VD-1250 Volume Control Dampers

Product Bulletin

VD-1250

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

- VD-1250
  Aluminum blades/frame
- VD-1251TI
  Aluminum blades/frame
  Thermal isolated (broken) aluminum blade
- VD-1251BF
  Aluminum blades/frame
  Thermal isolated (broken) aluminum blade/frame

Figure 1: VD-1250 Damper

Table 1: Features and Benefits

Features	Benefits
3-Year Warranty on Materials and Workmanship	Provides confidence of company standing behind product.
15-Working-Day Standard Shipping after Order Entry	Results in fast response for short lead time projects.
5-Working-Day Fast Track Shipping (VD-1250 Model Only)	Provides Fast Track at a cost premium.
Self-Compensating Side Seals	Minimize leakage between the blades and the damper frame.

Johnson Controls

Applications

VD-1250 dampers offer sturdy construction of both frame and airfoil shaped blades of aluminum, and are designed to meet different application and environmental requirements. These applications include, but are not limited to:

- VD-1250 - All aluminum dampers for use in harsh environments not suitable for galvanized steel
- VD-1251TI - Thermal isolated (broken) damper blades filled with polyurethane rated for low temperature applications
- VD-1251BF - Thermal isolated (broken) blade filled with polyurethane and isolated (broken) frame dampers for low temperature applications

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

Submittal Specifications

VD-1250 Aluminum Damper

Furnish and install Johnson Controls® VD-1250 low leakage all aluminum volume control dampers.

Frames are to be constructed of formed extruded aluminum with linkage concealed in the side channel to eliminate noise and friction. Compressible spring stainless steel side seals and self-lubricating bearings shall also be provided.

Blades are to be constructed with extruded aluminum in airfoil shape. Damper blade width shall not exceed 6 in. and shall have seals. Blade pins shall be 1/2 in. plated steel hex. Blade operation is to be parallel or opposed as shown on the schedules.

Performance shall be designed for tight shutoff and tested in accordance with AMCA Standard 500. Leakage for a damper with seals shall not exceed 3 cfm per square foot at a 1 in. w.g. The damper must be rated to operate over a temperature range of -72 to 275°F (-58 to 135°C).

Sizing shall be determined by the designer in accordance with accepted industry practices to ensure proper system performance. Blank off-plates and duct-to-damper transitions may be required.

VD-1251TI/1251BF Thermal Isolated Control Damper

Furnish and install Johnson Controls VD-1251TI or VD-1251BF low leakage thermal isolated volume control dampers.

Frames are to be constructed of formed extruded aluminum with linkage concealed in the side channel to eliminate noise and friction. Polycarbonate side seals and low temperature bearings shall also be provided. Thermal breaks added to the frame for additional isolation.

Blades are to be constructed with extruded aluminum in airfoil shape thermal isolation gap and with insulation injected within the blades for an R value of 4.9. Damper blade width shall not exceed 8 in. and shall have seals. Blade pins shall be 1/2 in. plated steel hex. Blade operation is to be parallel or opposed as shown on the schedules.

Performance shall be designed for tight shutoff and tested in accordance with AMCA Standard 500. Leakage for a damper with seals shall not exceed 3 cfm per square foot at 1 in. wg. The damper must be rated to operate over a temperature range of -40 to 165°F (-40 to 73°C).

Sizing shall be determined by the designer in accordance with accepted industry practices to ensure proper system performance. Blank off-plates and duct-to-damper transitions may be required.

Construction

Each frame is made of extruded aluminum channels. The frames of the VD-1251TI are stacked, and the frames of the VD-1251BF are welded.

Table 2: Materials

Part	Materials
Frame	**VD-1250:** 5 in. x 1 in. x 6063T5 extruded aluminum, hat channel shaped with 0.125 in. minimum wall thickness (127 x 25 x 3.2 mm) **VD-1251TI/VD-1251BF:** 5 in. x 1 in. x 6063T6 extruded aluminum, hat channel shaped with 0.125 in. minimum wall thickness (127 x 25 x 3.2 mm)
Blades	**VD-1250:** 6 in. (152 mm) wide, 6063T5 heavy gauge extruded aluminum, airfoil shaped **VD-1251TI/VD-1251BF:** 6 in. (152 mm) wide, 6063T6 heavy gauge extruded aluminum, airfoil shaped injected with high density polyurethane foam. Each blade is provided with a thermal gap. The R value is 4.9.
Axles	1/2 in. (13 mm), plated steel hex
Linkage	Concealed in end channel of frame
Extension	1/2 in. (13 mm) diameter, 6 in. (152 mm) long pin included with all control dampers
Bearings	**VD-1250:** Synthetic bearings standard. Stainless steel and vertical thrust optional **VD-1251TI/VD-1251BF:** Stainless steel bearings standard
Blade Seal	Extruded Santoprene® thermoplastic elastomer
Side Seal	**VD-1250:** Self-compensating stainless steel **VD-1251TI/VD-1251BF:** Polycarbonate

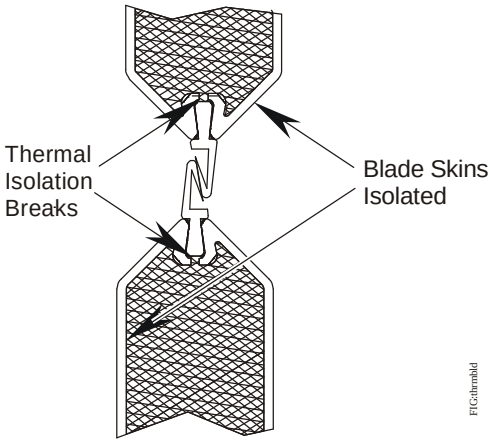

Figure 2: Thermal Blade Components (VD-1251TI/VD-1251BF Models)

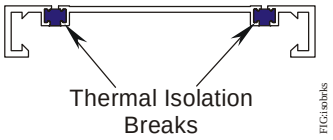

Figure 3: Frame Thermal Components (VD-1251BF Model)

Dimensions

Frame dimensions are 5 x 1 x 0.125 in. minimum wall thickness (127 x 25 x 3.2 mm).

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

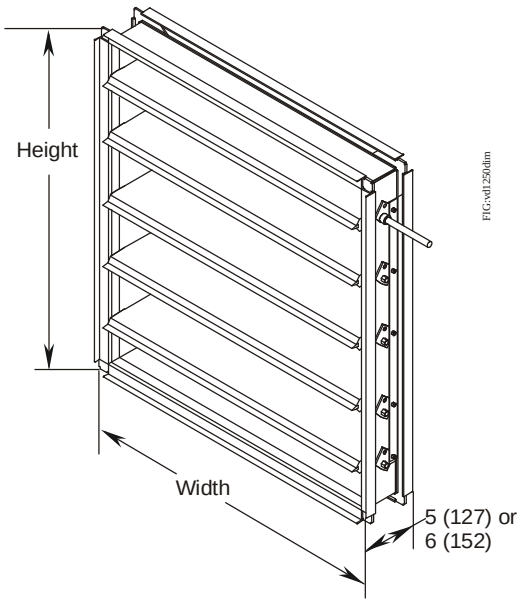

Figure 4: Mounting Dimensions, inches (mm)

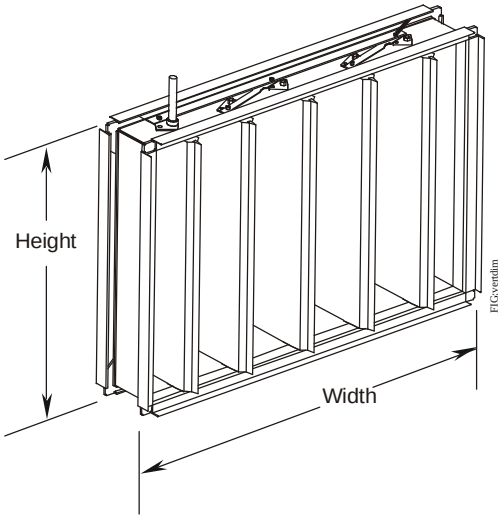

Figure 5: Mounting Dimensions Vertical Blades with Thrust Washers (VD-1250 Model)

See Table 3 for panel size limitations.

Table 3: Single-Panel Size Limits

Dimension	Limits
Width	**VD-1250:** 60 in. **VD-1250 with Thrust Washers:** 48 in. **VD-1251TI:** 60 in. **VD-1251BF:** 60 in.
Height	**VD-1250:** 72 in. **VD-1250 with Thrust Washers:** 36 in. **VD-1251TI:** 72 in. **VD-1251BF:** 72 in.
Size Increment	1 in. increments

Airfoil blades are made from nominal 1/16 in. extruded aluminum in an airfoil shape for high performance. Blade and side seals are standard. See Figure 6.

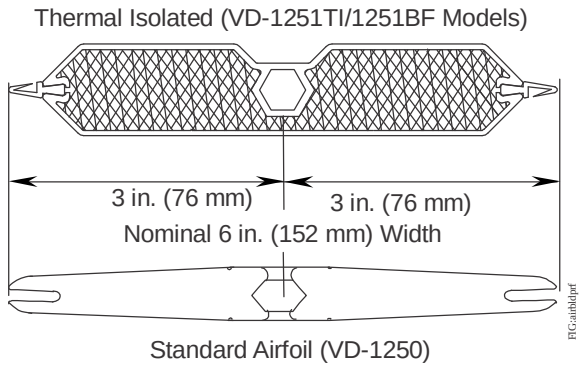

Figure 6: Blade Profiles

Note: All dimensions are nominal.

Selection Information

Use the following to select the product:

1. Determine required size from drawings.
2. Select the features using the Damper Selector in Table 4 that matches the operation and performance required.
3. Enter width and height of damper.

Note: Actual damper size is 1/4 in. less than nominal.

4. Enter options required.

Example: VPESN-020x020 is an all aluminum damper that has airfoil-shaped blades, parallel blade operation, synthetic bearings, vinyl blade seals, and stainless steel side seals. Its dimensions are 20 in. wide x 20 in. high.

Volume Control damper ordering size limits are 192 in. wide and 228 in. high. All VD-1250 dampers are shipped factory coupled.

For sizes larger than our ordering limits, divide the size by the width or height limit to find the quantity of dampers. Then divide the width or height by the quantity to provide equal size dampers.

Factory-mounted actuators are standard outside air stream on a side plate. Actuators are selected by the factory for best performance at 7 lb·in/sq ft for VD-1250 and 11 lb·in./sq ft for VD-1251TI and VD-1251BF.

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

Table 4: Damper Selector[1]

	Ordering Code Number	**V**					**-**	**w**	**w**	**w**	**x**	**h**	**h**	**h**		
Application	V = Volume Control															
Blade Operation	O = Opposed P = Parallel															
Blade/Frame	E = Extruded Aluminum Blade/Frame (VD-1250) B = Thermal Isolated Blade/Frame (VD-1251BF) T = Thermal Isolated Aluminum Blade/Aluminum Frame (VD-1251TI)															
Bearing/Seal	S = Standard (Synthetic/Santoprene) (VD-1250) S = Standard (Stainless Steel/Santoprene) (VD-1251TI/VD-1251BF) E = Extended (Stainless Steel/Santoprene) (VD-1250 Only) T = Vertical Blade (Thrust/Santoprene) (VD-1250 Only)															
Actuator[2]	A = M9208-AGC or M9220-AGC (24 V, Floating, Spring Return) B = M9208-GGC or M9220-HGC (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, Floating, 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)															
Width	All models: 005 to 192 (Parallel Blade), 006 to 192 (Opposed Blade), 005 to 999 (Vertical Blade), 1 in. increments															
Height	All models: 005 to 228 (Parallel Blade), 009 to 228 (Opposed Blade), 006 to 999 (Vertical Blade), 1 in. increments															
Options (limit two)	See *Factory Options* 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. Actuators, by default, come externally mounted (outside air stream). Use option Q for internally mounted actuators.

Factory Options

C Clear anodized finish (VD-1250 only)

E Exact whole inch size, no undercut

F 1.5 in. L flange air entering side (cannot be used with option G)

G 1.5 in. L flange air leaving side (cannot be used with option F)

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.)

S Galvanized Steel frame (VD-1250 only)

T Insulated blade not thermally isolated (VD-1250 only)

Multiple Section Stacking Details

Maximum Panel size for VD-1250 dampers is 48 in. wide x 72 in. high. See Table 3 for maximum panel sizes.

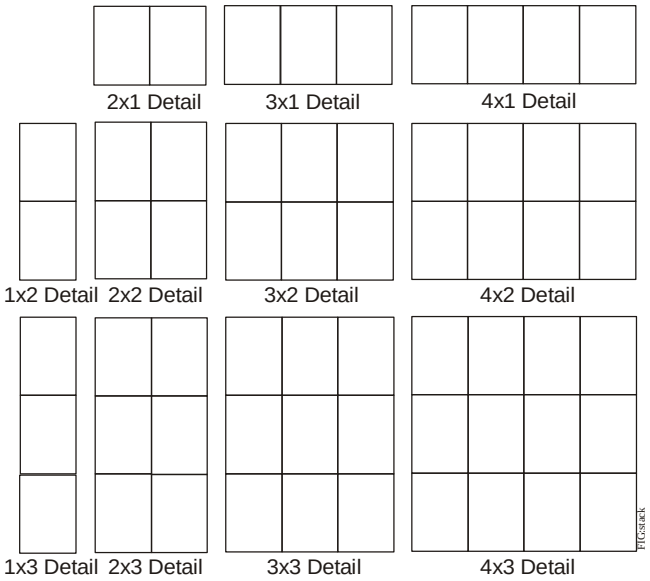

Figure 7: Multiple Section Stacking Options

Maintenance

Johnson Controls VD-1250 dampers have no components that require routine scheduled maintenance.

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

Table 5: Repair Parts

Code Number	Description
DMPR-RC062	Santoprene Blade Stop for VD-1250; 10 ft Long
DMPR-RC063	Santoprene Seal for Parallel and Opposed Bladed VD-1250; 10 ft Long
DMPR-RC064	Santoprene Seal for Parallel and Opposed Bladed VD-1251TI; 10 ft Long
DMPR-RC065	Santoprene Blade Stop Seal for Opposed Bladed VD-1251TI; 10 ft Long
DMPR-RC066	Vinyl Trim Blade Seal for VD-1251TI; 10 ft Long
DMPR-RC067	Silicone Seal for Parallel and Opposed Bladed VD-1250; 10 ft Long
DMPR-RC068	Silicone Blade Stop for VD-1250; 10 ft Long

Technical Specifications

VD-1250 Volume Control Dampers[1]

Leakage Resistance	**VD-1250**		3 cfm/sq ft maximum at 1 in. static pressure 8 cfm/sq ft maximum at 4 in. static pressure 11 cfm/sq ft maximum at 8 in. static pressure up to 48 in. wide			
	VD-1251TI and VD-1251BF		2 cfm/sq ft maximum at 1 in. static pressure 4 cfm/sq ft maximum at 4 in. static pressure 5.64 cfm/sq ft maximum at 8 in. static pressure			
Operating Torque	**VD-1250**		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			7 lb·in/sq ft 7 lb·in/sq ft 9 lb·in/sq ft
	VD-1251TI and VD-1251BF		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			11 lb·in/sq ft 11 lb·in/sq ft 13 lb·in/sq ft
Pressure Drop (inches WG) - Fully Open	**Size (in.)**		**Approach Velocity (fpm)**			
			1,000	**2,000**	**3,000**	**4,000**
	VD-1250	**24 x 24**	0.02	0.08	0.17	0.3
		36 x 36	0.02	0.04	0.10	0.2
	VD-1251xx	**24 x 24**	0.09	0.20	0.42	--
		36 x 36	0.08	0.3	0.4	--
Velocity Requirements			**Width (in.)**			
			12	**24**	**36**	**48**
	VD-1250		6,000 fpm at 13 in. static	5,000 fpm at 10.8 in. static	4,000 fpm at 8.5 in. static	4,000 fpm at 6.0 in. static
	VD-1251TI and VD-1251BF		6,000 fpm at 16 in. static	5,000 fpm at 13.5 in. static	4,000 fpm at 11 in. static	4,000 fpm at 8.5 in. static
Temperature Rating	**Standard and Extended Operating Conditions**		**VD-1250**	-72 to 275°F (-58 to 135°C)		
			VD-1251TI and VD-1251BF	-40 to 165°F (-40 to 73°C)		
	Actuator		-4 to 122°F (-20 to 50°C)			
Approximate Weight	**VD-1250**		7 lb/sq ft (3.2 kg/sq ft)			
	VD-1251TI and VD-1251BF		9 lb/sq ft (3.2 kg/sq ft)			
	Actuator		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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