CVS
Manufacturing Excellence

Life Safety DAMPERS

Combination Fire & Smoke Dampers | Smoke Dampers
Fire Dampers | Corridor Dampers | Ceiling Dampers

SAFE4

CLASSIFIED
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Central Ventilation Systems (CVS) designs, tests, manufactures, and supplies certified air distribution, air control, and passive fire protection solutions, complying with international standards such as UL, AMCA, BS, EN, NFPA, IBC, ASFP, SMACNA, and DW144.

We are a family-owned group, that has been understanding the HVAC industry for 20 years; through the experience of providing certified HVAC solutions to over 1000 projects of varied sizes and complexities, primarily for the commercial, residential, healthcare, educational facilities, data centers and different industrial segments.

The existing range of CVS products includes the BS & EN Certified Fire-Rated Ductwork System, UL Classified Life Safety Dampers, AMCA Certified Louvers, Volume Control Dampers, and Sound Attenuators.

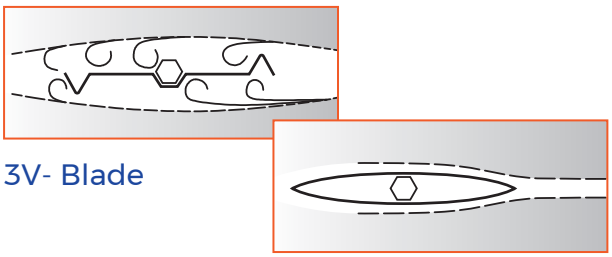
Our Research and Development team continually strives to improve our existing products as well as introduce new products to serve our customers efficiently. Maintaining quality at every stage, we work with a spirit of teamwork in achieving the various performance objectives of the consultants and building contractors. We inspect and certify our projects, and offer the assurance of all requisite approvals to be in place.

Combination Fire & Smoke Dampers

CVS-SAFE4 Combination Fire and Smoke Dampers are UL555 and UL555S tested and intended to protect HVAC penetrations made through fire and smoke rated walls and floors. These fire and leakage-rated dampers have been investigated for both a fire protection rating of 1-1/2 hr or 3 hr and a leakage rating as defined under Class I or Class II. Leakage ratings of combination fire and smoke dampers are determined at an elevated temperature 250˚F or 350˚F. Leakage ratings of combination fire and smoke dampers are established based on test conditions using heated air. The basic requirement for combination fire and smoke dampers is operation at 2,000 feet per minute (FPM) or 10.2 m/s when open and 4" w.g. of pressure when closed.

Damper Blade Design

The most common blade orientations available in damper standard construction are 3V type and Airfoil type. 3V-blades are incorporated in HVAC systems with velocities less than 2,000 fpm. Airfoil blades can be incorporated in all HVAC systems and should be utilized in systems greater than 2000 fpm.



3V- Blade

Airfoil Blade

Fire/Smoke Damper Selection Criteria

The selection criteria of a fire/smoke damper are based on the following considerations:

1. Fire Resistance Rating – 1.5-hours or 3-hours based on code requirements and building design.
2. Leakage Rating – Class I or Class II (IBC requires minimum Class II).
3. Elevated Temperature Rating – 250˚ F or 350˚ F
4. Dynamic Rating – Minimum 2000 fpm @ 4” w.g. or higher.
5. Blade Design – Airfoil or 3V Type.
6. Heat Response Device Rating - 165˚ F (Standard), 212˚ F, 250˚ F, 350˚ F (Optional).

Performance Criteria

Elevated Temperature and Rating

Under ambient airflow temperature the damper is cycled (open/closed) three times @ 4" w.g., then returned to the full-open position where heat is introduced at an average temperature rise of 30˚F to 50˚F (17˚C to 28˚C) per minute until the specified elevated temperature of 250˚F (121˚C) is attained. The system shall maintain an elevated temperature of up to a maximum of 50˚F (28˚C) above specified elevated temperature for a minimum of 15 minutes. At that time damper is to be fully closed and then fully opened using the actuator. Cycle times shall not exceed 75 seconds for both opening and closing. The minimum operational rating is 2000 fpm @ 4" w.g. and 250˚F. Other higher ratings that may be desired are conducted in increments of 1000 fpm and/or increments of 2" w.g., and up to 350˚F.

Operational Reliability

To ensure operation through 250 cycles for dampers for use without actuators, or 20,000 cycles for dampers with actuators and cycle testing following salt spray exposure.

Fire Test

For either 1.5-hours or 3-hours to determine the hourly classification of the damper assembly.

Hose Stream Test

To verify the damper assembly and associated installation components remain intact during explosive fire conditions.

Dynamic Closure

To verify the damper assembly will close against heated airflow velocity of at least 2400 fpm and 4" w.g. (Not required for dampers classified for static "fans off" systems).

Air Leakage Resistance

The damper must prevent air leakage efficiently after operational reliability and temperature resistance tests.

Leakage Class	Maximum Leakage (cfm/sqft at 4" w.g.)	Temperature Categories
I	8	250˚F 350˚F
II	20	250˚F 350˚F
IBC Chapter 7		

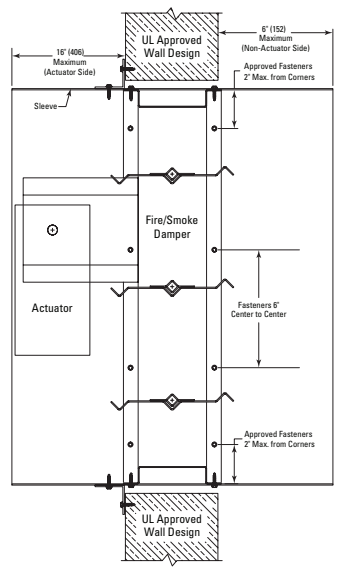
Table 1: Air Leakage Resistance

The system designers are advised to select the lowest leakage class damper. However, there are some smoke control applications when a higher leakage class damper is acceptable.

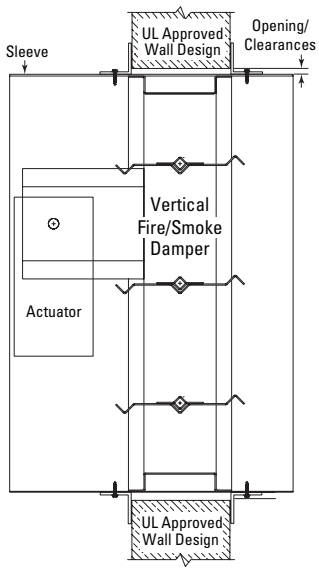
Combination Fire & Smoke Damper Installation

When UL is referred to in this document, it represents UL/ULC. This installation instruction applies to Fire/Smoke Dampers (3-V, Airfoil, Parallel, Opposed, Single, and Multi-blade types) mounted in the plane of a UL approved fire partition. Combination Fire/Smoke dampers are approved for use in Static or Dynamic Systems. The dampers are designed for operation in the vertical or horizontal position with blades running horizontally. Horizontal installations are similar to vertical shown. The dampers to be installed square and free from twisting or racking. The dampers shall not be compressed or stretched into the opening. Transportation and installation of the dampers shall be handled with the sleeve or frame. Do not lift the damper with the blades or actuator. Special care shall be given to the damper before installation and after to ensure it is protected against dirt weather, mortar and drywall dust, wall texture and paint. Any of these conditions could cause the damper not to operate correctly and void the warranty. Suitable access to the inside duct is to be provided for inspection and replacement of parts such as heat response devices and actuators per NFPA 90A and local authority having jurisdiction. The need to seal the damper in the penetration is not required by Underwriters Laboratories. CVS dampers have been tested and approved to be mounted without the use of sealants around the perimeter space between the damper and the penetration. As with all joints, the contractor must seal duct collar connections in the field after installation.

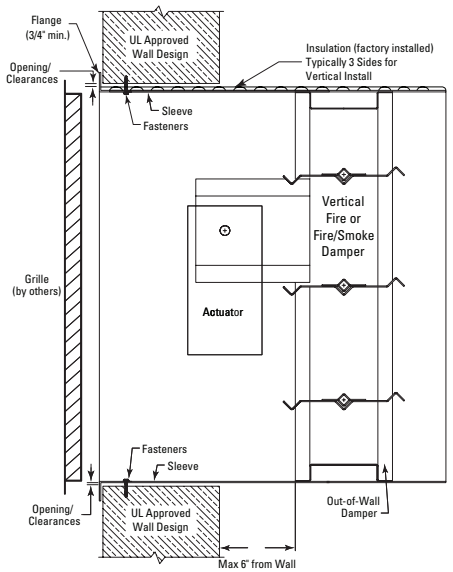
1 Angle (1 Sided) Installation



2 Angle (2 Sided) Installation



No Angle (Grill Mount) Installation



Combination Fire & Smoke Dampers

Combination Fire & Smoke Damper Models

Commonly used SAFE4 - Combination Fire & Smoke Damper (FSD) Models Abbreviations

FSD-3V – 3V Blade Models
FSD-AF – Airfoil Blade Models
FSD-AF-FA – Front Access Models
FSD-AF-OW – Out of Wall Models
F/S-AFM – Modulating Actuator Models
FSD-3V-CR – Corridor Models
FSD-RD – True Round Models

COMBINATION FIRE/SMOKE DAMPERS						
Model	Hourly Rating	Leakage Class	Dynamic Rating (FPM @ in. W.G.)	Blade Type	Maximum Section Size (in.)	
					Vertical	Horizontal
FSD-3V-211	1.5	I-350	2000 @ 4	3V - Type	108 x 96	72 x 96
FSD-3V-212	1.5	II-350	2000 @ 4	3V - Type	108 x 96	72 x 96
FSD-3V-231	3	I-350	2000 @ 4	3V - Type	72 x 96	72 x 96
FSD-3V-232	3	II-350	2000 @ 4	3V - Type	72 x 96	72 x 96
FSD-3V-OW-211	1.5	I-350	2000 @ 4	3V - Type	42 x 48	42 x 48
FSD-3V-OW-212	1.5	II-350	2000 @ 4	3V - Type	42 x 48	42 x 48
FSD-3V-FA-211	1.5	I-350	2000 @ 4	3V - Type	36 x 48	-
FSD-3V-FA-212	1.5	I-350	2000 @ 4	3V - Type	36 x 48	-
FSD-AF-211	1.5	I-250	4000 @ 6	Airfoil	108 x 96	36 x 48
FSD-AF-212	1.5	II-350	4000 @ 6	Airfoil	108 x 96	36 x 48
FSD-AF-231	3	I-250	4000 @ 6	Airfoil	72 x 96	36 x 48
FSD-AF-232	3	II-350	4000 @ 6	Airfoil	72 x 96	36 x 48
FSD-AF-OW-211	1.5	I-350	2000 @ 4	Airfoil	42 x 48	42 x 48
FSD-AF-OW-212	1.5	II-350	2000 @ 4	Airfoil	42 x 48	42 x 48
FSD-AF-FA-211	1.5	I-350	2000 @ 4	Airfoil	36 x 48	-
FSD-AF-FA-212	1.5	II-350	2000 @ 4	Airfoil	36 x 48	36 x 48
F/S-AFM-PB-I, F/S-AFM-OB-I (Parallel & Opposed Blade)	1.5	I-250	2000 @ 4	Airfoil	96 x 60	32 x 30
F/S-AFM-PB-II, F/S-AFM-OB-II (Parallel & Opposed Blade)	1.5	II-250	2000 @ 4	Airfoil	96 x 60	32 x 30
F/S-AFM-PB-3-I, F/S-AFM-OB-3-I (Parallel & Opposed Blade)	3	I-250	2000 @ 4	Airfoil	72 x 60	32 x 30
F/S-AFM-PB-3-II, F/S-AFM-OB-3-II (Parallel & Opposed Blade)	3	II-250	2000 @ 4	Airfoil	72 x 60	32 x 30
FSD-3V-CR-211, FSD-3V-CR-231	1.5, 3	I-350	2000 @ 4	3V - Type	-	24 x 24
FSD-3V-CR-212, FSD-3V-CR-232	1.5, 3	II-350	2000 @ 4	3V - Type	-	24 x 24
FSD-RD-211, FSD-RD-212	1.5	I-350 II-350	2000 @ 4	True Round	24 (dia)	24 (dia)

Note: Combination Fire and Smoke Dampers - F/S-AFM models have been found suitable for volume control use and are available with modulating actuator in parallel and opposed airfoil blade type. FSD-AF models are also approved for velocities up to 4000 fpm (20.4 m/s) at 6" w.g. (1.5 kPa) for sizes up to 36" x 36" with 20 Nm actuators.

This wide series of SAFE4 - Combination Fire & Smoke Dampers comply with all the major building codes, including **IBC/ICC International Code, UL555, UL555S, ULC S112, ULC S112.1, NFPA-90A, 80.**

MODEL FSD-3V-211 & FSD-3V-212
MODEL FSD-3V-231 & FSD-3V-232

Features

- **FSD-3V-211, -212** and **FSD-3V-231, -232** are a series of SAFE4 Combination Fire/Smoke Dampers have been designed and tested to exceed all UL, ULC and N.F.P.A. requirements for fire dampers as well as smoke dampers.
- **FSD-3V-211, -212** models are UL 555 and ULC S112 classified and labelled as a 1.5-hour fire damper.
- **FSD-3V-231, -232** models are UL 555 and ULC S112 classified and labelled as a 3-hour fire damper.
- UL and ULC classified for both vertical and horizontal mountings.
- UL 555S / ULC S112.1 classified and labelled as a **Leakage Class I & Class II** rated Smoke Damper with airflow in both directions. Class I provides for a max. leakage of 8 cfm/sq. ft. at 4" w.g. @ 350 ˚F elevated temperature.
- Models are rated for system velocities up to 2000 fpm @ 4" w.g.
- MSFD shall bear the UL labels for both Fire Dampers and Smoke Dampers

MODEL FSD-AF-211 & FSD-AF-212
MODEL FSD-AF-231 & FSD-AF-232

Features

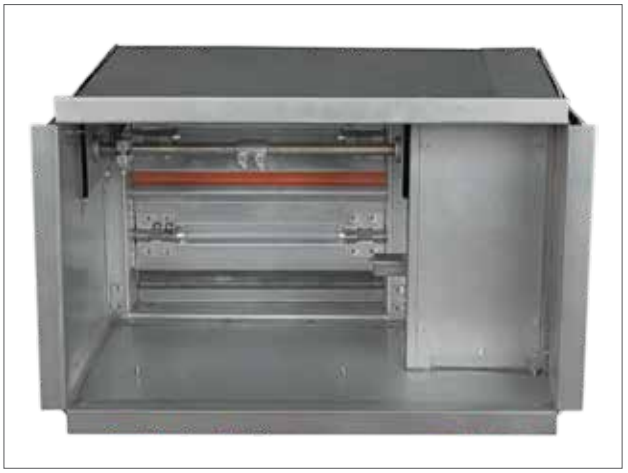
- **FSD-AF-211, -212** and **FSD-AF-231, -232** are a series of SAFE4 Combination Fire/Smoke Dampers have been designed and tested to exceed all UL, ULC and N.F.P.A. requirements for fire dampers as well as smoke dampers.
- **FSD-AF-211, -212** models are UL 555 and ULC S112 classified and labelled as a 1.5-hour fire damper.
- **FSD-AF-231, -232** models are UL 555 and ULC S112 classified and labelled as a 3-hour fire damper.
- UL and ULC classified for both vertical and horizontal mountings.
- Models are rated for system maximum velocities up to 4000 fpm @ 6” w.g.
- UL 555S / ULC S112.1 classified and labelled as a **Leakage Class I & Class II** rated Smoke Damper with airflow in both directions. Class I provides for a maximum leakage of 8 cfm per sq. ft. at 6" w.g. @ 350 ˚F elevated temperature.

Combination Fire & Smoke Dampers

MODEL FSD-3V-FA-211 (FRONT ACCESS)
MODEL FSD-3V-FA-212 (FRONT ACCESS)

Features

- **FSD-3V-FA-211, -212** is a series of SAFE4 Combination Fire/Smoke Dampers have been designed and tested to exceed all UL, ULC and N.F.P.A. requirements for fire dampers as well as smoke dampers.
- **FSD-3V-FA-211, -212** models are UL 555 and ULC S112 classified and labelled as a 1.5-hour fire damper.
- UL and ULC classified for vertical mountings.
- Models are rated for system velocities up to 2000 fpm @ 4" w.g.
- Frame: Roll-formed galvanized steel hat-section with staked corners with integral bracing.
- Blades: 3V shaped, single skin galvanized steel of roll-formed construction.
- Seals: Pressure sensitive 450˚ F silicone blade edge seals and flexible metal jamb seals.
- Linkage: Concealed in the frame. Linkage bars are 0.125" (3.2mm) thick plated steel.
- Sleeve: Galvanized, wrapped in a thermal blanket. (3 sides for vertical and 4 sides for horizontal installation)
- UL 555S / ULC S112.1 classified and labelled as a **Leakage Class I & Class II** rated Smoke Damper with airflow in both directions. Class I provides for a maximum leakage of 8 cfm per sq. ft. at 4" w.g. @ 350 ˚F elevated temperature.



MODEL FSD-3V-OW-211 (OUT OF WALL)
MODEL FSD-3V-OW-212 (OUT OF WALL)

Features

- **FSD-3V-OW-211, -212** is a series of SAFE4 Combination Fire/Smoke Dampers have been designed and tested to exceed all UL, ULC and N.F.P.A. requirements for fire dampers as well as smoke dampers.
- **FSD-3V-OW-211, -212** models are UL 555 and ULC S112 classified and labelled as a 1.5-hour fire damper.
- UL and ULC classified for both vertical and horizontal mountings.
- UL 555S / ULC S112.1 classified and labelled as a **Leakage Class I & Class II** rated Smoke Damper with airflow in both directions. Class I provides for a maximum leakage of 8 cfm per sq. ft. at 4" w.g. @ 350 ˚F elevated temperature.
- Models are rated for system velocities up to 2000 fpm @ 4" w.g.

MODEL F/S-AFM-PB-I, F/S-AFM-OB-I (Parallel & Opposed Blade)
MODEL F/S-AFM-PB-3-I, F/S-AFM-OB-3-I (Parallel & Opposed Blade)

Features

- **F/S-AFM-PB-I, F/S-AFM-OB-I** and **F/S-AFM-PB-3-I, F/S-AFM-OB-3-I** are a series of SAFE4 Combination Fire/Smoke Dampers with **modulating actuator** have been designed and tested to exceed all UL, ULC and N.F.P.A. requirements for fire dampers as well as smoke dampers.
- **F/S-AFM-PB-I, F/S-AFM-OB-I** models are UL 555 and ULC S112 classified and labelled as a 1.5-hour fire damper.
- **F/S-AFM-PB-3-I, F/S-AFM-OB-3-I** models are UL 555 and ULC S112 classified and labelled as a 3-hour fire damper.
- These models have been found **suitable for volume control use** and are available with modulating actuator in parallel and opposed airfoil blade type.
- UL and ULC classified for both vertical and horizontal mountings.
- Models are rated for system velocities up to 2000 fpm @ 4"w.g.
- UL 555S / ULC S112.1 classified and labelled as a **Leakage Class I & Class II** rated Smoke Damper with airflow in both directions. Class I provides for a maximum leakage of 8 cfm per sq. ft. at 4" w.g. @ 350 ˚F elevated temperature.

MODEL FSD-RD-211 (TRUE ROUND)
MODEL FSD-RD-212 (TRUE ROUND)

Features

- **FSD-RD-211, -212** is a series of SAFE4 Combination Fire/Smoke Dampers have been designed and tested to exceed all UL, ULC and N.F.P.A. requirements for fire dampers as well as smoke dampers.
- They are intended for use where building codes call for a fire damper to also operate as a smoke damper.
- **FSD-RD-212** and **FSD-RD-212** models are UL 555 and ULC S112 classified and labelled as a 1.5-hour fire damper.
- UL and ULC classified for vertical and horizontal mountings.
- Models are rated for system velocities up to 2000 fpm @ 4" w.g.
- UL 555S / ULC S112.1 classified and labelled as a **Leakage Class I & Class II** rated Smoke Damper with airflow in both directions. Class I provides for a maximum leakage of 8 cfm per sq.ft. at 4" w.g. @ 350 ˚F elevated temperature.

Smoke Dampers

CVS-SAFE4 Smoke dampers which are also known as leakage-rated dampers are tested and labelled under UL555S are constructed to restrict the spread of smoke in HVAC systems that are designed to be automatically shut down in the event of a fire, or open to control the movement of smoke within a building when the HVAC system is part of an engineered smoke control system as specified in NFPA 90A. Leakage ratings for smoke dampers are identified as Class Designation I or II as shown in the following Table 1: Air Leakage Resistance. Leakage ratings for smoke dampers are determined at elevated temperatures. The elevated temperatures are in increments of 100˚F with the minimum temperature being 250˚F or 350˚F at minimum velocities of 2000 feet per minute at 4 in. w.g. of static pressure. Smoke dampers are marked with respect to the Leakage Class at the elevated test temperature.

Smoke Damper Selection Criteria

The selection criteria of a Fire Damper are based on the following considerations:
1. Leakage Rating – Class I or Class II (IBC requires minimum Class II).
2. Elevated Temperature Rating – 250˚F or 350˚F
3. Operational Ratings – Minimum 2000 fpm @ 4” w.g. or higher.
4. Blade Design – Airfoil or 3V Type.

Performance Criteria

Elevated Temperature and Rating

Under ambient airflow temperature the damper is cycled (open/closed) three times @ 4" w.g., then returned to the full-open position where heat is introduced at an average temperature rise of 30˚F to 50˚F (17˚C to 28˚C) per minute until the specified elevated temperature of 250˚F (121˚C) is attained. The system shall maintain an elevated temperature of up to a maximum of 50˚F (28˚C) above specified elevated temperature for a minimum of 15 minutes. At that time damper is to be fully closed and then fully opened using the actuator. Cycle times shall not exceed 75 seconds for both opening and closing. The minimum operational rating is 2000 fpm @ 4" w.g. and 250˚F. Other higher ratings that may be desired are conducted in increments of 1000 fpm and/or increments of 2" w.g., and up to 350˚F.

Leakage Rating

UL 555S Standard identifies the leakage classes as follows

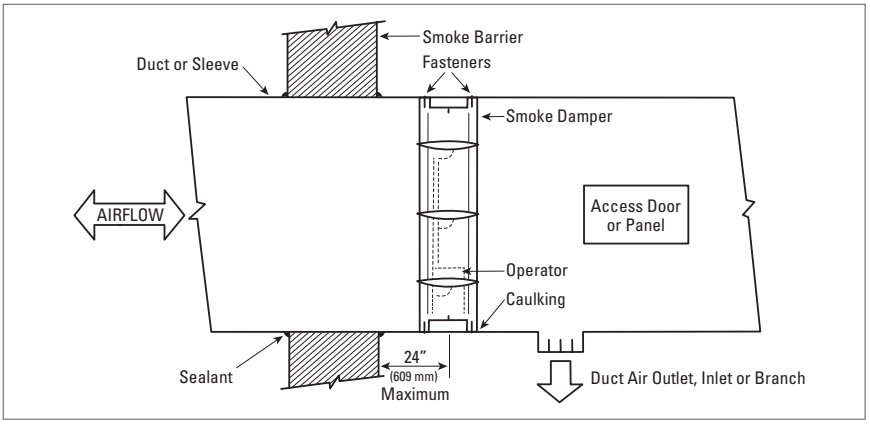
Leakage Class	Maximum Leakage (cfm/sqft at 4" w.g.)	Temperature Categories
I	8	250˚F 350˚F
II	20	250˚F 350˚F
IBC Chapter 7		

Table 1: Air Leakage Resistance

The system designers are advised to select the lowest leakage class damper. However, there are some smoke control applications when a higher leakage class damper is acceptable.

Smoke Damper Installation

The smoke damper may be installed outside the smoke barrier but not more than 24" from the smoke barrier it is intended to protect in accordance with NFPA 90A. Duct air outlets, inlets or branches shall not be located between the smoke damper and the smoke barrier



Smoke Damper Models

Commonly used SAFE4 - Smoke Damper Models Abbreviations

SSD-3V – 3V Blade Models
SSD-AF – Airfoil Blade Models
S-AFM – Modulating Actuator Models
SSD-RD – True Round Models

SMOKE DAMPERS					
Model	Leakage Class	Dynamic Rating (FPM @ in. W.G.)	Blade Type	Maximum Section Size (in.)	
				Vertical	Horizontal
SSD-3V-201	I-350	2000 @ 4	3V - Type	144 x 96	144 x 96
SSD-3V-202	II-350	2000 @ 4	3V - Type	144 x 96	144 x 96
SSD-AF-201	I-250	4000 @ 6	Airfoil	144 x 96	144 x 96
SSD-AF-202	II-350	4000 @ 6	Airfoil	144 x 96	144 x 96
S-AFM-PB-I, S-AFM-OB-I (Parallel & Opposed Blade)	I-250	2000 @ 4	Airfoil	96 x 60	96 x 60
S-AFM-PB-II, S-AFM-OB-II (Parallel & Opposed Blade)	II-250	2000 @ 4	Airfoil	96 x 60	96 x 60
SSD-3V-OW-201	I-350	2000 @ 4	3V - Type	42 x 48	42 x 48
SSD-3V-OW-202	II-350	2000 @ 4	3V - Type	42 x 48	42 x 48
SSD-3V-FA-201	I-350	2000 @ 4	3V - Type	36 x 48	-
SSD-3V-FA-202	I-350	2000 @ 4	3V - Type	36 x 48	-
SSD-AF-OW-201	I-350	2000 @ 4	Airfoil	42 x 48	42 x 48
SSD-AF-OW-202	II-350	2000 @ 4	Airfoil	42 x 48	42 x 48
SSD-AF-FA-201	I-350	2000 @ 4	Airfoil	36 x 48	-
SSD-AF-FA-202	II-350	2000 @ 4	Airfoil	36 x 48	36 x 48
SSD-RD-201, SSD-RD-202	I-350, II-350	2000 @ 4	True Round	24 (dia.)	24 (dia.)

Note: Smoke Dampers - S-AFM models have been found suitable for volume control use and are available with modulating actuator in parallel and opposed airfoil blade type. SSD-AF models are also approved for velocities up to 4000 fpm (20.4 m/s) at 6" w.g. (1.5 kPa)for sizes up to 36" x 36" with 20 Nm actuators.

MODEL SSD-3V-201
MODEL SSD-3V-202

Features

- **SSD-3V-201, -202** is a series of SAFE4 UL/ULC classified and labelled **Class I & Class II** leakage rated Smoke Damper and are approved for horizontal & vertical installation.
- Class I provides for a maximum leakage of 8 cfm per sq. ft. at 4" w.g. @ 350 °F elevated temperature.
- The damper is approved for airflow in either direction and provides a maximum leakage of 8 cfm per sq. ft. at 4" w. g.
- These dampers are approved for use in engineered smoke control systems and are controlled via a smoke detection system.
- Electric (24v or 230v) or pneumatic actuators are used to operate the smoke dampers.

Smoke Dampers

MODEL SSD-AF-201
MODEL SSD-AF-202

Features

- **SSD-AF-201, -202** is a series of SAFE4 is a UL/ULC classified and labelled **Class I & Class II** leakage rated Smoke Damper.
- Class I provides for a maximum leakage of 8 cfm per sq. ft.at 4" w.g. @ 350 ˚F elevated temperature.
- Models are rated for system velocities maximum up to 4000 fpm @ 6" w.g.
- The damper is approved for airflow in either direction and provides a maximum leakage of 8 cfm per sq. ft. at 6" w. g.
- It has been designed to be installed in a vertical or horizontal mounting position in the ductwork or a separate sleeve within 24" of the smoke partition.
- These dampers are approved for use in engineered smoke control systems and are controlled via a smoke detection system.
- Electric (24v, 230v) or pneumatic actuators are used to operate the smoke dampers.

MODEL SSD-RD-201
MODEL SSD-RD-202

Features

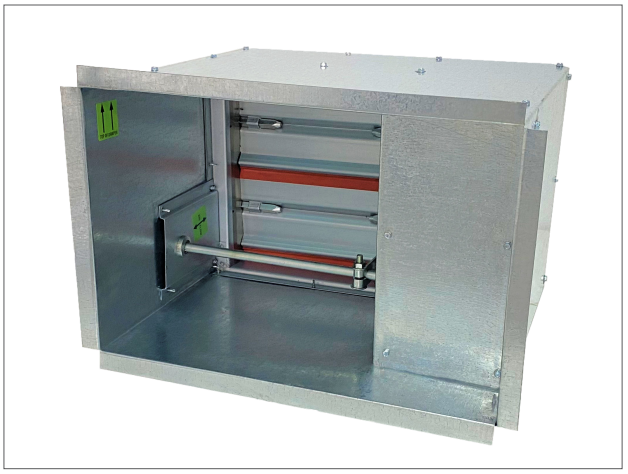
- **SSD-RD-201, -202** is a series of SAFE4 UL/ULC classified and labelled **Class I & Class II** leakage rated True Round Smoke Damper.
- Class I provides for a maximum leakage of 8 cfm per sq.ft. at 4" w.g. @ 350 ˚F elevated temperature.
- The damper is approved for airflow in either direction and provides a maximum leakage of 8 cfm per sq. ft. at 4" w.g.
- It has been designed to be installed in a vertical or horizontal mounting position in the ductwork or a separate sleeve within 24" of the smoke partition.
- These dampers are approved for use in engineered smoke control systems and are controlled via a smoke detection system.
- Electric (24v or 230v) or pneumatic actuators are used to operate the smoke dampers.
- Frame: Roll-formed Frame - Galvanized Steel - 16" Integral Sleeve
- Blades: Double thickness galvanized Steel of roll-formed construction.
- Seals: Pressure Sensitive 450˚F silicone blade edge seals and flexible metal jamb seals.

Smoke Dampers

MODEL SSD-3V-FA-201 (FRONT ACCESS)
MODEL SSD-3V-FA-202 (FRONT ACCESS)

Features

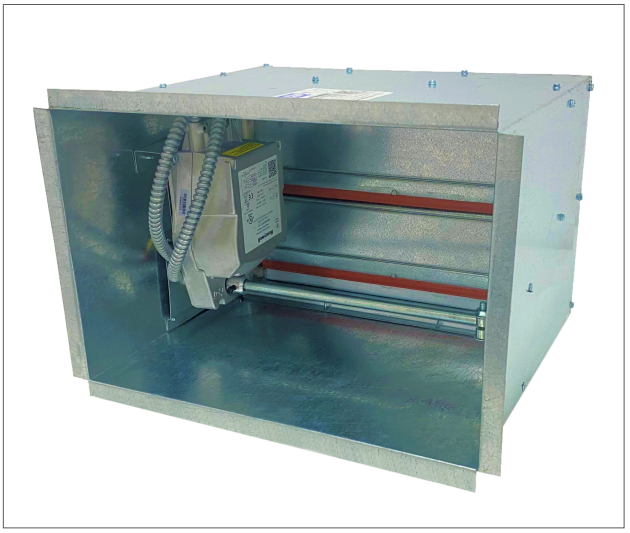
- **SSD-3V-FA-201, -202** is a series of SAFE4 Smoke Dampers have been designed and tested to exceed all UL, ULC and N.F.P.A. requirements for fire dampers as well as smoke dampers.
- **SSD-3V-FA-201, -202** models are UL 555S and ULC S112 classified and labelled as Leakage Class I & Class II rated Smoke Damper with airflow in both directions. Class I provides for a maximum leakage of 8 cfm per sq. ft. at 4" w.g. @ 350 ˚F elevated temperature.
- UL and ULC classified for vertical mountings.
- Models are rated for system velocities up to 2000 fpm @ 4" w.g.
- Frame: Roll-formed galvanized steel hat-section with staked corners with integral bracing.
- Blades: 3V shaped, single skin galvanized steel of roll-formed construction.
- Seals: Pressure sensitive 450˚ F silicone blade edge seals and flexible metal jamb seals.
- Linkage: Concealed in the frame. Linkage bars are 0.125" (3.2mm) thick plated steel.
- Sleeve: Galvanized steel with optional thermal blanket. (3 sides for vertical and 4 sides for horizontal installation)



MODEL SSD-AF-OW-201 (OUT OF WALL)
MODEL SSD-AF-OW-202 (OUT OF WALL)

Features

- **SSD-AF-OW-201, -202** is a series of SAFE4 Smoke Dampers have been designed and tested to exceed all UL, ULC and N.F.P.A. requirements for fire dampers as well as smoke dampers.
- **SSD-AF-OW-201, -202** models are UL 555S and ULCS112 classified and labelled as Leakage Class I & Class II rated Smoke Damper with airflow in both directions. Class I provides for a maximum leakage of 8 cfm per sq. ft. at 4" w.g. @ 350 ˚F elevated temperature.
- UL and ULC classified for both vertical and horizontal mountings.
- Frame: Roll-formed galvanized steel hat-section with staked corners with integral bracing.
- Blades: Airfoil shaped, double skin galvanized steel mechanically fastened to form equivalent to 16 Gauge Steel.



Fire Dampers

CVS-SAFE4 Fire Dampers are UL555 tested and labelled devices which are intended for installation where air ducts penetrate or terminate at openings in walls or partitions; in air transfer openings in partitions; and where air ducts extend through floors as specified in NFPA 90A, designed to close upon the detection of heat to further maintain the integrity of the fire-rated barrier. Fire dampers can be installed vertically or horizontally in Static or Dynamic Systems.

Fire Dampers for Use in Static Systems - are intended for use only in static HVAC systems that are automatically shut down in the event of a fire.
Fire Dampers for Use in Dynamic Systems - are intended for use in dynamic HVAC systems that remain operational during a fire, and may also be employed in static systems.

Fire dampers are available in 1-1/2-hour and 3-hour fire endurance ratings. As required by the NFPA-90A Chapter 5 & IBC Chapter 7, 1-1/2-hour fire dampers are required in walls, floors, and partitions with a fire-resistance rating of less than 3 hours; whereas, 3-hour dampers are applied when there are fire ratings of 3-hours or more.

Fire Damper Selection Criteria

The selection criteria of a Fire Damper are based on the following considerations:
1. Fire Resistance Rating – 1.5-hours or 3-hours based on code requirements and building design.
2. Type – Static or Dynamic.
3. Fusible Link – UL Listed 165˚F (Standard), 212˚F (Optional)
4. Operational Ratings – Minimum 2000 fpm @ 4 in. w.g. (for Dynamic damper)
5. Blade Type – Curtain, Slimline Curtain, Ultra Slimline Curtain, Multi-Blade (Airfoil or 3V-Type).

Performance Criteria

Fire Resistance Rating

Fire dampers are typically rated for 1.5-hours or 3-hours of fire resistance. A 1.5 hours rated damper is sufficient for wall or floors having a rating of less than 3-hours. If the wall or floor has a rating of 3-hours or more, a 3-hours rated damper is required for sufficient protection. (IBC Chapter 7 and NFPA90A Chapter 5).

Dynamic Closure Rating

Fire dampers are rated for either static (fans off) or dynamic (fans on) HVAC systems. Static fire dampers have not been tested for closure under airflow and therefore can only be applied in HVAC systems that are designed to shut down in the event of a fire. Dynamic fire dampers have been tested for closure under airflow and carry both an airflow velocity (fpm) and pressure rating (w.g). The minimum operational rating is 2000 fpm and 4" w.g. Other higher ratings that may be desired are conducted in increments of 1000 fpm and/or increments of 2" w.g. A dynamic fire damper should be selected based on the conditions it will operate in after installation.

Damper Type

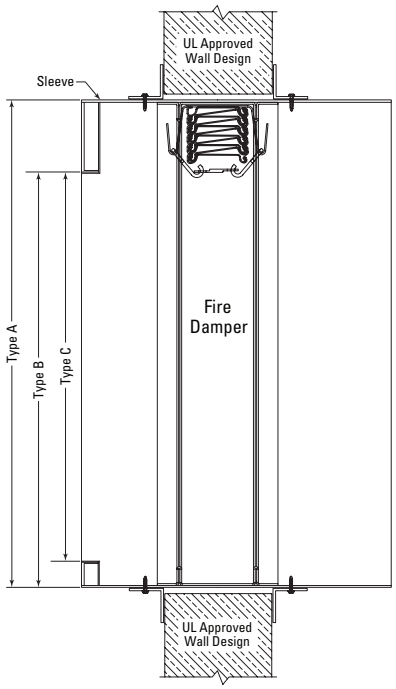
There are two main types of fire dampers: curtain type and multiple blade type. The curtain blade is the most commonly used fire damper because it costs less than the multiple blade type and, in most cases, is less restrictive to the airflow. Multiple blade fire dampers, however, are available in larger sizes and can be easier to test and re-open. Dynamic multiple blade fire dampers are airflow closure rated for higher velocities and pressures than curtain type fire dampers.

Fire Dampers

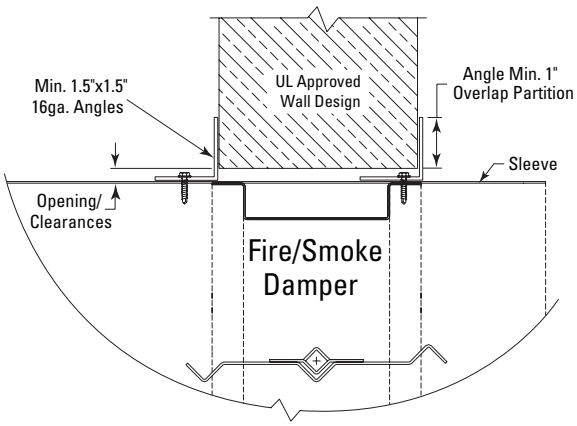
Fire Damper Installation

Fire dampers can be installed on the floor (horizontal) with vertical airflow or they can be installed in walls (vertical) with horizontal airflow. The damper blades must close within the plane of the rated barrier unless an “out of wall/floor” fire damper model is used. Fire dampers use a variety of spring mechanisms depending on size, rating and vertical or horizontal mounting. So, it is important to recognize that dampers must be ordered according to their installed position for proper operation and features. For a wall opening the damper, orientation is a vertical mount, and a floor opening the damper orientation is horizontal mount.

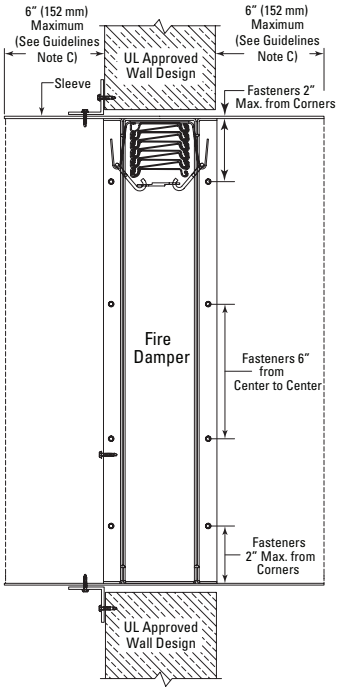
2 Angle (2 Sided) Installation



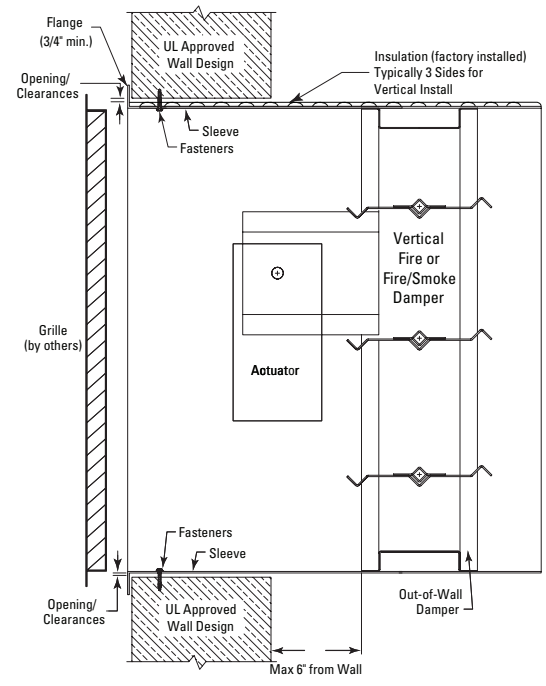
Reverse Angle Installation



1 Angle (1 Sided) Installation



No Angle (Grill Mount) Installation



Fire Damper Models

Commonly used SAFE4 - Fire Damper Model Abbreviations

FD – Static Fire Dampers

FDD – Dynamic Fire Dampers

FIRE DAMPERS FOR USE IN STATIC SYSTEMS

Model	Hourly Rating	Blade Type	Maximum Section Size (in.)	
			Vertical	Horizontal
FD, FD-SL	1.5	Curtain Type	120 x 120	96 x 48 120 x 40
FD, FD-SL	3	Curtain Type	80 x 40	80 x 40
FD-OW, FD-SL-OW	1.5	Curtain Type	36 x 48	36 x 48
FD-USL	1.5, 3	Curtain Type	40 x 40	-
FD-MB-3V (M), FD-MB-3V-OW (M), FD-MB-3V-FA (M)	1.5, 3	Multi-Blade	108 x 96 72 x 48	72 x 48
FD-MB-3V, FD-MB-3V-OW, FD-MB-3V-FA	1.5, 3	Multi-Blade	36 x 48	36 x 48
FD-MB-AF (M), FD-MB-AF-OW (M), FD-MB-AF-FA (M)	1.5, 3	Multi-Blade	108 x 96 72 x 48	36 x 48
FD-MB-AF, FD-MB-AF-OW, FD-MB-AF-FA	1.5, 3	Multi-Blade	36 x 48	36 x 48
FD-RD	1.5	True Round	24 (dia.)	24 (dia.)
FD-A-3V	1.5	Single Blade	16 x 16	16 x 16

FIRE DAMPERS FOR USE IN DYNAMIC SYSTEMS

Model	Hourly Rating	Dynamic Rating (FPM @ in. W.G.)	Blade Type	Maximum Section Size (in.)	
				Vertical	Horizontal
FDD	1.5, 3	2000 @ 4	Curtain Type	72 x 36 36 x 72	- -
FDD-SL	1.5, 3	2000 @ 4	Curtain Type	36 x 36	36 x 36
FDD-OW, FDD-SL-OW	1.5	2000 @ 4	Curtain Type	36 x 36	36 x 36
FDD-MB-3V (M)	1.5, 3	2000 @ 4	Multi-Blade	108 x 96 72 x 96	72 x 96
FDD-MB-3V	1.5, 3	2000 @ 4	Multi-Blade	36 x 48	36 x 48
FDD-MB-3V-OW (M) FDD-MB-3V-OW	1.5	2000 @ 4	Multi-Blade	42 x 48 36 x 48	42 x 48 36 x 48
FDD-MB-3V-FA (M) FDD-MB-3V-FA	1.5	2000 @ 4	Multi-Blade	36 x 48	-
FDD-MB-AF (M)	1.5, 3	2000 @ 4	Multi-Blade	108 x 96 72 x 96	36 x 48 72 x 96
FDD-MB-AF	1.5, 3	2000 @ 4	Multi-Blade	36 x 36	36 x 36
FDD-MB-AF-OW (M) FDD-MB-AF-OW	1.5	2000 @ 4	Multi-Blade	42 x 48 36 x 48	42 x 48 36 x 48
FDD-MB-AF-FA (M) FDD-MB-AF-FA	1.5	2000 @ 4	Multi-Blade	36 x 48	-
FDD-RD	1.5	2000 @ 4	True Round Type	24 (dia.)	24 (dia.)

Note: Consult factory for velocities up to 4000 fpm @ 6" w.g.

Fire Dampers

MODEL FD-A
MODEL FDD-A

Features

- **Type A** - Blades and frame inside air stream.
- **FD-A** and **FDD-A** are a series of SAFE4 UL Classified for installation in walls, floors, and partitions with a fire rating of up to 3-hours.
- **FD-A** and **FDD-A** models can be installed vertically or horizontally in HVAC systems that automatically shut down in the event of a fire.
- Frame: Roll-formed Frame - Galvanized Steel construction.
- Blades: Low Profile Roll Formed - Galvanized Steel.
- Closure Springs (horizontal models only of static type): Stainless Steel constant force coil.
- Fusible Link: UL listed 165˚F (Standard), 212˚F (Optional)
- Models are rated for system velocities up to 2000 fpm @ 4" w.g. (for Dynamic damper)
- **FD-A** and **FDD-A** model meets or complies with the following as a fire damper: All major building codes, including IBC/ICC International Code, UL 555 Listing, ULC S112, NFPA-90A, 80.

MODEL FD-B
MODEL FDD-B

Features

- **Type B** - Blades outside air stream.
- **FD-B** and **FDD-B** are a series of SAFE4 UL Classified for installation in walls, floors, and partitions with a fire rating of up to 3-hours.
- **FD-B** and **FDD-B** models can be installed vertically or horizontally in HVAC systems that automatically shut down in the event of a fire.
- Frame: Roll-formed Frame - Galvanized Steel construction.
- Blades: Low Profile Roll Formed - Galvanized Steel.
- Closure Springs (horizontal models only of static type): Stainless Steel constant force coil.
- Fusible Link: UL listed 165˚F (Standard), 212˚F (Optional)
- Models are rated for system velocities up to 2000 fpm @ 4" w.g. (for Dynamic damper)
- **FD-B** and **FDD-B** model meets or complies with the following as a fire damper: All major building codes, including IBC/ICC International Code, UL 555 Listing, ULC S112, NFPA-90A, 80.

MODEL FD-C
MODEL FDD-C

Features

- **Type C** - Blades and frame outside air stream (100% free air passage)
- **FD-C** and **FDD-C** are a series of SAFE4 UL Classified for installation in walls, floors, and partitions with a fire rating of up to 3 hours.
- **FD-C** and **FDD-C** models can be installed vertically or horizontally in HVAC systems that automatically shut down in the event of a fire.
- Frame: Roll-formed Frame - Galvanized Steel
- Blades: Low Profile Roll Formed - Galvanized Steel
- Closure Springs (horizontal models only of static type): Stainless Steel constant force coil.
- Fusible Link: UL Listed 165˚F (Standard), 212˚F (Optional)
- Models are rated for system velocities up to 2000 fpm @ 4" w.g. (for Dynamic damper)
- **FD-C** and **FDD-C** models meet or complies with the following as a fire damper: All major building codes, including IBC/ICC International Code UL 555 Listing 1.5-hours and 3-hour, ULC S112, NFPA - 90A, 80.

MODEL FD-OW
MODEL FDD-OW

Features

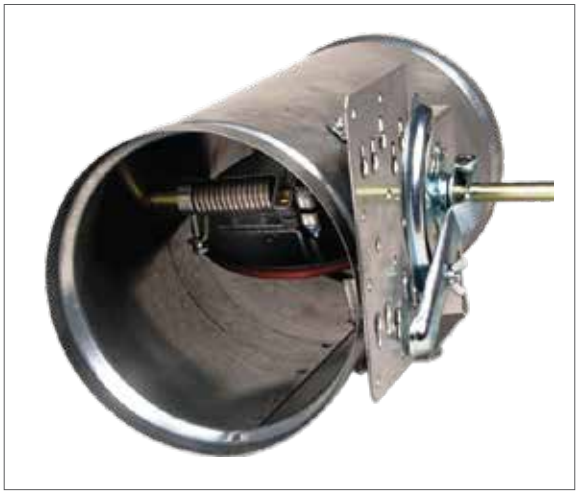
- **FD-OW** and **FDD-OW** are a series of SAFE4 UL Classified for installation where the grille and damper assembly does not allow for mounting in the plane of the fire barrier with a fire rating of up to 3-hours.
- **FD-OW** and **FDD-OW** models can be installed horizontally or vertically in dynamic systems that continue to operate in the event of a fire.
- Frame: Roll-formed Frame - Galvanized Steel – Sleeved.
- Sleeve: 20 Ga. Galvanized - Wrapped in Thermal Blanket.
- Blades: Low Profile Roll Formed - Galvanized Steel.
- Fusible Link: UL listed 165˚F (Standard), 212˚F (Optional)
- Models are rated for system velocities up to 2000 fpm @ 4" w.g. (for Dynamic damper)
- Insulation: Typ. 3 sides vertical, 4 sides horizontal.
- **FD-OW** and **FDD-OW** models meet or complies with the following as a fire damper: All major building codes, including IBC/ICC International Code, UL 555 Listing, ULC S112, NFPA-90A, 80.

Fire Dampers

MODEL FD-RD
MODEL FDD-RD

Features

- **FD-RD** and **FDD-RD** are a series of SAFE4 UL Classified for installation in walls, floors, and partitions with a fire rating of less than 3-hours.
- **FD-RD** and **FDD-RD** models can be installed horizontally or vertically in static systems (FD-R) that shut down in the event of a fire or dynamic systems (FDD-R) that continue to operate in the event of a fire.
- Frame: Roll-formed Frame - Galvanized Steel - Integral Sleeve.
- Blades: Double Thickness - Galvanized Steel - Welded.
- Fusible Link: UL listed 165˚F (Standard), 212˚F (Optional)
- Retaining Plates: Galvanized steel with angle clips (factory installed)
- Models are rated for system velocities up to 2000 fpm @ 4" w.g. (for Dynamic damper)



MODEL FD-SL (Slimline)
MODEL FDD-SL (Slimline)

Features

- **FD-SL** and **FDD-SL** are a series of SAFE4 UL Classified for installation in walls, floors, and partitions with a fire rating of up to 3-hours.
- **FD-SL** and **FDD-SL** models can be installed vertically or horizontally in HVAC systems that continue to operate in the event of a fire.
- Frame: Roll-formed Frame - Galvanized Steel construction.
- Blades: Low Profile Roll Formed - Galvanized Steel.
- Closure Springs: Stainless Steel constant force coil.
- Fusible Link: UL listed 165˚F (Standard), 212˚F (Optional)
- Models are rated for system velocities up to 2000 fpm @ 4" w.g. (for Dynamic damper)
- **FD-SL** and **FDD-SL** model meets or complies with the following as a fire damper: All major building codes, including IBC/ICC International Code, UL 555 Listing, ULC S112, NFPA - 90A, 80.

MODEL FD-USL (Ultra-Slimline)

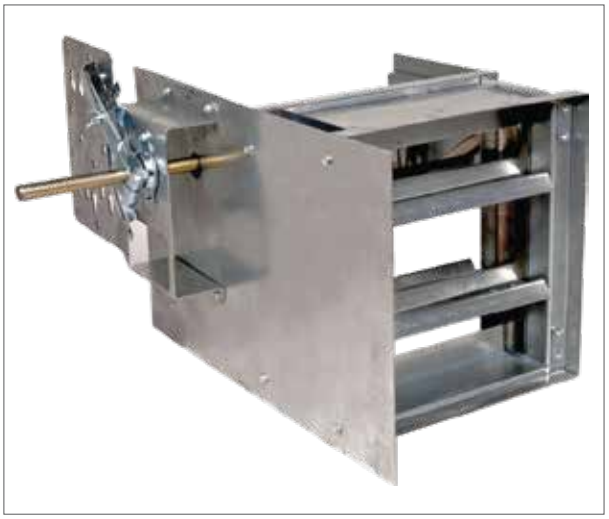
Features

- **FD-USL** is a series of SAFE4 UL Classified for installation in walls and partitions with a fire rating of up to 3-hours.
- **FD-USL** models can be installed vertically in static HVAC systems that automatically shut down in the event of a fire.
- Frame: Roll-formed Frame - Galvanized Steel construction.
- Blades: Low Profile Roll Formed - Galvanized Steel
- Fusible Link: UL listed 165˚F (Standard), 212˚F (Optional)
- Models are rated for system velocities up to 2000 fpm @ 4" w.g. (for Dynamic damper)
- **FDD-USL** model meets or complies with the following as a fire damper: All major building codes, including IBC/ICC International Code, UL 555 Listing, ULC S112, NFPA - 90A, 80.

MODEL FD-MB-3V (M) (Multi-Blade)
MODEL FDD-MB-3V (M) (Multi-Blade)

Features

- **FD-MB-3V** and **FDD-MB-3V** are a series of SAFE4 UL Classified for installation in walls, floors, and partitions with a fire rating of less than 3-hours.
- **FD-MB-3V** and **FDD-MB-3V** models can be installed vertically or horizontally in HVAC systems that automatically shut down in the event of a fire.
- Frame: Roll-formed Frame - Galvanized Steel hat-section W/staked corners & integral bracing.
- Blades: 3V type Roll-formed – Single Skin Galvanized Steel
- Fusible Link: UL listed 165˚F (Standard), 212˚F (Optional)
- Models are rated for system velocities up to 2000 fpm @ 4" w.g. (for Dynamic damper)
- **FD-MB-3V** and **FDD-MB-3V** models meets or complies with the following as a fire damper: All major building codes, including IBC/ICC International Code, UL 555 Listing, ULC S112, NFPA - 90A, 80.
- **FD-MB-3V (M)** and **FDD-MB-3V (M)** models are supplied with actuator and electric fusible link.

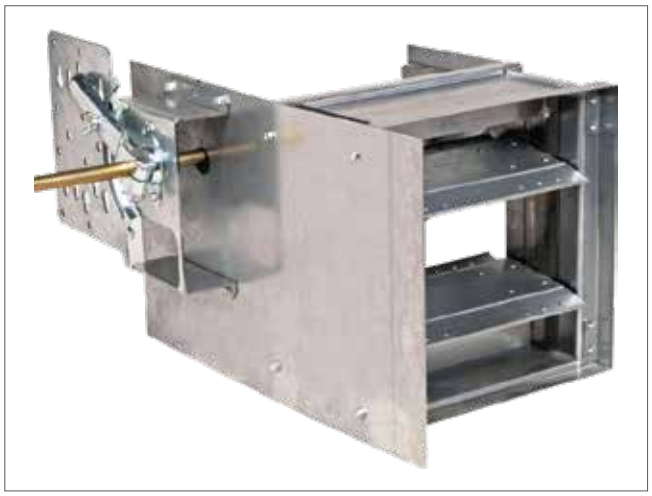


Fire Dampers

MODEL FD-MB-AF (M) (Multi-Blade)
MODEL FDD-MB-AF (M) (Multi-Blade)

Features

- **FD-MB-AF** and **FDD-MB-AF** are a series of SAFE4 UL Classified for installation in walls, floors, and partitions with a fire rating of less than 3-hours.
- **FD-MB-AF** and **FDD-MB-AF** models can be installed vertically or horizontally in HVAC systems that automatically shut down in the event of a fire.
- Frame: Roll-formed Frame - Galvanized Steel hat-section W/staked corners & integral bracing.
- Blades: Airfoil-shaped roll-formed – Double Skin Galvanized Steel
- Fusible Link: UL listed 165˚F (Standard), 212˚F (Optional)
- Models are rated for system velocities up to 2000 fpm @ 4" w.g. (for Dynamic damper)
- **FD-MB-AF** and **FDD-MB-AF** model meets or complies with the following as a fire damper: All major building codes, including IBC/ICC International Code, UL 555 Listing, ULC S112, NFPA - 90A, 80.
- **FD-MB-AF (M)** and **FDD-MB-AF (M)** models are supplied with actuator and electric fusible link.



Corridor Dampers

CVS-SAFE4 Corridor dampers are intended for use where air ducts penetrate or terminate at horizontal openings in the ceilings of interior corridors, as defined in the IBC, or where permitted by the Authority Having Jurisdiction.

Corridor dampers for this application shall be tested and labelled under UL 555 and UL 555S. These dampers are also classified as a corridor combination fire & smoke damper.

Corridor dampers are manufactured with “3V” type blade have been evaluated and approved for both a fire-resistance rating of 1-hour (UL555), and a Class I or Class II leakage rating as defined under Smoke Dampers (UL555S). Leakage ratings of corridor dampers are determined at an elevated temperature 350˚F.

Corridor Damper Installation

They are available in three different installation methods:

Method 1:

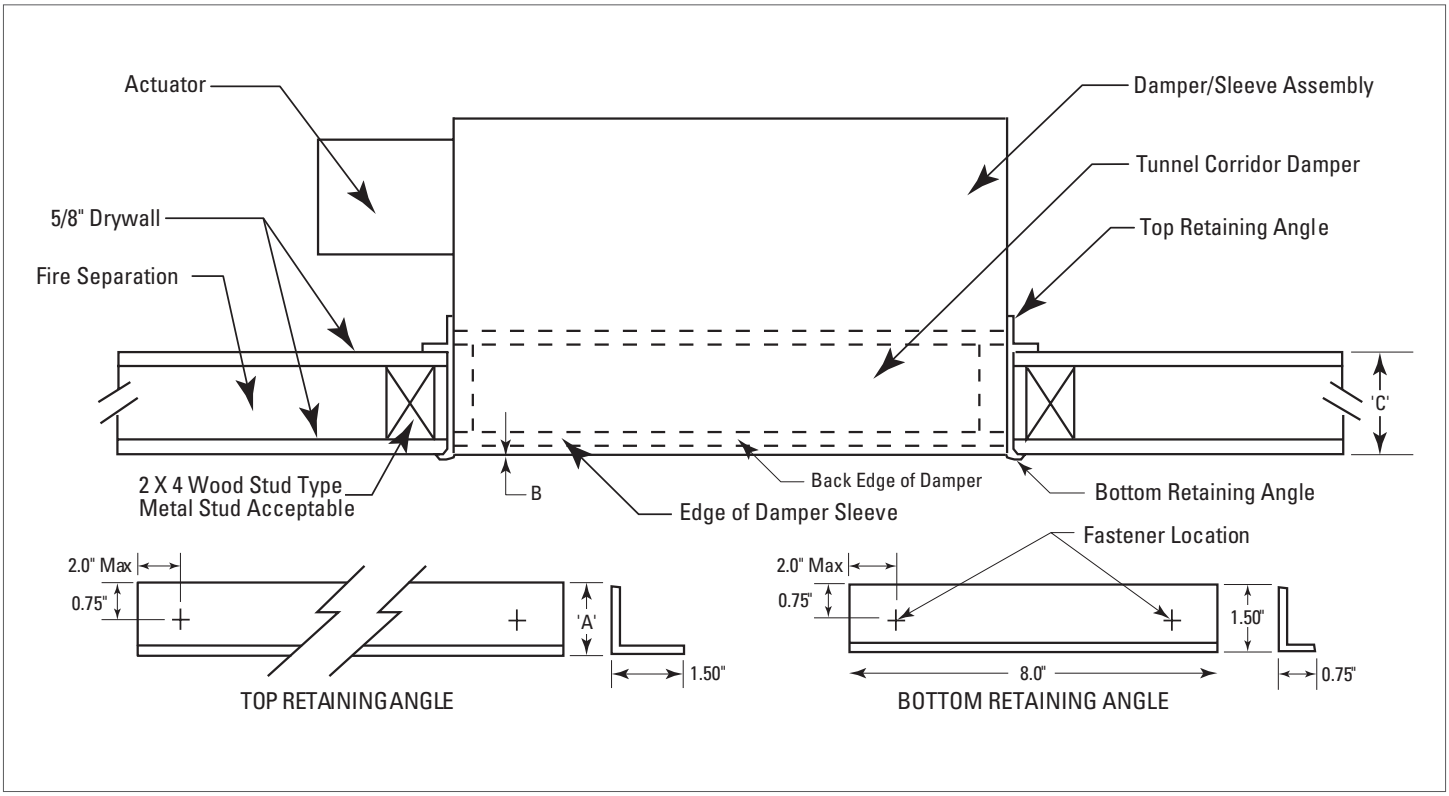
Used in a fire-rated ceiling that is also the finished ceiling. The damper is installed so there is access to the actuator and closure device through the grille, register or diffuser.

Method 2:

Used in a fire-rated ceiling that is also the finished ceiling. The damper is installed with access to the actuator and closure device above the finished ceiling. Clearance must be maintained between the damper and grille for proper operation.

Method 3:

Used where the fire-rated ceiling is above the finished ceiling



Corridor Dampers

Corridor Damper Models

Commonly used SAFE4 – Corridor Damper Model Abbreviations

FSD-3V-CR – Corridor Damper with 3V Blade

CORRIDOR DAMPERS						
Model	Hourly Rating	Leakage Class	Dynamic Rating (FPM @ in. W.G.)	Blade Type	Maximum Section Size (in.)	
					Vertical	Horizontal
FSD-3V-CR-211	1	I-350	2000 @ 4	3V - Type	-	24 x 24
FSD-3V-CR-212	1	II-350	2000 @ 4	3V - Type	-	24 x 24

FSD-3V-CR-211
FSD-3V-CR-212

Features

- **FSD-3V-CR-211** and **FSD-3V-CR-212** is a series of SAFE4 Corridor Fire/Smoke Dampers have been designed and tested to exceed all UL and N.F.P.A. requirements for fire dampers as well as smoke dampers.
- **FSD-3V-CR-211** and **FSD-3V-CR-212** is UL 555 classified and labelled as a 1.5-hour fire damper.
- **FSD-3V-CR-211** and **FSD-3V-CR-212** is UL 555S classified and labelled as a Leakage Class I rated Smoke Damper withairflow in both directions. Class I provides for a maximum leakage of 8 cfm per sq. ft. at 4" w.g. @ 350˚F elevated temperature.
- **FSD-3V-CR-211** and **FSD-3V-CR-212** models can be installed in horizontal mountings.
- Frame: Roll-formed galvanized steel hat-section with staked corners with integral bracing.
- Blades: Roll-formed galvanized steel
- Linkage: Concealed in the frame
- Controlled Closure Device: 165˚ F (Standard), 212˚, 250˚, 350˚ F (Optional)
- Maximum Velocity: 2000 fpm (10.2 m/s)
- Maximum Pressure: 4" w.g. (1kPa)

Ceiling Dampers

CVS-SAFE4 Ceiling Dampers are either tested to UL555C (for non-wood truss/joist construction) or to UL 263 (for wood truss/joist construction) and intended to function as a heat barrier in air-handling openings penetrating the ceiling membrane of fire-resistive floor-ceiling designs or roof-ceiling designs for which they have been investigated.

Some ceiling dampers are intended for use in lieu of hinged-door-type dampers in floor-ceiling and/or roof-ceiling designs that contain air ducts and specify the use of a hinged-door-type damper over each duct outlet. Some ceiling dampers are intended for use in specific floor-ceiling and/or roof-ceiling designs as specified in the designs and marked on the damper.

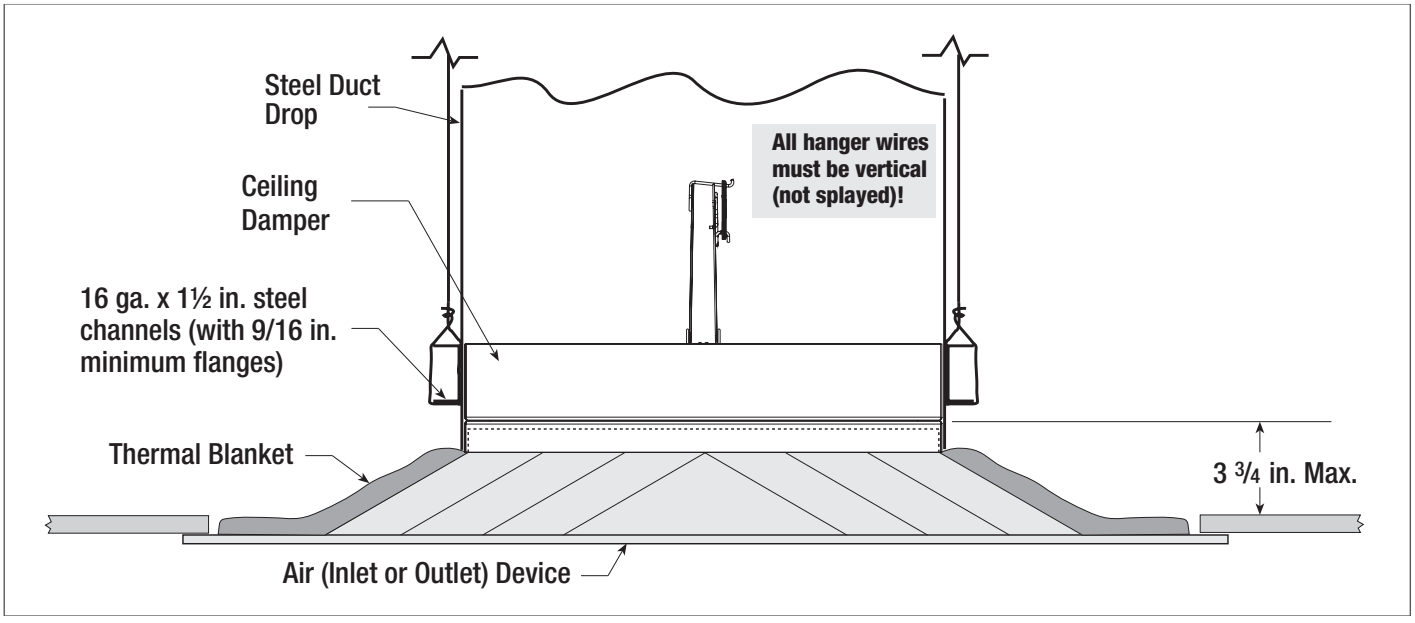
Ceiling dampers are intended for installation in a duct outlet in lieu of hinged-door-type dampers, the location of the ceiling damper in the duct outlet relative to the ceiling level is specified in the installation instructions. This location must be followed during installation in order to obtain the hourly fire-rated performance of the design.

Ceiling Fire Damper Selection

The process of selecting a ceiling fire damper involves one major consideration:
Floor/ceiling or roof/ceiling assembly design - Ceiling fire dampers are classified for use as a component in assemblies tested with an air inlet/outlet opening in the membrane. These assemblies have a specific hourly fire-resistance rating and ceiling fire dampers can normally be used in any assembly with a restrained or unrestrained rating of 3-hours or less.

Ceiling Fire Damper Installation

Ceiling fire damper installations are typically classifiedas lay-in or surface mount. The figure represents a lay-in installation and a surface mount installation. Refer tothe manufacturer's UL approved installationinstructions for specific information and details



Ceiling Dampers

Ceiling Damper Models

Ceiling dampers shall bear the Underwriters' Laboratories label and be rated for both steel duct and flex duct installations. No external damper supports shall be required for ceiling dampers up to and including 18" (457mm) diameter. Ceiling dampers shall be non-asbestos type and be furnished with a fusible link volume controller.

Commonly used SAFE4 - Ceiling Damper Model Abbreviations

C-RD – Round Damper

C-S/R, C/FS, C/D-P – Square/Rectangular Damper

Designed and tested as per the following standards: UL 555C, ULC S112.2. Labelled and classified by UL/ULC They meet all the NFPA-90A, IBC Code, and other major code requirements for Ceiling (Radiation) Dampers.

CEILING DAMPERS			
Model	**Floor-Ceiling or Roof-Ceiling Assembly Rating**	**Type**	**Maximum Section Size (in.)**
C/FS	3 hr or less	Square/Rectangular	24 x 24
C/FSB	2 hr or less	Square/Rectangular	24 x 22
C/FSX	3 hr or less	Square/Rectangular	24 x 24
C/FS-2F	3 hr or less	Square/Rectangular	24 x 24
C-RD	3 hr or less	Round	18 (dia.)
C-RD-A	3 hr or less	Round	18 (dia.)
C-RD-T	3 hr or less	Round	18 (dia.) 22 x 22
C-RD-A/T	3 hr or less	Round	18 (dia.) 22 x 22
C-RD-HC	1 hr or less	Round	15 (dia.)
C-S/R	3 hr or less	Square/Rectangular	22 x 22
C-S/R-HC	1 hr or less	Square/Rectangular	16 x 12
C-S/R-WT	1 hr or less	Square/Rectangular	20 x 22
C-S/R-WT(S)	1 hr or less	Square/Rectangular	9 x 18
C/D-P	3 hr or less	Square/Rectangular	24 x 24
C/FSR-1	3 hr or less	Square/Rectangular	24 x 24

Note: As per UL555C Standard, Ceiling Dampers are not assigned hourly ratings, but rather are assembly components designated for use in specific hourly rated fire-resistive assemblies incorporating air duct outlets penetrating protective ceilings.

Ceiling Dampers

MODEL C-RD
MODEL C-RD-A

Features

- **C-RD** and **C-RD-A** is a series of SAFE4 round UL Classified ceiling (radiation) damper, butterfly style, approved for steel duct, flex duct and ductless installations in approved UL ceiling designs that incorporate/show a hinged door damper requiring fire/heat protection where HVAC components penetrate the ceiling membrane.
- These dampers protect up to 18" (467mm) diameter openings.
- Frame: Galvanized Steel
- Blades: Galvanized Steel, un-insulated up to 10" With UL listed insulation (Over 10")
- Spring: Corrosion resistant steel spring.
- Models are rated for system velocities up to 2000 fpm @ 4" w.g.
- Fusible Link: Replaceable 212˚F (Standard), 165˚F (Optional).

MODEL C-RD-T
MODEL C-RD-A/T

Features

- **C-RD-T** and **C-RD-A/T** is a series of SAFE4 square neck diffuser to a round duct, UL Classified ceiling (radiation) damper, butterfly style approved for both steel duct, and flex duct installations in approved UL ceiling designs that incorporate/show a hinged door damper requiring fire/heat protection where HVAC components penetrate the ceiling membrane. These dampers protect up to 22" x 22" (559mm x 559mm) diffuser opens and an 18" (457mm) diameter duct opening.
- Frame: Roll-formed Galvanized Steel
- Blades: Galvanized Steel, un-insulated 9 X 9 (81 sq. in.) and under with UL listed Insulation over 9 X 9 (81 sq. in.)
- Spring: Corrosion resistant steel spring.
- Models are rated for system velocities up to 2000 fpm @ 4" w.g.
- Fusible Link: Replaceable 212˚F (Standard), 165˚F (Optional).

Ceiling Dampers

MODEL C-S/R
MODEL C-S/R-A

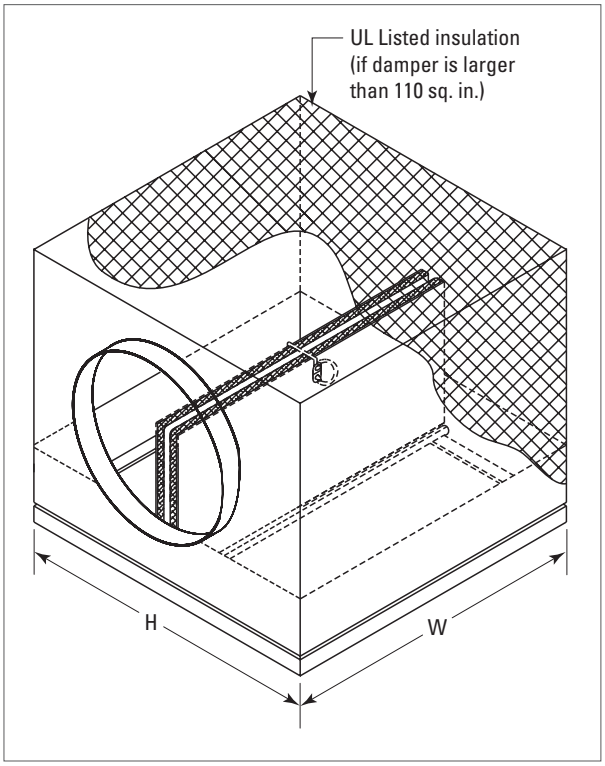
Features

- **C-S/R** and **C-S/R-A** is a series of SAFE4 square/rectangular UL Classified ceiling (radiation) damper, butterfly style, approved for both steel duct and ductless installations in approved UL ceiling designs that incorporate/show a hinged door damper requiring fire/heat protection where HVAC components penetrate the ceiling membrane.
- These dampers protect up to 22" x 22" (559mm x 559mm) openings.
- Frame: Roll-formed Galvanized Steel
- Blades: Galvanized Steel, un-insulated 80 sq. in. and under with UL listed Insulation over 80 sq. in.
- Spring: Corrosion resistant steel spring.
- Fusible Link: Replaceable 212˚F (Standard), 165˚F (Optional).

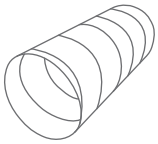
MODEL C-S/R-HC
MODEL C-S/R-HC-A

Features

- **C-S/R-HC** and **C-S/R-HC-A** is a series of SAFE4 square/rectangular UL Classified ceiling (radiation) damper, butterfly style, tested and specifically approved for specific UL ceiling designs classified below incorporating wood joist and gypsum construction.
- UL designs specifically approved for this damper are L501, L502, L503, L506, L507, L508, L512, L513, L514, L515, L516, L517, L519, L522, L523, L524, L533, L545, and ULC M500 Series designs.
- These dampers protect up to 16" x 12" (406mm x 305mm) openings.
- Frame: Roll-formed Galvanized Steel
- Blades: Galvanized Steel
- Spring: Corrosion resistant steel spring.
- Fusible Link: Replaceable 212˚F (Standard), 165˚F (Optional).
- Round Inlet: 4", 5", 6"
- Oval Inlet: 6", 8", 10"
- Models are rated for system velocities up to 2000 fpm @ 4" w.g.



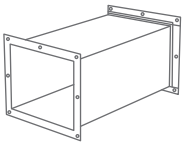
Our Product Range



Ductwork

Rectangular Ductwork

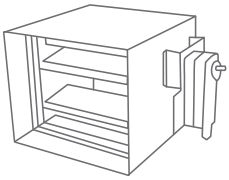
Spiral & Round Seamed Ductwork



Fire-rated Ductwork

BS: Fire-rated Ductwork

EN: Fire-rated Ductwork



UL Classified Dampers

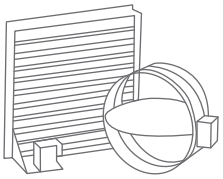
Fire Dampers

Smoke Dampers

Combination Fire & Smoke Dampers

Corridor Dampers

Ceiling Dampers



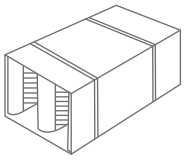
Dampers

Rectangular Dampers

Round Dampers

Backdraft Dampers

Industrial Dampers

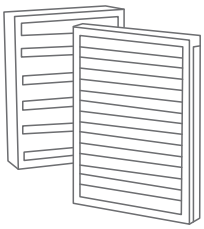


Sound Attenuators

Rectangular Attenuators

Round Attenuators

Fire-rated Attenuators



Louvers

Fixed Louvers

Sand Trap Louvers

Adjustable Louvers

Acoustical Louvers

Wind-driven Rain Louvers

Combination Louvers/Dampers

Our Certifications & Associations

ISO 9001:2015 certified manufacturer

CVS

Manufacturing Excellence

Central Ventilation Systems

K.S.A | U.A.E | Qatar | Kuwait | Oman | Egypt | Canada

Contact us: sales@cvshvac.com

www.cvshvac.com

Our Brands

SAFE4 — Fire-rated Ductwork

SAFE4 — UL Classified Dampers

CousTek — Sound Attenuators

KOMPONET — VCD's and Louvers