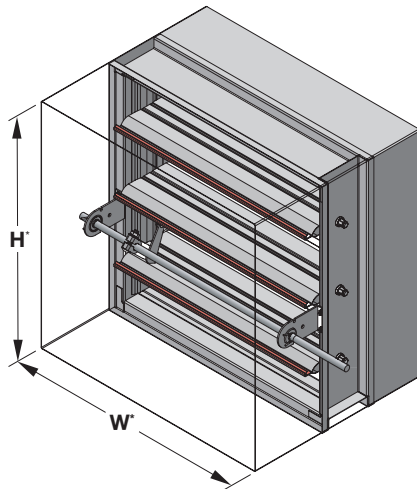




FSD-181
(standard)

*Damper dimensions furnished approximately 1/4" (6) undersize.
(sleeve thickness not included)

Options

- **Installation:** ■ Vertical Mount ■ Horizontal Mount
- **Velocity Rating:** ■ 2,000 fpm ■ 3,000 fpm ■ 4,000 fpm
- **Temperature Rating:** ■ 250°F ■ 350°F
- **Alternate actuator:** ■ Internal mount (actuator in air-stream)
- **Pancake actuator (external only):** ■ 24 VAC ■ 230 VAC
- **Pneumatic** ■ **24V Modulating ****
 - Opposed Blade ■ Parallel Blade†
- **Alternate power-close, spring-open position ****
 - Internal Mount (actuator in air-stream) ■ 24 VAC
- **DRS-30 — Two temperature fire closure device**
(Includes PI-50 switch package)
- **PI-50 — Dual position indicator switch package**
- **Alternate factory-installed sleeve:**
 - Type: ■ A (Std.) ■ C
 - Gauge: ■ 18 (1.3) ■ 16 (1.6) ■ 14 (2.0) ■ 10 (3.4)
 - Length: ■ 20" (508) ■ 24" (610) ■ Other _____
 - Side Plate ■ No Sleeve (Actuator must be internally mounted)
- **Transitions:**
 - Flanged ■ Round ■ Oval
 - Duct connections: ■ 1" (25) S-clip
 - DM25 ■ DM35 ■ DM45 ■ S & Drive
 - Ward
- **Retaining angle systems:**
 - Gauge: ■ 20 (1.0) ■ 16 (1.6)
 - Picture frame: ■ SSPF (single-side) ■ DSPF (2-sided)
 - Individual angle sets: ■ SS (single-side) ■ DS (2-sided)
- **Alternate fire closure temperature:**
 - 212°F (100°C) ■ 250°F (121°C) ■ 350°F (177°C)
- **Duct smoke detector factory mounted and wired:**
 - D4120 (100-4,000 fpm [0.5-20.3 m/s])
 - 2151 (0-3,000 fpm [0-15.2 m/s])
- **Duct access door factory mounted in common sleeve**
- **Burglar Bars**
- **Remote control stations:**
 - RCP-1 (single) ■ RCP-1K (single, key controlled)
 - RCP-1M (single, momentary switch)
 - RCP-1M-NL

NOTE: Dimensions in parentheses () are millimeters.
Information is subject to change without notice or obligation.

The FSD-181 combination fire smoke damper employs airfoil blades for point-of-origin control of fire and smoke in static and dynamic smoke management systems. The FSD-181 is qualified to 4,000 ft/min (20.3 m/s) and 8 in.wg. (2.0 kPa) and may be installed in vertical walls or partitions, or horizontally in floors or assemblies with fire resistance ratings up to 2 hours.

Ratings

UL 555 Fire Resistance Rating: 1-1/2 Hour (vertical and horizontal)

UL 555S Leakage Class: 1 [8 cfm/sq.ft. @ 4 in.wg.]
[(0.04 m³/s/m² @ 1.0 kPa)]

UL HNLJ.V-5: Ventilation Duct Assemblies

Maximum Dynamic Closure Velocity: 4,000 fpm (20.3 m/s)

Maximum UL555S Rated Pressure: 8 in.wg. (1.0 kPa)

Maximum Temperature: 350°F (177°C)

Listings

UL 555 and 555S: R14981

CAN/ULC S112 and CAN/ULC S112.1 listing: R14981

CSFM listing: 3225-1404:107 and 3230-1404:108

New York City MEA listing: 295-98-E

Meets NFPA Standards: 90A, 92A, 92B and 101

Meets Building Code Standards: IBC, NBC, NFPA, SBC and UBC



Standard Construction

Frame: 5" x 1" (127 x 25) galvanized steel hat channel with interlocking corner gusset. Equivalent to 13 gauge (2.4) channel frame. Low profile head and sill are used on sizes less than 13" (330) high.

Blades: 6" x 14 gauge (152 x 2.0) galvanized steel — steel airfoil.

Sleeve: 16" x 20 gauge (406 x 1.0) galvanized steel

Axles: 1/2" (13) diameter plated steel hex

Linkage: Concealed in frame

Bearings: Stainless steel oilite, sleeve-type

Seals: Silicone blade edge seals integrally rolled and mechanically fastened to blades. Flexible metal jamb seals

Actuator: 120 VAC, power-open, spring-close, external mount

Fire Closure Device: HS-10 (electric actuators)
PFV (pneumatic actuators)

Fire Closure Temperature: 165°F (75°C)

Minimum Size: 8" x 6" (203 x 152)
Type C: 6" x 4" (152 x 102)

Maximum Size: Single section: 32" x 48" (813 x 1219)
Type C: 30" x 46" (762 x 1168)

Multiple Section: Vertical mount: 144" x 48" (3658 x 1219) or
128" x 96" (3251 x 2438)

Horizontal mount: 120" x 96" (3048 x 2438)

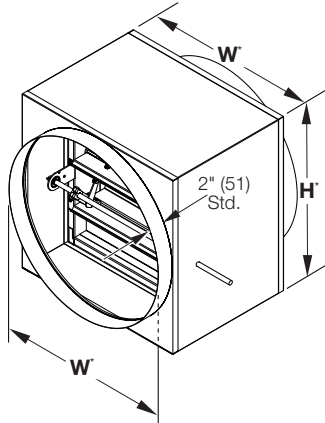
Actuator and Sleeve Dimensional Data

FSD-181

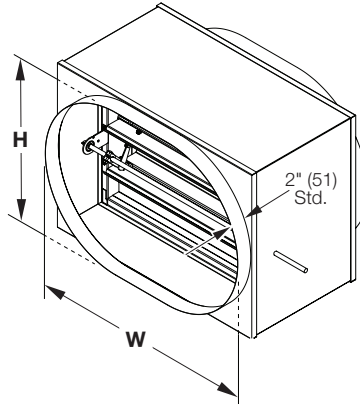
1-1/2-Hour fire • **UL Class 1**
Combination Fire-Smoke Damper • Airfoil Blade

**Special Sizing	Power Close Option	24V Modulating Option 4 in.wg.	24V Modulating Option 8 in.wg.
Maximum Single Section	32" × 36" (813 × 914)	32" × 24" (813 × 610)	24" × 22" (610 × 559)
Maximum Multiple Section - Vertical	N/A	128" × 48" or 144" × 24" (3521 × 1219 or 3658 × 610)	96" × 44" or 120" × 22" (2438 × 1118 or 3048 × 559)
Maximum Multiple Section - Horizontal	N/A	120" × 48" (3048 × 1219)	96" × 44" or 120" × 22" (2438 × 1118 or 3048 × 559)
Maximum Dynamic Closure Velocity	2,000 fpm (10.2 m/s)	2,000 fpm (10.2 m/s)	4,000 fpm (20.4 m/s)
Maximum Temperature	212°F (100°C)	250°F (121°C)	250°F (121°C)

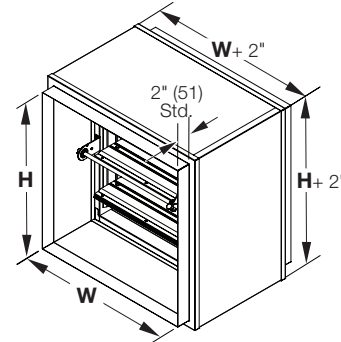
The drawings and corresponding table illustrate the position of the damper and the relative space required for a given actuator. The standard mounting locations provide enough space for installation of retaining plates and duct connections.



Type R (Optional)
Round duct transitions are standard with D=W=H. (available with D<W and H)



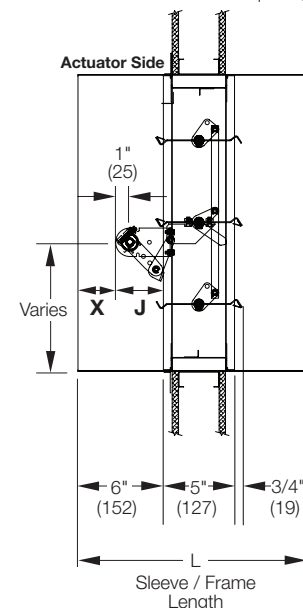
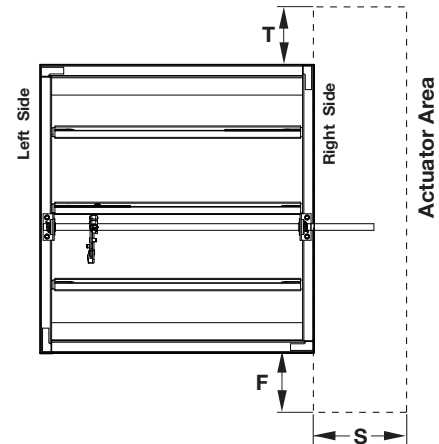
Type O (Optional)
Oval duct transitions are standard with W and H equal to damper width and height dimensions. (available with W and H smaller than damper width and height)



Type C (Optional)
Damper is oversized and uses rectangular transitions to remove damper frame from airstream

*Damper dimensions furnished approximately 1/4" (6) undersize. (sleeve thickness not included)

Actuator Model								
	Damper Height	FSLF120 FSLF24	FSNF120 FSNF24	GGD221 GGD121	ML4115 ML8115	MS4120 ML8120	331-4826	331-2998
F	6"-7"	5"	7"	9"	5"	8"	9"	13"
	8"-9"	4"	7"	8"	4"	8"	8"	12"
	10"-11"	1"	4"	6"	1"	5"	5"	9"
	12"-13"	0"	3"	5"	0"	4"	4"	8"
	14"	0"	2"	4"	0"	3"	4"	8"
	15"-16"	0"	1"	3"	0"	2"	3"	7"
	17"	0"	3"	5"	0"	4"	5"	9"
	18" and 23"	0"	0"	0"	0"	0"	0"	3"
T	19"- 20" and 25"	0"	0"	0"	0"	0"	0"	2"
	21"- 22" and 24"	0"	0"	0"	0"	0"	0"	0"
	26"-27"	0"	0"	0"	0"	0"	0"	1"
	>27"	0"	0"	0"	0"	0"	0"	0"
	6" and 10"	3"	3"	3"	3"	4"	3"	3"
	7" and 11"- 12"	2"	2"	2"	2"	3"	2"	2"
S	8", 13", -14" and 21"	1"	1"	1"	1"	2"	1"	1"
	9", 15"-17" and 20"	0"	0"	0"	0"	0"	0"	0"
	18"- 19"	0"	1"	1"	0"	0"	1"	1"
	22"-23" and >24"	0"	0"	0"	0"	0"	0"	0"
X	24"	0"	0"	0"	0"	0"	0"	1"
J	All	4-1/2"	4-1/2"	4-1/2"	4-1/2"	4-1/2"	5"	7-1/4"
	<8"	4"	4"	4"	4"	4"	4"	4"
	≥8"	2-5/8"	2-5/8"	2-5/8"	2-5/8"	2-5/8"	2-5/8"	2-5/8"
	<8"	2"	2"	2"	2"	2"	2"	2"
	≥8"	3-3/8"	3-3/8"	3-3/8"	3-3/8"	3-3/8"	3-3/8"	3-3/8"

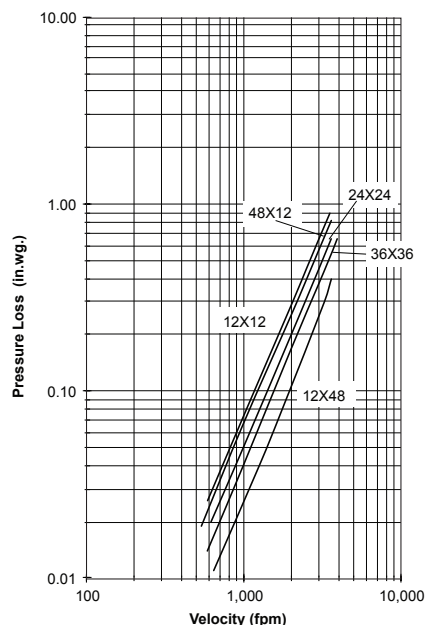


- NOTE:**
- Sleeve length "L" = wall/floor thickness + 10" (254). Standard sleeve length "L" = 16" (406)
 - Damper may be rotated 180° to position actuator area on the left side.
 - The entire damper frame is not required to be installed within the wall, partition or floor. However, the closed plane of the damper blades must be inside the wall, partition or floor.
 - Dimensions for FSNF24 apply to FSAFB24-SR and FSAFB24.
 - Dimensions for FSLF apply to FSTF.
 - Dimensions for ML4115/ML8115 apply to MS4209/MS8209.
 - For dimensions on actuators not shown above, contact factory.

Pressure Drop Performance Data

Pressure Loss vs. Velocity

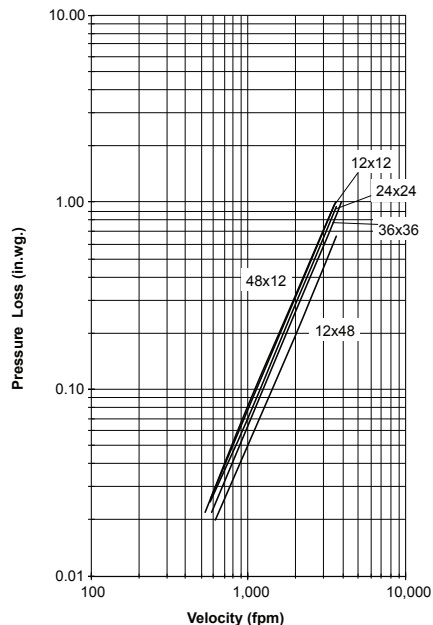
Figure 5.3 — Ducted Inlet and Outlet



Ducted Inlet and Outlet

AMCA Figure 5.3 illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

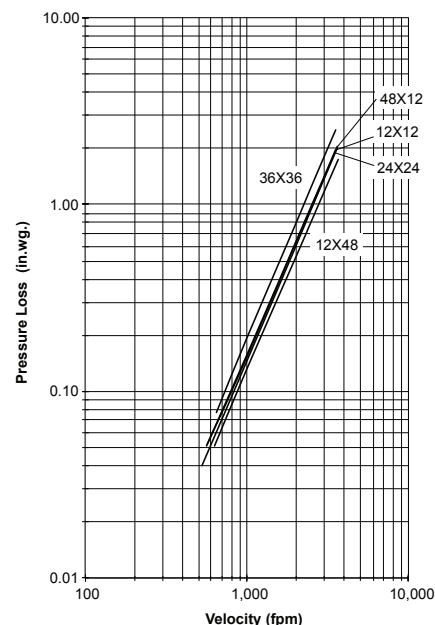
Figure 5.2 — Ducted Inlet



Ducted Inlet

AMCA Figure 5.2 illustrates a ducted damper exhausting air into an open area. This configuration has a lower pressure drop than Figure 5.5 because entrance losses are minimized by a straight duct run upstream of the damper.

Figure 5.5 — Plenum Mount



Plenum Mount

AMCA Figure 5.5 illustrates a plenum mounted damper. This configuration has the highest pressure drop because of extremely high entrance and exit losses due to the sudden changes of area in the system.