Combination Fire/Smoke Damper ▲ 1½ Hr. Rated ▲ Single Thickness Blades ▲ Leakage Class II ▲ 250°F or 350°F Rated ▲ Galvanized Steel

**STANDARD MATERIALS AND CONSTRUCTION**

**FRAME:** 5½” x 3/4” x 16 GA. galvanized steel hat channel. Flat 16 GA. galvanized steel head and sill for maximum free area on dampers less than or equal to 13” high.

**BLADES:** 16 GA. galvanized steel single thickness, parallel action.

**AXLES:** Plated solid steel stub.

**BEARINGS:** Oil impregnated bronze.

**LINKAGE:** Plated steel angle and crank plates with stainless steel pivots, in-jamb type or on-blade type.

**STOPS:** 18 GA. galvanized steel angles at head and sill.

**BLADE SEALS:** Silicone.

**JAMB SEALS:** Stainless steel.

**SLEEVE:** Minimum 20 GA. galvanized steel by 18” long (sizes greater than 84” wide or 84” high require minimum 18 GA.)

**CAULKING:** Hardcast irongrip 601 or UL-listed equivalent.

**FINISH:** Mill.

**OPTIONS**

Exact size (no undercut)

Actuators - 120V, 24V, 230V or Pneumatic

Right hand and/or internal actuator mounting locations (restrictions apply)

Dual Position Indication (DPI) Switches

Sensotherm Re-Openable Heat Response Device (ESOT) for electric actuators

Sensotherm Re-Openable Heat Response Device (EPOT) for pneumatic actuators

Model SM-501 flow-rated smoke detector

Model 2151 no-flow smoke detector (12” minimum damper height)

Momentary test switch

Remote test boxes

Copper tubing (for pneumatic actuators)

Transformers

Tab-lock retaining angles - 1 or 2 Sets

Stainless steel bearings

Stainless steel axles

Security bars

Sleeves of various depths and gauge thickness (restriction apply)

No sleeves (restriction apply)

Round or oval transitions

Short-width (less than 8”) and/or short-height (less than 6”) transitions

**NOTES**

1. Damper frames are provided approximately ¼” undercut. The addition of a sleeve will increase the size of the assembly.

2. Dampers greater than or equal to 12” in height with factory mounted SM-501 smoke detectors require a minimum 19” deep sleeve (10½” on the actuator side); detectors will be mounted on the side of the damper opposite actuator.

3. Dampers less than 12” in height with factory mounted SM-501 smoke detectors require a minimum 20” deep sleeve (11½” on the actuator side). Detectors will be mounted on the bottom or top of damper.

4. Smoke detectors can be ordered for field mounting with standard 18” deep sleeve.

5. Dampers for horizontal installation can only be mounted in a fire barrier constructed of masonry/concrete materials.

### DAMPER SIZES

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Horz &amp; Vert</th>
<th>2000 fpm, 4 in.wg</th>
<th>3000 fpm, 4 in.wg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Max Panel 250° / 350°</td>
<td>Max Panel 250° / 350°</td>
</tr>
<tr>
<td>Panels</td>
<td>** Min Panel</td>
<td>Max Assy 250°</td>
<td>Max Assy 250°</td>
</tr>
<tr>
<td>** Rectangular**</td>
<td>4”W x 4”H (8”W x 6”H frame)</td>
<td>36”W x 48”H</td>
<td>36”W x 48”H</td>
</tr>
<tr>
<td></td>
<td>36”W x 48”H</td>
<td>144”W x 70”H</td>
<td>128”W x 62”H</td>
</tr>
<tr>
<td></td>
<td>36”W x 48”H</td>
<td>36”W x 48”H</td>
<td>36”W x 48”H</td>
</tr>
<tr>
<td>** Round**</td>
<td>4” dia. (8”W x 6”H frame)</td>
<td>34” dia.</td>
<td>68” dia.</td>
</tr>
<tr>
<td></td>
<td>34” dia.</td>
<td>34” dia.</td>
<td>60” dia.</td>
</tr>
<tr>
<td></td>
<td>34” dia.</td>
<td>34” dia.</td>
<td>34” dia.</td>
</tr>
<tr>
<td>** Oval**</td>
<td>4”W x 4”H (8”W x 6”H frame)</td>
<td>34”W x 46”H</td>
<td>34”W x 46”H</td>
</tr>
<tr>
<td></td>
<td>34”W x 46”H</td>
<td>45 sq. ft. or 106”W x 68”H</td>
<td>106”W x 60”H</td>
</tr>
<tr>
<td></td>
<td>34”W x 46”H</td>
<td>34”W x 46”H</td>
<td>106”W x 34”H</td>
</tr>
</tbody>
</table>

* Dampers smaller than the minimum frame size require a transition. Reference SD-TRFS for details.

** For damper sizes smaller than 8”W x 8”H, airfoil blades will be supplied.

* For a true 6” high, width is limited to 16”. When ordered as 6” high and width is less than 16”, an 8” high damper with 2” short-height transition will be supplied.

** UNDERWRITERS LABORATORIES INC.® CLASSIFIED DYNAMIC FIRE AND SMOKE DAMPER **

**FIRE RESISTANCE RATING 1½ HR LEAKAGE RESISTANCE CLASS II**

This combination fire/smoke damper meets the construction and performance requirements of:

- Underwriters Laboratories Inc. Standard 555 and 555S
- National Fire Protection Association Standards 80 and 90A
- ICC’s International Building Code
- California State Fire Marshal Listing #3224-1328:119.
- New York City MIA Listing # 111-99-M
- Underwriters Laboratories Inc. Approved for dual direction airflow and dynamic conditions.
- Underwriters Laboratories Inc. Classified for use in fire resistive ratings of less than 3 hours
- Underwriters Laboratories Inc. Classified for use in smoke control systems for Leakage Class II and 250°F or 350°F.
- Actuators must be arranged to operate automatically, must fail closed upon loss of power, and must be controlled by a smoke detection system.
**MODEL FS2**

**Combination Fire/Smoke Damper** ▲ 1½ Hr. Rated ▲ Single Thickness Blades ▲ Leakage Class II ▲ 250°F or 350°F Rated ▲ Galvanized Steel

**OPERATIONAL RATING**
Maximum Differential Pressure: 4 in. w.g.
Maximum Face Velocity: 2000 fpm (3000 fpm for selected size/actuator combinations)

**LEAKAGE RATING**
UL Leakage Class II
10 cfm per sq.ft. maximum @ 1 in.wg
20 cfm per sq.ft. maximum @ 4 in.wg

**SOUND RATING**
The Noise Criterion data below was tested in accordance with ASTM E477.99 in the center octave band.

<table>
<thead>
<tr>
<th>Damper Size</th>
<th>Noise Criterion (NC)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Velocity (fpm)</td>
</tr>
<tr>
<td></td>
<td>1000</td>
</tr>
<tr>
<td>12&quot;W x 12&quot;H</td>
<td>31</td>
</tr>
<tr>
<td>24&quot;W x 24&quot;H</td>
<td>33</td>
</tr>
</tbody>
</table>

**PRESSURE DROP**
The pressure drop data shown below is based on laboratory conditions. The test setup does not take into account elbows or other duct fittings that are part of every actual duct system. The configuration of the actual duct system immediately upstream and downstream of the damper often contributes more pressure loss than the damper itself.

Air Balance certifies that the Model FS2 damper shown here 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 Ratings only.

![AMCA Certified Ratings Seal](image)

**Item #** | **Qty** | **Damper Size** | **Horizontal** | **Vertical** | **250°F** | **350°F** | **Velocity** | **Pressure** | **Operation Rating** | **Union Made**
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
| Arch. / Eng.: | EDR: | ECN: | Job: | Date: | DWN: | DWG:
| Contractor: | Project: |