

### Application

Model HCDR-350 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. A variety of optional features allows the model HCDR-350 to be tailored to the application.

### Damper Ratings

#### Velocity

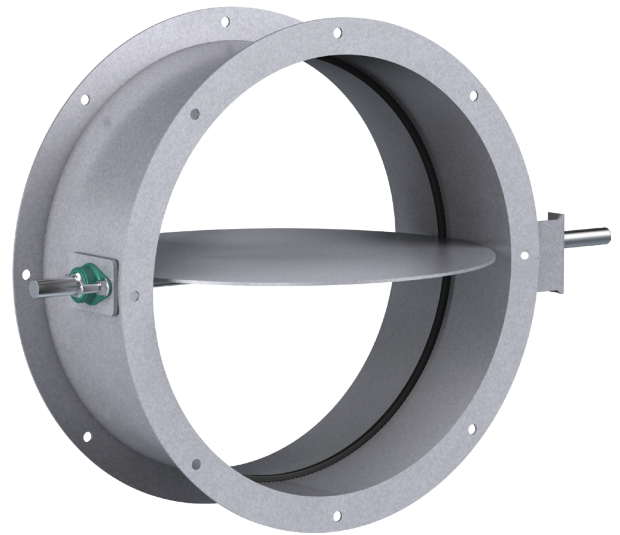
Up to 6400 fpm (32.5 m/s)

#### Pressure

Up to 20 in. wg (5 kPa) - pressure differential

#### Temperature

-40°F to 1000°F (-40°C to 538°C). Consult factory for temperatures

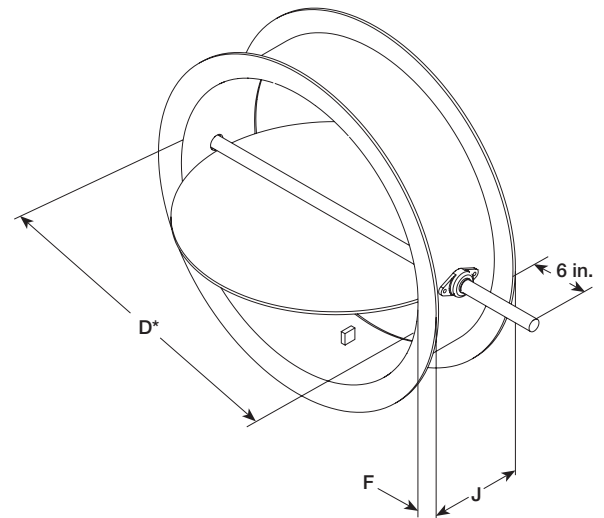


\* Actual Inside Dimension

### Size Limitations

| W x H  | Minimum Size | Maximum Size |
|--------|--------------|--------------|
| Inches | 4            | 72           |
| mm     | 102          | 1829         |

| Diameter D<br>Inches (mm) |              | Frame<br>Depth J<br>Inches<br>(mm) | Frame &<br>Flange<br>Gauge<br>(mm) | Flange<br>Width F<br>Inches<br>(mm) | Axle<br>Diameter<br>Inches<br>(mm) | Blade<br>Thickness<br>Gauge<br>(mm) |
|---------------------------|--------------|------------------------------------|------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|
| Above                     | Through      |                                    |                                    |                                     |                                    |                                     |
| 3.99<br>(101)             | 12<br>(3305) | 6<br>(152)                         | 12<br>(2.7)                        | 1.25<br>(32)                        | 0.5*<br>(13)                       | 10<br>(3.5)                         |
| 12<br>(305)               | 20<br>(508)  | 8<br>(203)                         | 10<br>(3.5)                        | 1.5<br>(38)                         | 0.75<br>(19)                       | 0.188<br>(4.8)                      |
| 20<br>(5080)              | 24<br>(610)  | 8<br>(203)                         | 10<br>(3.5)                        | 1.5<br>(38)                         | 0.75<br>(19)                       | 0.25<br>(6)                         |
| 24<br>(610)               | 36<br>(914)  | 8<br>(203)                         | 0.188<br>(4.8)                     | 2.0<br>(51)                         | 1<br>(25)                          | 0.25<br>(6)                         |
| 36<br>(914)               | 48<br>(1219) | 8<br>(203)                         | 0.188<br>(4.8)                     | 2.0<br>(51)                         | 1.25<br>(32)                       | 0.25<br>(6)                         |
| 48<br>(1219)              | 54<br>(1372) | 10<br>(254)                        | 0.188<br>(4.8)                     | 2.5<br>(64)                         | 1.50<br>(38)                       | 0.25<br>(6)                         |
| 54<br>(1372)              | 60<br>(1524) | 10<br>(254)                        | 0.25<br>(6)                        | 2.5<br>(64)                         | 1.50<br>(38)                       | 0.25<br>(6)                         |
| 60<br>(1524)              | 72<br>(1829) | 10<br>(254)                        | 0.25<br>(6)                        | 3<br>(76)                           | 2<br>(51)                          | 0.25<br>(6)                         |



\* The axle diameter is 3/4 in. (19mm) when outboard carbon bearings are selected for dampers 16 inches and below.

Construction Features - see page 2

## Construction Features

|                    | Frame Material | Frame Type      | Blade Material | Blade Seals         | Blade Stops | Blade Type      | Axle Bearing   | Axle Material  | Axle Seals             | Paint Finishes   |
|--------------------|----------------|-----------------|----------------|---------------------|-------------|-----------------|--|----------------|------------------------|--|
| <b>Up to 400°F</b> |                |                 |                |                     |             |                 |  |                |                        |  |
| <b>Standard</b>    | Painted        |                 | Painted        | None                | Pin Stop    |                 | External Bronze through 48 in. (1219mm); External Relubricable Ball above 48 in. (1219mm) diameter | Plated Steel   | None                   | Hi Pro Polyester   |
| <b>Optional</b>    | 304SS, 316SS   | Flanged Channel | 304SS, 316SS   | EPDM, Silicone      | Rolled Bar  | Round Butterfly | External Ball, Outboard Bronze, Outboard Ball  | 303SS or 316SS | O-ring, Double Gland   | Epoxy, Hi Temperature Flame Control, Hi Temperature Silver, Industrial Epoxy, None |
| <b>600°F</b>       |                |                 |                |                     |             |                 |  |                |                        |  |
| <b>Standard</b>    | Painted        | Flanged Channel | Painted        | None                | Pin Stop    | Round Butterfly | Outboard Bronze  | Plated Steel   | Double Gland           | Hi Temperature Flame Control   |
| <b>Optional</b>    | 304SS, 316SS   |                 | 304SS, 316SS   | Fiberglass, Ceramic | Rolled Bar  |                 | Outboard Ball<br>Outboard Carbon   | 303SS, 316SS   | Outboard Double Gland* | -  |
| <b>800°F</b>       |                |                 |                |                     |             |                 |  |                |                        |  |
| <b>Standard</b>    | Painted        | Flanged Channel | Painted        | None                | Pin Stop    | Round Butterfly | Outboard Carbon  | Plated Steel   | Double Gland           | High Temperature Flame Control   |
| <b>Optional</b>    | 304SS, 316SS   |                 | 304SS, 316SS   | Fiberglass, Ceramic | Rolled Bar  |                 | -  | 303SS, 316SS   | Outboard Double Gland* | -  |
| <b>1000°F</b>      |                |                 |                |                     |             |                 |  |                |                        |  |
| <b>Standard</b>    | 304SS          | Flanged Channel | 304SS          | None                | Rolled Bar  | Round Butterfly | Outboard Carbon  | 303SS          | Double Gland           | -  |
| <b>Optional</b>    | 316SS          |                 | 316SS          | Ceramic             | -           |                 | -  | 316SS          | Outboard Double Gland* | -  |

\*Outboard Double Gland assembly allows for 3 in. of insulation.

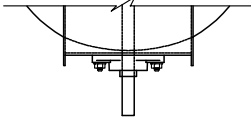
## Features

- 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.

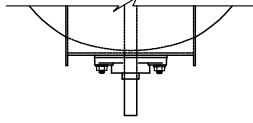
# Options

## Bearings and Shafts

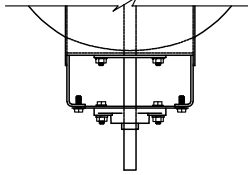
External Mounted Ball or Sleeve Bearing (Bronze Sleeve Standard, Ball Optional)



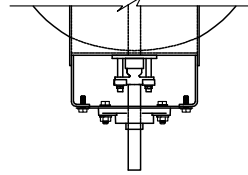
External Mounted Bronze Sleeve Bearing With O-Ring (Optional)



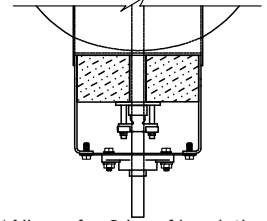
O-Ring Shaft Seal with Outboard Mounted Bearing (Optional)



Double Gland Stuffing Box with Outboard Mounted Bearing (Optional)



Insulated Outboard Double Gland Stuffing Box with Outboard Mounted Bearing (Optional)\*



\*Allows for 3 in. of insulation.

## Blade Seal (Rolled Bar Blade Stops Required)

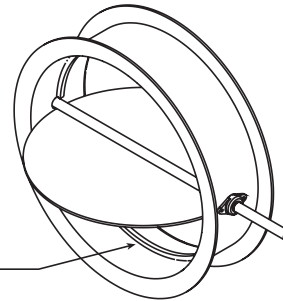
**Standard** - Does not include Blade Seals

**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.)

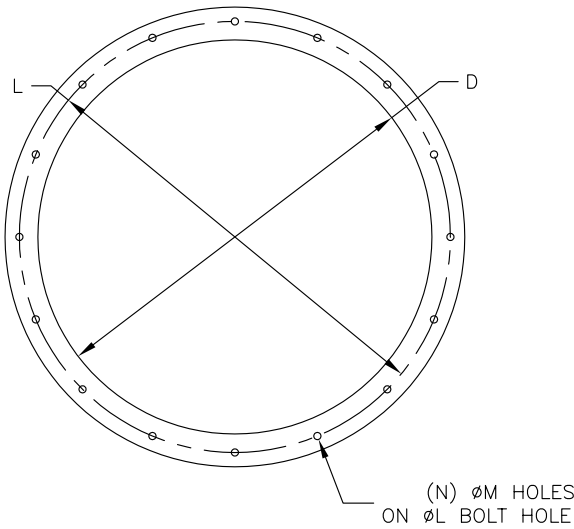
**Optional** - Ceramic Blade Seals (1000°F [538°C] max.)



Rolled Bar Blade Stop

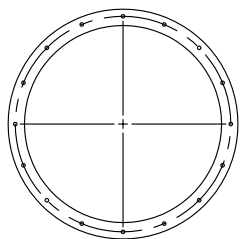
## Bolt Holes

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.

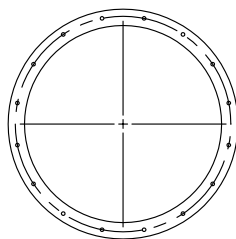


| Recommended Bolt Hole Pattern<br>(Bolt Holes Parallel to Axle Centerline) |           |                 |                                   |                        |                       |
|---|-----------|-----------------|-----------------------------------|------------------------|-----------------------|
| 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)                         | *                      | 22 1/2                |
| 36.001 (914)  | 58 (1473) | 24              | 7/16 (11)                         | *                      | 15                    |
| 58.001 (1473)   | 72 (1829) | 32              | 9/16 (14)                         | *                      | 11 1/4                |

\* Bolt Circle Diameter = Damper Diameter + Flange Height + 1/4 in. (6mm)



Parallel on Centerline

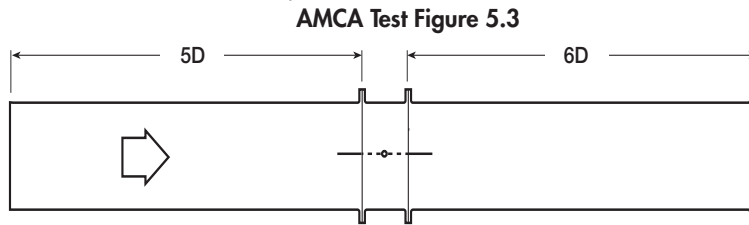


Straddle on Centerline

# 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

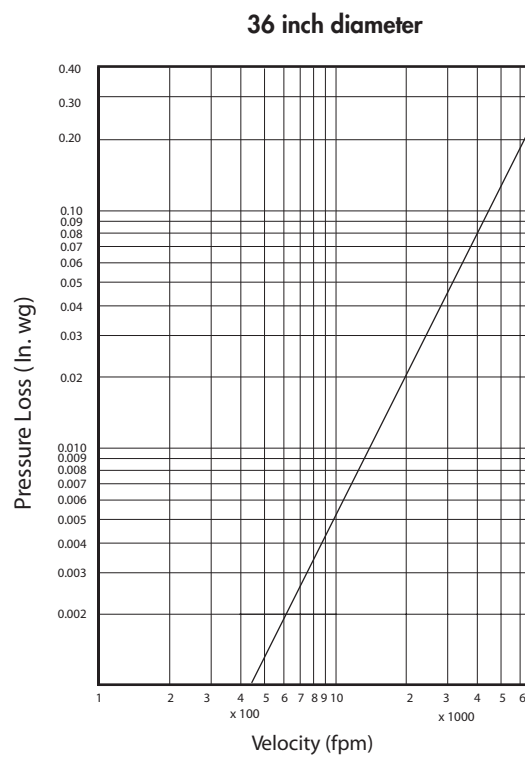
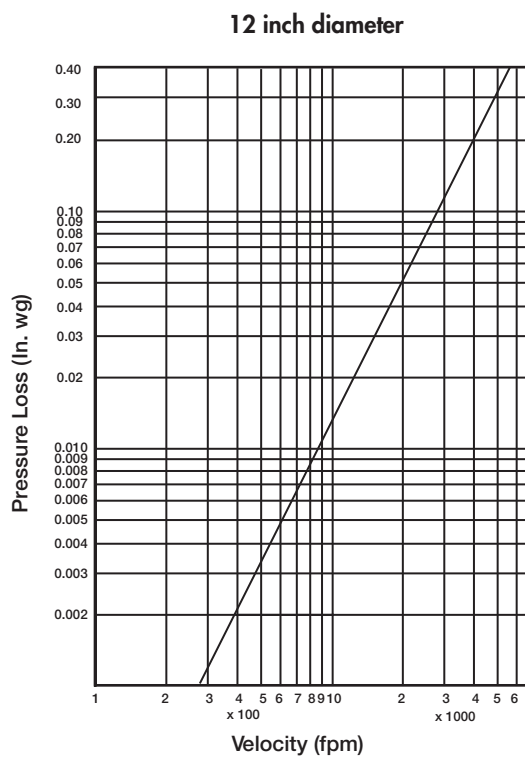
This pressure drop data was conducted in accordance with AMCA Standard 500-D using Test Figure 5.3. All data has been corrected to represent standard air at a density of 0.075 lb/ft<sup>3</sup> (1.2 kg/m<sup>3</sup>).

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:

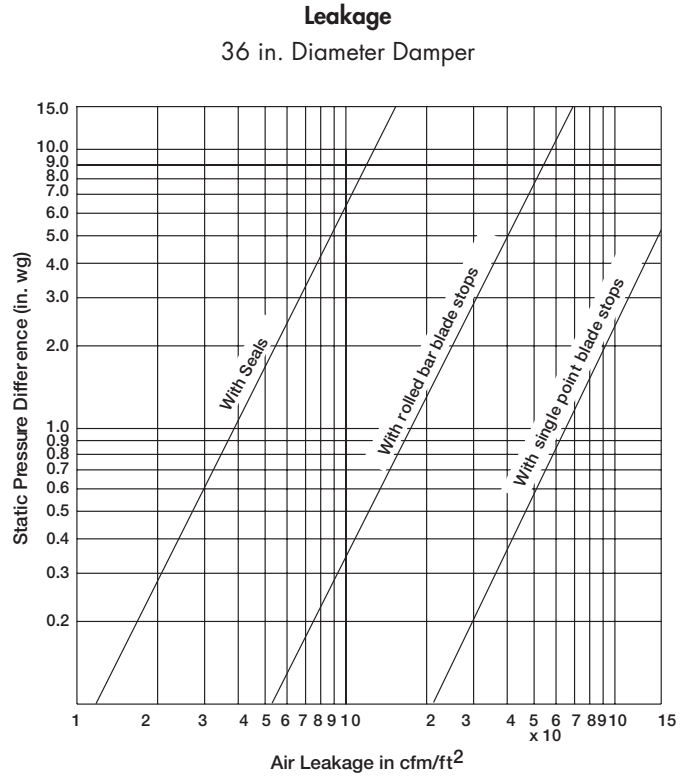
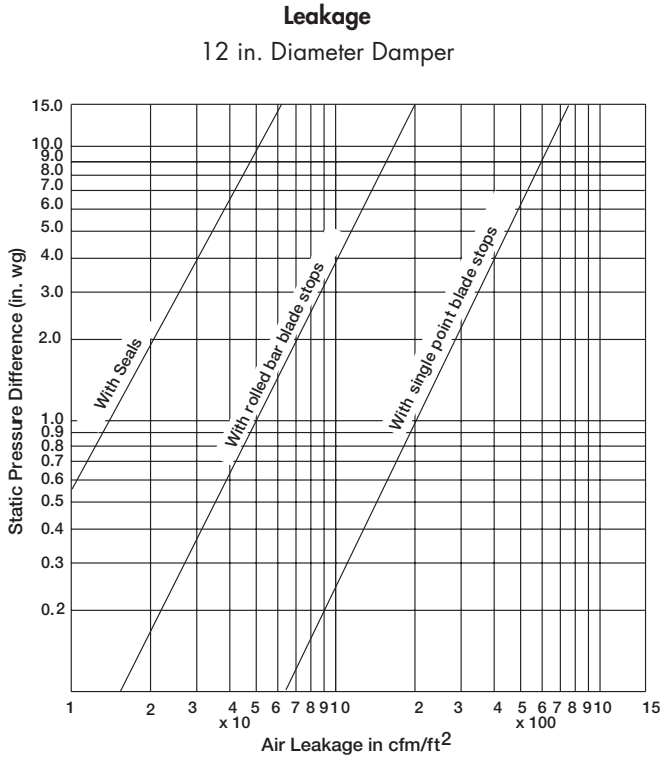
PS refers to damper with standard pin blade stop

BS refers to damper with rolled bar blade stop



# Leakage Data

Damper leakage (with blades fully closed) varies based on the type of blade stops and low leakage seals applied. Model HCDR-350 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>).



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