

- PREMIUM PERFORMANCE
- ULTRA-LOW LEAKAGE
- AIRFOIL BLADE
- UL 555 CLASSIFIED DYNAMIC FIRE DAMPER
- UL 555S SMOKE DAMPER



## MODELS:

- 1220 1 1/2 HR LABEL  
1220-3 3 HR LABEL



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COMBINATION FIRE/SMOKE DAMPERS

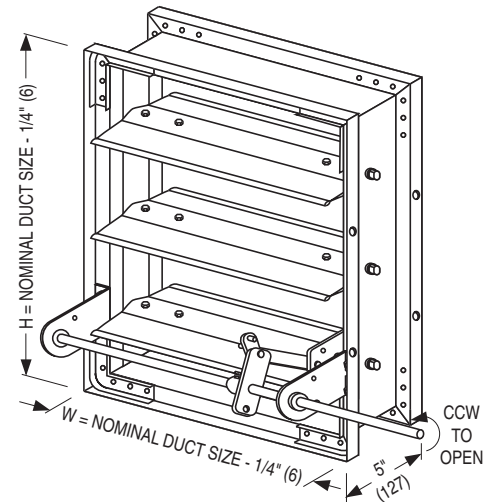
Nailor's 1220 Series combination fire/smoke damper, also known as "The Wall", provides the ultimate in fire containment and smoke management for both static and dynamic HVAC systems. Nailor's 1220 Series utilizes an innovative inter-locking double-skin airfoil blade design that eliminates the need for blade seals which burn out during fire conditions. Ideal for use where building codes require both a fire damper to protect ductwork penetrations in fire separations and a leakage rated damper for use in smoke management systems, the 1220 Series is available with Leakage Class I or II at 250°F or 350°F. Features include airfoil blade design and maintenance free concealed blade linkage for extremely low pressure drop and minimal turbulence and noise. Rugged hat-channel frame is reinforced with die-formed corner gussets for superior strength.

## QUALIFICATIONS:

- UL 555 Classified Dynamic Fire Damper, 1 1/2 and 3 hr. label (file #9492).
- UL 555S Classified Smoke Damper, Leakage Class I or II at 250°F or 350°F (file #9492).
- California State Fire Marshall: Fire Damper Listing #3225-0936-112.
- Meets NFPA 90A, NFPA 92A, and IBC requirements.
- British/European Standards 10294 and 1366. ISO Standard 10294. Fire Dampers. 4 hr. fire test. Classification ES 240.
- City of New York MEA #119-00-M
- Maximum velocity 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa) (up to 4000 fpm @ 8" w.g. with size and actuator limitations).

## CONSTRUCTION DETAILS:

- FRAME:** 5" x 7/8" x 16 ga. (127 x 22 x 1.6) galvanized steel hat channel.
- BLADES:** 14 ga. (2.0) equivalent galvanized steel formed airfoil on 5 1/2" (140) centers. Opposed action.
- LINKAGE:** Concealed in frame. 12 ga. (2.7) plated steel.
- BEARINGS:** 1/2" (13) dia. self-lubricating oilite bronze.
- AXLES:** 1/2" (13) dia. plated steel double bolted to blades.
- JACKSHAFT:** 1/2" (13) dia. cadmium plated steel.
- JAMB SEALS:** Stainless Steel.
- HEAT RESPONSIVE DEVICE (CONTROLLED CLOSURE):** 250°F (121°C) standard. 165°F (74°C), 212°F (100°C) and, with ERL only, 350°F (176°C) available. ERL (Electric Resettable Link) is standard on all dampers with electric actuators. PRL (Pneumatic Replaceable Link) is standard on all dampers with pneumatic actuators.



- MODEL 1220 1 1/2 HOUR LABEL**  
**MODEL 1220-3 3 HOUR LABEL**

**MINIMUM SIZE:** Vertical or Horizontal mount: 8" x 8" (203 x 203).

**MAXIMUM SIZE:** Single Section  
Vertical mount: 36" x 48" (914 x 1219).  
Horizontal mount: 32" x 48" (813 x 1219).  
  
Multiple Section Assembly (1 1/2 Hr. Label Only)  
Vertical mount: 144" x 96" (3658 x 2438).  
Horizontal mount: 128" x 96" (3251 x 2438).

Note: 3 Hr. Rated Multiple Section Assemblies are not permitted.

## WHEN IT COMES TO FIRE/SMOKE DAMPERS, MODEL 1220 'THE WALL' PROVIDES THE ULTIMATE CLOSURE!

### 'THE WALL' PRINCIPLE:

Low leakage fire/smoke dampers commonly incorporate a synthetic blade-to-blade seal in order to maintain their leakage class under elevated temperature conditions – the smoke control mode.

The weakness until now has been that when the damper is subjected to a fire condition the seals burn out. This permits significant leakage! In fact, UL 555 Standard permits gaps between the damper blades of up to 3/4" (19) during the fire test, thus allowing significant quantities of smoke to pass through a closed damper under fire conditions.

Nailor's model 1220, known as "The Wall", provides an innovative inter-locking double-skin airfoil blade which eliminates the need for seals to maintain a complete barrier throughout the fire test with absolutely no visible through gaps.

In fact, when this design was recently tested to ISO Standard 10294-1, it maintained its cold leakage rating throughout a 4 hour fire test at temperatures up to 2000°F (1093°C).

**Amazingly, "The Wall" gets tighter as it gets hotter!**

The 1220 Series Dampers are ideal for applications where building codes require both a fire damper for the protection of ductwork penetrations in walls or floors that have a fire resistance rating of up to 4 hours and also require a leakage rated damper for operational smoke control in static or dynamic smoke management systems.

The 1220 Series has been specially designed and tested to offer premium performance with the lowest leakage class available and a low pressure drop well suited to the majority of commercial applications.



### THE LARGEST UL LISTING IN THE INDUSTRY!

Photograph of actual UL 555 fire test conducted successfully at Underwriters Laboratories Inc., Northbrook Illinois. The largest multi-blade fire damper listing established to date (June 1999).

### FEATURES:

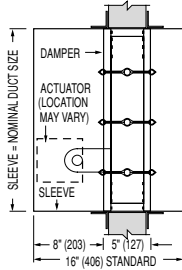
- Airfoil blade, double-skin design, provides extremely low pressure drop for optimal system performance.
- Unique interlocking blade design eliminates the need for seals, maintaining leakage class under fire conditions.
- Largest UL listing in the industry at 96 sq. ft. (8.9 sq. m) eliminates the need for costly mullions in most applications.
- Heat responsive device provides controlled closure by the actuator, eliminating instantaneous damper closure that can damage ductwork.
- Out of airstream linkage is maintenance free and prevents unwanted turbulence and noise.
- Each blade includes "no-slip" double bolting onto the axle to provide positive locking connection.
- Rugged hat channel frame design is reinforced with die-formed corner gussets for superior strength.

### OPTIONS:

- Factory supplied sleeve: Available from 10 to 20 ga. (3.5 to 1.0) and in various lengths to suit wall/floor thickness. Sleeve and damper are caulked at the factory to help ensure field compliance with UL installation requirements and to meet UL leakage performance. Standard sleeve is 16" x 20 ga. (406 x 1.0) for dampers up to 84" (2134) in width and 18 ga. (1.2) for wider assemblies in accordance with SMACNA requirements for duct construction.
- A comprehensive range of UL qualified electric or pneumatic actuators.
- MLS-300 Position Indicator Switchpack: Provides the ability to remotely indicate damper blade position.
- MLS-400 'Fire Sensor': A reopenable control system which provides the ability to override fire induced closure from a remote fire control station and permit controlled operation in a dynamic smoke management system.
- 'Quick-set' Retaining Angles: Completes the installation package. Sized to fit and shipped with each damper.

Model Series 1220 dampers with duct heights less than 8" (203) require a type 'B' sleeve enclosure (Model 1222/1222-3). Units less than 8" (203) in width only, or in both width and height, require a Type 'C' enclosure (Model 1223/1223-3).

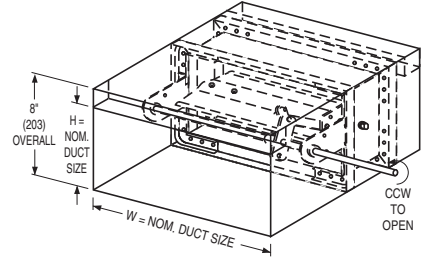
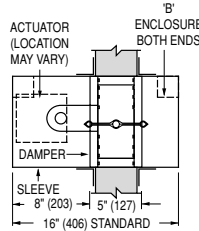
## WITH TYPE A SLEEVE: MODELS 1221/1221-3



Wall Thickness	Minimum Sleeve/Enclosure Length
4 (102)	16 (406)
8 (203)	20 (508)
12 (305)	24 (610)
16 (406)	28 (711)

Standard factory sleeve (caulked to UL requirements) 16" long x 20 ga. (406 x 1.0) (18 ga. (1.3) for dampers over 84" (2134) in width). Available up to 36" (914) dependent upon wall thickness and 10 through 20 ga. (3.5 - 1.0).

## TYPE B SLEEVE ENCLOSURE: MODELS 1222/1222-3



**Min. Duct Size:** 8" x 4" (203 x 102)  
(Overall damper height is 8" (203)).

**Max. Duct Size:** Single Section  
Vertical mount: 36" x 7 1/2" (914 x 191).  
Horizontal mount: 32" x 7 1/2" (813 x 191).

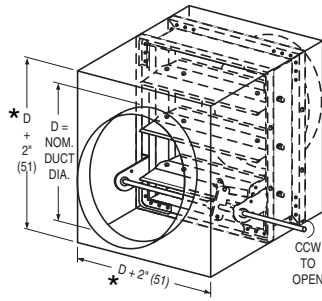
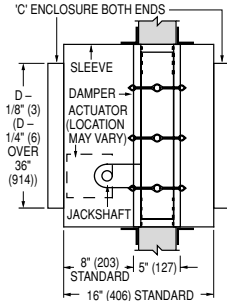
### Multiple Section Assembly Model 1222

Vertical mount: 144" x 7 1/2" (3658 x 191).  
Horizontal mount: 128" x 7 1/2" (3251 x 191).

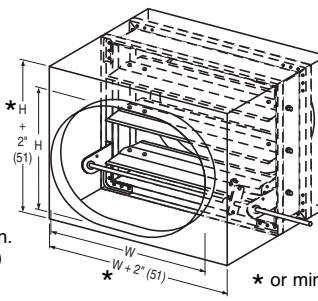
### Multiple Section Assembly Model 1222-3

Multiple Section Assemblies are not permitted.

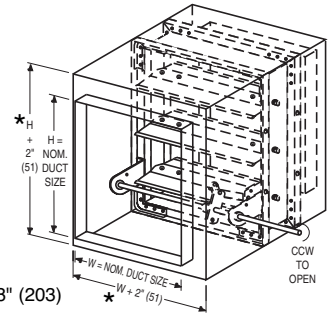
## TYPE C SLEEVE ENCLOSURES: MODELS 1223/1223-3



STYLE CR : FOR ROUND DUCT



STYLE CO : FOR OVAL DUCT



STYLE CSR : FOR SQUARE OR RECTANGULAR DUCT

**Min. Duct Size:** Vertical or Horizontal mount:  
4" (102) diameter.  
(Overall damper size is 8" x 8" (203 x 203) min.).

**Max. Duct Size:** Single Section  
Vertical mount: 34" (864) diameter.  
Horizontal mount: 30" (762) diameter.

### Multiple Section Assembly Model 1223

Vertical or  
Horizontal mount: 94" (2388) diameter.

### Multiple Section Assembly Model 1223-3

Multiple Section Assemblies are not permitted.

**Min. Duct Size:** Vertical or Horizontal mount:  
4" x 4" (102 x 102).  
(Overall damper size is 8" x 8" (203 x 203) min.).

**Max. Duct Size:** Single Section  
Vertical mount: 34" x 46" (864 x 1168).  
Horizontal mount: 30" x 46" (762 x 1168).

### Multiple Section Assembly Model 1223

Vertical mount: 142" x 94" (3607 x 2388).  
Horizontal mount: 126" x 94" (3200 x 2388).

### Multiple Section Assembly Model 1223-3

Multiple Section Assemblies are not permitted.

**MODELS: 1220 1 1/2 HOUR LABEL  
1220-3 3 HOUR LABEL**

**PERFORMANCE DATA:**

**LEAKAGE CLASS:**

The 1220 Series Combination Fire/Smoke Damper has been designed and qualified under UL 555S in order to provide maximum system design flexibility. They are available with a Class I (currently the lowest available) or Class II leakage rating with all damper/actuator assemblies having been tested successfully at an elevated temperature of 250°F (121°C) or 350°F (176°C), depending on actuator, under airflow of 2000 fpm (10 m/s) at 4" w.g. (0.995 kPa). The 1220 Series has also qualified under extended testing to 4000 fpm (20 m/s) at 8" w.g. (2 kPa), but with size and actuator restrictions.

The criteria for selection should be based upon both first cost consideration and the maximum total acceptable leakage of all closed dampers in the smoke management system when in the smoke control mode. This will have an influence on fan selection and capacity requirement.

Leakage Class	Maximum Leakage cfm/ft <sup>2</sup> (m <sup>3</sup> /s/m <sup>2</sup> )	
	@ 1" w.g. (0.249 kPa)	@ 4" w.g. (0.995 kPa)
I	4 (0.020)	8 (0.041)
II	10 (0.051)	20 (0.102)

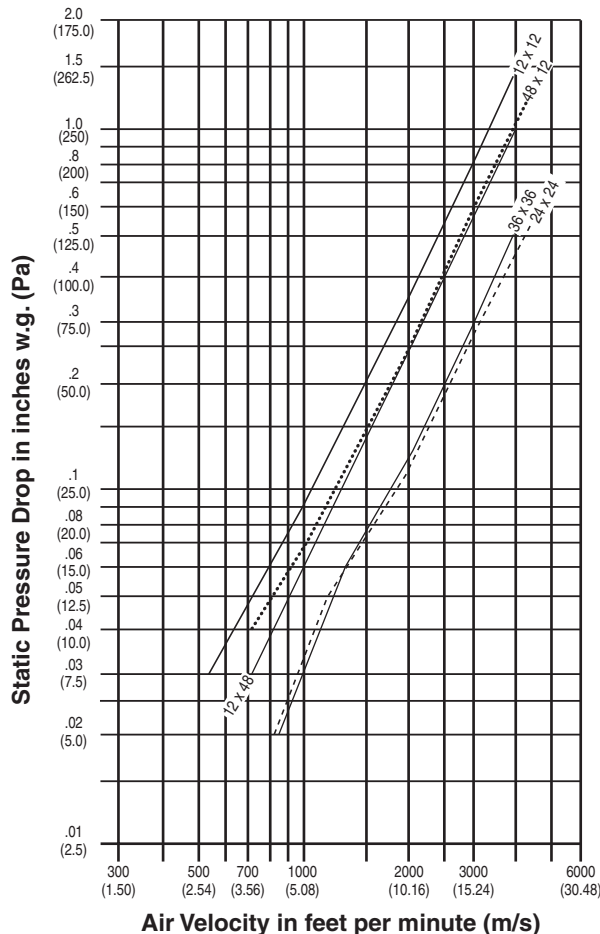


Nailor Industries Inc. certifies that the Models 1220 and 1220-3 Dampers shown herein are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Seal applies to air performance ratings only.



COMBINATION FIRE/SMOKE DAMPERS

**PRESSURE DROP:**



Pressure drop tested per AMCA Standard 500-D-98, Figure 5.3. Data corrected to standard air density of 0.075 lbs/ft.<sup>3</sup>.

Size: 12 x 12 (305 x 305)

VELOCITY fpm (m/s)	PRESSURE DROP in. w.g. (Pa)
542 (2.75)	.03 (7)
996 (5.06)	.09 (22)
2004 (10.18)	.36 (89)
3010 (15.29)	.83 (206)
3950 (20.07)	1.42 (353)

Size: 24 x 24 (610 x 610)

VELOCITY fpm (m/s)	PRESSURE DROP in. w.g. (Pa)
807 (4.10)	.02 (5)
1243 (6.32)	.05 (12)
1940 (9.86)	.11 (27)
3071 (15.60)	.28 (70)
4327 (21.98)	.56 (139)

Size: 36 x 36 (914 x 914)

VELOCITY fpm (m/s)	PRESSURE DROP in. w.g. (Pa)
849 (4.31)	.02 (5)
1378 (7.00)	.06 (15)
2045 (10.39)	.13 (32)
2988 (15.18)	.28 (70)
3984 (20.24)	.50 (124)

Size: 48 x 12 (1219 x 305)

VELOCITY fpm (m/s)	PRESSURE DROP in. w.g. (Pa)
718 (3.65)	.04 (10)
1018 (5.18)	.07 (17)
1949 (9.90)	.24 (60)
3084 (15.67)	.61 (152)
4355 (22.12)	1.22 (303)

Size: 12 x 48 (305 x 1219)

VELOCITY fpm (m/s)	PRESSURE DROP in. w.g. (Pa)
720 (3.66)	.03 (7)
1620 (8.23)	.17 (42)
2039 (10.36)	.26 (65)
2918 (14.83)	.54 (134)
3957 (20.10)	1.00 (249)

## COMBINATION FIRE/SMOKE DAMPERS

MODELS: 1220/1221/1222/1223 (1-1/2 HOUR LABEL)

1220-3/1221-3/1222-3/1223-3 (3 HOUR LABEL)

### VARIABLES/ACCESSORIES

VARIABLES:	CODE	DESCRIPTION
MOUNTING:	V	Vertical Mount (wall)
	H	Horizontal Mount (floor)
LEAKAGE/ELEV. TEMP. RATINGS:	125	Class I @ 250°F
	135	Class I @ 350°F
	225	Class II @ 250°F
	235	Class II @ 350°F
CLOSURE DEVICE:	ERL	Electric Resettable Link
	ML4	MLS-400 Fire Sensor Reopenable Control System
	PRL	Pneumatic Replaceable Link
CLOSURE TEMPERATURE:	165	165°F (74°C)
	212	212°F (100°C)
	250	250°F (121°C)
	350	350°F (177°C)
	HL (must select with MLS-400)	High=250°F or 350°F/Low=165°F
SLEEVE LENGTH/GAUGE:	Specify Sleeve Length:	12" (305) to 36" (914).
	Specify Sleeve Gauge:	20G, 18G, 16G, 14G, 10G
ACTUATORS:	411	Honeywell ML4115 (120 VAC)
	811	Honeywell ML8115 (24 VAC)
	MS4	Honeywell MS4X09 (120 VAC)
	MS8	Honeywell MS8X09 (24 VAC)
	4Y0	Honeywell MS4Y09 (230 VAC)
	F12	Belimo FSNF120 (120 VAC)
	F24	Belimo FSNF24 (24 VAC)
	412	Honeywell MS4120 (120 VAC)
	812	Honeywell MS8120 (24 VAC)
	462	Honeywell MS4620 (230 VAC)
	GD2	Siemens GGD221 (120 VAC)
	GD1	Siemens GGD121 (24 VAC)
	GD3	Siemens GGD321 (230 VAC)
	296	Siemens 331-2961 (25 psi)
306	Siemens 331-3060 (25 psi)	
ACTUATOR MOUNTING:	EXT	External Mount
	INT	Internal Mount
ACTUATOR LOCATION:	RH	Right-Hand Mount
	LH	Left-Hand Mount
	MH	Multi-Hand Mount
FAIL POSITION:	CL	Damper to Fail Closed
DAMPER LOCATION IN SLEEVE:	L8	8" (204) from Sleeve End
	L0	Specify Dimension from Sleeve End
IF MODEL 1223 IS SELECTED, SPECIFY TYPE OF TRANSITION:	CR	Round Type C Transitions
	CO	Oval Type C Transitions
	CSR	Square/Rect. Type C Transitions
ACCESSORIES:	CODE	DESCRIPTION
POSITION INDICATOR:	300	MLS-300 Switch Pack
E.P. SWITCH:	EPI	120V Siemens 2651008
	EP2	24V Siemens 2651007
MOTOR MTG. PLATE:	SMP	Side Mounting Plate (required for mounting of actuator without sleeve)
RETAINING ANGLES:	QS1	One "Quick Set" retaining angle
	QS2	Set of two "Quick Set" retaining angles
FLANGED SLEEVE:	TDF1	TDF Flange on One End
	TDF2	TDF Flange on Both Ends

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COMBINATION FIRE/SMOKE DAMPERS

## HOW TO ORDER OR TO SPECIFY

### COMBINATION FIRE / SMOKE DAMPERS

**MODELS: 1-1/2 HOUR LABEL 1220 / 1221 / 1222 / 1223**

**3 HOUR LABEL 1220-3 / 1221-3 / 1222-3 / 1223-3**

**HOW TO ORDER:** Select model number and size, then select from each variable. Choose accessories as desired. See previous page for description of variables and accessories.

MODEL	SIZE (W X H)	MOUNTING	LEAKAGE/ELEV. TEMP. RATING	CLOSURE DEVICE *	CLOSURE TEMP. **	SLEEVE LENGTH ***	SLEEVE GAUGE ***	ACTUATOR	ACTUATOR MOUNTING	ACTUATOR LOCATION	FAIL POSITION	DAMPER LOCATION IN SLEEVE	TRANSITION TYPE (MODELS 1223/1223-3 ONLY)	ACCESSORIES *
1220	ie: 36" x 24" or 18" dia.	V	125	ERL	165	SPECIFY LENGTH	20G	411	EXT	RH	CL	L8	CR	300
1221		H	135	ML4	212		18G	811	INT	LH		L0	CO	EP1
1222			225	PRL	250		16G	MS4		MH			CSR	EP2
1223			235		350		14G	MS8						SMP
1220-3					HL		10G	4Y0						QS1
1221-3								F12						QS2
1222-3								F24						TDF1
1223-3								412						TDF2
						812								
						462								
						GD2								
						GD1								
						GD3								
						296								
						306								

- Notes: 1. \* One MLS-400 or MLS-300 required per assembly. (MLS-300 is included as part of MLS-400 package.)  
 2. \*\* Maximum closure temperature allowed is equal to elevated temperature rating. HL (high/low closure temps.) must be selected when MLS-400 is selected as closure device.  
 3. \*\*\* Standard sleeve is 16" (406) long (suitable for 4" (102) thick wall) x 20 ga. (1.0).

#### SUGGESTED SPECIFICATION:

Provide and install, as shown on plans and/or schedules, Combination Fire/Smoke Dampers meeting or exceeding the following criteria: Frame shall be constructed of 16 ga. (1.6) galvanized steel hat channel with mitered corners reinforced with die-formed corner gussets for strength. Blades shall be 14 ga. (2.0) equivalent galvanized steel formed double skin, airfoil design, on 5 1/2" (140) centers. Dampers shall be of opposed blade configuration with an interlocking blade design that provides complete flame and smoke seal under fire conditions at an elevated temperature of 2000°F (1093°C) when in closed position. Dampers requiring blade seals to maintain leakage class when under elevated temperature conditions are not acceptable. Blade axles shall be plated steel, double bolted at each end of blade to provide positive locking connection. Hex or square friction-fit, or press-fit axles are not acceptable. Bearings shall be self-lubricating oilite bronze type. Blade linkage shall be zero-maintenance, concealed in frame, out of airstream. Jamb seals shall be compression-type stainless steel.

Dampers shall meet the requirements of NFPA 90A, 92A and 92B. Dampers shall be classified by Underwriter's Laboratories and labeled as a 1 1/2 or 3 hour, (**specifier select one**), Fire Damper under UL 555, and as a Class I or Class II (**specifier select one**) Smoke Damper under UL 555S at an elevated temperature of 250°F (121°C) or 350°F (177°C) (**specifier select one**) for use in dynamic or static Smoke Control Systems. Dampers shall be supplied with factory installed sleeves of minimum 16" (406) length and shall be field verified by contractor, dependent on wall thickness. Factory sleeves shall be caulked to UL requirements and shall be 20 ga. (1.0) through 84" (2134) wide, and 18 ga (1.2) above 84" (2134) wide.

Appropriate electric or pneumatic actuators (**specifier select one**) shall be installed by the damper manufacturer in the factory and shall have been tested and classified under UL 555S with the damper at an elevated temperature of 250°F (121°C) or 350°F (177°C). Actuators shall incorporate an OEM internal spring return mechanism. External after-market spring mechanisms are not acceptable. Each damper shall be equipped with a UL Classified heat responsive device that will cause the damper to close in a controlled manner and lock in a closed position by means of an over center/knee lock linkage, when the duct temperature reaches the maximum degradation temperature of the damper/actuator assembly as required by UL 555S. Closure devices that cause instantaneous closure are not acceptable. Submitted pressure drop data to be based on tests in accordance with AMCA Standard 500-D and shall demonstrate a maximum pressure drop of .02" w.g. @ 849 fpm (5 Pa @ 4.3 m/s) across a 36" x 36" (914 x 914) damper. Dampers must comply with the requirements of AMCA 511 Certified Ratings Program and be qualified to bear the AMCA Seal for Air Performance. Standard of acceptance: Nailor Industries Model 1220 (1 1/2 hour rating) or Model 1220-3 (3 hour rating).



COMBINATION FIRE / SMOKE DAMPERS