

**Combination Fire-Smoke Damper** ▲ 1½ Hour Rated ▲ Single Thickness Blades ▲ Leakage Class I ▲ 250°F or 350°F Rated ▲ Stainless Steel

### STANDARD MATERIALS AND CONSTRUCTION

- FRAME:** 5½" x 7⁄8" x 16 GA. 304 stainless steel hat channel. A flat head and sill are used for sizes up to 13" high.
- BLADES:** 16 GA. galvanized steel single thickness, parallel action.
- AXLES:** 304 stainless steel stub.
- BEARINGS:** Stainless steel.
- LINKAGE:** 304 stainless steel angle and crank plates with stainless steel pivots, in-jamb type.
- STOPS:** 18 GA. 304 stainless steel at head and sill.
- BLADE SEALS:** Silicone.
- JAMB SEALS:** Stainless steel.
- SLEEVE:** Minimum 20 GA. 304 stainless steel by 18" long (sizes greater than 84" wide or 84" high require minimum 18 GA.)
- CAULKING:** Hardcast iron grip 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 on 304 stainless steel.

### OPTIONS

- Type 316 Stainless Steel (where available)
- External right hand actuator mounting location.
- Integral Dual Position Indication (IDPI) switches.
- Sensotherm re-openable heat response device (ESOT) for electric actuator.
- Sensotherm re-openable heat response device (PSOT) for pneumatic actuator.
- Model SM-501 Flow-rated smoke detector (10" minimum damper height)
- Tab-Lock retaining angles.
- Copper tubing (for pneumatic actuators)
- Sleeves of various depths and gauge thicknesses.
- Round or oval transitions.
- Short-width (less than 16") and/or short-height (less than 8") transitions.

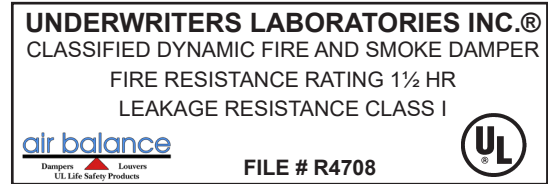
### NOTES

1. Damper frames are provided approximately ¼" undercut. The addition of a sleeve will increase the size of the assembly.
2. Damper with smoke detector must have a minimum sleeve of 19" (10½" on the actuator side and 3" on the non-actuator side).
3. Dampers for horizontal installation can only be mounted in a fire barrier constructed of masonry/concrete materials.
4. On dampers with all internal actuators, minimum height for factory mounted smoke detectors to be 14".
5. 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.

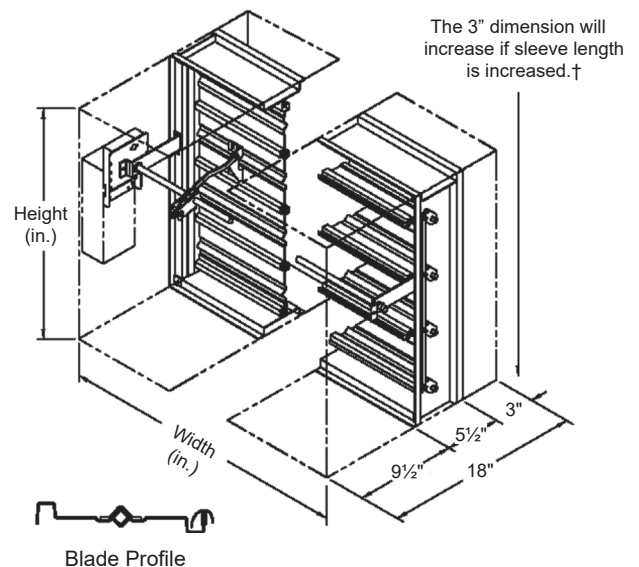
### DAMPER SIZES

Orientation	Horz & Vert	2000 fpm, 4 in. w.g.			3000 fpm, 4 in. w.g.		
		Horizontal	Vertical	Max Assembly	Horizontal	Vertical	Max Assembly
Panels	Min Panel	Max Panel	Max Panel	Max Assembly	Max. Panel	Max Panel	Max Assembly
Rectangular	4"W x 4"H (16"W x 8"H frame)	24"W x 24"H	36"W x 32"H	108"W x 32"H	24"W x 24"H	36"W x 32"H	108"W x 32"H
Round	4" dia. (16"W x 6"H frame)	22" dia.	30" dia.	N/A	22" dia.	30" dia.	N/A
Oval	4"W x 4"H (16"W x 6"H frame)	22"W x 22"H	34"W x 30"H	106"W x 30"H	22"W x 22"H	34"W x 30"H	106"W x 30"H

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



- Underwriters Laboratories Inc. Standards 555 and 555S
- National Fire Protection Association Standards 80, 90A, 92, 101, 105
- ICC's International Building Code
- New York City MEA Listing #111-99-M
- California State Fire Marshal Listing #3225-1328:119
- 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.
- Actuators must be arranged to operate automatically, must fail closed upon loss of power, and must be controlled by a smoke detection system.



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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. w.g.  
 8 CFM per sq.ft. maximum @ 4 in. w.g.

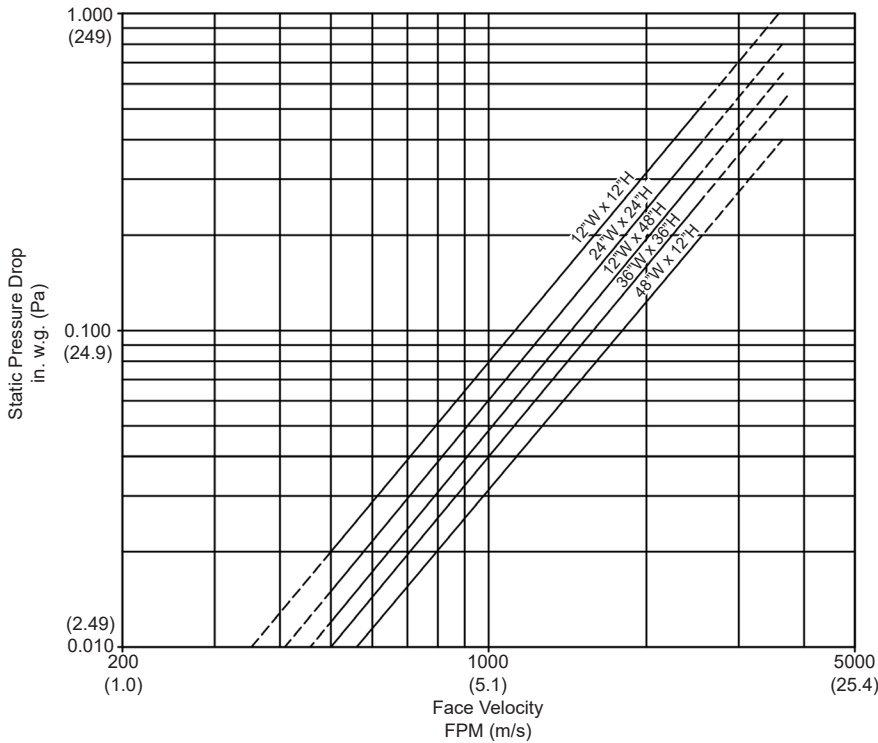
### SOUND RATING

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 RATING

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 FS1(SS) 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	
			Orientation		Temp. Rating		Operational Rating		
Arch. / Eng.:					EDR:		ECN:		Job:
Contractor:									
Project:					Date:		DWN:		DWG: