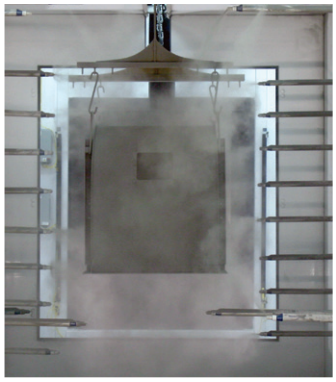
VENCO™

Your Ventilation Company



V-2 | Industrial Damper Catalog

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, ASME 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

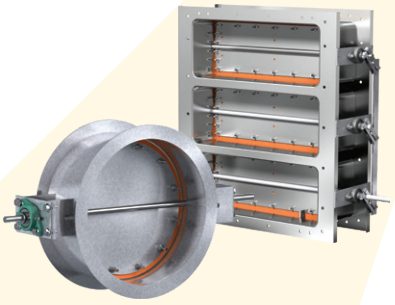
Venco offers an extensive line of heavy-duty and industrial grade dampers designed to provide a solution for the following applications:

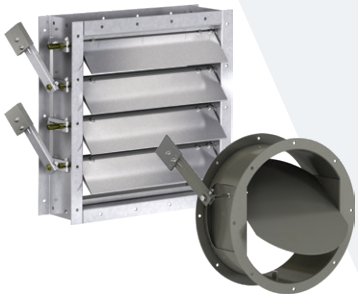
Control Dampers

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

Bubble-tight/Isolation dampers

Isolation and bubble-tight dampers are designed for applications where leakage is critical (HCD-221, HCDR-351, HBT and HBTR series).





Backdraft

The HB and HBR products are designed to prevent backflow in the ventilation system. Every HB and HBR damper is fitted with counterweights for easy operation.

Pressure Relief

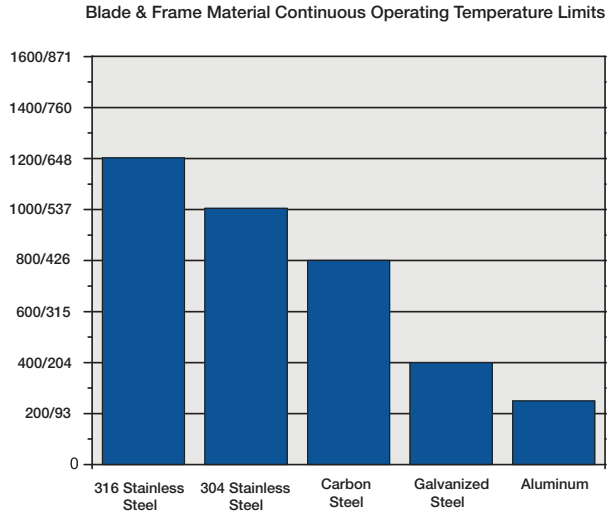
The HPR family of products are designed to prevent an overpressurization and backflow of a system. Like the HB series, the HPR dampers are fitted with counterweights for easy operation and also pressure set weights for the proper start-to-open pressure desired.

Construction Features

- MATERIAL
- SEALS

Blade and Frame Material

Venco's HCD series are limited to 600°F (316°C). The 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.



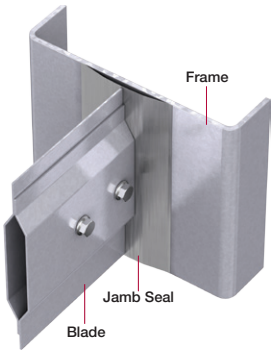
Blade Seals

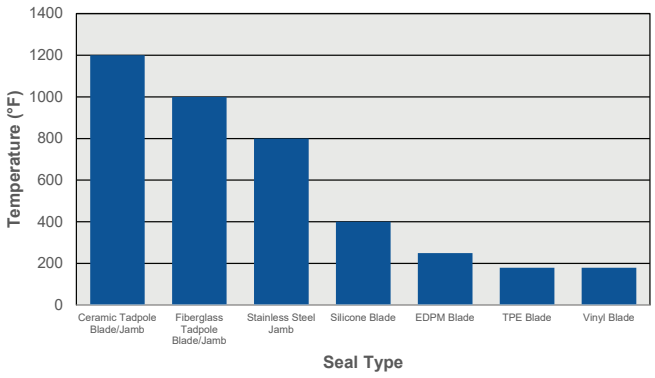
Venco offers several options for low leakage performance. EPDM, silicone, fiberglass tadpole, or ceramic tadpole blade seals are available. At temperatures above 400°F (204°C), fiberglass or ceramic blade seals are required. Reference the chart below for the temperature limitations.

EPDM or silicone 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 seals.





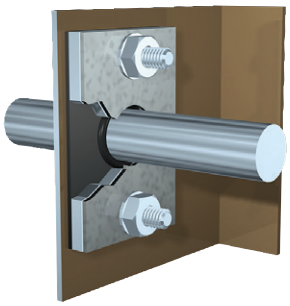
Construction Features

- SEALS
- MOUNTING HOLES

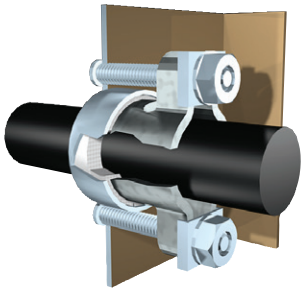
Axle Seals

Two axle seal options are available to ensure that the medium in the duct stays there. 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.



O-ring axle seal



Double gland stuffing box

Paint Finishes

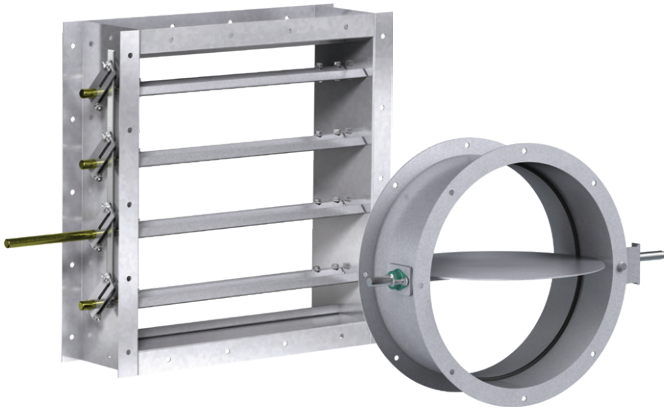
Venco offers a wide variety of standard paint finishes and colors.

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

Contact the factory for a special finish.

Mounting Holes

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



Mounting holes on flanged frame

Construction Features

Capable of operating 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)

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)

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

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)

Relubricable Ball Bearing

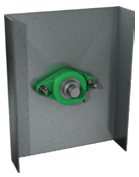
- Ideal for heavy-duty and industrial applications with high pressures or velocities
- Relubricable ball bearing features a flanged cast iron housing
- External grease zerks allow for easy lubrication of the bearing
- Bolted externally to the damper frame
- Capable of high radial loads
- Offers excellent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

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)

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

Outboard Bearing

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

Bearing Temperatures

Bearing Type	Minimum Airstream Temperature °F (°C)	Maximum Airstream Temperature °F (C°)*
Acetal	-40° (-40°)	180° (82°)
Galvanized Ball Bearing	-40° (-40°)	500° (260°)
Stainless Sleeve Bearing	-40° (-40°)	400° (204°)
Bronze Bearing	-40° (-40°)	600° (316°)
Relubricable Ball Bearing	-40° (-40°)	600° (316°)
Carbon Sleeve Bearings	-40° (-40°)	700°(371°)

- MANUAL
- ELECTRIC
- PNEUMATIC
- NEMA ENCLOSURES

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 Operators

- ✓ Manual quadrant
- ✓ Chainwheel
  - 10 foot drop is standard
- ✓ 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)
- ✓ 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


Electric

Pneumatic Actuator Checklist


Pneumatic

- ✓ 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 feedback
  - Speed control valves
  - Auxiliary Switches

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. 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 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.

[1]NEMA 250-2003

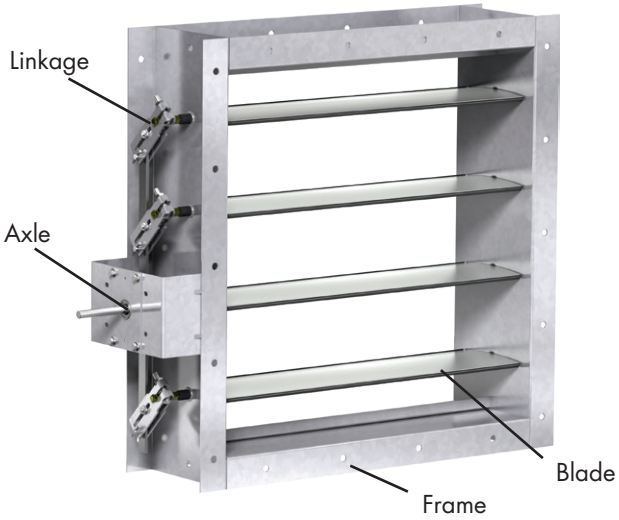
Control Dampers

- RECTANGULAR
- HCD SERIES

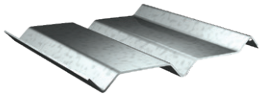
Frame

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.

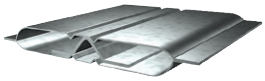


Blades



3V

- 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



Fabricated Airfoil

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

Extruded Airfoil

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

Fabricated Airfoil

- 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

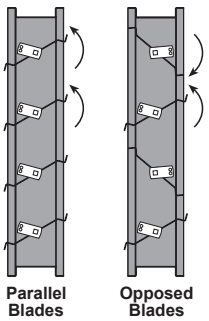
EPDM
- Pressure activated adhesive
- Humid or dirty airstream applications
- -20°F to 250°F

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

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.



Control Dampers

- RECTANGULAR
- HCD SERIES

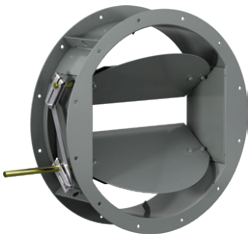
● = Standard, O = Optional		HCD-120	HCD-130	HCD-135	HCD-220	HCD-230	HCD-240	HCD-330	HCD-430	HCD-530
Pressure in. wg (kPa)	Maximum	8.5 (2.1)	8.5 (2.1)	8.5 (2.1)	15 (3.7)	15 (3.7)	15 (3.7)	25 (6.2)	35 (8.7)	45 (11.2)
Velocity ft/min. (m/s)	Maximum	3000 (15.2)	4000 (20.3)	4000 (20.3)	4000 (20.3)	5000 (25.4)	5000 (25.4)	5000 (25.4)	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)	250 (121)
	Optional	400 (204)	400 (204)	-	600 (315)	600 (315)	-	600 (315)	600 (315)	600 (315)
Blade Profile	3V	●	-	-	●	-	-	-	-	-
	Airfoil	-	●	Insulated	-	●	●	●	●	●
Blade Material	Galvanized	●	●	●	●	●	-	●	●	●
	Aluminum	-	-	-	-	-	●	-	-	-
	304SS	O	O	O	O	O	-	O	O	O
	316SS	O	O	O	O	O	-	O	O	O
	Painted	O	O	-	O	O	-	O	O	O
Frame	Galvanized	●	●	●	●	●	●	●	●	●
	304SS	O	O	O	O	O	O	O	O	O
	316SS	O	O	O	O	O	O	O	O	O
	Carbon Steel	-	-	-	O	O	O	O	O	O
	Aluminum	-	-	-	-	-	O	-	-	-
	Painted	O	O	-	O	O	O	O	O	O
Blade Seals	None	●	●	-	●	●	-	●	●	●
	EPDM	O	O	O	O	O	O	O	O	O
	Silicone	O	O	●	O	O	●	O	O	O
Jamb Seals	None	●	●	-	●	●	O	●	●	●
	301SS	O	O	●	-	-	-	-	-	-
	316SS	O	O	O	O	O	●	O	O	O
Axle Seals	None	●	●	●	●	●	●	●	●	●
	O-ring	-	-	-	O	O	O	O	O	O
	Double Gland	-	-	-	O	O	O	O	O	O
	Outboard Double Gland	-	-	-	-	-	-	-	-	-
Axle Bearings	Stainless Steel Sleeve	●	●	●	●	●	●	O	-	-
	External SS Sleeve				O	O	O	O		
	External Bronze	-	-	-	O	O	O	●	●	●
	Outboard Bronze	-	-	-	O	O	O	O	O	O
	External Ball	-	-	-	O	O	O	O	O	O
	Outboard Ball	-	-	-	O	O	O	O	O	O
Special Features	Mounting Holes	O	O	O	O	O	O	O	O	O

Control Dampers

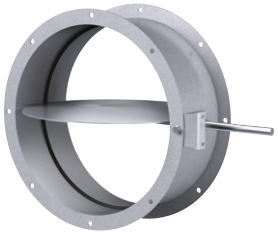
- ROUND
- HCDR SERIES

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

● = Standard, O = Optional		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)	Maximum	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	O	●	●	●	●	●
	Galvanized	●	-	-	-	-	-
	304SS	O	O	O	O	O	O
	316SS	O	O	O	O	O	O
Blade Seals	None	●	●	●	●	●	●
	EPDM	O	O	O	O	O	O
	Silicone	-	O	O	O	O	O
	Ceramic	-	-	-	O	O	-
	Fiberglass	-	-	-	O	O	-
Blade Type	Single Butterfly	●	●	-	●	●	●
	Two-Blade Fabricated Airfoil	-	-	●	-	-	-
Axle Seals	None	●	●	●	●	●	●
	O-ring	-	O	O	O	O	O
	Double Gland	-	-	-	O	O	O
	Outboard Double Gland	-	-	-	-	O	-
Axle Bearings	Stainless Steel Sleeve	●	●	●	-	-	-
	External Bronze	-	O	O	●	●	●
	Outboard Bronze	-	-	-	O	O	O
	External Ball	-	-	-	O	O	O
	Outboard Ball	-	-	-	O	O	O
	Outboard Carbon	-	-	-	O	O	-
Special Features	Mounting Holes	O	O	O	O	O	O
	Rolled Bar Stop	-	O	O	O	O	O
	Pin Stop	O	●	●	●	●	●
Paint Finishes	None	●	O	O	O	O	O
	Hi-Pro Polyester	O	●	●	●	●	●
	Industrial Epoxy	-	O	O	O	O	O
	High Temperature Silver	-	O	O	O	O	O
	High Temperature Flame Control	-	O	O	O	O	O

DAMPERS

Isolation Dampers

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

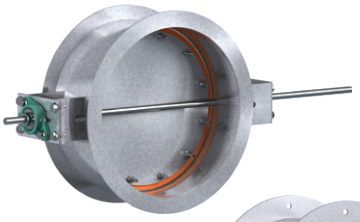
Low Leakage

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 to be tailored to your application.

Bubble-Tight

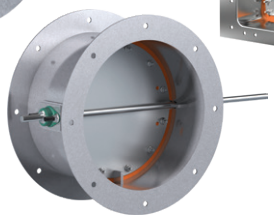
The HBT-221 and HBTR series are bubble-tight dampers designed for isolation applications. Bubble-tight means the damper has the lowest possible leakage rating: zero. The silicone blade seal and double gland axle seals provide bubble-tight performance.

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.



HBTR-151

HBT-221



HCDR-351

● = Standard, O = Optional		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/ft² (cmh/m²)	Maximum	Less than 1 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	O	O	O	O	O	O
	316SS	O	O	O	O	O	O
Blade Material	Galvanized	-	●	-	-	-	-
	Painted	●	-	●	●	●	●
	304SS	O	O	O	O	O	O
	316SS	O	O	O	O	O	O
Blade Seals	EPDM	O	O	-	-	-	-
	Silicone	●	●	●	●	●	●
Axle Seal	O-ring	●	●	-	-	-	-
	Double Gland	O	O	●	●	●	●
Axle Bearings	Stainless Steel Sleeve	-	●	-	-	-	-
	External Bronze	●	O	-	-	-	-
	Outboard Bronze	O	O	-	-	-	-
	External Ball	O	O	-	-	-	-
	Outboard Ball	O	O	●	●	●	●
Special Features	Mounting Holes	O	O	O	O	O	O
Paint Finishes	None	O	●	O	O	O	O
	Hi-Pro Polyester	●	O	●	●	●	●
	Industrial Epoxy	O	O	O	O	O	O
	Hi Temperature Silver	O	-	-	-	-	-
	Hi Temperature Flame Control	O	-	-	-	-	-

Backdraft Dampers

- HB SERIES
- HBR SERIES

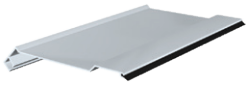
Heavy-duty/Industrial backdraft dampers prevent backflow at static pressures up to 20 in. wg (5 kPa) and velocities up to 6400 ft/min. (32.5 m/s).

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

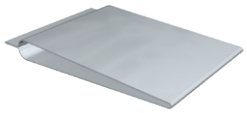


Aluminum

- 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

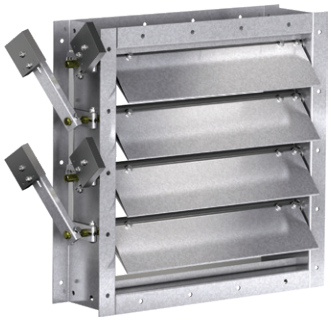
Backdraft Dampers

- HB SERIES
- HBR SERIES

● = Standard, O = Optional		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	-	-	O	-	-	O	-
	Galvanized	●	-	●	●	●	●	●
	304SS	O	O	O	O	O	O	O
	316SS	O	O	O	O	O	O	O
	Painted	O	●	O	O	O	O	O
Blade Type	Single Thickness	-	-	●	-	-	-	-
	2V	-	-	-	●	-	-	-
	Airfoil	-	-	-	-	●	●	●
	Round	●	●	-	-	-	-	-
Blade Material	Aluminum	-	-	●	-	-	●-	-
	Galvanized	●	-	-	●	●	-	●
	304SS	O	O	-	O	O	-	O
	316SS	O	O	-	O	O	-	O
	Painted	O	●	O	O	O	O	O
Blade Seals	None	●	●	O	O	O	O	O
	Vinyl	-	-	●	-	-	-	-
	TPE	-	-	-	●	-	-	-
	EPDM	-	O	-	-	O	O	O
	Silicone	-	O	-	-	●	●	●
Axle Bearings	Acetal w/stainless steel ball	-	-	O	O	-	-	-
	Galvanized Ball	●	-	●	●	●	●	-
	Stainless Steel Sleeve	-	●	-	-	-	-	-
	External Bronze	-	O	-	-	-	-	-
	External Ball	-	O	-	-	O	O	●
	External Galvanized Ball	-	-	-	-	-	O	-
Special Features	Spark A Resistance	-	-	-	-	-	O	-
	Spark B and C Resistance	-	-	-	-	-	O	-
	Mounting Holes	O	O	O	O	O	O	O
	Pin Stop	●	●	-	-	-	-	-
	Rolled Bar Stop	-	O	-	-	-	-	-
Paint Finishes	None	-	O	●	●	●	●	●
	Hi Pro Polyester	O	●	O	O	O	O	O
	Industrial Epoxy	-	-	O	O	O	O	O

Pressure Relief Dampers

A pressure relief damper is designed to stay closed until a "start-open" pressure is 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 into closed position. External weights are used for counterbalance and pressure sets, which offer some field adjustment capability. Dampers have flanges for duct or wall mounting.



HPR-230

A pressure relief damper is generally used as a safety 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.

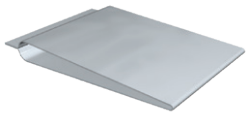
HPR-120

HPR-120 features galvanized steel 2V blade.

Galvanized Steel 2V

HPR-230

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



Galvanized Steel Airfoil

HPR-330

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

● = Standard, O = Optional		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	O	O	O
	316SS	O	O	O
	Painted	O	O	O
Blade Profile	Galvanized 2V	●	-	-
	304SS 2V	O	-	-
	316SS 2V	O	-	-
	Galvanized Airfoil	-	●	●
	304SS Airfoil	-	O	O
	316SS Airfoil	-	O	O
Axle Bearings	Galvanized Ball	●	●	-
	External Ball	-	O	●
Blade Seals	TPE	●	-	-
	Silicone	-	●	●
	EPDM	-	O	O
	None	O	O	O
Special Features	Mounting Holes	O	O	O
	Paint	O	O	O

DAMPERS | Checklist

- 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)

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