

Application

Models HBS-430 and HBS-431 are heavy duty double flanged channel frame style dampers with double thickness fabricated airfoil blades. They are designed to protect against rapid pressure changes due to an explosion. Qualified to pressures as high as 15 psi covers many applications in Unified Facilities Criteria (UFC) and General Services Administration (GSA) codes and standards, including Charge Weight II at 82 feet.

Ratings

Pressure

1.5 - 15 psi (42-415 in. wg)
(20 - 103 kPa) blast load
Consult factory for lower pressures

Velocity

500 to 4000 fpm (2.5 to 20.3 m/s)

Temperature

Minimum: -40°F
Maximum: 250°F (121°C)

Size Limitations

| W x H | Minimum Size | Maximum Size | |
|--|--------------|----------------|------------------------|
| | | Single Section | Maximum Blast Pressure |
| Inches | 6 x 6 | 36 x 48 | 15 psi |
| mm | 152 x 152 | 914 x 1219 | 103 kPa |
| * For higher blasts or larger opening sizes, consult factory | | | |

| Code | Blast Loading |
|--|---------------------------|
| GSA- Level C | 4 psi @ 28 psi-msec |
| UFC 4-010-01 (charge weight I at 148 ft) | 4.76 psi @ 41.1 psi-msec |
| UFC 4-010-01 (charge weight II at 82 ft) | 5.77 psi @ 29.69 psi-msec |
| GSA-Level D | 10 psi @89 psi-msec |
| UFC 4-010-01 (charge weight I @ 82 ft) | 12.6 pis @77.8 psi-msec |

- Charge weight I = large mass explosion as would be found in a vehicle bomb - specific explosive weights are for US Government "For official use only" clearance personnel.
- Charge weight II = medium size mass explosions as would be found in a briefcase or backpack bomb - specific weights are for US Government "For official use only" clearance personnel.



Note: Spring Location is determined from the perspective of viewing the damper with the blast coming towards you/facing the blast. As shown: HBS-430 left; HBS-431 right.

Options Available:

- Bolt holes in flanges

Construction

| Construction | Standard | Optional |
|--------------------------|--|---|
| Frame Material | Galvanized steel | 304SS, 316SS, Carbon Steel |
| Frame Material Thickness | 10 ga. (3.5mm) | - |
| Frame Type | Flanged channel | - |
| Frame Depth | 10 in. (254mm) | |
| Blade Material | Galvanized steel | 304SS, 316SS, Galvaneal |
| Blade Type | Airfoil | - |
| Blade Thickness | 14 ga. min. (2mm) - blast less than or equal to 10 psi (277 in. wg [69kPa]); 12 ga. - blast greater than 10 psi (277 in. wg [69kPa]) | |
| Axle Diameter | 1 in. (25mm) | - |
| Axle Material | Plated steel | 303SS, 316SS |
| Axle Bearings | External ball | - |
| Blade Seal | None | EPDM, Silicone |
| Linkage Material | Plated steel | 304SS, 316SS |
| Flange Width | 2 in. (51mm) | - |
| Springs | 301SS | - |
| Spring Location | Right | Left |
| Finish | None | Hi Pro Polyester, Epoxy, Industrial Epoxy |
| Air Flow | Horizontal | Vertical Up or Vertical Down |
| Mounting Holes | None | Standard, Standard w/Corner Holes |

Document Links

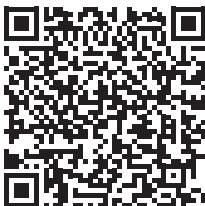
Installation Instructions



Heavy Duty and Industrial Damper Catalog



Heavy Duty and Industrial Damper Selection Guide



All Damper Product Selection Guide



Specifications



Damper Warranty Statement



Performance

Pressure Drop Data

This pressure drop data was conducted in accordance with AMCA Standard 500 using the three configurations shown. All data has been corrected to represent standard air at a density of 0.075 lb/ft³ (1.2 kg/m³).

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 entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

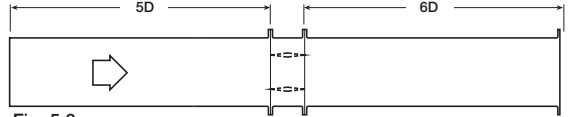


Fig. 5.3

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.

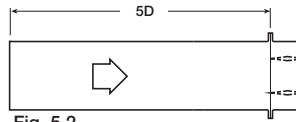


Fig. 5.2

$$D = \sqrt{\frac{4(W)(H)}{3.14}}$$

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.

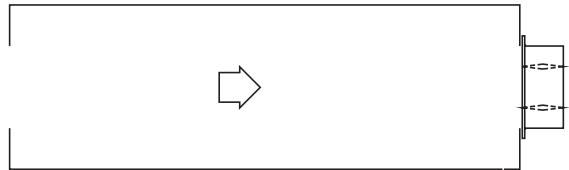
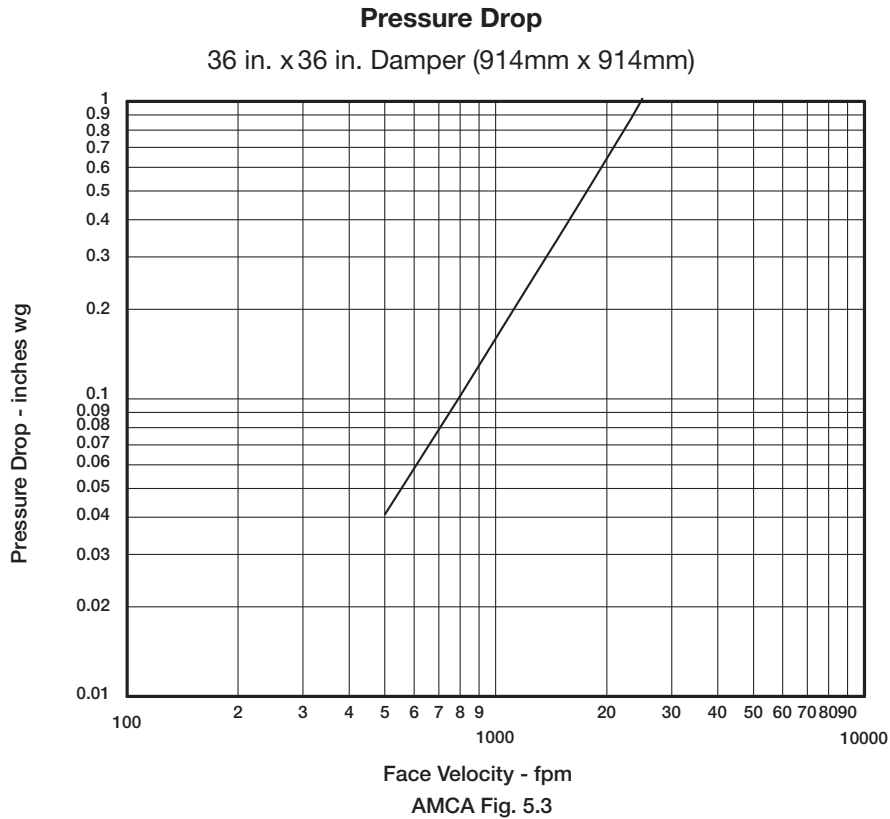


Fig. 5.5 AMCA Test Figures

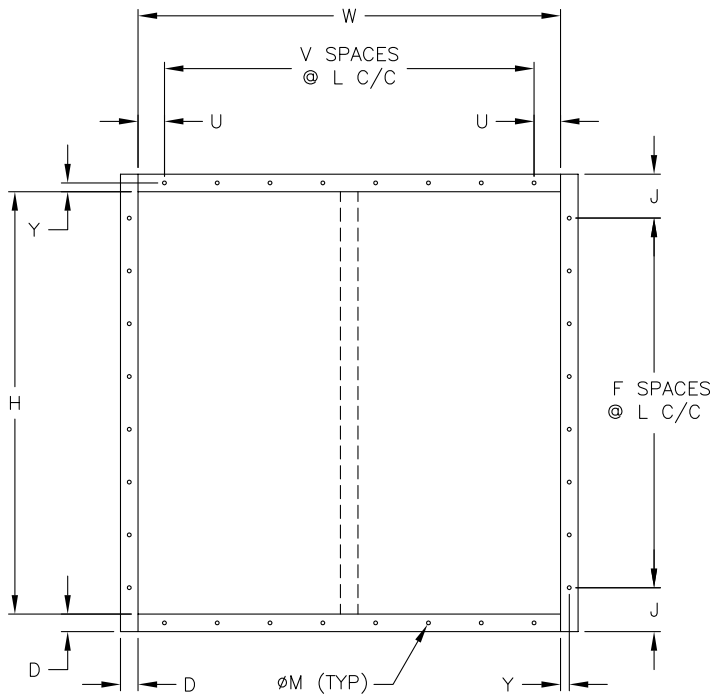
Leakage Data

Leakage testing was conducted in accordance with AMCA Standard 500 and is expressed as cfm/ft² of damper face area. All data has been corrected to represent standard air at a density of 0.075 lb/ft³ (1.2 kg/m³).

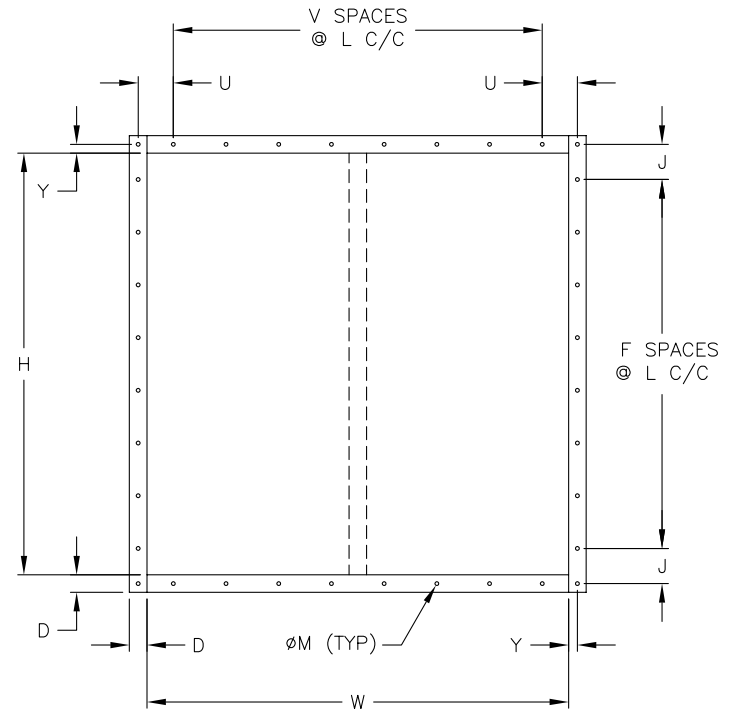


Bolt Hole Limitations

Bolt holes are available as an option. The standard pattern is $\frac{7}{16}$ 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.

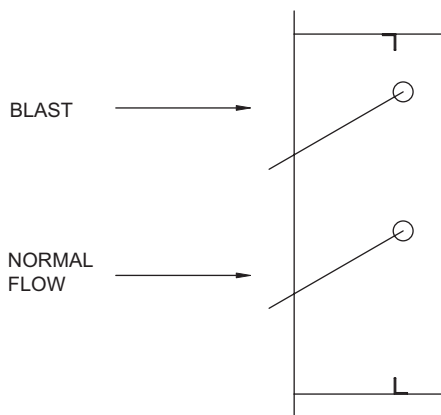


Standard Mounting Hole Pattern
Typical for single or double wide panel



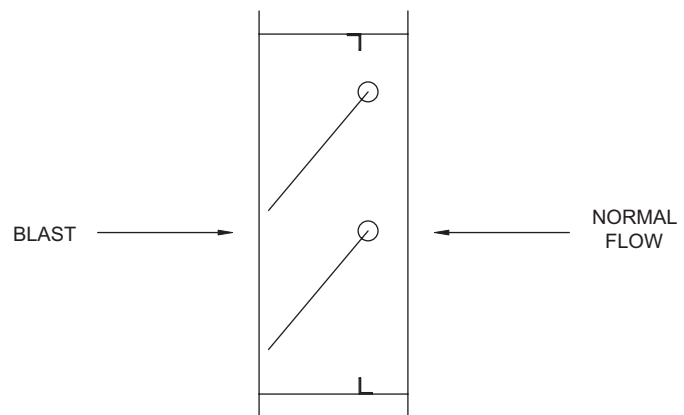
Standard Mounting Hole Pattern with Corner Holes
Typical for single or double wide panel

HBS-430 and HBS-431 Difference



Model HBS-430

This model closes in the same direction as normal flow.



Model HBS-431

This model closes in the opposite direction as normal flow.

Note: Spring Location is determined from the perspective of viewing the damper in the blast coming towards you/facing the blast. As shown: HBS-430 left; HBS-431 right.