

## FSD35

### COMBINATION FIRE AND SMOKE DAMPER

1½ HOUR UL555, UL555S Leakage Class 3 Classified

#### APPLICATION

The FSD35 is a combination fire and smoke damper designed with triple V-groove blades and controlled closure technology that provides point-of-origin fire containment and operational flexibility in static and dynamic smoke management systems.

The FSD35 is designed to be installed vertically in walls or horizontally in floors in HVAC systems with velocities to 2,000 fpm and pressures to 4" w.g. (consult Ruskin for proper application if velocity and pressure exceed those listed above).

#### STANDARD CONSTRUCTION

##### FRAME

5" x 16 (127 x 1.6) gauge galvanized, hat-shaped channel, structurally superior to 13 (2.3) gauge channel frame.

##### BLADES

6" (152) wide, 16 (1.6) gauge galvanized steel. Triple V-groove shaped approximately 6" (152) on center.

##### BEARINGS

Stainless steel sleeve, pressed into frame.

##### JAMB SEALS

Stainless steel, flexible metal compression type.

##### LINKAGE

Concealed in frame.

##### AXLES

½" (13) plated steel hex.

##### CONTROLLED CLOSURE DEVICE (HEAT-ACTUATED)

165°F (74°C) standard. 212°F (100°C), 250°F (121°C), 285°F (141°C) PFL only, or 350°F (177°C) are available at no additional cost.

#### DAMPER SIZES

##### MINIMUM SIZE

8"w x 6"h (203 x 152).

##### MAXIMUM SIZE

Single Section

36"w x 48"h (914 x 1219)

Multiple Section

Vertical Installation – 126"w x 96"h (3200 x 2438)

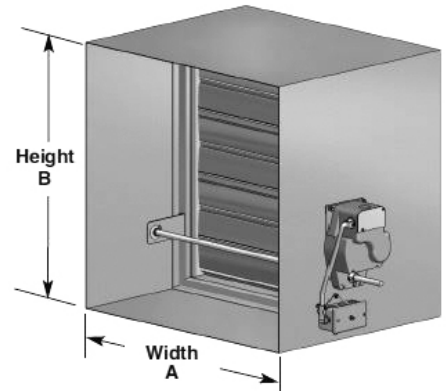
Horizontal Installation – 144"w x 96"h (3658 x 2438).

#### OPTIONS

- **FM Approved** as Specification Tested Product.
- **TS150 FireStat** for reopenable operation in dynamic smoke management systems.
- **DSDf/DSDN Duct Smoke Detector** (Flow rated or No-flow)
- **SP100 Switch Package** to remotely indicate damper blade position.
- **FAST Angle** factory supplied for labor saving angle one-side installation.
- **Factory Sleeve** of various lengths and gauges to insure compliance with UL installation requirements.
- **MCP** master control panels for test purposes or smoke management systems.
- **Stainless Steel linkage**

#### NOTES:

1. Dampers are furnished approximately ¼" (6) smaller than given opening dimensions.
2. Dimensions shown in parentheses ( ) indicate millimeters.



Model FSD35 meets the requirements for smoke dampers established by:

- **National Fire Protection Association NFPA Standards** 80A, 90A, 92A, 92B and 101 & 105
- **ICC International Building Codes**
- **CSFM California State Fire Marshal Listing (#3230-245:109).**
- **New York City (BSA Listing #176-82-SM)**

#### UL CLASSIFIED

UL555 Listing R5531, UL555S Listing R5531



#### FEATURES

The FSD35 offers:

##### CONTROLLED CLOSURE DEVICE (HEAT-ACTUATED)

**EFL** (Electric Fuse Link) - 165°F (74°C) standard. 212°F (100°C), 250°F (121°C), 350°F (177°C) available.

**PFL** (Pneumatic Fuse Link) - 165°F (74°C) standard. 212°F (100°C), 285°F (141°C) available.

# AMCA LICENSED AIR PERFORMANCE DATA



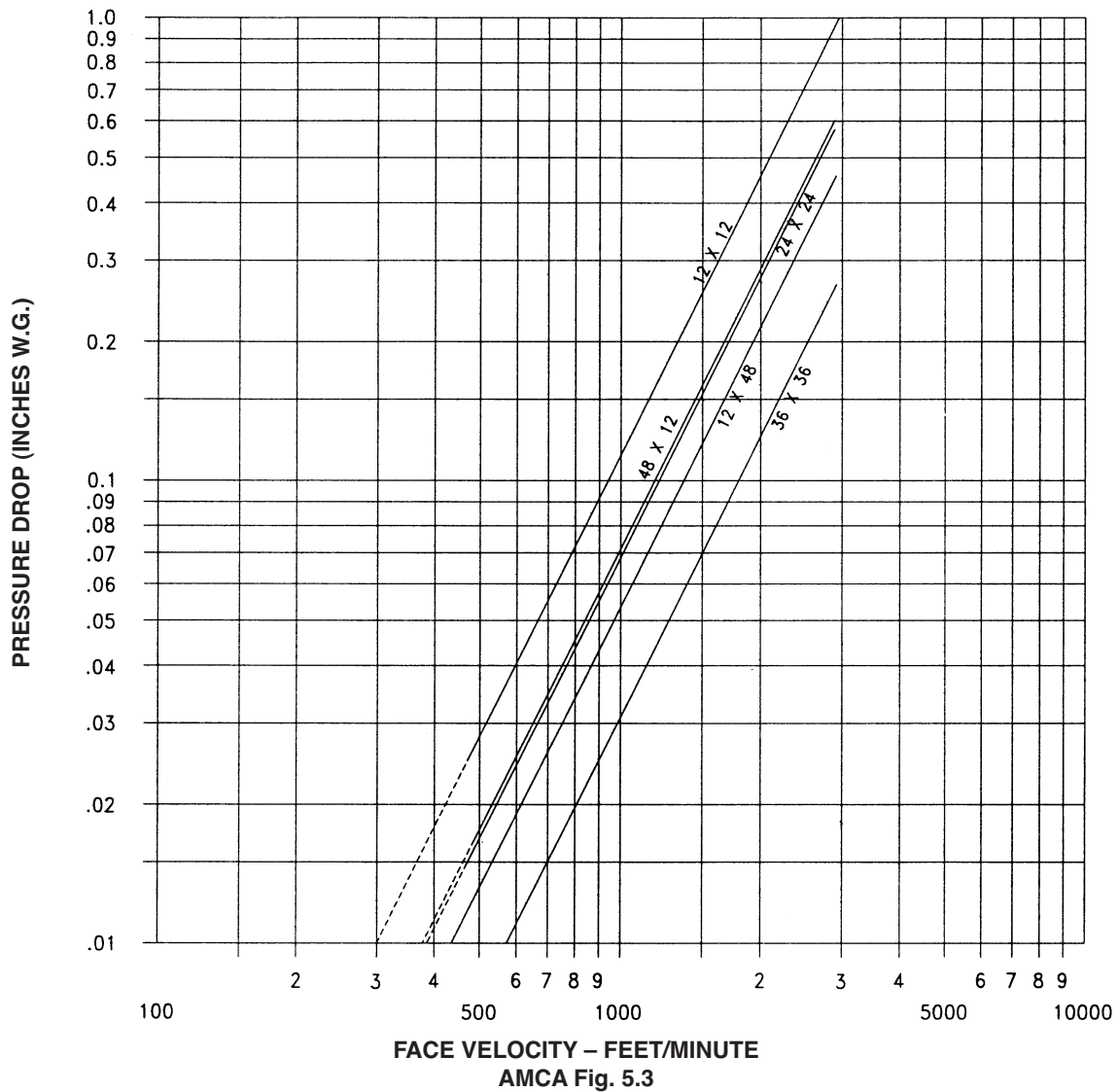
Ruskin Company certifies that the FSD35 shown hereon is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance for the FSD35.

To determine the AMCA Licensed air performance:

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 Fire and Smoke Dampers** spec sheet.

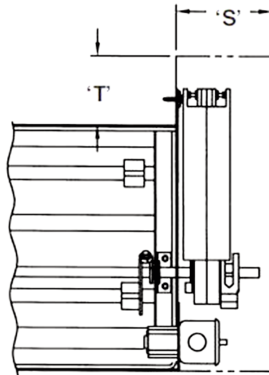
**VELOCITY vs. PRESSURE DROP**



## SPACE ENVELOPE

Combination fire smoke dampers are required by the UL listing to have all actuators and accessories factory mounted, wired and/or piped. The Ruskin standard is for the actuator to be located on the right hand side of the damper (onto a factory installed sleeve or side plate) as viewed from the jackshaft face of the unit. Larger units may require multiple actuators which are located on the right, left and maybe internal mount locations. See the "Multiple Section Detail" specification sheet for details. Ruskin's fire smoke dampers are not air flow directional, so the dampers may be rotated 180° or turned over as long as the blades are running horizontally in a position to accommodate installation obstructions.

The adjacent chart indicates an "S" and a "T" dimension for the space envelope that each actuator requires for installation. The "S" dimension is the "side" clearance, the "T" dimension is the "top" clearance required for the various actuators approved for use with Ruskin fire smoke dampers.



Ruskin recommends 6" (152) of additional space beyond the "S" dimension for ease of maintenance.

ACTUATORS	S	T
FSTF, FSLF	4" (102)	0" (0)
FSNF, FSAF, MS4120	5" (127)	5" (127)
331-4827	5" (127)	6" (152)
331-2961	8" (203)	8" (203)
331-3060	9" (229)	11" (279)

### NOTES:

1. The dimensions shown in the chart above are for dampers 14" (356) tall.
2. Dampers shorter than 14" (356) tall, increase the "T" dimension by 1" (25) for every 1" (25) the damper is less than 14" (356).
3. Dampers taller than 14" (356) high reduce the "T" dimension by 1" (25) for every 1" (25) the damper height is greater than 14" (356).

### Example:

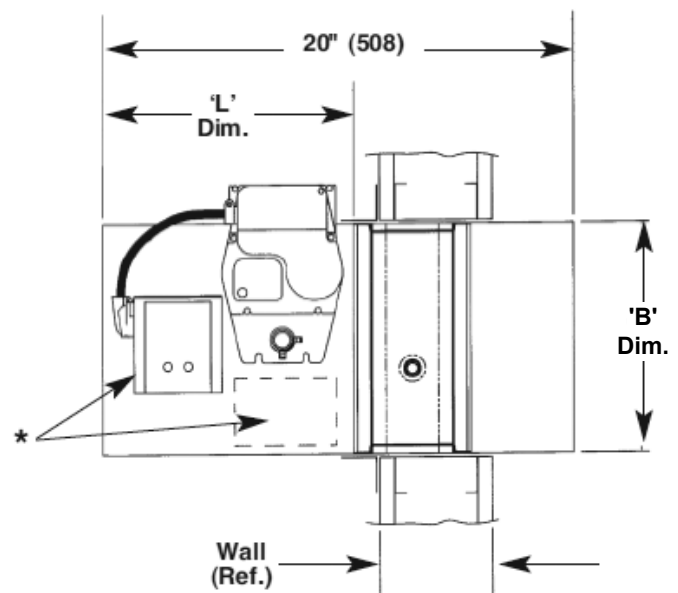
- a) 12" (305) tall damper with a FSLF actuator, "T" = 2" (52) and "S" = 4" (102).
- b) 18" (457) tall damper with a FSNF actuator, "T" = 1" (25) and "S" = 5" (127).

## DAMPER SLEEVE DIMENSIONAL DATA

The 'L' dimension is the distance from the end of the sleeve to the damper. The standard damper location in the sleeve provides enough space for the actuator, controls, mounting angles and duct connection. The standard sleeve length for FSD's is 20" (508) long and the standard 'L' dimension is 10<sup>5</sup>/<sub>8</sub>" (270). The standard 'L' dimension allows the end of the sleeve to be a minimum of 10<sup>5</sup>/<sub>8</sub>" (270) the the wall/floor and up to a maximum of 12<sup>1</sup>/<sub>2</sub>" (318) to the wall/floor.

\*The EFL, PFL, SP100 or TS150 location may be located above, below or on the side of the actuator depending upon the dampers height.

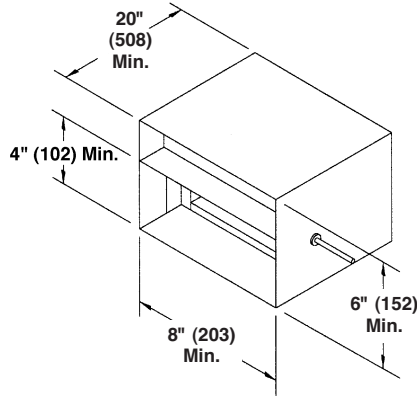
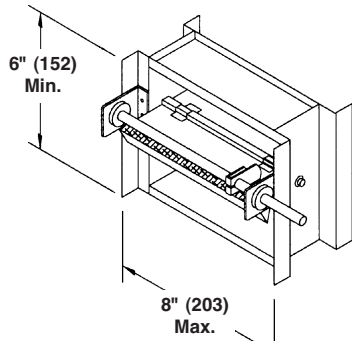
Optional 17" (432) long sleeve length available. Due to space limitations for actuators and controls with 17" (432) long sleeves, the damper height ('B' dimension) is restricted to the dimensions shown on the chart below. Consult Ruskin for other sleeve lengths.



7 <sup>1</sup> / <sub>8</sub> " (181) 'L' Dim. for Sleeves Shorter than 20" (508) Long				
Without Accessories	With Accessories (TS150, SP100 or DTS)			
Electric or Pneumatic Actuators	Electric Actuators	Pneumatic Actuators		
		331-4827	331-2961	331-3060
Over 10" (250) 'B' Dim.	Over 28" (711) 'B' Dim.	Over 28" (711) 'B' Dim.	Over 32" (813) 'B' Dim.	Over 21" (533) 'B' Dim.

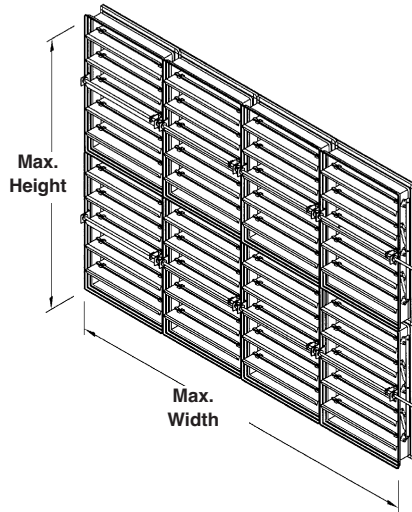
**NOTE:** The 21" (4533) dimension becomes 32" (813) when the MS4120, FSNF, FSAF and GGD series are utilized.

## DIMENSIONAL INFORMATION



### MINIMUM SIZES

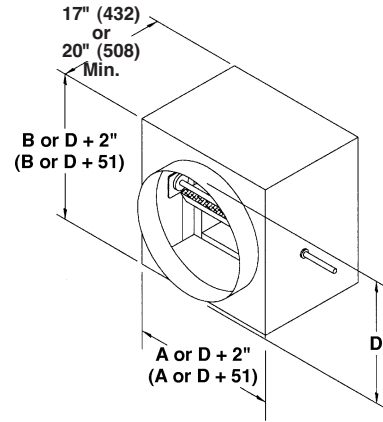
Nominal – 8" w x 6" h (203 x 152).  
Dampers with heights (B dimension) less than 8" (203) require Style B transitions and a sleeve. The damper itself remains 8" (203) high.



### MAXIMUM UL CLASSIFIED SIZE

Single Section:  
36" w x 48" h (914 x 1219)  
Multiple Section Assembly  
Vertical Installation –  
126" w x 96" h (3200 x 2438)  
Horizontal Installation  
144" w x 96" h (3658 x 2438)

For dampers exceeding these dimensions consult Ruskin for specific recommendations.



### ROUND, OVAL OR RECTANGULAR DUCT TRANSITION CONNECTION

FSD35 dampers supplied with round connections (R for low pressure, CR for medium pressure or WR welded for high pressure) are:

Minimum 6" (152) in diameter  
Maximum horizontal 94" (2388) in diameter

The square size of the damper will be 2" (51) larger than the diameter dimension ordered.

FSD35 dampers supplied with rectangular connections (C for low to medium pressure or WC welded for high pressure) are:

Minimum 6" w x 4" h (152 x 102)  
Maximum vertical 124" w x 94" h (3150 x 2388)  
Maximum horizontal 142" w x 94" h (3607 x 2388)

The square size of the damper will be 2" (51) larger than the width and height of the damper A x B dimensions.

FSD35 dampers supplied with oval connections (LO for low pressure, CO for medium pressure or WO welded for high pressure) will be 2" (51) larger than the width and height of the damper A x B dimensions.

## SPECIFICATION

Combination fire/smoke dampers meeting or exceeding the following specifications shall be furnished and installed at locations shown on plans or as described in schedules. Dampers shall meet the requirements of NFPA90A, 92A and 92B and shall be classified for use for fire resistance ratings of less than 3 hours, in accordance with UL555. Dampers shall further be classified as Smoke Dampers in accordance with the latest version of UL555S. The leakage rating in accordance with UL555S shall be Leakage Class 3.

In addition to the leakage ratings already specified, the dampers shall be AMCA licensed for Air Performance and shall bear the AMCA Certified Ratings Seal. Also, the dampers and their actuators shall be qualified in accordance with UL555S to elevated temperature of 250°F (121 °C) or 350°F (177°C) depending upon the actuator. Appropriate electric or pneumatic actuators (**specifier select one**) shall be installed by the damper manufacturer at time of damper fabrication. Electric actuators shall have been energized hold open tested for a period of at least 1 year with no spring return

failures. Each damper shall be rated for leakage and airflow in either direction through the damper.

Each combination fire/smoke damper shall be equipped with a "controlled closure" quick detect heat-actuated release device to prevent duct and HVAC component damage. Instantaneous damper closure is unacceptable.

Damper frame (when size permits) shall be constructed using the UniFrame Design Concept (UDC) and shall be minimum 16 (1.6) gauge galvanized steel formed into a structural hat channel reinforced at corners. Damper blades shall be single skin galvanized steel 16 (1.6) gauge minimum with three longitudinal grooves for reinforcement. Bearings shall be stainless steel sleeve turning in an extruded hole in the frame. Jamb seals shall be stainless steel compression type. Each damper shall be supplied with a factory mounted sleeve of 20" (508) minimum length. Dampers shall be Ruskin model FSD35.

(Consult Ruskin for detailed CSI MasterFormat Specification).

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