

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

### STANDARD MATERIALS AND CONSTRUCTION

- FRAME:** 5½" x ⅞" 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 ironrip 601 or UL-listed equivalent.
- ACTUATOR:** Electric with heat response device (EHRD) or pneumatic with heat response device (PHRD). Factory-installed for Power-Open/Spring-Close (fail close) operation. External left hand mounted as viewed from jackshaft side of damper.
- 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.
6. Unless ordered with a smoke detector, the 3" sleeve setback on the non-jackshaft side will increase when sleeve lengths greater than 18" are ordered. Custom non-jackshaft side setback dimensions must be specified on order. When ordered with a smoke detector, additional sleeve length is added to jackshaft side. If ordered with smoke detector and additional sleeve length (beyond requirements of notes 2 and 3), additional sleeve length will be added to jackshaft side unless custom setback dimension is otherwise specified on order.

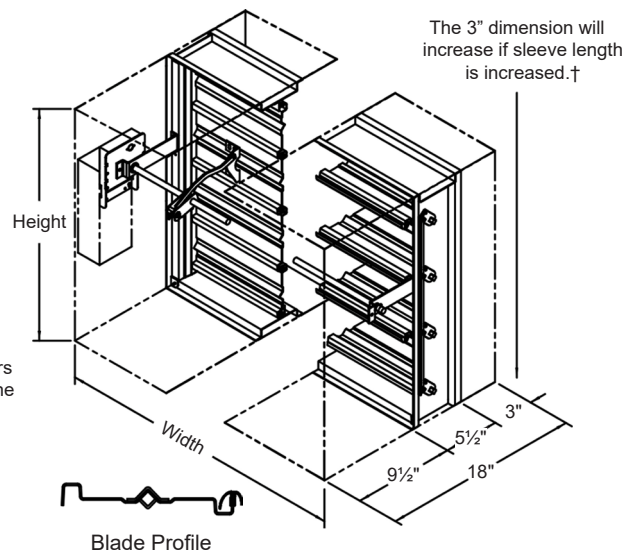
**UNDERWRITERS LABORATORIES INC.®**  
 CLASSIFIED DYNAMIC FIRE AND SMOKE DAMPER  
 FIRE RESISTANCE RATING 1½ HR  
 LEAKAGE RESISTANCE CLASS I

**air balance**  
Dampers Louvers  
UL Life Safety Products

**FILE # R4708**

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, 90A, 92, 101, 105.
- ICC's International Building Code.
- California State Fire Marshal Listing #3224-1328:119.
- New York City MEA 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 I 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 detections system.



† See Note 6 for details

### DAMPER SIZES

		2000 fpm, 4 in.wg						3000 fpm, 4 in.wg		
Orientation	Horz & Vert	Horizontal		Vertical				Horz & Vert	Horizontal	Vertical
Panels	** Min Panel	Max Panel 250° / 350°	Max Assy 250° / 350°	Max Panel 250°	Max Panel 350°	Max Assy 250°	Max Assy 350°	Max. Panel 250°	Max Assy 250°	Max Assy 250°
Rectangular	4"W x 4"H (8"W x 6"H frame)	36"W x 48"H	72"W x 48"H	36"W x 48"H	36"W x 48"H	144"W x 70"H	128"W x 62"H	36"W x 36"H	72"W x 36"H	108"W x 36"H
Round	4" dia. (8"W x 6"H frame)	34" dia.	46" dia.	34" dia.	34" dia.	68" dia.	60" dia.	34" dia.	34" dia.	34" dia.
Oval	4"W x 4"H (8"W x 6"H frame)	34"W x 46"H	70"W x 46"H	34"W x 46"H	34"W x 46"H	45 sq. ft. or 106"W x 68"H	106"W x 60"H	34"W x 34"H	70"W x 34"H	106"W x 34"H

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

\*\* For damper sizes smaller than 16"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.

**For handwritten orders, use the schedule block on page 2.**

In the interest of product development, Air Balance reserves the right to make changes without notice.  
 450 Riverside Dr • Wyalusing PA, 18853 • Phone 570-746-1888 • Fax 570-746-9286

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### 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 I  
4 cfm per sq.ft. maximum @ 1 in.wg  
8 cfm per sq.ft. maximum @ 4 in.wg

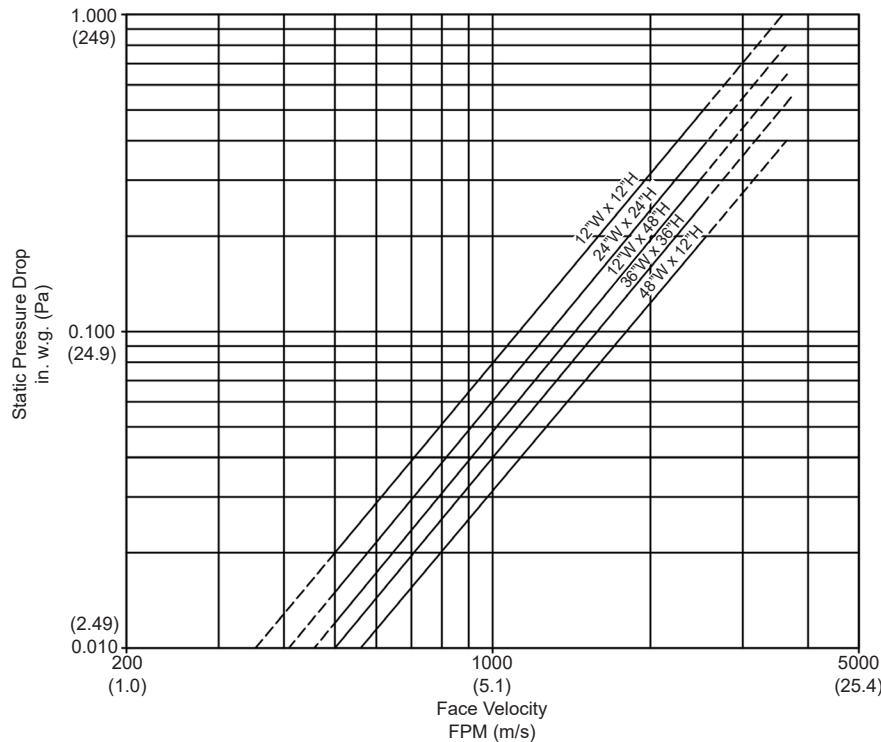
### SOUND RATING

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

Damper Size	Noise Criterion (NC)			
	Velocity (fpm)			
	1000	2000	3000	4000
12"W x 12"H	31	53	64	71
24"W x 24"H	33	54	65	-

### 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.



This product was tested in accordance with AMCA Standard 500D, Figure 5.3.

Intake air converted to standard air density.



Air Balance certifies that the Model FS1 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.

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