



## Application and Design

Model HB-240 is a heavy duty backdraft damper with a double flanged galvanized steel channel frame and extruded airfoil blades. It is designed to prevent backflow and to provide shutoff in HVAC or industrial process systems. External heavy duty linkage, blade counterbalance, and ball bearings are standard.

Optional spark resistant 'A' construction meets the spirit of AMCA Standard 99-0401 with all components in the airstream being non-ferrous. Spark 'B' & 'C' construction require blades to be non-ferrous. AMCA Standard 99-041 as written applies to fans ONLY.

## Ratings

**Pressure:** Up to 13.5 in. wg (3.4 kPa) - differential pressure

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

**Temperature:** -40°F to 250°F (-40°C to 121°C)

# HB-240

## Industrial Backdraft Damper

Extruded Aluminum Airfoil Blades

Standard 'B' and 'C' Resistant

Optional 'A' Resistant



**RH**

**LH**

Advise air flow direction & counterbalance weight location when ordering

\* Actual inside dimension.

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

\*\*\* RH counterbalance is standard.

\*\*\*\* Counterbalance weights extend beyond inlet flange in the open position.

	Spark B & C Resistant (Standard)		Spark A Resistant (Optional)*	
	Standard	Optional	Standard	Optional
<b>Frame Material</b>	Galvanized Steel	304SS, 316SS, Aluminum, Carbon Steel	Aluminum	
<b>Frame Type</b>	Flanged Channel		Flanged Channel	
<b>Frame Gauge</b>	14 ga. (2mm)	10 ga. (3.5mm), 12 ga. (2.7mm), 0.125 in. (3mm)	0.125 in. (3mm)	
<b>Frame Depth</b>	8 in. (203mm)	8 in. - 12 in. (203mm - 305mm)	8 in. (203mm)	8 in. - 12 in. (203mm - 305mm)
<b>Blade Material</b>	Aluminum		Aluminum	
<b>Blade Type</b>	Extruded Airfoil		Extruded Airfoil	
<b>Blade Gauge</b>	.080 in. (2mm)		.080 in. (2mm)	
<b>Blade Seals</b>	Silicone	EPDM, None	Silicone	EPDM, None
<b>Flange Width</b>	2 in. (51mm)	1 1/2 in. (38mm)	2 in. (51mm)	1 1/2 in. (38mm)
<b>Axle Bearing</b>	Galvanized Ball	External Ball	External Galvanized Ball	-
<b>Axle Diameter</b>	3/4 in. (19mm)	-	3/4 in. (19mm)	-
<b>Axle Material</b>	Plated Steel	303SS or 316SS	Aluminum	
<b>Linkage</b>	External heavy duty type with galvanized steel clevis arms and plated steel tie bars & pivot pins with nylon pivot bearings	304SS or 316SS	External heavy duty type with galvanized steel clevis arms and plated steel tie bars & pivot pins with nylon pivot bearings	
<b>Air Flow</b>	-	Horizontal, Vertical Up, Vertical Down, Angular Up, Angular Down	-	Horizontal, Vertical Up, Vertical Down, Angular Up, Angular Down
<b>Paint Finishes</b>	Mill Finish	Hi Pro Polyester, Industrial Epoxy	Mill Finish	Hi Pro Polyester, Industrial Epoxy

\* No stainless steel linkage. Five inch (127mm) wide mullion required on two panel wide due to bearings.

## Size Limitations

W x H	Minimum Size	Maximum Size	
		Single Section	Multi - Section
Inches	6 x 6.5	60 x 96	120 x 96
mm	152 x 165	1524 x 2438	3048 x 2438

## Pressure Limitations

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

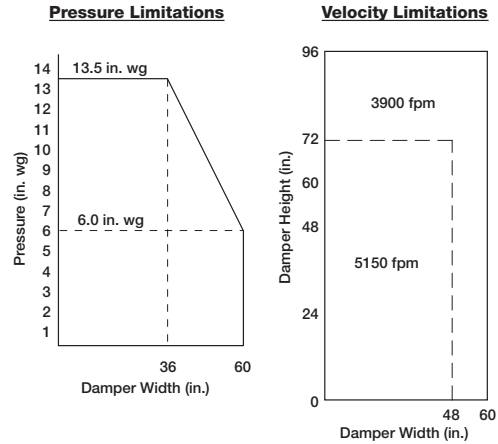
## Temperature Limitations

**Blade seals:** -40° to 250°F (-40° to 121°C)

**For higher temperatures, consult factory.**

## Velocity Limitations

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



## Pressure Drop Data

This pressure drop data was conducted in accordance with AMCA Standard 500-D using the three configurations shown. All data has been corrected to represent standard air at a density of .075 lb/ft<sup>3</sup> (1.2 kg/m<sup>3</sup>).

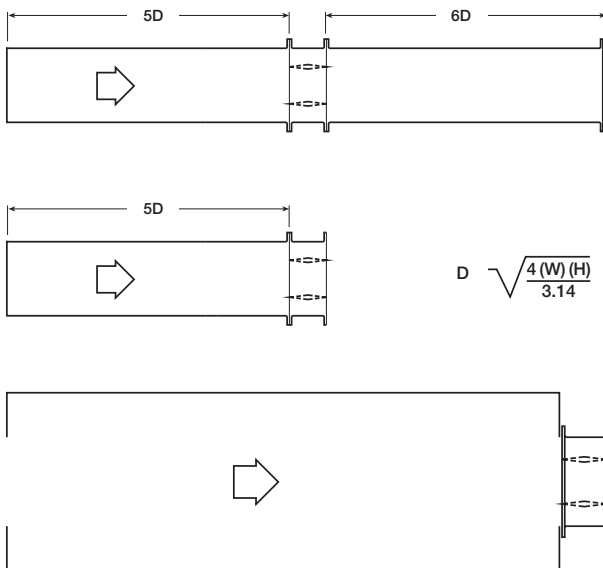
Actual pressure drop found in any HVAC system is a combination of many factors. This pressure drop information along with an analysis of other system influences should be used to estimate actual pressure losses for a damper installed in a given HVAC system.

## AMCA Test Figures

**Figure 5.3** illustrates a fully ducted damper. This configuration has the lowest pressure drop of the three test configurations because the entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

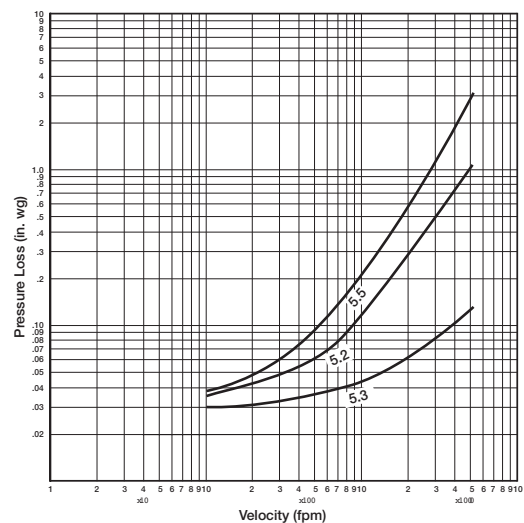
**Figure 5.2** illustrates a ducted damper exhausting air into an open area. This configuration has a lower pressure drop than Figure 5.5 because the entrance losses are minimized by a straight duct run upstream of the damper.

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



## Pressure Drop

36 in. x 36 in. (914mm x 914mm) Damper

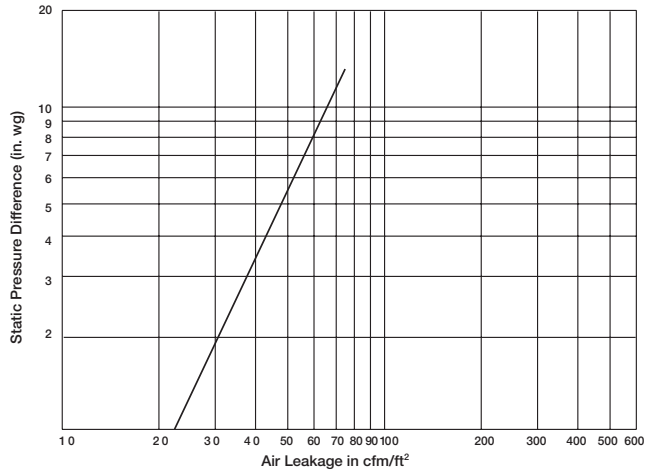


## Leakage Data

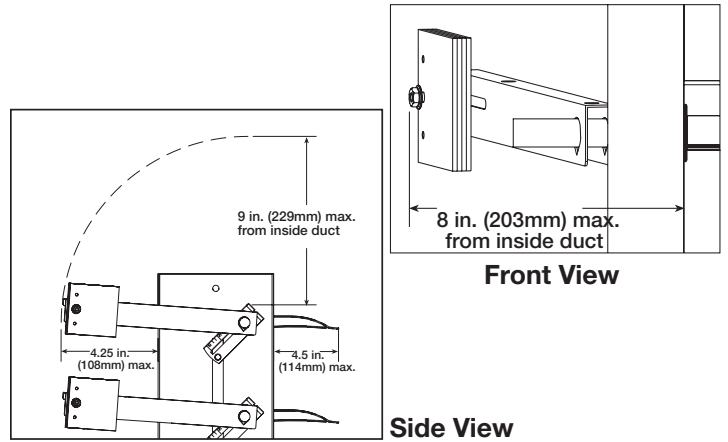
Leakage testing was conducted in accordance with AMCA Standard 500-D and is expressed as CFM per sq. ft. of damper face area. All data has been corrected to represent standard air at a density of 0.075 lb/ft<sup>3</sup> (1.2 kg/m<sup>3</sup>).

### Leakage

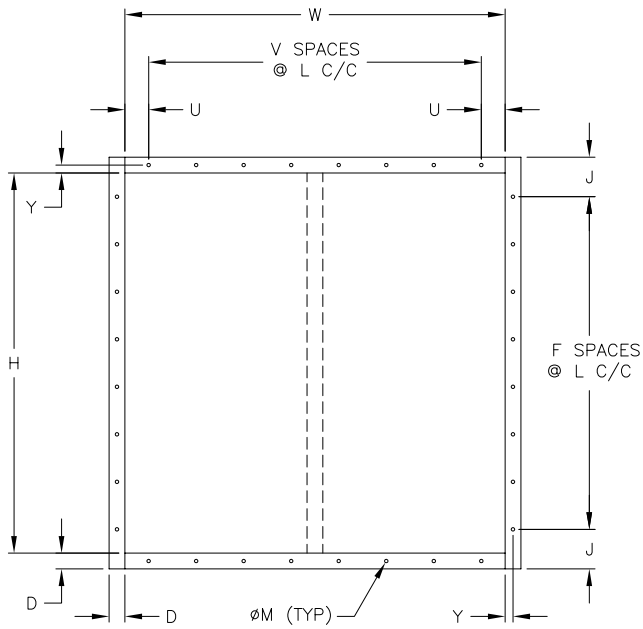
36 in. x 36 in. (914mm x 914mm) Damper



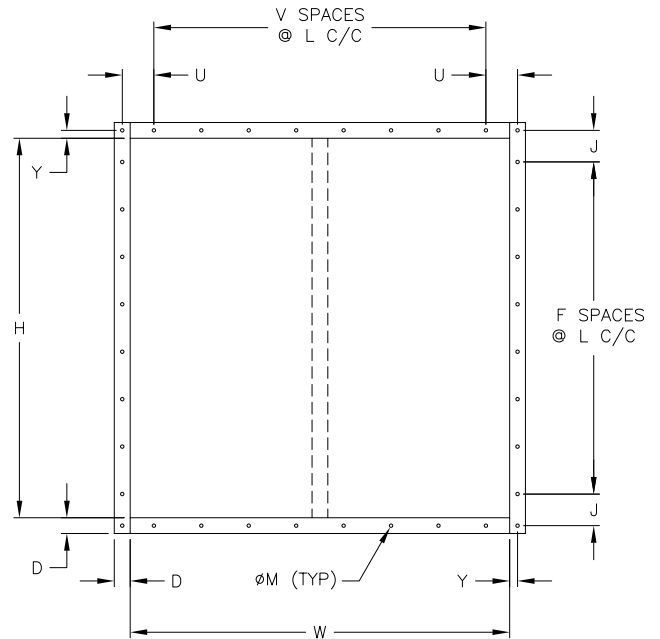
## Counterbalance Weight Dimensions



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 patterns are available. Contact factory for the limitations.



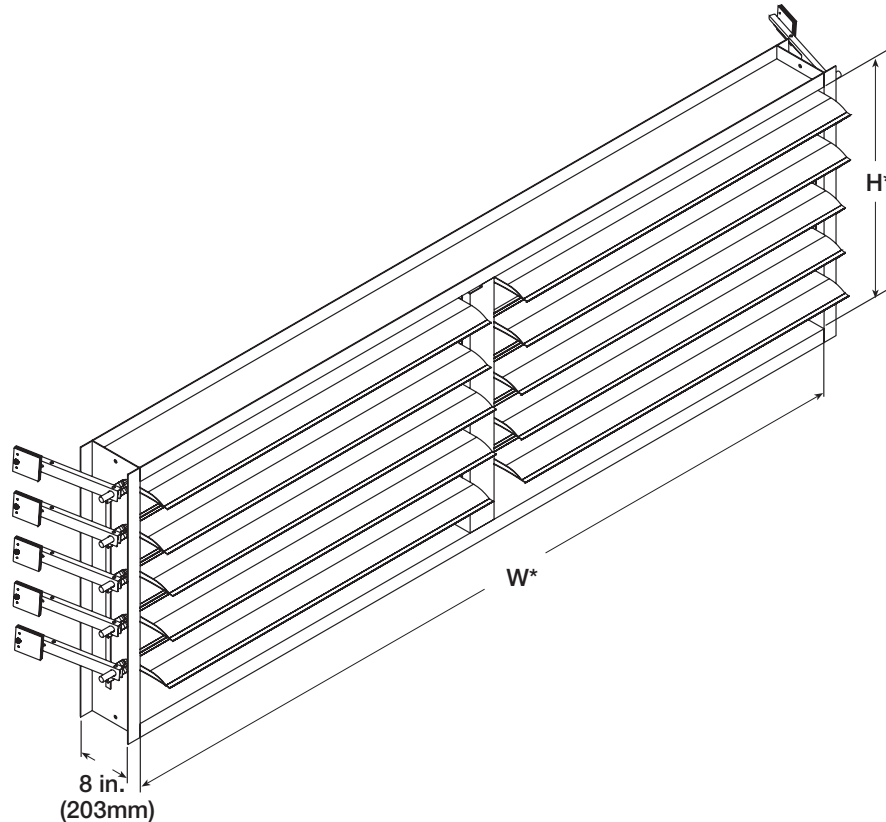
Standard Mounting Hole Pattern  
Typical for single or double wide panel



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

## Multiple Section Assembly

Damper sizes larger than 60 in. x 96 in. (1524mm x 2438mm) and less than 120 in. x 96 in. (3048mm x 2438mm) will be supplied in one frame with two sets of blades separated by a mullion as shown below. Counterbalance weights supplied on right hand and left hand side. For sizes larger than 120 in. x 96 in. (3048mm x 2438mm), consult factory.



## Specifications

Industrial grade backdraft 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; maximum 7 in. (178mm) wide airfoil shaped, extruded aluminum blades, .080 in. thick (2mm) with integral structural reinforcing tube and torsional stiffener running full length of each blade; silicone rubber 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 weights.

Spark 'A' resistant requires the damper to be non-ferrous in the airstream. Damper shall consist of 1/8 in. (3.2mm) aluminum channel frame with 8 in. (203mm) minimum

depth and 2 in. (51mm) flanges; maximum 7 in. (178mm) wide airfoil shaped, extruded aluminum (.080 in. [2mm] thick) blades with integral structural reinforcing tube and torsional stiffener running full length of each blade; silicone rubber seals; 3/4 in. (19mm) dia. aluminum axles turning in external mounted galvanized steel press fit ball bearings; and external (out of the airstream) heavy duty linkage with counterbalance weights.

Damper manufacturer's printed application and performance shall be submitted for approval showing damper suitable for pressures to 13.5 in. wg (3.4 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 HB-240.