

# ▶ HVAC CONTROL DAMPERS

*Models: VCD and MBD*

- SELECTION
- CONSTRUCTION
- PERFORMANCE



**DODGE ENGINEERING  
& CONTROLS, INC.**

*Your Complete Solution*

*November 2008*

# ► *HVAC Control and Manual Balancing Dampers*

## • *Products You Can Trust*

Comprehensive state-of-the-art laboratory and testing facilities have always been important to the success of these product lines. Our vendor's laboratory facility, which is devoted exclusively to development and testing of damper related products, contains the HVAC industry's most extensive and modern equipment for testing to the latest versions of AMCA, ANSI, ASHRAE, UL, and other industry standards of performance. These laboratory capabilities are used to provide the most comprehensive performance data, including leakage and pressure loss, over the widest range of sizes. Their lifecycle and endurance testing goes far beyond any current industry requirements.



## • *Strong Support*

Let Dodge Engineering & Controls provide dampers and damper actuation to meet your project needs. Send us your damper schedule for a quote and great pricing.

**Toll Free:** (877) 334-2875

**Fax:** (978) 244-1422

**Website:** DEIControls.com

**E-mail:** Mail@DEIControls.com

**Mail:** 196 Riverneck Road  
Chelmsford, MA 01824

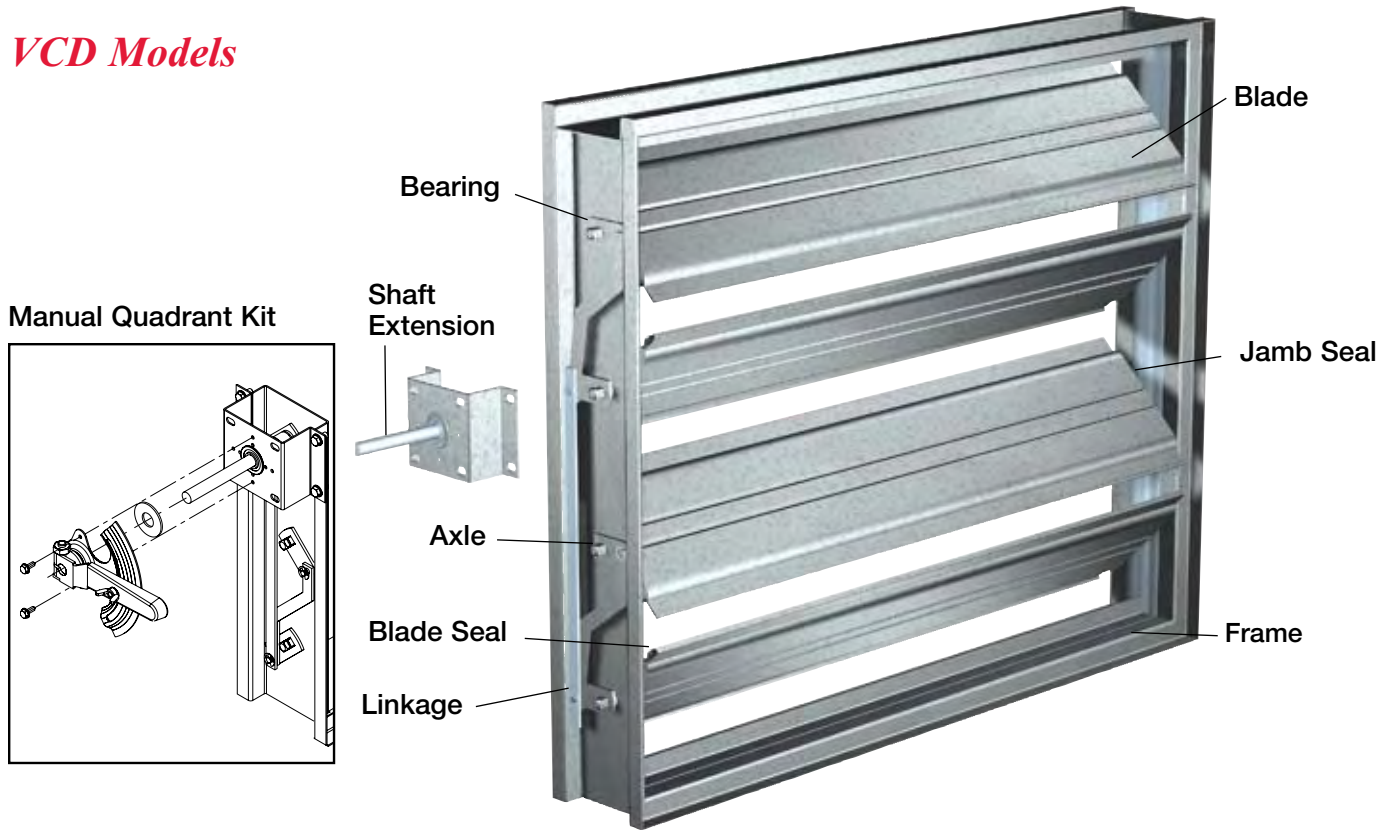
Our dampers are shipped directly to you from many convenient locations throughout the country to better serve you.

We also offer *Fast Track* service for even faster delivery.



# ► Construction Features

## VCD Models



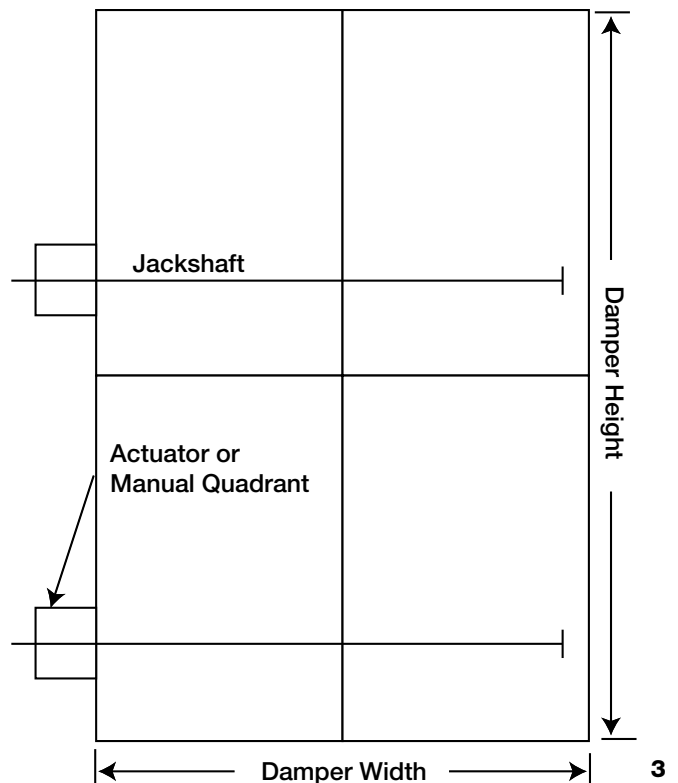
## Drive Arrangement Definition

Each damper is given a drive arrangement code that helps describe the construction of the damper. The following breaks down what each number and letter represents.

### 22-2FEL-2



- ① Number of sections wide
- ② Number of sections high
- ③ Number of actuators or manual quadrants
- ④ Who supplies the actuators or manual quadrants  
F - Factory  
C - Customer Supplied (field mounted)
- ⑤ Actuator or manual quadrant mounting  
E - External  
I - Internal  
B - Both internal and external
- ⑥ Actuator or manual quadrant location  
L - Left-hand drive  
R - Right-hand drive  
B - Both right and left
- ⑦ Number of jackshafts



# ► Design and Construction Features

## Variable Symmetric Blade Design (VSB)

Part of our unique approach to damper construction, Variable Symmetric Blade Design (VSB) uses two principles to increase damper performance. First, all damper blades are symmetric about their axis. Second, any combination of 4, 5, 6, and 7 in. (102, 127, 152, and 178mm) blade widths are used in a single damper. These two features are standard construction, providing the following advantages:

- **Increases Mounting Flexibility** - Symmetrical blades have identical operating characteristics regardless of airflow direction. This allows a control damper to be mounted in either direction of flow, an advantage when installing with space constraints.
- **Increases Free Area** - Traditional damper designs with a single blade width require oversized blade stops, limiting free area when the blades are open (Figure 1). Blade stop height is able to be reduced, which maximizes free area, and increases damper performance (Figure 2).
- **Reduces Actuator Torque** - If an unsymmetrical blade closes against airflow, a large amount of torque is needed because the air distribution is unbalanced. The VSB design balances airflow on each side of a symmetrical blade, reducing the torque required to operate the damper. The use of symmetrical blades has allowed us to reduce the sizes and quantities of actuators used on our dampers (Figure 3).

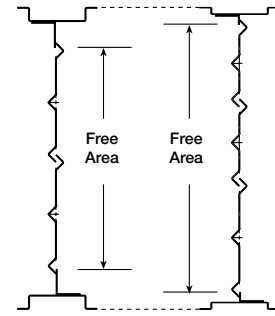


Figure 1

Figure 2

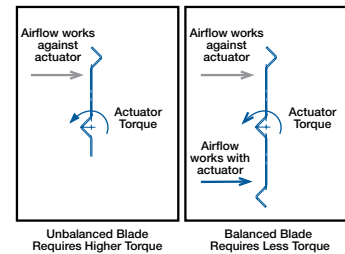
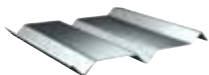


Figure 3

## Blades

3V blades are fabricated from a single thickness of 16 ga. (1.5mm) galvanized steel incorporating three longitudinal V-Type grooves running the full length of the blade to increase strength. This blade is standard on models VCD-15, 18, 20, 20V, 23, 23V, and SEVCD-23, designed for low to medium velocity and pressure capabilities.

Airfoil blades are constructed of double skin galvanized steel or heavy gauge extruded aluminum. This blade design presents a lower resistance to airflow and strength that is typically used in high pressure systems. Airfoil blades are standard on models VCD-33, 33V, 34, 40, 42, 42V, 43, 43V and SEVCD-33.



3V Blade



Steel Airfoil Blade

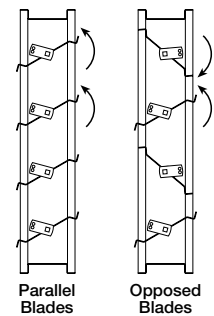


Aluminum Airfoil Blade

## Parallel Versus Opposed Blade Operation

Control dampers are offered with either parallel or opposed blades. Each style has distinguishing characteristics in regards to the type of operation required.

- **Parallel blade operation** - This configuration requires the damper blades to open or close in the same direction, parallel to one another. Parallel blade orientation is typically used when the damper operates in two positions, open or close.
- **Opposed blade operation** - Adjacent damper blades will open or close opposite one another under opposed blade configuration. Opposed blade orientation is typically used on dampers that modulate airflow.



Parallel Blades

Opposed Blades

## Linkage

Traditional damper linkages are found in the airstream, adding to the pressure drop of the damper blades and frame. Control dampers have blade linkage concealed in the frame to prevent additional pressure drop. With standard plated steel construction (stainless steel optional), linkage is engineered to accurately control each and every blade without need for adjustment.

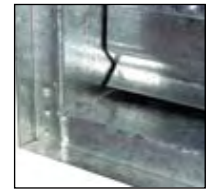


# ► Design and Construction Features

## Frame

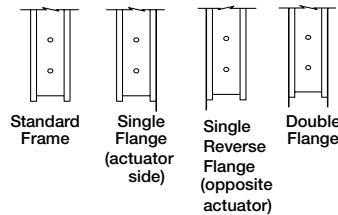
Specifically designed for installation inside ductwork, control dampers utilize a 5 in. x 1 in. (127mm x 25mm) hat channel frame made of 16 ga. (1.5mm) steel or 0.125 in. (3mm) aluminum. Each frame is built with four separate pieces of material and joined by our Tog-L-Loc® process with the following advantages:

- **Rigid frame** - When two pieces of 16 ga. (1.5mm) steel are joined by the Tog-L-Loc® system, the joint has an equivalent thickness of 10 ga. (3.5mm) steel.
- **Increased corrosion resistance** - The high temperatures from welding will remove the galvanized finish from damper frames. As the Tog-L-Loc® process doesn't use heat, damper frames have greater corrosion resistance by retaining the galvanized coating.
- **Optimal free area** - On all dampers that are 17 in. (432mm) high or less, a low profile top and bottom frame section is used to maximize free area.
- **Square frame** - Many damper manufacturers construct each frame from a single piece of sheet metal, formed into shape by bending at three corners and spot welding in one. This type of construction can produce weak corners that are not necessarily 90°, resulting in a frame that is out of square. Symptoms of out-of-square frames include blades that do not close properly and reduced leakage performance. Using four separate frame components (top, bottom, and two sides), our Tog-L-Loc® process results in four sturdy, 90° joints. This ensures that each damper is square and provides optimum performance in the field.



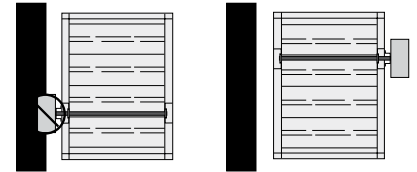
Tog-L-Loc®  
Reinforced Corner

- Frame Options:**
- Channel Frame (standard)
  - Single Flange
  - Single Reverse Flange
  - Double Flange



## No Top or Bottom

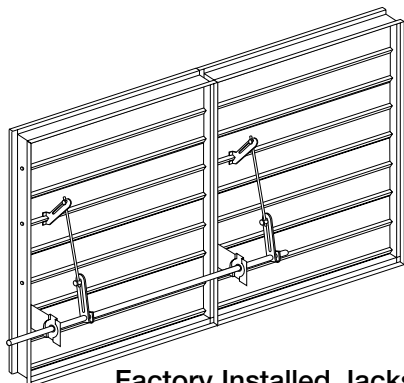
Control Dampers are designed for installation in any position with the blades horizontal. As shown in the drawing at the right, the damper can be turned over so the actuator is on the left or right side.



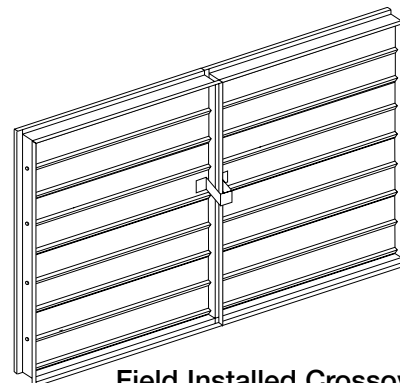
## Multi-Section Dampers

VCD Control Dampers have a maximum size for a single damper section or panel. These sections vary from 48 in. x 60 in. (1219mm x 1524mm) to 60 in. x 74 in. (1524mm x 1880mm), see Quick Selection Charts on page 12 and 13. Dampers larger than a single section will be made up of equal size sections which, depending upon model and size, may be shipped as a single complete assembly or as separate sections for field assembly.

Most multi-section damper assemblies are supplied with a factory installed jackshaft so all sections operate together. Models VCD-15 and VCD-18 utilize a field-installed crossover bracket to connect adjacent sections.



Factory Installed Jackshaft



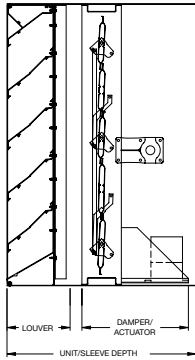
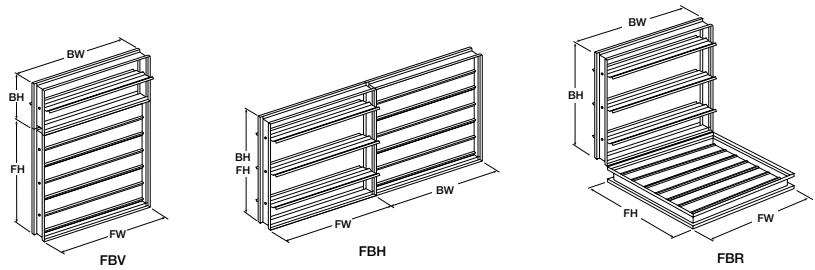
Field Installed Crossover Bracket

*Damper assemblies (larger than one section) are not designed to be structurally self-supporting. Additional horizontal bracing is recommended to support the weight of the damper and vertical bracing should be installed if required to hold against system pressure.*

# ► Options and Accessories

## Face & Bypass Dampers

Most VCD models can be supplied in a Face & Bypass configuration where the sections of the damper operate opposite from each other. Face & Bypass dampers are available in vertical, horizontal, and right angle arrangements as shown at the right.

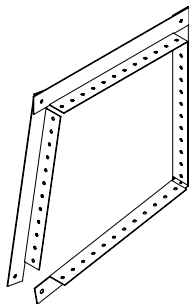
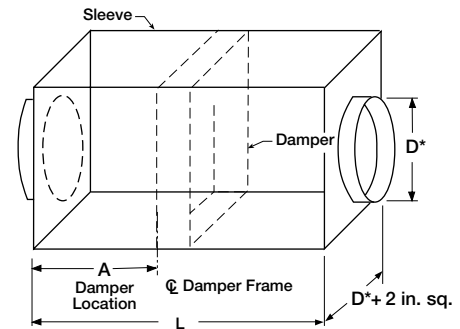


## Damper/Louver in a Common Sleeve

A common sleeve can be provided for your applications requiring single unit assembly. This assembly makes it convenient for installing in the field as one unit instead of dealing with multiple units (consult factory for more information).

## Factory Sleeve Option

Control dampers are available in factory furnished sleeves in lengths up to 48 in. (1219mm). Sleeves are constructed out of 10 through 20 ga. (3.25 through 0.91 mm) galvanized steel. When dampers are installed in ductwork, the “A” dimension specifies location of damper within the sleeve.

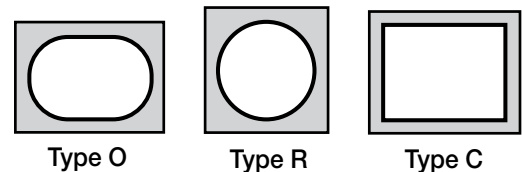


## One Piece Retaining Angles

A one piece retaining angle, the POC (literally named for being a “Piece of Cake”) makes control damper installation a breeze. The POC angle is designed by fastening four pieces together to form one piece. When installed the angle simply wraps around the sleeve of the damper and fastened in place.

## Transitions

In applications where dampers require installation in round or oval openings, our control dampers can be supplied with the appropriate transition option. Rectangular dampers are constructed 1 inch (25mm), or 2 inches (51mm) larger than the dimensions provided and installed in a factory sleeve. The sleeve is transitioned at each end to the appropriate round, oval, or rectangular size.



Transition options available



## Security Bars

When security becomes an issue, use our optional factory installed security bars. Security bars are factory welded into a 10 ga. (3.5mm) sleeve.

# ► *Damper Actuator Checklist*

Dodge Engineering has a wide range of manual, electric, and pneumatic actuators for use with our control dampers. Actuators can be installed at the factory or shipped loose with the necessary linkage and brackets required for mounting. Each damper and actuator is cycle tested in our factory before the final product is shipped, ensuring quality and trouble free operation in the field.

## *Manual Hand Quadrant* See Figure 4

- ✓ **Location**
  - Internal or external

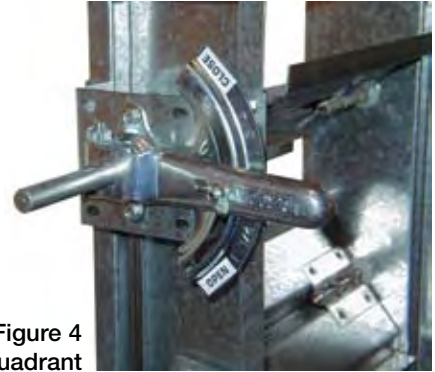


Figure 4  
Manual Quadrant

## *Electric Actuator Checklist* See Figures 5 & 6

- ✓ **Power Supply**
  - 24 Vdc, 24 Vac, 120 Vac, and 240 Vac
  - Frequency
- ✓ **Operation**
  - Spring Return (spring will drive damper to original starting point)
  - Power Open or Power Closed
- ✓ **Operating Mode**
  - Modulating (damper position determined by modulating control signal)
  - Floating (damper can be stopped anywhere between open and closed)
  - Two position (damper position is open or closed)
- ✓ **Fail Direction (for spring return only)**
  - Open or Closed
- ✓ **Location**
  - Internal or external
- ✓ **Control Signal (for modulating only)**
  - 0-10 Vdc, 4-20 mA dc, or 135 ohm
- ✓ **NEMA Enclosure**
  - 1, 3, 4, 4X, or 7 (specify one for specific application)
- ✓ **Accessories**
  - Auxiliary Switches
  - Transformers



Figure 5  
Electric-External Mount



Figure 6  
Electric-Internal Mount

## *Pneumatic Actuator Checklist* See Figure 7

- ✓ **Power Supply**
  - 20 psi
- ✓ **Operation**
  - Spring Return (spring will drive damper to original starting point)
- ✓ **Operating Mode**
  - Modulating (damper position determined by modulating pressure signal)
  - Two Position (damper position is open or closed)
- ✓ **Fail Direction (for spring return only)**
  - Open or Closed
- ✓ **Location**
  - Internal or external
- ✓ **Control Signal (for modulating only)**
  - 3-15 psi
- ✓ **Accessories**
  - Solenoid Valves or Positioners



Figure 7  
Pneumatic

# ► Damper Performance Testing Criteria

Pressure drop testing was conducted in accordance with AMCA Standard 500-D using the three configurations shown. All data has been corrected to represent standard air at a density of .075 lb/ft<sup>3</sup> (1.201 kg/m<sup>3</sup>).

Actual pressure drop found in any HVAC system is a combination of many factors. This pressure drop information along with an analysis of other system influences should be used to estimate actual pressure losses for a damper installed in a given HVAC system.

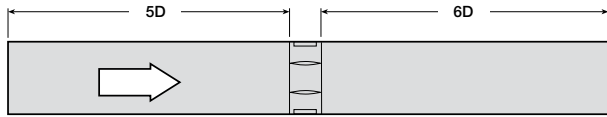


Figure 5.3

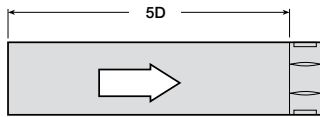


Figure 5.2

$$D = \sqrt{\frac{4(W)(H)}{3.14}}$$

D=Duct length  
W=Damper width  
H=Damper height

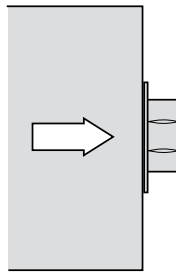


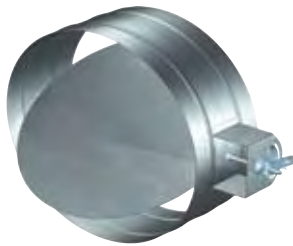
Figure 5.5

**Figure 5.3** Illustrates a fully ducted damper. This configuration has the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

**Figure 5.2** Illustrates a ducted damper exhausting air into an open area. This configuration has a lower pressure drop than Figure 5.5 because entrance losses are minimized by a straight duct run upstream of the damper.

**Figure 5.5** Illustrates a plenum mounted damper. This configuration has the highest pressure drop because of extremely high entrance and exit losses due to the sudden changes of area in the system.

# ► Pressure Drop Data

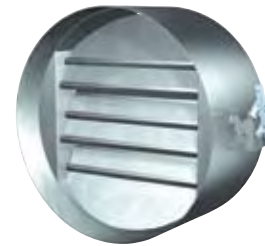


**VCDR-50 & 53**

- Insert type round single blade
- Blade seals VCDR-53

**Models VCDR-50, 53**

Dimension inches	12			24		
AMCA figure	5.2	5.3	5.5	5.2	5.3	5.5
Velocity (fpm)	Pressure Drop in. wg					
500	.01	.01	.02	.01	.01	.02
1000	.06	.02	.10	.04	.01	.09
1500	.13	.05	.22	.08	.03	.20
2000	.23	.08	.38	.15	.06	.36
2500	.37	.13	.60	.23	.09	.56
3000	.53	.19	.86	.33	.13	.81



**VCDRM-50 & 53**

- Insert type round multi-blade
- Blade seals VCDRM-53

**Models VCDRM-50, 53**

Dimension inches	12			24			36		
AMCA figure	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5
Velocity (fpm)	Pressure Drop in. wg								
500	.04	.03	.05	.03	.02	.04	.05	.05	.06
1000	.15	.11	.19	.13	.10	.15	.19	.20	.25
1500	.33	.25	.42	.29	.21	.33	.42	.44	.57
2000	.59	.45	.75	.51	.38	.59	.75	.79	1.01
2500	.93	.70	1.18	.79	.60	.92	1.18	1.23	1.58



# ► Pressure Drop Data



### VCD-15, 18, 20, 23

- Galvanized 3V blade
- Economic VCD-15 & VCD-18
- Blade and jamb seals VCD-18 & 23

### SEVCD-23

- 316 stainless steel 3V blade
- 316 stainless steel construction
- Blade and jamb seals

## Models VCD-15, 18, 20, 23 & SEVCD-23

Dimension inches	12x12			24x24			36x36			12x48			48x12		
AMCA figure	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5
Velocity (fpm)	Pressure Drop in. wg														
500	.04	.02	.06	.02	.01	.03	.01	.01	.03	.01	.01	.03	.03	.02	.04
1000	.14	.09	.22	.07	.04	.14	.04	.03	.12	.06	.04	.13	.10	.07	.17
1500	.31	.20	.50	.16	.09	.31	.09	.06	.26	.13	.10	.30	.23	.16	.38
2000	.55	.36	.89	.29	.16	.54	.16	.11	.46	.23	.17	.53	.41	.29	.67
2500	.86	.56	1.39	.45	.25	.85	.25	.17	.73	.36	.27	.83	.63	.45	1.04
3000	1.24	.81	2.00	.65	.35	1.22	.36	.24	1.05	.52	.39	1.19	.91	.64	1.50
3500	1.69	1.10	2.72	.89	.48	1.66	.49	.33	1.42	.70	.53	1.62	1.24	.88	2.05
4000	2.20	1.44	3.55	1.16	.63	2.17	.64	.42	1.86	.92	.70	2.11	1.62	1.14	2.67

## Models VCD-20V, 23V



### VCD-20V & 23V

- Vertical 3V blade
- Blade and jamb seals VCD-23V

Dimension inches	12x12			24x24			36x36			12x48			48x12		
AMCA figure	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5
Velocity (fpm)	Pressure Drop in. wg														
500	.04	.02	.06	.02	.01	.03	.01	.01	.03	.03	.02	.04	.01	.01	.03
1000	.14	.09	.22	.07	.04	.14	.04	.03	.12	.10	.07	.17	.06	.04	.13
1500	.31	.20	.50	.16	.09	.31	.09	.06	.26	.23	.16	.38	.13	.10	.30
2000	.55	.36	.89	.29	.16	.54	.16	.11	.46	.41	.29	.67	.23	.17	.53
2500	.86	.56	1.39	.45	.25	.85	.25	.17	.73	.63	.45	1.04	.36	.27	.83
3000	1.24	.81	2.00	.65	.35	1.22	.36	.29	1.05	.91	.64	1.50	.52	.39	1.19
3500	1.69	1.10	2.72	.89	.48	1.66	.49	.33	1.42	1.24	.88	2.05	.70	.53	1.62
4000	2.20	1.44	3.55	1.16	.63	2.17	.64	.42	1.86	1.62	1.14	2.67	.92	.70	2.11



### VCD-33 & 34

- Galvanized airfoil blade
- Insulated airfoil VCD-34
- Blade and jamb seals

### SEVCD-33

- 316 stainless steel airfoil blade
- 316 stainless steel construction
- Blade and jamb seals

## Models VCD-33, 34, & SEVCD-33

Dimension inches	12x12			24x24			36x36			12x48			48x12		
AMCA figure	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5
Velocity (fpm)	Pressure Drop in. wg														
500	.03	.01	.04	.01	.01	.03	.01	.01	.03	.01	.01	.03	.02	.01	.03
1000	.12	.06	.18	.06	.02	.13	.06	.02	.12	.05	.02	.12	.08	.04	.14
1500	.26	.13	.42	.12	.06	.29	.12	.05	.27	.12	.06	.27	.18	.10	.32
2000	.46	.23	.75	.22	.10	.52	.22	.09	.48	.21	.10	.49	.33	.18	.57
2500	.72	.37	1.17	.34	.16	.81	.34	.14	.75	.33	.16	.77	.51	.29	.89
3000	1.04	.53	1.68	.49	.23	1.17	.49	.21	1.08	.48	.24	1.11	.74	.42	1.28
3500	1.41	.73	2.29	.67	.32	1.60	.67	.29	1.48	.65	.33	1.51	1.0	.57	1.75
4000	1.84	.95	2.09	.87	.42	2.14	.88	.38	1.93	.85	.43	1.97	1.31	.74	2.29

# ► Pressure Drop Data

## Model VCD-33V

Dimension inches	12x12			24x24			36x36			12x48			48x12		
AMCA figure	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5
Velocity (fpm)	Pressure Drop in. wg														
500	.03	.01	.04	.01	.01	.03	.01	.01	.03	.02	.01	.03	.01	.01	.03
1000	.12	.06	.18	.06	.02	.13	.06	.02	.12	.08	.04	.14	.05	.02	.12
1500	.26	.13	.42	.12	.06	.29	.12	.05	.27	.18	.10	.32	.12	.06	.27
2000	.46	.23	.75	.22	.10	.52	.22	.09	.48	.33	.18	.57	.21	.10	.49
2500	.72	.37	1.17	.34	.16	.81	.34	.14	.75	.51	.29	.89	.74	.16	.77
3000	1.04	.52	1.68	.49	.23	1.17	.49	.21	1.08	.74	.42	1.28	.48	.24	1.11
3500	1.41	.73	2.29	.67	.32	1.60	.67	.29	1.48	1.0	.57	1.75	.65	.33	1.51
4000	1.84	.95	2.09	.87	.42	2.14	.88	.38	1.93	1.31	.74	2.29	.85	.43	1.97



**VCD-33V**

- Vertical galvanized airfoil blade
- Blade and jamb seals

## Models VCD-40, 42, 43

Dimension inches	12x12			24x24			36x36			12x48			48x12		
AMCA figure	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5
Velocity (fpm)	Pressure Drop in. wg														
500	.05	.03	.07	.01	.01	.04	.01	.01	.02	.01	.01	.03	.03	.02	.05
1000	.18	.12	.28	.05	.03	.17	.04	.02	.12	.01	.04	.18	.11	.06	.19
1500	.43	.28	.62	.12	.06	.37	.09	.05	.28	.14	.09	.40	.25	.14	.44
2000	.76	.49	1.11	.22	.11	.66	.17	.08	.50	.25	.16	.72	.44	.25	.78
2500	1.19	.77	1.73	.34	.17	1.04	.26	.13	.78	.39	.25	1.12	.69	.39	1.21
3000	1.71	1.11	2.50	.49	.24	1.50	.38	.19	1.13	.57	.36	1.62	1.0	.57	1.75
3500	2.33	1.51	3.41	.66	.33	2.04	.51	.26	1.53	.77	.49	2.21	1.36	.77	2.38
4000	3.04	1.98	4.45	.87	.43	2.66	.67	.34	2.01	1.01	.64	2.88	1.78	1.01	3.11



**VCD-40**

- Extruded aluminum airfoil blade
- Blades contained within the frame
- Blade and jamb seals

**VCD-42 & 43**

- Extruded aluminum airfoil blade
- Galvanized frame - VCD-42
- Aluminum frame - VCD-43
- Blade and jamb seals

## Models VCD-42V, 43V

Dimension inches	12x12			24x24			36x36			12x48			48x12		
AMCA figure	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5	5.2	5.3	5.5
Velocity (fpm)	Pressure Drop in. wg														
500	.05	.03	.07	.01	.01	.04	.01	.01	.02	.03	.02	.05	.01	.01	.03
1000	.18	.12	.28	.05	.03	.17	.04	.02	.12	.11	.06	.19	.01	.04	.18
1500	.43	.28	.62	.12	.06	.37	.09	.05	.28	.25	.14	.44	.14	.09	.40
2000	.76	.49	1.11	.22	.11	.66	.17	.08	.50	.44	.25	.78	.25	.16	.72
2500	1.19	.77	1.73	.34	.17	1.04	.26	.13	.78	.69	.39	1.21	.39	.25	1.12
3000	1.71	1.11	2.50	.49	.24	1.50	.38	.19	1.13	1.0	.57	1.75	.57	.36	1.62
3500	2.33	1.51	3.41	.66	.33	2.04	.51	.26	1.53	1.36	.77	2.38	.77	.49	2.21
4000	3.04	1.98	4.45	.87	.43	2.66	.67	.34	2.01	1.78	1.01	3.11	1.04	.64	2.88

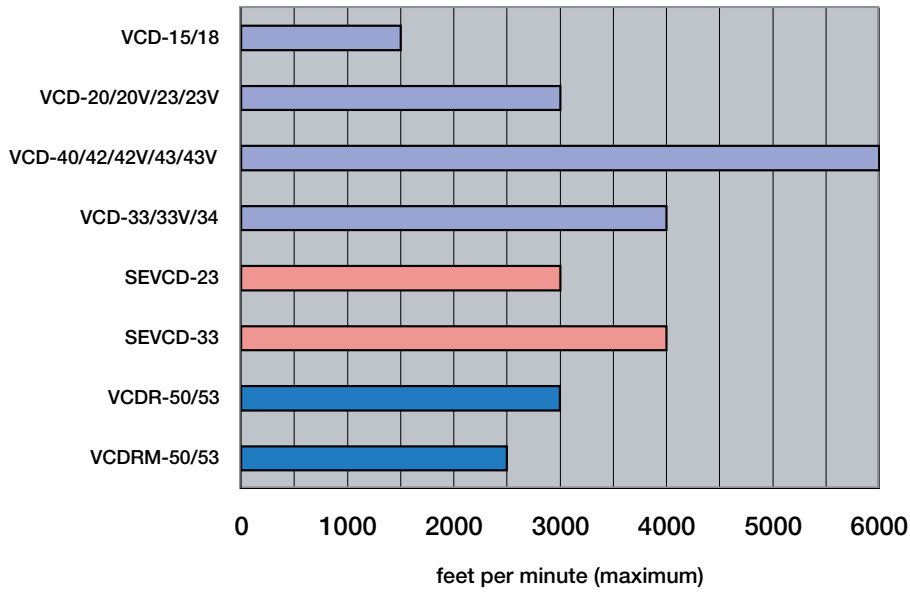


**VCD-42V, 43V**

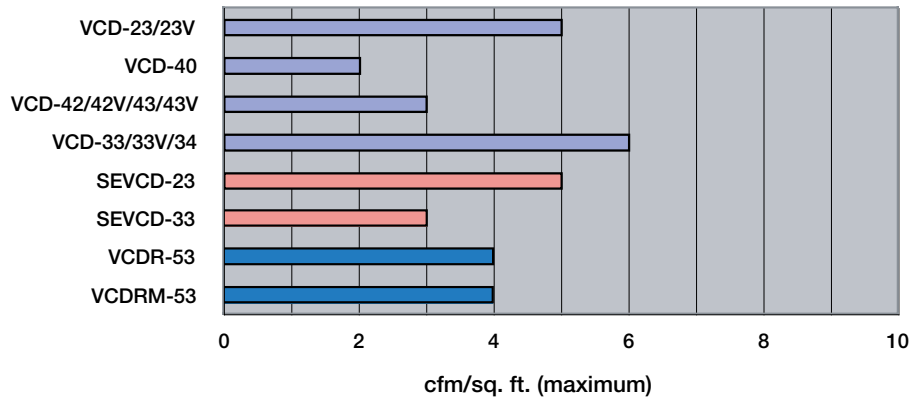
- Vertical extruded aluminum airfoil blade
- Blade and jamb seals

# ► *Volume Control Damper Performance*

## Velocity

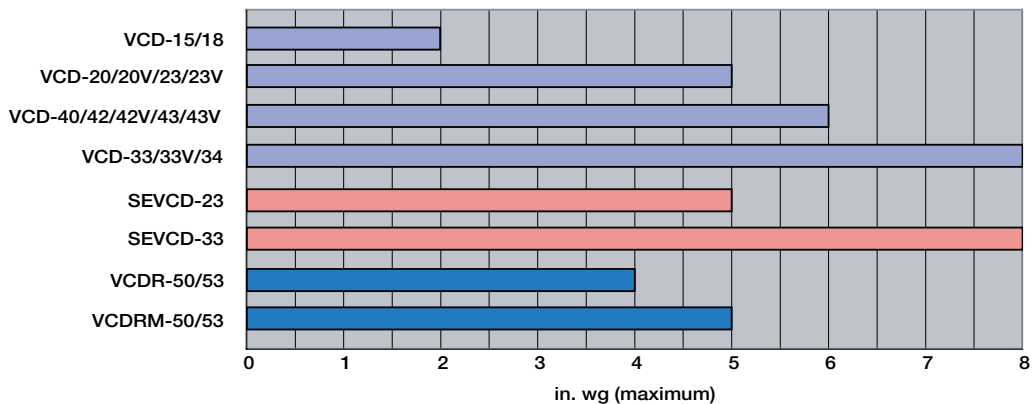


## Leakage



Leakage rating based on 1 in. wg

## Pressure



# ► Volume Control Dampers Quick Selection Chart

X=standard O=optional		VCD-15	VCD-18	VCD-20	VCD-20V	VCD-23	VCD-23V	VCD-33	VCD-33V	VCD-34	VCD-40
Blade Profile	Single Blade										
	3V	X	X	X		X					
	3V-Vertical Blade				X		X				
	Airfoil							X			X
	Airfoil-Vertical Blade								X		
	Airfoil-Insulated									X	
Frame Material	Galvanized	X	X	X	X	X	X	X	X	X	
	304 Stainless Steel			O	O	O	O	O	O	O	
	316 Stainless Steel										
	Aluminum			O	O	O	O				X
Blade Material	Galvanized	X	X	X	X	X	X	X	X	X	
	304 Stainless Steel			O	O	O	O	O	O	O	
	316 Stainless Steel										
	Aluminum			O	O	O	O				X
Frame Gauge (in mm)	20 (1.0)										
	16 (1.5)	X	X	X	X	X	X	X	X	X	
	14 (2)			O	O	O	O	O	O	O	
	12 (2.8)			O	O	O	O	O	O	O	.125 (3.2)
Blade Seals	Vinyl		X			X	X				
	Silicone					O	O	X	X	X	X
Jamb Seals	304 Stainless Steel		X			X	X	X	X	X	X
	316 Stainless Steel										
Bearings	Synthetic	X	X	X	X	X	X	X	X	X	X
	Bronze	O	O	O	O	O	O	O	O	O	O
	304 Stainless Steel	O	O	O	O	O	O	O	O	O	O
	316 Stainless Steel										
Axles	Steel	X	X	X	X	X	X	X	X	X	X
	304 Stainless Steel			O	O	O	O	O	O	O	O
	316 Stainless Steel										
Linkage Material	Steel	X	X	X	X	X	X	X	X	X	X
	304 Stainless Steel			O	O	O	O	O	O	O	O
	316 Stainless Steel										
Accessories	Sleeves	O	O	O	O	O	O	O	O	O	
	Transitions	O	O	O	O	O	O	O	O	O	
	Actuators*	O	O	O	O	O	O	O	O	O	O
	Flanges**	O	O	O	O	O	O	O	O	O	O
	Retaining Angles	O	O	O	O	O	O	O	O	O	
	Security Bars	O	O	O	O	O	O	O	O	O	
Paint Finishes	Baked Enamel			O	O	O	O	O***	O***	O***	O***
	Epoxy			O	O	O	O	O***	O***		O***
	Hi Pro Polyester			O	O	O	O	O***	O***		O***
Sizing inches (mm)	Minimum Size	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)
	Maximum Single Section Size	48x60 (1219x1524)	48x60 (1219x1524)	48x74 (1219x1880)	74x48 (1880x1219)	48x74 (1219x1880)	74x48 (1880x1219)	60x74 (1524x1880)	74x60 (1880x1524)	60x74 (1524x1880)	60x74 (1524x1880)
	Maximum Multi Section Size	84x60 (2134x1524)	84x60 (2134x1524)	Unlimited	NA	Unlimited	NA	Unlimited	NA	Unlimited	Unlimited

\* Actuators include manual, 24V, 120V, 240V, and pneumatic.

\*\* Flanges include single, single reverse, and double flange.

\*\*\* On airfoil blade dampers, the inside of the blade is not painted.

# ► Volume Control Dampers Quick Selection Chart

X=standard O=optional		VCD-42	VCD-42V	VCD-43	VCD-43V	SEVCD-23	SEVCD-33	VCDR-50	VCDR-53	VCDRM-50	VCDRM-53
Blade Profile	Single Blade							X	X		
	3V					X				X	X
	3V-Vertical Blade										
	Airfoil	X		X			X				
	Airfoil-Vertical Blade		X		X						
	Airfoil-Insulated										
Frame Material	Galvanized	X	X					X	X	X	X
	304 Stainless Steel							O	O	O	O
	316 Stainless Steel					X	X				
	Aluminum			X	X						
Blade Material	Galvanized							X	X	X	X
	304 Stainless Steel							O	O	O	O
	316 Stainless Steel					X	X				
	Aluminum	X	X	X	X						
Frame Gauge (in mm)	20 (1.0)							X	X		
	16 (1.5)	X	X			X	X				
	14 (2)	O	O							X	X
	12 (2.8)	O	O	.125 (3.2)	.125 (3.2)					.125 (3.2)	.125 (3.2)
Blade Seals	Vinyl					X					X
	Silicone	X	X	X	X	O	X		X		
Jamb Seals	304 Stainless Steel	X	X	X	X						X
	316 Stainless Steel					X	X				
Bearings	Synthetic	X	X	X	X						
	Bronze	O	O	O	O					X	X
	304 Stainless Steel	O	O	O	O			X	X	O	O
	316 Stainless Steel					X	X				
Axles	Steel	X	X	X	X			X	X	X	X
	304 Stainless Steel	O	O	O	O			O	O	O	O
	316 Stainless Steel					X	X				
Linkage Material	Steel	X	X	X	X					X	X
	304 Stainless Steel	O	O	O	O					O	O
	316 Stainless Steel					X	X				
Accessories	Sleeves	O	O			O	O				
	Transitions	O	O			O	O				
	Actuators*	O	O	O	O	O	O	O	O	O	O
	Flanges**	O	O	O	O	O	O				
	Retaining Angles	O	O			O	O				
	Security Bars	O	O			O	O				
Paint Finishes	Baked Enamel	O***	O***	O***	O***			O	O		
	Epoxy	O***	O***	O***	O***			O	O		
	Hi Pro Polyester	O***	O***	O***	O***			O	O		
Sizing Inches (mm)	Minimum Size	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	6x6 (152x152)	5 (127)	5 (127)	10 (254)	10 (254)
	Maximum Single Section Size	60x74 (1524x1880)	74x60 (1880x1524)	60x74 (1524x1880)	74x60 (1880x1524)	48x74 (1219x1880)	60x74 (1524x1880)	24 (610)	24 (610)	36 (914)	36 (914)
	Maximum Multi Section Size	Unlimited	NA	Unlimited	NA	Unlimited	Unlimited	NA	NA	NA	NA

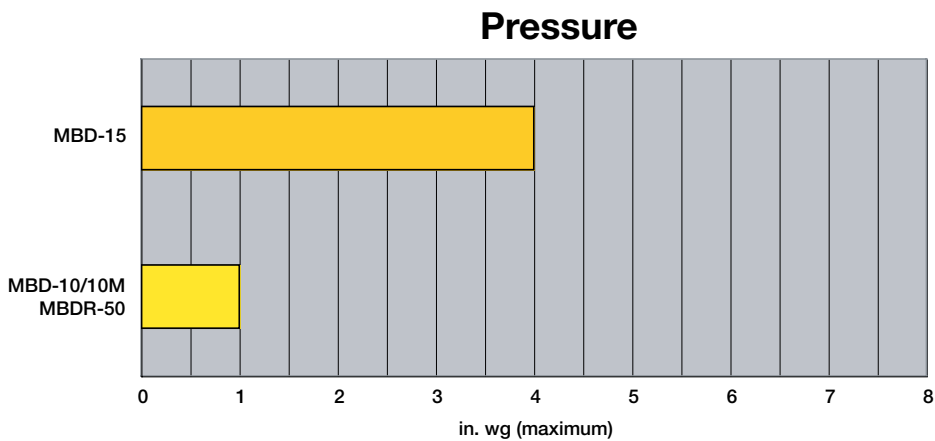
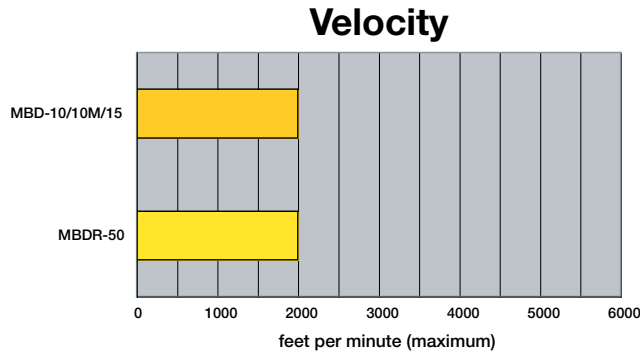
\* Actuators include manual, 24V, 120V, 240V, and pneumatic.

\*\* Flanges include single, single reverse, and double flange.

\*\*\* On airfoil blade dampers, the inside of the blade is not painted.

# ▶ Manual Balancing Damper Quick Selection Chart

Manual balancing dampers are designed to regulate flow of air in a HVAC system. Manual balancing dampers are not intended to be used in applications for positive shut off or for automatic control.



X=standard O=optional	Blade Profile		Material	Frame Gauge (in mm)			Bearings		Axles	Linkage Material	Actuator		Sizing inches (mm)		
	Single Blade	3V		20 (1.0)	18 (1.3)	16 (1.5)	Synthetic	Bronze			Steel	Steel	Manual Quadrant	1 1/2 in. Standoff Bracket	Minimum Size
<b>MBD-10</b>	X		X		X						X	O	6 x 4 (152 x 102)	36 x 12 (914 x 305)	NA
<b>MBD-10M</b>	X		X		X		X				X	O	8 x 4 (203 x 102)	36 x 12 (914 x 305)	NA
<b>MBD-15</b>		X	X			X	X	O	X	X	X	X	6 x 6 (152 x 152)	48 x 60 (1219 x 1524)	96x96 (2438x2438)
<b>MBDR-50</b>	X		X	X			X		X		X	O	5 (127)	24 (610)	NA



**MBD-10**  
• Single Blade



**MBD-15**  
• Multi-blade  
• Meets SMACNA recommended construction requirements



**MBDR-50**  
• Round Blade

## ► Specialty Control Dampers

### • IAQ-42 - Air flow measuring control damper

The IAQ-42 is an air measuring control damper that utilizes patented Speciflow™ technology. The IAQ-42 will control air to prevent:

- Over ventilation
- Provide energy savings during low occupancy periods
- Under ventilation

The Speciflow™ technology built into the controller measures the pressure, position of the damper blades, and temperature of the air flowing through the damper.

The IAQ-42 can help buildings meet the indoor/outdoor air requirements of ASHRAE Standard 62 or California Title 24 by providing accurate monitoring and control of outside air. You can earn LEED-EB credits for air monitoring, increased ventilation, and ultra low leakage.

The IAQ-42 is provided with a factory supplied honeycomb air straightener (4 or 6 in. louver is optional), 24 Vac modulating actuator, air pressure pickups mounted on the damper blades, temperature sensors to allow the controller to correct airflow rate, and factory calibrated controller (without controller is optional).



IAQ-42 with straightener



IAQ-42 with a 4 or 6 inch louver

### • ICD - Insulated control damper

The ICD series of dampers was developed for applications where it is necessary to minimize the transfer of heat or cold penetration and reduce condensation. ICD series dampers can be used in applications down to -70°F for:

- Cold food storage warehouses
- Buildings/warehouse
- Rooftop intake or exhaust

The ICD-45 features:

- Insulated thermally broken hat channel frame which provides an insulating barrier from the ductwork
- Insulated thermally broken airfoil shaped blades that separate the outside air from the inside of the ductwork
- Silicone blade and jamb seals provide superior leakage protection
- Dual bearing construction features no metal-to-metal or metal-to-plastic contact
- Meets IECC (International Energy Conservation Code) leakage of less than 3 cfm/sq. ft. @ 1 in. wg.



Cross section of thermally broken frame and blade



## ▶ *Heavy Duty/Industrial Dampers*

Did you know that we offer a full line of Heavy Duty Dampers?

Heavy duty dampers are our specialty and no matter what the project, our dedicated engineering staff will work to develop a custom solution to meet your needs. Our numerous industrial products include:



### • *Control Dampers*

Heavy duty/Industrial control dampers have a heavy duty flanged frame that is designed to regulate airflow and provide shutoff in HVAC or industrial process control systems. This flange type frame is different than the commercial control dampers which have an insert type frame. The rectangular model series is HCD and the round model series is HCDR. Heavy duty/Industrial have a wide range of manual, electric and pneumatic actuators to use. Actuators can be installed at the factory or shipped loose.

Isolation dampers are designed for sealing off airflow to allow access for maintenance and cleaning.

### • *Backdraft & Pressure Relief Dampers*

Backdraft dampers are used in ventilation systems to allow airflow in one direction and prevent airflow in the opposite. A pressure relief damper is developed with an elevated and adjustable start open pressure while providing the backdraft function. When selecting the correct damper for your application, you need to know:

- System velocity and back pressure requirements
- Mounting orientation and airflow direction
- Start open pressure

### • *Blast Dampers*

Blast dampers are designed to close during a blast to isolate the blast. Blast dampers will remain closed or reopen after pressures return to normal. There are two different applications:

- 1) When exhausting air out of a building, the damper will prevent the blast from coming inside the building.
- 2) When used as an intake damper, the damper is designed to prevent the blast inside the building from going outside.

### • *Smoke Dampers*

Heavy duty smoke dampers are used in applications with higher velocity and pressure than standard smoke dampers. These dampers are UL555S certified.

### • *Tunnel Transit*

A tunnel transit damper is a heavy duty damper designed to meet the rigorous environment of a transit tunnel and is especially qualified to withstand the stresses and pressures of such environments. The blades, frame, seals and actuators are designed to meet the standards for NFPA-130, NFPA-502, UL555S and BS 476 which are commonly found in tunnel transit specifications. Because of the demanding requirements of tunnel transit systems, the tunnel transit damper can be specifically designed to meet the requirements of every specification.

#### WARRANTY

Dodge Engineering & Controls warrants this equipment to be free from defects in material and workmanship for a period of one year from the purchase date. Any units or parts which prove defective during the warranty period will be replaced at our option when returned to the factory, transportation prepaid. Dodge Engineering & Controls shall not be liable for damages resulting from misapplication or misuse of its products. Dodge Engineering & Controls will not be responsible for any installation or removal costs. Dodge Engineering & Controls will not be responsible for any service work or backcharges without prior written authorization.

Actuators are warranted by the actuator manufacturer. Should actuators furnished by Dodge Engineering & Controls prove defective during this period, they should be returned to the factory. Call Dodge Engineering & Controls prior to return for proper authorization for returning materials.

Due to continuing research, Dodge Engineering & Controls reserves the right to change specifications without notice.



**DODGE ENGINEERING  
& CONTROLS, INC.**

196 Riverneck Road, Chelmsford, MA 01824 USA

Toll Free (877) 334-2875 • Fax (978) 244-1422 • [www.DEICcontrols.com](http://www.DEICcontrols.com)