

WELCOME to VENCO

INTRODUCTION ABOUT US

Venco is a North American ventilation manufacturer with a dedicated focus on developing and producing rugged, high quality products. Our engineers continuously improve existing, and introduce new solutions based on the input they receive from our Venco manufacturer representatives around the globe and customers like you.

Venco offers a comprehensive line of air movement and control products that specifying engineers and contractors throughout the world have come to rely on. Every product we manufacture is thoroughly tested to ensure top performance and incomparable dependability.

In addition to reliable ventilation solutions, we offer best-in-class customer service to ensure you're taken care of before, during and after a project is completed.

IN-HOUSE TESTING

State-of-the-art laboratory and testing facilities are significant factors in Venco's business success. Its laboratory facility exclusively devotes development and testing time for damper related products to the latest version of AMCA, ANSI, ASHRAE, UL, AG-1, and other industry standards for performance.

ISO 9001:2015

Venco dampers are manufactured in a ISO9001 registered facility.



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Damper Applications

Venco offers an extensive line of heavy duty and industrial grade dampers designed to provide a solution for the following applications:

Control and Isolation

The rectangular HCD and round HCDR products are designed to for control and shut-off applications.

Bubble-tight/Isolation dampers

These dampers are designed for applications where leakage is critical. The low leakage models HCD-221, HCDR-351, and bubble-tight HBT/HBTR series provide the highest levels of shut off possible.

Backdraft

The HB family of products are designed to prevent back flow in the ventilation system. Every HB damper is fitted with counterweights for easy operation.

Pressure Relief

The HPR family of products is designed to prevent an over pressurization and back flow of a system. Like the HB series, the HPR dampers are fitted with counterweights for easy operation and also pressure set weights for the proper start-to-open pressure desired.

Blast

In the event of an explosion, the HBS reacts to the shock wave by closing the damper, helping to contain the explosion and help protect equipment and personnel downstream of the blast.

Tornado

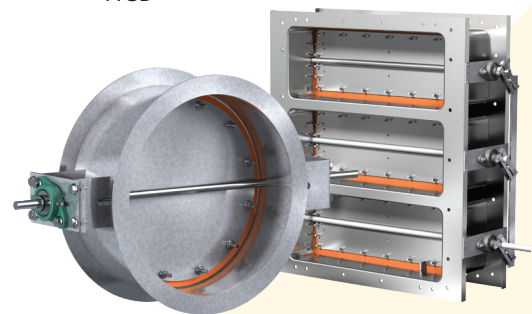
In the event of a tornado, the HTOD reacts to negative pressure changes.

Custom Products

Utilizing more than 65 years of heavy duty and industrial damper engineering experience, Venco has designed and built custom dampers for many unique applications. Contact your local Venco damper expert for a custom solution.



HCD



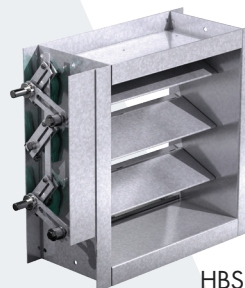
HBT/HBTR



HB



HPR



HBS



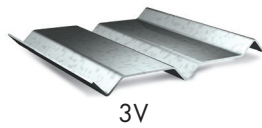
HTOD

- RECTANGULAR
- HCD SERIES

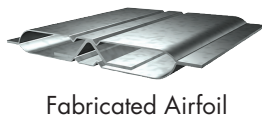
Frame

The rectangular HCD models feature a heavy duty frame fabricated from formed sheet metal C-channels. Depending on your air velocity, static pressure, damper size, and other variables unique to your application Venco has a variety of frame depths and material thicknesses available.

Blades



- Constructed of galvanized steel or stainless steel
- Three V-type grooves running the full length of the blade to increase strength
- ½ in. diameter pin axle (HCD-120); ¾ in. diameter axle (HCD-220)



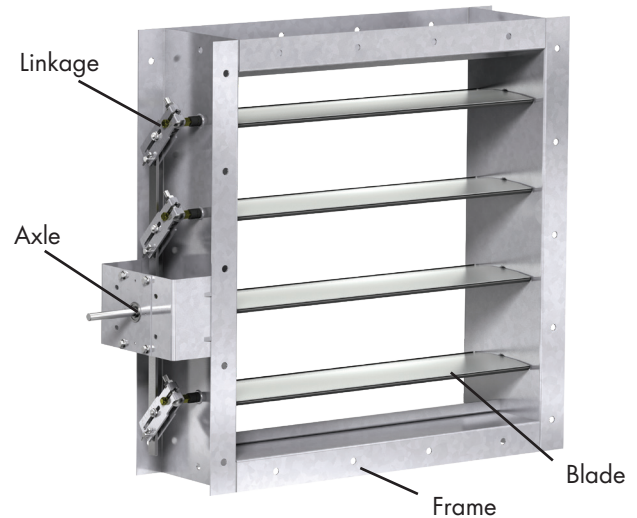
- Constructed of double-skin galvanized or stainless steel
- Hollow blade: HCD-130
Insulated blade: HCD-135
- ½ in. diameter pin axle



- Constructed of heavy gauge extruded aluminum
- ¾ in. diameter axle (HCD-240)



- Constructed of galvanized steel or stainless steel
- Bolted to the axle
- ¾ in. diameter axle (HCD-230 and HCD-330);
1 in. diameter axle (HCD-430 and HCD-530)



Blade Seals

- TPE**
- Mechanically fastened
 - -10°F to 180°F

- EPDM**
- Pressure activated adhesive
 - Humid or dirty airstream applications
 - -20°F to 250°F

- Silicone**
- Pressure activated adhesive
 - Good resistance to ozone, sunlight and oxidation
 - -40°F to 400°F

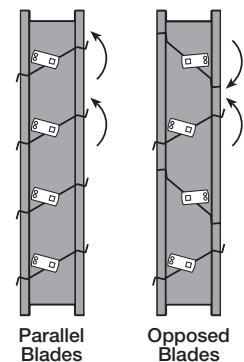
- Fiberglass**
- Mechanically fastened
 - High temperature
 - -60°F to 800°F

- Ceramic**
- Mechanically fastened
 - Extreme temperatures
 - -60°F to 1200°F

Parallel Versus Opposed Blade Operation

Venco control dampers are offered with either parallel or opposed blades. Each style has distinguishing characteristics regarding the type of operation required.

- **Parallel blade operation** - This configuration requires the damper blades to rotate in the same direction, parallel to one another. Parallel blade orientation is typically used when the damper operates in two positions, open or closed.
- **Opposed blade operation** - Adjacent damper blades rotate opposite one another under opposed blade configuration. Opposed blade configuration is typically used on dampers that modulate airflow.



DAMPERS

Control Dampers

- RECTANGULAR
- HCD SERIES

		HCD-120	HCD-130	HCD-130-LE	HCD-135	HCD-220	HCD-230	HCD-230-LE	HCD-240	HCD-324	HCD-330	HCD-430	HCD-524	HCD-530
Pressure in. wg (kPa)	Maximum	8.5 (2.1)	8.5 (2.1)	8.5 (2.1)	8.5 (2.1)	15 (3.7)	15 (3.7)	15 (3.7)	15 (3.7)	25 (6.2)	25 (6.2)	35 (8.7)	45 (11.2)	45 (11.2)
Velocity ft./min. (m/s)	Maximum	3000 (15.2)	4000 (20.3)	4000 (20.3)	4000 (20.3)	4000 (20.3)	5000 (25.4)	5000 (25.4)	5000 (25.4)	5000 (25.4)	5000 (25.4)	6000 (30.5)	6000 (30.5)	6000 (30.5)
Maximum Temperature °F (°C)	Standard	250 (121)	250 (121)	250 (121)	250 (121)	250 (121)	250 (121)	250 (121)	250 (121)	600 (315)	250 (121)	250 (121)	600 (315)	250 (121)
	Optional	400 (204)	400 (204)	400 (204)	-	600 (315)	600 (315)	600 (315)	-	1000 (538)	600 (315)	600 (315)	1000 (538)	600 (315)
Blade Profile	3V	●	-	-	-	●	-	-	-	-	-	-	-	-
	Airfoil	-	●	●	Insulated	-	●	●	●	High Temp	●	●	High Temp	●
Blade Material	Galvanized	●	●	●	●	●	●	●	-	-	●	●	-	●
	Aluminum	-	-	-	-	-	-	-	●	-	-	-	-	-
	304SS	○	○	○	○	○	○	○	-	○	○	○	○	○
	316SS	○	○	○	○	○	○	○	-	○	○	○	○	○
	Painted	-	-	-	-	-	-	-	-	●	-	-	●	-
Frame	Galvanized	●	●	●	●	●	●	●	●	-	●	●	-	●
	304SS	○	○	○	○	○	○	○	○	○	○	○	○	○
	316SS	○	○	○	○	○	○	○	○	○	○	○	○	○
	Carbon Steel	-	-	-	-	○	○	-	○	-	○	○	-	○
	Aluminum	-	-	-	-	-	-	-	○	-	-	-	-	-
	Painted	-	-	-	-	-	-	-	-	●	-	-	●	-
Blade Seals	None	●	●	●	-	●	●	●	-	●	●	●	●	●
	EPDM	○	○	○	○	○	○	○	○	-	○	○	-	○
	Silicone	○	○	○	●	○	○	○	●	-	○	○	-	○
	Fiberglass	-	-	-	-	-	-	-	-	○	-	-	○	-
	Ceramic	-	-	-	-	-	-	-	-	○	-	-	○	-
Jamb Seals	None	●	●	●	-	●	●	●	○	●	●	●	●	●
	301SS	○	○	○	●	-	-	-	-	-	-	-	-	-
	316SS	○	○	○	○	○	○	○	●	-	○	○	-	○
	Fiberglass	-	-	-	-	-	-	-	-	○	-	-	○	-
	Ceramic	-	-	-	-	-	-	-	-	○	-	-	○	-
Axle Seals	None	●	●	●	●	●	●	●	●	-	●	●	-	●
	O-ring	-	-	-	-	○	○	○	○	-	○	○	-	○
	Double Gland	-	-	-	-	○	○	○	○	●	○	○	●	○
	Outboard Double Gland	-	-	-	-	-	-	-	-	○	-	-	○	-
Axle Bearings	Stainless Steel Sleeve	●	●	●	●	●	●	●	●	-	○	-	-	-
	External Bronze	-	-	-	-	○	○	○	○	-	●	●	-	●
	Outboard Bronze	-	-	-	-	○	○	○	○	-	○	○	-	○
	External Ball	-	-	-	-	○	○	○	○	-	○	○	-	○
	Outboard Ball	-	-	-	-	○	○	○	○	●	○	○	●	○
	Outboard Carbon	-	-	-	-	-	-	-	-	○	-	-	○	-

● = Standard, ○ = Optional

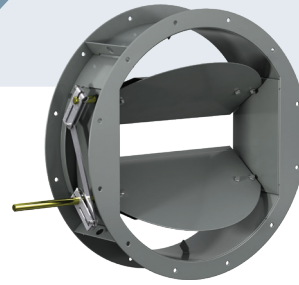
DAMPERS

Control Dampers

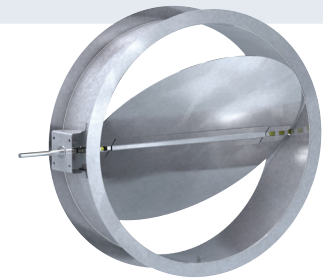
- ROUND
- HCDR SERIES

To complement Venco's rectangular heavy duty control dampers, the HCDR models offer an extensive range of round dampers for industrial use.

Solid flanges are welded around the circular frame, providing a rigid base to support the butterfly style blade. For larger diameters, blades are reinforced with structural supports to ensure years of operation at elevated pressures and velocities.



HCDR-152



HCDR-050, 150, 250, 350, 450

		HCDR-050	HCDR-150	HCDR-152	HCDR-250	HCDR-350	HCDR-450
Pressure in. wg (kPa)	Maximum	6 (1.5)	6 (1.5)	6 (1.5)	13.5 (3.4)	20 (5)	30 (7)
	Velocity ft/min. (m/s)	3000 (15.2)	4000 (20.3)	4000 (20.3)	5150 (26.2)	6400 (32.5)	7000 (36)
Maximum Temperature °F (°C)	Standard	250 (121)	250 (121)	250 (121)	250 (121)	250 (121)	250 (121)
	Optional	-	400 (204)	400 (204)	600 (315)	1000 (538)	400 (204)
Frame and Blade Material	Painted	○	●	●	●	●	●
	Galvanized	●	-	-	-	-	-
	304SS	○	○	○	○	○	○
	316SS	○	○	○	○	○	○
Blade Seals	None	●	●	●	●	●	●
	EPDM	○	○	○	○	○	○
	Silicone	-	○	○	○	○	○
	Ceramic	-	-	-	○	○	-
	Fiberglass	-	-	-	○	○	-
Blade Type	Single Butterfly	●	●	-	●	●	●
	Two-Blade Fabricated Airfoil	-	-	●	-	-	-
Axle Seals	None	●	●	●	●	●	●
	O-ring	-	○	○	○	○	○
	Double Gland	-	-	-	○	○	○
	Outboard Double Gland	-	-	-	-	○	-
Axle Bearings	Stainless Steel Sleeve	●	●	●	-	-	-
	External Bronze	-	○	○	●	●	●
	Outboard Bronze	-	-	-	○	○	○
	External Ball	-	-	-	○	○	○
	Outboard Ball	-	-	-	○	○	○
	Outboard Carbon	-	-	-	○	○	-
Special Features	Mounting Holes	○	○	○	○	○	○
	Rolled Bar Stop	-	○	○	○	○	○
	Pin Stop	○	○	○	○	○	○
Paint Finishes	None	●	○	○	○	○	○
	Hi-Pro Polyester	○	●	●	●	●	●
	Industrial Epoxy	-	○	○	○	○	○
	High Temperature Silver	-	○	○	○	○	○
	High Temperature Flame Control	-	○	○	○	○	○

● = Standard, ○ = Optional

- HCD-221/HCDR-351
- HBT-221
- HBTR SERIES

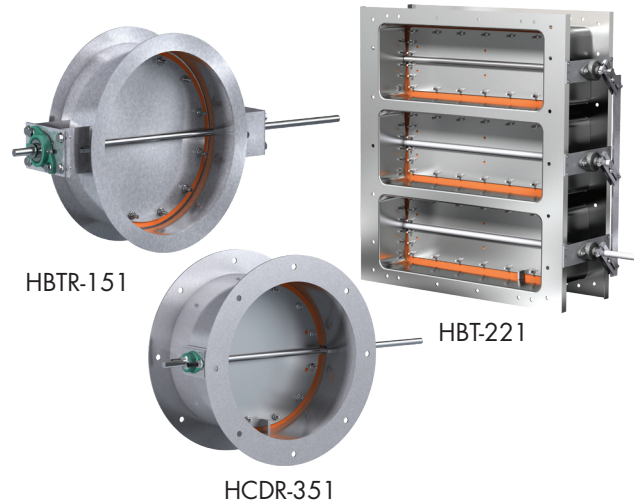
Low Leakage

HCD-221 and HCDR-351 are isolation dampers that provide tight shutoff with very low leakage in HVAC or process control systems. Optional features allow the HCDR-351 the capability of being tailored to your application.

Bubble-Tight

The HBT-221 and HBTR series are bubble-tight dampers designed for isolation applications. Bubble-tight means the damper has the lowest possible leakage rating: zero. The silicone blade seal and double gland axle seals provide bubble-tight performance.

Every bubble-tight damper is leakage tested in accordance with AMCA 500-D Figure 5.8 before it leaves the factory to ensure bubble-tight performance.



		HCDR-351	HCD-221	HBT-221	HBTR-151	HBTR-451	HBTR-551
Pressure in. wg (kPa)	Maximum	20 (5)	10 (2.5)	10 (2.5)	10 (2.5)	30 (7.5)	30 (7.5)
Velocity ft./min. (m/s)	Maximum	6500 (33)	4000 (20.3)	4000 (20.3)	3900 (19.8)	6500 (33)	6500 (33)
Leakage cfm/ft ² (cmh/m ²)	Maximum	Less than 1.5 at 10 in. wg (27.4 at 2.5 kPa)	Less than 1 at 1 in. wg (18.3 at .25 kPa)	0	0	0	0
Temperature °F (°C)	Maximum	400 (204)	400 (204)	250(121)	250 (121)	250 (121)	250 (121)
Frame	Galvanized	-	●	-	-	-	-
	Painted	●	-	●	●	●	●
	304SS	○	○	○	○	○	○
	316SS	○	○	○	○	○	○
Blade Material	Galvanized	-	●	-	-	-	-
	Painted	●	-	●	●	●	●
	304SS	○	○	○	○	○	○
	316SS	○	○	○	○	○	○
Blade Seals	EPDM	○	○	-	-	-	-
	Silicone	●	●	●	-	-	-
	Silicone Rubber	-	-	-	●	●	●
Axle Seal	O-ring	●	●	-	-	-	-
	Double Gland	○	○	●	●	●	●
Axle Bearings	Stainless Steel Sleeve	-	●	-	-	-	-
	External Bronze	●	○	-	-	-	-
	Outboard Bronze	○	○	-	-	-	-
	External Ball	○	○	-	-	-	-
	Outboard Ball	○	○	●	●	●	●
Special Features	Mounting Holes	○	○	○	○	○	○
Paint Finishes	None	○	●	○	-	-	-
	Hi-Pro Polyester	●	○	●	●	●	●
	Industrial Epoxy	○	○	○	○	○	○
	Hi Temperature Silver	○	-	-	-	-	-
	Hi Temperature Flame Control	○	-	-	-	-	-

● = Standard, ○ = Optional

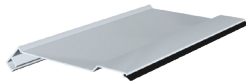
- HB SERIES
- HBR SERIES

Heavy duty/Industrial backdraft dampers prevent back flow at static pressures up to 20 in. wg (5 kPa) and velocities up to 6400 ft/min. (32.5 m/s).

All of Venco's heavy duty backdraft dampers (HB series) use an edge-pivoting blade. Standard construction is the fabricated 2V blade, which is strengthened by two longitudinal "V"s, designed for a tight seal when closed and low pressure drop when open. To complete Venco's model line, a fabricated or extruded aluminum airfoil blade is available for better performance at higher velocities and pressures.

For round duct applications, the HBR series uses a single round blade with a true round flanged frame. Counterbalance weights are mounted externally for easy adjustment and balancing in the field. The wide mounting flange can be ordered with bolt holes customized to match your requirements. A variety of options are available.

Blades



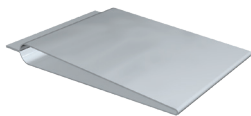
Aluminum

- Constructed of heavy gauge extruded aluminum
- Lower resistance to airflow and increased strength



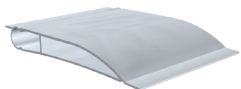
Galvanized Steel 2V

- Fabricated from a single thickness galvanized steel or stainless steel
- Two V-type grooves running the full length of the blade to increase strength



Galvanized Steel Airfoil

- Fabricated double thickness galvanized steel or stainless steel
- Lower resistance to airflow and increased strength
- High velocity and pressure applications

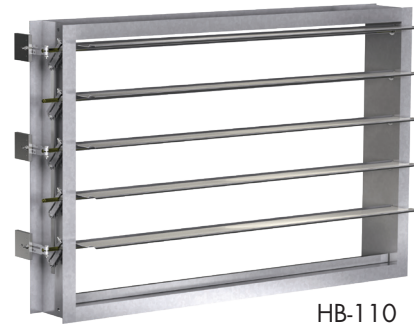


Aluminum Airfoil

- Constructed of heavy gauge extruded aluminum
- Lower resistance to airflow and increased strength
- High velocity and pressure applications



HBR-050



HB-110



HB-230



HB-240

DAMPERS

Backdraft Dampers

- HB SERIES
- HBR SERIES

		HBR-050	HBR-150	HB-110	HB-120	HB-230	HB-240	HB-330
Back Pressure in. wg (kPa)	Maximum	6 (1.5)	6 (1.5)	5 (1.2)	8.5 (2.1)	13.5 (3.4)	13.5 (3.4)	20 (5)
Velocity ft/min. (m/s)	Maximum	3000 (15.2)	4000 (20.3)	3900 (20)	5150 (26)	5150 (26)	5150 (26)	6400 (33)
Temperature °F (°C)	Minimum	-20° (-29°)	-20° (-29°)	-20° (-29°)	-20° (-29°)	-20° (-29°)	-40° (-40°)	-40° (-40°)
	Maximum	250° (121°)	250° (121°)	180° (82°)	250° (121°)	250° (121°)	250° (121°)	250° (121°)
Frame Material	Aluminum	-	-	○	-	-	○	-
	Galvanized	●	-	●	●	●	●	●
	304SS	○	○	○	○	○	○	○
	316SS	○	○	○	○	○	○	○
	Painted	○	●	○	○	○	○	○
Blade Profile	Aluminum Single Thickness	-	-	●	-	-	-	-
	Galvanized 2V	-	-	-	●	-	-	-
	304SS 2V	-	-	-	○	-	-	-
	316SS 2V	-	-	-	○	-	-	-
	Galvanized Airfoil	-	-	-	-	●	-	●
	Aluminum Airfoil	-	-	-	-	-	●	-
	304SS Airfoil	-	-	-	-	○	-	○
	316SS Airfoil	-	-	-	-	○	-	○
	Galvanized Round	●	-	-	-	-	-	-
	Painted	○	●	○	○	○	○	○
	304SS Round	○	○	-	-	-	-	-
316SS Round	○	○	-	-	-	-	-	
Blade Seals	None	●	●	○	○	○	○	○
	Vinyl	-	-	●	-	-	-	-
	TPE	-	-	-	●	-	-	-
	EPDM	-	○	-	-	○	○	○
	Silicone	-	○	-	-	●	●	●
Axle Bearings	Acetal w/stainless steel ball	-	-	○	○	-	-	-
	Galvanized Ball	●	-	●	●	●	●	-
	Stainless Steel Sleeve	-	●	-	-	-	-	-
	External Bronze	-	○	-	-	-	-	-
	External Ball	-	○	-	-	○	○	●
	External Galvanized Ball	-	-	-	-	-	○	-
Special Features	Spark A Resistance	-	-	-	-	-	○	-
	Spark B and C Resistance	-	-	-	-	-	○	-
	Mounting Holes	○	○	○	○	○	○	○
	Pin Stop	●	●	-	-	-	-	-
	Rolled Bar Stop	-	○	-	-	-	-	-
Paint Finishes	None	-	-	●	●	●	●	●
	Hi Pro Polyester	○	●	○	○	○	○	○
	Industrial Epoxy	-	-	○	○	○	○	○

● = Standard, ○ = Optional

DAMPERS

Pressure Relief Dampers

• HPR SERIES

A pressure relief damper is designed to stay closed until a "start-open" pressure reached. It will then begin to relieve the pressure in the system. When pressure reduces below the start to open pressure value, the damper will go it closed position again. External

weights are used for counterbalance and pressure sets, which offer some field adjustment capability. Dampers have flanges for duct or wall mounting.

A pressure relief damper is generally used as a safety



HPR-230

or controlling device. In a duct section, it would be mounted on the duct to either relieve an unexpected overpressure or to relieve negative pressure downstream of a rapidly closing fire damper. Available in galvanized, aluminum and stainless steel materials.

HPR-120

HPR-120 features galvanized steel 2V blade.

HPR-230

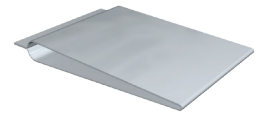
HPR-230 features dual skin airfoil blades for added strength.

HPR-330

HPR-330 features fabricated airfoil same as the HPR-230.



Galvanized Steel 2V



Galvanized Steel Airfoil

		HPR-120	HPR-230	HPR-330
Back Pressure in. wg (kPa)	Maximum	5 - 8.5 (1.2 - 2)	6 - 13.5 (1.5 - 3.4)	13.5 - 20 (3.4 - 5)
Pressure Relief - in. wg (kPa)		.1 - 2 (.02 - .5)	.25 - 4 (.06 - 1)	.50 - 6 (.12 - 1.5)
Velocity ft/min. (m/s)	Maximum	5150 (26)	5150 (26)	6400 (33)
Temperature °F (°C)	Minimum	-20° (-29°)	-40° (-40°)	-40° (-40°)
	Maximum	250° (121°)	250° (121°)	250° (121°)
Frame	Galvanized	●	●	●
	304SS	○	○	○
	316SS	○	○	○
	Painted	○	○	○
Blade Profile	Galvanized 2V	●	-	-
	304SS 2V	○	-	-
	316SS 2V	○	-	-
	Galvanized Airfoil	-	●	●
	304SS Airfoil	-	○	○
	316SS Airfoil	-	○	○
Axle Bearings	Galvanized Ball	●	●	-
	External Ball	-	○	●
Blade Seals	TPE	●	-	-
	Silicone	-	●	●
	EPDM	-	○	○
	None	○	○	○
Special Features	Mounting Holes	○	○	○
	Paint	○	○	○

● = Standard, ○ = Optional

- HBS SERIES
- HTOD SERIES

Blast Dampers - HBS Series

Blast dampers are designed to protect against blasts and rapid pressure changes.

HBS-330 will close in the same direction as normal flow.

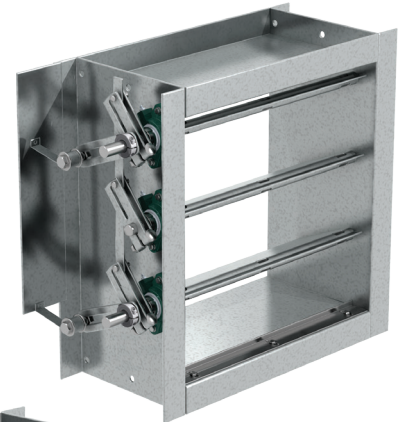
HBS-331 will close in the opposite direction as normal flow.

Tornado Dampers - HTOD Series

Tornado dampers are designed to protect against tornadoes and instantaneous pressure changes.

HTOD-330 will close in the same direction as normal flow.

HTOD-331 will close in the opposite direction as normal flow.



HBS-330/430



HTOD-330

	HBS-330	HBS-331	HBS-430	HBS-431	HTOD-330	HTOD-331
Maximum Pressure	5.77 psi (40 kPa)	5.77 psi (88 kPa)	15 psi (103 kPa)	15 psi (103 kPa)	3 psi (20.7 kPa)	3 psi (20.7 kPa)
Maximum Velocity ft/min. (m/s)	6400 (32.5)	6400 (32.5)	4000 (20.3)	4000 (20.3)	6400 (32.5)	6400 (32.5)
Minimum Temperature °F (°C)	-40° (-40°)	-40° (-40°)	-40° (-40°)	-40° (-40°)	-40° (-40°)	-40° (-40°)
Maximum Temperature °F (°C)	250° (121°)	250° (121°)	250° (121°)	250° (121°)	250° (121°)	250° (121°)
Pressure Rise or Decrease	N/A	N/A	N/A	N/A	3 psi	3 psi

N/A = Not Applicable

Capable of operations in extreme temperatures, high pressure, high velocities, and chemical or corrosive environments. Venco's bearing offering provides solutions for the most demanding applications.

Acetal Bearing

- 316 stainless steel balls
- Polymer raceways and cages
- Offers excellent corrosion and chemical resistance for applications up to 180°F (82°C)



Relubricable Ball Bearing

- Ideal for heavy duty and industrial applications with high pressures or velocities
- Relubricable ball bearing features a flanged cast iron housing
- External grease zerks allow for easy lubrication of the bearing
- Bolted externally to the damper frame
- Capable of high radial loads
- Offers excellent operation in dirty applications; seals protect the bearings' balls from the environment



Galvanized Ball Bearing

- Flanged housing, fabricated from galvanized steel
- Press fit into the damper frame
- Hardened, low-carbon steel balls
- Offers dependable operation for general purpose at temperatures up to 500°F (260°C)



Carbon Sleeve Bearings

- Designed for the most demanding industrial application
- Carbon sleeve bearing is self-aligning and self-lubricating
- Flange mounted externally to the damper frame
- Sleeve portion is fabricated from carbon graphite
- Offers continuous operation at 1000°F (538°C)



Stainless Steel Ball Bearing

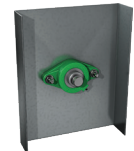
- 316 stainless steel ball and raceway
- Cage is fabricated from acetal
- Housed inside of a 316 stainless steel flange that is bolted externally to the damper frame
- Offers excellent corrosion and chemical resistance for applications up to 180°F (82°C)



Bearing Placement

External Bearing

- External mount directly to the damper's frame
- Recommended for temperatures 400°F (204°C) or less
- Heat conducts through the damper frame and into the bearing, with elevated airstream temperatures
- In extreme temperatures, lubricants inside of the bearing can leak, causing the bearing to seize



Stainless Steel Sleeve Bearing

- Fabricated from 316SS
- Impregnated with an oil lubricant
- Bushing style bearing is press fit into the damper frame
- Offers low maintenance and excellent corrosion resistance and is recommended for applications with a continuous operating temperature of 400°F (204°C) or less.



Outboard Bearing

- Recommended for temperatures above 400°F (204°C)
- Bearings located away from the hot damper frame



Bronze Bearing

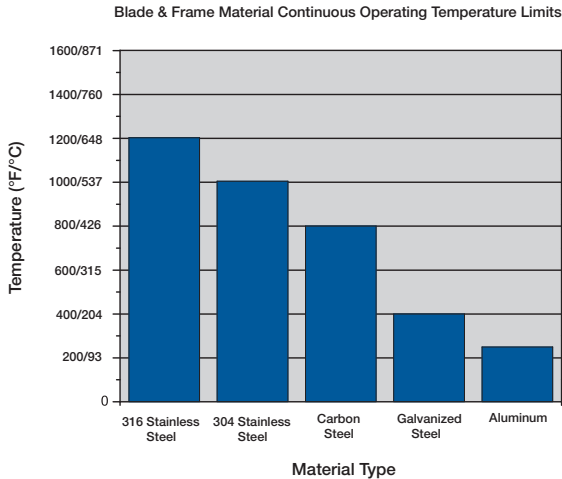
- Self-aligning spherical design bearing
- Contained inside a galvanized housing
- Oil-impregnated bronze sleeve
- Offers dependable operation for general purpose applications up to 400°F (204°C)



- MATERIAL
- SEALS

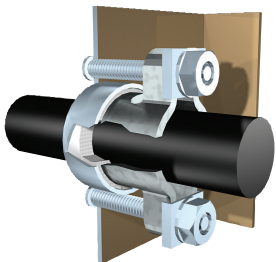
Blade and Frame Material

Venco's HCD and HCDR series are limited to 1000°F (538°C). Temperatures above this limit require special consideration, please consult the factory. The chart below displays these limits.

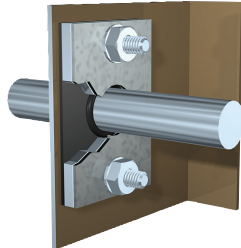


Axle Seals

Two axle seal options are available to ensure that the medium in the duct stays in place. An o-ring seal is ideal for clean air applications. The double gland stuffing box uses a packing gland impregnated with Teflon® or carbon/graphite for a superior seal. The double-gland stuffing box is recommended for clean air, contaminated air and high temperature. At temperatures above 400°F (204°C), double gland axle seals are required. The double gland axle seals reduce leakage where the axle penetrates the damper frame. Leakage around the axle tends to jet out toward the bearing and can overheat if not controlled. Double gland axle seals reduce but may not eliminate this leakage.



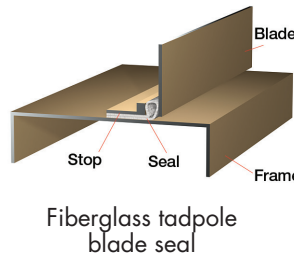
Double gland stuffing box



O-ring axle seal

Blade Seals

Venco offers several options for low leakage performance. EPDM, silicone, fiberglass tadpole, or ceramic tadpole blade seals are available. At temperature above 400°F (204°C), fiberglass or ceramic blade seals are required. Reference the chart below for the temperature limitations.



Fiberglass tadpole blade seal



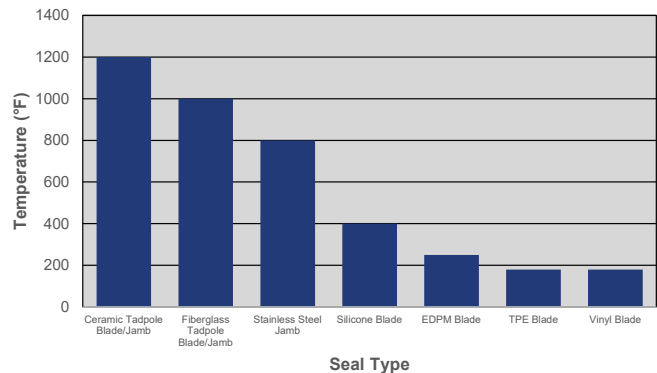
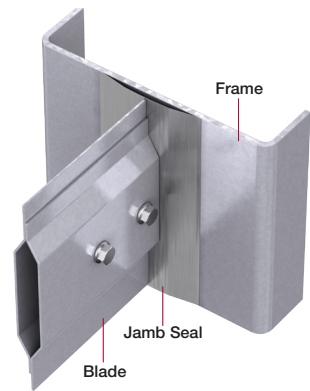
EPDM or silicone blade seal



Ceramic tadpole blade seal

Jamb Seals

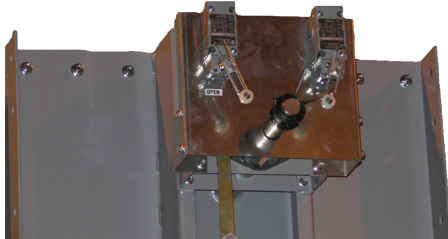
Stainless steel jamb seals are constructed of flexible compression type material to prevent air from leaking between the ends of each blade and frame. The chart at the bottom left shows the continuous operating temperature limitations of blade and jamb seal.



- LIMIT SWITCHES
- MOUNTING HOLES
- PAINT FINISHES

Limit Switches

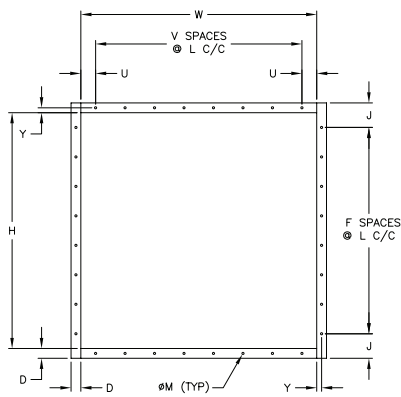
Limit switches are available on many actuators or can be installed separately to provide positive blade indication. Limit switch packages are offered with NEMA 4, 4X, 7, or 9 housings for hazardous environments.



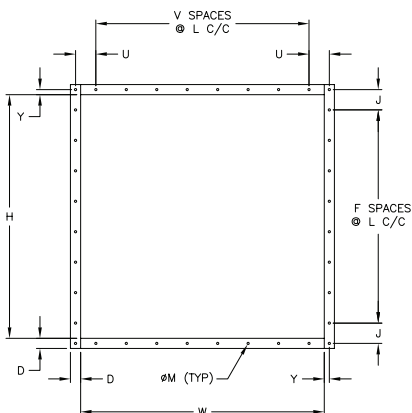
Mounting Holes

Mounting holes can be added as an option to the damper flanges for ease of installation.

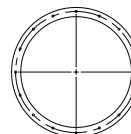
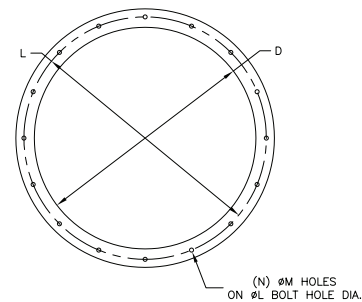
- Standard - Hole pattern uses equal spacing on all flanges.
- Corner Holes - This mounting pattern places holes directly on the four corners of the damper flanges. Holes between these are then equally spaced by the entered mounting hole spacing.



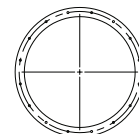
Standard Mounting Hole Pattern



Standard Mounting Hole Pattern with Corner Holes



Parallel on Centerline



Straddle on Centerline

Paint Finishes

Venco offers a wide variety of standard paint finishes and colors.

- Hi Pro Polyester
- Industrial Epoxy
- Hi Temperature Silver
- Hi Temperature Flame Control

Contact the factory for a special finish.

- MANUAL
- ELECTRIC
- PNEUMATIC

Venco's actuator offering includes hundreds of models from dozens of manufacturers. An extensive selection of actuator types, enclosures, power supply, controls, and operation provides thousands of actuator variations.

Manual Operators

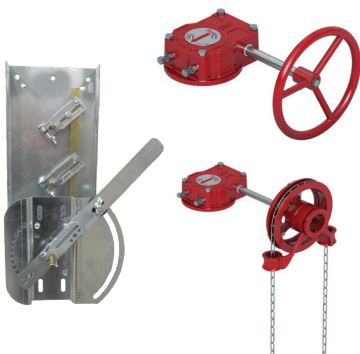
- ✓ Manual quadrant
 - 10 feet is standard
- ✓ Chainwheel
- ✓ Handwheel

Electric Actuator Checklist

- ✓ Power supply
 - 24 VDC, 24 VAC, 120 VAC, and 230 VAC
 - Frequency: 50Hz or 60Hz
- ✓ Operation
 - Spring return (spring will drive damper to original starting point)
 - Power open or power close
- ✓ Operating mode
 - Two-position (damper position is either open or closed)
 - Modulating (damper position determined by modulating control signal)
 - Floating (damper can be stopped anywhere between open and closed)
- ✓ Control signal (for modulating only)
 - 2-10 VDC or 4-20 mAdc
- ✓ Fail direction (for spring return only)
 - Open or closed
- ✓ NEMA enclosure
 - 1, 3, 4, 4X, 7, or 9 (specify one per application)
- ✓ Accessories
 - Auxiliary switches

Pneumatic Actuator Checklist

- ✓ Power supply
 - 80 psi
- ✓ Operation
 - Spring return (spring will drive damper to original starting point)
 - Power open or power close
- ✓ Operating mode
 - Two-position (damper position is open or closed)
 - Modulating (damper position determined by modulating pressure signal)
- ✓ Fail direction (for spring return only)
 - Open or closed
- ✓ Control signal (for modulating only)
 - 3-15 psi
 - 4-20 mAdc
- ✓ Accessories
 - Solenoid valve
 - Positioner



Manual Quadrant



Electric



Pneumatic

- LIMIT SWITCHES
- MANUAL OVERRIDE
- PNEUMATIC ACCESSORIES
- ENCLOSURES

Limit Switches

Limit switches are available to provide feedback and positive blade indication. Some actuators have the limit switches incorporated within the actuator, providing conformity between the actuator and position display.



Limit Switch

Manual Override

Actuators can be fitted with a manual override in case of a loss of power or air pressure. The override allows the damper to open or close using a handwheel or manual quadrant in an emergency.



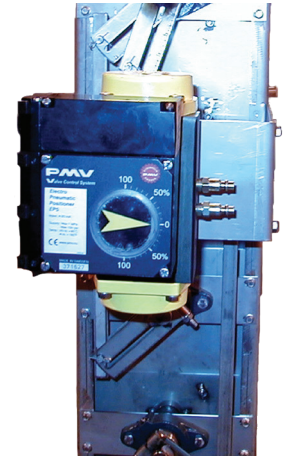
Electric Actuator with Manual Override

Heater and Thermostat

A heater and thermostat can regulate the actuator temperature and prevent condensation from forming on the electrical components.

Pneumatic Accessories

Venco offers several options to control pneumatic actuators. For two-position operation, a solenoid valve (3-way or 4-way, depending on actuator operation) can be mounted directly to the actuator in various voltages. Modulating pneumatic actuators use a positioner with a 3-15 psi control signal to control blade position. A pneumatic positioner can also be fitted with an I/P converter, allowing a 2-10 Vdc or 4-20 mAdc control signal input.



Position Indicator

Enclosure

Consider the actuator's enclosure rating when selecting an electric actuator, especially if installing it in a wet, dirty or hazardous location. NEMA provides standards for different types of enclosures. Please consult the latest edition of NEMA Standard 250 to determine the appropriate enclosure for your application.

- **NEMA 1** - General purpose enclosure appropriate for indoor applications where there is exposure to dust.
- **NEMA 4** - Appropriate for outdoor applications, this enclosure protects against from dirt, dust, direct splashing, and a hose down.
- **NEMA 4X** - This enclosure provides the same protection against dirt, dust and moisture as the NEMA 4, but also provides added protection against corrosive agents.
- **NEMA 7** - The enclosure is for hazardous locations per NFPA 70, Class 1, Groups A, B, C, or D.¹
- **NEMA 9** - This enclosure prevents the ignition of combustible dust.

Less common enclosure ratings including ATEX, IEC and other NEMA enclosures are available.

¹NEMA 250-2003

From wastewater treatment plants to boiler stacks, Venco heavy duty and industrial dampers are found in applications throughout the world. Building owners and engineers rely on Venco to provide not only a product but also the knowledge and experience to solve today's industrial challenges. Below are examples of how Venco has delivered value to our customers through our industrial solutions.



Underground Mining

This job required dampers to withstand snow and temperatures down to -40°F/C. Venco furnished HCD-240's with a Jamesbury actuator and custom-designed covers for the jamb and actuator to withstand the elements. Knockouts were provided on the actuator cover to make the pneumatic hookup access easier at the job site. Customer-specified bolt hole patterns were provided on the frame.



Rolling Mill Exhaust

Venco developed this damper to be placed in the exhaust system of a rolling mill. It features a fully seal-welded frame and axle seals, which work to achieve a leakproof design of the mist carried away by the exhaust duct system. A central bearing lubrication station was provided for easy access to the greaseable bearings located behind the linkage pinch guards.



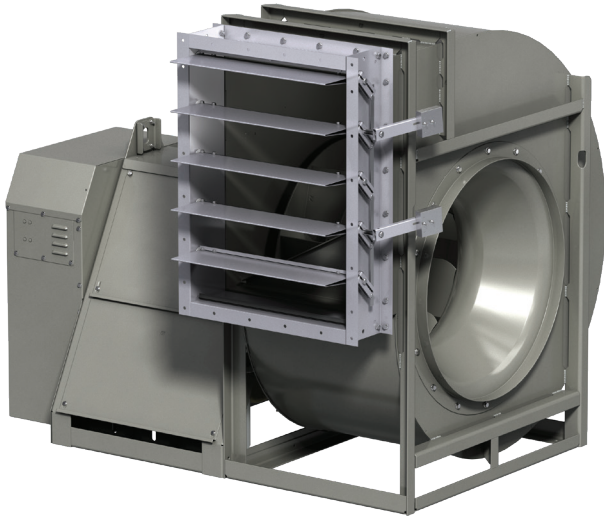
Dust Collection System

At 110 inches (2794mm) diameter, this damper was built for a massive industrial dust collection system. Venco engineered the blade to withstand static pressure differences over 20 in. wg (5 kPa) when closed. A single actuator was used to drive the damper, providing over 11,000 in. lbs. (1243 N•m) of torque.



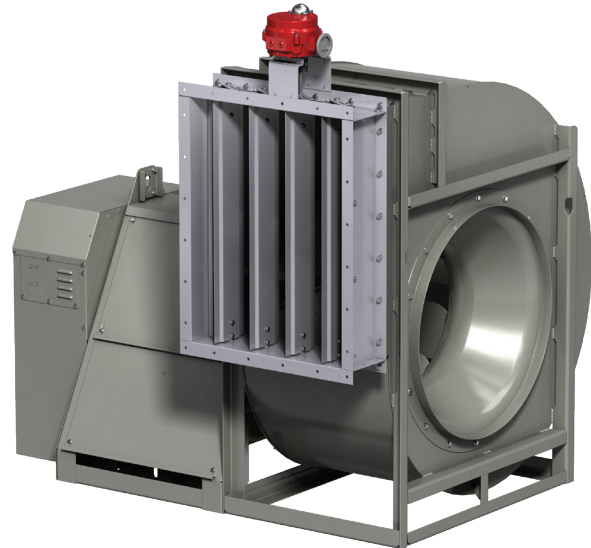
Hospital System

This large bubble-tight damper was designed for a hospital system where low leakage was critical to contain potential contaminants. The eight 28 in. x 78 in. dampers needed to recirculate air in an exhaust fan section while maintaining zero leakage. The dampers required special actuator mounting with the ability to install the actuators on the face of the dampers. All eight bubble-tight dampers were tested before shipment per AMCA 500 & ASME AG-1 Class 0A. Testing certificates were shipped with the dampers.



Blower Outlet Application - Backdraft Damper

Centrifugal fans are offered with optional HB series backdraft dampers. These dampers allow air to flow when the fan is on, but will close by gravity when the fan is off. This action prevents wind from back spinning the fan wheel and prevents damage to the fan during start up. HB units are designed as “easy open” to operate as efficiently as possible.



Blower Outlet Application - Control Damper

Centrifugal fans are offered with optional HCD series control dampers. These dampers are commonly used in variable air volume systems. Blades are mounted perpendicular to fan shaft for even force loading on the blades and to reduce pressure losses.

Fan Isolation Application

The isolation damper is used with a manual quadrant or electric actuator to control direction, limit and/or isolate the airflow as desired.



- OPERATION
- PERFORMANCE
- CONSTRUCTION
- ACTUATOR

Operating Parameters

- ✓ Pressure
- ✓ Flow rate (volumetric or velocity)
- ✓ Temperature (minimum and maximum)
- ✓ Medium (clean air, dirty air, other)

Performance Requirements

- ✓ Leakage
- ✓ Pressure drop

Construction Requirements

- ✓ Material (galvanized, 304 stainless steel, 316 stainless steel, aluminum)
- ✓ Coating (Hi-Pro Polyester, High Temperature Silver, other)
- ✓ Blade type (V-type, fabricated airfoil, extruded airfoil)
- ✓ Bearings (stainless sleeve, bronze, ball, high temperature)
- ✓ Seals (blade, jamb, axle)
- ✓ Mounting holes

Actuator Requirements

- ✓ Type (electric, pneumatic or manual)
- ✓ Function (two-position or modulating)
- ✓ Operation (spring return or power open/power close)
- ✓ Accessories (manual override, limit switch)
- ✓ Special request (explosion proof housings, 250°C for 1 hour rating)





VENCO ™

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