

## CD60

### AMCA CLASS 1A LEAKAGE RATED, HIGH PERFORMANCE CONTROL DAMPER

#### APPLICATION

Ruskin model CD60 incorporates an exclusive one-piece steel frame construction, making it the engineer's preferred frame design with no fasteners required. Frame corners are internally braced and machine staked. Exclusive one-piece aerodynamic dual skin airfoil blades are suitable for medium and high pressure velocity applications. Blade edge seals are mechanically fastened to ensure years of sustainable performance and reliability. Frame and blade construction, in concert with compression type chambered jamb seals, ensures leakage performance on par with requirements of the International Energy Conservation Code (IECC). Factory mounted and commissioned actuators are among the available options.

#### STANDARD CONSTRUCTION

##### FRAME

5" x 1" x 16 gauge (127 x 25 x 1.6) hot dipped galvanized steel hat channel reinforced with corner braces.

##### BLADES

Galvanized steel, one piece airfoil shaped, construction of 14 gauge (2.0) equivalent thickness, typically 6" (152) wide, maximum 8<sup>5</sup>/<sub>8</sub>" wide. Opposed blade action standard, parallel blade action optional.

##### AXLES

1/2" (13) plated steel hex.

##### BEARINGS

Oil impregnated, self-lubricating, stainless steel sleeve.

##### BLADE SEALS

Ruskiprene blade edge seals mechanically fastened to blades.

##### JAMB SEALS

300 Series stainless steel cambered compression type.

##### LINKAGE

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

##### CONTROL SHAFT

1/2" (13) dia. x 6" (152) long plated steel shaft on single section units.

1/2" (13) dia. jackshaft on multi-section assemblies up to 12 1/2 ft<sup>2</sup> (1.16 m<sup>2</sup>) and 1" (25) dia. jackshaft multi-section assemblies over 12 1/2 ft<sup>2</sup> (1.16 m<sup>2</sup>)

##### MAX PRESSURE

Up to 13 inches w.g. (see Performance Data on page 2).

##### MAX VELOCITY

Up to 6000 FPM (see Performance Data on page 2).

##### LEAKAGE

Class 1A (see Performance Data on page 2).

##### TEMPERATURE LIMITS

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

##### MINIMUM SIZE

Single blade – 8" w x 6" h (203 x 152).

Two blades, opposed or parallel action: 8" w x 10" h (203 x 254).

##### MAXIMUM SIZE

Single section – 60" w x 72" h (1524 x 1829).

Multiple section assembly – Unlimited size.

\*Units over 60" w or 72" h (1524 x 1829) are broken down into 48" w (1219) max sections.

##### ESTIMATED SHIPPING WEIGHT

7 lbs. (3.2kg) per square foot.



#### FEATURES

- One-piece airfoil blade for low pressure drop.
- One-piece interlocking frame design to reduce racking.
- Positive lock axles, noncorrosive bearings and shake proof linkage for low maintenance operation.

#### VARIATIONS

Ruskin model CD60 is available with the following variations at additional charge.

- Factory mounted and commissioned electric and pneumatic actuators, chain pull devices and manual locking handles.
- Front, rear or double flange frame with or without bolt holes.
- Stainless steel axles and linkage.
- SP100 switch package to remotely indicate damper blade position.
- Factory mounted sleeves with optional round or oval transitions.
- Enamel and epoxy finishes.
- Silicone blade edge seals.

#### NOTES

\* Value shown in parenthesis ( ) are millimeters unless otherwise indicated.

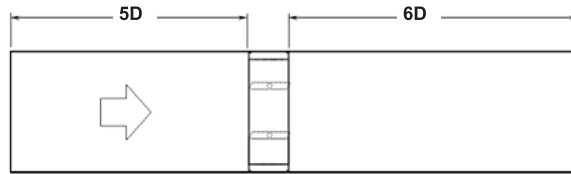
\* Units furnished approximately 1/4" (6) smaller than given opening dimensions.

# AMCA LICENSED PERFORMANCE DATA

## Pressure Drop Data

CD60 air performance testing is performed in accordance with AMCA Standard 500-D configuration 5.3 as illustrated below. All data are corrected to standard air density of .075 lb/ft<sup>3</sup> (1.201 kg/m<sup>3</sup>).

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



AMCA figure 5.3 was established to represent a fully ducted damper with straight duct upstream and downstream. With entrance and exit losses minimized by this straight duct arrangement, this configuration has the lowest pressure drop of all three configurations.

12" x 12" (305 x 305)		24" x 24" (610 x 610)		36" x 36" (914 x 914)		12" x 48" (305 x 1219)		48" x 12" (1219 x 305)	
Velocity (fpm)	Pressure Drop (in.wg)	Velocity (fpm)	Pressure Drop (in.wg)	Velocity (fpm)	Pressure Drop (in.wg)	Velocity (fpm)	Pressure Drop (in.wg)	Velocity (fpm)	Pressure Drop (in.wg)
499	0.02	506	0.005	517	0.005	508	0.005	509	0.01
869	0.06	998	0.03	1007	0.02	1002	0.03	1005	0.04
1417	0.17	1514	0.06	1404	0.03	1519	0.06	1523	0.08
1980	0.34	2012	0.11	1949	0.05	2019	0.10	2024	0.16
2986	0.79	2867	0.22	3004	0.12	2883	0.21	2884	0.32

## Leakage Data

Air Leakage testing is performed in accordance with ANSI/AMCA Standard 500-D, figure 5.5.

Data are based on a torque of 7 in-lbs/ft<sup>2</sup> (.56 N.m./m<sup>2</sup>) applied to close and seat the damper during the test.

Air Leakage is based on operation between 32°F - 120°F (0°C - 49°C).

CD60	LEAKAGE CLASS*			
Maximum Damper Width	1" w.g. (0.25 kPa)	4" w.g. (1 kPa)	8" w.g. (2 kPa)	10" w.g. (2.5 kPa)
60" (1524)	1A	1	NA	NA

### \* Leakage Class Definitions

As defined by AMCA, the maximum allowable leakage is as follows:

Leakage Class 1A (is only defined @ 1" wg)  
 - 3 cfm/ft<sup>2</sup> (.92 cmm/m<sup>2</sup>) @ 1" wg (0.25 kPa)

Leakage Class 1

- 4 cfm/ft<sup>2</sup> (1.22 cmm/m<sup>2</sup>) @ 1" wg (0.25 kPa)
- 8 cfm/ft<sup>2</sup> (2.44 cmm/m<sup>2</sup>) @ 4" wg (1 kPa)
- 11.3 cfm/ft<sup>2</sup> (3.45 cmm/m<sup>2</sup>) @ 8" wg (2 kPa)
- 12.6 cfm/ft<sup>2</sup> (3.85 cmm/m<sup>2</sup>) @ 10" wg (2.5 kPa)

## Maximum System Velocity and Pressure

The CD60 may be used in systems with total pressures exceeding 3.5" w.g. (.09 kPa) and velocities exceeding 3000 fpm (15.2 m/s) by reducing damper section width as indicated below:

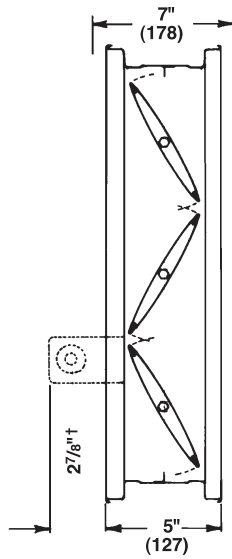
VELOCITY AND PRESSURE DATA		
DAMPER WIDTH INCHES	MAXIMUM SYSTEM PRESSURE In. wg (kPa)	MAXIMUM SYSTEM VELOCITY FPM (m/s)
60" (1524)	3.5" (0.9)	3000 (15.2)
48" (1219)	6.2" (1.5)	4000 (20.3)
36" (914)	8.5" (2.1)	4000 (20.3)
24" (610)	10.8" (2.7)	5000 (25.4)
12" (305)	13.0" (3.25)	6000 (30.5)



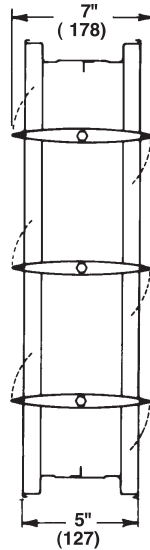
Ruskin Company certifies that model CD60 shown herein is licensed to bear the AMCA seal. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance ratings. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program.

## DIMENSIONAL INFORMATION

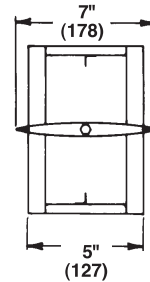
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**OPPOSED  
BLADE**



**PARALLEL  
BLADE**



**Low profile frame  
illustrated is typical for  
units under 12" (305) high.**

## CD60 SUGGESTED SPECIFICATION

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Furnish and install, at locations shown on plans, or in accordance with schedules AMCA certified, low leakage airfoil control dampers meeting the following minimum construction standards. Control dampers shall be produced in an ISO9001 certified factory. Frame shall be one-piece uniframe construction of 16 ga. (1.6) galvanized steel roll formed hat channel structurally equivalent to a minimum 13 ga. (2.4) frame. Blades shall be 14 ga. (2.0) equivalent galvanized steel, roll-formed airfoil type for low pressure drop and low noise generation. Blade edge seals shall be Ruskiprene™ TPV type or equivalent mechanically locked into the blade edge. Adhesive or clip-on type seals are unacceptable. Jamb seals shall be stainless steel chambered 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 engineer. Bearings shall be 304 stainless steel, oil impregnated, and self-lubricating sleeve type with a 450 pound (204 kg) minimum radial crush load. Bearings shall turn in extruded holes 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. Temperature limits shall be -72°(-58°C) to +275°F (+135°C). Submittal must include leakage, maximum air flow and maximum pressure ratings based on AMCA Publication 500. Damper shall be tested and licensed in accordance with AMCA 511 for Air Performance and Air Leakage. Damper widths from 12" to 60" (305 to 1524) wide shall not leak any greater than 3 cfm/sq.ft. at 1" w.g. (15.2 l/s-m<sup>2</sup> at .25 kPa). Dampers shall be equivalent in all respects to Ruskin Model CD60.

**RUSKIN**<sup>®</sup>

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