VCD-43
Aluminum Control Damper

Application

The VCD-43 is a low leakage damper with extruded aluminum airfoil blades and frame. Smooth profile extruded aluminum airfoil blades insure the lowest resistance to airflow in HVAC systems. This model is intended for application in medium to high pressure and velocity systems.

VCD-43 is IECC (International Energy Conservation Code) compliant with a leakage rating of 3 cfm/ft² at 1 in. wg (55 cmh/m² at .25 kPa) or less.

*W&H dimension furnished approximately 1/4 in. (6mm) undersize.

Damper Ratings

Velocity

Up to 6000 fpm (30.5 m/s)

Pressure

Up to 8 in. wg (2 kPa) - pressure differential
For preesures greater than 8 in. wg, consult factory

Leakage

Class 1A at 1in. wg (0.25 kPa)
Class 1 up to 4-8 in. wg (1-2 kPa)

Temperature

-40°F to 250°F (-40°C to 121°C)

Construction

	Standard	Optional
Frame Material	Aluminum (6063T5)	-
Frame Material Thickness	.125 in. (3.2 mm)	-
Frame Type	5 in. x 1 in. hat channel (127 mm x 25 mm)	Single flange, Reversed flange, Quick connect
Blade Material	Extruded Aluminum (6063T5)	-
Blade Type	Airfoil	-
Blade Action	Opposed	Parallel
Blade Seals	TPE	Silicone
Linkage	Plated steel out of airstream, concealed in jamb	316SS
Axle Bearings	Synthetic (acetal) sleeve	316SS
Axle Material	Plated steel	316SS
Jamb Seal	Stainless Steel	-
Paint Finishes	Mill Finish	Baked Enamel, Hi Pro Polyester, Industrial Epoxy, Kynar/Hylar (70%), Anodize

Size Limitations

in. (mm) W x H		Frame Type		
		Channel	Quick Connect	Single or Reverse Flange
Minimum Sizes*		8 x 6 (203 x 178)	8 x 5 (20 3xx127)	8 x 6 (203 x 178)
Maximum Sizes	Single Section	60 x 78 (1524 x 1981)	60 x 76 (1524 x 1930)	60 x 78 (1524 x 1981)
	Multiple Section	288 x 234 (7315 x 5944)	144 x 152 (3658 x 3861)	288 x 234 (7315 x 5944)
* varies by actuator				

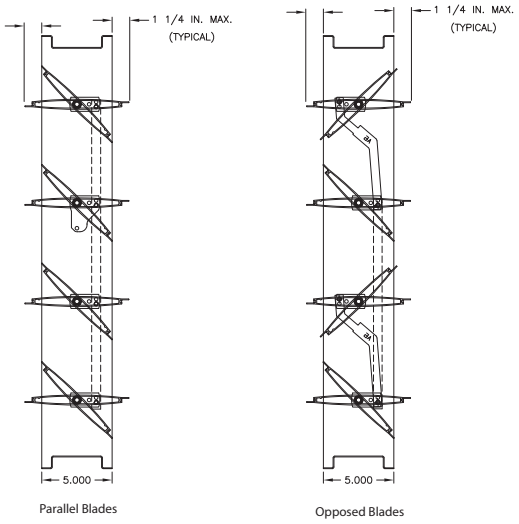
Note

- Low profile head and sill are used on sizes less than 17 in. high (432mm), excluding quick connect frame.
- Electric actuators and manual operators available. Factory supplied actuators are sized for 1500 fpm (7 m/s) and fully-closed differential pressure of 2 in. wg (.5 kPa). Contact factory for actuator sizing on applications exceeding those limits.
- In applications where airflow could be uneven, such as a discharge fan, it is imperative to verify that at no point the maximum velocity exceeds the damper's cataloged velocity.
- Blades must be horizontal for either horizontal or vertical mount. See VCD-43V model for vertical blade applications.

Options

- Actuators (24V, 120V, manual, pull chain, bracket only)
- Actuator mounting (external, external kit (field assembly), internal)
- NEMA enclosures (3, 4, 4X, 7)
- OCI (open or closed indicator)
- Transformers

Blade Operation



Document Links

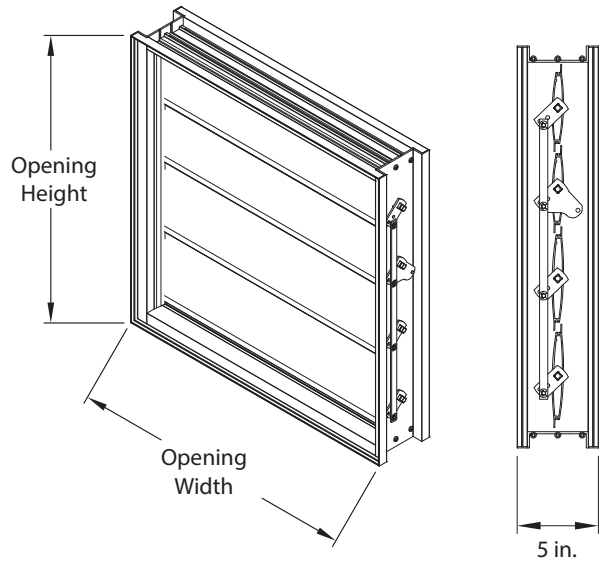
Installation Instructions

Product Catalog

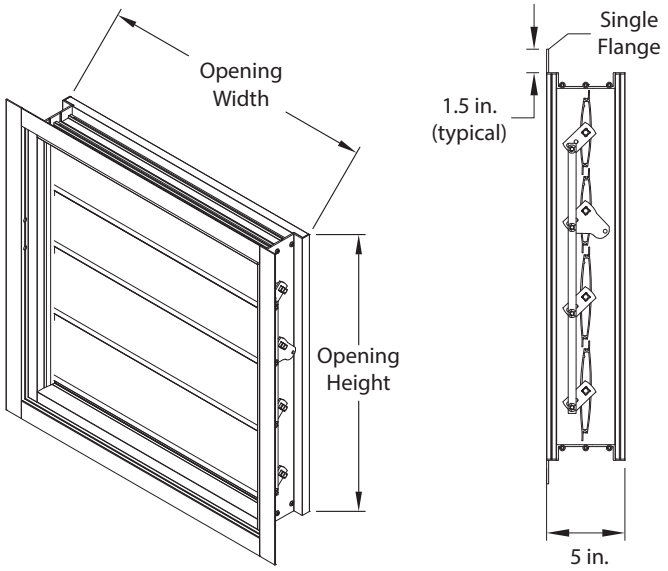
Damper Warranty Statement

Frame Type Options

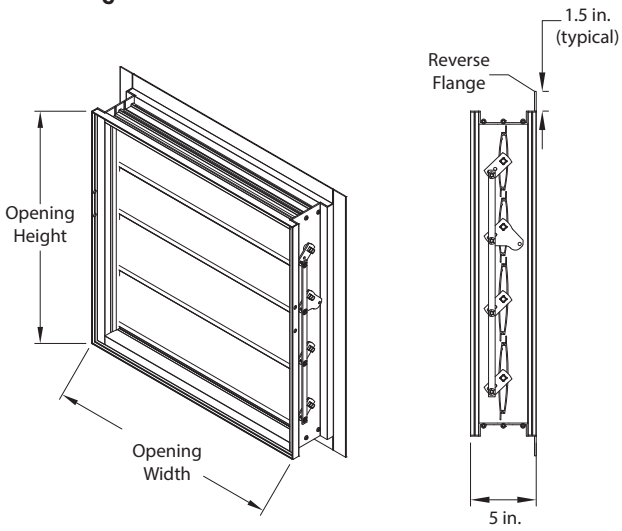
Channel Frame



Single Flange

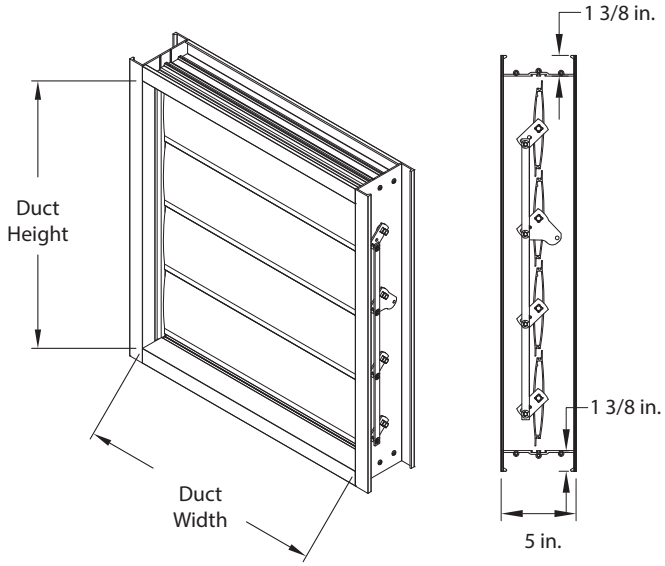


Reverse Flange

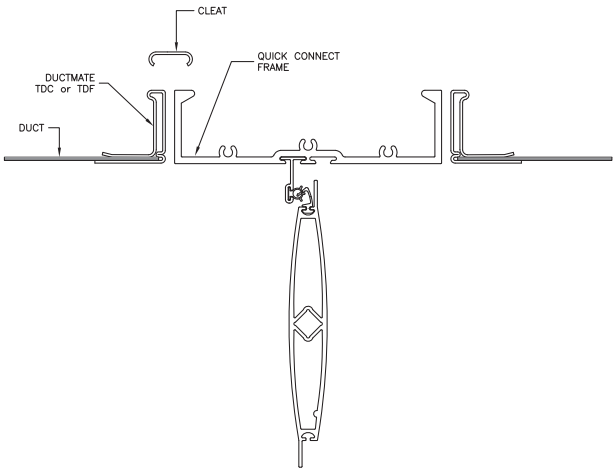


* Width and height is based on outside dimension. W & H dimensions furnished approximately ¼ in. (6mm) undersize.

Quick Connect

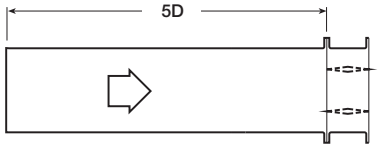


Note: When ordering the Quick Connect Frame, size is based on duct size (or inside dimension of the damper frame). Quick connect frame is actual size.



AMCA Certified Pressure Drop Data

AMCA 5.2



12 in. x 12 in. (305mm x 305mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.06
1500	0.13
2000	0.23
2500	0.35
3000	0.50
3500	0.68
4000	0.88

24 in. x 24 in. (610mm x 610mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.04
1500	0.10
2000	0.18
2500	0.28
3000	0.40
3500	0.54
4000	0.70

36 in. x 36 in. (914mm x 914mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.03
1500	0.06
2000	0.12
2500	0.18
3000	0.26
3500	0.35
4000	0.46

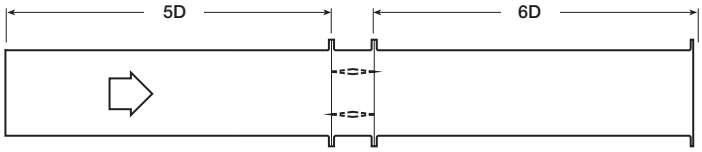
12 in. x 48 in. (305mm x 1219mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.06
1500	0.13
2000	0.23
2500	0.36
3000	0.51
3500	0.71
4000	0.93

48 in. x 12 in. (1219mm x 305mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.03
1500	0.06
2000	0.10
2500	0.16
3000	0.23
3500	0.30
4000	0.39

AMCA 5.3



12 in. x 12 in. (305mm x 305mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.03
1500	0.07
2000	0.14
2500	0.21
3000	0.29
3500	0.39
4000	0.51

24 in. x 24 in. (610mm x 610mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.02
1500	0.04
2000	0.08
2500	0.13
3000	0.19
3500	0.26
4000	0.34

36 in. x 36 in. (914mm x 914mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.01
1500	0.02
2000	0.04
2500	0.06
3000	0.09
3500	0.13
4000	0.17

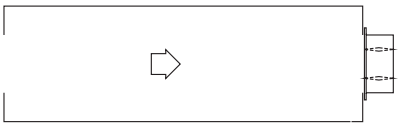
12 in. x 48 in. (305mm x 1219mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.03
1500	0.06
2000	0.11
2500	0.17
3000	0.25
3500	0.34
4000	0.45

48 in. x 12 in. (1219mm x 305mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.02
1500	0.04
2000	0.08
2500	0.12
3000	0.18
3500	0.24
4000	0.31

AMCA 5.5



12 in. x 12 in. (305mm x 305mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.04
1000	0.14
1500	0.31
2000	0.55
2500	0.86
3000	1.23
3500	1.67
4000	2.19

24 in. x 24 in. (610mm x 610mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.03
1000	0.12
1500	0.27
2000	0.48
2500	0.75
3000	1.07
3500	1.47
4000	1.91

36 in. x 36 in. (914mm x 914mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.03
1000	0.10
1500	0.22
2000	0.39
2500	0.61
3000	0.87
3500	1.19
4000	1.56

12 in. x 48 in. (305mm x 1219mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.03
1000	0.11
1500	0.25
2000	0.46
2500	0.72
3000	1.05
3500	1.43
4000	1.87

48 in. x 12 in. (1219mm x 305mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.03
1000	0.11
1500	0.26
2000	0.46
2500	0.72
3000	1.02
3500	1.40
4000	1.83

Leakage

Air leakage is based on operation between 32°F (0°C) and 120°F (49°C).
Tested for leakage in accordance with ANSI/AMCA Standard 500-D, Figure 5.5.
Tested for air performance in accordance with ANSI/AMCA Standard 500-D, Figures 5.2, 5.3 and 5.5.

Torque

Data are based on a torque of 5.0 in.lb./ft² (0.56 N·m) applied to close and seat the damper during the test.

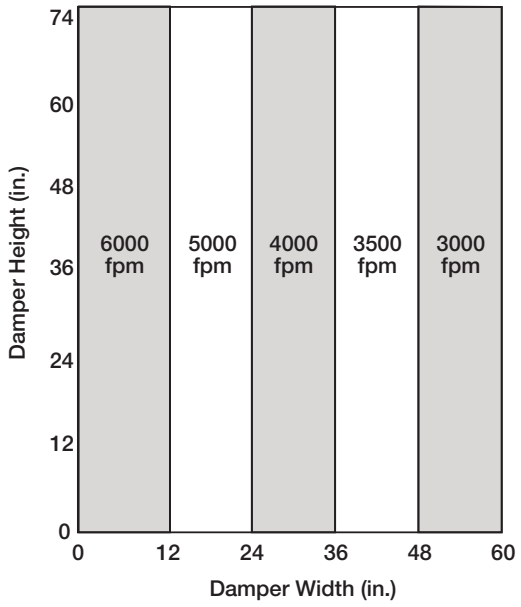
VCD-43	Leakage Class*		
Maximum Damper Width	1 in. wg (0.25 kPa)	4 in. wg (1 kPa)	8 in. wg (2 kPa)
60 in. (1524mm)	1A	1	1
* applies to opposed blades only			

***Leakage Class Definitions**

The maximum allowable leakage is defined as the following:

- Leakage Class 1A - 3 cfm/ft^2 at 1 in. wg (class 1A is only defined at 1 in. wg).
- Leakage Class 1
  - 4 cfm/ft^2 at 1 in. wg
  - 8 cfm/ft^2 at 4 in. wg
  - 11 cfm/ft^2 at 8 in. wg
  - 12.6 cfm/ft^2 at 10 in. wg

Velocity and Temperature Limitations

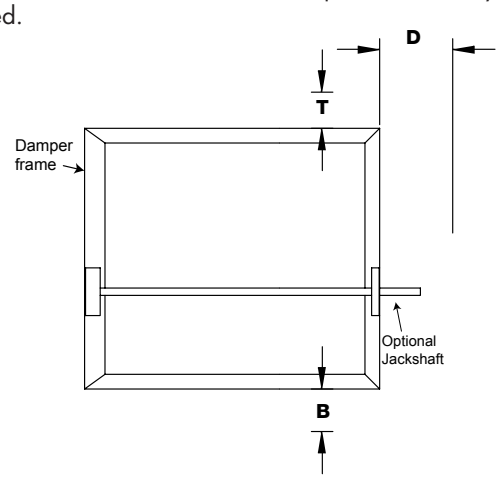


Temperature Limitations

Blade Seal	Temperature Range
TPE	-10°F to 180°F (-23°C to 82°C)
Silicone	-40°F to 250°F (-40°C to 121°C)

Space Envelopes

Externally mounted actuator always require space outside the damper. The "D" dimension illustrates the clearance required for various available actuators. Dampers less than 18 in. (457mm) high may required actuator clearances above and/or below the damper frame. “B” and “T” dimensions are worst case clearance requirements for some dampers less than 18 in. (457mm) high. All damper sizes under 18 in. (457mm) high do not require these worst case clearances. If space availability above or below the damper is limited, each damper size should be individually evaluated.

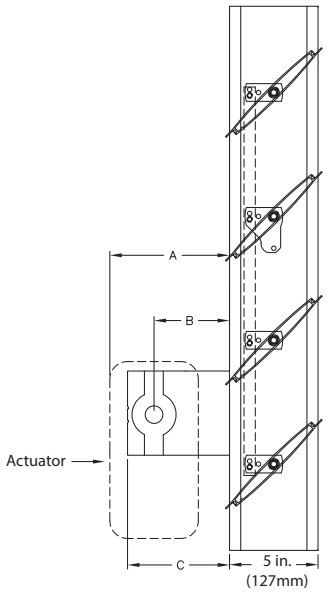


Actuator Type/Model	Height	T	B	D
	Inches (mm)	Inches (mm)		
AFBUP (-S) and FSNF Series, Belimo MSxx20 Series, Honeywell	≥6 to <10	0	12¾	6
	≥10 to <18	0	2	6
	≥18	0	0	10
FSLF, LF and TFB Series, Belimo	≥6 to <10	0	3½	6
	≥10	0	0	6
MSxx04 & MSxx09 Series, Honeywell	≥6 to <9	0	4¾	6
	≥9	0	0	6
MS75xx Series, Honeywell	≥6 to <10	0	12¾	6
	≥10 to <18	0	7	6
	≥18	0	0	6

Internal mount only Actuator model	A	B	C
All except - EFB & EFCX Series	7¾ in. (197 mm)	3¾ in. (95 mm)	5⅜ in. (136.5 mm)
EFB & EFCX Series	8½ in. (216 mm)	6 in. (152mm)	8½ in. (216 mm)

Mounting

- External - includes extension pin (standoff bracket optional)
- External kit - actuator and all mounting hardware
- Internal - blade lever



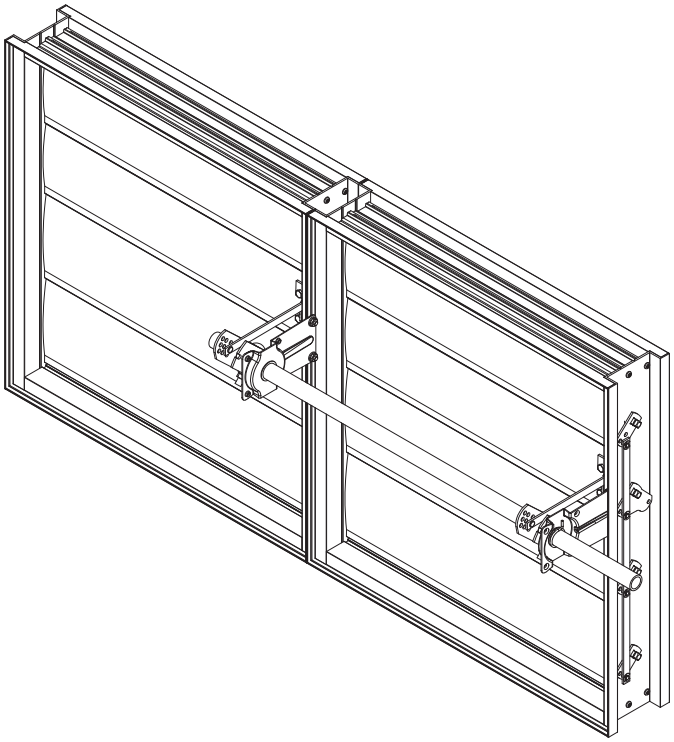
This drawing depicts the worse case clearance requirements for an actuator with a jackshaft.

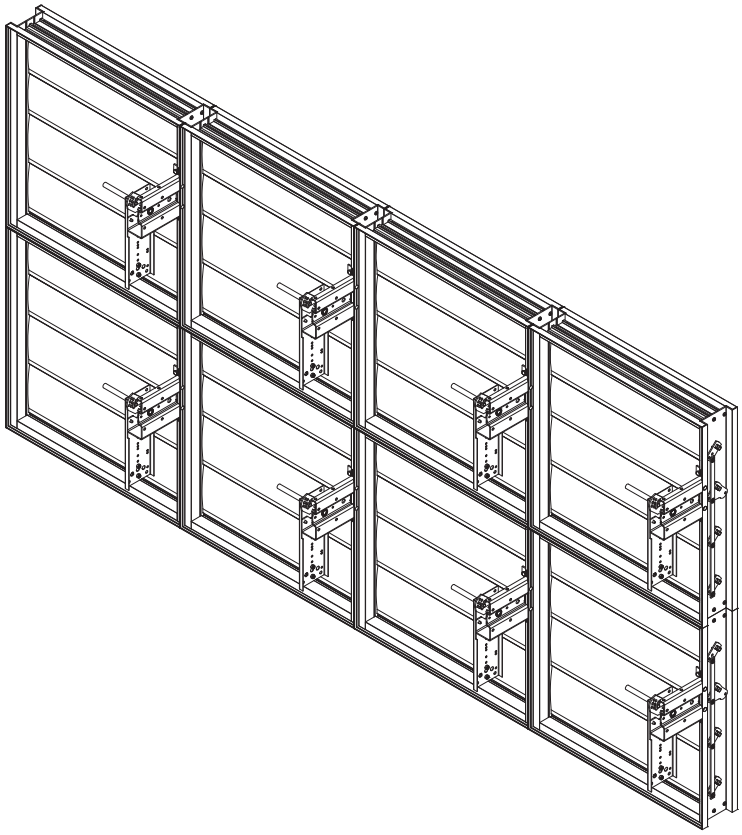
Multi-Section Dampers

Dampers larger than the maximum single section size, will be made up of a multiple of equal size sections. Multiple section dampers can be jackshafted together so that all sections operate together as shown below.

NOTE: Dampers larger than 60 in. x74 in. (1524mm x 1880mm) are not intended to be structurally self supporting. Additional horizontal bracing is recommended to support the weight of the damper and vertical bracing should be installed as required to hold against system pressure.

Refer to IOM document 483509 for structural support requirements on multi-section assemblies.





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