

## GENERAL PRODUCT OVERVIEW

### Ceiling Diffusers

Quality Assured Products, unobtrusive clean lines for appearance, careful engineering and professional workmanship with the backing of an industry leader - these add up to true value; prime reasons for specifying Nailor Ceiling Diffusers.

Architectural excellence and engineering selections demand high quality products and shipping schedules demand service, all part of the package.

#### SQUARE AND RECTANGULAR PATTERN

Nailor's pattern diffusers are typically used in applications where considerable volumes of air are required while maintaining relatively low noise levels and pressure drops. A full range of models are available and consist of a choice of corrosion-resistant steel or aluminum construction, fixed and adjustable patterns, as well as extra high capacity models. Induction vanes are also available for those jobs that require quick equalization of cool and warm air such as in VAV systems with high cooling loads. The louvered cores are removable and are available in an assortment of patterns.

#### Steel High Capacity Construction – Fiberglass Plenum

Fixed Pattern Model 6500FP **Page D18**

#### Steel Construction –

Fixed Pattern Model 6500 **Page D14**

Adjustable Pattern Model 6550 **Page D14**

Induction Vane Model 6500IV **Page D39**

Suffix '-O' adds a steel OBD

#### Aluminum Construction –

Fixed Pattern Model 6200 **Page D14**

Adjustable Pattern Model 6250 **Page D14**

Induction Vane Model 6200IV **Page D39**

Suffix '-O' adds a steel OBD

Suffix '-OA' adds an aluminum OBD

#### Aluminum High Capacity Construction –

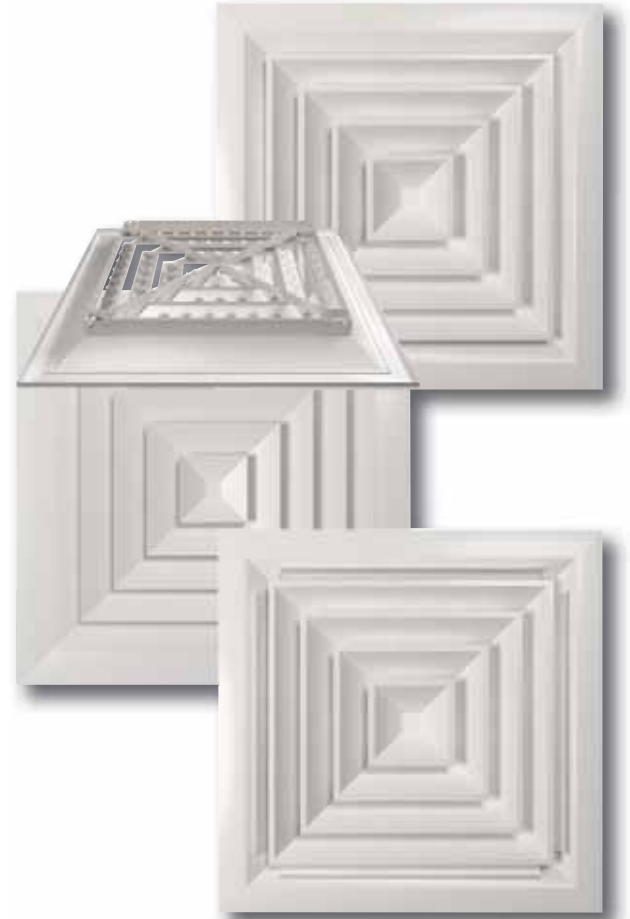
100% Aluminum Model 6200-MRI **Page D20**

Fixed Pattern Model 6400 **Page D46**

Induction Vane Model 6400IV **Page D65**

Suffix '-O' adds a steel OBD

Suffix '-OA' adds an aluminum OBD



Models 6500, 6500IV, 6400, 6550

D

CEILING DIFFUSERS



Models RNS, ARNSA, RNS2

#### STAMPED SQUARE

These diffusers are a very popular choice for general air distribution applications. The diffusers are designed to provide high performance at a cost effective price. The stamped one-piece cones and die-formed clean curves supply a 360° diffusion pattern and provide the high performance necessary in VAV systems. Integral round necks provide a secure connection for flexible duct applications. Nailor's "classic" four-cone, removable core design is available in most ceiling module sizes, a choice of corrosion-resistant steel or aluminum, and an option of fixed or adjustable patterns. A two and three cone fixed pattern diffuser also accompanies this series.

#### Steel Construction –

Fixed Pattern Model RNS **Page D87**

Adjustable Pattern Model RNSA **Page D91**

Fixed Pattern 3 Cone Model RNS3 **Page D95**

Fixed Pattern 2 Cone Model RNS2 **Page D98**

#### Aluminum Construction –

Fixed Pattern Model ARNS **Page D87**

Adjustable Pattern Model ARNSA **Page D91**

Fixed Pattern 3 Cone Model ARNS3 **Page D95**

## ADJUSTABLE STAMPED SQUARE CEILING DIFFUSERS

- HIGH PERFORMANCE
- SQUARE FACE
- ROUND NECK
- HORIZONTAL TO VERTICAL ADJUSTABLE DISCHARGE PATTERN

### Models:

RNSA Steel

ARNSA Aluminum



Model RNSA

Model Series RNSA and ARNSA Adjustable Square Ceiling Air Diffusers have been specially designed to provide both the unobtrusive appearance required for architectural excellence and the 360° diffusion pattern at minimum NC levels required for high engineering performance. They provide the flexibility of a standard horizontal discharge or near vertical discharge pattern, useful in high ceiling applications where better air penetration or spot heating may be desired. The stamped one-piece cones eliminate mitered corners and the die-formed curves provide consistent quality and performance.

The adjustable diffusers provide stable diffusion and mixing patterns under constant and changing load conditions and are particularly suitable for variable air volume systems. They are available to suit many situations 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.

### STANDARD FEATURES:

- Removable core.
- 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.
- Compatible with Model 4275 Radial Opposed Blade Damper (option). Other dampers may need adaptors.
- Screwdriver adjustment of the optional balancing damper through the core.

### CONSTRUCTION MATERIAL:

Heavy gauge, corrosion-resistant steel or aluminum with miscellaneous steel components.

### FINISH OPTIONS:

AW Appliance White finish is standard. Other finishes are available.

### ADJUSTMENT:

The unique design permits gradual adjustment of air pattern from horizontal flow with the inner cone assembly extended to vertical flow by retracting the inner cone assembly. Available as Type 1 or 2. (ARNSA is available in Type 1 only).

### OPTIONS & ACCESSORIES:

- 4275 Radial Opposed Blade Damper 5" – 24" (127 – 610).
  - QB Quadrant Blanks for 1, 2 and 3-way blow. (See page D267).
  - EX External Foil-Back Insulation (installed) – R-4.2.
  - EXB External Foil-Back Insulation (loose) – R-4.2.
  - EQT Earthquake Tabs
- For additional options and accessories; see page D255.

#### Type 1 'Sliding Type'

Adjusted by sliding the inner cone assembly up or down. Core is securely retained by a spring loaded friction arrangement. Steel or aluminum construction.

#### Type 2 'Rotating Type'

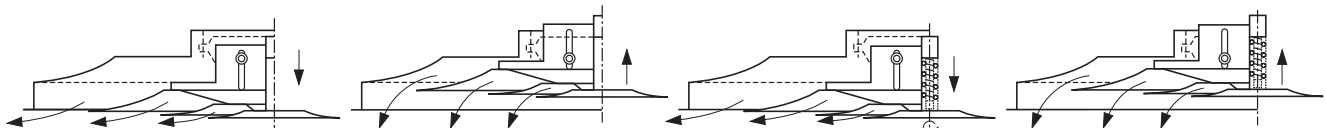
A unique 'screw type' arrangement where the angle of discharge is varied by rotating the center cone. Steel construction only.

#### Horizontal Air Pattern

#### Vertical Air Pattern

#### Horizontal Air Pattern

#### Vertical Air Pattern

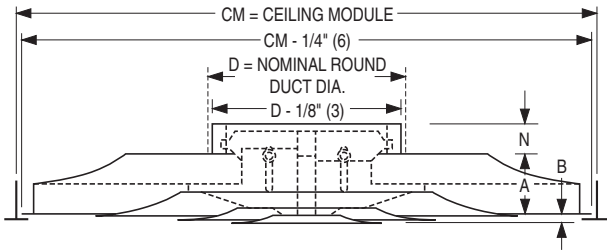


## DIMENSIONAL DATA AND FRAME TYPES:

### MODELS RNSA AND ARNSA

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

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

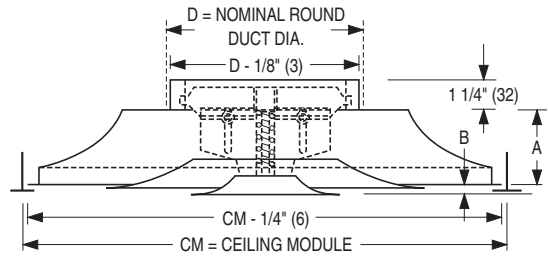


Ceiling Module CM		Imperial Units (inches)				Metric Units (mm)			
Imperial Modules	Metric Modules	Duct Size D	N	A	B	Duct Size D	N	A	B
12 x 12	300 x 300	4*, 5*	3 1/4	2 1/4	0 to 1/2	102*, 127*	83	57	0 to 13
		6, 7, 8	1 1/4			152, 178, 203			
24 x 24	600 x 600	6, 8, 10, 12, 14, 15	1 1/4	3 3/4	0 to 3/8	152, 203, 254, 305, 356, 381	32	95	0 to 10

\* Supplied with a reducer.

#### Type L Lay-in T-Bar\*\*

20 x 20 (500 x 500) module

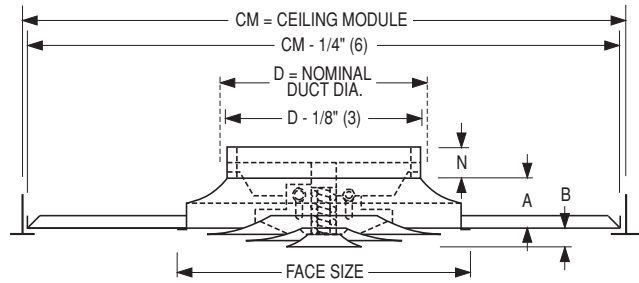


Listed Neck Size	Imperial Modules				Metric Modules	
	Imperial Units (inches)		SI Units (mm)		SI Units (mm)	
	CM = 20 x 20		CM = 508 x 508		CM = 500 x 500	
	A	B	A	B	A	B
6 (152)		0		0		0
8 (203)	3 1/8	to	79	to	79	to
10 (254)		3/8		10		10

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

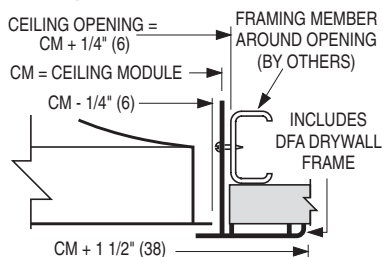
Listed Neck Size	Imperial Modules (inches)				SI Units (mm)			
	Face Size = 12 x 12				Face Size = 305 x 305			
4*	4	3 1/4	2 1/4	0 TO 1/2	102	83	57	0 TO 13
5*	5				127			
6	6	1 1/4	3 3/4	0 TO 3/8	152	32	95	0 TO 10
7	7				178			
8	8				203			
	Face Size = 24 x 24				Face Size = 610 x 610			
	6	1 1/4	3 3/4	0 TO 3/8	152	32	95	0 TO 10
	8				203			
	10				254			
	12				305			
	14				356			
	15				381			

\* Supplied with a reducer.

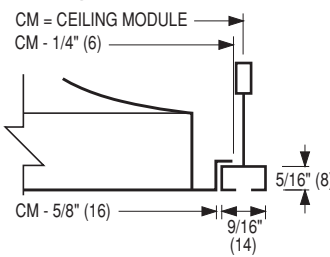


Available Ceiling Modules CM		
Imperial Units (inches)	SI Units (mm)	SI Units (mm)
Face Size 12 x 12 (305 x 305)		
Listed Neck Sizes 4, 5, 6, 7, 8 (102, 127, 152, 178, 203)		
20 x 20	508 x 508	500 x 500
24 x 12	610 x 305	600 x 300
24 x 24	610 x 610	600 x 600
Face Size 24 x 24 (610 x 610)		
Listed Neck Sizes 6, 8, 10, 12, 14, 15 (152, 203, 254, 305, 356, 381)		
30 x 30	762 x 762	750 x 750
48 x 24	1219 x 610	1200 x 600

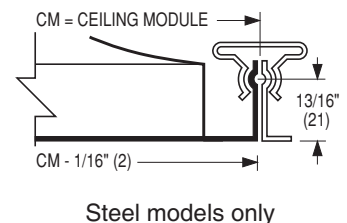
#### Type S Surface Mount



#### Type F Fineline®



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



Steel models only

D

CEILING DIFFUSERS

## PERFORMANCE DATA:

### Models RNSA and ARNSA • 12 x 12 (300 x 300) Face Size

Nominal Neck Size	Neck Velocity, FPM		400	500	600	700	800	900	1000	1200	1400	1600
	Velocity Pressure		.010	.016	.023	.031	.040	.051	.063	.090	.122	.160
6" Dia.	Total Pressure	Horizontal	.019	.028	.039	.057	.074	.093	.121	.150	.192	.247
		Vertical	.023	.034	.057	.086	.110	.146	.168	.246	.316	.415
	Airflow, CFM		80	100	120	140	160	180	200	235	275	315
	Throw	Horizontal	1-2-4	2-3-6	2-3-6	3-4-7	3-5-7	4-5-8	4-6-10	6-7-11	6-8-11	6-9-12
		Vertical	1-1-2	2-2-5	2-2-6	2-3-5	2-3-5	3-5-6	3-4-7	4-5-8	5-6-9	5-7-10
Noise Criteria	Horizontal	—	—	12	17	21	23	24	32	38	41	
	Vertical	—	—	16	21	25	27	28	36	42	45	
8" Dia.	Total Pressure	Horizontal	.020	.031	.043	.059	.071	.090	.110	.150	.200	.259
		Vertical	.032	.052	.063	.096	.12	.159	.186	.258	.342	.443
	Airflow, CFM		140	175	210	245	280	315	350	420	490	560
	Throw	Horizontal	2-3-6	3-5-8	4-5-8	4-7-10	5-7-12	6-9-14	8-9-15	8-10-16	10-12-18	11-14-20
		Vertical	2-2-3	3-4-7	3-5-6	4-6-9	4-6-9	5-7-10	6-8-11	7-9-12	8-9-13	9-10-14
Noise Criteria	Horizontal	—	11	17	22	25	27	29	36	44	47	
	Vertical	—	—	21	26	29	31	33	40	48	51	

### Models RNSA and ARNSA • 20 x 20 (500 x 500) Face Size

Nominal Neck Size	Neck Velocity, FPM		400	500	600	700	800	900	1000	1200	1400	1600
	Velocity Pressure		.010	.016	.023	.031	.040	.051	.063	.090	.122	.160
6" Dia.	Total Pressure	Horizontal	.017	.026	.038	.051	.067	.085	.105	.149	.202	.264
		Vertical	.023	.036	.052	.070	.091	.116	.143	.201	.274	.359
	Airflow, CFM		80	100	120	140	160	180	200	235	275	315
	Throw	Horizontal	1-2-4	2-2-5	2-3-6	2-4-6	3-5-6	4-5-7	4-5-7	4-6-8	5-6-8	5-7-9
		Vertical	1-1-2	2-2-3	2-2-4	2-3-5	2-4-5	3-5-6	3-5-7	4-5-8	4-6-9	5-7-10
Noise Criteria	Horizontal	—	12	17	22	25	29	32	37	41	45	
	Vertical	—	17	22	26	29	32	35	40	44	48	
8" Dia.	Total Pressure	Horizontal	.019	.031	.044	.059	.077	.098	.120	.173	.235	.307
		Vertical	.031	.049	.070	.094	.122	.155	.192	.275	.373	.489
	Airflow, CFM		140	175	210	245	280	315	350	420	490	560
	Throw	Horizontal	2-3-5	2-3-7	3-4-8	3-5-8	3-5-9	4-6-9	4-7-10	5-8-11	6-8-12	7-9-12
		Vertical	1-1-4	1-2-5	2-3-6	3-4-6	3-4-8	4-5-8	4-6-9	4-7-10	5-7-10	6-8-12
Noise Criteria	Horizontal	—	—	15	20	24	28	31	38	43	47	
	Vertical	14	19	24	29	32	35	38	44	48	52	
10" Dia.	Total Pressure	Horizontal	.024	.039	.056	.076	.098	.125	.153	.220	.299	.391
		Vertical	.041	.065	.094	.127	.165	.209	.258	.370	.502	.657
	Airflow, CFM		220	270	330	380	435	490	545	655	765	875
	Throws	Horizontal	2-4-7	3-5-8	4-6-9	4-7-10	5-7-10	6-8-11	6-8-12	7-9-13	8-10-14	9-11-15
		Vertical	1-2-4	1-3-6	3-5-7	3-5-8	4-5-9	4-6-10	5-6-10	5-7-11	6-8-12	7-9-12
Noise Criteria	Horizontal	—	—	16	21	26	30	33	39	45	49	
	Vertical	—	20	25	29	33	36	39	44	48	52	

#### Performance Notes:

1. Throws are given at 150, 100 and 50 fpm terminal velocities under isothermal conditions.
2. All pressures are in inches w.g..
3. Horizontal throws are with ceiling coanda effect. For exposed duct mounting, multiply table values by x 0.7. Vertical throw is a free jet.
4. Noise Criteria (NC) are based on a room absorption of 10 dB, re 10<sup>-12</sup> watts. Dash (—) in space denotes an Noise Criteria level less than 10.
5. Data derived from independent tests conducted in accordance with ANSI/ASHRAE Standard 70-2006.

## PERFORMANCE DATA:

### Models RNSA and ARNSA • 24 x 24 (600 x 600) Face Size

Nominal Neck Size	Neck Velocity, FPM		400	500	600	700	800	900	1000	1200	1400	1600
	Velocity Pressure		.010	.016	.023	.031	.040	.051	.063	.090	.122	.160
6" Dia.	Total Pressure	Horizontal	.016	.024	.034	.047	.061	.078	.098	.129	.182	.240
		Vertical	.020	.031	.052	.080	.097	.124	.151	.218	.289	.390
	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>
	Throw	Horizontal	1-2-5	2-3-5	2-3-6	3-4-7	3-5-8	4-5-8	4-6-9	6-8-10	6-10-11	7-10-12
		Vertical	1-1-2	2-2-3	2-2-4	2-3-5	2-4-5	3-5-6	3-5-7	4-5-8	4-6-9	5-7-10
	Noise Criteria	Horizontal	—	—	—	13	17	20	22	28	32	36
Vertical		—	—	—	15	19	22	24	30	34	38	
8" Dia.	Total Pressure	Horizontal	.017	.026	.037	.049	.062	.08	.102	.131	.185	.243
		Vertical	.025	.04	.057	.077	.1	.126	.153	.221	.297	.393
	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>
	Throw	Horizontal	1-2-5	2-4-6	3-5-7	3-5-8	4-6-9	4-7-10	4-7-11	5-8-12	6-9-13	7-10-14
		Vertical	1-1-4	1-2-5	2-3-6	3-4-6	3-4-8	4-5-8	4-6-9	5-7-10	5-7-11	6-8-12
	Noise Criteria	Horizontal	—	—	13	18	21	22	26	32	38	42
Vertical		—	—	17	20	25	26	30	36	42	46	
10" Dia.	Total Pressure	Horizontal	.014	.021	.030	.039	.052	.065	.080	.112	.152	.194
		Vertical	.030	.048	.070	.092	.120	.161	.196	.264	.360	.450
	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>
	Throw	Horizontal	1-4-6	3-5-9	3-6-9	4-7-10	5-7-11	5-9-13	6-10-14	7-11-15	8-11-16	9-12-17
		Vertical	1-2-4	1-3-6	3-5-7	3-5-8	4-5-9	4-6-10	5-6-10	5-7-11	6-8-12	7-9-12
	Noise Criteria	Horizontal	—	10	15	21	26	30	33	38	43	45
Vertical		—	14	19	25	31	34	37	42	47	49	
12" Dia.	Total Pressure	Horizontal	.016	.025	.032	.043	.056	.072	.085	.129	.163	.216
		Vertical	.045	.069	.088	.120	.155	.204	.240	.360	.455	.585
	Airflow, CFM		<b>315</b>	<b>390</b>	<b>470</b>	<b>550</b>	<b>630</b>	<b>705</b>	<b>785</b>	<b>950</b>	<b>1100</b>	<b>1255</b>
	Throw	Horizontal	2-3-7	3-6-9	4-7-10	5-8-12	6-9-14	6-10-15	7-10-16	8-11-17	9-12-18	10-14-19
		Vertical	2-3-5	2-4-6	3-6-7	5-6-9	5-7-10	5-7-10	6-7-12	7-8-12	8-10-14	8-9-15
	Noise Criteria	Horizontal	—	15	22	25	30	33	36	43	45	48
Vertical		12	18	25	28	33	36	39	46	48	51	
14" Dia.	Total Pressure	Horizontal	.022	.037	.049	.057	.073	.092	.115	.147	.208	.262
		Vertical	.063	.101	.135	.160	.203	.261	.326	.411	.583	.640
	Airflow, CFM		<b>425</b>	<b>530</b>	<b>635</b>	<b>745</b>	<b>855</b>	<b>960</b>	<b>1070</b>	<b>1285</b>	<b>1500</b>	<b>1710</b>
	Throw	Horizontal	2-4-8	4-5-8	5-6-10	6-8-12	7-10-14	8-10-16	9-11-17	10-11-18	11-12-20	12-14-21
		Vertical	2-3-5	4-4-6	4-5-9	5-7-10	6-9-12	7-9-13	8-9-14	9-10-15	10-11-16	10-13-18
	Noise Criteria	Horizontal	—	16	22	25	29	33	36	40	42	48
Vertical		11	19	25	28	32	36	39	43	45	51	
15" Dia.	Total Pressure	Horizontal	.030	.041	.054	.062	.080	.100	.128	.155	.224	.308
		Vertical	.068	.110	.143	.165	.210	.271	.330	.425	.590	.660
	Airflow, CFM		<b>490</b>	<b>615</b>	<b>735</b>	<b>860</b>	<b>985</b>	<b>1110</b>	<b>1230</b>	<b>1470</b>	<b>1720</b>	<b>1965</b>
	Throw	Horizontal	5-6-8	5-8-9	8-9-11	9-10-12	10-10-13	11-12-15	12-12-16	12-14-18	14-15-20	15-17-23
		Vertical	3-4-6	3-4-7	5-6-8	6-7-9	6-8-10	8-9-11	10-11-12	11-12-14	11-14-16	12-16-18
	Noise Criteria	Horizontal	10	18	24	30	34	37	40	42	48	51
Vertical		13	21	27	33	37	40	43	45	51	54	

#### Performance Notes:

1. Throws are given at 150, 100 and 50 fpm terminal velocities under isothermal conditions.
2. All pressures are in inches w.g..
3. Horizontal throws are with ceiling coanda effect. For exposed duct mounting, multiply table values by x 0.7. Vertical throw is a free jet.
4. Noise Criteria (NC) are based on a room absorption of 10 dB, re 10<sup>-12</sup> watts. Dash (—) in space denotes an Noise Criteria level less than 10.
5. Data derived from independent tests conducted in accordance with ANSI/ASHRAE Standard 70-2006.

D  
CEILING DIFFUSERS

## HOW TO ORDER

### STAMPED SQUARE CEILING DIFFUSERS

#### MODEL SERIES RNS, ARNS, UNI, AUNI AND TWR

EXAMPLE: RNS - 08 - 24 x 24 - L - AW - -

**1. Models**

**Louvered Face**

- RNS Steel, Fixed, 4 Cone
- RNS3 Steel, Fixed, 3 Cone
- RNS2 Steel, Fixed, 2 Cone
- RNSA1 Steel, Adjustable, Sliding Type
- RNSA2 Steel, Adjustable, Rotating Type

- ARNS Aluminum, Fixed
- ARNS3 Aluminum, Fixed, 3 Cone, Non-removable
- ARNSA Aluminum, Adjustable

**Architectural**

- UNI Steel, Concealed Bracketry
- UNI2 Steel, Corner Posts
- UNI-RP Steel, Round Plaque
- AUNI Aluminum, Concealed Bracketry
- AUNI2 Aluminum, Four Corner Posts

**Downblast**

- UNI-AD Adjustable
- UNI-PD Fixed, Perforated

**High Induction**

- TWR Twister

**2. Neck Size (inches)**

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

**3. Ceiling Module Size**

**Imperial (inches)**

- 12 x 12, 20 x 20, 24 x 12, 24 x 24 (default), 30 x 30, 48 x 24

**Metric (mm)**

- 300 x 300, 500 x 500, 600 x 300, 600 x 600, 750 x 750, 1200 x 600

**4. Frame Type**

- L Lay-in T-Bar/Surface Mount
- S Surface Mount
- PL Panel Lay-in T-Bar
- SP Spline
- M Metal Pan
- F Fineline®
- TL Tegular Lay-in

**5. Finish**

- AW Appliance White (default)
- AL Aluminum
- BK Black
- BW British White
- MI Mill
- PC Prime Coat Paint
- PPA Paint Prepared Aluminum
- SP Special Custom Color

**OPTIONS & ACCESSORIES:**

(Default is none unless noted otherwise)

**6. MRI Option (AUNI2 only)\***

- MRI MRI Compatible (100% Aluminum)

**7. Damper**

- 4250 Radial Sliding, 6" - 14"
- 4275 Radial Opposed Blade, 5" - 24"
- 4675 Butterfly, 6" - 14"

**8. Quadrant Blanks**

- QB3 3-way blow
- QB2 2-way opposite blow
- QC2 2-way corner blow
- QB1 1-way blow

**9. External Insulation**

- EX Foil-back (installed), R-4.2
- EXB Foil-back (loose), R-4.2
- MIB Molded Insulation Blanket R-6.0

**10. Extended Inlet Collar \*\***

- EIC Extended Inlet Collar (2.25") with bead

**11. Earthquake Tabs**

- EQT Earthquake Tabs

**OTHER OPTIONS & ACCESSORIES:**

**Ceiling Tile Option:**

- (UNI, AUNI only)
- RC Retaining Channel only
- RCCF Retaining Channel + Tile Cut & Fitted

**Air Balancing Devices**

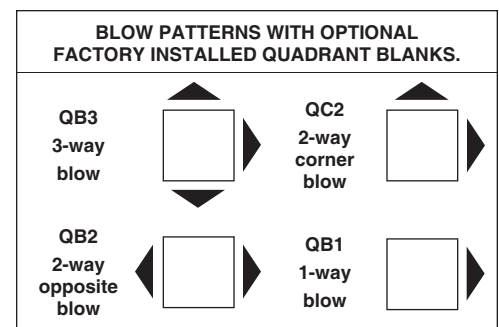
- (order separately)
- EGR Equalizing Grid
- DEGR Damper/Equalizing Grid

**Notes:**

1. Consult price pages as to limitations of module, frame type, neck size and accessories combinations.
2. Face size 20" x 20" (500 x 500) is available only in Frame Type L.
3. MIB Molded Insulation Blanket is not available on Models RNSA1, RNSA2, and ARNSA.
4. Butterfly damper (4675) is not compatible with Model RNSA.
5. PPA Finish is available on Aluminum models only.
6. \*Dampers are not available on Model AUNI2 when MRI option is selected.
7. \*\*Extended Inlet Collar is available for steel models RNS, RNS3, UNI and UNI2 only.

D  
CEILING DIFFUSERS

NOMINAL ROUND NECK (DUCT) SIZE	FACE SIZE	CEILING MODULE
4, 5, 6, 7, 8	12 x 12	12 x 12 20 x 20 24 x 12 24 x 24
6, 8, 10	20 x 20	20 x 20
6, 8, 10, 12, 14, 15	24 x 24	24 x 24 30 x 30 48 x 24



## HOW TO SPECIFY

### 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 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 (optional finishes are available).

The manufacturer shall provide published performance data for the diffuser, which shall be tested in accordance with ANSI/ASHRAE Standard 70-2006.

#### 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 (optional finishes are available).

The manufacturer shall provide published performance data for the diffuser, which shall be tested in accordance with ANSI/ASHRAE Standard 70-2006.

### SUGGESTED SPECIFICATION:

#### RNSA1, RNSA2 – Steel Construction

Furnish and install **Nailor Model (select one) RNSA1 or RNSA2 Adjustable 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 concentric cones in all sizes, except the 20" x 20" (500 x 500) module size which will consist of three cones. Model RNSA1 shall have an adjustable sliding type inner cone assembly that is securely retained by a spring loaded friction arrangement. Model RNSA2 shall have an adjustable rotating type inner cone assembly that is adjusted by rotating the center cone. 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 (optional finishes are available).

The manufacturer shall provide published performance data for the diffuser, which shall be tested in accordance with ANSI/ASHRAE Standard 70-2006.

#### ARNSA – Aluminum Construction

Furnish and install **Nailor Model ARNSA Adjustable 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 diffuser shall have an adjustable sliding type inner cone assembly that is securely retained by a spring loaded friction arrangement. 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 (optional finishes are available).

The manufacturer shall provide published performance data for the diffuser, which shall be tested in accordance with ANSI/ASHRAE Standard 70-2006.

## PRODUCT OVERVIEW OPTIONS AND ACCESSORIES FOR CEILING DIFFUSERS

### MOUNTING FRAMES

- Surface mount adapter frames for plaster and sheet rock ceilings are available in steel and aluminum. They simplify installation, save time and allow ceiling plenum access.

### OPTIONS

- A selection of optional items that are available on ceiling diffusers.

### FINISHES

- Selection of standard and non-standard finishes to choose from.
- Baked enamel paint in custom colors to suit architect.

### AIR BALANCING DEVICES

- Dampers for round and square necks.
- Equalizing grids.
- Volume extractors.

Effective air balancing of an HVAC System requires the correct selection, specification and installation of the right product to suit the system design.

Nailor offers a comprehensive range of models and options to cover all applications.

Nailor balancing devices are:

- Easy to select and specify. Many items can be ordered or specified as diffuser accessories.
- Designed to offer a smooth, accurate and predictable response during adjustment for precise air metering.
- Designed to provide quick access and adjustment.
- Engineered with attention to optimizing airflow, in order to minimize noise, turbulence and pressure drop.

**Model DFA**  
Drywall/Plaster Frame  
Surface Mount  
Ceiling Adapter



**Model 4275**  
Radial Opposed  
Blade Damper



**Model 4250**  
Radial Sliding Blade Damper



**Model 4675**  
Butterfly Damper



**Model OBD**  
Opposed Blade Damper  
Steel, Neck Mount



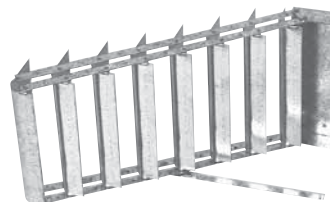
**Model OBDD**  
Opposed Blade Damper  
Steel, Duct Mount



**Model EGR**  
Equalizing Grid



**Model DEGR**  
Damper with Equalizing Grid



**Model EX-1**  
Volume Extractor



## Mounting Frames

### DFS (Steel), DFA (Aluminum) Drywall/Plaster Frame

The DF Series are for mounting in finished drywall or plaster ceilings to accept any standard lay-in type grille, register, diffuser or other ceiling component. Installation of the air outlet is as simple as inserting them in a standard lay-in T-Bar type ceiling system.

The DF Series simplifies and reduces installation time compared with surface mount type diffusers. This is especially true where flexible duct is utilized.

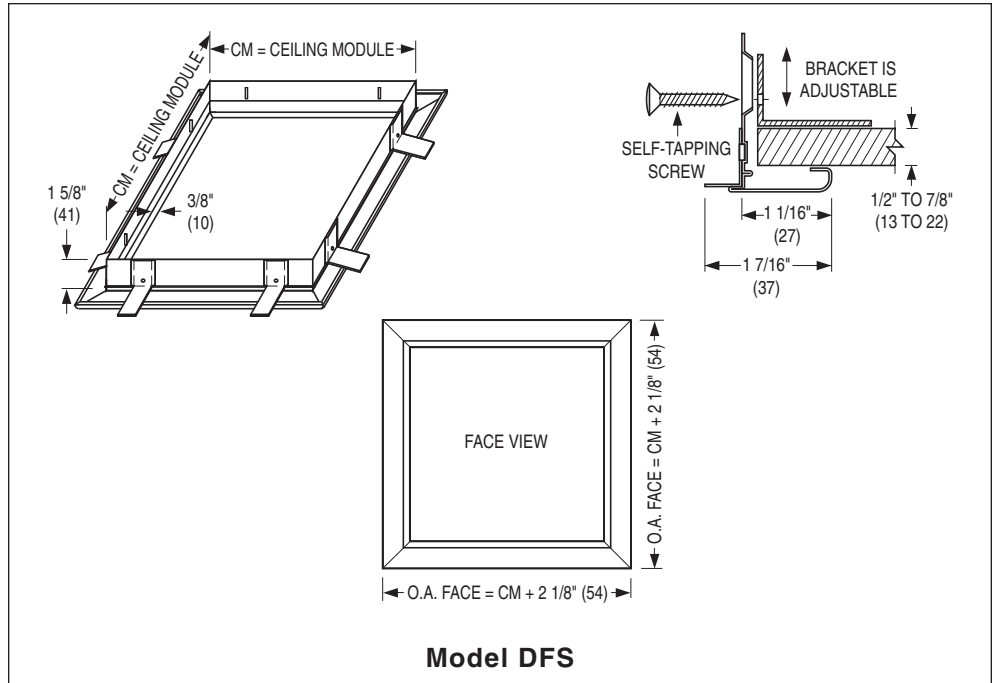
A major benefit is that the DF Series allows access to the ceiling plenum space above for maintenance purposes without the need for separate access doors. The finished appearance is professional and aesthetically pleasing.

**Standard Finish:** AW Appliance White. Other finishes are available.

**Model DFS** is installed quickly and easily using adjustable fastening angle brackets which adapt to various ceiling thicknesses. Frames are roll-formed corrosion-resistant steel with staked and mitered corners.

IMPERIAL MODULES		METRIC MODULES
Imperial Units (inches)	S.I. Units (mm)	S.I. Units (mm)
12 x 12	305 x 305	300 x 300
16 x 16	406 x 406	400 x 400
20 x 20	508 x 508	500 x 500
24 x 12	610 x 305	600 x 300
24 x 24	610 x 610	600 x 600

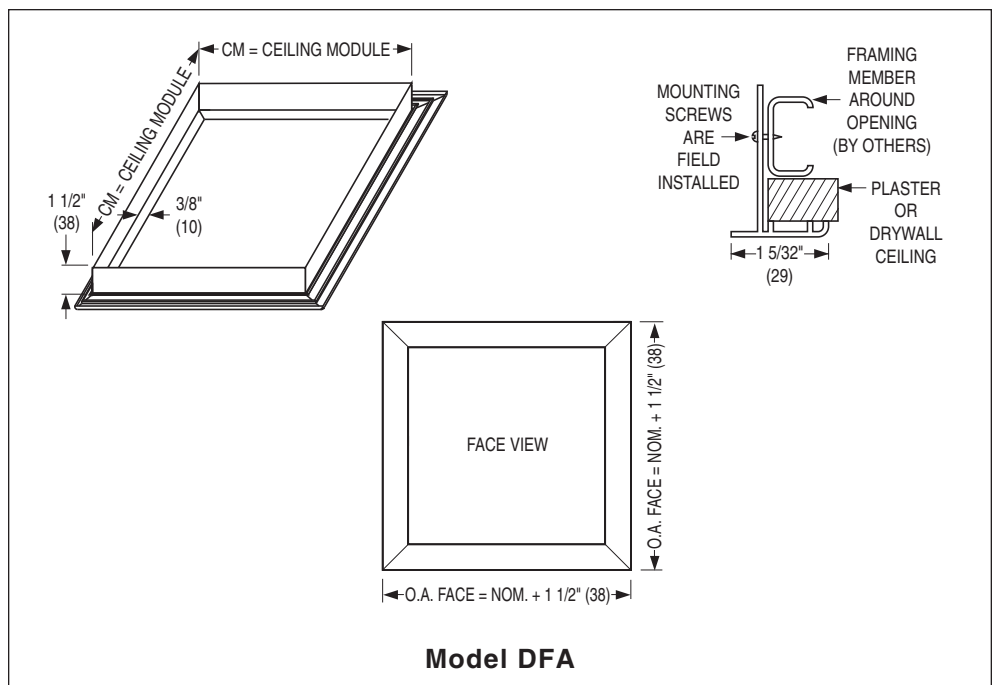
Ceiling opening = CM + 1/4" (6)



**Model DFA** requires framing of the ceiling opening with 'C' channel or wood studs for attachment with mounting screws (by others).

IMPERIAL MODULES		METRIC MODULES
Imperial Units (inches)	S.I. Units (mm)	S.I. Units (mm)
12 x 12	305 x 305	300 x 300
16 x 16	406 x 406	400 x 400
20 x 20	508 x 508	500 x 500
24 x 12	610 x 305	600 x 300
24 x 24	610 x 610	600 x 600
36 x 24	914 x 610	900 x 600
48 x 12	1219 x 305	1200 x 300
48 x 24	1219 x 1219	1200 x 600
60 x 12	1524 x 305	1500 x 300

Ceiling opening = CM + 1/4" (6)



## Options and Finishes

### OPTIONS:

#### EQT Earthquake Tabs

Earthquake (seismic) retaining safety tabs are available; factory installed on diffusers when required by local building code that units be independently restrained and safety wired to supporting structure.

#### SC Safety Chain

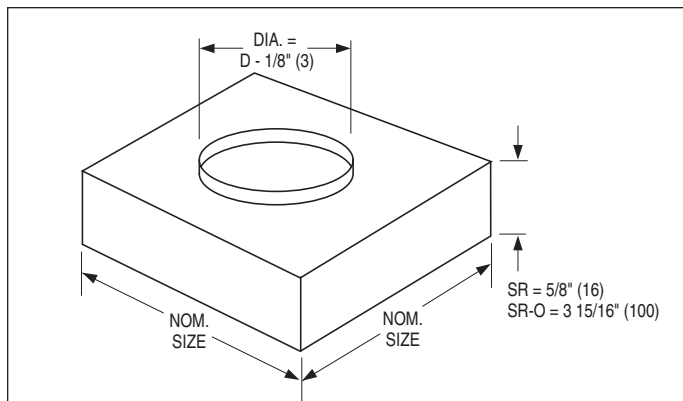
An optional safety chain is available on all of Nailor's round ceiling diffusers.

#### GK Foam Gaskets

Foam gasket is available on a selection of surface mount diffusers.

#### SR Square to Round Transition Collar

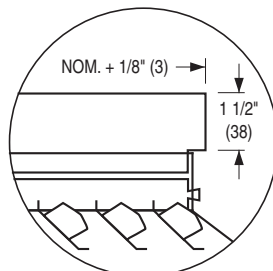
Transition collars are for use on Nailor square neck diffusers where a round duct connection is required. Round necks are sized for flexible or hard duct connection. SR's are shipped loose for field installation and are supplied with barbed S clips.



Square Neck Size (inches)	Round Neck Size D (inches)
6 x 6	4, 5, 6
8 x 8	4, 5, 6, 7, 8
9 x 9	6, 7, 8, 9
10 x 10	6, 7, 8, 9, 10
12 x 12	6, 8, 9, 10, 12
14 x 14	6, 8, 9, 10, 12, 14
15 x 15	6, 8, 10, 12, 14, 15
16 x 16	6, 8, 10, 12, 14, 15, 16
18 x 18	6, 8, 10, 12, 14, 15, 16, 18
20 x 20	6, 8, 10, 12, 14, 15, 16, 18, 20
21 x 21	6, 8, 10, 12, 14, 15, 16, 18, 20
22 x 22	6, 8, 10, 12, 14, 16, 18, 20
24 x 24	6, 8, 10, 12, 14, 15, 16, 18, 20, 24

#### ONA Offset Neck Adaptor

Fits outside duct (if a damper is required; order separately for remote mount. See Model OBDD).



### EXTERNAL FOIL BACK INSULATION

#### EX External Insulation Blanket - Factory Installed

An optional 1 1/2" thick foil back insulation is available installed on a majority of Nailor ceiling diffusers. The insulation has an R value of 4.2.

#### EXB External Insulation Blanket - Ships Loose

This insulation is the same as above but is shipped loose for field installation.

#### MIB Molded Insulation Blanket - Factory Installed

The molded insulation is available as an option on various 24" x 24" square diffusers. The insulation has an R value of 6.0.

### FINISHES:

#### AW Appliance White (standard)

A white finish that is currently the industry standard. Closely matches standard finishes supplied by the majority of T-Bar ceiling system manufacturers. (No additional cost).

#### AL Aluminum

Contains suspended metal particles to give the appearance of a silver grey metallic or anodized finish. (No additional cost).

#### BW British White

Matches most white ceiling tiles. (No additional cost)

#### BK Black

This black has a matte finish. (Additional cost)

#### BA Black Interior/Appliance White Face

Optional on perforated diffusers. AW Appliance White is applied on the perforated face and BK Black is applied on the interior of the backpan for a discreet appearance. (No additional cost)

#### SP Special

The Nailor range of diffusers are available in any color for special architectural consideration. Custom colors are individually mixed to match customer supplied samples. (Additional cost)

### ALSO AVAILABLE:

#### MI Mill Finish

(No additional cost).

#### PPA Paint Prepared Aluminum (Washed only)

Aluminum models only. (No additional cost).

#### PC Prime Coat Paint

(Additional cost).

## Air Balancing Devices

### Radial Opposed Blade Damper

A unique method of controlling volume through a diffuser providing premium design quality and performance. The multi-blade perimeter design offers true radial flow at any setting.

A screwdriver slot, accessible through the diffuser, requires only a half turn to adjust from fully closed to fully open. The damper is designed to fit directly on the neck of the diffuser. Simple, convenient and accurate installation and operation.

Available with an optional operator arm. **Model 4275-OA** allows damper adjustment on the **UNI Diffusers** without removing the inner cone assembly.

**Model 4275**

	Nominal size (inches)							Nominal Size (mm)								
	5	6	8	10	12	14	15	16	127	152	203	254	305	356	381	406
<b>A</b>	4 7/8	5 7/8	7 7/8	9 7/8	11 7/8	13 7/8	14 7/8	15 7/8	124	149	200	251	302	352	378	403
<b>B</b>	1 1/8	1 5/8	2 1/2	2 1/4	2 7/8	3 3/8	3 3/4	4 3/8	29	41	64	57	73	86	95	111
<b>C</b>	1 5/8			2 1/2				41				64				

### Radial Sliding Blade Damper

The **Model 4250** is a neck mounted radial sliding blade damper used in round neck diffuser applications to provide fine volume control. Gang operated radial blades slide at right angles to the duct with minimal protrusion above the diffuser neck; allowing the damper to work effectively in flexible duct applications.

Available in sizes 6", 8", 10", 12" and 14" (152, 203, 254, 305 and 356).

**Model 4250**

### Butterfly Damper

The **Model 4675 Butterfly Damper** is an economical damper for volume balancing in round neck diffusers. Adjustable friction pivots hold the blades at the required setting. Adjusted from the face of the diffuser.

Not recommended for use with flexible duct.

**Model 4675**

	Nominal Size (inches)					Nominal size (mm)				
	6	8	10	12	14	152	203	254	305	356
<b>A</b>	5 7/8	7 7/8	9 7/8	11 7/8	13 7/8	149	200	251	302	352
<b>B</b>	2 1/2	3 1/2	4 1/2	5 1/2	6 1/2	64	89	114	140	165

D

CEILING DIFFUSERS

## Air Balancing Devices

### OPPOSED BLADE DAMPERS

**Nailor** Opposed Blade Dampers feature heavy gauge, roll-formed, corrosion-resistant steel or extruded aluminum blades and frame with miscellaneous steel components. Mill finish.

The gang operated multi-blade design with blades closing at 45 degrees permits fine volume control for accurate balancing with minimum disturbance to the airflow pattern. Blades are individually pivoted on 1" (25) centers.

#### DIFFUSER MOUNT MODELS:

**OBD Steel**

**OBD-A Aluminum**

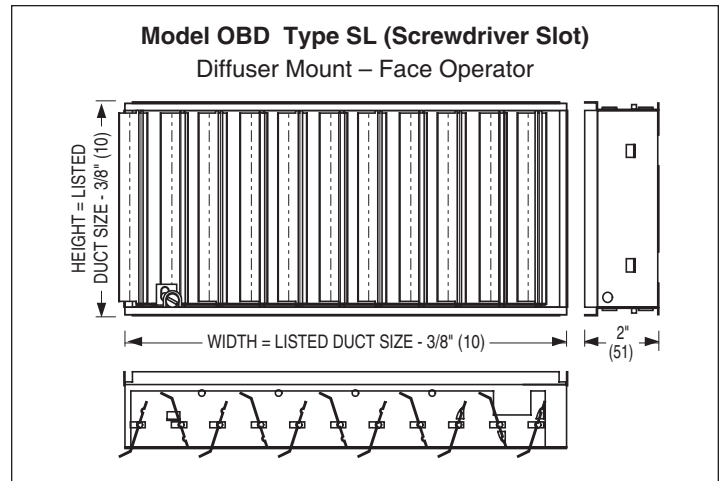
This style of damper mounts directly on the neck and are sized to suit most **Nailor** diffusers. Uses steel barbed S-clips for easy field mounting or removal when ordered separately. Supplied as standard with a screwdriver slot operator (Type SL).

Can be specified as an integral part of the diffuser model by adding a - O (steel) or - OA (aluminum) suffix to the diffuser model.

Available with Type DL Lever Operator for use with 6200, 6400 and 6500 Series Pattern Diffusers and 6600 Series Plaque Diffusers. Permits balancing without removing the diffuser inner core assembly.

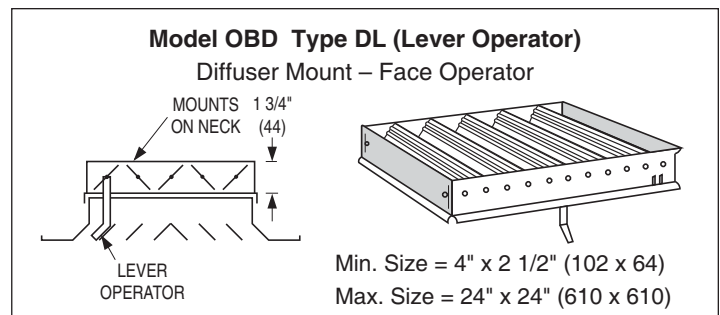
#### Type SL Operator

The SL Operator incorporates a screwdriver slot, which adjusts from the face of the diffuser. This operator is the standard supplied when ordered separately.



#### Type DL Operator

The DL Operator incorporates a lever that adjusts without the use of tools. The lever operator extends through the diffuser face.



## Air Balancing Devices

### DUCT MOUNT MODELS:

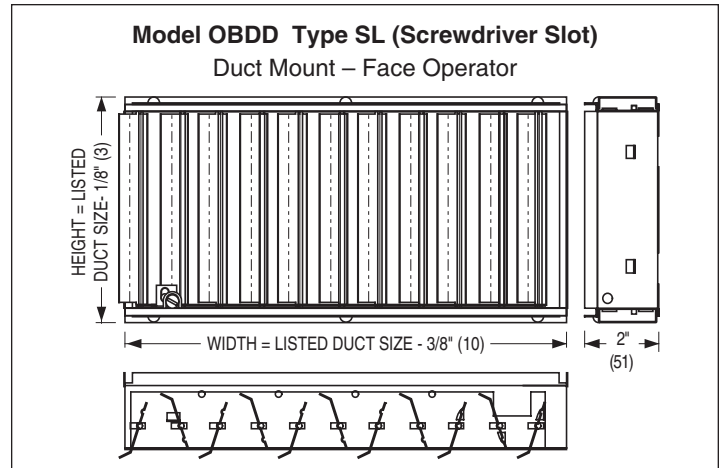
**OBDD Steel**

**OBDD-A Aluminum**

Designed to be field mounted independently in the duct, separate from and behind the diffuser. They are sized to suit and offer a friction fit in nominally sized ducts. They are secured with 1/2" (13) long sheet metal screws (by others) through the double walled sub-frame. Min. Size = 4" x 2 1/2" (102 x 64). Max. Size = 24" x 24" (610 x 610).

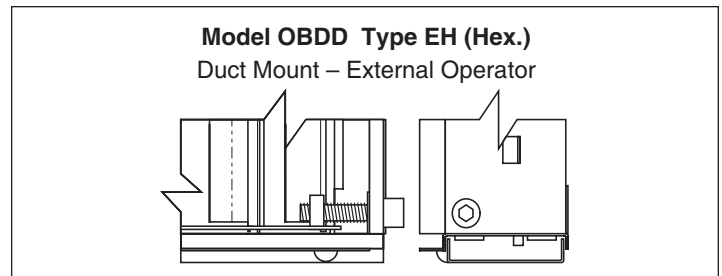
### Type SL Operator

These models are supplied with a screwdriver slot face operator that is accessed from inside the duct by removing the diffuser.



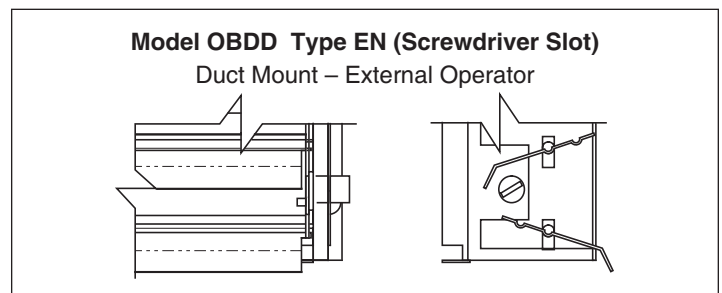
### Type EH Operator

These duct mount models feature an external 3/16" (5) hex operator accessible from outside the duct; from the side of the duct when blades run vertically and from underneath the duct when blades run horizontally.



### Type EN Operator

These duct mount models feature an external glass-filled nylon screwdriver slot operator accessible from outside the duct; from underneath the duct when blades run vertically, and from the side of the duct when blades run horizontally.



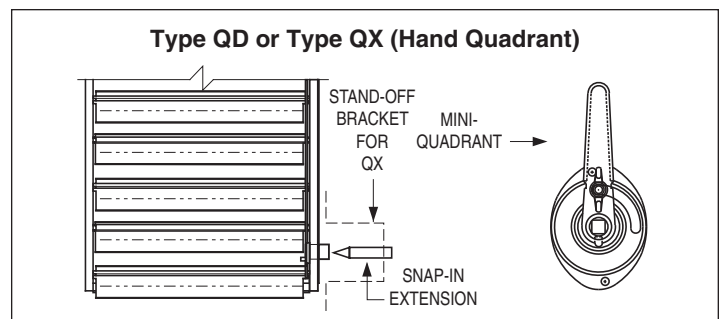
### Type QD Operator \*

A snap-in shaft extension with 'mini' hand locking quadrant is available as an optional accessory.

### Type QX Operator \*

A snap-in shaft extension with 'mini' hand locking quadrant and 2" (51) stand-off bracket for externally insulated ducts. Order damper with blades parallel to horizontal duct dimension to ensure quadrant is located on vertical side of the duct.

\*Not available on Model OBDD-A

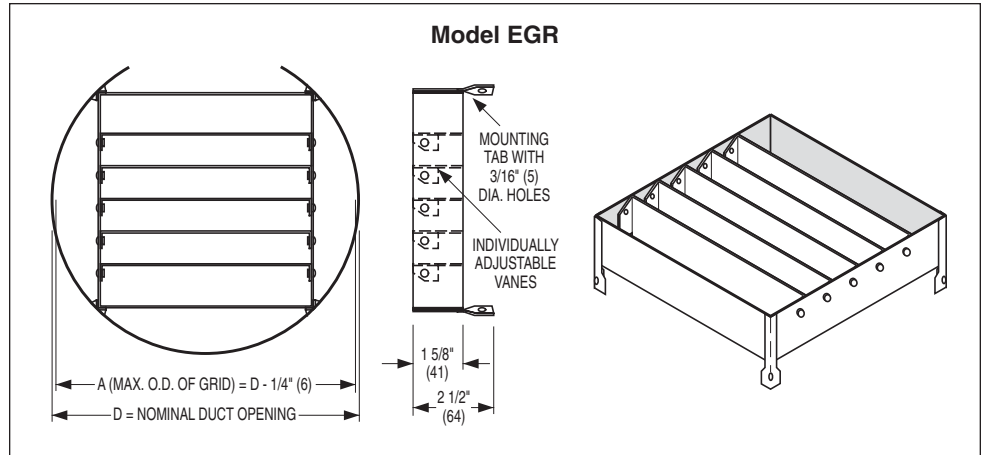


**Air Balancing and Directional Control Devices**

**Equalizing Grid for Round Necks**

The **Model EGR** is a duct mounted grid that equalizes the airflow into the branch duct or diffuser neck and provides directional control. They are shipped loose for field installation. The individually adjusted vanes are friction pivoted to hold the desired setting.

Recommended method of installation is flush with the take-off collar and with the vanes perpendicular to the direction of the approaching airflow.

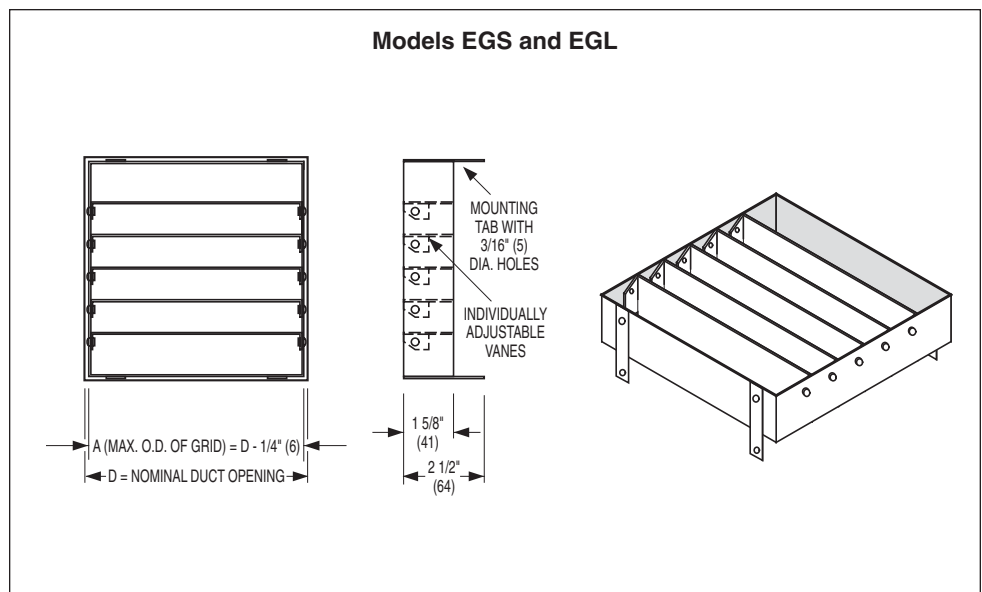


**Equalizing Grid for Square and Rectangular Necks**

The **Models EGS and EGL** are duct mounted grids that equalize the airflow into the branch duct or diffuser neck and provide directional control. They are shipped loose for field installation. The individually adjusted vanes are friction pivoted to hold the desired setting.

Recommended method of installation is flush with the take-off collar and with the vanes perpendicular to the direction of the approaching airflow.

The suffix 'S' or 'L' indicates blades are parallel to the short or long dimension.



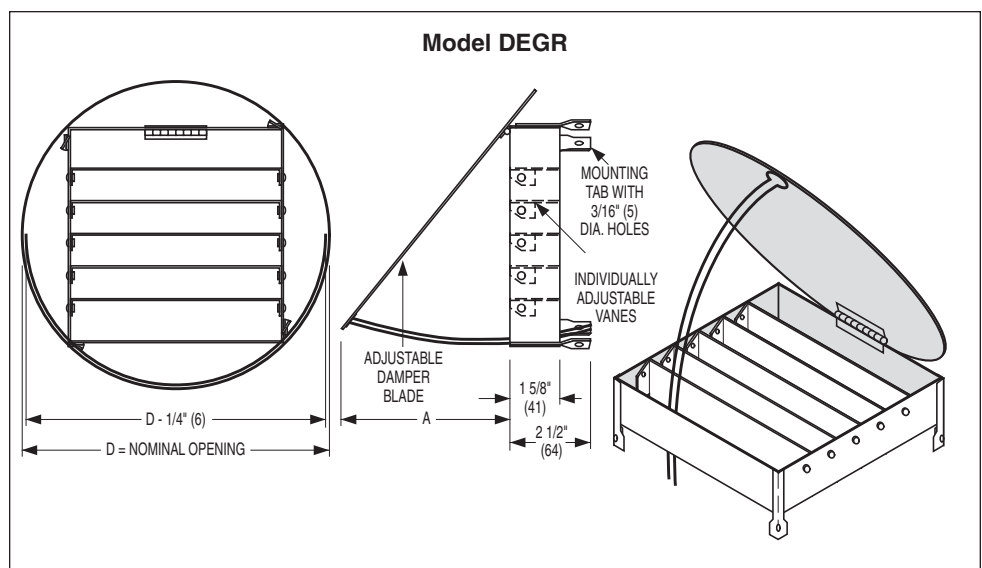
**Damper with Equalizing Grid for Round Necks**

The **Model DEGR** is a duct mounted combination damper with equalizing grid.

It performs as a volume extractor with dampering to near shut-off as well as equalizing the airflow into the branch duct or diffuser neck and providing directional control.

The individual adjustable vanes are friction pivoted to hold the desired setting.

Damper blade may be adjusted to any angle and locked in position with adjusting wires under screw heads.



**Air Balancing and Directional Control Devices**

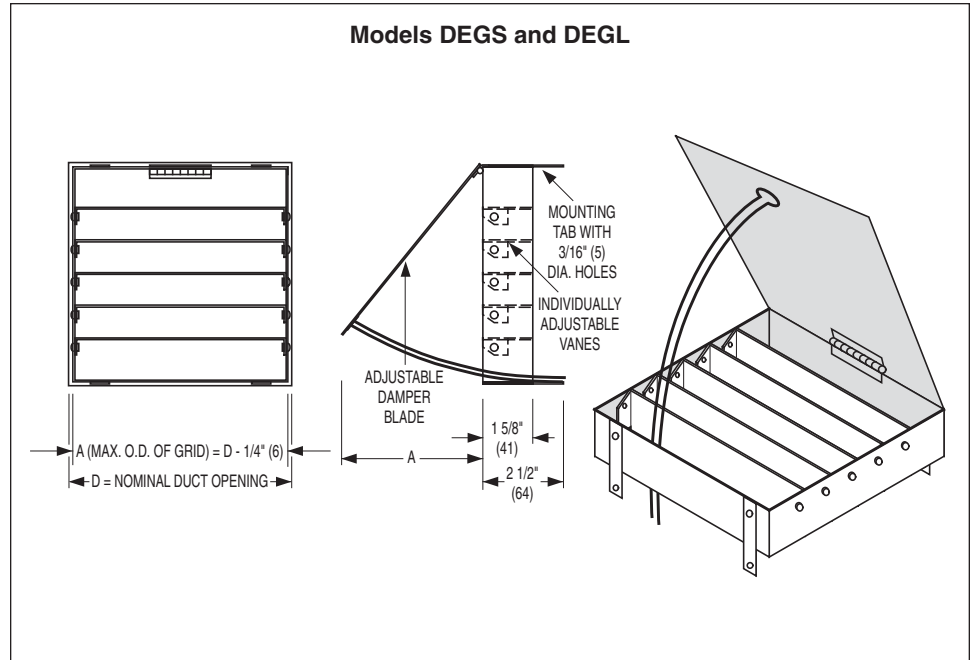
**Damper with Equalizing Grid for Square and Rectangular Necks**

The **Models DEGS** and **DEGL** are duct mounted combination dampers with equalizing grids. They perform as a volume extractor with dampering to near shut-off as well as equalizing the airflow into the branch duct or diffuser neck and providing directional control.

The individual adjustable vanes are friction pivoted to hold the desired setting.

Damper blade may be adjusted to any angle and locked in position with adjusting wires under screw heads.

The suffix 'S' or 'L' indicates blades are parallel to the short or long dimension.



**D**

**CEILING DIFFUSERS**

## Volume Extractors

### MODEL SERIES

**EX** Blades on 2" centers

**EXD** Blades on 1" centers

The **Model Series EX Volume Extractors** uniformly divert air from the main duct into the branch take-off and across the face of a grille or diffuser. Gang-operated parallel blades available on 2" (51) or 1" (25) centers pivot from full open to full closed with blades overlapping for shut-off. The curved blade design improves airflow by reducing turbulence, thereby reducing noise and pressure drop.

Specify or order: Length x Width. (Length is first dimension. Blades are parallel to width, second dimension).

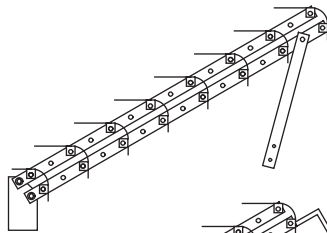
### FEATURES:

- Material: Galvanized steel.
- Minimum size: 6" x 4" (152 x 102).
- Maximum size: 36" x 36" (914 x 914).

### Operator Types

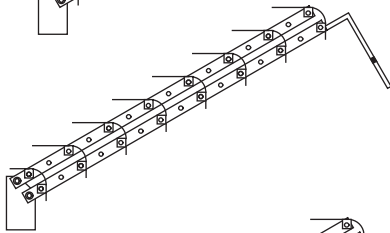
#### EX/EXD-1

Standard unit with adjusting strap.



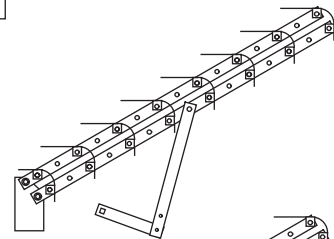
#### EX/EXD-1-R

Rod operator for external operation.



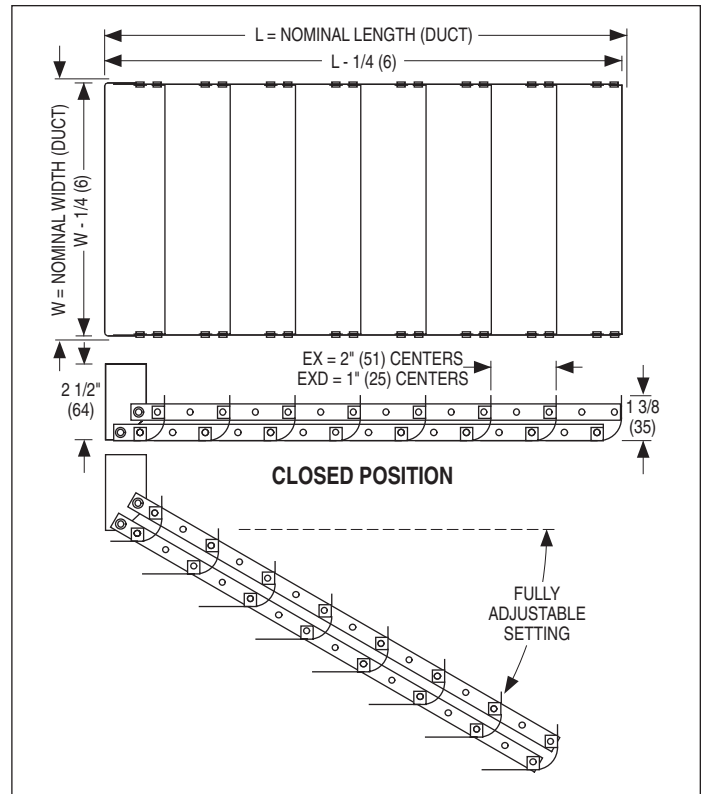
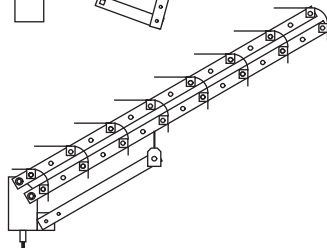
#### EX/EXD-2

Linkage with 7/16" (11) square hole (2 per unit). Remote operator (eg. Young Regulator #1) by others.



#### EX/EXD-3

Screw gear operator. Adjusts with 3/16" (5) wrench (by others).



### Optional Accessories

#### RLD

Locking device for Models **EX/EXD-1-R**.

