

## CD36 LOW LEAKAGE CONTROL DAMPER

### APPLICATION

Ruskin model CD36 incorporates the industries only one-piece steel frame construction, making it the engineer's preferred frame design. It promotes tighter leakage, and there are no bolts, screws or rivets that could fail over time. Frame corners are internally braced to reduce racking. 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. Factory mounted and commissioned pneumatic and electric actuators are available options.

### STANDARD CONSTRUCTION

#### FRAME

5" x 1" x 16 gage (127mm x 25mm x 1.6mm) hot dipped, roll formed galvanized steel.

#### BLADE

6" x 16 gage (152mm x 1.6mm) hot dipped, roll formed galvanized steel.

#### AXLES

1/2" (13mm) nominal hexagonal zinc plated steel.

#### BEARINGS

High impact, molded synthetic, formed to hexagonal axle shape.

#### BLADE SEALS

Mechanically fastened, fire resistant, vinyl coated polyester. Meets requirements to qualify for UL94, 5903.

#### JAMB SEALS

300 series stainless steel compression type.

#### LINKAGE

Shake proof Swedgelock™ plated steel assembly, concealed out of airstream.

#### PRESSURE

Up to 5" W.C. (1.2 kPa). Refer to chart.

#### VELOCITY

Up to 3,000 FPM (15.3 m/s). Refer to chart.

#### LEAKAGE

Superior to AMCA Class 2. Refer to chart.

#### TEMPERATURE RANGE

Standard -25°F to +185°F (-32°C to +85°C).

Enhanced -45°F to +350°F (-43°C to +177°C).

With silicone blade seals and stainless bearings, see variations.

#### MINIMUM SIZE

Single blade – 5" (127mm) "A" width x 5" (127mm) "B" height.

Opposed blade – 5" (127mm) "A" width x 10" (254) "B" height.

#### MAXIMUM SIZE

Single section – 48" (1219mm) "A" width x 72" (1829mm) "B" height.

Multi-section – multiple factory assembled equal sections with unlimited overall dimensions.

#### ESTIMATED SHIPPING WEIGHT

7 lbs. (3.2kg) per square foot.



ISO9001  
CERTIFIED

### FEATURES

- One-piece roll formed frame
- Swedgelock™ shake proof concealed linkage
- Mechanically fastened blade seals

### VARIATIONS

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

- Front, rear or double flange frame
- Stainless axles, bearings and linkage
- Factory mounted sleeves with round and oval transitions
- Security bars
- Factory mounted and commissioned electric and pneumatic actuators, chain pull devices, and manual locking handles
- Enamel and epoxy finishes
- Remote blade position indicator switches
- Wireless (on/off) remote control



### NOTES

- Values shown in parenthesis ( ) indicate metric units.
- Units furnished approximately 1/4" (6mm) smaller than given opening dimensions.

# 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 Maximum Damper "A" Width	Leakage (CFM/Ft <sup>2</sup> )			
	1" wg (0.25 kPa)	4" wg (1 kPa)	8" wg (2 kPa)	10" wg (2.5 kPa)
48" (1219mm)	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/ft<sup>2</sup> (0.57N.m).

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

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)

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

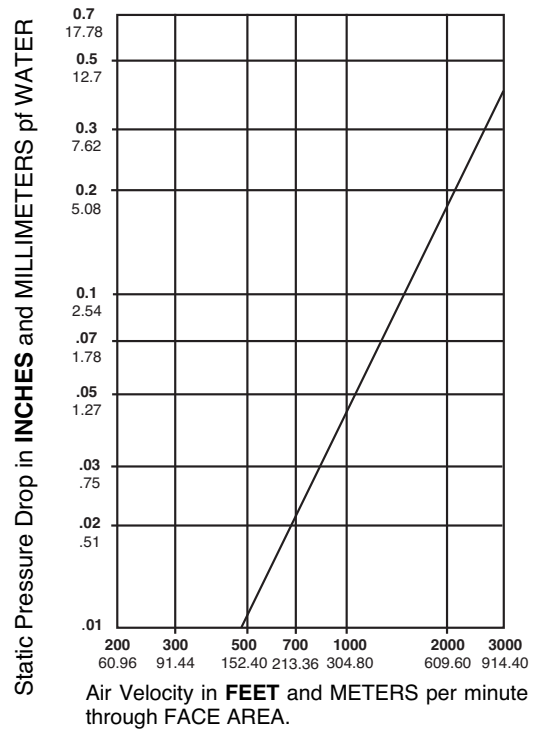
### Leakage Class 2

- 10cfm/ft<sup>2</sup> @ 1 inch wg
- 20cfm/ft<sup>2</sup> @ 4 inch wg
- 28cfm/ft<sup>2</sup> @ 8 inch wg
- 35cfm/ft<sup>2</sup> @ 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*  
 $5.4 \text{ cfm} (\sqrt{5}) = 20.07 \text{ cfm}$

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



## MAXIMUM VELOCITY AND RECOMMENDATIONS

Damper Width "A" Dimension in inches (mm)	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 recommendation (see note below)	1500	7.6

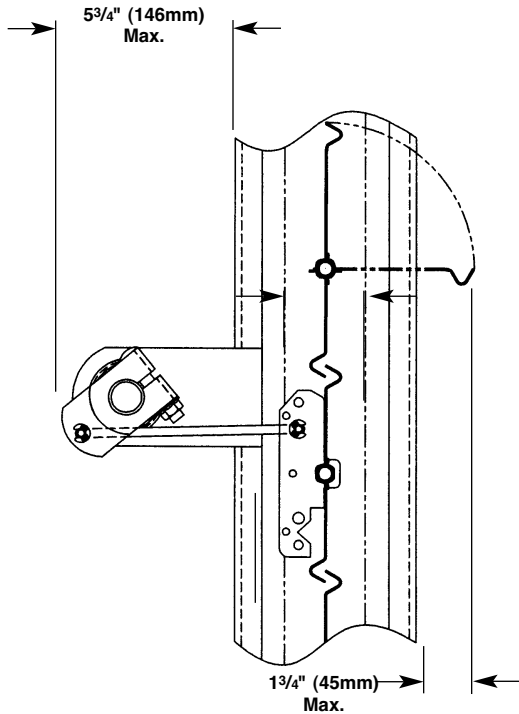
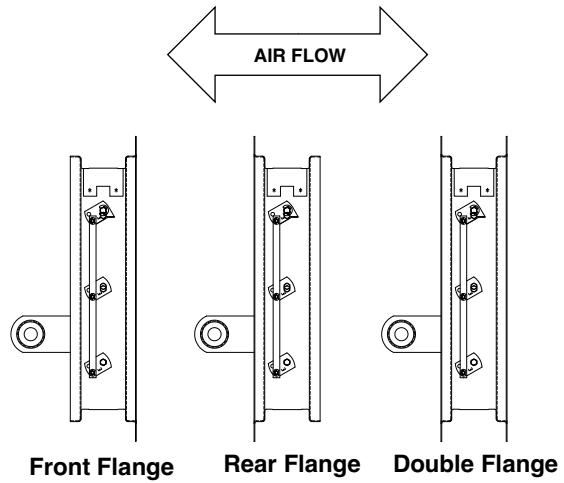
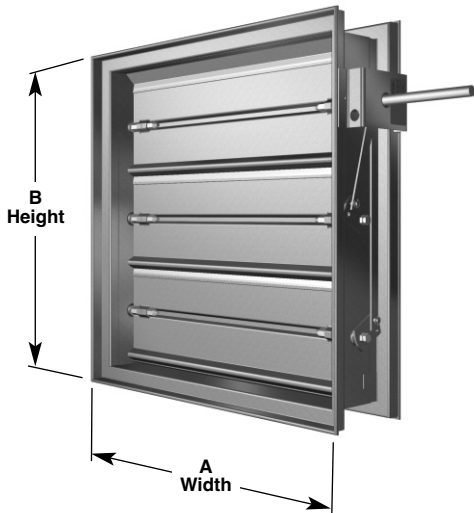
**NOTE:** For optimum sound characteristics and pressure drop performance on dampers with v-groove blades, we recommend sizing dampers for 1,500 fpm. Higher velocities are not recommended for outside air openings, due to water penetration concerns. For best pressure drop and sound performance at higher velocities, consider an airfoil blade damper, such as Ruskin model CD60.

## INSTALLATION

Ruskin model CD36 **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 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

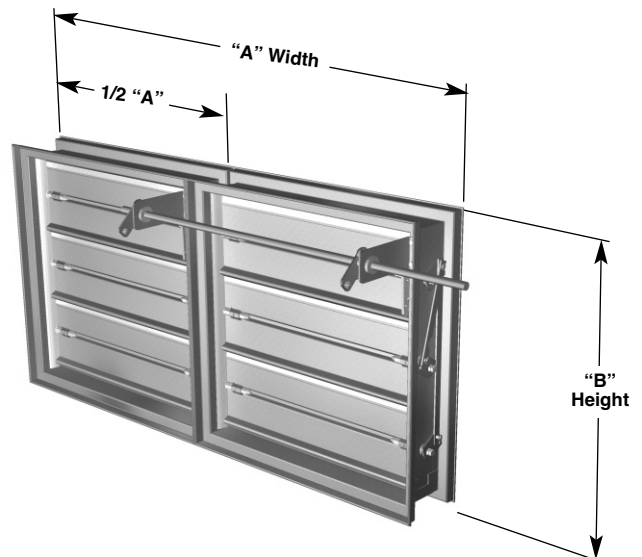
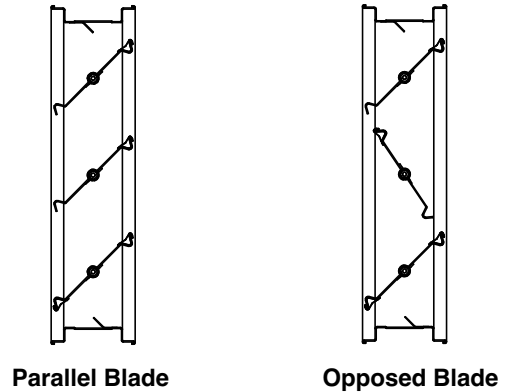


**Typical Envelope Dimensions**

### \*TYPICAL JACKSHAFT ASSEMBLY

Unless other wise specified, all dampers larger than the maximum single section 48" (1219mm) "A" width of 72" (1829mm) "B" height will be built in equal smaller sections and factory assembled with jackshaft as indicated in the detail to the right. In this detail, the damper is over the 48" (1219mm) width, but is less than 96" (2438mm), so it will be built two sections wide. The height is less than 72" (1829mm) so it remains one section tall. Multiple section dampers are not intended to be structural supports, or self-supporting. Additional bracing is recommended to support the damper weight and support against system pressure. Ruskin recommends appropriate bracing to support the damper horizontally at a minimum of every 96" (2438mm) of damper width. Vertical assemblies and higher pressure systems may require additional bracing.

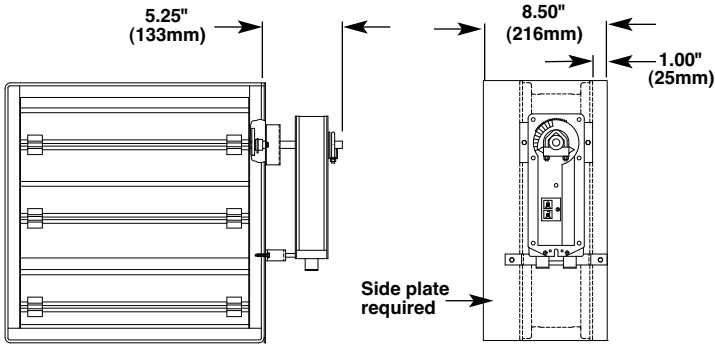
Ruskin model CD36 is bi-directional, meaning it can be installed with the airflow in either direction. When considering mounting flange location, orientation must be defined to properly communicate the desired results. For definition purposes only, the "front" of the damper can be determined by viewing the jackshaft\*, linkage, and blade rotation. When required, jackshaft is always placed on the "rear" surface of the damper. When viewing the concealed side linkage, the "front" surface is adjacent on the right side. Also, when viewing the linkage, the top blade should rotate clockwise to open, as shown in the blade orientation graphic below. If it does not, rotate the damper 180° so the blade rotation is clockwise to open when viewing the linkage side.



## DIMENSIONAL DATA

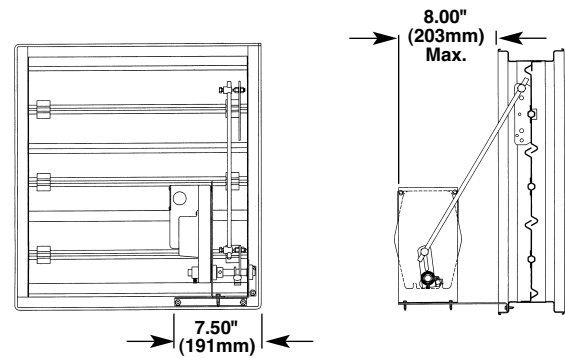
Ruskin model CD36 is available with a wide variety of factory furnished, installed, and commissioned actuators. Actuators can be installed for a fraction of the cost when compared to field installation. It also makes installation faster and more reliable. Actuators vary from manufacturer to manufacturer, so it is not practical to illustrate every mounting arrangement. The four illustrations below

are intended to be used for general guidance on similar mounting arrangements. These provide typical maximum envelope dimensions for layout purposes. If space is a concern, consult your local Ruskin representative for specific details based on your unique actuator selection and installation requirements.



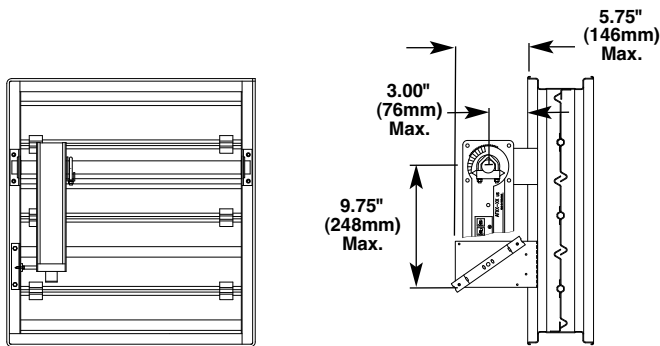
External side plate mounted actuators

**Figure 1**



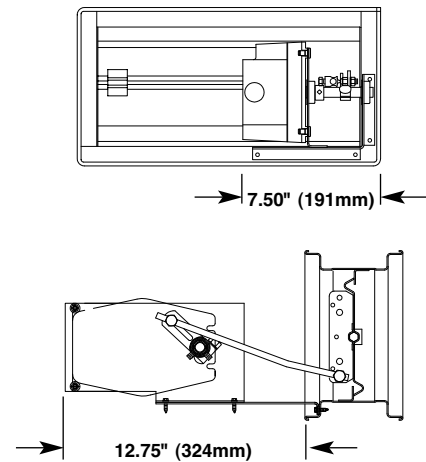
"A" width 9" (229mm) x "B" height 20" (508mm) minimum

**Figure 2**



Jackshaft mounted actuators. If "A" width is greater than 9" (229mm) and "B" height is more than 20" (508mm) jackshaft will be used for internally mounted actuators.

**Figure 3**



If "B" height is less than 20" (508mm) it may be necessary to rotate the actuator 90° as illustrated.

**Figure 4**

## 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 ga. (1.6mm) galvanized steel structural hat channel with tabbed corners for reinforcement. The blades shall be 6" (152mm) single skin, 16 gage (1.6mm) galvanized steel with three longitudinal grooves to reduce blade deflection. Bearings shall be corrosion resistant, molded synthetic 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 pressure drop and noise. Blade edge seals shall be PVC coated polyester fabric suitable for -25°F to +185°F (-32°C to +85°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**.

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