

Application

The VCD-23 is a low leakage control damper used in buildings to regulate the flow air in an HVAC system. They can be used in intake, exhaust, or mixed air application.

This model is IECC (International Energy Conservation Code) compliant with a leakage rating of 3 cfm/ft² at 1 in. wg (55 cmh/ m^2 at .25 kPa) or less.

Damper Ratings

Velocity

Up to 3000 fpm (15.2 m/s)

Pressure

Up to 5 in. wg (1.2 kPa) - pressure differential

Leakage

Class 1A at 1in. wg (0.25 kPa) Class 1 up to 5 in. wg (1.2 kPa)

Temperature

-40°F to 250°F (-40°C to 121°C). Consult factory for higher temperature

Construction

	Standard	Optional	
Frame Galvanized Steel		304SS	
FrameMaterial16 ga. (1.5 mm)Thickness		12 ga. (2.7 mm) [*]	
Frame Type 5 in. x 1 in. hat channel		Single flange, Reversed flange, Double flange	
Blade Material	Galvanized steel	304SS	
Blade Thickness	16 ga. (1.5mm)	-	
Blade Type	3V	-	
Blade Action	Opposed	Parallel	
Blade Seals	TPE	Silicone, None**	
Linkage	Plated steel out of airstream, concealed in jamb		
Axle Bearings Synthetic		316SS	
Axle Material	1/2 in. dia. Plated steel	316SS	
Jamb Seal	Stainless Steel	-	
Paint Finishes Mill Finish		Baked Enamel, Hi Pro Polyester, Industrial Epoxy	

*When 12 ga. frame is selected and the damper height is less than 17 inches, low profile top and bottom frame members are utilized. These low profile frame members will be made from 16 ga. material.

**AMCA leakage applies when damper is provided with blade seals.

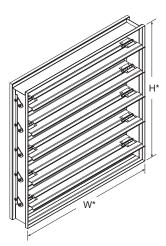




* W&H dimension furnished approximately 1/4 in. (6mm) undersize.

Size Limitations

WхH	Minimum	Maximum Size		
W X T	Size	Single Section	Multiple Section	
Inches	6 x 6	48 x 74	Unlimited	
mm	152 x 152	1219 x 1880	Unlimited	



Notes:

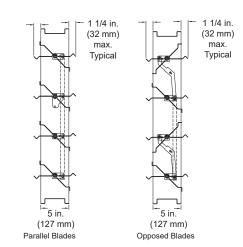
- Low profile head and sill are used on sizes less than 17 in. (432mm) high
- Electric actuator and manual quadrant available. Factory supplied actuators are sized for 1500 fpm (7m/s) and fully closed differential pressure of 2 in. wg (.5 kPa). Contact factory for actuator sizing on applications exceeding 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. If you need vertical blades, see VCD-23V model.



Blade Operation

Parallel blade operation - this configuration requires the damper blades to rotate in the same direction, parallel to one another.

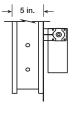
Opposed blade operation - adjacent damper blades rotate opposite one another.

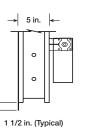


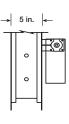
Options

- Actuators (24V, 120V, manual, pull chain)
- Actuator mounting (external, external kit (field assembly), internal)
- Flanges
- Multi-section fastening
- NEMA enclosures (3, 4, 4X, 7)
- OCI (open or closed indicator)
- R Transition
- Retaining angles
- Security bars
- Sleeves
- Transformers

Flange Options







Single Flange

Reversed Flange

Double Flange

Shown with optional internally mounted actuator.

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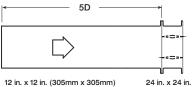
AMCA Certified Pressure Drop Data



Greenheck Fan Corporation certifies that the model VCD-23 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Programs. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance ratings.

AMCA 5.2

Ve



in. x 12 in. (30	24 in. x 24	
ocity (fpm)	Pressure Drop (in. wg)	Velocity (f
500	0.01	500
1000	0.05	1000
1500	0.11	1500
2000	0.19	2000
2500	0.29	2500
3000	0.41	3000
3500	0.55	3500
4000	0.72	4000

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

0.40

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

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.02
1500	0.05
2000	0.09
2500	0.14
3000	0.19
3500	0.27
4000	0.25

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

Velocity (fpm)

500

1000

1500 2000

2500

3000

3500

4000

Pressure Drop

(in. wg)

0.01

0.04 0.08

0.15

0.22

0.32

0.43

0.56

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

Velocity (fpm)	Pressure Drop (in. wg)	
500	0.01	
1000	0.03	
1500	0.07	
2000	0.12	
2500	0.18	
3000	0.26	
3500	0.36	
4000	0.47	

AMCA 5.3



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

Velo

ocity (fpm)	Pressure Drop (in. wg)		Ve
500	0.01		
1000	0.03	L	
1500	0.08		
2000	0.13		
2500	0.20		
3000	0.29		
3500	0.40	. [
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	0.07	
2500	0.11	
3000	0.16	
3500	0.21	
4000	0.28	

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

Velocity (fpm)	Pressure Drop (in. wg)	
500	0.01	
1000	0.02	
1500	0.03	
2000	0.06	
2500	0.09	
3000	0.13	
3500	0.19	
4000	0.25	

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

Velocity (fpm)	Pressure Drop (in. wg)	
500	0.01	
1000	0.03	
1500	0.07	
2000	0.12	
2500	0.18	
3000	0.26	
3500	0.36	
4000	0.46	

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	0.22	
3500	0.30	
4000	0.39	

AMCA 5.5





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

Pressure Drop (in. wg) 0.03 0.12 0.26 0.47 0.75 1.04 1.41 1.90

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

elocity (fpm)	Pressure Drop (in. wg)	Velocity (fpn
500	0.03	500
1000	0.13	1000
1500	0.30	1500
2000	0.53	2000
2500	0.82	2500
3000	1.19	3000
3500	1.62	3500
4000	2.10	4000

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

Velocity (fpm)	Pressure Drop (in. wg)
500	0.02
1000	0.10
1500	0.22
2000	0.40
2500	0.62
3000	0.90
3500	1.23
4000	1.62

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

Velocity (fpm)	Pressure Drop (in. wg)		,	
500	0.03			
1000	0.14			
1500	0.32			
2000	0.57			
2500	0.90			
3000	1.29			
3500	1.76			
4000	2.30			

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

Velocity (fpm)	Pressure Drop (in. wg)
500	0.03
1000	0.12
1500	0.28
2000	0.49
2500	0.77
3000	1.12
3500	1.53
4000	2.01



AMCA Certified Leakage Data

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-23	Leakage Class*			
Maximum Damper Width	1 in. wg 4 in. wg 5 in. wg (0.25 kPa) (1 kPa) (1.2 kPa			
48 in. (1219mm)	1A	1	1	



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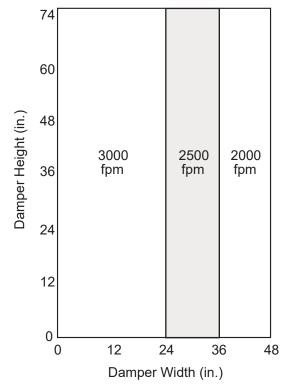
*Leakage Class Definitions

The maximum allowable leakage is defined by AMCA as the following:

• Leakage Class 1A - 3 cfm/ft² at 1 in. wg (class 1A is only defined at 1 in. wg).

- Leakage Class 1
 - 4 cfm/ft² at 1 in. wg
 - 8 cfm/ft² at 4 in. wg
 - 11 cfm/ft² at 8 in. wg
 - 12.6 cfm/ft² at 10 in. wg

Velocity and Temperature Limitations

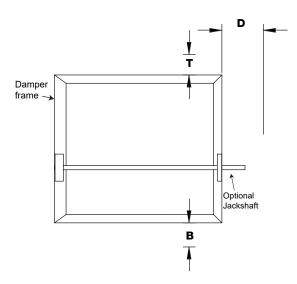


Temperature Limitations

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)
No Seal	-40°F to 250°F (-40°C to 121°C)

Space Envelopes

On dampers less than 18 in. (457mm) high, actuators may also require 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.



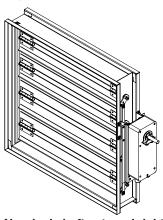
Actuator Tupe/Madal	Height	Т	В	D
Actuator Type/Model	Inches			
AFBUP (-S) and	<u>≥</u> 6 to <10	0	12 ¾	6¼
FSNF Series, Belimo	≥10 to <18	0	2	6¼
MSxx20 Series, Honeywell	<u>≥</u> 18	0	0	6¼
FSLF, LF and TFB Series,	≥6 to <10	0	31⁄2	6¼
Belimo	≥10	0	0	6¼
MSxx04 & MSxx09 Series,	<u>≥</u> 6 to <9	0	4¾	6¼
Honeywell	≥9	0	0	6¼
	<u>≥</u> 6 to <10	0	12¾	61⁄4
MS75xx Series, Honeywell	≥10 to <18	0	7	6¼
	≥18	0	0	6¼
	≥6 to <10	0	12¾	6¼
GRD and GVD Series, Siemens	≥10 to <18	0	2	6¼
	≥18	0	0	6¼
GJD Series, Siemens	≥6 to <10	0	31/2	6¼
	≥10 to <18	0	0	6¼
	<u>≥</u> 18	0	0	6¼

Actuator Mounting

Actuators may be installed at the factory, shipped loose with the necessary linkage and brackets for mounting, or field supplied. For more detail information on actuator mounting, click on link below or scan QR code.



ACTUATOR MOUNTING

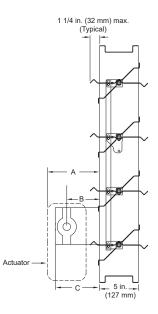


Non-jackshaft external right

Clearance Requirements

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

Internal mount only Actuator model	А	В	С
All except - EFB &	7 ¾ in	3 ¾ in	5 ¾ in
EFCX Series	(197 mm)	(95 mm)	(136.5 mm)
EFB & EFCX Series	8 ½ in	6 in	8 ½ in
	(216 mm)	(152mm)	(216 mm)

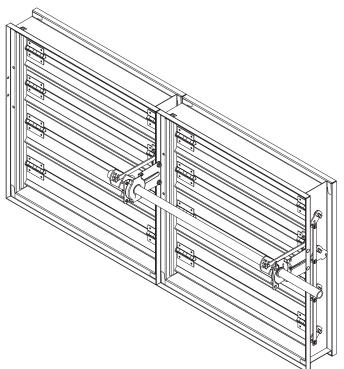


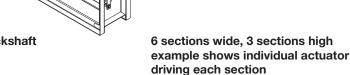


Multi-Section Dampers

Dampers larger than the maximum single section size, will be made up of a multiple of equal size sections.

NOTE: Dampers larger than 48 in. x 74 in. (1219mm x 1880mm) are not intended to be structurally self supporting. Refer to IOM document 463384 for structural support requirements on multi-section assemblies.





2 section example shows single jackshaft driving multiple sections

Document Links



INSTALLATION



CATALOG



SELECTION GUIDE







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