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) gage galvanized, hat-shaped channel, structurally superior to 13 (2.3) gage channel frame.

BLADES

6" (152) wide, 16 (1.6) gage 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

1/2" (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

5"w x 6"h (127 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

• 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 gages to insure compliance with UL installation requirements.
• MCP master control panels for test purposes or smoke management systems.

NOTES

1. Dampers are furnished approximately 1/4" (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 90A, 92A, 92B and 101
• BOCA National Building Codes
• SBCCI Standard Building Codes
• CSFM California State Fire Marshal Smoke Damper Listing (#3230-245:109).
• New York City (BSA Listing #176-82-SM)

UL CLASSIFIED

UL555 Listing R5531, UL555S Listing R5531

FEATURES

The FSD35 offers:

• EFL (Electric Fuse Link) or PFL (Pneumatic Fuse Link) heat-actuated release devices permit controlled (rather than instantaneous) closure through the damper actuator. The EFL and PFL allow the damper to automatically reopen after a test, smoke detection or power failure condition.
• EFL is standard on dampers with electric actuators.
• PFL is standard on dampers with pneumatic actuators.
• EFL's may be ordered on dampers with pneumatic actuators but require an additional EP switch.
• Actuators mounted either out or in airstream.

<table>
<thead>
<tr>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
</table>
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.
The drawing and corresponding table show the position of the damper when mounted in a factory sleeve. The standard mounting locations provide enough space for the mounting of actuators, controls and allow space for installation of retaining angles and duct connections. The minimum factory sleeve length is 17” (432). Consult Ruskin for shorter sleeve lengths.

The standard location of a damper mounted in a factory sleeve ("L" dimension) is shown at right.

**NOTE:**

The entire damper frame is not required to be installed within the wall. The damper blades, when closed should be contained within the wall.

---

**DAMPER SLEEVE DIMENSIONAL DATA**

The drawing and corresponding table show the position of the damper when mounted in a factory sleeve. The standard mounting locations provide enough space for the mounting of actuators, controls and allow space for installation of retaining angles and duct connections. The minimum factory sleeve length is 17” (432). Consult Ruskin for shorter sleeve lengths.

The standard location of a damper mounted in a factory sleeve ("L" dimension) is shown at right.

**NOTE:**

The entire damper frame is not required to be installed within the wall. The damper blades, when closed should be contained within the wall.

---

*Minimum Sleeve Length Formula:

Sleeve Length = "L" dimension + wall/floor thickness + 3” sleeve non-motor side

---

**ACTUATORS**

<table>
<thead>
<tr>
<th>ACTUATORS</th>
<th>H (Damper Height)</th>
<th>S</th>
<th>T</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2000, H2024</td>
<td>15” (381)</td>
<td>4” (102)</td>
<td>0” (0)</td>
<td>N/A</td>
</tr>
<tr>
<td>MS4209, MS8209</td>
<td>15” (381)</td>
<td>4” (102)</td>
<td>0” (0)</td>
<td>N/A</td>
</tr>
<tr>
<td>MS4120, MS8120</td>
<td>17” (432)</td>
<td>5” (127)</td>
<td>0” (0)</td>
<td>N/A</td>
</tr>
<tr>
<td>FSNF120, GGD221</td>
<td>17” (432)</td>
<td>5” (127)</td>
<td>0” (0)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**NOTES:**

1. The "H" dimension represents the required height to encompass the actuator and accessories with nothing protruding above or below the damper.
2. The "B" (bottom) dimension does Not Apply to the "H" sizes shown. The MS4120, MS8120, FSNF120 and GGD221 will hang below the damper on sizes 10” (254) high and shorter.

---

**ACTUATORS**

<table>
<thead>
<tr>
<th>Electric Actuators</th>
<th>All dampers with EFL or PFL</th>
<th>Pneumatic Actuators</th>
<th>All dampers with TS150 or SP100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Over 10” (254) High</td>
<td>Over 21” (533) High</td>
<td>Over 40” (1016) High</td>
</tr>
<tr>
<td></td>
<td>Over 21” (533) High and Under</td>
<td>Over 28” (711) High</td>
<td>Over 40” (1016) High</td>
</tr>
<tr>
<td></td>
<td>331-4827(P)</td>
<td>28” (711) High &amp; Under</td>
<td>Over 40” (1016) High</td>
</tr>
<tr>
<td></td>
<td>331-2961(P)</td>
<td>32” (813) High &amp; Under</td>
<td>7½” (181)</td>
</tr>
<tr>
<td></td>
<td>331-3060(P)</td>
<td>Over 40” (1016) High &amp; Under</td>
<td>10½” (270)</td>
</tr>
<tr>
<td>&quot;L&quot;</td>
<td>7½” (181)</td>
<td>7½” (181)</td>
<td>7½” (181)</td>
</tr>
</tbody>
</table>

**Note:** The 21” (533) dimension becomes 32” (813) when the MS4120, MS8120, GGD221 or FSNF120 are utilized.

---

**SPACE ENVELOPE**

Externally mounted actuators require space outside the damper sleeve. The "S" dimension is the "side" clearance, the "T" dimension is the "top" clearance and the "B" dimension is the "bottom" clearance required for the various actuators approved for use with Ruskin fire/smoke dampers. Actuators and accessories are factory mounted on the right side when viewed from the actuator side of the wall or floor. Ruskin fire/smoke dampers can be rotated or turned over to accommodate the application. If the actuator must be mounted on top or bottom, select the FSD60V.

The most commonly used electric actuators are shown in the table below. Refer to the Actuators And Accessories Space Envelopes For All Fire and Smoke Dampers data sheet for actuators and space information not shown.

**NOTES:**

See basic UL Installation Instructions for complete installation requirements.
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) gage galvanized steel formed into a structural hat channel reinforced at corners. Damper blades shall be single skin galvanized steel 16 (1.6) gage 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 17" (432) minimum length. Dampers shall be Ruskin model FSD35. (Consult Ruskin for detailed CSI MasterFormat Specification).