

The Carnes DD Series Radial Flow Diffuser has been designed to provide low aspiration and high ventilation rates especially for clean room applications such as research laboratories, animal labs, food processing, hospital rooms and computer rooms. The unique design of solid baffles in an intrusive perforated face can handle large volumes of air with low initial face velocities.

The DD Series introduces air in a semi-cylindrical 180 degree radial flow pattern, flushing a room with large volumes of clean conditioned air, minimizing entrainment and hence mixing with contaminated air, whilst still allowing low room air velocities. The one way blow model introduces air in a 90 degree radial flow pattern for perimeter applications.

**FEATURES:**

- Unique curved face design is pleasing to the eye. No unsightly sharp angles.
- Engineered design and performance are the result of extensive laboratory design and testing. Standard two way blow pattern model has a true 180° radial air pattern. One way blow pattern has a 90° radial pattern for perimeter applications.
- The face of the diffuser is attached to the plenum with two stainless steel hinges. The opposite side is secured with 1/4 turn fasteners.
- The diffuser face simply hinges down for easy access to the interior for cleaning and sanitation.
- Type 304 stainless steel perforated face has 3/32" (2.4) dia. holes on 1/4" (6) staggered centers (13% free area).
- Round inlets for simple duct connection.
- Standard unit designed for both lay-in T-bar ceiling systems and surface mount applications.
- Integral earthquake hanger tabs are standard.

**Material:** 304 stainless steel face, backpan and baffles.

**Finish:** #3 satin polished finish is standard. Other finishes are available.

**Options:**

- 316 Stainless Steel construction.
- Carnes Bright White.

## Drop Face Radial Flow Diffuser (DDAC, DDTC)

CARNES®

**Application**

The Carnes DD Series Radial Flow Diffusers have been designed to provide low aspiration and high ventilation rates, especially for clean room applications such as research laboratories, animal labs, food processing, hospital rooms and computer rooms. The unique design of solid baffles in an intrusive perforated face can handle large volumes of air with low initial face velocities and offers a very pleasing, attractive appearance.

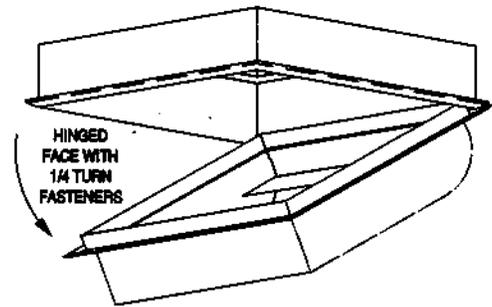
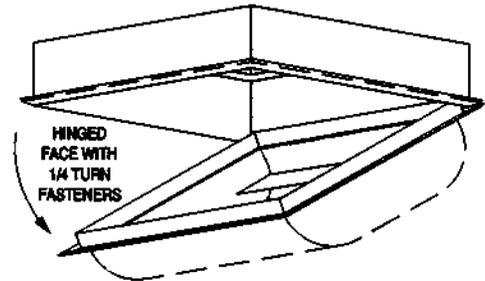
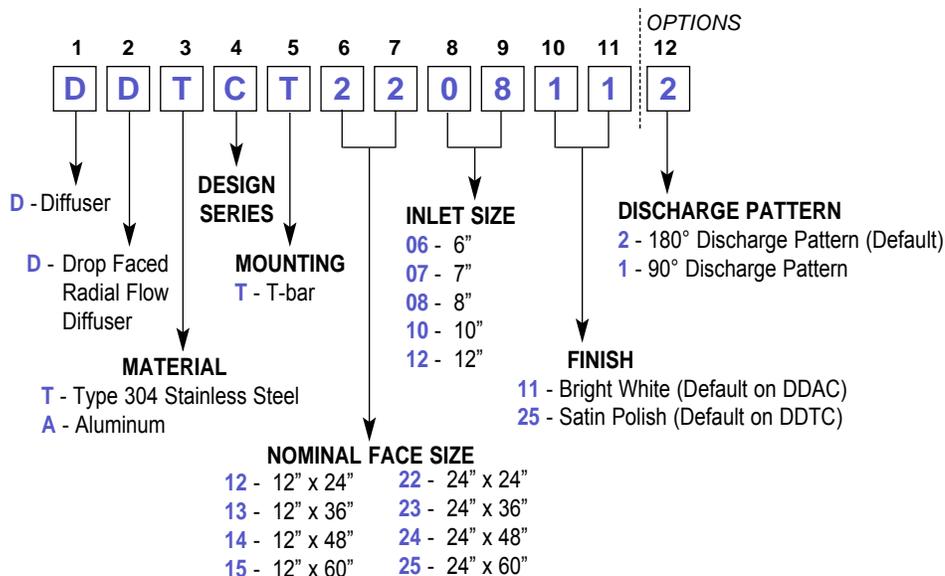
The two way blow pattern introduces air in a semi-cylindrical 180° radial flow pattern, flushing a room with large volumes of clean conditioned air, minimizing entrainment and contaminated air, while still allowing low room air velocities. The one way blow pattern introduces air in a 90° radial flow pattern for perimeter applications.

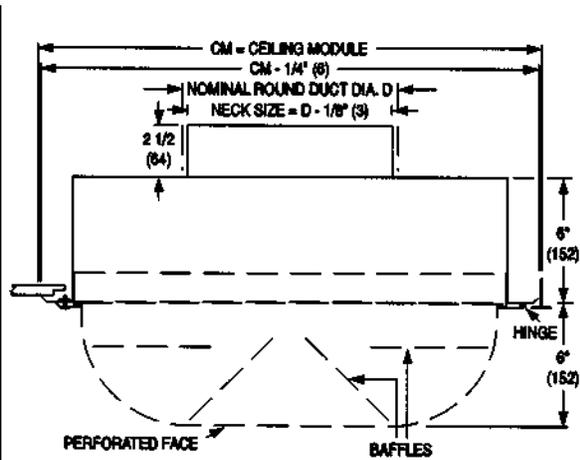
**Standard Features**

- Available Type 304 stainless steel or aluminum construction.
- The diffuser simply hinges down for easy access to the interior for cleaning and sanitation.
- Same unit will work for both T-bar or surface mount applications.
- The face of the diffuser is attached to the plenum with two stainless steel hinges. The opposite side is attached with 1/4" turn fasteners.
- Perforated face has 3/32" holes on 1/4" staggered centers (13% free area).
- Round inlets are standard.
- Integral seismic clips are standard.
- Standard finish is #3 satin polished for stainless steel and Carnes bright white for aluminum.

**Available Options**

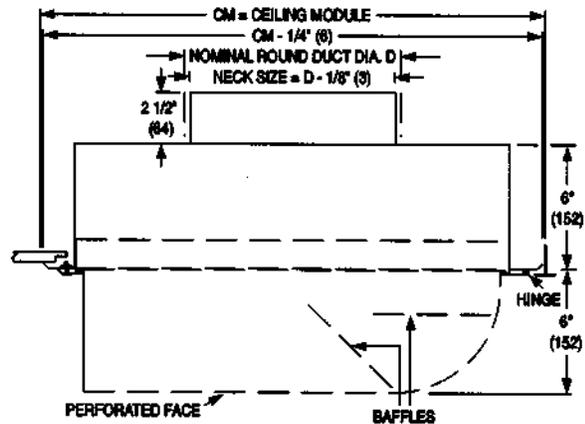
- 316 stainless steel construction available.
- Other colors available upon request.

**Model Numbering System**



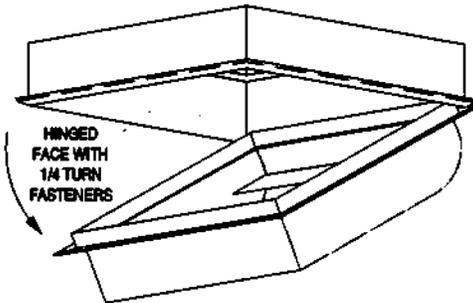
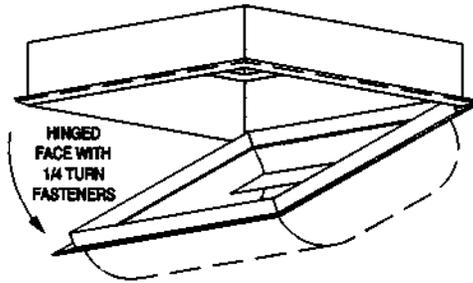
Model DD 180° Pattern Ceiling Module Sizes

| Imperial Modules        |         |                 |            | Metric Modules  |            |
|-------------------------|---------|-----------------|------------|-----------------|------------|
| Imperial Units (inches) |         | S.I. Units (mm) |            | S.I. Units (mm) |            |
| D                       | CM      | D               | CM         | D               | CM         |
| 8                       | 24 x 24 | 203             | 610 x 610  | 203             | 600 x 600  |
| 12                      | 48 x 24 | 305             | 1219 x 610 | 305             | 1200 x 600 |

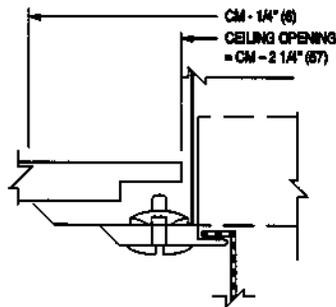


Model DD 90° Pattern Ceiling Module Sizes

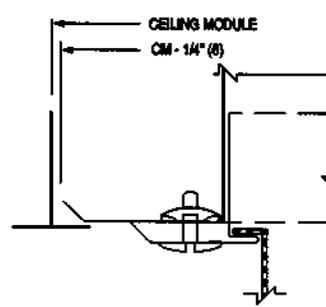
| Imperial Modules        |         |                 |            | Metric Modules  |            |
|-------------------------|---------|-----------------|------------|-----------------|------------|
| Imperial Units (inches) |         | S.I. Units (mm) |            | S.I. Units (mm) |            |
| D                       | CM      | D               | CM         | D               | CM         |
| 8                       | 48 x 12 | 203             | 1219 x 305 | 203             | 1200 x 300 |
| 8                       | 24 x 24 | 203             | 610 x 610  | 203             | 600 x 600  |
| 12                      | 48 x 24 | 305             | 1219 x 610 | 305             | 1200 x 600 |



Type S Surface Mount Detail



Type L Lay-in T-Bar Detail



**180 Degree Pattern****24 x 24 (600 x 600) Module Size • 8" (203 mm) dia. Inlet •  $\Delta T$  - 10°F**

| Air Flow<br>CFM | Total<br>Pt<br>Pressure | Static<br>Ps<br>Pressure | NC | T Horizontal Throw @ |           |           | T Vertical Throw @ |           |           |
|-----------------|-------------------------|--------------------------|----|----------------------|-----------|-----------|--------------------|-----------|-----------|
|                 |                         |                          |    | 100<br>FPM           | 75<br>FPM | 50<br>FPM | 100<br>FPM         | 75<br>FPM | 50<br>FPM |
| 300             | .101                    | .055                     | 21 | 1.0                  | 1.5       | 2.0       | 2.5                | 3.0       | 4.0       |
| 400             | .179                    | .097                     | 30 | 1.5                  | 2.0       | 2.5       | 3.0                | 4.0       | 5.0       |
| 500             | .280                    | .152                     | 38 | 2.0                  | 2.5       | 3.0       | 3.5                | 4.5       | 5.5       |

**48 x 24 (1200 x 600) Module Size • 12" (305 mm) dia. Inlet •  $\Delta T$  - 10°F**

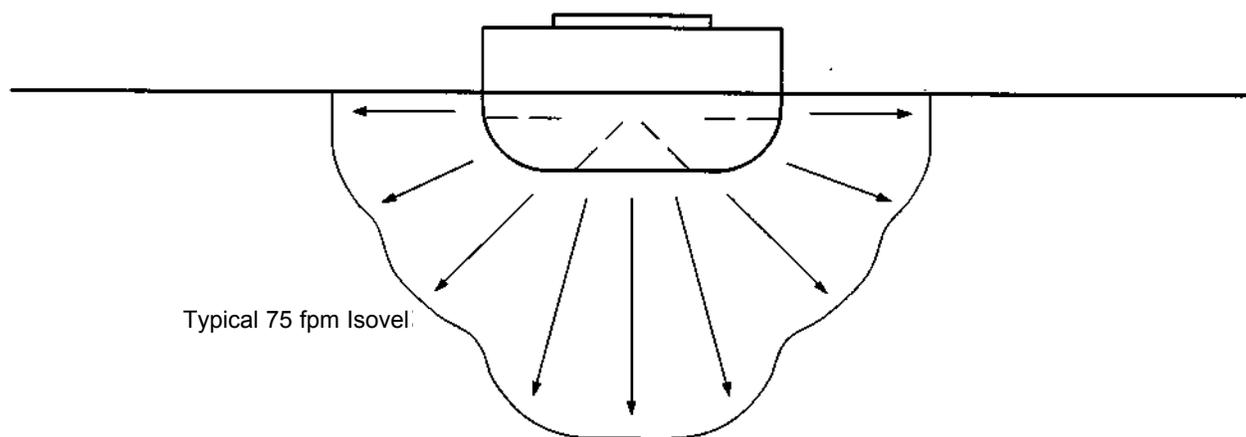
| Air Flow<br>CFM | Total<br>Pt<br>Pressure | Static<br>Ps<br>Pressure | NC | T Horizontal Throw @ |           |           | T Vertical Throw @ |           |           |
|-----------------|-------------------------|--------------------------|----|----------------------|-----------|-----------|--------------------|-----------|-----------|
|                 |                         |                          |    | 100<br>FPM           | 75<br>FPM | 50<br>FPM | 100<br>FPM         | 75<br>FPM | 50<br>FPM |
| 600             | .072                    | .036                     | 22 | 1.0                  | 1.5       | 2.0       | 1.5                | 2.0       | 2.5       |
| 800             | .129                    | .064                     | 32 | 1.5                  | 2.0       | 2.5       | 2.0                | 2.5       | 3.5       |
| 1000            | .201                    | .100                     | 41 | 2.0                  | 2.5       | 3.5       | 2.5                | 3.0       | 4.5       |

**CFM** - cubic feet per minute  
**FPM** - feet per minute velocity  
**Pt** - total pressure - inches w.g.  
**Ps** - static pressure - inches w.g.  
**T** - throw in feet  
**NC** - Noise Criteria (values) based on 10 dB room absorption, re  $10^{-12}$  watts

**Performance Notes:**

1. The radial flow pattern of the Model DD is unlike conventional air distribution devices. The data presented above describes isovels by average terminal velocity in both horizontal and vertical directions.

2.  $\Delta T$  is the temperature difference between supply and room air. Testing is based on 10°F (5.5°C) cooling.  
 3. Data derived from tests conducted in accordance with ANSI/ASHRAE Standard 70 — 1991.

**Suggested Guide Specifications**

Furnish and install Carnes DD Radial Flow Ceiling Diffusers of the size and type shown on the plans and air distribution schedules. The diffusers shall be constructed entirely from 304 stainless steel (316 optional) minimum 24 ga. The perforated face of the diffuser shall have 13% free area with 3/32" (2.4) dia. holes on 1/4" (6) staggered centers. The face shall have rounded corners and integral distribution baffles to provide a low velocity, non-aspirating radial air pattern. The face shall have 1/4 turn fasteners on one side and hinges on the other to allow for access to the interior for cleaning. Integral earthquake hanger tabs shall be included with all units.

All exposed surfaces shall have a #3 satin polished finish.

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

**90 Degree Pattern**

**24 x 24 (600 x 600) Module Size • 8" (203 mm) dia. Inlet • Δ T - 10°F**

| Air Flow<br>CFM | Total<br>Pt<br>Pressure | Static<br>Ps<br>Pressure | NC | T Horizontal Throw @ |           |           | T Vertical Throw @ |           |           |
|-----------------|-------------------------|--------------------------|----|----------------------|-----------|-----------|--------------------|-----------|-----------|
|                 |                         |                          |    | 100<br>FPM           | 75<br>FPM | 50<br>FPM | 100<br>FPM         | 75<br>FPM | 50<br>FPM |
| 300             | .114                    | .068                     | 21 | 2.0                  | 2.5       | 3.5       | 3.5                | 4.0       | 5.0       |
| 400             | .203                    | .121                     | 29 | 2.5                  | 3.5       | 4.0       | 4.0                | 4.5       | 6.0       |
| 500             | .317                    | .189                     | 36 | 3.0                  | 3.5       | 4.5       | 4.5                | 5.0       | 7.0       |

**48 x 24 (1200 x 600) Module Size • 12" (305 mm) dia. Inlet • Δ T - 10°F**

| Air Flow<br>CFM | Total<br>Pt<br>Pressure | Static<br>Ps<br>Pressure | NC | T Horizontal Throw @ |           |           | T Vertical Throw @ |           |           |
|-----------------|-------------------------|--------------------------|----|----------------------|-----------|-----------|--------------------|-----------|-----------|
|                 |                         |                          |    | 100<br>FPM           | 75<br>FPM | 50<br>FPM | 100<br>FPM         | 75<br>FPM | 50<br>FPM |
| 600             | .082                    | .046                     | 21 | 1.5                  | 2.5       | 3.5       | 3.0                | 4.0       | 6.0       |
| 800             | .146                    | .081                     | 30 | 2.0                  | 3.0       | 4.0       | 3.5                | 5.0       | 7.5       |
| 1000            | .228                    | .127                     | 38 | 2.5                  | 3.0       | 4.5       | 4.5                | 6.0       | 8.5       |

**48 x 12 (1200 x 300) Module Size • 8" (203 mm) dia. Inlet • Δ T - 10°F**

| Air Flow<br>CFM | Total<br>Pt<br>Pressure | Static<br>Ps<br>Pressure | NC | T Horizontal Throw @ |           |           | T Vertical Throw @ |           |           |
|-----------------|-------------------------|--------------------------|----|----------------------|-----------|-----------|--------------------|-----------|-----------|
|                 |                         |                          |    | 100<br>FPM           | 75<br>FPM | 50<br>FPM | 100<br>FPM         | 75<br>FPM | 50<br>FPM |
| 300             | .125                    | .079                     | 22 | 1.5                  | 2.0       | 3.0       | 1.0                | 1.5       | 2.0       |
| 400             | .221                    | .139                     | 30 | 2.0                  | 2.5       | 3.5       | 2.0                | 2.5       | 3.5       |
| 500             | .346                    | .218                     | 37 | 2.5                  | 3.5       | 4.5       | 2.5                | 3.0       | 4.0       |

**CFM** - cubic feet per minute  
**FPM** - feet per minute velocity  
**Pt** - total pressure - inches w.g.  
**Ps** - static 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. The radial flow pattern of the Model DD is unlike conventional air distribution devices. The data presented above describes isovels by average terminal velocity in both horizontal and vertical directions.

2. ΔT is the temperature difference between supply and room air. Testing is based on 10°F (5.5°C) cooling.  
 3. Data derived from tests conducted in accordance with ANSI/ASHRAE Standard 70 — 1991.

Typical 75 fpm Isovel

