



Model HPR-230

Industrial Pressure Relief Damper

Application and Design

Model HPR-230 is a heavy duty pressure relief damper with double flanged channel frame and streamlined airfoil blades. It is designed to protect HVAC systems and industrial processes by relieving air pressure. External heavy duty linkage, ball bearings, blade counterbalance, and adjustable pressure setting weights are standard.

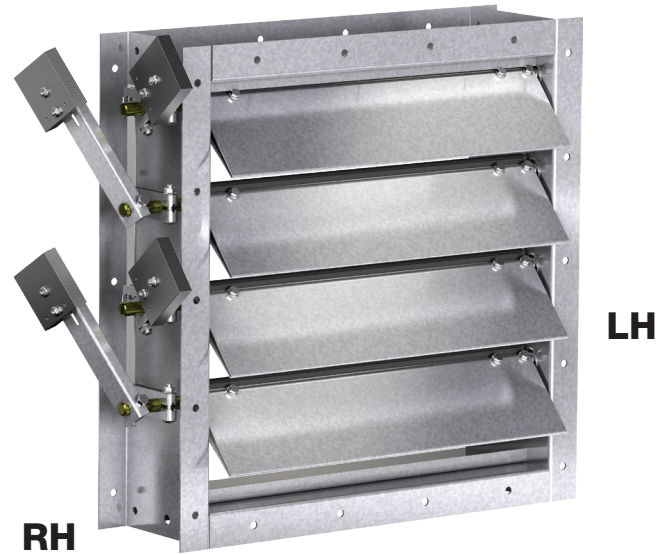
Ratings (see page 2 for specific limitations)

Pressure Relief: 0.25 in. wg (0.062 kPa) minimum
4.0 in. wg (1 kPa) maximum

Back Pressure: 6.0 - 13.5 in. wg (1.49 - 3.36 kPa)

Velocity: Up to 5150 fpm (26.2 m/s)

Temperature: Minimum: -40°F (-40°C)
Maximum: 250°F (121°C)
Consult factory for temperature above 250°F (121°C)



	Standard	Optional
Frame Material	Galvanized Steel	304SS, 316SS, Carbon Steel
Frame Type	Flanged Channel	
Frame Gauge	14 ga. (2mm)	10 ga. (3.5mm), 12 ga. (2.7mm)
Frame Depth	8 in. (203mm)	8 in. - 12 in. (203mm - 305mm)
Blade Material	Galvanized Steel	304SS, 316SS, Galvanneal
Blade Type	Airfoil	
Blade Gauge	18 ga. (1.3mm)	16 ga. (1.5mm)
Blade Seals	Silicone	EPDM, None
Flange Width (D)	2 in. (51mm)	1 1/2 in. (38mm)
Axle Bearing	Galvanized Ball	External Ball
Axle Diameter	3/4 in. (19mm)	-
Axle Material	Plated Steel	303SS or 316SS
Linkage	External heavy duty type with galvanized steel clevis arms and plated steel tie bars & pivot pins with nylon pivot bearings	304SS or 316SS
Pressure Set	Adjustable arms and weights	
Air Flow	-	Horizontal, Vertical Up, Vertical Down
Paint Finishes	Mill Finish	Hi Pro Polyester, Industrial Epoxy
Mounting Holes	None	Standard, Standard w/Corner Holes

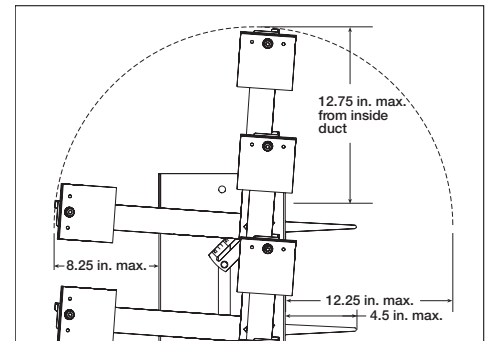
Actual Inside Dimensions.

- The W dimension is ALWAYS parallel with the damper blade length.

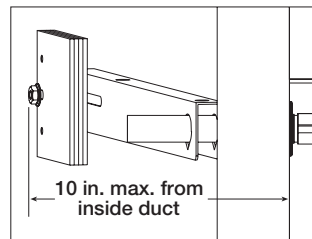
** RH counterbalance and pressure setting are standard.

*** Counterbalance and pressure setting weights extend beyond flanges in the open/closed positions.

Counterbalance & Pressure Setting Weight Dimensions



Side View



Front View

Advise air flow direction, relief pressure, & counterbalance weight location when ordering

Size Limitations

W x H	Minimum Size	Maximum Size	
		Single Section	Multiple Section
Inches	6 x 6	48 x 96	96 x 96
mm	152 x 152	1219 x 2438	2438 x 2438

Back Pressure Limitations

The chart at the right shows conservative pressure limitations based on a maximum blade deflection of $w/360$.

Temperature Limitations

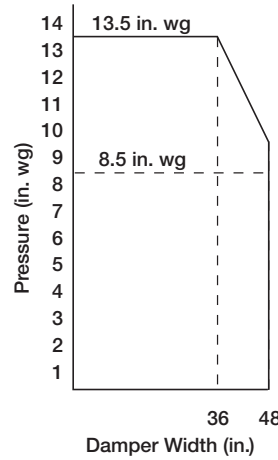
-40°F to 250°F (-40°C to 121°C)

For higher temperatures, consult factory.

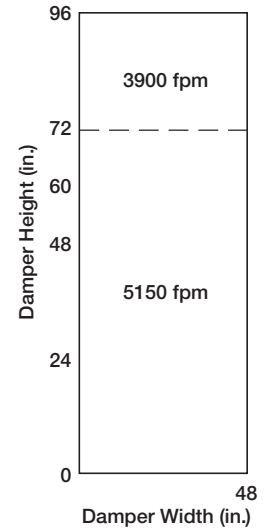
Velocity Limitations

The chart at far right shows conservative velocity limitations based on damper size.

Pressure Limitations



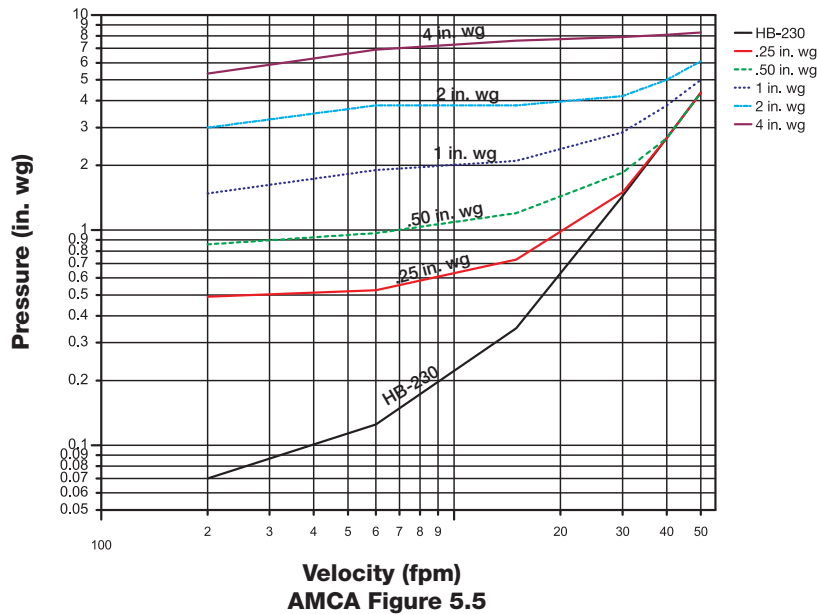
Velocity Limitations



Pressure Relief/Leakage Data

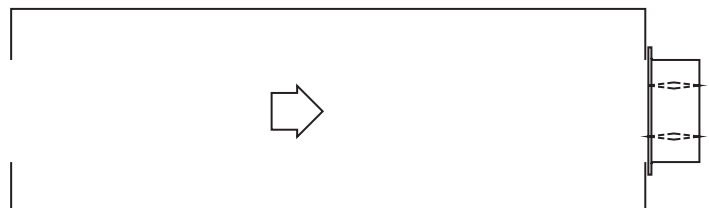
This pressure drop data was conducted in accordance with AMCA Standard 500-D using the configuration shown. All data has been corrected to represent standard air at a density of 0.075 lb/ft³ (1.2 kg/m³). (The HB-230 data was included as a reference.)

Pressure Relief
24 in. x 24 in. (610mm x 610mm) Damper

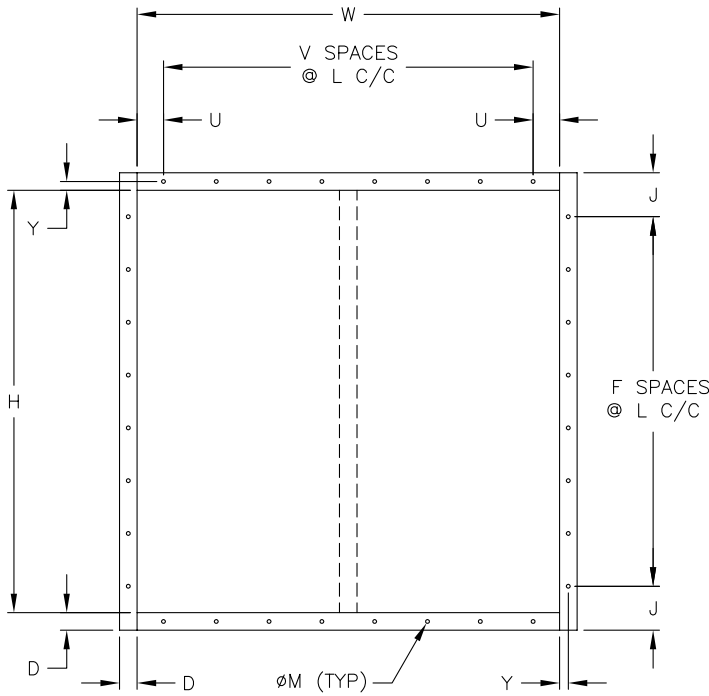


AMCA Test Figure

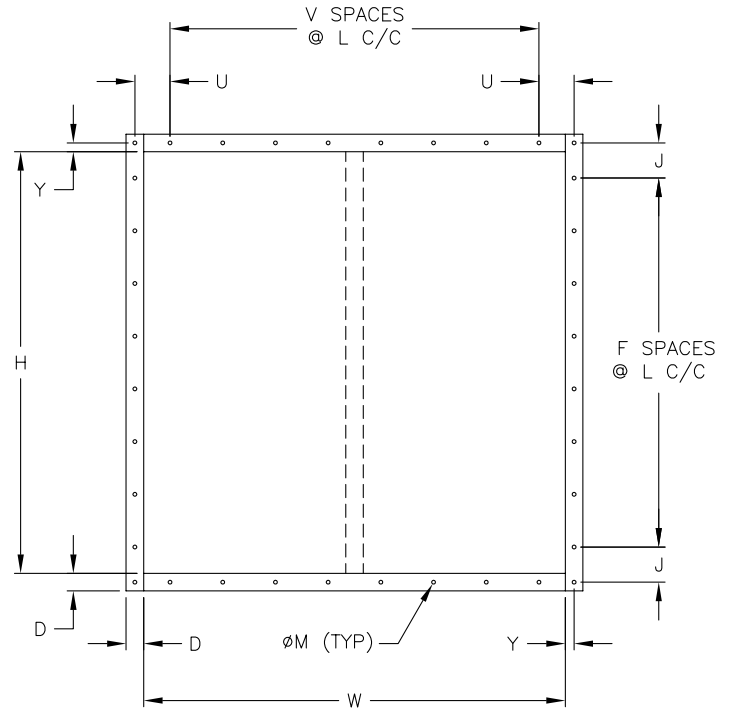
Figure 5.5 illustrates a plenum mounted damper. This configuration has high pressure drop because of entrance and exit losses due to the sudden changes of area in the system.



Bolt holes are available as an option. The standard pattern is 7/16 in. (11mm) diameter holes (M dimension) spaced 6 in. (152mm) on center (L dimension). Custom bolt hole pattern is available within the limitations of the chart below.



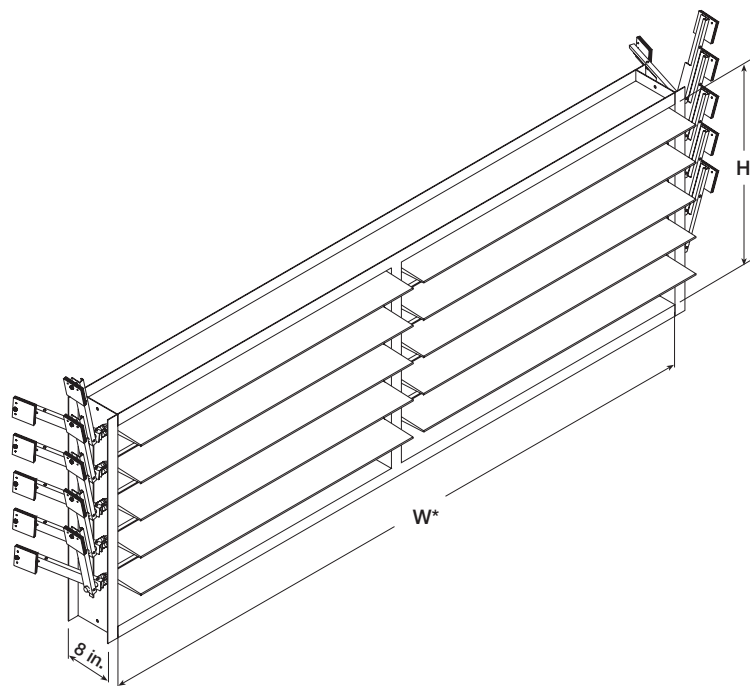
Standard Mounting Hole Pattern
Typical for single or double wide panel



Standard Mounting Hole Pattern with Corner Holes
Typical for single or double wide panel

Multi Section Assembly

Damper sizes larger than 48 in. x 96 in. (1219mm x 2438mm) and less than 96 in. x 96 in. (2438mm x 2438mm) will be supplied in one frame with two sets of blades separated by a mullion as shown below. Counterbalance and pressure set weights supplied on right hand and left hand side. For sizes larger than 96 in. x 96 in. (2438mm x 2438mm), consult factory.



Specifications

Industrial grade pressure relief dampers meeting the following specifications shall be furnished and installed where shown on plans and/or as described in schedules.

Dampers shall consist of: a 14 ga. (2mm) galvanized steel channel frame with 8 in. (203mm) minimum depth and 2 in. (51mm) flanges; airfoil shaped, 18 ga. (1.3mm) galvanized steel double skin construction blades; silicone blade seals; 3/4 in. (19mm) dia. plated steel axles turning in galvanized steel ball bearings press fit into frame; and external (out of the airstream) heavy duty linkage with counterbalance and pressure set weights.

Damper manufacturer's printed application and performance data including pressure, velocity, and temperature limitations shall be submitted for approval showing damper suitable for back pressures to 13.5 in. wg (3.36 kPa), relief pressures to 4 in. wg (1 kPa), velocities to 5150 fpm (26.2 m/s), and temperatures to 250°F (121°C). Testing and ratings to be in accordance with AMCA Standard 500-D.

Basis of design is model HPR-230.