

Application

The VCD-20 series is a general purpose control damper for applications as an automatic control or manual balancing damper with low to medium pressure and velocity systems.

Damper Ratings

Velocity

Up to 3000 fpm (15.2 m/s)

Pressure

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

Temperature

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



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

| W x H | Minimum Size | Maximum Size | |
|--------|--------------|----------------|------------------|
| | | Single Section | Multiple Section |
| Inches | 6 x 6 | 48 x 74 | Unlimited |
| mm | 152 x 152 | 1219 x 1880 | Unlimited |

Construction

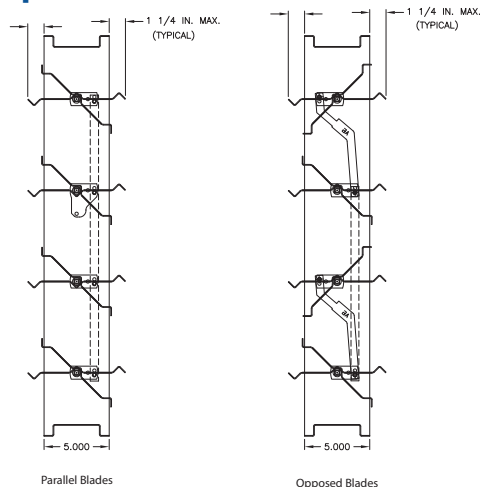
| | Standard | Optional |
|--------------------------|--|--|
| Frame Material | Galvanized Steel | 304SS |
| Frame Material Thickness | 16 ga. (1.5 mm) | 12 ga. (2.7 mm)* |
| Frame Type | 5 in. x 1 in. hat channel | Single flange, Reversed flange, Double flange |
| Blade Material | Galvanized steel | 304SS |
| Blade Thickness | 16 ga. (1.5mm) | |
| Blade Type | 3V | - |
| Blade Action | Opposed | Parallel |
| Linkage | Plated steel out of airstream, concealed in jamb | 316SS |
| Axle Bearings | Synthetic | 316SS |
| Axle Material | 1/2 in. dia. Plated steel | 316SS |
| 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.

Notes:

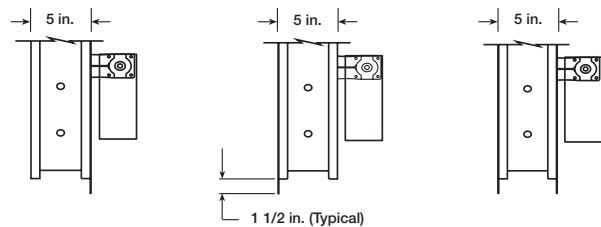
- Low profile head and sill are used on sizes less than 17 in. (432mm) high
- Linkage concealed in the frame
- Electric actuator and manual quadrant available. Factory supplied actuators are sized for 1500 fpm (7m/s) and fully closed differential pressure of 2 in. wg (.5 kPa). contact factory for actuator 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



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



Single Flange

Reversed Flange

Double Flange

* Shown with optional internally mounted actuator.

Document Links

[HVAC Control & Balancing
Damper Catalog](#)



[Installation Instructions](#)



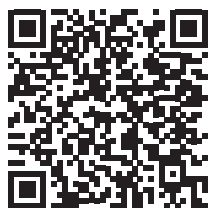
[Specifications](#)



[Damper Selection Guide](#)



[Warranty](#)

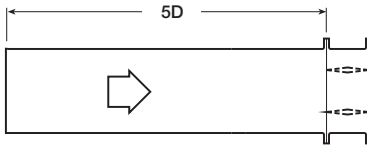


AMCA Certified Pressure Drop Data



Greenheck Fan Corporation certifies that the model VCD-20 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.

AMCA 5.2



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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.01 |
| 1000 | 0.05 |
| 1500 | 0.11 |
| 2000 | 0.19 |
| 2500 | 0.29 |
| 3000 | 0.41 |
| 3500 | 0.55 |
| 4000 | 0.72 |

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 |
| 4000 | 0.40 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.01 |
| 1000 | 0.02 |
| 1500 | 0.05 |
| 2000 | 0.09 |
| 2500 | 0.14 |
| 3000 | 0.19 |
| 3500 | 0.27 |
| 4000 | 0.35 |

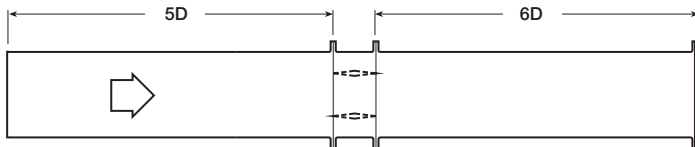
12 in. x 48 in. (305mm x 1219mm)

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.01 |
| 1000 | 0.04 |
| 1500 | 0.08 |
| 2000 | 0.15 |
| 2500 | 0.22 |
| 3000 | 0.32 |
| 3500 | 0.43 |
| 4000 | 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)

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.01 |
| 1000 | 0.03 |
| 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 |

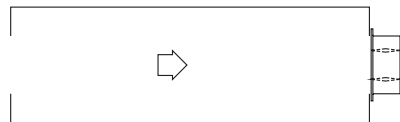
12 in. x 48 in. (305mm x 1219mm)

| 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



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

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

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.03 |
| 1000 | 0.12 |
| 1500 | 0.26 |
| 2000 | 0.47 |
| 2500 | 0.75 |
| 3000 | 1.04 |
| 3500 | 1.41 |
| 4000 | 1.90 |

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

| Velocity (fpm) | Pressure Drop (in. wg) |
|----------------|------------------------|
| 500 | 0.03 |
| 1000 | 0.12 |
| 1500 | 0.28 |
| 2000 | 0.50 |
| 2500 | 0.78 |
| 3000 | 1.12 |
| 3500 | 1.53 |
| 4000 | 2.00 |

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 |

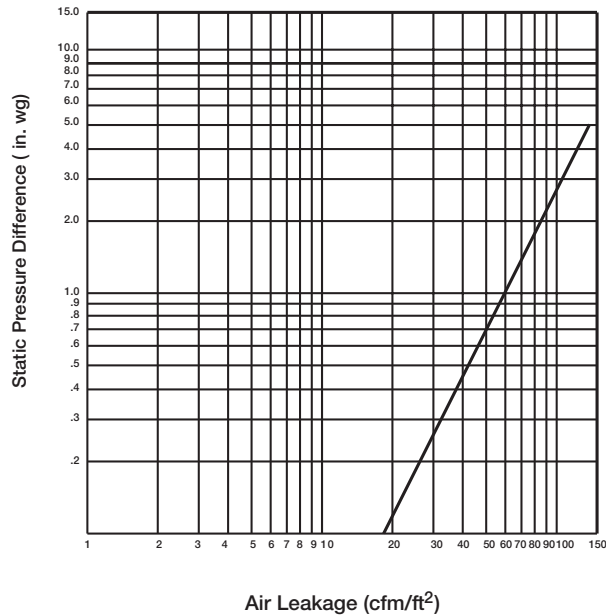
48 in. x 12 in. (1219mm x 305mm)

| 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 |

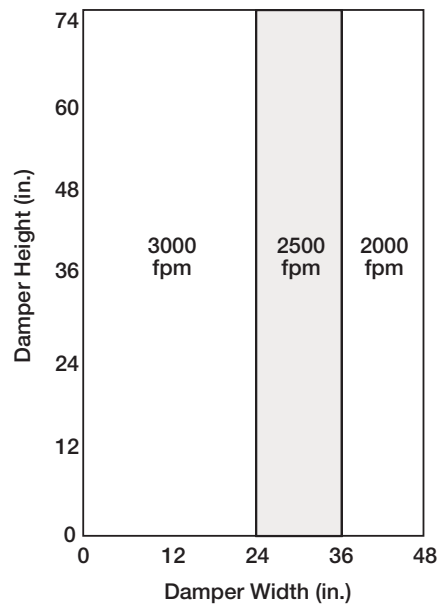
Leakage Data

Leakage testing was conducted in accordance with AMCA Standard 500-D and is expressed as cfm/ft2 of damper face area. All data has been corrected to represent standard air at a density of 0.075 lb/ft³ (1.204 kg/m³).

VCD-20

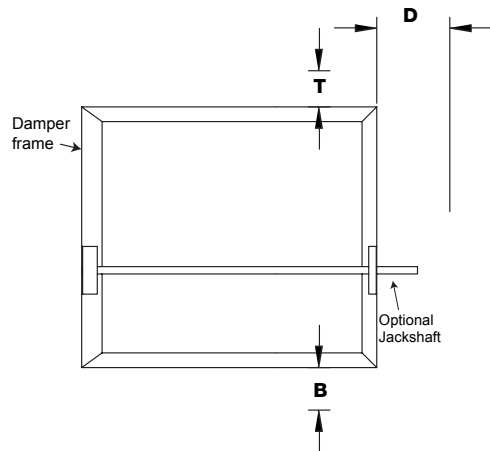


Velocity Limitations



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.

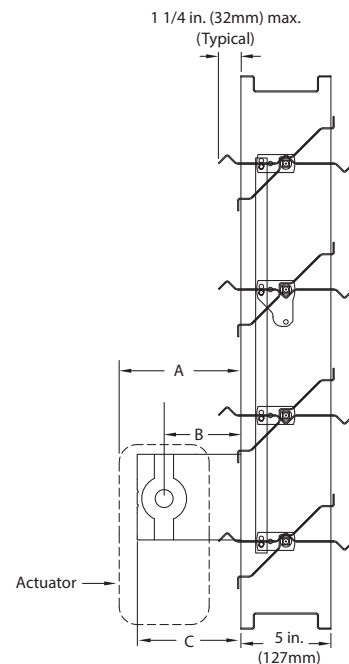


| Actuator Type/Model | Height | T | B | D |
|--|-------------|-------------|-----|----|
| | Inches (mm) | Inches (mm) | | |
| AFBUP (-S) and FSNF Series, Belimo MSxx20 Series, Honeywell | ≥6 to <10 | 0 | 12¾ | 6 |
| | ≥10 to <18 | 0 | 2 | 6 |
| | ≥18 | 0 | 0 | 10 |
| FSLF, LF and TFB Series, Belimo | ≥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 |

Mounting

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

| Internal mount only Actuator model | A | B | C |
|---------------------------------------|--------------------|-------------------|----------------------|
| All except - EFB & EFCX Series | 7 ¾ in (197 mm) | 3 ¾ in (95 mm) | 5 ⅜ in (136.5 mm) |
| EFB & EFCX Series | 8 ½ in (216 mm) | 6 in (152mm) | 8 ½ in (216 mm) |

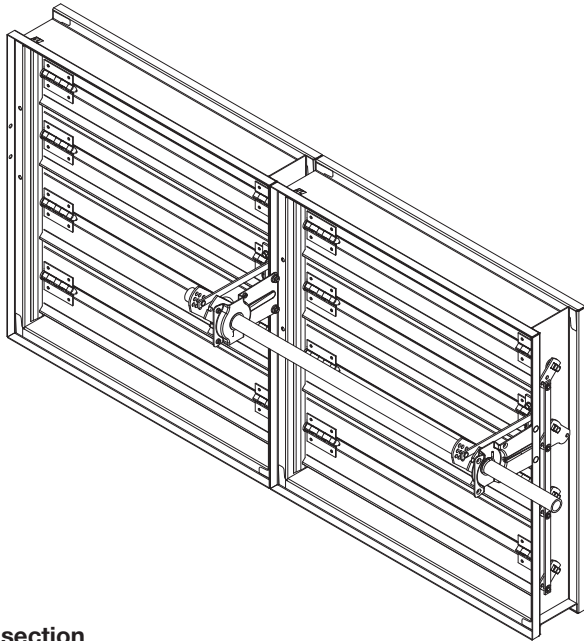


This drawing depicts the worse case clearance requirements for an actuator with a jackshaft.

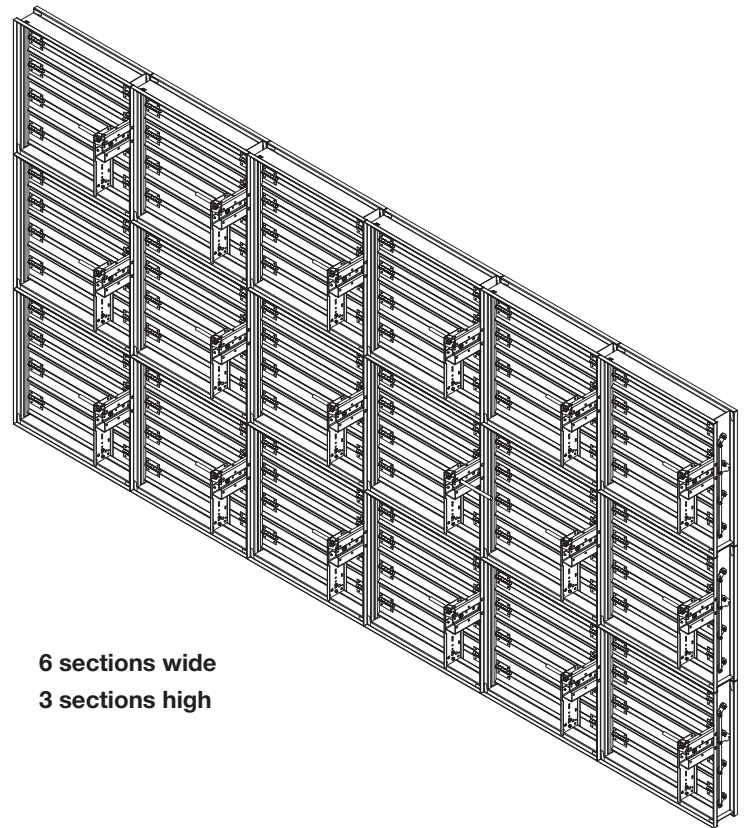
Dampers larger than the maximum single section size, will be made up of a multiple of equal size sections. Multiple section dampers can be jackshafted together so that all sections operate together as shown below.

NOTE: Dampers larger than 48 in. x 74 in. (1219mm 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 463384 for structural support requirements on multi-section assemblies.



2 section



6 sections wide
3 sections high