

GENERAL PRODUCT OVERVIEW

Fire Rated Products

Nailor offers a wide variety of fire rated products that are designed to provide the unobtrusive appearance required for architectural excellence and the high engineering performance required for use in heating and cooling applications. Ceiling diffusers, plenum slot diffusers and even ductless return air grilles are some of the many styles that are available.

Nailor's selection of fire rated products are classified for use in UL/ULC restrained or unrestrained floor/ceiling and or roof/ceiling assemblies which incorporate an exposed grid suspended ceiling (lay-in T-Bar) with up to a 3 hour rating. For details of fire rated assemblies, see the current UL or ULC Fire Resistance Directory.

FIRE RATED PATTERN CEILING DIFFUSERS

Nailor pattern ceiling diffusers are a high capacity louvered face directional diffuser that can supply large volumes of air at relatively low sound levels and pressure drops. Available in a variety of core styles and neck sizes: a combination can be selected to suit a specified air pattern and deliver the desired volume of air to suit particular requirements.

Square Neck –

Fixed Pattern	Model 6500FRD	Page E7
Adjustable Pattern	Model 6550FRD	Page E7
Induction Vanes	Model 6500IVFRD	Page E7

Round Neck –

Fixed Pattern	Model 6505FRD	Page E10
Adjustable Pattern	Model 6555FRD	Page E10
Induction Vanes	Model 6505IVFRD	Page E10



Model 6500FRD



Models 4010, 4010-1, 4420

FIRE RATED STAMPED SQUARE CEILING DIFFUSERS

Nailor 4000 and 4400 series models are a fire rated version of the popular RNS series. They 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.

Fixed Air Pattern – Round Neck

Full Face	Models 4010, 4020	Page E13
Panel Type	Models 4030, 4040	Page E13
Surface Mount	Model 4010 Type S (ULC only)	Page E16

Adjustable Pattern – Round Neck

Full Face	Models 4010-1, 4020-1	Page E19
Panel Type	Models 4030-1, 4040-1	Page E19

Fixed Pattern 2-Cone – Round Neck

Full Face	Models 4410, 4420	Page E22
Panel Type	Models 4430, 4440	Page E22

FIRE RATED ARCHITECTURAL CEILING DIFFUSERS

These Nailor models are a fire rated version of the popular UNI series. Designed with the architect in mind, the diffusers in this series are fashioned to blend in with most ceiling types to create the ultimate aesthetic look. Nailor has made available the standard UNI with a fixed 360° air diffusion pattern.

Flat Panel – Round Neck

Full Face	Models 4410-UNI, 4420-UNI	Page E25
Panel Type	Models 4430-UNI, 4440-UNI	Page E25
Surface Mount	Models 4410-UNI Type S (ULC only)	Page E28



Model 4410-UNI

FIRE RATED STAMPED SQUARE CEILING DIFFUSERS

- 4 CONE
- FIXED AIR PATTERN
- HIGH PERFORMANCE
- ROUND NECK
- 3 HOUR RATING
- LAY-IN

Full Face Models:

4010, 4020

Panel Type Models:

4030, 4040



CATEGORY
BZZU



CATEGORY
BZGUC



Model 4020

Model Series 4000 are UL/ULC Classified fire rated Ceiling Diffuser/Air Terminal Unit assemblies listed in Underwriters Laboratories Fire Resistance Directory. This design meets UL time-vs-temperature test criteria and NFPA 90A requirements.

All diffusers are classified for use in UL/ULC restrained or unrestrained floor/ceiling and or roof/ceiling assemblies which incorporate an exposed grid suspended ceiling (lay-in T-Bar) with up to a 3 hour rating. For details of fire rated assemblies, see the current UL or ULC Fire Resistance Directory.

These models are a fire rated version of the popular RNS Series. They 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.

STANDARD FEATURES:

- Factory assembled, 'packaged' product ensures compliance with fire code, simplifies specification and minimizes field labor.
- Tested in accordance with ANSI/UL Standard 263, "Fire Tests of Building Construction and Materials" and CAN/ULC Standard S101 "Fire Endurance Tests of Building Construction and Materials."
- Approved for use with flexible duct. Eliminates steel branch duct and drop. No costly independent hangers and supports are required.
- Spring-loaded core is securely held in position and is removable without the use of tools.
- Engineered air diffusion pattern.
- Steel stamped cones for uniformity.
- All 12 x 12 (300 x 300) and 24 x 24 (600 x 600) modules feature four cones in all neck sizes, providing a uniform appearance where different sizes are installed in the same area.
- The fixed ceiling radiation damper is standard. An adjustable version for balancing is optional (see page E14).
- Quick, easy access to the AV balancing option is achieved from the face of the diffuser by removing the center plug. It is not necessary to remove the inner cone assembly.
- 212°F (100°C) fusible link is standard (165°F [74°C] is optional).
- All models must be installed in accordance with the installation instructions for UL/ULC Classification.

CONSTRUCTION MATERIAL:

- Heavy gauge corrosion-resistant steel.

FINISH OPTIONS:

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

PERFORMANCE DATA:

- See non-fire rated Model RNS.

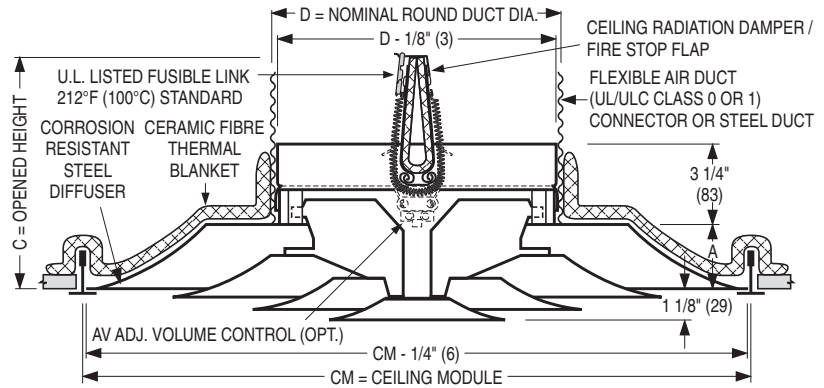
DIMENSIONAL DATA:

MODELS 4010 AND 4020 • FULL FACE

Model 4010 12 x 12 or 300 x 300

Model 4020 24 x 24 or 600 x 600

Listed Neck Size	Imperial Modules (inches)			Metric Modules (mm)		
	D	A	C	D	A	C
6	CM = 12 x 12			CM = 300 x 300		
	6	1	5 1/2	152	25	140
8	CM = 12 x 12			CM = 300 x 300		
	8		6 1/2	203		165
Listed Neck Size	CM = 24 x 24			CM = 600 x 600		
	D	A	C	D	A	C
6	CM = 24 x 24			CM = 600 x 600		
	6		6 13/16	152		173
8	CM = 24 x 24			CM = 600 x 600		
	8		7 13/16	203		198
10	CM = 24 x 24			CM = 600 x 600		
	10	2 5/16	8 13/16	254	59	224
12	CM = 24 x 24			CM = 600 x 600		
	12		9 13/16	305		249
14	CM = 24 x 24			CM = 600 x 600		
	14		10 13/16	356		275



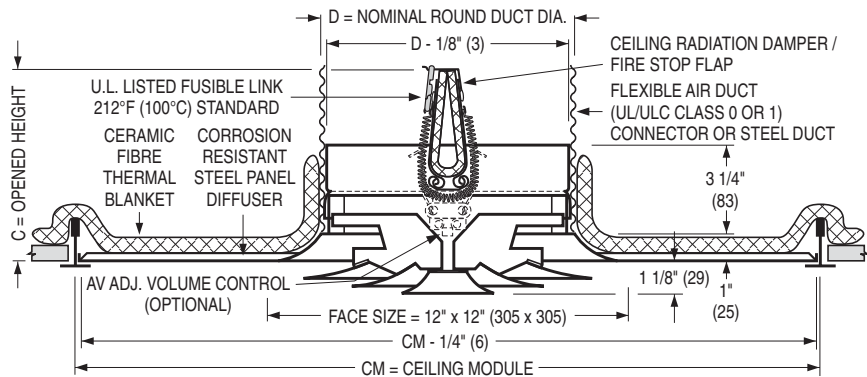
Type L Lay-in T-Bar Frame

MODELS 4030 AND 4040 • PANEL TYPE

Model 4030 24 x 12 or 600 x 300

Model 4040 24 x 24 or 600 x 600

Listed Neck Size	Imperial Modules (inches)		Metric Modules (mm)	
	D	C	D	C
6	CM = 24 x 12		CM = 600 x 300	
	6	5 1/2	152	140
8	CM = 24 x 12		CM = 600 x 300	
	8	6 1/2	203	165
Listed Neck Size	CM = 24 x 24		CM = 600 x 600	
	D	C	D	C
6	CM = 24 x 24		CM = 600 x 600	
	6	5 1/2	152	140
8	CM = 24 x 24		CM = 600 x 600	
	8	6 1/2	203	165

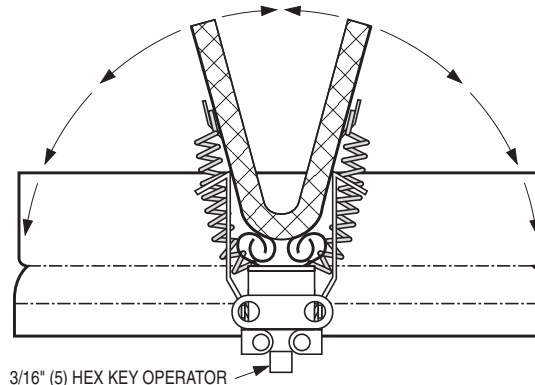


Type PL Panel Lay-in T-Bar Frame

AV Adjustable Volume Control Option.

This UL Listed ceiling radiation damper control (**Model 0722A**) option allows the ceiling radiation damper to be used as a balancing damper for volume control.

The ceiling damper blades are adjusted with a hex key and perform like a butterfly damper.



HOW TO ORDER OR TO SPECIFY

FIRE RATED STAMPED SQUARE CEILING DIFFUSERS – FIXED PATTERN

MODELS 4010, 4020, 4030, 4040

EXAMPLE: 4020 - 08 - 24" x 24" - L - AW - 212 - AV

1. Models

- 4010 12" x 12" or 300 mm x 300 mm, Full Face
- 4020 24" x 24" or 600 mm x 600 mm, Full Face
- 4030 24" x 12" or 600 mm x 300 mm, Panel Type
- 4040 24" x 24" or 600 mm x 600 mm, Panel Type

2. Neck Size

Imperial

- 06 6" (152) Round
- 08 8" (203) Round
- 10 10" (254) Round
- 12 12" (305) Round
- 14 14" (356) Round

Only available on Model 4020

3. Ceiling Module Size

Imperial

- 12" x 12" (Model 4010)
- 24" x 12" (Model 4030)
- 24" x 24" (Models 4020 and 4040)

Metric

- 300 mm x 300 mm (Model 4010)
- 600 mm x 300 mm (Model 4030)
- 600 mm x 600 mm (Models 4020 and 4040)

4. Frame Type

- L Lay-in T-Bar (Models 4010 and 4020)
- PL Panel Lay-in T-Bar (Models 4030 and 4040)

5. Finish

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

6. Fusible Link Temperature

- 212 212°F (100°C) (default)
- 165 165°F (74°C)

7. Volume Control

- None (default)
- AV Adjustable Volume Control

Note:

- 1. Consult individual model as to limitations of module and neck size combination.

SUGGESTED SPECIFICATION:

Furnish and install **Nailor Model** (select one or more) **4010, 4020 (Full Face)** or **4030, 4040 (Panel Type) Fixed Pattern Steel Fire Rated 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. The inner core assembly is removable by using a spring clip arrangement that permits quick, easy installation and removal. Diffusers shall include a factory mounted ceiling damper and thermal blanket. (Optional: ceiling damper shall be supplied with AV adjustable volume control option for field balancing). The finish shall be AW Appliance White (optional finishes are available). Diffusers shall be UL/ULC Classified fire rated ceiling diffuser assemblies as listed in the UL/ULC Certifications Directory. Diffusers shall be tested in accordance with UL Standard 263 (field assembled diffusers with ceiling dampers tested to UL Standard 555C are not acceptable) and meet all of the requirements of NFPA 90A. Diffusers shall be classified for use in restrained or unrestrained floor/ceiling and or roof/ceiling assemblies which incorporate an exposed grid suspended ceiling with up to a 3 hour rating.

FIRE RATED STAMPED SQUARE CEILING DIFFUSERS

- 4 CONE
- FIXED AIR PATTERN
- ROUND NECK
- 3 HOUR RATING
- SURFACE MOUNT



Model 4010

Model:

4010 12 x 12 (300 x 300)
Type S Surface Mount

The only fire rated diffuser assembly of its kind for surface mount applications. Popular applications are fire rated ceiling designs which incorporate wooden joists on less than 24" (610) centers and 'Type X' gypsum wallboard ceiling membrane protection. This model is a fire rated version of the popular RNS Louvered Face Series.

Classified by Underwriters' Laboratories of Canada (ULC) for use in ULC restrained or unrestrained floor/ceiling and or roof/ceiling assemblies which incorporate air ducts and a hard (gypsum board) ceiling membrane with up to a 3 hour rating. For details of fire rated assemblies, see the current ULC Fire Resistance Directory. The use of this product in fire rated ceilings with ceiling membrane protection and/or UL Classified assemblies in the U.S.A. requires local approval by the authority having jurisdiction.

STANDARD FEATURES:

- Tested in accordance with CAN/ULC Standard S101 "Fire Endurance Tests of Building Construction and Materials."
- AV Adjustable Volume control. Permits adjustment to damper blades for balancing.
- Non-standard temperature UL Listed fusible link (165°F [74°C]).

CONSTRUCTION MATERIAL:

- Corrosion-resistant steel.

FINISH OPTIONS:

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

PERFORMANCE DATA:

- See non-fire rated Model RNS.

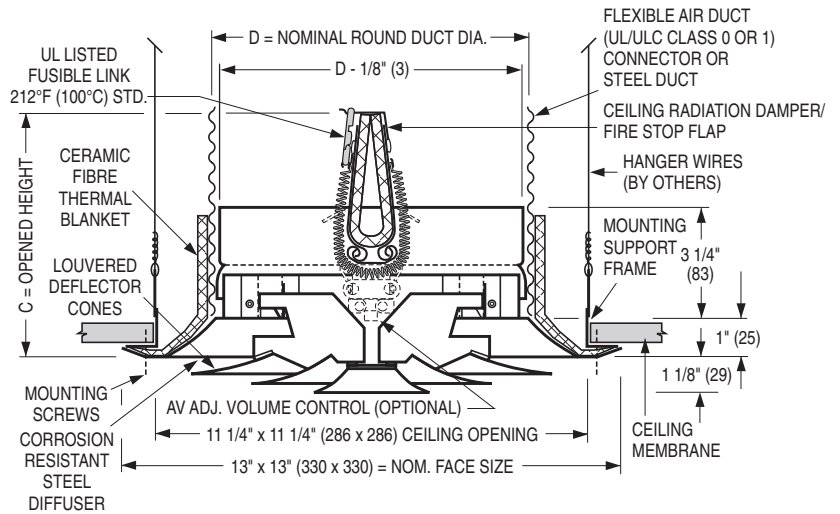
DIMENSIONAL DATA:

MODEL 4010 • FULL FACE

12 x 12 or 300 x 300 TYPE S SURFACE MOUNT MODULE FOR HARD CEILINGS

Model 4010: 12 x 12 or 300 x 300 module

Listed Neck Size	Imperial Modules (inches)		Metric Modules (mm)	
	CM = 12 x 12	C	CM = 300 x 300	C
6	6	5 1/2	152	140
8	8	6 1/2	203	165

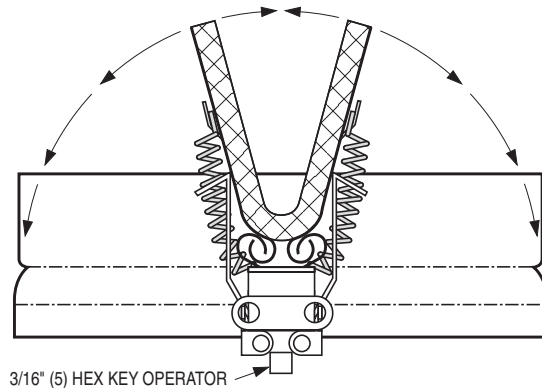


Type S Surface Mount

AV Fusible Link Adjustable Volume Control Option.

This UL Listed ceiling radiation damper control (**Model 0722A**) option allows the ceiling radiation damper to be used as a balancing damper for volume control.

The ceiling damper blades are adjusted with a hex key and perform like a butterfly damper.



HOW TO ORDER OR TO SPECIFY

FIRE RATED STAMPED SQUARE CEILING DIFFUSER – 4 CONE FIXED PATTERN MODEL 4010

EXAMPLE: 4010 - 08 - 12" x 12" - S - AW - 212 - AV

- | | |
|--|---|
| <p>1. Model
4010 12" x 12" or 300 mm x 300 mm, Full Face Module</p> <p>2. Neck Size
Imperial
06 6" (152) Round
08 8" (203) Round</p> <p>3. Ceiling Module Size
Imperial
12" x 12"
Metric
300 mm x 300 mm</p> <p>4. Frame Type
S Surface Mount (default)</p> | <p>5. Finish
AW Appliance White (default)
AL Aluminum
BK Black
BW British White
PC Prime Coat
SP Special Custom Color</p> <p>6. Fusible Link Temperature
212 212°F (100°C) (default)
165 165°F (74°C)</p> <p>7. Volume Control
— None (default)
AV Adjustable Volume Control</p> |
|--|---|

Note:

1. Consult individual model as to limitations of module and neck size combination.

FIRE RATED PRODUCTS

SUGGESTED SPECIFICATION:

Furnish and install **Nailor Model 4010 Type S** Surface Mount (round neck) **Steel Fire Rated Stamped Square Ceiling Diffusers** of the sizes and capacities as shown on the plans and air distribution schedules. The diffusers shall be manufactured from corrosion-resistant steel and have four die-formed concentric cones in all sizes. The inner core assembly is removable by 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 adjustable volume controller without removing the inner core. The finish shall be AW Appliance White (optional finishes are available). Diffusers shall be ULC Classified fire rated ceiling diffuser assemblies as listed in the ULC Certifications Directory. Diffusers shall be tested in accordance with CAN/ULC Standard S101 (field assembled diffusers with ceiling dampers tested to UL Standard 555C are not acceptable) and meet all of the requirements of NFPA 90A. Diffusers shall be classified for use in restrained or unrestrained floor/ceiling and or roof/ceiling assemblies which incorporate air ducts and a hard gypsum board ceiling membrane with up to a 3 hour rating. The use of this product in UL Classified Ceiling Assemblies requires approval from the local authority having jurisdiction.

FIRE RATED ADJUSTABLE STAMPED SQUARE CEILING DIFFUSERS

- 4 CONE
- HORIZONTAL TO VERTICAL ADJUSTABLE DISCHARGE PATTERN
- HIGH PERFORMANCE
- ROUND NECK
- 3 HOUR RATING
- LAY-IN

Full Face Models:

4010-1, 4020-1

Panel Type Models:

4030-1, 4040-1



CATEGORY
BZZU



CATEGORY
BZGUC



Model 4020-1

Model Series 4000 are UL/ULC Classified Fire Rated Ceiling Diffuser / Air Terminal Unit assemblies listed in Underwriters Laboratories Fire Resistance Directory and Underwriters Laboratories of Canada List of Equipment and Materials. This design meets UL time-vs-temperature test criteria and NFPA 90A requirements.

All diffusers are classified for use in UL/ULC restrained or unrestrained floor/ceiling and or roof/ceiling assemblies which incorporate an exposed grid suspended ceiling (lay-in T-Bar) with up to a 3 hour rating. For details of fire rated assemblies, see the current UL or ULC Fire Resistance Directory.

These models are a fire rated version of the popular RNSA Series. They 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. 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 diffusers provide stable diffusion and mixing patterns under constant and changing load conditions, and are particularly suitable for variable air volume systems.

STANDARD FEATURES:

- Factory assembled, 'packaged' product ensures compliance with fire code, simplifies specification and minimizes field labor.
- Tested in accordance with ANSI/UL Standard 263, "Fire Tests of Building Construction and Materials" and CAN/ULC Standard S101 "Fire Endurance Tests of Building Construction and Materials."
- Approved for use with flexible duct. Eliminates steel branch duct and drop. No costly independent hangers and supports are required.

Adjustment: Quick and simple unique screw-type arrangement from the face of the diffuser. Permits gradual adjustment of the air discharge pattern from horizontal to vertical by rotating the center cone and so moving the inner cone assembly up or down.

- Spring-loaded core is securely held in position and is removable without the use of tools.

- Engineered air diffusion pattern.
- Steel stamped cones for uniformity.
- All 12 x 12 (300 x 300) and 24 x 24 (600 x 600) modules feature four cones in all neck sizes, providing a uniform appearance where different sizes are installed in the same area.
- The fixed ceiling radiation damper is standard. An adjustable version for balancing is optional (see page E20).
- Quick, easy access to the AV balancing option is achieved from the face of the diffuser by removing the center plug. It is not necessary to remove the inner cone assembly.
- 212°F (100°C) fusible link is standard (165°F [74°C] is optional).
- All models must be installed in accordance with the installation instructions for UL/ULC Classification.

CONSTRUCTION MATERIAL:

- Heavy gauge corrosion-resistant steel.

FINISH OPTIONS:

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

PERFORMANCE DATA:

- See non-fire rated Model RNSA.

DIMENSIONAL DATA:

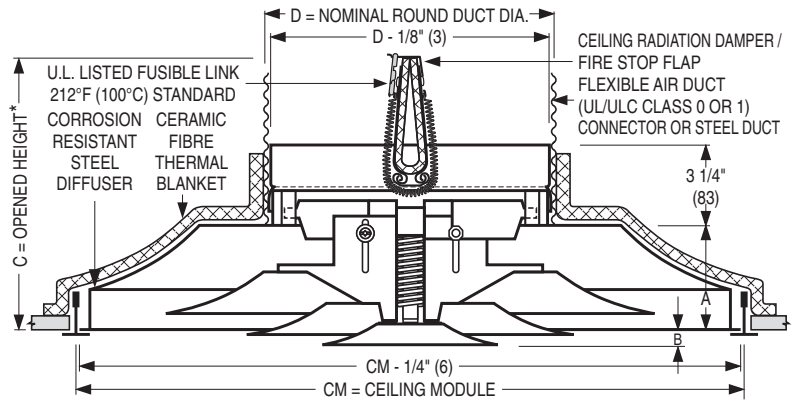
MODELS 4010-1 AND 4020-1 • FULL FACE

Model 4010-1 12 x 12 or 300 x 300

Model 4020-1 24 x 24 or 600 x 600

Listed Neck Size	Imperial Modules (inches)				Metric Modules (mm)			
	D	A	B	C*	D	A	B	C*
6	CM = 12 x 12				CM = 300 x 300			
	6	2 1/4	0 to 1/2	6 3/4	152	57	0 to 13	171
8	8			7 3/4	203			197
6	CM = 24 x 24				CM = 600 x 600			
	6			8 1/4	152			210
8	8		0	9 1/4	203	0	235	
10	10	3 3/4	to	10 1/4	254	95	to	260
12	12		3/8	11 1/4	305	10	286	
14	14			12 1/4	356			311

* Plus 1 1/2" (38) with AV option.



Type L Lay-in T-Bar Frame

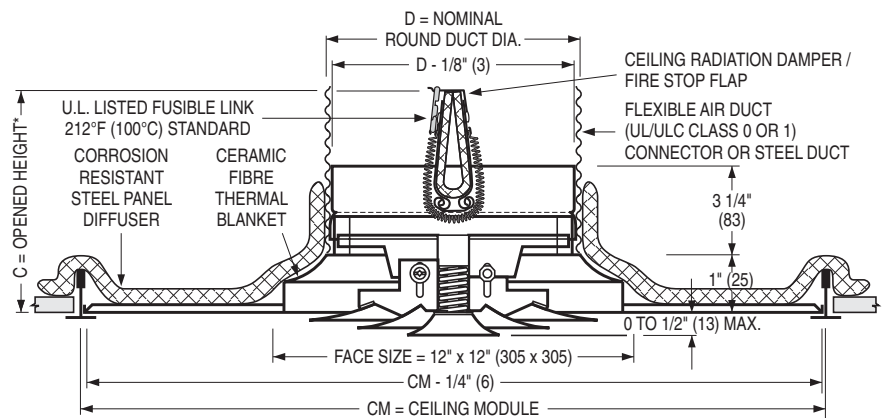
MODELS 4030-1 AND 4040-1 • PANEL TYPE

Model 4030-1 24 x 12 or 600 x 300

Model 4040-1 24 x 24 or 600 x 600

Listed Neck Size	Imperial Modules (inches)		Metric Modules (mm)	
	D	C*	D	C*
6	CM = 24 x 12		CM = 600 x 300	
	6	6 3/4	152	171
8	8	7 3/4	203	197
6	CM = 24 x 24		CM = 600 x 600	
	6	6 3/4	152	171
8	8	7 3/4	203	197

* Plus 1 1/2" (38) with AV option.

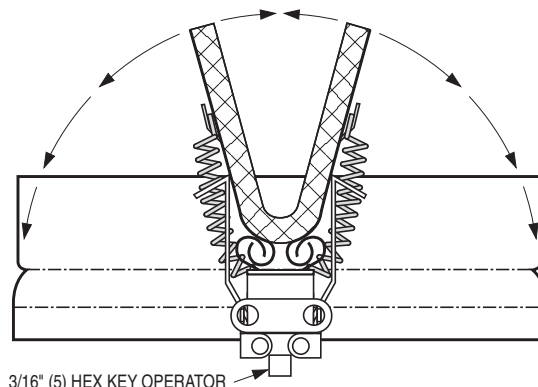


Type PL Panel Lay-in T-Bar Frame

AV Adjustable Volume Control Option.

This UL Listed ceiling radiation damper control (**Model 0722A**) option allows the ceiling radiation damper to be used as a balancing damper for volume control.

The ceiling damper blades are adjusted with a hex key and perform like a butterfly damper.



3/16" (5) HEX KEY OPERATOR

HOW TO ORDER OR TO SPECIFY

FIRE RATED STAMPED SQUARE CEILING DIFFUSERS – 4 CONE ADJUSTABLE PATTERN MODELS 4010-1, 4020-1, 4030-1, 4040-1

EXAMPLE: 4020-1 - 10 - 24" x 24" - L - AW - 212 - AV

1. Models

- 4010-1 12" x 12" or 300 mm x 300 mm, Full Face
- 4020-1 24" x 24" or 600 mm x 600 mm, Full Face
- 4030-1 24" x 12" or 600 mm x 300 mm, Panel Type
- 4040-1 24" x 24" or 600 mm x 600 mm, Panel Type

2. Round Neck Size

Imperial

- 06 6" (152) Round
- 08 8" (203) Round
- 10 10" (254) Round
- 12 12" (305) Round
- 14 14" (356) Round

Only available on Model 4020-1

3. Ceiling Module Size

Imperial

- 12" x 12" (Model 4010-1)
- 24" x 12" (Model 4030-1)
- 24" x 24" (Models 4020-1 and 4040-1)

Metric

- 300 mm x 300 mm (Model 4010-1)
- 600 mm x 300 mm (Model 4030-1)
- 600 mm x 600 mm (Models 4020-1 and 4040-1)

4. Frame Type

- L Lay-in T-Bar (Models 4010-1 and 4020-1)
- PL Panel Lay-in T-Bar (Models 4030-1 and 4040-1)
- S Surface Mount (Model 4010-1)

5. Finish

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

6. Fusible Link Temperature

- 212 212°F (100°C) (default)
- 165 165°F (74°C)

7. Volume Control

- None (default)
- AV Adjustable Volume Control

Notes:

1. Consult individual model as to limitations of module and neck size combination.
2. Model 4010-1 (Frame Type S) is ULC Classified only.

SUGGESTED SPECIFICATION:

Furnish and install **Nailor Model** (select one or more) **4010-1, 4020-1, 4030-1, 4040-1 Adjustable Pattern Steel Fire Rated Stamped Square Ceiling Diffusers** of the sizes and capacities as shown on the plans and air distribution schedules. The diffusers shall be manufactured from corrosion-resistant steel and have four die-formed concentric cones in all sizes. The inner core assembly is to be removable by 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 adjustable volume controller without removing the inner core. (Optional: ceiling damper shall be supplied with AV adjustable volume control option for field balancing). The finish shall be AW Appliance White (optional finishes are available). Diffusers shall be UL/ULC Classified fire rated ceiling diffuser assemblies as listed in the UL/ULC Fire Resistance (Certifications) Directory. Diffusers shall be tested in accordance with UL Standard 263 (field assembled diffusers with ceiling dampers tested to UL Standard 555C are not acceptable) and meet all of the requirements of NFPA 90A. Diffusers shall be classified for use in restrained or unrestrained floor/ceiling and or roof/ceiling assemblies which incorporate an exposed grid suspended ceiling with up to a 3 hour rating.

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
	Velocity Pressure	.010	.016	.023	.031	.040	.051	.063	.090	.122	.160
4" Dia.	Total Pressure	.014	.022	.032	.043	.056	.071	.088	.126	.172	.224
	Airflow, CFM	35	44	52	61	70	79	87	105	122	140
	Throw	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
	Noise Criteria	—	—	—	—	—	11	19	25	30	35
5" Dia.	Total Pressure	.017	.026	.038	.051	.067	.085	.105	.151	.206	.269
	Airflow, CFM	55	68	82	95	109	123	136	164	191	218
	Throw	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
	Noise Criteria	—	—	—	—	—	14	22	28	33	38
6" Dia.	Total Pressure	.018	.029	.043	.060	.079	.100	.128	.175	.250	.325
	Airflow, CFM	80	100	120	140	160	180	200	235	275	315
	Throw	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
	Noise Criteria	—	—	11	16	20	22	24	31	38	41
7" Dia.	Total Pressure	.022	.035	.050	.068	.089	.112	.138	.199	.271	.354
	Airflow, CFM	107	134	160	187	214	241	267	321	374	428
	Throw	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
	Noise Criteria	—	—	12	17	20	24	27	33	39	42
8" Dia.	Total Pressure	.031	.047	.065	.087	.110	.140	.168	.235	.310	.395
	Airflow, CFM	140	175	210	245	280	315	350	420	490	560
	Throw	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
	Noise Criteria	—	—	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
	Velocity Pressure	.010	.016	.023	.031	.040	.051	.063	.090	.122	.160
6" Dia.	Total Pressure	.015	.023	.033	.045	.058	.074	.091	.130	.176	.230
	Airflow, CFM	80	100	120	140	160	180	200	235	275	315
	Throw	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
	Noise Criteria	—	—	14	18	21	26	29	34	38	41
8" Dia.	Total Pressure	.018	.028	.041	.055	.072	.091	.112	.161	.219	.286
	Airflow, CFM	140	175	210	245	280	315	350	420	490	560
	Throw	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
	Noise Criteria	—	11	16	20	23	28	31	36	40	43
10" Dia.	Total Pressure	.023	.036	.052	.071	.092	.117	.144	.207	.281	.367
	Airflow, CFM	220	270	330	380	435	490	545	655	765	870
	Throw	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
	Noise Criteria	—	13	18	22	25	30	33	38	42	45

Performance Notes:

- Throws are given at 150, 100 and 50 fpm terminal velocities, under isothermal conditions.
- All pressures are in inches w.g..
- 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 Noise Criteria, use correction factors as shown for 4-way blow values.

- Noise Criteria (NC) are based on a room absorption of 10 dB, re 10⁻¹² watts. Dash (—) in space denotes an Noise Criteria level less than 10.
- Data derived from independent tests conducted in accordance with ANSI/ASHRAE Standard 70-2006.

Neck Size Diameter in Inches	Nominal Overall Face Size	Ak Factor
6	12 x 12	.131
8	12 x 12	.202
6	24 x 24	.180
8	24 x 24	.227
10	24 x 24	.331
12	24 x 24	.450
14	24 x 24	.511
15	24 x 24	.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

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

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. 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 Noise Criteria, use correction factors as shown for 4-way blow values.

4. Noise Criteria (NC) are based on a room absorption of 10 dB, re 10⁻¹² 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.

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

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 10⁻¹² 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		80	100	120	140	160	180	200	235	275	315
	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		140	175	210	245	280	315	350	420	490	560
	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		220	270	330	380	435	490	545	655	765	870
	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		315	390	470	550	630	705	785	950	1100	1255
	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		425	530	635	745	855	960	1070	1285	1500	1710
	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		490	615	735	860	985	1110	1230	1470	1720	1965
	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 10⁻¹² 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.