

Application

The VCD-40 is a low leakage control damper with extruded aluminum airfoil blades. Blades are completely contained within the frame allowing the damper to be directly mounted to a louver, filter frame, or similar application with no blade interference.

VCD-40 is IECC (International Energy Conservation Code) compliant with a leakage rating of 3 cfm/ft² at 1 in. wg (55cmh/m² at .25 kPa) or less.

Damper Ratings

Velocity

Up to 6000 fpm (30.5 m/s)

Pressure

Up to 6 in. wg (1.5 kPa) - pressure differential

Leakage

Class 1A at 1 in. wg (0.25 kPa)

Temperature

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



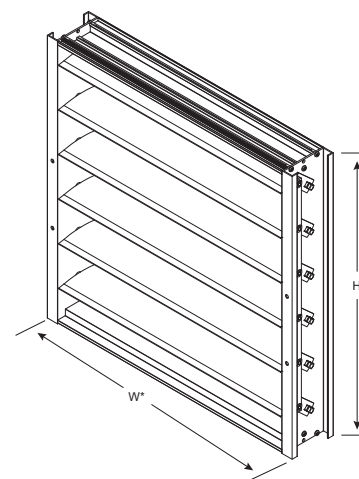
* W and H dimension furnished approximately ¼ in. (6 mm) undersize. If the height is 6 inches, the damper will be undersized an ⅛ in. (3mm).

Size Limitations

| W x H | Minimum Size | Maximum Size | |
|---------------|--------------|----------------|------------------|
| | | Single Section | Multiple Section |
| Inches | 6 x 6 | 60 x 74 | Unlimited |
| mm | 152 x 152 | 1524 x 1880 | Unlimited |

Construction

| | Standard | Optional |
|---------------------------------|--|--|
| Frame Material | Aluminum | - |
| Frame Material Thickness | .125 in. (3.2 mm) minimum wall thickness | - |
| Frame Type | 4 in. x 1 in. (102 mm x 25 mm) hat channel | Single flange, Reversed flange |
| 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 | 316SS |
| Axle Material | ½ in. dia. Plated steel | 316SS |
| Jamb Seal | Stainless Steel | - |
| Paint Finishes | Mill Finish | Baked Enamel, Hi Pro Polyester, Industrial Epoxy Kynar/Hylar (70% Kynar) Anodize |



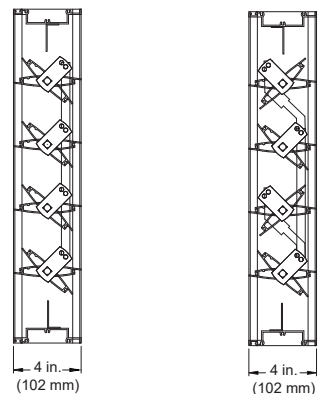
Notes:

- 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.

Blade Operation

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

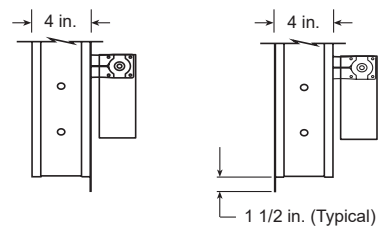
Opposed blade operation - adjacent damper blades rotate opposite one another.



Options

- Actuators (24V, 120V, manual, pull chain)
- Actuator mounting (external, external kit (field assembly), internal)
- Flanges
- NEMA enclosures (3, 4, 4X)
- Retaining angles
- Transformers

Flange Options



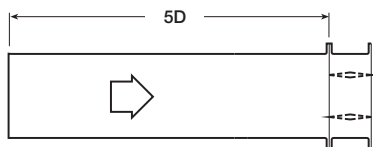
Single Flange

Reversed Flange

Shown with optional internally mounted actuator.

Pressure Drop Data

AMCA 5.2



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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.08 |
| 1000 | 0.31 |
| 1500 | 0.69 |
| 2000 | 1.19 |
| 2500 | 1.84 |
| 3000 | 2.67 |
| 3500 | 3.59 |
| 4000 | 4.64 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.01 |
| 1000 | 0.05 |
| 1500 | 0.11 |
| 2000 | 0.19 |
| 2500 | 0.30 |
| 3000 | 0.43 |
| 3500 | 0.58 |
| 4000 | 0.76 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.01 |
| 1000 | 0.04 |
| 1500 | 0.09 |
| 2000 | 0.16 |
| 2500 | 0.24 |
| 3000 | 0.35 |
| 3500 | 0.48 |
| 4000 | 0.62 |

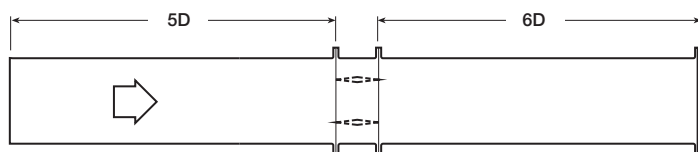
12 in. x 48 in. (305mm x 1219mm)

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.01 |
| 1000 | 0.05 |
| 1500 | 0.11 |
| 2000 | 0.20 |
| 2500 | 0.30 |
| 3000 | 0.43 |
| 3500 | 0.59 |
| 4000 | 0.77 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.06 |
| 1000 | 0.23 |
| 1500 | 0.52 |
| 2000 | 0.91 |
| 2500 | 1.43 |
| 3000 | 2.05 |
| 3500 | 2.82 |
| 4000 | 3.69 |

AMCA 5.3



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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.05 |
| 1000 | 0.20 |
| 1500 | 0.45 |
| 2000 | 0.76 |
| 2500 | 1.19 |
| 3000 | 1.70 |
| 3500 | 2.29 |
| 4000 | 2.97 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.01 |
| 1000 | 0.02 |
| 1500 | 0.05 |
| 2000 | 0.10 |
| 2500 | 0.15 |
| 3000 | 0.22 |
| 3500 | 0.30 |
| 4000 | 0.40 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.01 |
| 1000 | 0.02 |
| 1500 | 0.04 |
| 2000 | 0.07 |
| 2500 | 0.10 |
| 3000 | 0.15 |
| 3500 | 0.20 |
| 4000 | 0.27 |

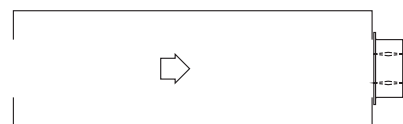
12 in. x 48 in. (305mm x 1219mm)

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.01 |
| 1000 | 0.03 |
| 1500 | 0.07 |
| 2000 | 0.12 |
| 2500 | 0.19 |
| 3000 | 0.26 |
| 3500 | 0.36 |
| 4000 | 0.46 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.03 |
| 1000 | 0.13 |
| 1500 | 0.29 |
| 2000 | 0.51 |
| 2500 | 0.81 |
| 3000 | 1.16 |
| 3500 | 1.59 |
| 4000 | 2.09 |

AMCA 5.5



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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.1 |
| 1000 | 0.40 |
| 1500 | 0.88 |
| 2000 | 1.54 |
| 2500 | 2.41 |
| 3000 | 3.45 |
| 3500 | 4.75 |
| 4000 | 6.09 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.03 |
| 1000 | 0.12 |
| 1500 | 0.29 |
| 2000 | 0.52 |
| 2500 | 0.80 |
| 3000 | 1.14 |
| 3500 | 1.60 |
| 4000 | 2.14 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.03 |
| 1000 | 0.11 |
| 1500 | 0.26 |
| 2000 | 0.46 |
| 2500 | 0.72 |
| 3000 | 1.04 |
| 3500 | 1.43 |
| 4000 | 1.87 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.03 |
| 1000 | 0.12 |
| 1500 | 0.27 |
| 2000 | 0.49 |
| 2500 | 0.76 |
| 3000 | 1.11 |
| 3500 | 1.53 |
| 4000 | 2.00 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.08 |
| 1000 | 0.29 |
| 1500 | 0.63 |
| 2000 | 1.12 |
| 2500 | 1.76 |
| 3000 | 2.52 |
| 3500 | 3.40 |
| 4000 | 4.52 |



Greenheck Fan Corporation certifies that the model VCD-40 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 performance ratings only.

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

| VCD-40 | Leakage Class* | | | | | |
|----------------------|------------------------|-----------------------|---------------------------|---------------------|------------------------|-----------------------|
| Maximum Damper Width | 1 in. wg (0.25 kPa) | 2 in. wg (0.5 kPa) | 3 in. wg (0.75 in. wg) | 4 in. wg (1 kPa) | 5 in. wg (1.25 kPa) | 6 in. wg (1.5 kPa) |
| 36 in. (914mm) | 1A | 1 | 1 | 1 | 1 | 1 |
| 48 in. (1219mm) | 1A | 1 | 1 | 1 | 2 | N/A |
| 60 in. (1524mm) | 1A | 2 | 2 | N/A | N/A | N/A |

*Leakage Class Definitions

The maximum allowable leakage is defined as the following:

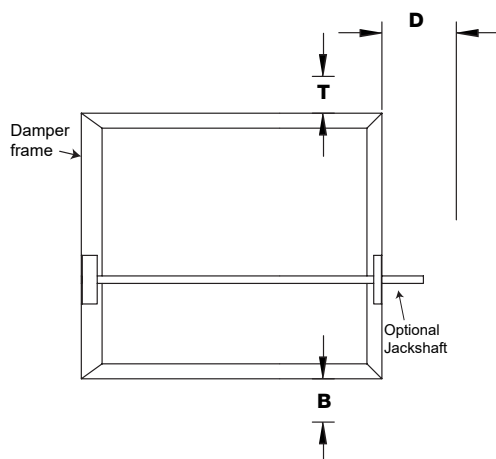
- Leakage Class 1A - 3 cfm/ft² at 1 in. wg (class 1A is only defined at 1 in. wg).
- Leakage Class 1
 - 4 cfm/ft² at 1 in. wg
 - 8 cfm/ft² at 4 in. wg
 - 11 cfm/ft² at 8 in. wg
 - 12.6 cfm/ft² at 10 in. wg

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

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.



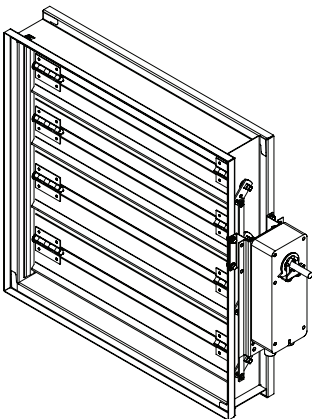
| Actuator Type/Model | Height | T | B | D |
|---|------------|--------|-----|----|
| | Inches | Inches | | |
| AFBUP (-S) and FSNF Series, Belimo MSxx20 Series, Honeywell | ≥6 to <10 | 0 | 12¾ | 6¼ |
| | ≥10 to <18 | 0 | 2 | 6¼ |
| | ≥18 | 0 | 0 | 6¼ |
| FSLF, LF and TFB Series, Belimo | ≥6 to <10 | 0 | 3½ | 6¼ |
| | ≥10 | 0 | 0 | 6¼ |
| MSxx04 & MSxx09 Series, Honeywell | ≥6 to <9 | 0 | 4¾ | 6¼ |
| | ≥9 | 0 | 0 | 6¼ |
| MS75xx Series, Honeywell | ≥6 to <10 | 0 | 12¾ | 6¼ |
| | ≥10 to <18 | 0 | 7 | 6¼ |
| | ≥18 | 0 | 0 | 6¼ |
| GRD and GVD Series, Siemens | ≥6 to <10 | 0 | 12¾ | 6¼ |
| | ≥10 to <18 | 0 | 2 | 6¼ |
| | ≥18 | 0 | 0 | 6¼ |
| GJD Series, Siemens | ≥6 to <10 | 0 | 3½ | 6¼ |
| | ≥10 to <18 | 0 | 0 | 6¼ |
| | ≥18 | 0 | 0 | 6¼ |

Actuator Mounting

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



[ACTUATOR MOUNTING](#)

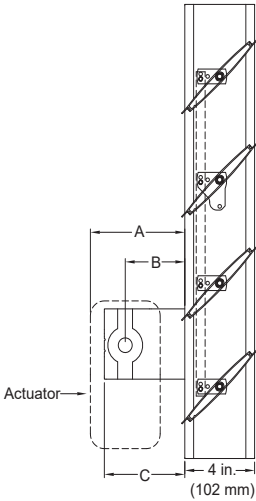


Non-jackshaft external right

Clearance Requirements

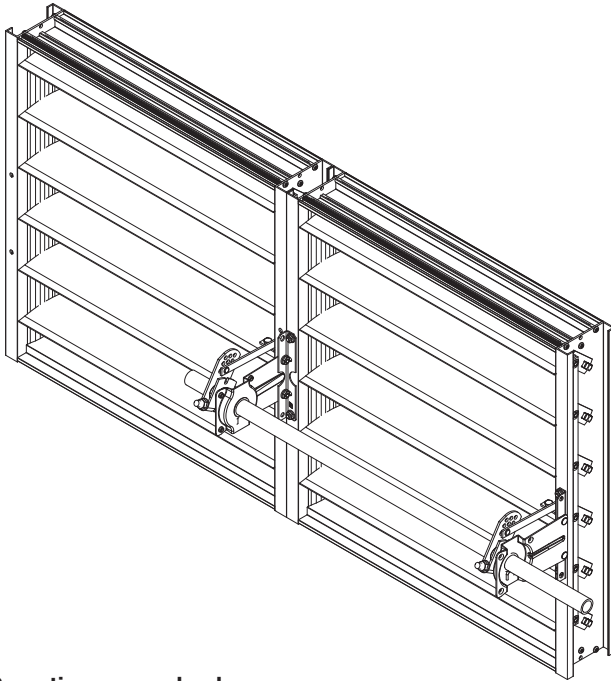
This drawing depicts the worse case clearance requirements for an actuator with a jackshaft.

| Internal mount only Actuator model | A | B | C |
|---------------------------------------|----------------------|---------------------|----------------------|
| All except - EFB & EFCX Series | 7 3⁄4 in (197 mm) | 3 3⁄4 in (95 mm) | 5 3⁄8 in (137 mm) |
| EFB & EFCX Series | 8 1⁄2 in (216 mm) | 6 in (152mm) | 8 1⁄2 in (216 mm) |

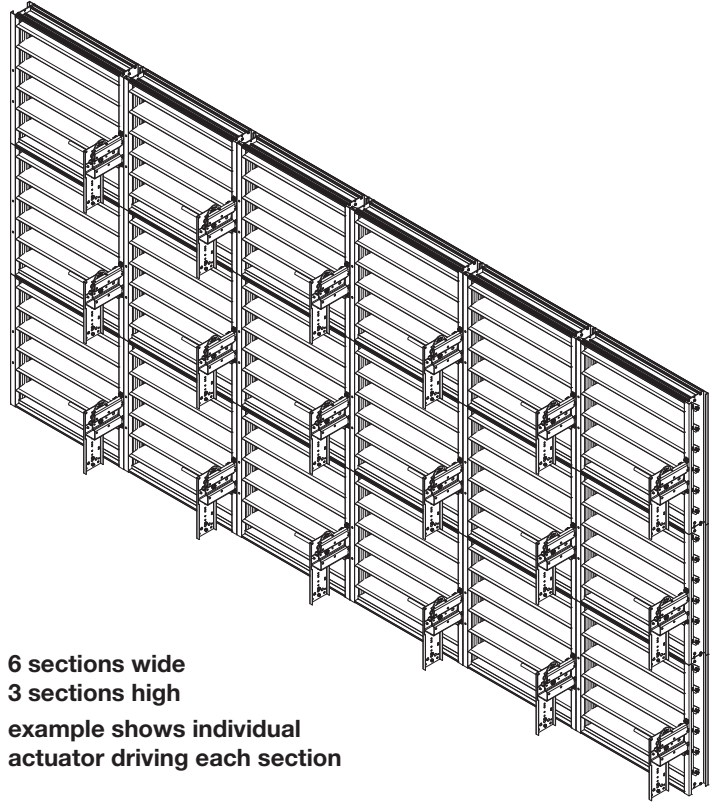


Dampers larger than the maximum single section size, will be made up of a multiple of equal size sections. Multiple section dampers can be jackshafted together so that all sections operate together as shown below.

Note: Dampers larger than 60 in. x 74 in. (1524mm x 1880mm) are not intended to be structurally self supporting. Refer to IOM document 483509 for structural support requirements on multi-section assemblies.



2 section example shows
single jackshaft driving multiple
sections



6 sections wide
3 sections high
example shows individual
actuator driving each section

Document Links



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