

## Diffusers (VSD & HDD) & Sheet Metal Boot (SMB)

# DIFFUSERS

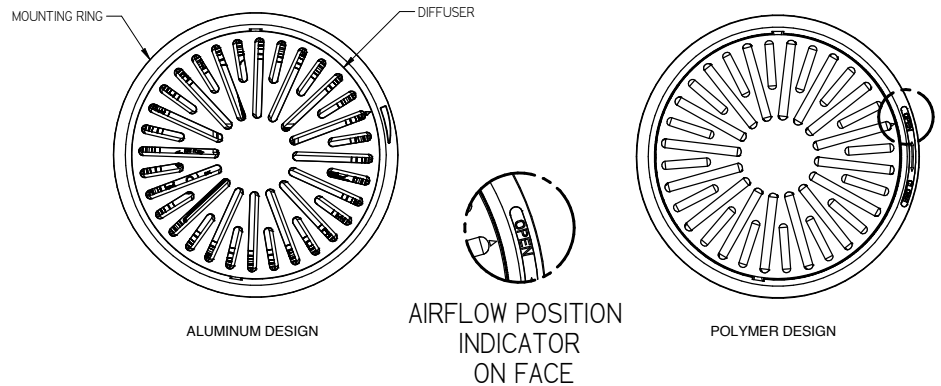
## PRODUCT OVERVIEW

### Vertical Swirl Diffusers

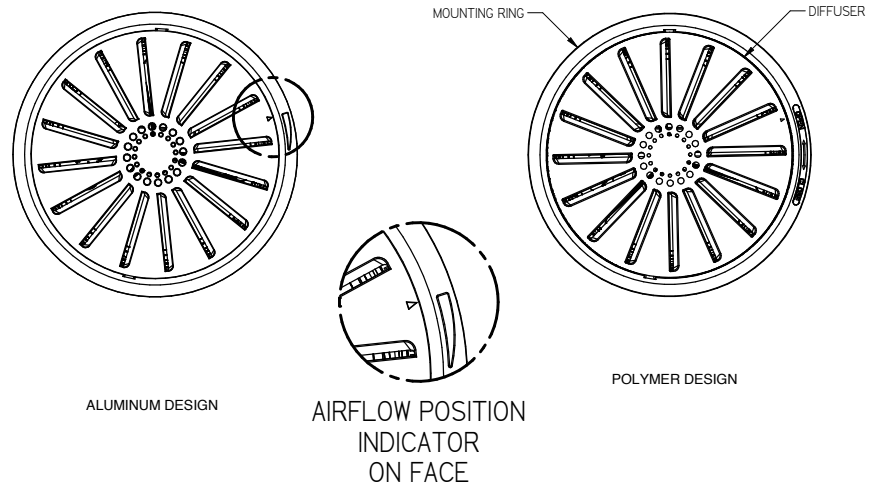
The Vertical Swirl Diffuser Twist Pattern (VSD) is designed with a twist effect using radial slots in combination with an inclined discharge. This generates a vertical supply with very high induction due to the turbulent flow. This symmetrical discharge is ideal for mixing within the occupied zone.

The Horizontal Displacement Pattern (HDD) is used where low, floor level flow is required. The diffuser slots discharge the air horizontally across the floor where it can absorb the heat load and rise to the return grilles in the ceiling. Polymer 8 in. diffusers are available in black and dusty grey finishes. Aluminum diffusers are available in 8 and 10 in.

#### VSD ▼



#### HDD ▼



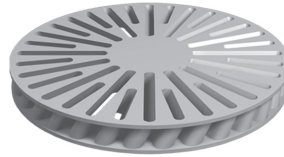
# DIFFUSERS

## PRODUCT OVERVIEW

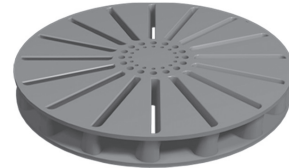
### Diffuser Face Options

- A. Plastic diffusers and can be mounted in either RPF or ZC configurations.
- B. Aluminum diffusers and can be mounted in either RPF or ZC configurations. ZC available with ZC adapter.

#### DIFFUSERS ▼



SWIRL PATTERN



DISPLACEMENT PATTERN

### Mounting Ring Options

- A. Ring Press Fit (RPF) mounting ring uses a soft rubberized seal to hold the mounting ring in the bore. RPF comes standard with all modular floor mounting rings.

**NOTE:** The maximum suggested carpet thickness used for Ring Press Fit is 5/16 in., carpets beyond that thickness should use Zip-Clip mounting.

- B. Zip Clip (ZC) mounting ring uses the RPF seal to center the ring in the bore and three (3) clips which ratchet in place to secure the mounting ring to the floor. If the floor tile has a contoured bottom, care must be taken to ensure all three zip clips can tighten against the tile.
- C. Stepped Bore does not require a mounting ring; the floor is cut to size to fit only the diffuser face.

#### MOUNTING RING ▼



POLYMER



ALUMINUM

#### ALUMINUM ADAPTERS ▼



#### STEPPED BORE ▼



#### ZIP CLIP ▼



# DIFFUSERS

## PRODUCT OVERVIEW

### Basket/Damper Options

The seven standard 8 in. distributor baskets (CB, LB, VBD, BD, LBD, MBA, LMBD) and four standard 10 in. distributor baskets (CB, BD, MBA, VBD) allow for even distribution of supply air through the round floor diffuser. The basket is also used to catch debris that may fall through the diffuser face.



CB - BASIC BASKET



BD - BASKET WITH DAMPER



MBD - BASKET WITH FACE ADJUSTABLE DAMPER



LB - SHORT 2 IN. BASIC BASKET



LBD - SHORT 2 IN. BASKET WITH DAMPER



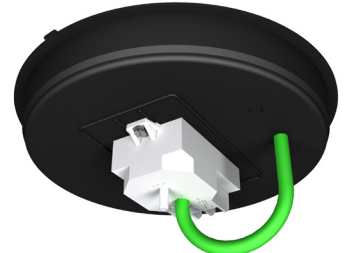
LMBD - SHORT 2 IN. BASKET WITH FACE ADJUSTABLE DAMPER



PDC - BASKET WITH COLLAR FOR DUCT CONNECTION



BB - BLANK OFF PLATE



BBP - BLANK OFF BASKET WITH PRESSURE SENSOR



VBD - ELECTRONICALLY CONTROLLED VAV BASKET

# DIFFUSERS

## INSTALLATION & MOUNTING INSTRUCTIONS

### Installation Instructions

The components for the Vertical Swirl diffuser assembly are shipped assembled. The following is a recommended installation guide.

**STEP 1:** Cut the hole in the floor/tile according to the following table:

#### Hole Sizes

| MFD     |                                   |
|---------|-----------------------------------|
| Size    | Ring Press Fit / Zip Clip         |
| 8 in.   | $8.50 \pm 0.040$ ( $216 \pm 1$ )  |
| 10 in.* | $10.50 \pm 0.040$ ( $267 \pm 1$ ) |

\*10 in. available in aluminum only

**STEP 2:** Secure the mounting ring into the floor cutout:

- A. RPF rings do not require additional hardware; the rubberized seal prevents the unit from accidentally being dislodged during normal foot traffic as shown in Figure 1. Do not use glue!
- B. Zip Clip mounting uses three (3) clips that lock the ring in place. The clips can be inserted onto the legs of the mounting ring from the roomside opening and locked into place, as shown in Figure 2.

**NOTE:** For aluminum mounting rings the zip clip adapter must first be snapped into place before placing the zip clips, as shown in Figure 3.

FIGURE 1: RPF RINGS ▼

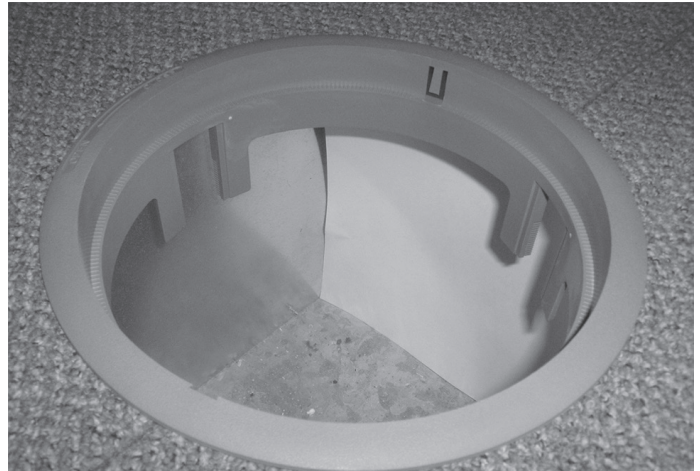


FIGURE 2: ZIP CLIP MOUNTING

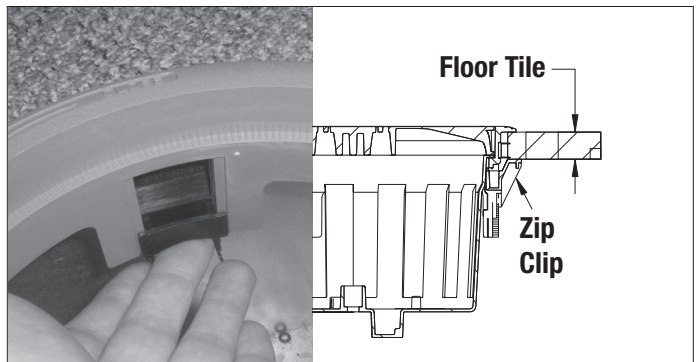


FIGURE 3: ZIP CLIP ADAPTER FOR ALUMINUM MOUNTING RINGS





# DIFFUSERS

## INSTALLATION & MOUNTING INSTRUCTIONS

If using a VBD basket skip step 3 and go straight to step 4, otherwise proceed to step 3 below.

**STEP 3:** The basket and damper assembly can now be placed into the mounting ring:

- A. The basket should be aligned such that the tabs on the basket flange aligns with the notch in the mounting ring. The tabs are 171° and should only be installed in one orientation, refer to Figure 4.
- B. The damper must be installed such that the thinner web portion on the damper legs aligns with the raised tab on the basket, refer to Figure 5.
- C. Using the minimum airflow knob, rotate until the indicator points to the desired min airflow as shown in Figure 6. Press down on the damper to ensure it does not slip above the min airflow knobs.
- D. For MBD installation, the damper can be placed into

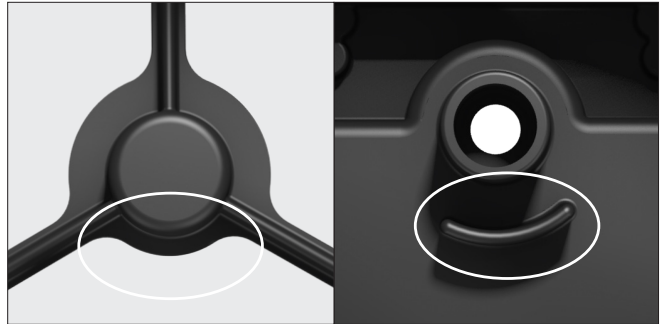
basket and rotated until it drops into place, in the correct orientation, refer to Figure 6 and Figure 7.

**NOTE:** The airflow arrow will point to the “open - closed” text or the curved triangular air flow bar on the mounting rings.

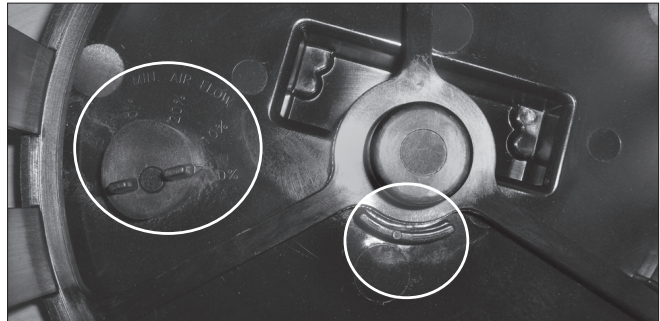
**FIGURE 4: BASKET TAB ALIGNMENT**



**FIGURE 5: DAMPER LEG ALIGNMENT**



**FIGURE 6: MINIMUM AIRFLOW KNOB**



**FIGURE 7: MBD BASKET**



# DIFFUSERS

## STEP 3 CONTINUED:

- E. BBP and PDC are installed into the mounting ring, following the same procedure as other baskets. Two protrusions prevent the diffuser from rotating. Figure 8 shows the PDC.
- F. 1/4 in. pressure hose is connected to the top or bottom fitting on BBP to measure the pressurized underfloor plenum or occupied zone, respectively. Figure 9 shows the the Blank Off Plate and Figure 10 shows the installed BBP.

**FIGURE 8: PDC▼**



**FIGURE 9: BLANK OFF BASKET▼**



**FIGURE 10: BBP▼**



# DIFFUSERS

## STEP 4: Variable Volume Diffuser Basket (VBD) Installation

The Variable Volume Diffuser Basket (VBD) is designed to allow even distribution of supply air through the Vertical Swirl Diffuser core while integrating into a VAV cooling system. It utilizes a 24 VAC floating point actuator to modulate a gasketed control damper based on a signal from the building control system or from the Global IFS PCM - Power and Control Module. The actuator modulates the damper to throttle the supply air from the pressurized underfloor plenum to the occupied zone. The motorized damper provides control of cooling flows from maximum to near shut-off. The VBDs can be daisy chained from one unit to another using the provided plenum rated cable with plug-in modular connectors.

### INSTALLATION INSTRUCTIONS

1. Locate the mounting ring in the hole in the floor tile.
2. Connect the control wire to the VBD through the floor, Figure 11.
3. Insert the VBD, ensuring that the tabs on the VBD align with the holes in the mounting ring, Figure 12.

### BASKET SIZE OPTIONS:

| Diffuser | Basket Diameter "A" |
|----------|---------------------|
| 8"       | 7.400" (188)        |
| 10"      | 9.400" (239)        |

#### VBD ▼

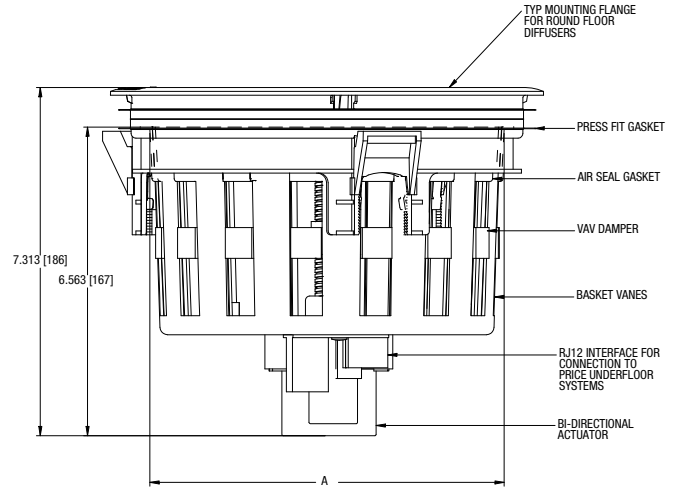


FIGURE 11: CONNECT CONTROL WIRE TO ▼VBD

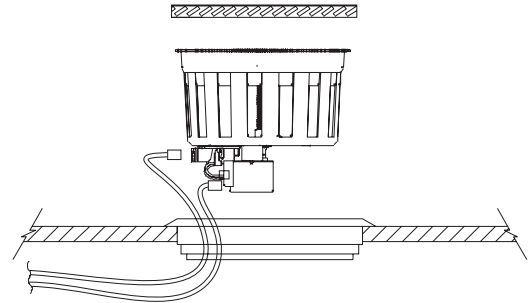
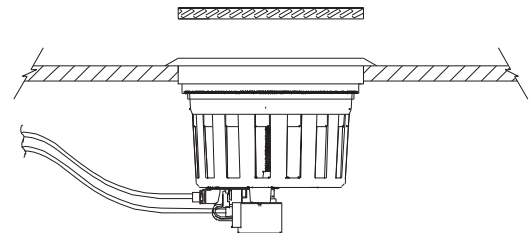


FIGURE 12: INSERT VBD▼





# DIFFUSERS

**STEP 5:** The diffuser face can now be installed into the mounting ring:

- A. If the assembly is not face adjustable (BD, DBS, MDB), then the face can be dropped in place and the unit is complete, refer to Figures 13A and 13B.
- B. If the assembly is face adjustable, the tabs on the damper must align and lock into the bottom of the diffuser face, Figure 14A and Figure 14B. The arrow on the diffuser face should also point in-between the open and close labels on the mounting ring as shown in Figures 13A and 13B.

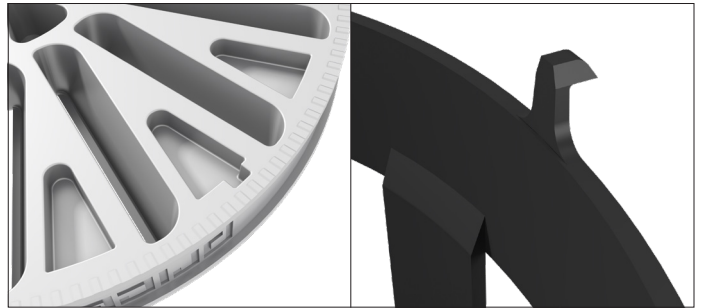
**FIGURE 13A: ALUMINUM DIFFUSER FACE ▼  
INSTALLATION TOP VIEW**



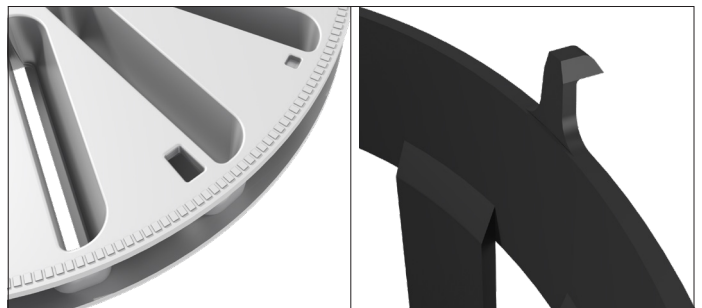
**FIGURE 13B: POLYMER DIFFUSER FACE ▼  
INSTALLATION TOP VIEW**



**FIGURE 14A: ALUMINUM DIFFUSER FACE ▼  
INSTALLATION BOTTOM VIEW**



**FIGURE 14B: POLYMER DIFFUSER FACE ▼  
INSTALLATION BOTTOM VIEW**



# DIFFUSERS

## STEP 6: Final Inspection:

The diffuser should sit flush in the mounting ring and if face adjustable, should allow rotation of the damper quite easily between open and close positions. When a downward force is applied to the face, the diffuser locks in place. This is to reduce the chance of inadvertent rotation when walking across the diffuser. Therefore, excessive downward force on the face will prevent rotation of the diffuser.

### DIFFUSER FLUSH WITH MOUNTING RING ▼



# Sheet Metal Boot Installation Instructions

The Global IFS sheet metal boots are specially designed for mounting on the bottom of a floor tile under a Vertical Swirl Diffuser. A top plate with a discharge hole outlet ensures proper sealing to the diffuser even when structural depressions exist on the bottom surface of the floor tiles.

The SMB-F enables a ducted connection to a fan powered terminal unit. It is designed to control the supply of conditioned air to a space which has a variable occupancy schedule.

The SMB-HC is used in conjunction with heat/cool applications. The SMB-HC comes with two (2) inlets, one (1) for connecting to a fan powered terminal unit and the second to admit supply air from the pressurized plenum. The SMB-HC comes complete with a 24 VAC floating point actuator on the inlet open to the plenum to cycle a gasketed control damper through a 90° range of movement. The controller modulates based on a call for cooling either directly from the building control system, from the Global IFS PSM. A 25 foot plenum rated control cable is provided with each unit for connecting to a controller or daisy chaining to multiple boots.

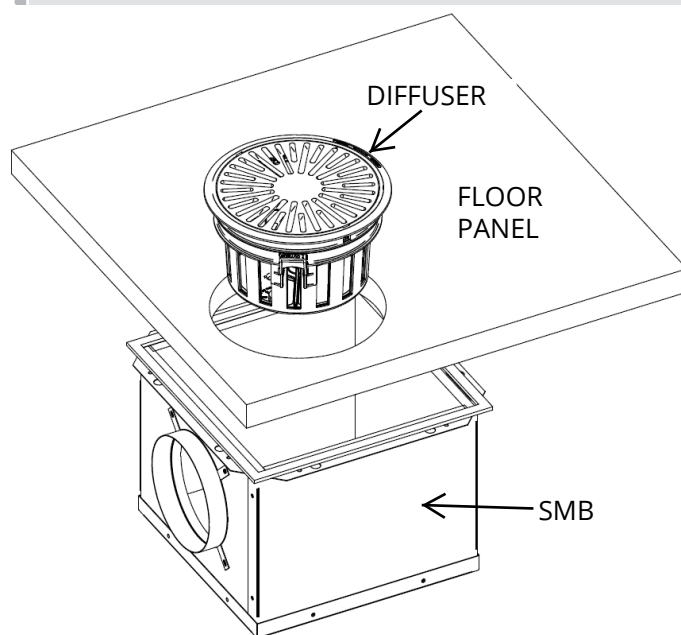
Supply air is either provided through an open connection to the pressurized plenum or via a ducted fan powered terminal unit.

## INSTALLATION INSTRUCTIONS

1. Cut hole in tile (hole must be located as marked on submittal and installation page).
2. Fasten the flange on the floor tile by screwing through the outer hole labeled 2. The gasket will cover the holes. Ensure that self-drilling screws are used.
3. Place SMB over flange in with small holes aligned, the large holes provide clearance for the fastener used in Step 2.
4. Fasten SMB to mounting flange and floor tile by screwing through holes labeled 4.

**NOTE:** Adjust set screw and damper to minimum airflow for balancing.

## SMB INSTALLATION



### PLENUM BOOT SIZE

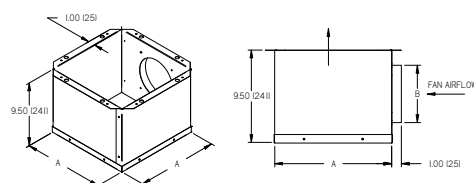
| BOOT SIZE | SIDE LENGTH (A) | TILE CENTER (D) | SIDE LENGTH (E) | SIDE LENGTH (F) |
|-----------|-----------------|-----------------|-----------------|-----------------|
| 8B        | 10.000 (254)    | 6.750 (171)     | 8.960 (228)     | 8.960 (228)     |
| 10B       | 12.000 (305)    | 8.000 (203)     | 4.710 (120)     | 4.710 (120)     |

### PLENUM INLET (VC, HC) & FAN INLET (F, FC)

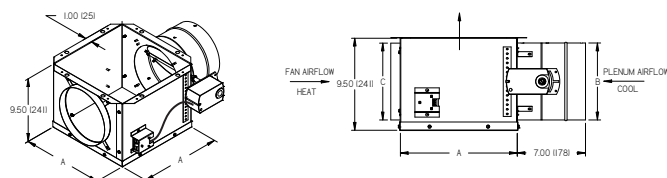
| NOM. DUCT SIZE | FAN INLET (B) | PLENUM INLET (C) |
|----------------|---------------|------------------|
| 6 (152)        | 5.88 (149)    |                  |
| 8 (203)        | 7.88 (200)    |                  |

### SMB-F

FOR SMB



### SMB-HC



# DIFFUSERS

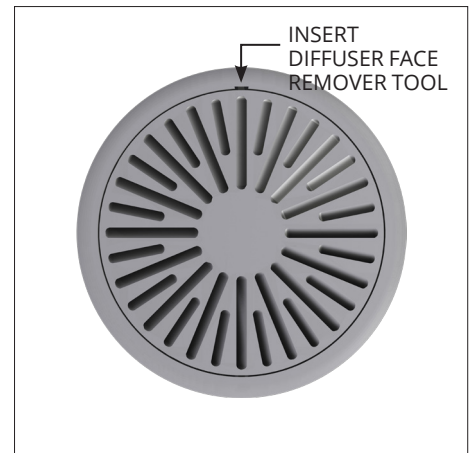
## Cleaning Instructions


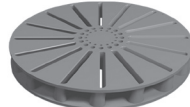


The face can be cleaned from liquids or food by wiping the face with a moist rag.

For more stubborn stains use disinfectant wipes.

The diffuser basket should be periodically cleaned by removing the diffuser face from the ring and vacuuming any particles that have accumulated in the catch basket. The diffuser face can be removed by inserting the diffuser face removal tool, into the notches carved out along the diffuser face. Once the tool is inserted simply bend back the clip holding the diffuser face in place and pull out the diffuser.

### DIFFUSER FACE CLEANING



| Name   | Description   | Mounting Options                         | Basket Options                          | Standard Finish             |
|--|---|--|---|-----------------------------|
|  VSD- Polymer   | Swirl diffuser<br>High induction<br>mixing Polymer<br>construction 8 in.<br>only          | Standard with<br>Ring Press Fit<br>(RPF) | 8 in. or 10 in.:<br>CB, BD, MBA,<br>VBD | Black<br>Dusty Grey<br>(DG) |
|  HDD - Polymer  | Displacement<br>diffuser Non-mixing<br>low throw Polymer<br>construction 8 in.<br>only    | Zip-Clip<br>No Fastening                 | 8 in.: only: LB,<br>LBD, LMBD,          | Black<br>Dusty Grey<br>(DG) |
|  VSD - Aluminum | Twist diffuser<br>High induction<br>mixing Aluminum<br>construction 8 in. or<br>10 in.    |  |   | Fine Aluminum Finish        |
|  HDD - Aluminum | Horizontal<br>Displacement diffuser<br>Non-mixing low throw<br>Aluminum 8 in. or<br>10in. |  |   | Fine Aluminum Finish        |