000	1200	1400	1600
	VP	.010	.016	.023	.031	.040	.051	.063	.090	.122	.160
4" Dia.	TP	.014	.022	.032	.043	.056	.071	.088	.126	.172	.224
	Airflow, CFM	<b>35</b>	<b>44</b>	<b>52</b>	<b>61</b>	<b>70</b>	<b>79</b>	<b>87</b>	<b>105</b>	<b>122</b>	<b>140</b>
	T	1-2-4	2-2-5	2-3-5	2-3-6	2-4-7	3-4-7	3-5-7	4-5-8	4-6-9	5-7-9
	NC	—	—	—	—	—	11	19	25	30	35
5" Dia.	TP	.017	.026	.038	.051	.067	.085	.105	.151	.206	.269
	Airflow, CFM	<b>55</b>	<b>68</b>	<b>82</b>	<b>95</b>	<b>109</b>	<b>123</b>	<b>136</b>	<b>164</b>	<b>191</b>	<b>218</b>
	T	2-2-5	2-3-6	2-4-6	2-4-7	2-5-8	3-6-9	4-6-9	5-7-10	5-8-11	6-8-11
	NC	—	—	—	—	—	14	22	28	33	38
6" Dia.	TP	.018	.029	.043	.060	.079	.100	.128	.175	.250	.325
	Airflow, CFM	<b>80</b>	<b>100</b>	<b>120</b>	<b>140</b>	<b>160</b>	<b>180</b>	<b>200</b>	<b>235</b>	<b>275</b>	<b>315</b>
	T	1-2-4	1-2-5	1-3-6	2-3-6	2-4-8	3-4-8	3-4-10	4-5-10	4-6-14	5-8-14
	NC	—	—	11	16	20	22	24	31	38	41
7" Dia.	TP	.022	.035	.050	.068	.089	.112	.138	.199	.271	.354
	Airflow, CFM	<b>107</b>	<b>134</b>	<b>160</b>	<b>187</b>	<b>214</b>	<b>241</b>	<b>267</b>	<b>321</b>	<b>374</b>	<b>428</b>
	T	2-4-8	3-5-9	4-6-10	4-7-11	5-8-12	5-9-13	6-10-14	7-10-14	9-11-15	10-12-16
	NC	—	—	12	17	20	24	27	33	39	42
8" Dia.	TP	.031	.047	.065	.087	.110	.140	.168	.235	.310	.395
	Airflow, CFM	<b>140</b>	<b>175</b>	<b>210</b>	<b>245</b>	<b>280</b>	<b>315</b>	<b>350</b>	<b>420</b>	<b>490</b>	<b>560</b>
	T	3-5-9	4-5-11	5-7-13	5-8-14	6-9-14	6-10-15	7-11-16	8-12-17	10-13-18	11-14-18
	NC	—	—	13	18	22	26	29	35	40	44

### Models RNS and ARNS • 20 x 20 (500 x 500) Face Size

Nominal Neck Size	Neck Velocity, FPM	400	500	600	700	800	900	1000	1200	1400	1600
	VP	.010	.016	.023	.031	.040	.051	.063	.090	.122	.160
6" Dia.	TP	.015	.023	.033	.045	.058	.074	.091	.130	.176	.230
	Airflow, CFM	<b>80</b>	<b>100</b>	<b>120</b>	<b>140</b>	<b>160</b>	<b>180</b>	<b>200</b>	<b>235</b>	<b>275</b>	<b>315</b>
	T	1-1-3	1-2-4	1-2-4	1-3-5	2-3-6	2-3-6	2-4-7	3-5-8	3-5-8	4-6-9
	NC	—	—	14	18	21	26	29	34	38	41
8" Dia.	TP	.018	.028	.041	.055	.072	.091	.112	.161	.219	.286
	Airflow, CFM	<b>140</b>	<b>175</b>	<b>210</b>	<b>245</b>	<b>280</b>	<b>315</b>	<b>350</b>	<b>420</b>	<b>490</b>	<b>560</b>
	T	1-2-5	2-3-6	2-4-6	3-4-7	3-5-7	4-5-8	4-6-8	5-6-9	6-7-10	6-8-11
	NC	—	11	16	20	23	28	31	36	40	43
10" Dia.	TP	.023	.036	.052	.071	.092	.117	.144	.207	.281	.367
	Airflow, CFM	<b>220</b>	<b>270</b>	<b>330</b>	<b>380</b>	<b>435</b>	<b>490</b>	<b>545</b>	<b>655</b>	<b>765</b>	<b>870</b>
	T	2-4-6	3-4-7	4-5-8	4-6-9	5-6-9	5-7-10	6-7-10	6-8-11	7-9-12	8-9-13
	NC	—	13	18	22	25	30	33	38	42	45

For performance notes, see next page.

**D**  
CEILING DIFFUSERS

## Performance Data

### Models RNS and ARNS • 24 x 24 (600 x 600) Face Size

Nominal Neck Size	Neck Velocity, FPM	400	500	600	700	800	900	1000	1200	1400	1600
	VP	.010	.016	.023	.031	.040	.051	.063	.090	.122	.160
6" Dia.	TP	.015	.023	.035	.045	.060	.076	.095	.135	.186	.240
	Airflow, CFM	80	100	120	140	160	180	200	235	275	315
	T	1-1-4	1-2-5	1-2-6	1-3-7	2-4-9	2-5-9	3-6-11	3-6-12	4-7-14	6-8-15
	NC	—	—	—	13	17	21	24	27	32	36
8" Dia.	TP	.021	.033	.047	.063	.082	.105	.128	.183	.245	.325
	Airflow, CFM	140	175	210	245	280	315	350	420	490	560
	T	1-1-5	1-2-6	1-3-8	2-4-8	3-5-10	3-6-10	4-6-13	5-8-13	6-8-16	7-10-17
	NC	—	—	13	17	20	25	28	33	37	40
10" Dia.	TP	.024	.037	.047	.074	.097	.123	.150	.215	.293	.372
	Airflow, CFM	220	270	330	380	435	490	545	655	765	870
	T	1-3-6	2-4-8	3-5-9	4-6-12	5-6-12	5-7-14	6-9-15	6-10-15	8-13-17	9-13-18
	NC	—	11	16	20	23	28	31	36	40	43
12" Dia.	TP	.026	.039	.057	.075	.097	.127	.150	.245	.310	.410
	Airflow, CFM	315	390	470	550	630	705	785	990	1100	1255
	T	2-3-7	3-4-9	3-5-10	4-6-13	5-7-13	5-8-15	5-8-16	7-9-18	9-11-18	10-12-19
	NC	—	13	18	21	24	29	32	37	41	44
14" Dia.	TP	.030	.050	.070	.100	.110	.160	.200	.240	.390	.490
	Airflow, CFM	425	530	635	745	850	955	1060	1270	1490	1695
	T	3-4-9	4-5-11	4-7-13	5-7-16	6-9-16	7-11-16	7-11-19	9-13-19	11-16-19	11-16-27
	NC	—	14	19	22	25	29	32	37	42	45
15" Dia.	TP	.033	.054	.072	.100	.127	.163	.204	.280	.395	.500
	Airflow, CFM	490	615	735	860	985	1110	1230	1470	1720	1970
	T	5-7-10	6-8-11	7-9-14	8-10-17	8-13-18	10-15-19	11-16-22	12-18-27	13-20-32	15-22-34
	NC	—	15	20	23	26	30	33	38	43	46

**D**  
CEILING DIFFUSERS

- CFM** - cubic feet per minute
- FPM** - feet per minute velocity
- TP** - total pressure - inches w.g.
- VP** - velocity pressure - inches w.g.
- T** - throw in feet
- NC** - Noise Criteria (values) based on 10 dB room absorption, re 10<sup>-12</sup> watts.

**Performance Notes:**

1. Throws are given at 150, 100 and 50 fpm terminal velocities, under isothermal conditions.
2. Data derived from tests conducted in accordance with ANSI/ASHRAE Standard 70 – 1991.
3. The addition of quadrant blanks reduces the effective area and for a

given air volume, increases the discharge velocity. This will result in an increase in throw, pressure drop and sound level. To determine throw, select the diffuser as if it were supplying a larger volume of air. The table shows the percentage increase required to determine selection of diffuser size and throw. To correct pressure drop and NC, use correction factors as shown for 4-way blow values.

Neck Size Diameter in Inches	Nominal Overall Face Size	Ak Factor
6	12 x 12	0.131
8	12 x 12	0.202
6	24 x 24	0.180
8	24 x 24	0.227
10	24 x 24	0.331
12	24 x 24	0.450
14	24 x 24	0.511
15	24 x 24	0.625

Quadrant Blanks (Blow)	% Increase in Air Volume for Throw Determination	% Increase in Static Pressure Drop	NC Sound Level Increase
1 (3-way)	35	125	8
2 (2-way)	100	450	19