

# VD-1600 Volume Control Dampers

## Product Bulletin

VD-1600

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Since 1885, Johnson Controls has provided the highest quality control dampers that fit your application and size requirements.

- VD-1620  
galvanized triple-vee blade/galvanized frame
- VD-1630  
galvanized airfoil blade/galvanized frame
- VD-1640  
304 stainless steel triple-vee blades/stainless steel frames



Figure 1: VD-1600 Damper

Table 1: Features and Benefits

Features	Benefits
<b>3-Year Warranty on Materials and Workmanship</b>	Provides confidence of company standing behind product.
<b>15-Working-Day Standard Shipping after Order Entry</b>	Results in fast response for short lead time projects.
<b>5-Working-Day Fast Track Shipping</b>	Provides Fast Track (at a cost premium).
<b>Self-Compensating Stainless Steel Side Seals</b>	Minimize leakage between the blades and the damper frame.

## Applications

VD-1600 dampers are designed to meet different application and environmental requirements. These applications include but are not limited to:

- VD-1620 dampers with seals rated for Class II leakage resistance in applications requiring tight closure with less velocity, such as outdoor air
- VD-1630 dampers with seals rated for Class IA leakage resistance in applications requiring very tight closure and high velocities
- VD-1640 dampers with seals rated for Class II leakage resistance in applications requiring 304 stainless steel construction

Dampers are tested at an AMCA Certified Laboratory using instrumentation and procedures in accordance with AMCA Standard No. 500, Test Methods for Louvers, Dampers, and Shutters.

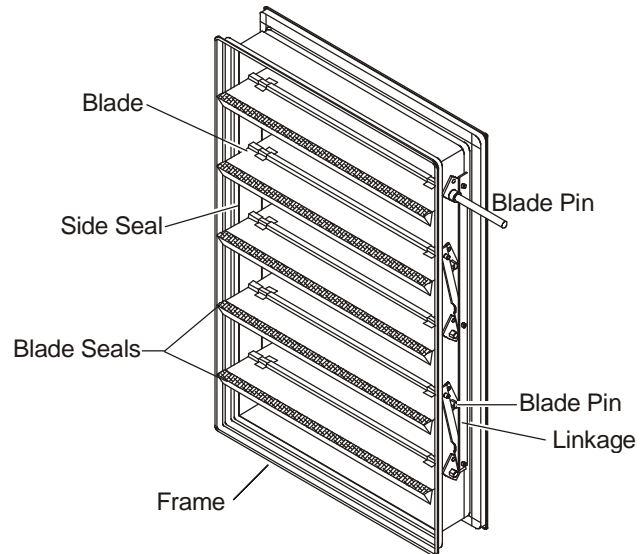
**Table 2: Leakage Resistance Classes**

Pressure /Class	Leakage, L/s/m <sup>2</sup> (ft <sup>3</sup> /min/ft <sup>2</sup> )			
	Required Rating - in. (kPa)		Extended Range (Optional) - in. (kPa)	
	1 (0.25)	4 (1.0)	8 (2.0)	12 (3.0)
<b>1A</b>	3 (15.2)	--	--	--
<b>1</b>	4 (20.3)	8 (40.6)	11 (55.9)	14 (71.1)
<b>2</b>	10 (50.8)	20 (102)	28 (142)	35 (178)
<b>3</b>	40 (203)	80 (406)	112 (569)	140 (711)

## Construction

**Table 3: Materials**

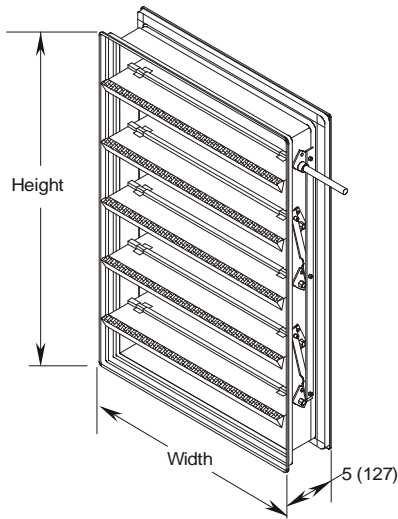
Part	Materials
<b>Frame</b>	<b>VD-1620/VD-1630:</b> 5 in. x 1 in. x 16-gauge (127 mm x 25 mm x 1.6 mm) galvanized steel, hat channel shaped <b>VD-1640:</b> 5 in. x 1 in. x 16-gauge 304 stainless steel, U-channel shaped
<b>Blades</b>	<b>VD-1620:</b> 6 in. (152 mm) wide, triple vee-shaped, 16-gauge (1.6 mm) galvanized steel, approximately 6 in. (152 mm) on center <b>VD-1630:</b> Galvanized steel airfoil shaped double skin construction, 6 in. nominal construction, 8 in. maximum width <b>VD-1640:</b> 6 in. (152 mm) wide, triple vee-shaped, 16-gauge (1.6 mm) 304 stainless steel, approximately 6 in. (152 mm) on center
<b>Blade Pin</b>	1/2 in. (13 mm), plated steel hex
<b>Linkage</b>	Concealed in end channel of frame
<b>Extension</b>	1/2 in. (13 mm) diameter, 6 in. (152 mm) long pin included with all control dampers
<b>Bearings</b>	<b>VD-1620:</b> Synthetic <b>VD-1630/VD-1640:</b> Stainless steel
<b>Side Seal</b>	<b>VD-1620/VD-1640:</b> Self-compressing flexible metal or stainless steel <b>VD-1630:</b> Stainless steel; compression type
<b>Blade Seal</b>	<b>VD-1620/VD-1640:</b> PVC coated polyester fabric mechanically locked into blade edge, silicone optional <b>VD-1630:</b> Ruskiprene blade edge seal mechanically locked into blade edge, silicone optional



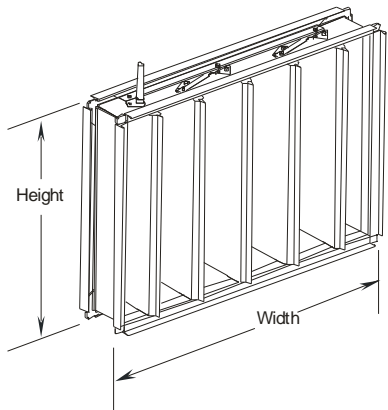
**Figure 2: Damper Components**

Each frame is made of 16-gauge galvanized steel, formed into channels, and welded with corner braces for additional strength.

### Dimensions



**Figure 3: Mounting Dimensions, in. (mm)**

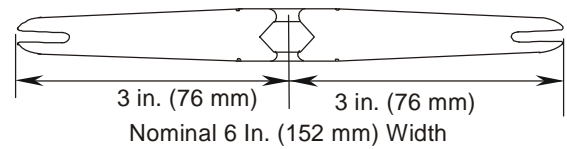


**Figure 4: Mounting Dimensions Vertical Blades with Thrust Washers**

All Johnson Controls height and width dimensions are from the outside edges of the frame. Actual damper size is 1/4-inch less than nominal.

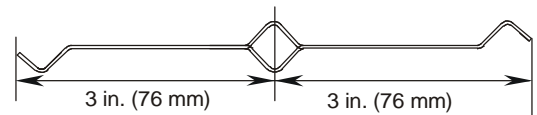
**Table 4: Single-Panel Size Limits**

Dimension	Limits
Width	VD-1620: 5 to 48 in. VD-1630: 8 to 60 in. VD-1640: 6 to 48 in. VD-1630 with thrust washers: 6 to 48 in.
Height	VD-1620: 5 to 72 in. VD-1630: 6 to 72 in. VD-1640: 7 to 72 in. VD-1630 with thrust washers: 6 to 36 in.
Size Increment	1 in. increments



**Figure 5: VD-1630 Airfoil Blade Profile**

Airfoil blades are made from nominal 1/16-inch extruded aluminum in an airfoil shape for high performance. Blade and side seals are standard.



**Figure 6: VD-1620/VD-1640 Triple-Vee Blade Profile**

Triple-vee blades are made from one layer of 16-gauge formed sheet metal. Blade and side seals are standard.

The top and bottom blades may be up to 8 inches in width with up to 2-inch extensions on one side of each blade.

**Note:** All dimensions are nominal.

## Selection Information

1. Configure your damper to the operation and performance required using Table 5.
2. Enter the width and height of the damper.

**Note:** Actual damper size is 1/4-inch less than nominal.

3. Enter the required options.

**Table 5: Damper Selector<sup>1</sup>**

	Ordering Code Number	V				-	w	w	w	x	h	h	h			
<b>Application</b>	V = Volume Control															
<b>Blade Operation</b>	O = Opposed P = Parallel															
<b>Blade/Frame</b>	G = Galvanized Airfoil/Galvanized Steel (VD-1630) S = Triple-Vee 304 Stainless Steel (VD-1640) W = Triple-Vee Galvanized Steel (VD-1620)															
<b>Bearing/Seal</b>	S = Standard (Synthetic/PVC Coated) (VD-1620) S = Standard (Stainless Steel/PVC Coated) (VD-1640) S = Standard (Stainless Steel/Ruskiprene) (VD-1630) E = Extended (Stainless Steel/Silicone) (All Models) T = Thrust Bearing (Vertical Airfoil Blade) (VD-1630)															
<b>Actuator<sup>2</sup></b>	A = M9208-AGC or M9220-AGC (24 V, Floating, Spring Return) B = M9208-GGC or M9220-GGC (24 V, Modulating, Spring Return) C = M9208-BAC or M9220-BAC (120 V, Two-Position, Spring Return) D = M9208-BGC or M9220-BGC (24 V, Two-Position, Spring Return) F = M9106-AGC or M9116-AGC (24 V Floating, Non-Spring Return) G = M9106-GGC or M9116-HGC (24 V Modulating, Non-Spring Return) N = No Actuator P = D-3062-3 or D-3151-3 (Pneumatic 8-13 lb Spring Range)															
<b>Width</b>	VD-1620 = 005 to 999 (Opposed and Parallel Blade) VD-1630 = 006 to 999 (Vertical Blade), 008 to 999 (Opposed and Parallel Blade) VD-1640 = 005 to 192 (Opposed and Parallel Blade)															
<b>Height</b>	VD-1620 = 005 to 999 (Opposed and Parallel Blade) VD-1630 = 006 to 999 (Parallel Blade), 008 to 999 (Vertical Blade), 010 to 999 (Opposed Blade) VD-1640 = 005 to 228 (Opposed and Parallel Blade)															
<b>Options (limit two)</b>	See <i>Factory Options</i> for descriptions and combinations.															

1. Not all combinations are available; check selector tool for valid combinations.
2. Actuators may restrict maximum sizes; check selector tool for valid maximum sizes. By default, actuators come externally mounted (outside air stream). Use option Q for internally mounted actuators.

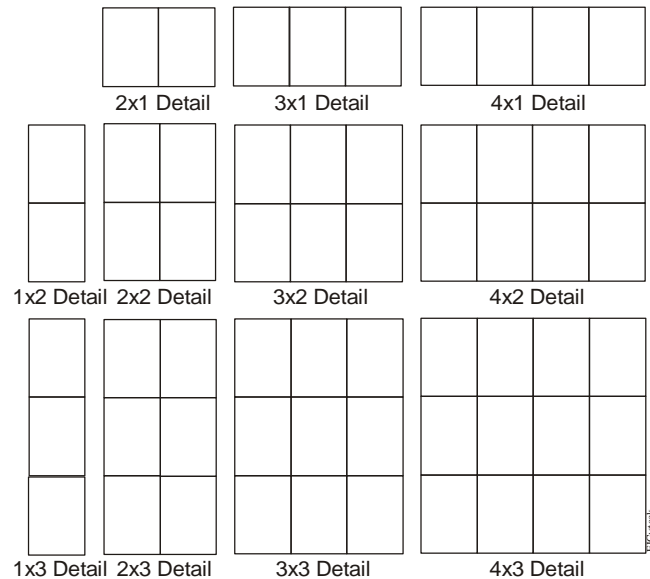
### Factory Options

- E** Exact whole inch size, no undercut
- F** 1.5 in. L flange air entering side (cannot be used with option G or H)
- G** 1.5 in. L flange air leaving side (cannot be used with option F or H)
- H** Double flange (cannot be used with option F or G)
- I** Indicator switch
- J** Field installed jackshaft on single panel (multiple section units broken down and shipped in sections)
- M** Factory installed jackshaft on single panel units
- Q** Internal mount actuator (actuator mounted in air stream, minimum electric actuator 14 x 21 in., minimum pneumatic actuator 18 x 24 in.)
- V** Transition (round/oval) (VD-1620 and VD-1630)

**Note:** When the transition option is selected, the damper is 2 inches larger than the round or oval duct for the transition. For example, the VOGSN-014x014V has a 16 in. x 16 in. damper used with a 14 in. round duct. The VOGSN-014x024V has a 16 in. x 26 in. damper used with a 14 in. x 24 in. oval duct.

### Multiple Section Stacking Details

Multiple section dampers are shipped assembled from the factory and include jackshafts.



**Figure 7: Multiple Section Stacking Options**

### Maintenance

Johnson Controls® VD-1600 dampers have no components that require routine scheduled maintenance.

During normal duct maintenance, damper blades should be wiped clean if necessary and opened and closed to verify complete rotation and sealing.

**Table 6: Repair Parts**

Code Number	Description
<b>DMPR-RC058</b>	PVC Coated Fiberglass Seal for VD-1620; 10 ft Long
<b>DMPR-RC059</b>	Silicone Seal for Parallel and Opposed Bladed VD-1620; 10 ft Long
<b>DMPR-RC060</b>	Santoprene Seal for Parallel and Opposed Bladed VD-1630; 10 ft Long
<b>DMPR-RC061</b>	Silicone Seal for Parallel and Opposed Bladed VD-1630; 10 ft Long
<b>DMPR-RC062</b>	Santoprene Blade Stop for VD-1630; 10 ft Long
<b>DMPR-RC069</b>	Silicone Blade Stop for VD-1630; 10 ft Long

### Return Policy

All Johnson Controls Dampers are built to order and cannot be returned due to customer ordering errors. All dampers are backed by a 3-year warranty that covers defects in materials or workmanship. Refer to terms and conditions of sale for specifics.

## Technical Specifications

### VD-1600 Volume Control Dampers<sup>1</sup>

<b>Leakage</b>	<b>VD-1620/VD-1640</b>		5.4 cfm/sq ft maximum at 1 in. static pressure for 48 in. wide damper 10.7 cfm/sq ft maximum at 4 in. static pressure for 48 in. wide damper			
	<b>VD-1630</b>		3 cfm/sq ft maximum at 1 in. static pressure for 48 in. x 48 in. wide damper 8 cfm/sq ft maximum at 4 in. static pressure for 48 in. x 48 in. wide damper			
<b>Operating Torque</b>	<b>VD-1640</b>		0.5 in. static pressure, 100 fpm fully open approach velocity 1 in. static pressure, 1,000 fpm fully open approach velocity 10 in. static pressure, 2,500 fpm fully open approach velocity		5 lb-in/sq ft 5 lb-in/sq ft 7 lb-in/sq ft	
	<b>VD-1620/VD-1630</b>		0.5 in. static pressure, 100 fpm fully open approach velocity 1 in. static pressure, 1,000 fpm fully open approach velocity		3.25 lb-in/sq ft 4.25 lb-in/sq ft	
<b>Pressure Drop (inches WG) - Fully Open</b>	<b>Size (in.)</b>		<b>Approach Velocity (fpm)</b>			
			<b>1,000</b>	<b>2,000</b>	<b>3,000</b>	<b>4,000</b>
	<b>VD-1620</b>	<b>24 x 24</b>	0.045	--	0.40	--
	<b>VD-1630</b>	<b>24 x 24</b>	0.025	0.10	0.25	--
	<b>VD-1640</b>	<b>24 x 24</b>	0.045	--	0.40	--
<b>Velocity and Pressure Limits</b>			<b>Width (in.)</b>			
			<b>12</b>	<b>24</b>	<b>36</b>	<b>48</b>
	<b>VD-1630</b>		6,000 fpm at 11 in. static	--	3,000 fpm at 7 in. static	1,500 fpm at 5.0 in. static
	<b>VD-1620/VD-1640</b>		1,500 fpm at 5 in. static	1,500 fpm at 4 in. static	1,500 fpm at 4 in. static	1,500 fpm at 2.5 in. static
<b>Temperature Rating</b>	<b>VD-1620</b>	<b>Standard and Extended Operating Conditions</b>	-25 to 180°F (-32 to 83°C)			
	<b>VD-1630</b>		<b>Extended Operating Condition</b>	-72 to 275°F (-60 to 135°C)		
		<b>Standard Operating Condition</b>		-40 to 200°F (-40 to 93°C)		
	<b>VD-1640</b>	<b>Standard and Extended Operating Conditions</b>	-25 to 180°F (-32 to 83°C)			
	<b>Actuator</b>		-4 to 122°F (-20 to 50°C)			
<b>Approximate Weight</b>	<b>VD-1620</b>		5 lb/sq ft (2.27 kg/sq ft)			
	<b>VD-1630</b>		7 lb/sq ft (3.2 kg/sq ft)			
	<b>VD-1640</b>		7 lb/sq ft (3.2 kg/sq ft)			
	<b>Actuator</b>		2.9 pounds (1.6 kg) per actuator			

1. All performance data is determined using instrumentation and procedures at an AMCA Certified Laboratory in accordance with AMCA Standard No. 500, Test Methods for Louvers, Dampers, and Shutters.

*The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products. Refer to the M9208-xxx-x Series Electric Spring Return Actuators Product Bulletin (LIT-12011480), M9220-xxx-3 Electric Spring Return Actuators Product Bulletin (LIT-12011057), and M9108, M9116, M9124, and M9132 Series Electric Non-spring Return Actuators Product Bulletin (LIT-2681058) for necessary information on operating and performance specifications for the actuator.*



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