

## Application

Model HCDR-450 is a heavy duty round industrial control damper with a flanged style frame. It is designed to control airflow and provide shut off in HVAC or industrial process control systems.

## Ratings

### Velocity

Up to 7000 fpm (36 m/s)

### Temperature

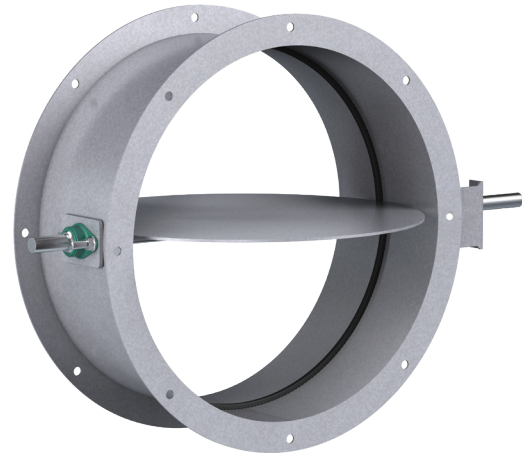
-40° to 400°F (-40° to 204°C) See page 2

### Pressure

Up to 30 in. wg (7 kPa) - differential pressure

## Construction

|                       | Standard  | Optional  |
|-----------------------|---|---|
| <b>Frame Material</b> | Painted   | 304SS or 316SS  |
| <b>Frame Type</b>     | Flanged channel   |   |
| <b>Blade Material</b> | Painted   | 304SS or 316SS  |
| <b>Blade Seals</b>    | None  | EPDM, Silicone  |
| <b>Blade Stop</b>     | Pin stop  | Rolled bar  |
| <b>Blade Type</b>     | Round butterfly   |   |
| <b>Axle Bearing</b>   | External bronze through 24 in. (610 mm); External ball above 24 in. (610 mm) diameter | External ball, Outboard bronze, Outboard ball                               |
| <b>Axle Material</b>  | Plated steel  | 303SS or 316SS  |
| <b>Axle Seals</b>     | None  | O-ring, Double gland  |
| <b>Paint Finishes</b> | Hi Pro Polyester  | Hi Temperature Flame Control, Hi Temperature Silver, Industrial Epoxy, None |
| <b>Mounting Holes</b> | None  | Parallel, Straddle  |



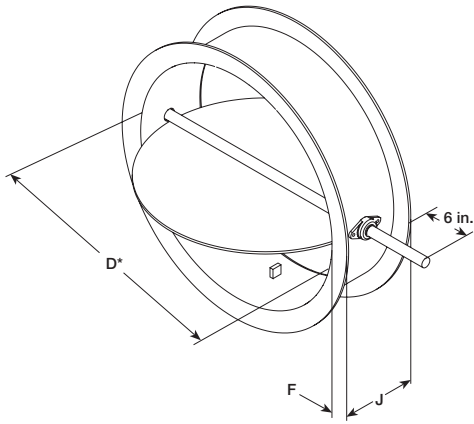
\* Actual Inside Dimension

| Diameter | Minimum Size | Maximum Size |
|----------|--------------|--------------|
| Inches   | 6            | 60           |
| mm       | 152          | 1524         |

## Features

- Wide mounting flanges can be ordered with bolt holes, customized to match your requirements.
- Rolled bar stops are required when blade seal is selected.
- Wide range of actuators available

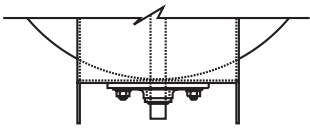
## Dimensions



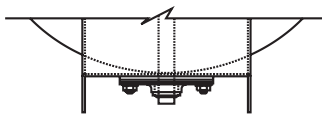
| Diameter <i>D</i><br>Inches (mm) |              | Frame<br>Depth <i>J</i><br>Inches<br>(mm) | Frame &<br>Flange<br>Gauge<br>(mm) | Flange<br>Width <i>F</i><br>Inches<br>(mm) | Axle<br>Diameter<br>Inches<br>(mm) | Blade<br>Thickness<br>Gauge<br>(mm) |
|----------------------------------|--------------|---|------------------------------------|--|------------------------------------|-------------------------------------|
| Above                            | Through      |   |                                    |  |                                    |                                     |
| 6<br>(152)                       | 12<br>(305)  | 10<br>(254)                               | 10<br>(254)                        | 1.25<br>(32)                               | 1<br>(25)                          | 0.188<br>(4.8)                      |
| 12<br>(305)                      | 20<br>(508)  | 10<br>(254)                               | 0.188<br>(4.8)                     | 1.5<br>(38)                                | 1.25<br>(32)                       | 0.188<br>(4.8)                      |
| 20<br>(508)                      | 24<br>(610)  | 10<br>(254)                               | 0.188<br>(4.8)                     | 1.5<br>(38)                                | 1.25<br>(32)                       | 0.25<br>(6)                         |
| 24<br>(610)                      | 32<br>(813)  | 10<br>(254)                               | 0.188<br>(4.8)                     | 2<br>(51)                                  | 1.5<br>(38)                        | 0.25<br>(6)                         |
| 32<br>(813)                      | 36<br>(914)  | 10<br>(254)                               | 0.188<br>(4.8)                     | 2<br>(51)                                  | 1.5<br>(38)                        | 0.25<br>(6)                         |
| 36<br>(914)                      | 48<br>(1219) | 10<br>(254)                               | 0.188<br>(4.8)                     | 2<br>(51)                                  | 2<br>(51)                          | 0.25<br>(6)                         |
| 48<br>(1219)                     | 54<br>(1372) | 10<br>(254)                               | 0.188<br>(4.8)                     | 2.5<br>(64)                                | 2<br>(51)                          | 0.25<br>(6)                         |
| 54<br>(1372)                     | 60<br>(1524) | 10<br>(254)                               | 0.25<br>(6)                        | 2.5<br>(64)                                | 2<br>(51)                          | 0.25<br>(6)                         |

## Options

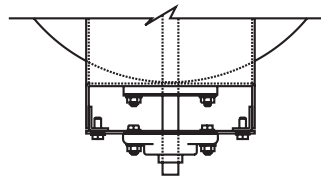
### Bearings and Shafts



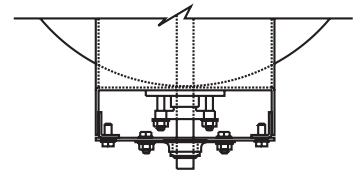
External Mounted Ball or Sleeve Bearing (Bronze Sleeve Standard, Ball Optional)



External Mounted Bronze Sleeve Bearing with O-Ring (Optional)



O-Ring Shaft Seal with Outboard Mounted Bearing (Optional)



Double Gland Stuffing Box with Outboard Mounted Bearing (Optional)

### Blade Seal (Rolled Bar Blade Stops Required)

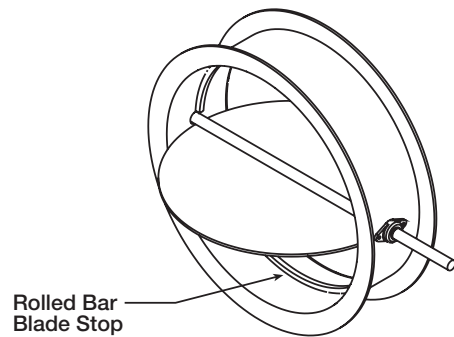
**Standard** - Does not include Blade Seals

**Optional** - EPDM Blade Seals (250°F [121°C] max.)

**Optional** - Silicone Rubber Blade Seals (400°F [204°C] max.)

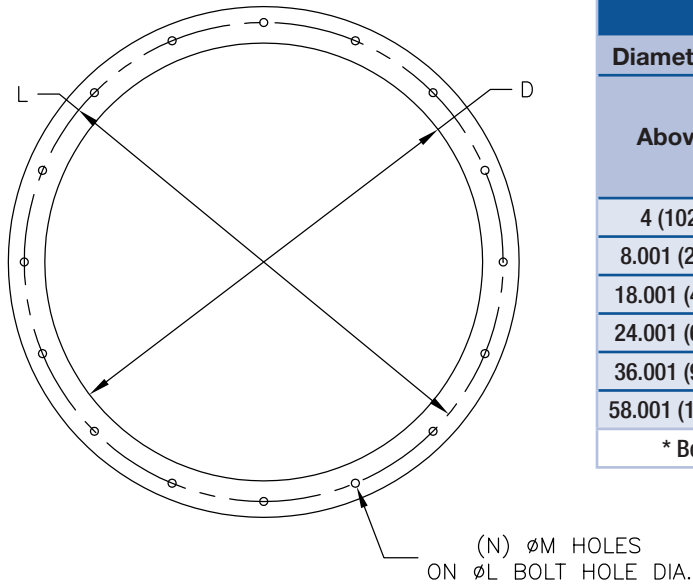
**Optional** - Fiberglass Blade Seals (800°F [427°C] max.)

**Optional** - Ceramic Blade Seals (1000°F [538°C] max.)



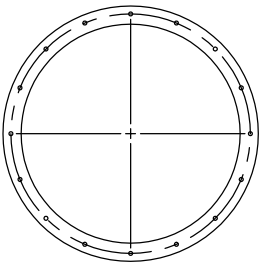
# Mounting Holes

The recommended bolt hole pattern is shown in the table below. Customer must specify bolt holes that are parallel to the axle centerline or that straddle the axle centerline as shown in the diagrams below. The factory can also provide bolt hole sizes and patterns other than those shown.

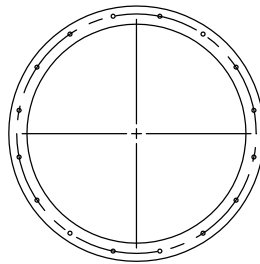


| Recommended Bolt Hole Pattern<br>(Bolt Holes Parallel to Axle Centerline) |           |                 |                                   |                        |                       |
|---|-----------|-----------------|-----------------------------------|------------------------|-----------------------|
| Diameter Inches (mm)  |           | Number of Holes | Mounting Hole Diameter in. (mm) N | Bolt Circle Diameter L | Degrees Between Holes |
| Above   | Through   |                 |                                   |                        |                       |
| 4 (102)   | 8 (203)   | 4               | 3/8 (9.5)                         | *                      | 90                    |
| 8.001 (203)   | 18 (457)  | 8               | 7/16 (11)                         | *                      | 45                    |
| 18.001 (457)  | 24 (610)  | 12              | 7/16 (11)                         | *                      | 30                    |
| 24.001 (610)  | 36 (914)  | 16              | 7/16 (11)                         | *                      | 22½                   |
| 36.001 (914)  | 58 (1473) | 24              | 7/16 (11)                         | *                      | 15                    |
| 58.001 (1473)   | 72 (1829) | 32              | 9/16 (14)                         | *                      | 11¼                   |

\* Bolt Circle Diameter = Damper Diameter + Flange Height + ¼ in. (6mm)



On Centerline

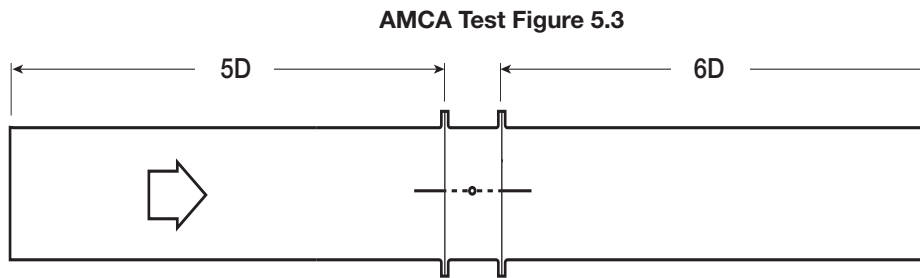


Straddle Centerline

## Performance Data

### AMCA Test Figure 5.3

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



### Pressure Drop Data

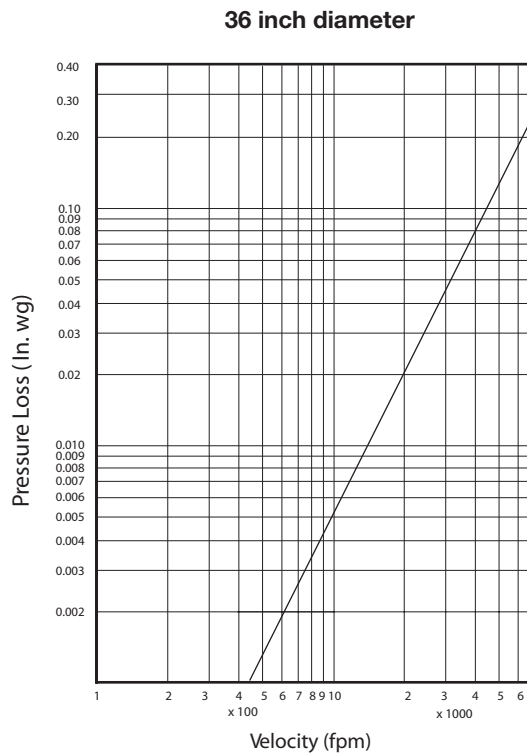
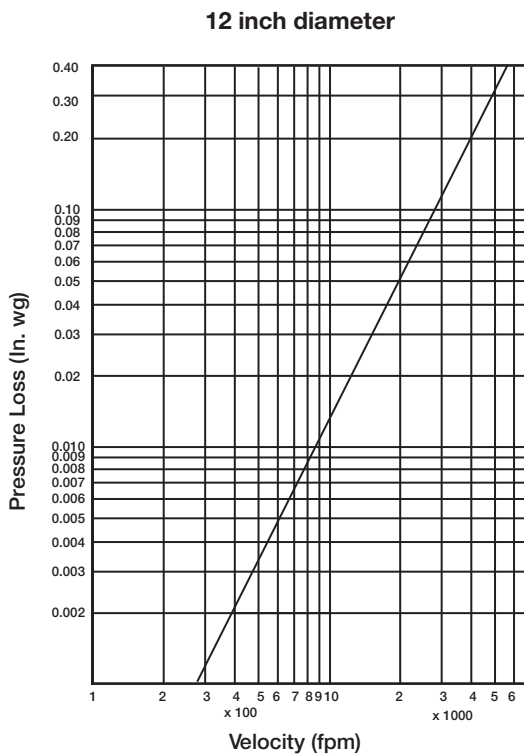
This pressure drop data was conducted in accordance with AMCA Standard 500-D using Test Figure 5.3. All data has been corrected to represent standard air at a density of 0.075 lb/ft<sup>3</sup> (1.2 kg/m<sup>3</sup>).

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.

**NOTE:**

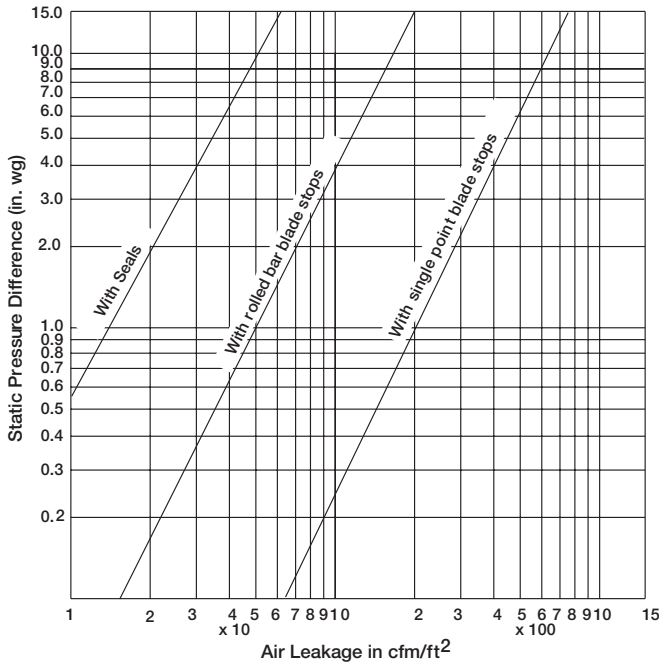
PS refers to damper with standard pin blade stop

BS refers to damper with rolled bar blade stop

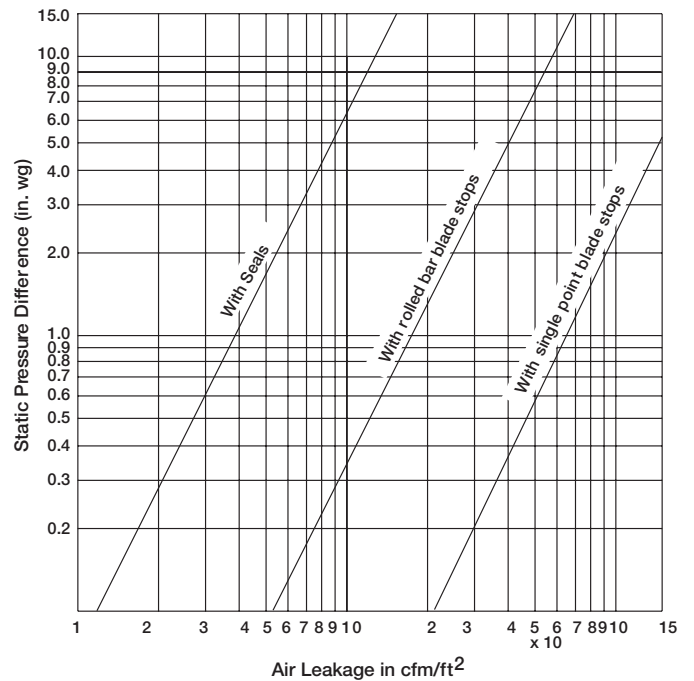


Damper leakage (with blades fully closed) varies based on the type of blade stops and low leakage seals applied. Model HCDR-450 is available with no seals (standard) or with EPDM or silicone rubber blade seals. Leakage testing was conducted in accordance with AMCA Standard 500-D and is expressed as cfm/ft<sup>2</sup> 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**  
12 in. Diameter Damper



**Leakage**  
36 in. Diameter Damper



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