

CD36-CE LOW LEAKAGE CONTROL DAMPER Stainless Steel Construction for Coastal Environments

APPLICATION

Ruskin model CD36-CE incorporates features which make it suitable for coastal and other corrosive environments. The design includes non-corrosive axle bearings and stainless steel construction. V-groove blades are suitable for low and medium velocity applications. Blade edge seals are mechanically fastened to ensure years of dependable low leakage performance.

STANDARD CONSTRUCTION

FRAME

316L stainless steel 5" x 1" x 16 gauge (127 x 25.6 1.6) hat channel reinforced at corners.

BLADE

316L Stainless steel, triple-vee rollformed construction. Typically 6" (152) wide, maximum 7" wide. Opposed blade action standard, parallel blade action optional.

AXLES

7/16" (26) nominal hexagonal zinc plated steel.

BEARINGS

316 Oil impregnated stainless steel formed to hexagonal shape to minimize leakage.

BLADE SEALS

Silicone blade edge seals mechanically fastened to blades.

JAMB SEALS

301 wear resistant stainless steel cambered compression type.

LINKAGE

304 stainless steel shake resistant Swedgelock™ assembly, concealed out of airstream.

CONTROL SHAFT

1/2" (13) dia. x 6" (152) long stainless steel shaft single section units.
1/2" (13) dia. stainless jackshaft on multi-section assemblies up to 12 1/2 ft.² (3.8 m²).

1" (25) dia. stainless jackshaft multi-section assemblies over 12 1/2 ft.² (3.8 m²)

MAX PRESSURE

Up to 5 inches w.g. (1.2 kPa) depending on damper width.

MAX VELOCITY

Up to 3000 FPM (15.3 m/s) depending on damper width.

LEAKAGE

Superior to AMCA class 2 (see Performance Data on page 2).

TEMPERATURE LIMITS

-72°F (-58°C) minimum and +275°F (+135°C) maximum.

MINIMUM SIZE

Single blade – 5"w x 5"h (127 x 127).

Two blades, opposed or parallel action: 5"w x 10"h (127 x 254).

MAXIMUM SIZE

Single section – 48"w x 72"h (1220 x 1829).

Multiple section assembly – Unlimited size.

ESTIMATED SHIPPING WEIGHT

7 lbs. (3.2kg) per square foot.

NOTES

1. Values shown in parentheses () are millimeters unless otherwise indicated.
2. Refer to Installation Instructions for additional details.
3. Units furnished approximately 1/4" (6) smaller than given opening dimensions when standard frame is ordered.



MEMBER OF



FEATURES

- Non-corrosive axle bearings
- Swedgelock™ shake proof concealed linkage
- Mechanically fastened blade seals

VARIATIONS

Ruskin model CD36-CE is available with the following variations at additional cost.

- Front, rear or double flange frame
- Stainless axle bearings
- Factory mounted and commissioned electric and pneumatic actuators, chain pull devices, and manual locking handles
- Remote blade position indicator switches (SP-100)

LEAKAGE AND PERFORMANCE DATA

LEAKAGE AND PERFORMANCE

All data represented in this literature are based on tests performed in accordance with AMCA test standards at Ruskin's AMCA accredited test facility. Third party verification of testing procedures and data are verified through ISO procedure audits.

CD36-CE Maximum Damper "A" Width	Leakage (CFM/Ft ²)			
	1" wg (0.25 kPa)	4" wg (1 kPa)	8" wg (2 kPa)	10" wg (2.5 kPa)
48" (1219)	5.4	10.7	N/A	N/A

Leakage testing is performed in accordance with ANSI/AMCA Standard 500-D, figure 5.5. Leakage data are based on a closing torque of 5 inch pounds/ft² (0.57N.m).

As defined by AMCA, the maximum allowable leakage for class 2 rated dampers is as follows.

Leakage Class 2

- 10cfm/ft² @ 1 inch wg
- 20cfm/ft² @ 4 inch wg
- 28cfm/ft² @ 8 inch wg
- 35cfm/ft² @ 12 inch wg

To calculate leakage at a given pressure, multiply the leakage at 1 inch wg by the square root of the given leakage.

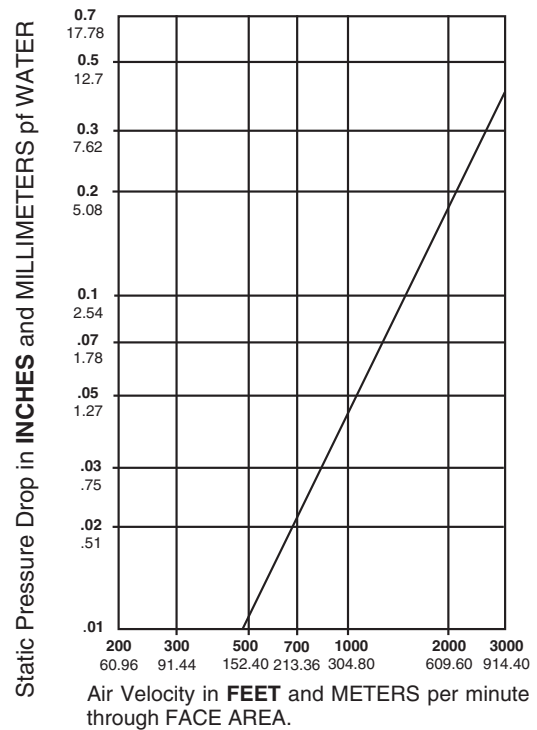
Example: given 5 inches wg
 $5.4 \text{ cfm} (\sqrt{5}) = 20.07 \text{ cfm}$

Air performance testing is performed in accordance with ANSI/AMCA Standard 500-D, figure 5.3.

PRESSURE DROP - DAMPER OPEN (24" X 24" size)

Maximum System Pressure

Damper "A" Width	Maximum System Pressure
48" (1219)	2.5" wg (.62 kPa)
36" (914)	3.0" wg (.75 kPa)
24" (610)	4.0" wg (1 kPa)
12" (305)	5.0" wg (1.25 kPa)



MAXIMUM VELOCITY AND INSTALLATION

Damper Width "A" Dimension in inches ()	Maximum Velocity	
	fpm	m/s
Above 5" (127) through 24" (609)	3000	15.25
Above 24" (609) through 36" (914)	2500	12.71
Above 36" (914) through 48" (1219)	2000	10.17
Velocity recoendation (see note below)	1500	7.6

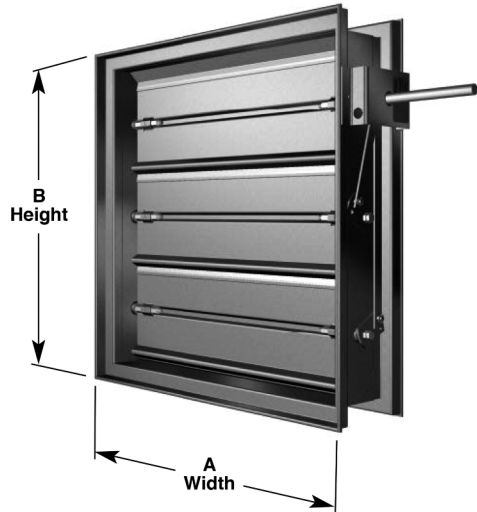
NOTE: For optimum sound characteristics and pressure drop performance on dampers with v-groove blades, we recommend sizing dampers for 1,500 fpm. Higher velocities are not recommended for outside air openings, due to water penetration concerns. For best pressure drop and sound performance at higher velocities, consider an airfoil blade damper, such as Ruskin model CD50-CE.

INSTALLATION

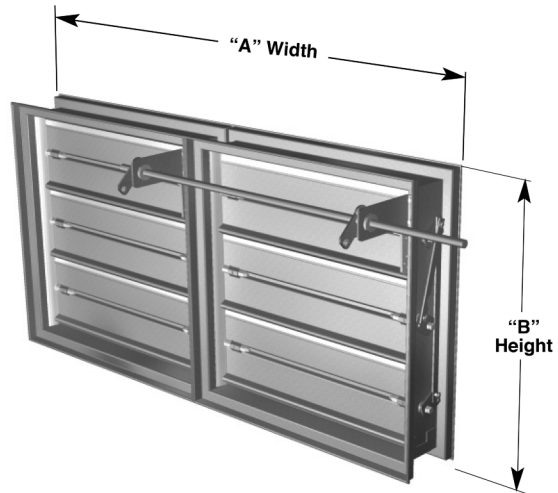
Ruskin model CD36-CE is **not recommended for installation with blades running vertically** unless ordered with thrust washers. For proper performance, damper must be installed square and free from racking. Actuator must be installed on linkage side. Opposed blade dampers must be operated from a power blade or shaft. Refer to installation instructions for additional information.

The CD36-CE is intended to be self supporting only in its largest single section size. Multiple section damper assemblies may require bracing to support the weight of the assembly and to hold against system pressure. Ruskin recommends appropriate bracing to support the damper horizontally at a minimum of every 8 feet of damper width. Vertical assemblies and higher system pressures may require more bracing.

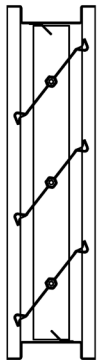
DIMENSIONAL DATA



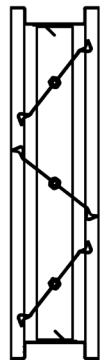
Single section shown with extended shaft



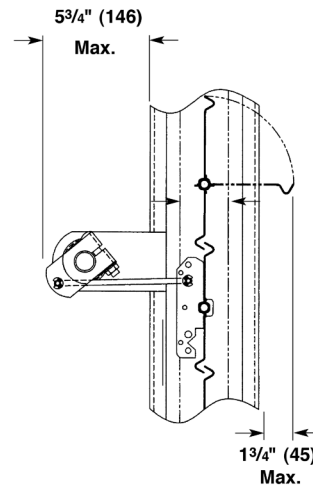
Multi-section shown with jackshaft



Parallel Blade



Opposed Blade



Typical Jackshaft Dimensions

SUGGESTED SPECIFICATION

Furnish and install, at locations shown on plans, or in accordance with schedules, control dampers that meet the following minimum construction standards. Control dampers shall be produced in an ISO9001 certified factory. Frame shall be 16 gauge (1.6) 304L stainless steel structural hat channel with reinforced corners for strength. The blades shall be 6" (152) single skin, 16 gauge (1.6) 304L stainless steel with three longitudinal grooves to reduce blade deflection. Bearings shall be corrosion resistant, 316 stainless steel sleeve type turning in an extruded hole in the damper frame. Axles shall be hexagonal positively locked into the damper blade. Linkage shall be concealed out of airstream, within the damper frame to reduce pres-

sure drop and noise. Blade edge seals shall be silicone. damper construction suitable for -75°F to +275°F (-58°C to +135°C) mechanically locked into the blade edge. Adhesive or clip-on type seals are unacceptable. Jamb seals shall be stainless steel compression type to prevent leakage between blade end and damper frame. Blade end overlapping frame is unacceptable. Multiple section dampers must have factory installed jackshafts unless clearly eliminated by the engineer. Submittal must include leakage, pressure drop, maximum velocity and maximum pressure data based on AMCA Publication 500D. Dampers shall be in all respects equivalent to **Ruskin Model CD36-CE**.



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