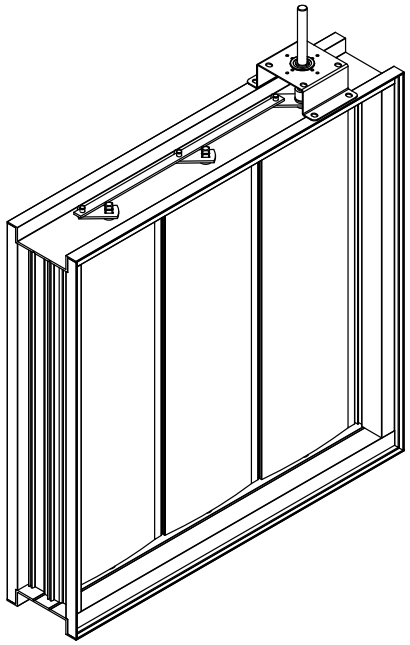
GREENHECK

Model VCD-43V

Vertical Blade Control Damper

Application and Design

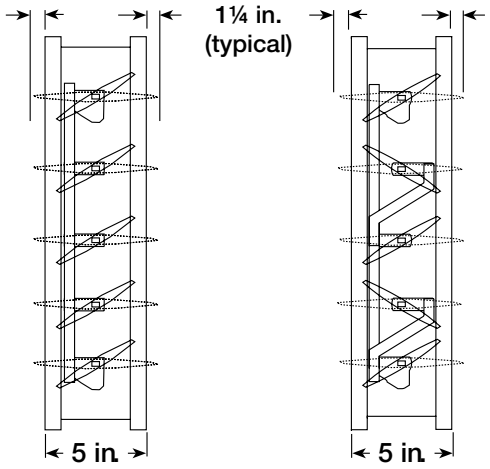
VCD-43V is a low leakage damper with vertical blade orientation designed to meet the highest standards established for commercial control dampers. The VCD-43V is intended for application in medium to high pressure and velocity systems. This model is IECC (International Energy Conservation Code) compliant with a leakage rating of 3 cfm/ft² @ 1 in. wg (55 cmh/m² @ .25 kPa) or less.



Ratings

Pressure: 2.0 - 6.0 in. wg (.5 kPa - 1.5 kPa) pressure differential
Velocity: 3000 fpm to 6000 fpm (15.2 m/s - 30.5 m/s)
Leakage: 6 cfm/ft² @ 4 in. wg (110cmh/m² @ 1 kPa)
3 cfm/ft² @ 1 in. wg (55cmh/m² @ .25 kPa)
Temperature: 200°F (93°C)

Construction	Standard	Optional
Frame Material	Aluminum	-
Frame Type	5 in. x 1in. (127mm x 25mm) hat channel	Single Flange, Reverse Flange, Quick Connect
Blade Material	Extruded Aluminum	-
Blade Type	Airfoil	-
Linkage	Plated steel out of airstream, concealed in jamb	304SS
Axle Bearings	Synthetic with thrush washers	Bronze or 304SS with thrush washers
Axle Material	Plated steel	304SS
Blade Seals	TPE	Silicone
Jamb Seals	304SS	-
Paint Finishes	Mill Finish	Baked Enamel, Epoxy, Hi Pro Polyester, Industrial Epoxy, Kynar/Hylar (70%) Permatector™



Parallel Blades Opposed Blades

Size Limitations

in. (mm) W x H		Frame Type		
		Channel	**Quick Connect**	**Single or Reverse Flange**
Blade Action		**Parallel**	**Parallel**	**Parallel**
Minimum Sizes		6 x 8 (178 x 203)	5 x 8 (127 x 203)	6 x 8 (178 x 203)
Maximum Sizes	**Single Section**	74 x 60 (1880 x 1524)		
*** varies by actuator**				

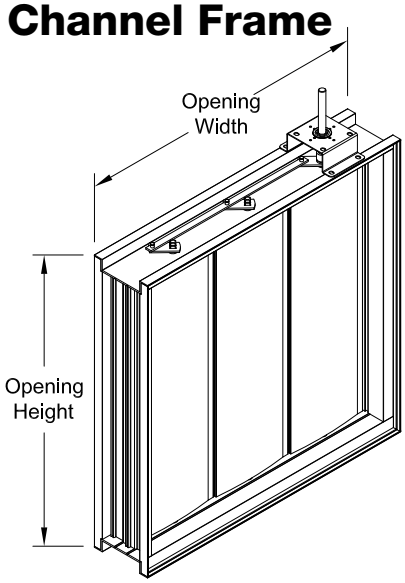
Features Available:

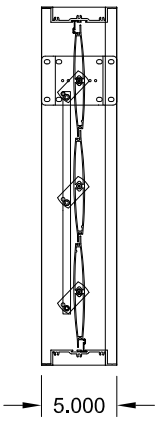
- Blade seals - pressure activated to produce tighter sealing
- Wide range of electric and pneumatic actuators available
- Clean wrap available
- NEMA 3, 4, 4x or 7 available

Installation instructions available at www.greenheck.com

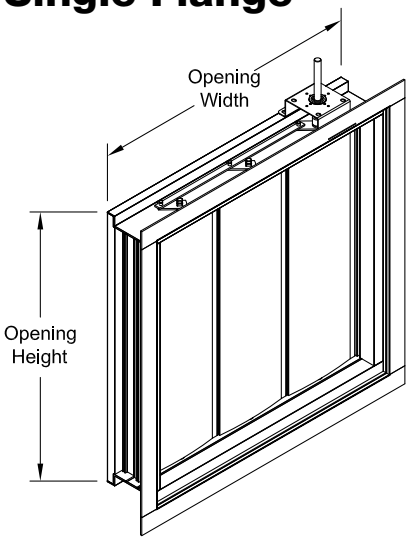
FRAME TYPE OPTIONS VCD-43V

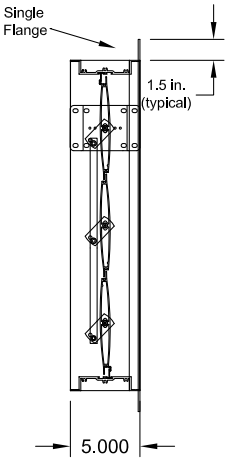
Channel Frame



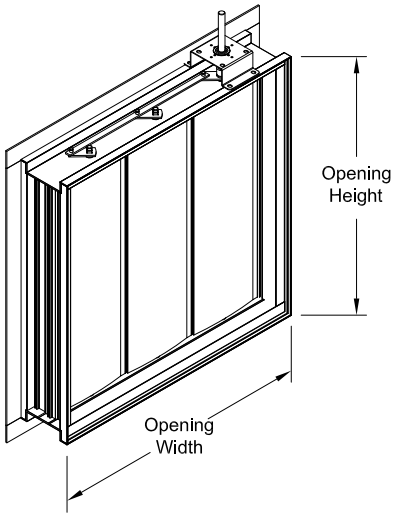


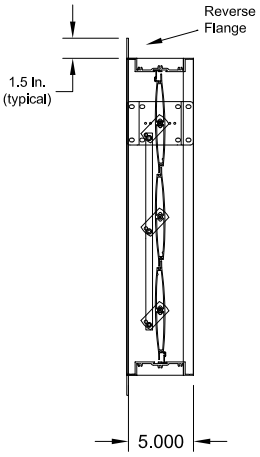
Single Flange





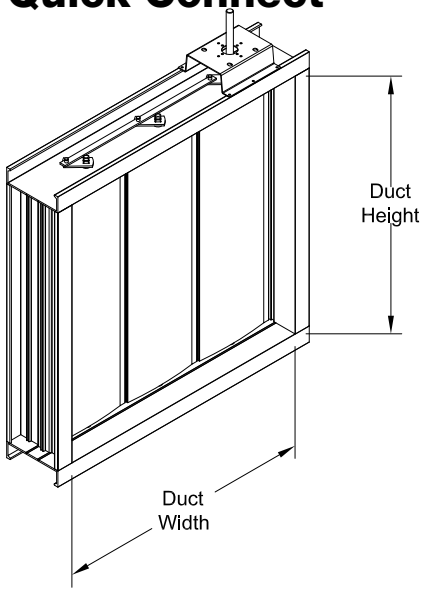
Reverse Flange

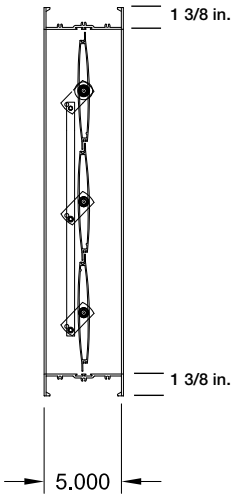




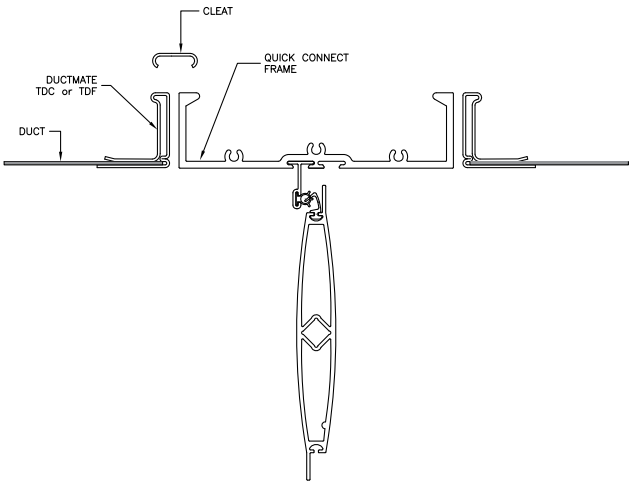
*** Width and height is based on outside dimension. W & H dimensions furnished approximately 1/4 in. (6mm) undersize.**

Quick Connect





Note: **When ordering the Quick Connect Frame, size is based on duct size (or inside dimension of the damper frame). Quick connect frame is actual size.**



Pressure Drop Data VCD-43V

This 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 0.075 lb/ft^3 (1.201 kg/m^3).

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.

AMCA Test Figures

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.

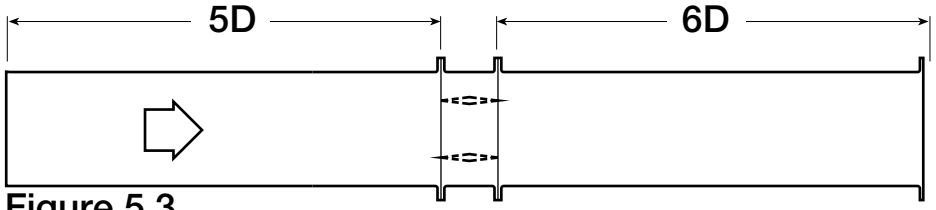


Figure 5.3

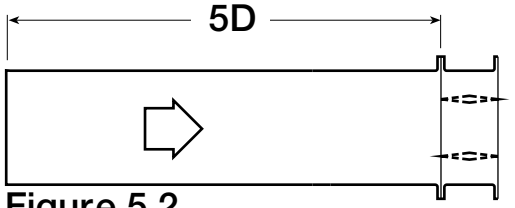


Figure 5.2

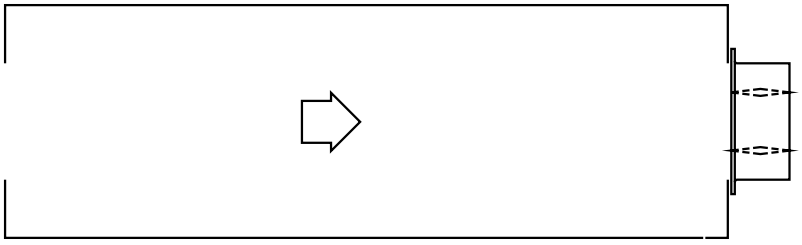


Figure 5.5

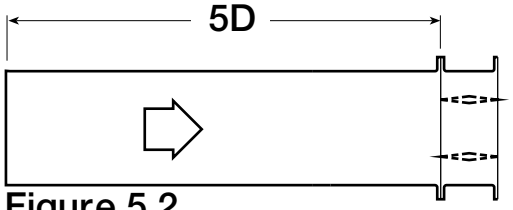


Figure 5.2

12 in. x12 in. (305mm x 305mm)		24x24 (610 mm x 610mm)		36x36 (914mm x 914mm)		12x48 (305mm x 1219mm)		48x12 (1219mm x 305mm)	
Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in wg)	Velocity (fpm)	Pressure Drop (in. wg)
500	.05	500	.01	500	.01	500	.03	500	.01
1000	.18	1000	.05	1000	.04	1000	.11	1000	.01
1500	.43	1500	.12	1500	.09	1500	.25	1500	.14
2000	.76	2000	.22	2000	.17	2000	.44	2000	.25
2500	1.19	2500	.34	2500	.26	2500	.69	2500	.39
3000	1.71	3000	.49	3000	.38	3000	1.00	3000	.57
3500	2.33	3500	.66	3500	.51	3500	1.36	3500	.77
4000	3.04	4000	.87	4000	.67	4000	1.78	4000	1.04

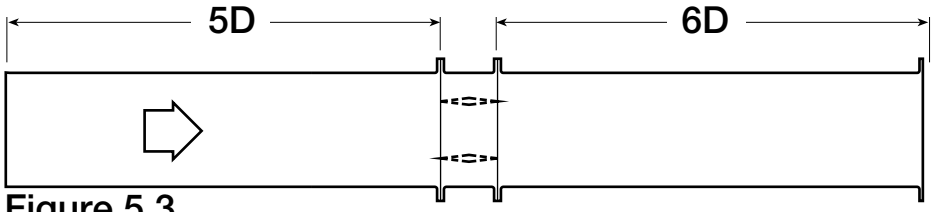


Figure 5.3

12 in. x12 in. (305mm x 305mm)		24x24 (610 mm x 610mm)		36x36 (914mm x 914mm)		12x48 (305mm x 1219mm)		48x12 (1219mm x 305mm)	
Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in wg)	Velocity (fpm)	Pressure Drop (in. wg)
500	.03	500	.01	500	.01	500	.02	500	.01
1000	.12	1000	.03	1000	.02	1000	.06	1000	.04
1500	.28	1500	.06	1500	.05	1500	.14	1500	.09
2000	.49	2000	.11	2000	.08	2000	.25	2000	.16
2500	.77	2500	.17	2500	.13	2500	.39	2500	.25
3000	1.11	3000	.24	3000	.19	3000	.57	3000	.36
3500	1.51	3500	.33	3500	.26	3500	.77	3500	.49
4000	1.98	4000	.43	4000	.34	4000	1.01	4000	.64

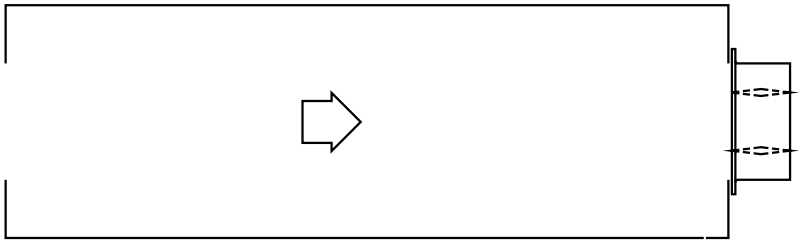
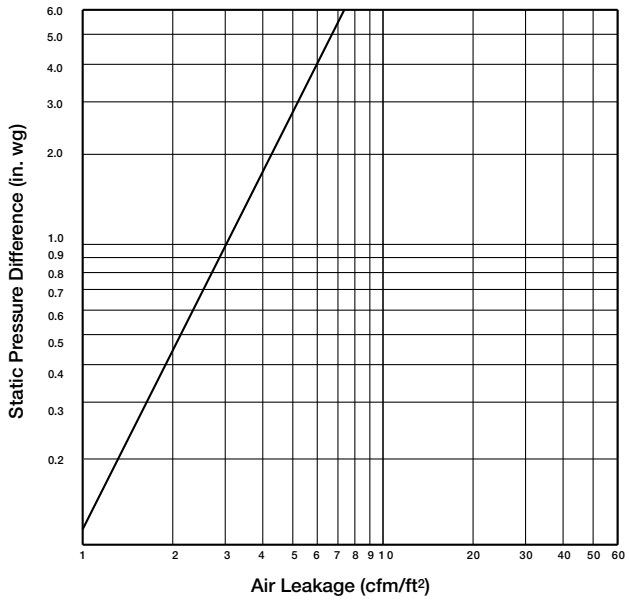


Figure 5.5

12 in. x12 in. (305mm x 305mm)		24x24 (610 mm x 610mm)		36x36 (914mm x 914mm)		12x48 (305mm x 1219mm)		48x12 (1219mm x 305mm)	
Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in. wg)	Velocity (fpm)	Pressure Drop (in wg)	Velocity (fpm)	Pressure Drop (in. wg)
500	.07	500	.04	500	.02	500	.05	500	.03
1000	.28	1000	.17	1000	.12	1000	.19	1000	.18
1500	.62	1500	.37	1500	.28	1500	.44	1500	.40
2000	1.11	2000	.66	2000	.50	2000	.78	2000	.72
2500	1.73	2500	1.04	2500	.78	2500	1.21	2500	1.12
3000	2.50	3000	1.50	3000	1.13	3000	1.75	3000	1.62
3500	3.41	3500	2.04	3500	1.53	3500	2.38	3500	2.21
4000	4.45	4000	2.66	4000	2.01	4000	3.11	4000	2.88

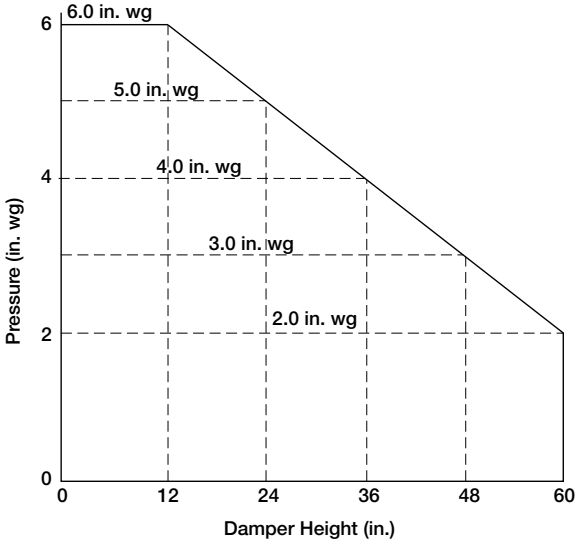
Leakage Data

Damper leakage (with blades fully closed) varies based on the type of low leakage seals applied. Model VCD-43V is available with silicone blade seals and stainless steel jamb seals. Leakage testing was conducted in accordance with AMCA Standard 500-D and is expressed as cfm/ft^2 of damper face area. All data has been corrected to represent standard air at a density of 0.075 lb/ft^3 (1.201 kg/m^3).

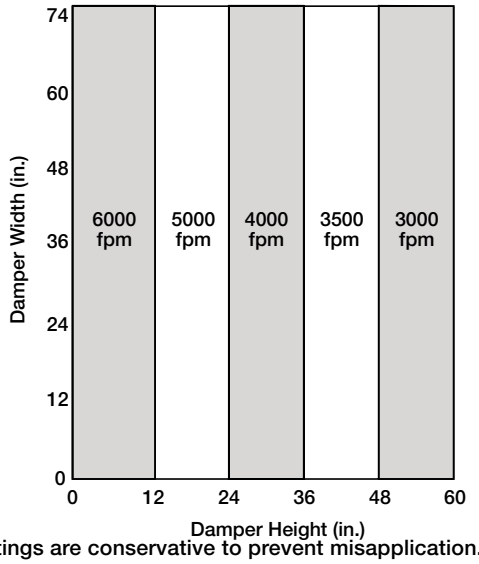


Selection Criteria & Specifications

Pressure Limitations



Velocity Limitations



NOTE: VCD-43V will withstand higher pressures and velocities. Displayed ratings are conservative to prevent misapplication. Consult Greenheck if you have an application outside these limitations.

Temperatures in excess of 180°F (82ºC) require special consideration.

Specifications

Control dampers meeting the following specifications shall be furnished and installed where shown on plans and/or as described in schedules.

Dampers shall consist of: heavy gauge aluminum frame (0.125 in. [3.2mm] thick) with 5 in. (127mm) depth formed into a structural hat channel shape with reinforced corners; airfoil shaped, extruded aluminum blades (0.063 in. [1.6mm] thick) with metal blade to blade overlap (seal to seal only contact is not acceptable); blades shall be completely symmetrical relative to their axle point, presenting identical resistance to airflow in either direction or pressure on either side of the damper; 1/2 in. (6mm) dia. plated steel axles turning in synthetic (acetal) sleeve bearings; TPE blade seals ; flexible stainless steel jamb seals; and external (out of the airstream) blade-to-blade linkage.

Damper manufacturer's printed application and performance data including pressure, velocity, leakage, and temperature limitations shall be submitted for approval showing damper suitable for pressures to 6 in. wg (1.5 kPa), velocities to 6000 fpm (30.5 m/s) and temperatures to 250°F (121°C).

Damper leakage for approval showing standard air leakage less than 6 cfm/sq.ft. @ 4 in. wg (110cmh/m sq. @ 1 kPa). Testing and ratings to be in accordance with AMCA Standard 500-D.

Basis of design is Greenheck model VCD-43V.

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