

Excelair Fire Safety dampers

Airfoil Blade

EXCELAIR

Fire Dampers

Since 1982

EFSD-151 Combination Fire smoke Damper

1.5 Hour - UL Class 1 - airfoil blade

Application

The EFSD-151 combination fire smoke damper employs airfoil blades for point-of-origin control of fire and smoke in static and dynamic smoke management systems. The EFSD-151 is qualified to 2,000 ft/min (10.2 m/s) and 4 in.wg. (1.0 kPa) and may be installed in vertical walls or partitions, or horizontally in floors or assemblies with fire resistance ratings up to 2 hours.

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) equivalent galvanized — 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.

Fire Closure Device:

HS-10 (electric)

Fire Closure Temperature:

165°F (75°C).

Actuator:

230 VAC, power-open, spring-close, external mount.

Minimum Size:

8" x 6" (203 x 152)

Maximum Size:

Single Section:
32" x 48" (813 x 1219)

Multiple Section

Vertical

144" x 48" (3658 x 1219)

or 128" x 96" (3251 x 2438)

Horizontal:

120" x 96" (3048 x 2438)

Options

Installation

☐ Vertical Mount ☐ Horizontal Mount

Velocity Rating:

☐ 2000 fpm ☐ 3000 fpm ☐ 4000 fpm

Temperature Rating:

☐ 250° F ☐ 350° F

Alternate actuator

☐ 24 VAC ☐ 120 VAC

Alternate factory installed sleeve

Gauge: ☐ 8 (1.3) ☐ 16 (1.6) ☐ 14 (2.0) ☐ 10 (3.5)

Length: ☐ 20" (508) ☐ 24" (610)

Transitions

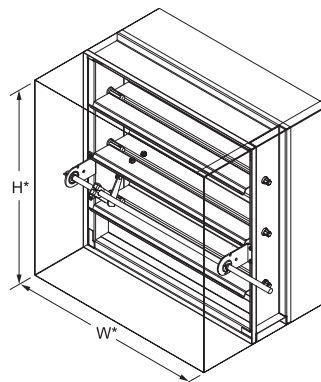
☐ Round ☐ Oval

Retaining angle systems:

Gauge: ☐ 20 (1.0) ☐ 16 (1.6)

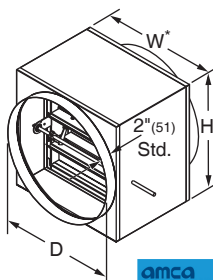
Alternate fire closure temperature:

☐ 212°F (100°C) ☐ 250°F (121°C) ☐ 350°F (177°C)



EFSD-151 (standard)

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



Type R (optional)

Round duct transitions are standard with D-W and H.

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]

Maximum Dynamic Closure Velocity:

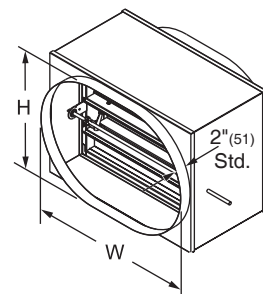
2,000 fpm (10.2 m/s)

Maximum UL555S Rated Pressure:

4 in.wg. (1.0 kPa)

Maximum Temperature:

350°F (177°C)



Type O (optional)

Oval duct transitions are standard with W and H smaller than damper width and height dimensions.



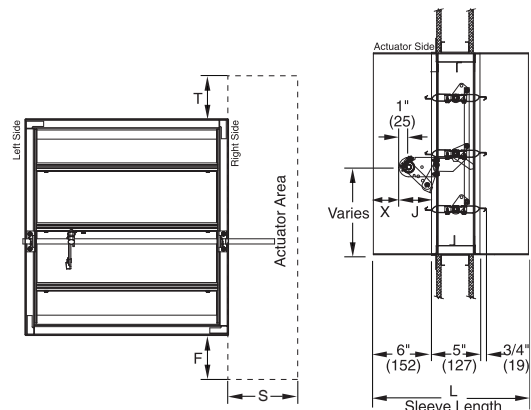
Air Performance

Century Mechanical Systems Factory LLC certifies that the model EFSD-151 shown herein 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

Actuator and Sleeve Dimensional Data

The drawings and corresponding table illustrate the position of the damper when mounted in a factory sleeve and the relative space required for a given actuator. The standard mounting locations provide enough space for installation of retaining angles and duct connections.

Damper Height	Actuator Model			
	FSLF230 FSLF24	FSNF230 FSNF24	GGD321 GGD121	MS4609 MS8109
F	6"-7"	5"	7"	9"
	8"-9"	4"	7"	8"
	10"-11"	1"	4"	6"
	12"-13"	0"	3"	5"
	14"	0"	2"	4"
	15"-16"	0"	1"	3"
	17"	0"	3"	5"
	18" and 23"	0"	0"	1"
	19"-20" and 25"	0"	0"	0"
	21"-22" and 24"	0"	0"	0"
T	26"-27"	0"	0"	0"
	>27"	0"	0"	0"
	6" and 10"	3"	3"	3"
	7" and 11"-12"	2"	2"	2"
	8", 13"-14" and 21"	1"	1"	1"
S	9", 15"-17" and 20"	0"	0"	0"
	18"-19"	0"	1"	1"
	22"-23" and >24"	0"	0"	0"
	24"	0"	0"	0"
X	All	4-1/2"	4-1/2"	4-1/2"
J	<8"	2"	2"	2"
	≥8"	3-3/8"	3-3/8"	3-3/8"



NOTE:
 1. Sleeve length "L" = wall/floor thickness + 10" (254). Standard sleeve length "L" = 16" (406).
 2. Damper may be rotated 180° to position actuator area on the left side.
 3. 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.
 4. For dimensions on actuators not shown above and other UL approved actuators, contact factory.

Airflow Performance Data (Pressure Loss vs. Velocity)

Figure 5.3 — Ducted Inlet and Outlet

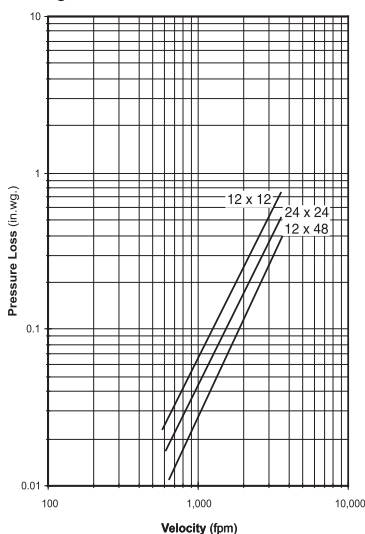


Figure 5.2 — Ducted Inlet

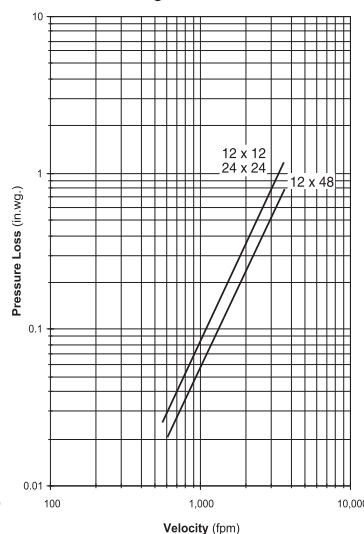
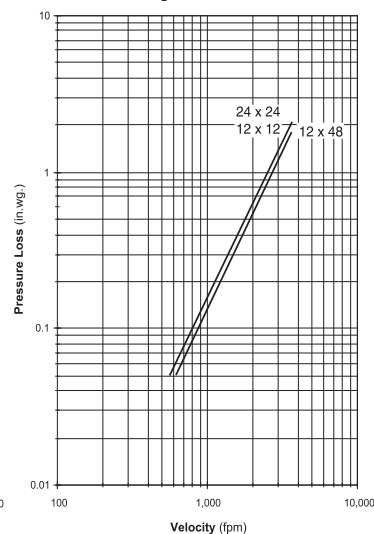


Figure 5.5 Plenum Mount



Ducted Inlet and Outlet

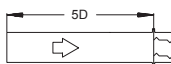
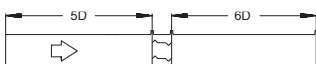
AMCA Figure 5.3 illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

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.

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.



EFD-150 Fire Damper

1.5 hour fire damper airfoil blade

Application

The EFD-150 fire damper employs airfoil blades for point-of-origin control of fire in static and dynamic HVAC systems. The EFD-150 is qualified to 2,000 ft/min (10.2 m/s) and 4 in.wg. (1.0 kPa) and may be installed in vertical walls or partitions, or horizontally in floors or assemblies with fire resistance ratings up to 2 hours.

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) equivalent galvanized steel airfoil.

Sleeve:

12" x 20 gauge (305 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.

Fire Closure Device:

Fusible link.

Fire Closure Temperature:

165°F (75°C).

Minimum Size:

8" x 6" (203 x 152)

Maximum Size:

Single Selection: 32" x 48" (813 x 1219)

Vertical: 128" x 96" (3251 x 2438)

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

Options

Factory installed sleeve

Gauge:

☐ 20 (1.0) ☐ 18 (1.3) ☐ 16 (1.6)

☐ 14 (2.0) ☐ 10 (3.5)

Length:

☐ 16" (406) ☐ 24" (610)

Transitions (sleeve required):

☐ Round ☐ Oval

Retaining angle systems:

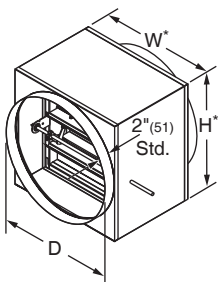
Gauge: ☐ 20 (1.0) ☐ 16 (1.6)

Alternate fire closure temperature:

☐ 212°F (100°C)

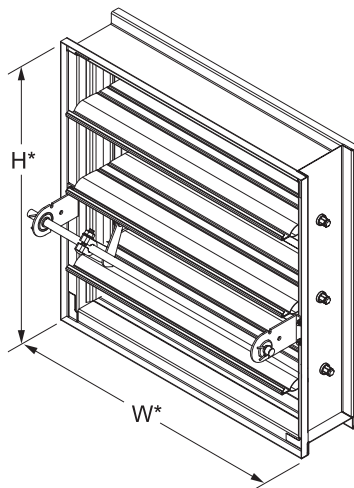
Actuators

☐ 230V ☐ 24V



Type R (optional)

Round duct transitions are standard with D-W-H.



EFD-150

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

Ratings



UL 555 Fire Resistance Rating:

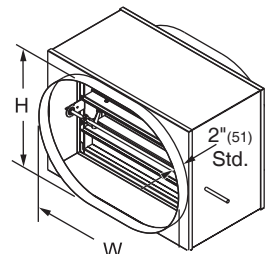
1 1/2 hour (vertical and horizontal)

Maximum Dynamic Closure Velocity:

2,000 fpm (10.2 m/s)

Maximum UL555S Rated Pressure:

4 in.wg. (1.0 kPa)



Type O (optional)

Oval duct transitions are standard with W and H smaller than damper width and height dimensions.

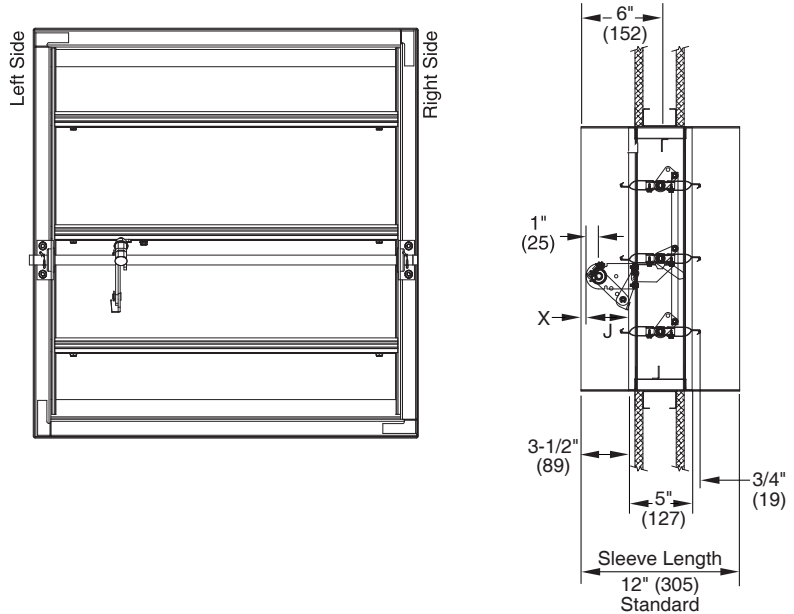
Typical Damper Dimensional Data

The drawings and corresponding table show the position of the damper when mounted in a factory sleeve. The standard mounting locations provide enough space for installation of retaining angles and duct connections

Damper Height	J	X
< 8"	2"	1-1/2"
≥ 8"	3-3/8"	1/8"

NOTE:

1. 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.



Airflow Performance Data (Pressure Loss vs. Velocity)

Figure 5.3 — Ducted Inlet and Outlet

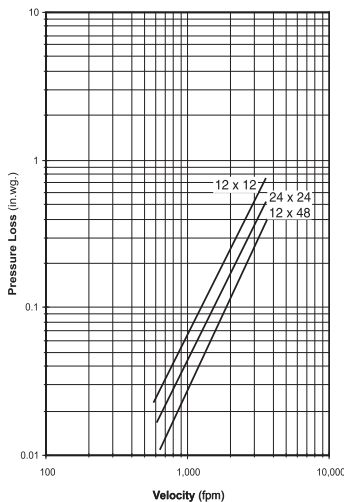


Figure 5.2 — Ducted Inlet

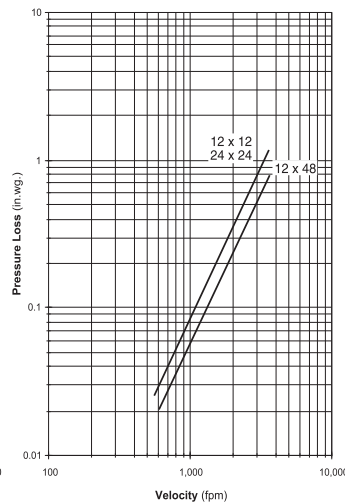
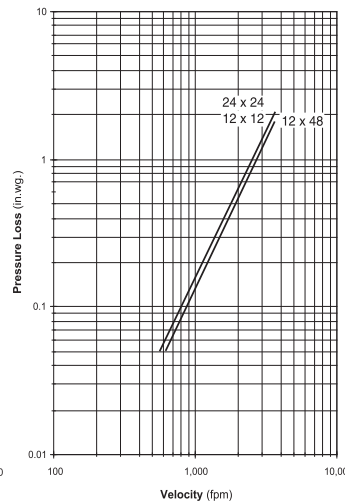


Figure 5.5 Plenum Mount



Ducted Inlet and Outlet

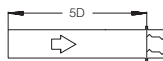
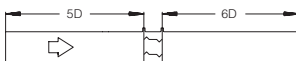
AMCA Figure 5.3 Illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

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.

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.



ESD-151 Smoke Damper

UL Class-1

Application

The ESD-151 smoke damper employs airfoil blades for point-of-origin control of smoke in static and dynamic smoke management systems. The ESD-151 is qualified to 2,000 ft/min (10.2 m/s) and 4 in.wg. (1.0 kPa) and may be installed in, or adjacent to vertical walls or partitions, or horizontally in, or adjacent to floors or assemblies.

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.

Blades:

6" x 14 gauge (152 x 2.0) equivalent galvanized 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:

230 VAC, power-open, spring-close, external mount.

Minimum Size:

8" x 6" (203 x 152)

Maximum Size:

Single Section: 36" x 48" (914 x 1219)
Multiple Section: 144" x 96" (3658 x 2438)
or 288" x 48" (7315 x 1219)

Options

Alternate actuator:

(Power-open, spring close)

☐ 24VAC ☐ 120VAC

Factory installed sleeve:

Gauge: ☐ 20 (1.0) ☐ 18 (1.3) ☐ 16 (1.6)

☐ 14 (2.0) ☐ 10 (3.5)

Length: ☐ 12" (305) ☐ 16" (406) ☐ 24" (610)

Side-Plate:

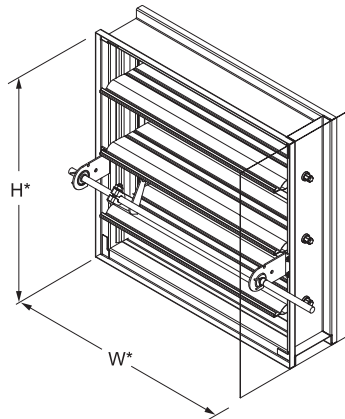
☐ 12" x 20 gauge (305 x 1.0) galvanized steel

Transitions (sleeve required):

☐ Round ☐ Oval

Retaining angle systems:

Gauge: ☐ 20 (1.0) ☐ 16 (1.6)



ESD-151 (with side plate)

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

Ratings



UL 555S Leakage Class: 1

[8 cfm/sq.ft. @ 4 in.wg.]
[0.04 m³/s/m² @ 1.0 kPa]

Maximum Dynamic Closure Velocity**:

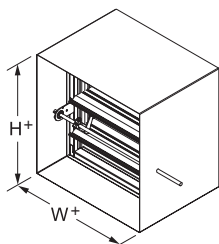
2,000 fpm (10.2 m/s)

Maximum UL555S Rated Pressure:

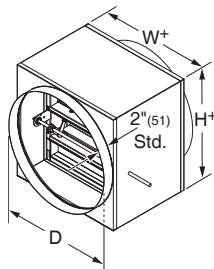
4 in.wg. (1.0 kPa)

Maximum Temperature**:

350°F (177°C)

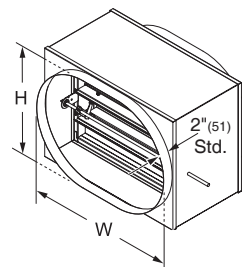


ESD-151
(with sleeve)



Type R
(optional)

Round duct transitions are standard with D-W and H.



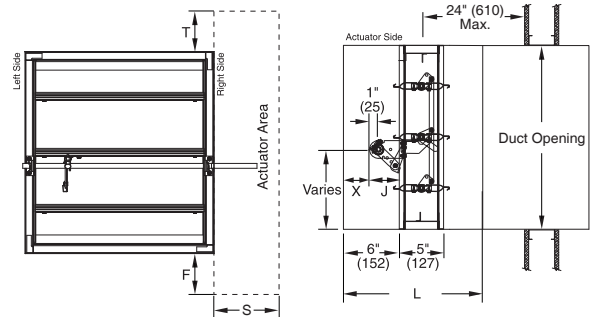
Type O
(optional)

standard with W and H smaller than damper width and height dimensions.

Typical Damper Dimensional Data

The drawings and corresponding table illustrate the position of the damper when mounted in a factory sleeve and the relative space required for a given actuator. The standard mounting locations provide enough space for installation of retaining angles and duct connections.

Damper Height		Actuator Model			
		FSLF230 FSLF24	FSNF230 FSNF24	GGD321 GGD121	MS4609 MS8109
F	8"-9"	4"	7"	8"	7"
	10"-11"	1"	4"	6"	6"
	12"-13"	1"	3"	5"	4"
	14"	0"	2"	4"	3"
	15"-16"	0"	1"	3"	2"
	17"	0"	3"	5"	2"
	18" and 23"	0"	0"	0"	1"
	19"-20" and 25"	0"	0"	0"	0"
T	21"-22" and 24"	0"	0"	0"	0"
	26"-27"	0"	0"	0"	0"
	>27"	0"	0"	0"	0"
	6" and 10"	3"	3"	3"	3"
	7" and 11"-12"	2"	2"	2"	2"
S	8", 13"-14" and 21"	1"	1"	1"	1"
	9", 15"-17" and 20"	0"	0"	0"	0"
	18"-19"	0"	1"	1"	0"
	22"-23" and >24"	0"	0"	0"	0"
	24"	0"	0"	0"	0"
X	<8"	4"	4"	4"	4"
J	≥8"	2-5/8"	2-5/8"	2-5/8"	2-5/8"



- NOTE:
1. Sleeve length "L" = wall/floor thickness + 10" (254). Standard sleeve length "L" = 16" (406).
 2. Damper may be rotated 180° to position actuator area on the left side.
 3. 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 within 24" (610) of the wall, partition or floor.
 4. For dimensions on actuators not shown above, contact factory.

Airflow Performance Data (Pressure Loss vs. Velocity)

Figure 5.3 — Ducted Inlet and Outlet

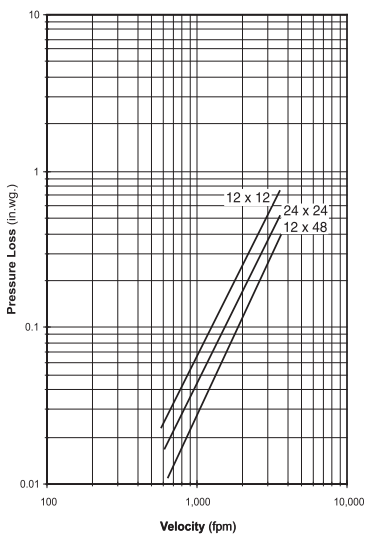


Figure 5.2 — Ducted Inlet

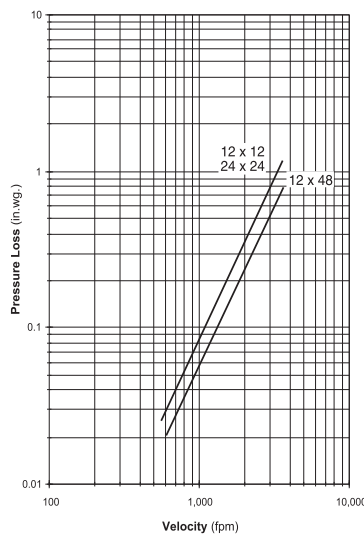
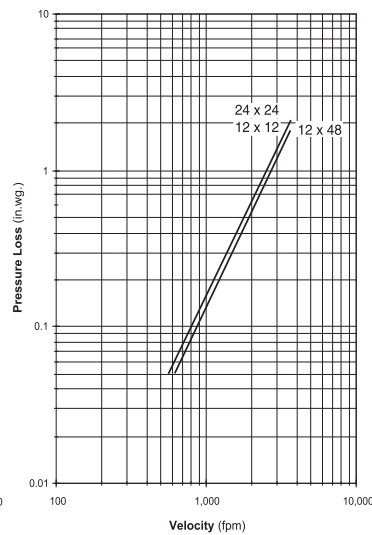


Figure 5.5 Plenum Mount



Ducted Inlet and Outlet

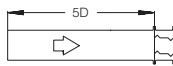
AMCA Figure 5.3 illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

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.

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.



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

Excelair Fire Dampers | engineering ideas since 1982 | cmsglobal.com

Catalogue ID: EFSD-151, August 2021

EFSD-351 Combination Fire smoke Damper

3 hour - UL class 1 - Airfoil Blade

Application

The EFSD-351 combination fire smoke damper employs airfoil blades for point-of-origin control of fire and smoke in static and dynamic smoke management systems. The EFSD-351 is qualified to 2,000 fpm (10.2 m/s) and 4 in.wg. (1.0 kPa) and may be installed in vertical walls or partitions, or horizontally in floors or assemblies with fire resistance ratings up to 4 hours.

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 (406 x 1.0) equivalent galvanized — 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.

Fire Closure Device:

HS-10 (electric actuators)

Fire Closure Temperature:

165°F (75°C).

Actuator:

230VAC, power-open, spring-close, external mount.

Minimum Size:

8" x 6" (203 x 152)

Maximum Size:

Single Section:

Vertical: 30" x 48" (762 x 1219)

Horizontal: 32" x 48" (813 x 1219)

Multiple Section

Vertical: 120" x 96" (3048 x 2438)

Horizontal: 64" x 96" (1626 x 2438)

Options

Alternate actuator:

☐ 24 VAC ☐ 120 VAC

Alternate factory installed sleeve

Gauge: ☐ 8 (1.3) ☐ 16 (1.6) ☐ 14 (2.0) ☐ 10 (3.5)

Length: ☐ 20" (508) ☐ 24" (610)

Transitions

☐ Round ☐ Oval

Retaining angle systems:

1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.6)

Alternate fire closure temperature:

☐ 212°F (100°C) ☐ 250°F (121°C) ☐ 350°F (177°C)

Ratings



UL 555 Fire Resistance Rating:

3 hour (vertical and horizontal)

UL 555S Leakage Class: 1 [8 cfm/sq.ft. @

4 in.wg.] [0.04 m3/s/m2 @ 1.0 kPa]

Maximum Dynamic Closure Velocity:

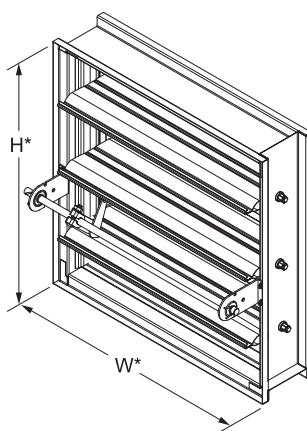
2,000 fpm (10.2 m/s)

Maximum UL555S Rated Pressure:

4 in.wg. (1.0 kPa)

Maximum Temperature:

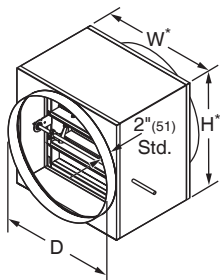
350°F (177°C)



EFSD-351

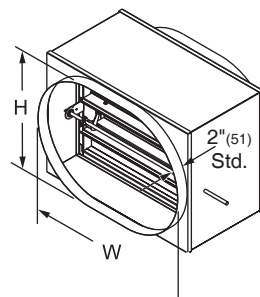
*Damper dimensions furnished approximately 1/4" (6) undersize. (sleeve thickness not included)

**Power Close option limited to:
Maximum Single Section: 32" x 36" (813 x 914)
Maximum Dynamic Closure Velocity: 2000 fpm (10.2 m/s) Maximum Temperature: 212°F (100°C)



Type R (optional)

Round duct transitions are standard with D-W and H.



Type O (optional)

Oval duct transitions are standard with W and H smaller than damper width and height dimensions.

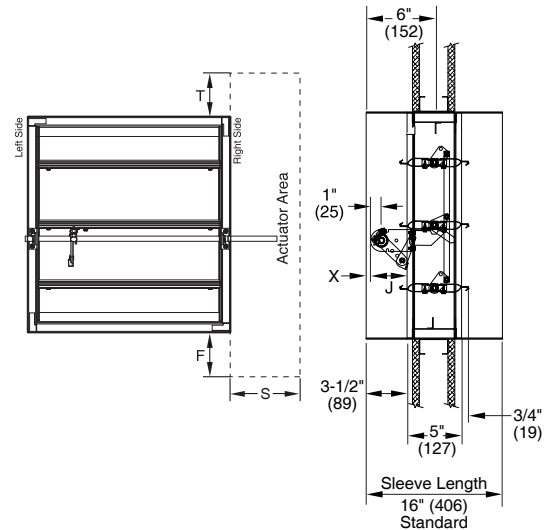
Actuator and Sleeve Dimensional Data

The drawings and corresponding table illustrate the position of the damper when mounted in a factory sleeve and the relative space required for a given actuator. The standard mounting locations provide enough space for installation of retaining angles and duct connections.

Damper Height		Actuator Model			
		FSLF230 FSLF24	FSNF230 FSNF24	GGD321 GGD121	MS4609 MS8109
F	6"-7"	5"	7"	9"	7"
	8"-9"	4"	7"	8"	6"
	10"-11"	1"	4"	6"	4"
	12"-13"	0"	3"	5"	3"
	14"	0"	2"	4"	2"
	15"-16"	0"	1"	3"	2"
	17"	0"	3"	5"	1"
	18" and 23"	0"	0"	0"	1"
	19"-20" and 25"	0"	0"	0"	0"
	21"-22" and 24"	0"	0"	0"	0"
	26"-27"	0"	0"	0"	0"
	>27"	0"	0"	0"	0"
T	6" and 10"	3"	3"	3"	3"
	7" and 11"-12"	2"	2"	2"	2"
	8", 13"-14" and 21"	1"	1"	1"	1"
	9", 15"-17" and 20"	0"	0"	0"	0"
	18"-19"	0"	1"	1"	0"
	22"-23" and >24"	0"	0"	0"	0"
S	All	4-1/2"	4-1/2"	4-1/2"	4-1/2"
X	<8"	4"	4"	4"	4"
	≥8"	2-5/8"	2-5/8"	2-5/8"	2-5/8"
J	<8"	2"	2"	2"	2"
	≥8"	3-3/8"	3-3/8"	3-3/8"	3-3/8"

NOTE:

1. Sleeve length "L" = wall/floor thickness + 10" (254). Standard sleeve length "L" = 16" (406).
2. Damper may be rotated 180° to position actuator area on the left side.
3. 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.
4. For dimensions on actuators not shown above and UL approved actuators, contact factory.



Airflow Performance Data (Pressure Loss vs. Velocity)

Figure 5.3 — Ducted Inlet and Outlet

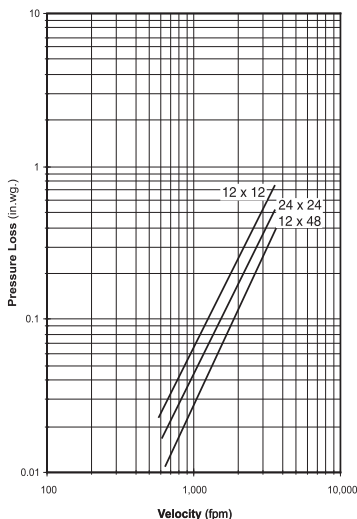


Figure 5.2 — Ducted Inlet

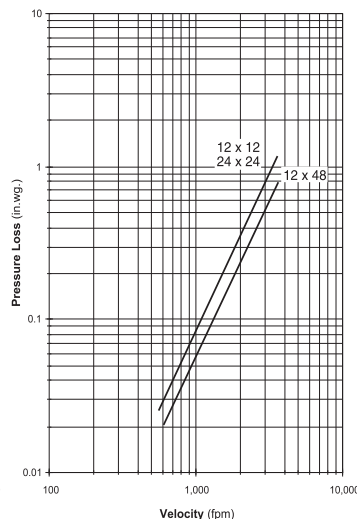
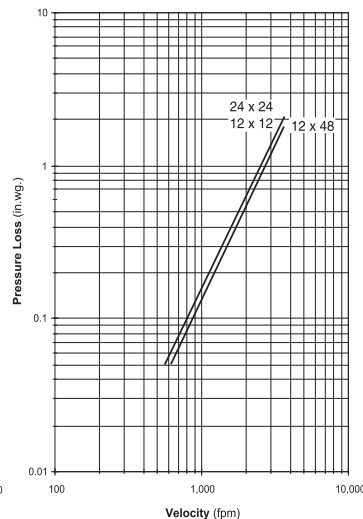


Figure 5.5 Plenum Mount



Ducted Inlet and Outlet

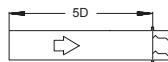
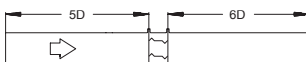
AMCA Figure 5.3 illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by a straight duct run upstream and downstream of the damper.

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.

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.



EFD-350 Fire Damper

3 hour fire damper with airfoil blade

Application

The EFD-350 fire damper employs airfoil blades for point-of-origin control of fire in static and dynamic HVAC systems. The EFD-350 is qualified to 2,000 ft/min (10.2 m/s) and 4 in.wg. (1.0 kPa) and may be installed in vertical walls or partitions, or horizontally in floors or assemblies with fire resistance ratings up to 4 hours.

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) equivalent galvanized steel airfoil.

Axles:

1/2" (13) diameter plated steel hex.

Sleeve:

12" x 20 gauge (305 x 1.0) galvanized steel.

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.

Fire Closure Device:

Fusible link.

Fire Closure Temperature:

165°F (75°C).

Minimum Size:

8" x 6" (203 x 152)

Maximum Size:

Single Section (Vertical)

30" x 48" (762 x 1219)

Single Section (Horizontal)

32" x 48" (813 x 1219)

Multiple Section (Vertical)

120" x 96" (3048 x 2438)

Multiple Section (Horizontal)

64" x 96" (1626 x 2438)

Options

Factory installed sleeve

Gauge:

☐ 20 (1.0) ☐ 18 (1.3) ☐ 16 (1.6)
☐ 14 (2.0) ☐ 10 (3.5)

Length:

☐ 16" (406) ☐ 24" (610)

Transitions (sleeve required):

☐ Round ☐ Oval

Retaining angle systems:

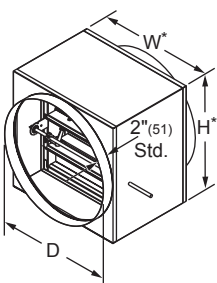
☐ 16 ga (1.6)

Alternate fire closure temperature:

☐ 212°F (100°C)

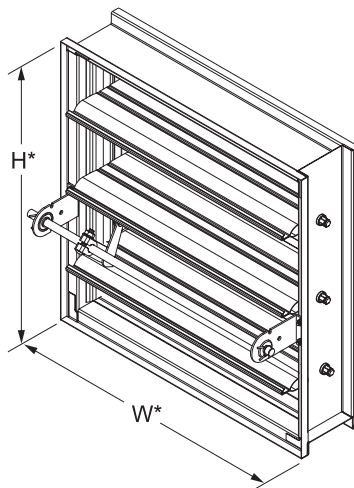
Transitions (sleeve required):

☐ 230VAC ☐ 24VAC



Type R (optional)

Round duct transitions are standard with D*W and H.



EFD-350

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

Ratings



UL 555 Fire Resistance Rating:

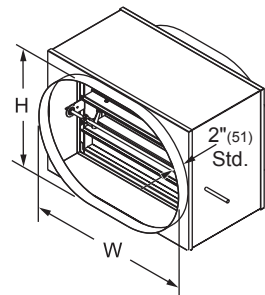
3 hour (vertical and horizontal)

Maximum Dynamic Closure Velocity:

2000 fpm (10.2 m/s)

Maximum UL555S Rated Pressure:

4 in.wg. (1.0 kPa)



Type O (optional)

Oval duct transitions are standard with W and H smaller than damper width and height dimensions.

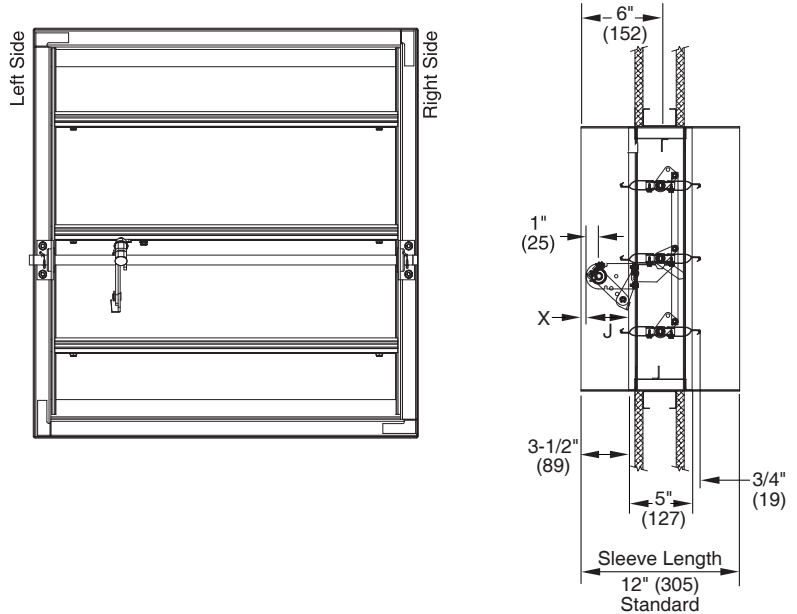
Typical Damper Dimensional Data

The drawings and corresponding table show the position of the damper when mounted in a factory sleeve. The standard mounting locations provide enough space for installation of retaining angles and duct connections

Damper Height	J	X
< 8"	2"	1-1/2"
≥ 8"	3-3/8"	1/8"

NOTE:

1. 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.



Airflow Performance Data (Pressure Loss vs. Velocity)

Figure 5.3 — Ducted Inlet and Outlet

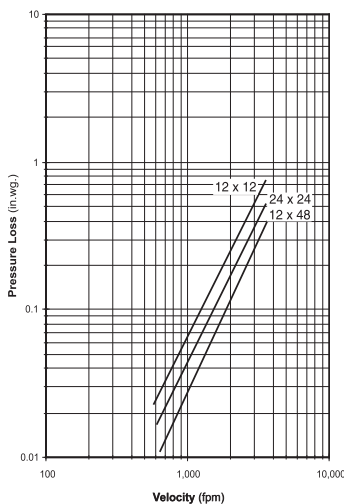


Figure 5.2 — Ducted Inlet

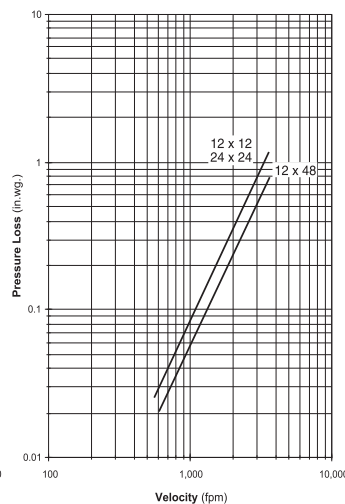
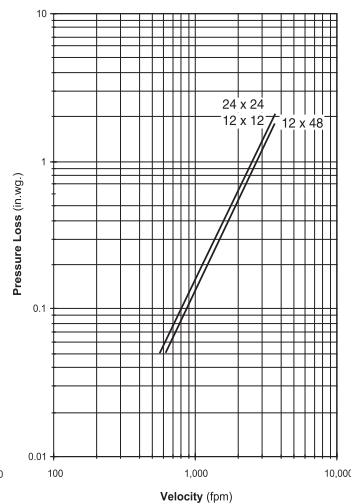


Figure 5.5 Plenum Mount



Ducted Inlet and Outlet

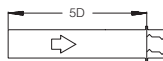
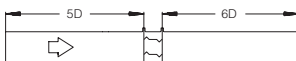
AMCA Figure 5.3 Illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

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.

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.



EFSD-152 Combination Fire smoke Damper

1.5 Hour - UL Class 2 - airfoil blade

Application

The EFSD-152 combination fire smoke damper employs airfoil blades for point-of-origin control of fire and smoke in static and dynamic smoke management systems. The EFSD-152 is qualified to 2,000 ft/min (10.2 m/s) and 4 in.wg. (1.0 kPa) and may be installed in vertical walls or partitions, or horizontally in floors or assemblies with fire resistance ratings up to 2 hours.

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) equivalent galvanized — 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.

Fire Closure Device:

HS-10 (electric)

Fire Closure Temperature:

165°F (75°C).

Actuator:

230 VAC, power-open, spring-close, external mount.

Minimum Size:

8" x 6" (203 x 152)

Maximum Size:

Single Section:
32" x 48" (813 x 1219)

Multiple Section

Vertical

144" x 48" (3658 x 1219)

128" x 96" (3251 x 2438)

Horizontal:

120" x 96" (3048 x 2438)

Options

Installation

☐ Vertical Mount ☐ Horizontal Mount

Velocity Rating:

☐ 2000 fpm ☐ 3000 fpm ☐ 4000 fpm

Temperature Rating:

☐ 250° F ☐ 350° F

Alternate actuator

☐ 24 VAC ☐ 120 VAC

Alternate factory installed sleeve

Gauge: ☐ 8 (1.3) ☐ 16 (1.6) ☐ 14 (2.0) ☐ 10 (3.5)

Length: ☐ 20" (508) ☐ 24" (610)

Transitions

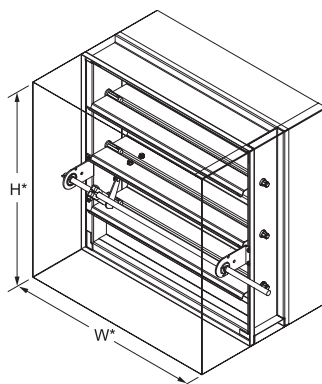
☐ Round ☐ Oval

Retaining angle systems: Gauge

Gauge: ☐ 20 (1.0) ☐ 16 (1.6)

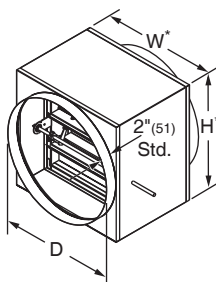
Alternate fire closure temperature:

☐ 212°F (100°C) ☐ 250°F (121°C) ☐ 350°F (177°C)



EFSD-152(standard)

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



Type R

(optional)

Round duct transitions are standard with D-W and H

Ratings



UL 555 Fire Resistance Rating:

1 1/2 hour (vertical and horizontal)

UL 555S Leakage Class: 2 [20 cfm/sq.ft.

@ 4 in.wg.] [0.10 m3/s/m2 @ 1.0 kPa]

Maximum Dynamic Closure Velocity:

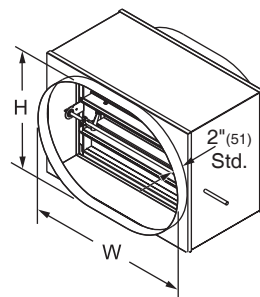
2,000 fpm (10.2 m/s)

Maximum UL555S Rated Pressure:

4 in.wg. (1.0 kPa)

Maximum Temperature:

350°F (177°C)



Type O

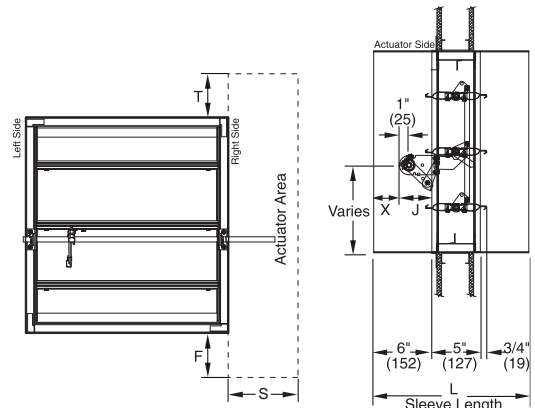
(optional)

Oval duct transitions are standard with W and H smaller than damper width and height dimensions.

Actuator and Sleeve Dimensional Data

The drawings and corresponding table illustrate the position of the damper when mounted in a factory sleeve and the relative space required for a given actuator. The standard mounting locations provide enough space for installation of retaining angles and duct connections.

Damper Height		Actuator Model			
		FSLF230 FSLF24	FSNF230 FSNF24	GGD321 GGD121	MS4609 MS8109
F	6"-7"	5"	7"	9"	7"
	8"-9"	4"	7"	8"	6"
	10"-11"	1"	4"	6"	4"
	12"-13"	0"	3"	5"	3"
	14"	0"	2"	4"	2"
	15"-16"	0"	1"	3"	2"
	17"	0"	3"	5"	1"
	18" and 23"	0"	0"	0"	0"
	19"-20" and 25"	0"	0"	0"	0"
	21"-22" and 24"	0"	0"	0"	0"
T	26"-27"	0"	0"	0"	0"
	>27"	0"	0"	0"	0"
	6" and 10"	3"	3"	3"	3"
	7" and 11"-12"	2"	2"	2"	2"
	8", 13"-14" and 21"	1"	1"	1"	1"
S	9", 15"-17" and 20"	0"	0"	0"	0"
	18"-19"	0"	1"	1"	0"
	22"-23" and >24"	0"	0"	0"	0"
	24"	0"	0"	0"	0"
X	<8"	4"	4"	4"	4"
J	≥8"	2-5/8"	2-5/8"	2-5/8"	2-5/8"
	<8"	2"	2"	2"	2"
J	≥8"	3-3/8"	3-3/8"	3-3/8"	3-3/8"



NOTE:

1. Sleeve length "L" = wall/floor thickness + 10" (254). Standard sleeve length "L" = 16" (406).
2. Damper may be rotated 180° to position actuator area on the left side.
3. 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.
4. For dimensions on actuators not shown above and UL approved actuators, contact factory.

Airflow Performance Data (Pressure Loss vs. Velocity)

Figure 5.3 — Ducted Inlet and Outlet

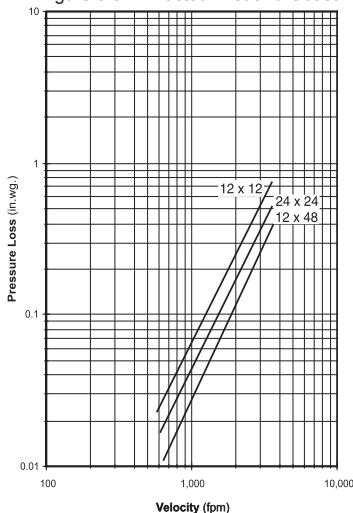


Figure 5.2 — Ducted Inlet

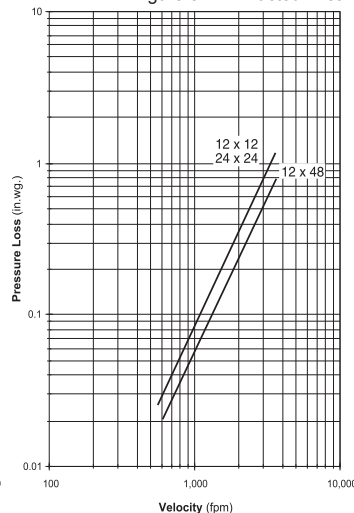
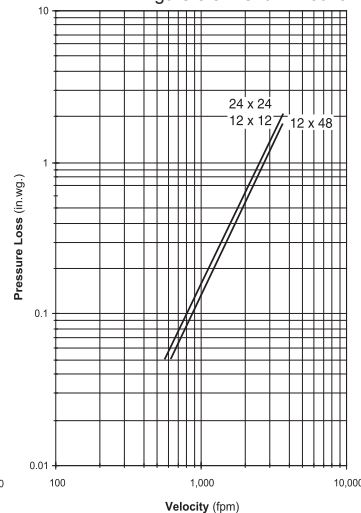


Figure 5.5 Plenum Mount



Ducted Inlet and Outlet

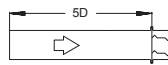
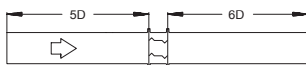
AMCA Figure 5.3 illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

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.

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.



EFSD-352 Combination Fire smoke Damper

3 hour - UL class 2 - Airfoil Blade

Application

The EFSD-352 combination fire smoke damper employs airfoil blades for point-of-origin control of fire and smoke in static and dynamic smoke management systems. The EFSD-352 is qualified to 2,000 ft/min (10.2 m/s) and 4 in.wg. (1.0 kPa) and may be installed in vertical walls or partitions, or horizontally in floors or assemblies with fire resistance ratings up to 4 hours.

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) equivalent galvanized - 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.

Fire Closure Device:
HS-10 (electric actuators)

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

Actuator:
230 VAC, power-open, spring-close, external mount.

Minimum Size:
8" x 6" (203 x 152)

Maximum Size:
Single Section:
Vertical: 30" x 48" (762 x 1219)
Horizontal: 32" x 48" (813 x 1219)

Multiple Section
Vertical: 120" x 96" (3048 x 2438)
Horizontal: 64" x 96" (1626 x 2438)

Options

Alternate actuator:

☐ 24 VAC ☐ 120 VAC

Alternate factory installed sleeve

Gauge: ☐ 8 (1.3) ☐ 16 (1.6) ☐ 14 (2.0) ☐ 10 (3.5)
Length: ☐ 20" (508) ☐ 24" (610)

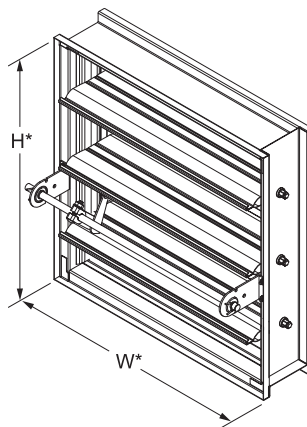
Transitions

☐ Round ☐ Oval

1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.6) retaining angle systems:

Alternate fire closure temperature:

☐ 212°F (100°C) ☐ 250°F (121°C) ☐ 350°F (177°C)



Ratings



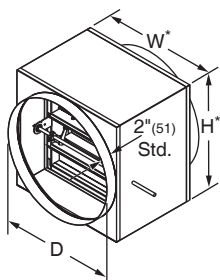
UL 555 Fire Resistance Rating:
3 hour (vertical and horizontal)

UL 555S Leakage Class: 2 [20 cfm/sq.ft. @ 4 in.wg.] [0.10 m3/s/m2 @ 1.0 kPa]

Maximum Dynamic Closure Velocity:
2,000 fpm (10.2 m/s)

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

Maximum Temperature:
350°F (177°C)

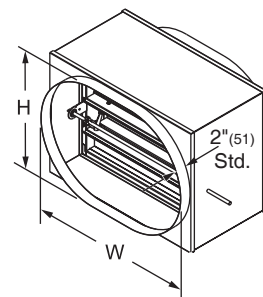


Type R (optional)

Round duct transitions are standard with D-W and H.

EFSD-352

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



Type O (optional)

Oval duct transitions are standard with W and H smaller than damper width and height dimensions.

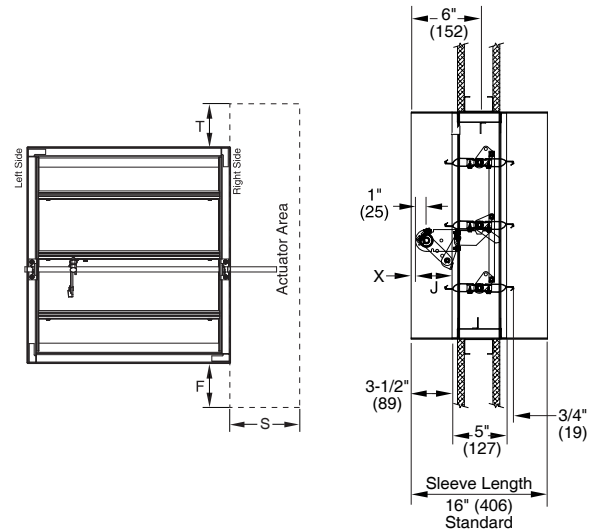
Actuator and Sleeve Dimensional Data

The drawings and corresponding table illustrate the position of the damper when mounted in a factory sleeve and the relative space required for a given actuator. The standard mounting locations provide enough space for installation of retaining angles and duct connections.

Damper Height		Actuator Model			
		FSLF230 FSLF24	FSNF230 FSNF24	GGD321 GGD121	MS4609 MS8109
F	6"-7"	5"	7"	9"	7"
	8"-9"	4"	7"	8"	6"
	10"-11"	1"	4"	6"	4"
	12"-13"	0"	3"	5"	3"
	14"	0"	2"	4"	2"
	15"-16"	0"	1"	3"	2"
	17"	0"	3"	5"	1"
	18" and 23"	0"	0"	0"	0"
	19"-20" and 25"	0"	0"	0"	0"
	21"-22" and 24"	0"	0"	0"	0"
T	26"-27"	0"	0"	0"	0"
	>27"	0"	0"	0"	0"
	6" and 10"	3"	3"	3"	3"
	7" and 11"-12"	2"	2"	2"	2"
	8", 13"-14" and 21"	1"	1"	1"	1"
S	9", 15"-17" and 20"	0"	0"	0"	0"
	18"-19"	0"	1"	1"	0"
	22"-23" and >24"	0"	0"	0"	0"
	24"	0"	0"	0"	0"
X	All	4-1/2"	4-1/2"	4-1/2"	4-1/2"
J	<8"	2"	2"	2"	2"
	≥8"	3-3/8"	3-3/8"	3-3/8"	3-3/8"

NOTE:

1. Sleeve length "L" = wall/floor thickness + 10" (254). Standard sleeve length "L" = 16" (406).
2. Damper may be rotated 180° to position actuator area on the left side.
3. 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.
4. For dimensions on actuators not shown above and UL approved actuators, contact factory.



Airflow Performance Data (Pressure Loss vs. Velocity)

Figure 5.3 — Ducted Inlet and Outlet

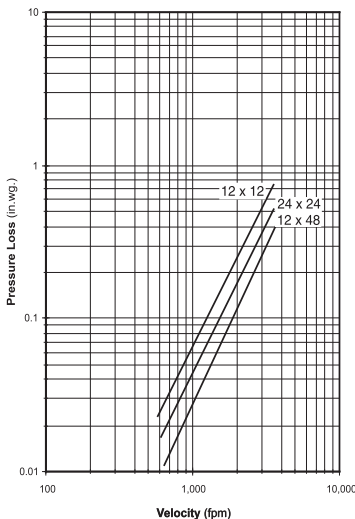


Figure 5.2 — Ducted Inlet

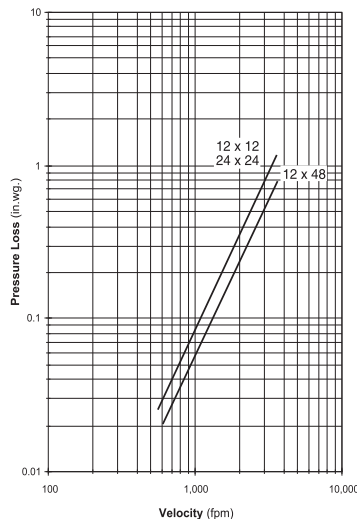
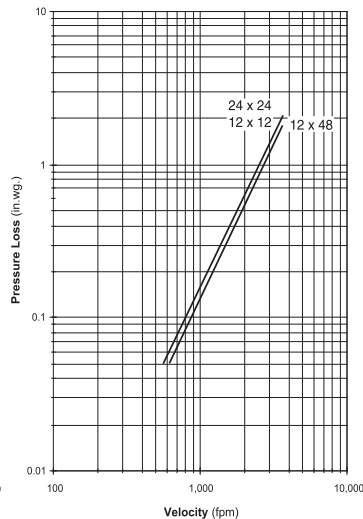


Figure 5.5 Plenum Mount



Ducted Inlet and Outlet

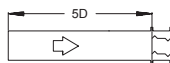
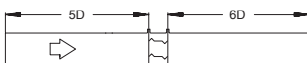
AMCA Figure 5.3 Illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

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.

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.



ESD-152 Smoke Damper

UL Class-2

Application

The ESD-152 smoke damper employs airfoil blades for point-of-origin control of smoke in static and dynamic smoke management systems. The ESD-152 is qualified to 2,000 ft/min (10. m/s) and 4 in.wg. (1.0 kPa) and may be installed in, or adjacent to vertical walls or partitions, or horizontally in, or adjacent to floors or assemblies.

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.

Blades:
6" x 14 gauge (152 x 2.0) equivalent galvanized 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:
230 VAC, power-open, spring-close, external mount.

Minimum Size:
8" x 6" (203 x 152)

Maximum Size:
Single Section: 36" x 48" (914 x 1219)
Multiple Section: 144" x 96" (3658 x 2438)
or 288" x 48" (7315 x 1219)

Options

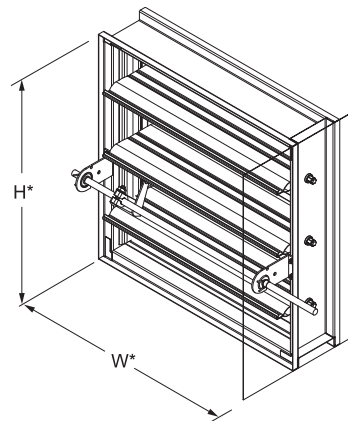
Alternate actuator:
(Power-open, spring close)
☐ 24VAC ☐ 120VAC

Factory installed sleeve:
Gauge: ☐ 20 (1.0) ☐ 18 (1.3) ☐ 16 (1.6)
☐ 14 (2.0) ☐ 10 (3.5)
Length: ☐ 12" (305) ☐ 16" (406) ☐ 24" (610)

Side-Plate:
☐ 12" x 20 gauge (305 x 1.0) galvanized steel

Retaining angle systems:
Gauge: ☐ 20 (1.0) ☐ 16 (1.6)

Transitions (sleeve required):
☐ Round ☐ Oval



ESD-152 (with side plate)

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

Ratings

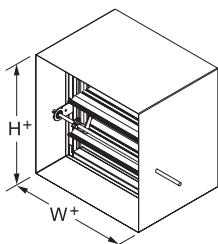


UL 555S Leakage Class: 2
[20 cfm/sq.ft. @ 4 in.wg.]
[0.10 m3/s/m2 @ 1.0 kPa]

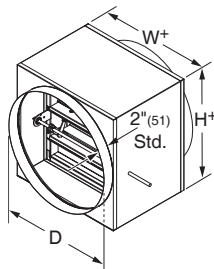
Maximum Dynamic Closure Velocity:**
2,000 fpm (10.2 m/s)

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

Maximum Temperature:**
350°F (177°C)

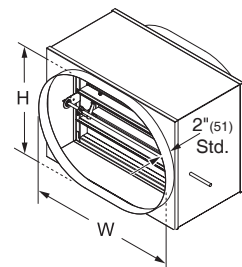


ESD-152 (with sleeve)



Type R (optional)

Round duct transitions are standard with D-W-H. (available with D-W and H)



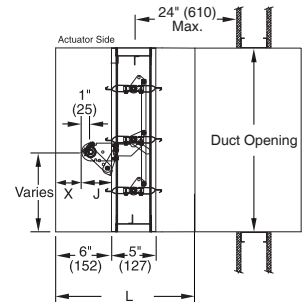
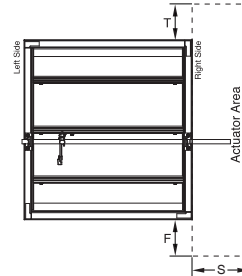
Type O (optional)

standard with W and H equal to damper width and height dimensions. (available with W and H smaller than damper width and height)

Typical Damper Dimensional Data

The drawings and corresponding table illustrate the position of the damper when mounted in a factory sleeve and the relative space required for a given actuator. The standard mounting locations provide enough space for installation of retaining angles and duct connections.

Damper Height		Actuator Model			
		FSLF230 FSLF24	FSNF230 FSNF24	GGD321 GGD121	MS4609 MS8109
F	8"-9"	4"	7"	8"	7"
	10"-11"	0"	4"	6"	6"
	12"-13"	1"	3"	4"	4"
	14"	0"	2"	4"	3"
	15"-16"	0"	1"	3"	2"
	17"	0"	3"	5"	2"
	18" and 23" 19"-20" and 25" 21"-22" and 24" 26"-27" >27"	0"	0"	0"	1"
T	6" and 10"	3"	3"	3"	3"
	7" and 11"-12"	2"	2"	2"	2"
	8", 13"-14" and 21"	1"	1"	1"	1"
	9", 15"-17" and 20"	0"	0"	0"	0"
	18"-19"	0"	1"	1"	0"
	22"-23" and >24" 24"	0"	0"	0"	0"
S	All	4-1/2"	4-1/2"	4-1/2"	4-1/2"
X	<8"	4"	4"	4"	4"
	≥8"	2-5/8"	2-5/8"	2-5/8"	2-5/8"
J	<8"	2"	2"	2"	2"
	≥8"	3-3/8"	3-3/8"	3-3/8"	3-3/8"



NOTE:
 1. Sleeve length "L" = wall/floor thickness + 10" (254). Standard sleeve length "L" = 16" (406).
 2. Damper may be rotated 180° to position actuator area on the left side.
 3. 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 within 24" (610) of the wall, partition or floor.
 4. For dimensions on actuators not shown above, contact factory.

Airflow Performance Data (Pressure Loss vs. Velocity)

Figure 5.3 — Ducted Inlet and Outlet

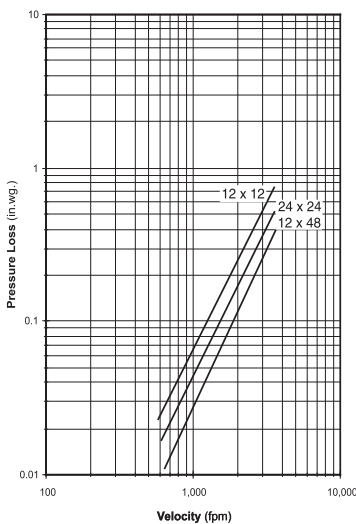


Figure 5.2 — Ducted Inlet

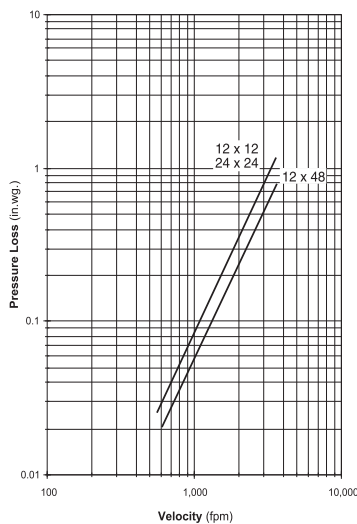
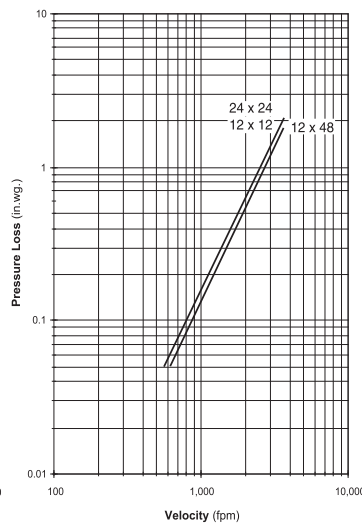


Figure 5.5 Plenum Mount



Ducted Inlet and Outlet

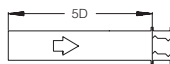
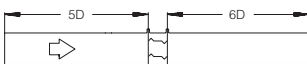
AMCA Figure 5.3 illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

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.

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.



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