Backdraft & Pressure Relief Dampers

- Backdraft
- Barometric Relief
- Pressure Relief
Greenheck dampers bring the same quality engineering and manufacturing that has earned Greenheck its position as an industry leader. Aggressive research and development keeps Greenheck a major player in the damper and louver industry. Greenheck has the most UL classified dampers and the largest selection of AMCA licensed dampers and louvers in the industry.

**In-House Testing**
State-of-the-art laboratory and testing facilities have always been important to Greenheck’s ongoing business success. Greenheck has a laboratory facility devoted exclusively to development and testing of damper and louver related products for testing to the latest versions of AMCA, ANSI, ASHRAE, UL, Miami-Dade County, and other industry standards of performance.

**A Global Presence**
Greenheck operates five manufacturing locations, five national distribution centers, and two international distribution centers:

- **Manufacturing**
  - Rocklin, CA
  - Schofield, WI
  - Frankfort, KY
  - Saltillo, Mexico
  - Kunshan, China

- **National Distribution**
  - Schofield, WI
  - Rocklin, CA
  - Dallas, TX
  - Miami, FL
  - Greensboro, NC

- **International Distribution**
  - China
  - Mexico

Enjoy Greenheck’s extraordinary service, before, during and after the sale.
Greenheck offers added value to our wide selection of top performing, energy-efficient products by providing several unique Greenheck service programs.

- Our Quick Delivery Program ensures shipment of our in-stock products within 24 hours of placing your order. Our Quick Build made-to-order products can be produced in 1-3-5-10- or 15-day production cycles, depending upon their complexity.
- Greenheck’s free Computer Aided Product Selection program (CAPS), rated by many as the best in the industry, helps you conveniently and efficiently select the right products for the challenge at hand.
- Greenheck has been Green for a long time! Our energy-saving products and ongoing corporate commitment to sustainability can help you qualify for LEED credits.
- Our 3D service allows you to download, at no charge, easy-to-use AutoDesk™ Revit™ 3D drawings for many of our ventilation products.

Find out more about these special Greenheck services at [greenheck.com](http://greenheck.com)
Backdraft dampers are used in ventilation systems to allow airflow in one direction and prevent airflow in the opposite direction. A pressure relief damper is developed with an elevated and adjustable start-open pressure while providing the backdraft function. When selecting the correct damper for your application, you need to know:

- System velocity and back pressure requirements
- Mounting orientation and airflow direction
- Mounting configuration (inserted into duct/opening or flange mounted)
- Damper operation (gravity or motorized)
- Start-open pressure

**Mounting Orientation**

There are two mounting and four airflow configurations available on backdraft dampers:

![Mounting Orientation Diagrams](image)

**Frame Construction**

Three types of frame construction are available on all backdraft damper models:

- No flange
- Flange on discharge
- Flange on intake

![Frame Construction Diagrams](image)

**Damper Operation**

Backdraft dampers can either be operated by gravity (where pressure or velocity opens and closes the damper) or they can be motorized to be open and close when required.

![Damper Operation Diagrams](image)
A commercial backdraft damper is an isolation damper allowing airflow in one direction only. When placed on a propeller fan, for example, it will prevent the wind from causing the fan to run backwards when the power is off.

To assist with opening the damper blades, backdraft dampers may utilize springs, adjustable counterbalance weights, or a motorpack.

- **Spring assist** is a spring attached to the damper that helps in opening or closing the damper blades. The spring is adjustable by using a series of holes in the frame or blade assembly to increase or decrease the tension.
- **Adjustable counterbalance** weights are a more precise means of reducing the pressure that is required to open the damper.
- **A motorpack** is used when it is necessary that the damper opens and closes without having to rely on air velocity or pressure.

Backdraft damper selection begins by determining the damper construction required based on system velocity and static pressure. Level I damper models are used in applications up to 2500 ft/min (12.7 m/s) and 2 in. (0.5 kPa) of static pressure. This includes the WD and ES series. Level II damper models are used in applications up to 3500 ft/min (17.8 m/s) and 10 in. wg (2.5 kPa) of static pressure. This includes the EM series.

**WD, ES, and EM Series dampers can be used in applications for:**

- Exhaust
- Air Intake
- Roof ventilation
- Sidewall ventilation
- In-duct ventilation

### WD Series

The WD series are backdraft dampers constructed of a galvanized steel frame and aluminum blades. The dampers are opened by air pressure differential (assisted by springs) and closed by gravity. WD series dampers are rated for velocities up to 2500 ft/min (12.7 m/s) and pressures up to 2 in. wg (0.5 kPa).

**Options available are:**

- Flanges
- Motorpacks (WD-100, WD-300, standard on WD-200)
- End switch kit (WD-100, 200, 300)
- Stainless steel bearings (WD-100, 200, 300)
- Stainless steel axles

#### WD-100 Series

WD-100 series dampers are horizontally mounted to allow vertical airflow. The primary application is for roof mounted exhaust fans.

#### WD-200 Series

WD-200 series dampers are electric motorized backdraft dampers that open when energized and spring return close when de-energized. These dampers can be used for horizontal or vertical mount applications. The primary application is to prevent undesirable reverse airflow when installed with roof or sidewall supply (intake) fans.
Commercial Backdraft
WD Series

WD-300 Series
WD-300 series dampers are vertical mount for horizontal exhaust applications. These dampers are designed to remain open under low velocity conditions.

WD-400 Series
WD-400 is a non-motorized damper that can be mounted vertically (for horizontal intake airflow) or horizontally (for vertical airflow down).

WDR-53/SSWDR-53
WDR-53 and SSWDR-53 are round backdraft dampers. These models can be mounted horizontally for vertical airflow down or up, or mounted vertically for horizontal airflow. The WDR-53 and SSWDR-53 are rated for velocities up to 2000 ft/min (10.2 m/s) and pressure up to 3 in. wg (0.75 kPa).

Commercial Backdraft (WD Series) Quick Selection Guide

<table>
<thead>
<tr>
<th>Model</th>
<th>Material</th>
<th>Counterbalance Weights</th>
<th>Motorized</th>
<th>Mounting Positions</th>
<th>Airflow Direction</th>
<th>Flange</th>
<th>Maximum Velocity ft/min (m/s)</th>
<th>Maximum Back Pressure in. wg (kPa)</th>
<th>Start-Open Pressure* in. wg (kPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WD-100</td>
<td>Galvanized Steel</td>
<td>N/A</td>
<td>Opt</td>
<td>H</td>
<td>Vertical Up</td>
<td>No</td>
<td>2500 (12.7)</td>
<td>1 (0.25)</td>
<td>0.01 (0.002)</td>
</tr>
<tr>
<td>WD-110</td>
<td>Galvanized Steel</td>
<td>N/A</td>
<td>Opt</td>
<td>H</td>
<td>Vertical Up</td>
<td>Discharge</td>
<td>2500 (12.7)</td>
<td>1 (0.25)</td>
<td>0.01 (0.002)</td>
</tr>
<tr>
<td>WD-120</td>
<td>Galvanized Steel</td>
<td>N/A</td>
<td>Opt</td>
<td>H</td>
<td>Vertical Up</td>
<td>intake</td>
<td>2500 (12.7)</td>
<td>1 (0.25)</td>
<td>0.01 (0.002)</td>
</tr>
<tr>
<td>WD-200</td>
<td>Aluminum</td>
<td>Std</td>
<td>H or V</td>
<td>H or V</td>
<td>No</td>
<td>2500 (12.7)</td>
<td>2 (0.5)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>WD-210</td>
<td>Aluminum</td>
<td>Std</td>
<td>H or V</td>
<td>H or V</td>
<td>Motor Side</td>
<td>2500 (12.7)</td>
<td>2 (0.5)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>WD-220</td>
<td>Aluminum</td>
<td>Std</td>
<td>H or V</td>
<td>H or V</td>
<td>Opposite Motor Side</td>
<td>2500 (12.7)</td>
<td>2 (0.5)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>WD-300</td>
<td>Aluminum</td>
<td>Opt</td>
<td>V</td>
<td>H</td>
<td>Intake</td>
<td>2500 (12.7)</td>
<td>2 (0.5)</td>
<td>0.015 (0.003)</td>
<td></td>
</tr>
<tr>
<td>WD-320</td>
<td>Aluminum</td>
<td>Opt</td>
<td>V</td>
<td>H</td>
<td>Discharge</td>
<td>2500 (12.7)</td>
<td>2 (0.5)</td>
<td>0.015 (0.003)</td>
<td></td>
</tr>
<tr>
<td>WD-330</td>
<td>Aluminum</td>
<td>Opt</td>
<td>V</td>
<td>H</td>
<td>No</td>
<td>2500 (12.7)</td>
<td>2 (0.5)</td>
<td>0.015 (0.003)</td>
<td></td>
</tr>
<tr>
<td>WD-400</td>
<td>Aluminum</td>
<td>N/A</td>
<td>V</td>
<td>H</td>
<td>No</td>
<td>2500 (12.7)</td>
<td>2 (0.5)</td>
<td>0.026 (0.006)</td>
<td></td>
</tr>
<tr>
<td>WD-410</td>
<td>Aluminum</td>
<td>N/A</td>
<td>H</td>
<td>Vertical Down</td>
<td>No</td>
<td>2500 (12.7)</td>
<td>2 (0.5)</td>
<td>0.014 (0.003)</td>
<td></td>
</tr>
<tr>
<td>WD-420</td>
<td>Aluminum</td>
<td>N/A</td>
<td>V</td>
<td>H</td>
<td>Discharge</td>
<td>2500 (12.7)</td>
<td>2 (0.5)</td>
<td>0.026 (0.006)</td>
<td></td>
</tr>
<tr>
<td>WD-430</td>
<td>Aluminum</td>
<td>N/A</td>
<td>V</td>
<td>H</td>
<td>Intake</td>
<td>2500 (12.7)</td>
<td>2 (0.5)</td>
<td>0.026 (0.006)</td>
<td></td>
</tr>
<tr>
<td>WDR-53</td>
<td>Aluminum</td>
<td>N/A</td>
<td>H or V</td>
<td>Vertical Up or Down, or Horizontal</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>3 (0.75)</td>
<td>N/A**</td>
<td></td>
</tr>
<tr>
<td>SSWDR-53</td>
<td>304SS</td>
<td>N/A</td>
<td>H or V</td>
<td>Vertical Up or Down, or Horizontal</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>3 (0.75)</td>
<td>N/A**</td>
<td></td>
</tr>
</tbody>
</table>

H = Horizontal; V = Vertical; N/A = Not Available; Opt = Optional; Std = Standard
* Note that start-open is the pressure at which damper blades just begin to rotate, blades are not fully open at this point. Damper size and bearing selection may cause start-open pressure to vary from this value.
** Not available at time of publication, consult factory.
EM & ES series are extruded aluminum backdraft dampers that open by air pressure differential and close by gravity.

**ES Series**
ES series is a lighter weight version of the EM series. These dampers are rated for velocities up to 2000 ft/min (10.2 m/s) and pressure up to 2.5 in. wg (0.6 kPa).

Options available are:
- Flanges
- Bird screen
- Insect screen

**EM Series**
EM series uses a heavier aluminum compared to the ES series. These dampers are rated for velocities of 2500 to 3500 ft/min (12.7-17.8 m/s) and pressure of 4-10 in. wg (1 kPa-2.5 kPa).

Options available are:
- Flanges
- Adjustable pressure controller (APC) used for field setting of relief pressure
- Paint finishes

---

**Commercial Backdraft (EM & ES Series) Quick Selection Guide**

<table>
<thead>
<tr>
<th>Model</th>
<th>Material</th>
<th>Counterc-balance Weights</th>
<th>Mounting Position</th>
<th>Airflow Direction</th>
<th>Flange</th>
<th>Maximum Velocity ft/min (m/s)</th>
<th>Maximum Back Pressure in. wg (kPa)</th>
<th>Start-Open Pressure* in. wg (kPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM-10</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Up</td>
<td>No</td>
<td>3500 (17.8)</td>
<td>10 (2.5)</td>
<td>0.05 (0.01)</td>
</tr>
<tr>
<td>EM-11</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Up</td>
<td>Discharge</td>
<td>3500 (17.8)</td>
<td>10 (2.5)</td>
<td>0.05 (0.01)</td>
</tr>
<tr>
<td>EM-12</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Up</td>
<td>Intake</td>
<td>3500 (17.8)</td>
<td>10 (2.5)</td>
<td>0.05 (0.01)</td>
</tr>
<tr>
<td>EM-30</td>
<td>Aluminum</td>
<td>Opt</td>
<td>V</td>
<td>Vertical Up</td>
<td>No</td>
<td>3500 (17.8)</td>
<td>10 (2.5)</td>
<td>0.03 (0.01)</td>
</tr>
<tr>
<td>EM-31</td>
<td>Aluminum</td>
<td>Opt</td>
<td>V</td>
<td>Vertical Up</td>
<td>Discharge</td>
<td>3500 (17.8)</td>
<td>10 (2.5)</td>
<td>0.03 (0.01)</td>
</tr>
<tr>
<td>EM-32</td>
<td>Aluminum</td>
<td>Opt</td>
<td>V</td>
<td>Vertical Up</td>
<td>Intake</td>
<td>3500 (17.8)</td>
<td>10 (2.5)</td>
<td>0.03 (0.01)</td>
</tr>
<tr>
<td>EM-40</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Down</td>
<td>No</td>
<td>3500 (17.8)</td>
<td>10 (2.5)</td>
<td>0.07 (0.017)</td>
</tr>
<tr>
<td>EM-41</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Down</td>
<td>Discharge</td>
<td>3500 (17.8)</td>
<td>10 (2.5)</td>
<td>0.07 (0.017)</td>
</tr>
<tr>
<td>EM-42</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Down</td>
<td>Intake</td>
<td>3500 (17.8)</td>
<td>10 (2.5)</td>
<td>0.07 (0.017)</td>
</tr>
<tr>
<td>ES-10</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Up</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>2.5 (0.6)</td>
<td>0.035 (0.008)</td>
</tr>
<tr>
<td>ES-11</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Up</td>
<td>Discharge</td>
<td>2000 (10.2)</td>
<td>2.5 (0.6)</td>
<td>0.035 (0.008)</td>
</tr>
<tr>
<td>ES-12</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Up</td>
<td>Intake</td>
<td>2000 (10.2)</td>
<td>2.5 (0.6)</td>
<td>0.035 (0.008)</td>
</tr>
<tr>
<td>ES-30</td>
<td>Aluminum</td>
<td>Opt</td>
<td>V</td>
<td>Vertical Up</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>2.5 (0.6)</td>
<td>0.05 (0.012)</td>
</tr>
<tr>
<td>ES-31</td>
<td>Aluminum</td>
<td>Opt</td>
<td>V</td>
<td>Vertical Up</td>
<td>Discharge</td>
<td>2000 (10.2)</td>
<td>2.5 (0.6)</td>
<td>0.05 (0.012)</td>
</tr>
<tr>
<td>ES-32</td>
<td>Aluminum</td>
<td>Opt</td>
<td>V</td>
<td>Vertical Up</td>
<td>Intake</td>
<td>2000 (10.2)</td>
<td>2.5 (0.6)</td>
<td>0.05 (0.012)</td>
</tr>
<tr>
<td>ES-40</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Down</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>2.5 (0.6)</td>
<td>0.075 (0.019)</td>
</tr>
<tr>
<td>ES-41</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Down</td>
<td>Discharge</td>
<td>2000 (10.2)</td>
<td>2.5 (0.6)</td>
<td>0.075 (0.019)</td>
</tr>
<tr>
<td>ES-42</td>
<td>Aluminum</td>
<td>Std</td>
<td>H</td>
<td>Vertical Down</td>
<td>Intake</td>
<td>2000 (10.2)</td>
<td>2.5 (0.6)</td>
<td>0.075 (0.019)</td>
</tr>
</tbody>
</table>

H = Horizontal; V = Vertical; N/A = Not Available; Opt = Optional; Std = Standard; * = w/o weights; 1 = w/ weights
* Note that start-open is the pressure at which damper blades just begin to rotate, blades are not fully open at this point. Damper size and bearing selection may cause start-open pressure to vary from this value.
A barometric relief damper is a backdraft damper with an adjustable start-open pressure. It is used for gravity ventilation and low velocity systems. Counterbalance weights provide the ability to fine tune start-to-open and full-open operation.

BR series dampers are constructed with a galvanized steel frame and aluminum blades. The SEBR series is constructed of 316 stainless for severe or corrosive environments. Vinyl blades seals are used on both series of dampers. They are rated for velocities up to 2000 ft/min (10.2 m/s) and back pressure up to 2 in. wg (0.5 kPa). The start-open pressure is selectable from .05 to .13 in. wg (0.01 kPa to .03 kPa).

BR and SEBR Series dampers can be used in applications for:

- Gravity hood intake and exhaust
- Stairwell pressurization
- Room pressurization
- Ductwork outlets

Options available are:

- EPDM jamb seals
- 304 stainless steel or aluminum frame (BR series)
- 304 stainless steel axles or linkage (BR series)
- 316 stainless steel ball bearings with acetal races (BR series, standard on SEBR series)

### Barometric Relief (BR & SEBR Series) Quick Selection Guide

<table>
<thead>
<tr>
<th>Model</th>
<th>Material</th>
<th>Mounting Position</th>
<th>Airflow Direction</th>
<th>Flange</th>
<th>Maximum Velocity ft/min (m/s)</th>
<th>Maximum Back Pressure in. wg (kPa)</th>
<th>Start-Open Pressure* in. wg (kPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR-10</td>
<td>Galvanized Steel</td>
<td>H Vertical Up</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>BR-11</td>
<td>Galvanized Steel</td>
<td>H Vertical Up</td>
<td>Discharge</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>BR-12</td>
<td>Galvanized Steel</td>
<td>H Vertical Up</td>
<td>Intake</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>BR-13</td>
<td>Galvanized Steel</td>
<td>V H</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>BR-31</td>
<td>Galvanized Steel</td>
<td>V H</td>
<td>Discharge</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>BR-32</td>
<td>Galvanized Steel</td>
<td>V H</td>
<td>Intake</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>BR-40</td>
<td>Galvanized Steel</td>
<td>H Vertical Down</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>BR-41</td>
<td>Galvanized Steel</td>
<td>H Vertical Down</td>
<td>Discharge</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>BR-42</td>
<td>Galvanized Steel</td>
<td>H Vertical Down</td>
<td>Intake</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>SEBR-10</td>
<td>316 Stainless Steel</td>
<td>H Vertical Up</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>SEBR-11</td>
<td>316 Stainless Steel</td>
<td>H Vertical Up</td>
<td>Discharge</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>SEBR-12</td>
<td>316 Stainless Steel</td>
<td>H Vertical Up</td>
<td>Intake</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>SEBR-30</td>
<td>316 Stainless Steel</td>
<td>V H</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>SEBR-31</td>
<td>316 Stainless Steel</td>
<td>V H</td>
<td>Discharge</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>SEBR-32</td>
<td>316 Stainless Steel</td>
<td>V H</td>
<td>Intake</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>SEBR-40</td>
<td>316 Stainless Steel</td>
<td>H Vertical Down</td>
<td>No</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>SEBR-41</td>
<td>316 Stainless Steel</td>
<td>H Vertical Down</td>
<td>Discharge</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
<tr>
<td>SEBR-42</td>
<td>316 Stainless Steel</td>
<td>H Vertical Down</td>
<td>Intake</td>
<td>2000 (10.2)</td>
<td>2 (0.5)</td>
<td>0.05 (0.01)</td>
<td></td>
</tr>
</tbody>
</table>

H = Horizontal; V = Vertical

* Note that start-open is the pressure at which damper blades just begin to open. The blades are not fully open at this point. Damper size and bearing selection may cause start-open pressure to vary from this value.
Heavy Duty/Industrial Backdraft HB Series

Heavy duty/Industrial backdraft dampers are designed to prevent backflow at static pressures up to 20 in. wg (5 kPa) and velocities up to 6400 ft/min (32.5 m/s). Counterbalance weights are mounted externally for easy adjustment and balancing in the field. HB series dampers are flange frame mounted.

HB Series dampers can be used in applications for:
- Blower outlets
- Branch duct isolation
- Industrial process isolation
- Emergency generator radiator outlets

HB-110
- Aluminum frame
- Aluminum blade
- Corrosion resistant
- Spark B & C resistant
- Optional 304 or 316 stainless steel frame

HB-120
- Galvanized steel frame
- Galvanized steel 2V blade
- Optional 304 stainless steel frame and blade
- Optional 316 stainless steel frame

HB-230
- Galvanized steel frame
- Galvanized steel airfoil blade
- Optional 304 or 316 stainless steel frame and blade

HB-240
- Galvanized steel frame
- Extruded aluminum airfoil blade
- Spark B & C resistant
- Optional Spark A resistant
- Optional 304 or 316 stainless steel frame

HB-330
- Galvanized steel frame
- Galvanized steel airfoil blade
- Fan Class III
- Optional 304 or 316 stainless steel frame and blade

Wide variety of options are available:
- Frame gauge
- Blade seals
- Axles
- Bearings
- Flanges
- Mounting holes in flanges
- Paint finishes

Note: HB series dampers are flange frame mounted.
Width and height dimensions are to the inside of the frame.
Heavy Duty/Industrial Pressure Relief - HPR Series

A pressure relief damper is a backdraft damper having an adjustable start-open pressure, which is capable of maintaining a relatively constant pressure at various airflows and which closes upon a decrease in differential pressure. Pressure relief dampers do not immediately open fully upon reaching their start-open pressure, they maintain tight leakage to approximately 60% of the start-open pressure and have a relatively flat flow control somewhat above the start-open pressure. Counterbalance weights are mounted externally for easy adjustment and balancing in the field. HPR series dampers are flange frame mounted. They are designed to handle velocities up to 6400 ft/min (32.5 m/s).

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. It can also be used as a control device, such as opening to admit additional air when used in parallel to a direct-fired gas burner or to admit additional air into fume exhaust so as to maintain 3000 ft/min (15.2 m/s) exhaust velocity.

HPR Series dampers can be used in applications for:
- Fume exhaust
- Duct/plenum protection

Additional material and coating selections are available in aluminum and stainless steel for corrosive or clean room applications.

HPR-120
- Galvanized steel frame
- Galvanized steel 2V blade
- Optional 304 stainless steel frame and blade

HPR-230
- Galvanized steel frame
- Galvanized steel airfoil blade
- Optional 304 stainless steel frame and blade

HPR-330
- Galvanized steel frame
- Galvanized steel airfoil blade
- Optional 304 stainless steel frame and blade

Wide variety of options available:
- 8-12 in. (203-305 mm) frame depth
- 304 stainless steel axle and linkage
- Flanges
- Mounting holes in flanges
- Paint finishes

Note: HPR series dampers are flange frame mounted. Width and height dimensions are to the inside of the frame.
Heavy Duty/Industrial (HB & HPR Series) Quick Selection Guide

<table>
<thead>
<tr>
<th>Damper Type</th>
<th>Model</th>
<th>Material</th>
<th>Countercbalance</th>
<th>Maximum Velocity ft/min (m/s)</th>
<th>Maximum Back Pressure in. wg (kPa)</th>
<th>Start-Open Pressure* in. wg (kPa)</th>
<th>Pressure Relief in. wg (kPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Duty/Industrial Backdraft</td>
<td>HB-110</td>
<td>Aluminum</td>
<td>Aluminum Single</td>
<td>3900 (20)</td>
<td>5 (1.2)</td>
<td>0.02 (0.005)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>HB-120</td>
<td>Galvanized Steel</td>
<td>Galvanized Steel 2V</td>
<td>5150 (26)</td>
<td>8.5 (2.1)</td>
<td>0.045 (0.11)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>HB-230</td>
<td>Galvanized Steel</td>
<td>Galvanized Steel Airfoil</td>
<td>5150 (26)</td>
<td>13.5 (3.4)</td>
<td>0.04 (0.010)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>HB-240</td>
<td>Galvanized Steel</td>
<td>Extruded Aluminum Airfoil</td>
<td>5150 (26)</td>
<td>13.5 (3.4)</td>
<td>0.04 (0.010)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>HB-330</td>
<td>Galvanized Steel</td>
<td>Galvanized Steel Airfoil</td>
<td>6400 (33)</td>
<td>20 (5)</td>
<td>0.25 (0.06)</td>
<td>N/A</td>
</tr>
<tr>
<td>Heavy Duty/Industrial Pressure Relief</td>
<td>HPR-120</td>
<td>Galvanized Steel</td>
<td>Galvanized Steel 2V</td>
<td>5150 (26)</td>
<td>5-8.5 (1.2-2)</td>
<td>N/A</td>
<td>0.10-2 (0.02-5)</td>
</tr>
<tr>
<td></td>
<td>HPR-230</td>
<td>Galvanized Steel</td>
<td>Galvanized Steel Airfoil</td>
<td>5150 (26)</td>
<td>6-13.5 (1.5-3)</td>
<td>N/A</td>
<td>0.25-4 (0.06-1)</td>
</tr>
<tr>
<td></td>
<td>HPR-330</td>
<td>Galvanized Steel</td>
<td>Galvanized Steel Airfoil</td>
<td>6400 (33)</td>
<td>13.5-20 (3.4-5)</td>
<td>N/A</td>
<td>0.50-6 (0.12-1.5)</td>
</tr>
</tbody>
</table>

N/A = Not Applicable; Std = Standard

* Note that start-open is the pressure at which damper blades just begin to rotate, blades are not fully open at this point. Damper size and bearing selection may cause start-open pressure to vary from this value.

Specialty Dampers

PS-32

PS-32 is an economical backdraft damper constructed of UV-stabilized PVC plastic. This damper is designed for corrosion resistance and quiet operation. It is rated up to 2000 ft/min (10.2 m/s) and pressures up to 2 in. wg (0.5 kPa). Optional motorpacks are available.

PS-32
- No tie bar
- Acetal pin axles

PS-32T
- Tie bars
- Acetal pin axles

PS-32R
- No tie bar
- Full length fiberglass rod reinforced blade

PS-32TA
- Tie bars
- Full length fiberglass rod reinforced blade
Specialty Dampers

Backdraft dampers are used on sidewall prop fans, sidewall exhaust fans, and centrifugal utility fans for exhaust or supply applications. They can be used alone or in conjunction with a wall housing or wall collar.

Industrial backdraft dampers are used on blower outlets for automatic isolation. They allow air to pass in one direction and restrict flow in the opposite direction. Each damper is factory adjusted for its intended flow direction. Multiple nested counterbalance arms and weights are adjusted to reduce load on bearings and linkage. Industrial backdraft dampers are recommended for low temperatures and clean air applications.

Greenheck's experienced staff can also work with you to develop custom products to meet your needs. An example of a custom job is this HPR-330 designed for a tunnel sewage system in Singapore. The customer required a large pressure relief damper to vent-off excessive gasses upward due to rapid storm water influx. The design used blade weights to provide the initial 2 in. wg (0.5 kPa) relief pressure and movable weights to extend start-open pressure to 6.3 in. wg (1.6 kPa). The HPR-330 was constructed of 316 stainless steel.
Greenheck warrants this equipment to be free from defects in material and workmanship for a period of one year from the shipment date. Any units or parts which prove defective during the warranty period will be replaced at our option when returned to our factory, transportation prepaid. Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by Greenheck prove defective during this period, they should be returned to the nearest authorized motor service station. Greenheck will not be responsible for any removal or installation costs. As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.