

SD50

Aluminum Airfoil Blade Smoke Damper
UL555S Leakage Class I Classified



APPLICATION

The SD50 is an ultra low leakage rated smoke damper used in ducts that penetrate smoke rated barriers. One-piece extruded aluminum airfoil blades insure lowest resistance to airflow with velocities up to 4000 fpm (20.3 m/s) and 8 in w.g. (2 kPa). The SD50 may be installed vertically (with blades running horizontal) or horizontally and is rated for airflow and leakage in either direction.

STANDARD CONSTRUCTION

Frame	5" x 1" (127 x 25) 6063T6 extruded aluminum, hat shaped channel, .125" (3) minimum wall thickness
Blades	One-piece 6063T6 extruded aluminum, airfoil shape, 6" (152) wide. Blades are approximately 6" (152) on center
Bearings	Stainless steel sleeve type, pressed into frame
Jamb Seals	Stainless steel, flexible metal compression type
Blade Seals	Silicone edge type for smoke seal to 450°F (232°C) mechanically fastened to the blade edge
Linkage	Concealed in frame

OPERATION OPTIONS

Fail Position	Closed or Open
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DAMPER SIZES

Sizes listed below are for ratings of 2000 fpm (10.2 m/s) and 4 in. wg (1 kPa). See page 3 for extended operational ratings.

Minimum size	8" w x 6" h (203 x 152)
Maximum size	Single Section 48" w x 72" h (1219 x 1829)
	Multiple Section 144" w x 96" h (3658 x 2438), 288" w x 48" h (7315 x 1219) or 72" w x 192" h (1829 x 4877)

*Multiple section assemblies consist of 36" x 48" (914 x 1219) max single section sizes.

MAXIMUM OPERATIONAL RATINGS

UL555S Leakage Rating	Class I
Maximum Velocity	4000 FPM (20.3 m/s)
Maximum Pressure	8 in. wg (2kPa)
Temperature	250°F (121°C)



OPTIONS

DSDF/DSDN Smoke Detector (Flow rated or No-Flow)

DTS-SD (Damper Test Switch) test switch for cycle testing

SP100 Switch Package to allow remote indication damper or damper blade position

Factory Sleeves of various lengths and thicknesses to ensure field compliance with UL installation requirements

MCP control panels for test purposes or smoke management systems

Model SD50 meets the requirements for smoke dampers established by:

- ▶ **National Fire Protection Association NFPA** Standards 80, 90A, 92A, 92B, 101 and 105
- ▶ **ICC International Building Codes**
- ▶ **CSFM California State Fire Marshal** Listing (#3230-0245:0131)
- ▶ **New York City** (MEA 252-05-E)



SEE COMPLETE MARKING ON PRODUCT

UL555S Classification R5531

NOTE:

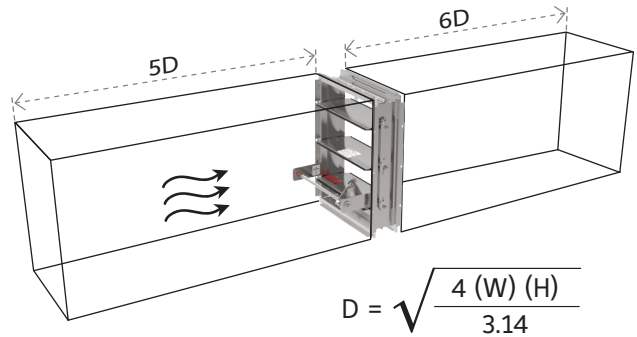
1. Dampers furnished approximately 1/4" (6) smaller than given opening dimensions.
2. Dimensions shown in () indicate millimeters.

AMCA LICENSED AIR PERFORMANCE DATA

Pressure Drop Data SD60 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/ft³ (1.201 kg/m³).



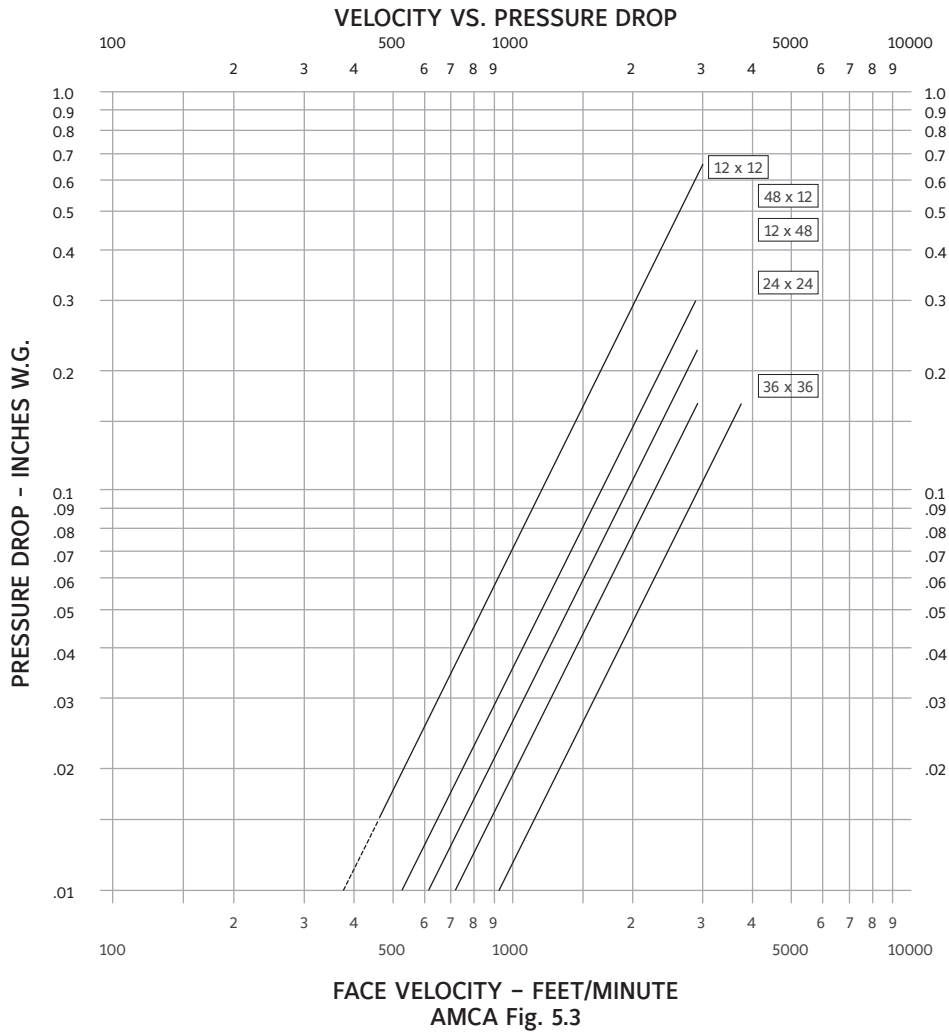
Ruskin Company certifies that the SD50 shown hereon is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance for the SD50.



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.

Locate the applicable feet per minute face velocity on the bottom of the velocity vs. pressure drop chart below. Move up the chart to the most appropriate size damper line. From the intersection point, move left to determine the pressure drop on the left side of the chart.

For other damper sizes refer to **Air Performance Data For All Smoke Dampers** spec sheet.



EXTENDED OPERATIONAL RATINGS

The UL555S Test Standard requires all smoke dampers to prove their operation (Close to Open and Open to Close) against heated air flow with minimum temperature of 250°F (121°C), minimum velocity of 2,000 feet per minute (10.2 m/s) and minimum static pressure of 4 inches of water (1 kPa). UL555S extended ratings allow the temperature to be increased at 100°F (37.8°C), 2 inches of water (0.5 kPa) and 1000 feet per minute (5.1 m/s) increments. The SD50 smoke damper exceeds the minimum UL555S requirements on selected sizes. See chart for sizes and ratings. **Consult Ruskin for the appropriate actuator model and quantities.**

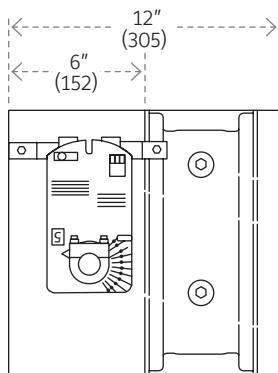
EXTENDED RATINGS FOR FAIL CLOSE

Size	Static Pressure	Temperature
2,000 FPM (10.2 m/s)		
144" x 96" (3658 x 2438) 288" x 48" (7315 x 1219) 72" x 192" (1829 x 4877)	4" (102) w.g. (1 kPa)	250°F (121°C)
180" x 64" (4572 x 1625) 360" x 32" (9144 x 813) 90" x 128" (2286 x 3251)	6" (152) w.g. (1.5 kPa)	250°F (121°C)
48" x 48" (1219 x 1219) 96" x 24" (2438 x 610) 24" x 96" (610 x 2438)	8" (203) w.g. (2 kPa)	250°F (121°C)
3,000 FPM (15.2 m/s)		
64" x 72" (1625 x 1829) 128" x 36" (3251 x 914)	4" (102) w.g. (1 kPa)	250°F (121°C)
64" x 64" (1625 x 1625) 128" x 32" (3251 x 813)	4" (102) w.g. (1 kPa)	250°F (177°C)
180" x 64" (4572 x 1625) 360" x 32" (9144 x 813) 90" x 128" (2286 x 3251)	6" (152) w.g. (1.5 kPa)	250°F (121°C)
48" x 48" (1219 x 1219) 96" x 24" (2438 x 610) 24" x 96" (610 x 2438)	8" (203) w.g. (2 kPa)	250°F (121°C)
4,000 FPM (20.3 m/s)		
48" x 48" (1219 x 1219) 96" x 24" (2438 x 610) 24" x 96" (610 x 2438)	8" (203) w.g. (2 kPa)	250°F (121°C)

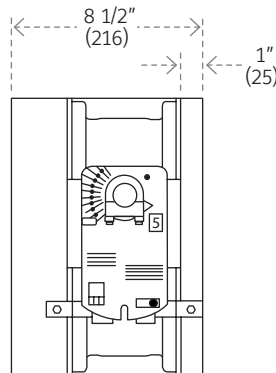
EXTENDED RATINGS FOR FAIL OPEN

Size	Static Pressure	Temperature
2,000 FPM (10.2 m/s) Fail Open Operation		
72" x 96" (1829 x 2438) 144" x 48" (3658 x 1219) 36" x 192" (914 x 4877)	4" (102) w.g. (1 kPa)	250°F (121°C)
3,000 FPM (15.2 m/s)		
72" x 64" (1892 x 1625) 144" x 32" (3658 x 813) 36" x 128" (914 x 3251)	4" (102) w.g. (1 kPa)	250°F (121°C)
4,000 FPM (20.3 m/s)		
48" x 48" (1219 x 1219) 96" x 24" (2438 x 610) 24" x 96" (610 x 2438)	8" (203) w.g. (2 kPa)	250°F (121°C)

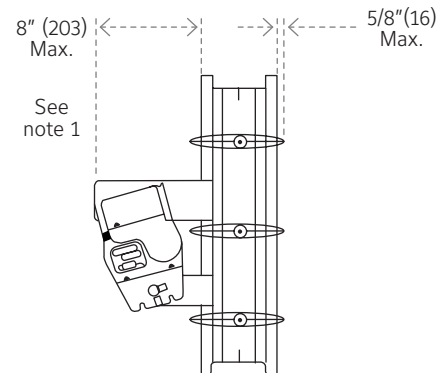
TYPICAL ACTUATOR MOUNTING



Multiple Section with Side Plate



Single Section with Side Plate



Typical Internal Mount

NOTE:

1. 8" (203) actuator depth shown varies upon the damper height and actuator selection.
2. External mount actuators may extend above or below the damper height.

ACTUATOR REQUIREMENTS

- ▶ UL555S requires that all smoke dampers have factory mounted actuators in order to bear the UL label.
- ▶ Smoke dampers larger than single section may require multiple actuators. See "Smoke Damper Multiple Section Detail" spec sheet for details.
- ▶ Ruskin's smoke dampers are UL555S labeled with either electric or pneumatic actuators mounted internal (in air stream) or external (out of air stream).
- ▶ Smoke dampers utilizing multiple actuators must have all actuators field wired to a common point for simultaneous closure. All field wiring shall be in accordance with applicable codes, ordinances and regulations.

SLEEVE TRANSITION DIMENSIONAL INFORMATION

DUCT TRANSITION CONNECTIONS

SD50 dampers may be supplied with Round, Oval and Rectangular duct connections.

Style	Description
CR	Round Sealed (Medium Pressure)
WR	Round Welded (High Pressure)
C	Rectangular Sealed (Low and Medium Pressure)
WC	Rectangular Welded (High Pressure)
CO	Oval Sealed (Medium Pressure)
WO	Oval Welded (High Pressure)

The square damper size will be 2" (51) larger in width and height than the round, oval or rectangular duct size ordered.

MINIMUM and MAXIMUM SIZES

Round Transitions

Minimum – 4" (102) diameter
Maximum – 94" (2388) diameter

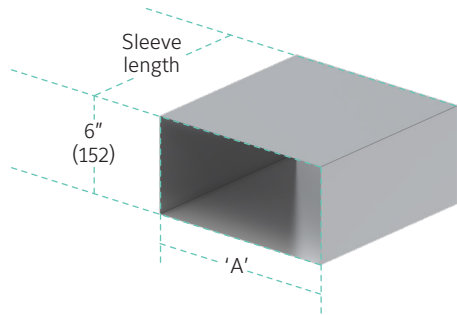
Rectangular and Oval Transitions

Minimum – 6" w x 4" h (152 x 102)
Maximum – 142" x 94" (3607 x 2388)

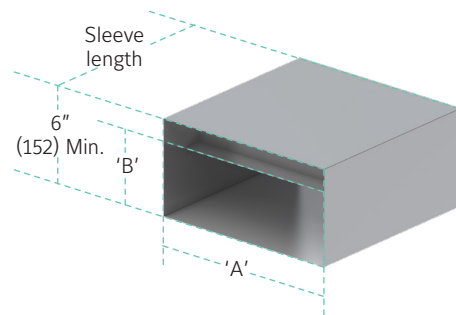
Consult Ruskin for other available styles and sizes.

Note:

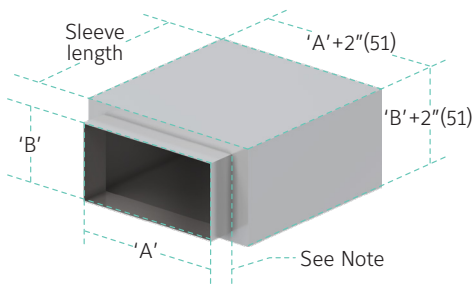
For medium pressure units (Styles CR, C and CO) the collar extends 1 1/2" (38) beyond the sleeve length and for low pressure and high pressure units (Styles R, WR, WC and LO) the collar extends 2 1/2" (64) beyond the sleeve length.



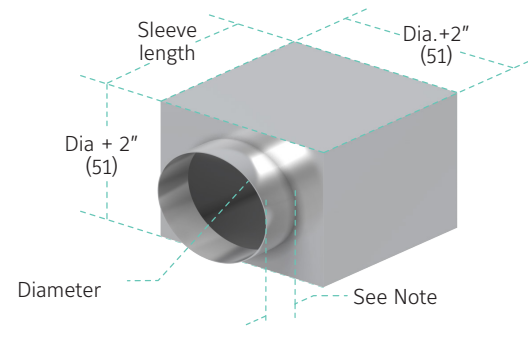
Style A



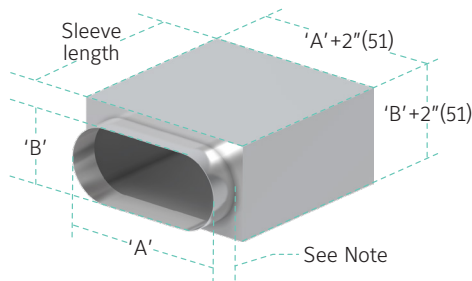
Style B



Style C and WC



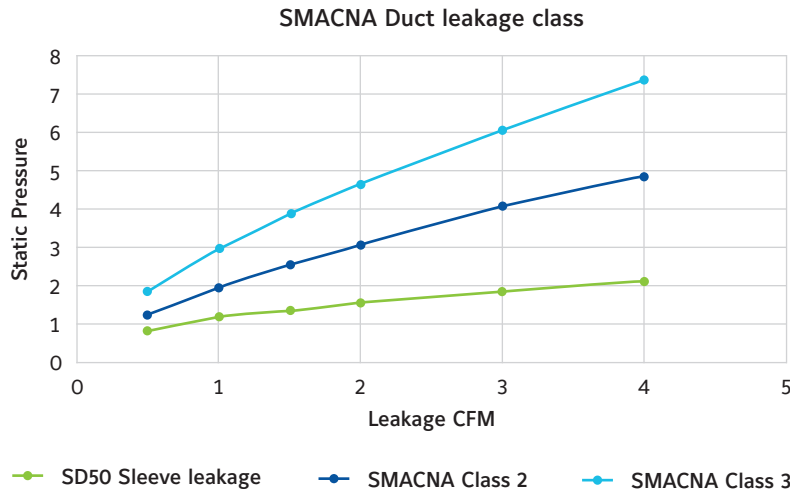
Style R, CR and WR



Style LO, CO and WO

DAMPER LEAKAGE TO ATMOSPHERE

When Ruskin's Smoke Dampers are supplied with a factory installed damper sleeve, the sealed sleeve meets the lowest duct leakage requirements set fourth by SMACNA. See Details Below



SUGGESTED SPECIFICATION

Smoke dampers meeting or exceeding the following specifications shall be furnished and installed at locations shown on plans or as described in schedules. AMCA Certified smoke dampers shall meet the requirements of NFPA80, 90A, 92A, 92B, 101 and 105 and shall be classified as Smoke Dampers in accordance with the latest version of UL555S. The leakage rating under UL555S shall be Leakage Class 1. Smoke dampers shall be produced in an ISO 9001 certified factory and warranted to be free from defects in material and workmanship for a period of 5 years after date of shipment.

Damper frame shall be 5" x 1" x .125" (minimum thickness) (127 x 25 x 3.2) 6063T6 extruded aluminum hat channel with hat mounting flanges on both sides of the frame. Each corner shall be reinforced with two die formed internal braces and machine staked for maximum rigidity.

Blades shall be airfoil type extruded aluminum (maximum 6" [152] depth) with integral structural reinforcing tube running full length of each blade. Blade edge seals shall be silicone extruded double edge design with inflatable pocket which enables air pressure from either direction to assist in blade to blade seal off. Adhesive or clipon type blade seals are not acceptable. Jamb seals shall be stainless steel compression type. Bearings shall be stainless steel, permanently lubricated sleeve type.

Smoke dampers and their actuators shall be qualified in accordance with UL555S to an elevated temperature of 250°F (121°C). Appropriate electric or pneumatic actuators (**specifier select one**) shall be installed by the damper manufacturer at time of damper fabrication. Electric actuators, factory installed on dampers, shall have been tested for prolonged periods of holding (minimum 1 year with no evidence of reduced spring return performance). Each damper shall be rated for leakage and airflow in either direction through the damper. In addition to the leakage ratings already specified, the dampers shall be AMCA licensed for Air Performance.

Smoke dampers shall be Ruskin model SD50.

(Consult www.Ruskin.com for electronic version of this "Quick" spec as well as for complete 3-part CSI *MasterFormat* Specification).

i LINKS TO IMPORTANT DOCUMENTS

Document Number	Document Title
II-SD-118	Smoke Damper Installation
FSD O-and-M_0120	Operation and Maintenance Instructions
FSD60-MSD-319	FSD/SD Multiple Section Details



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