

COMBINATION FIRE / SMOKE



Nailor
Industries Inc.

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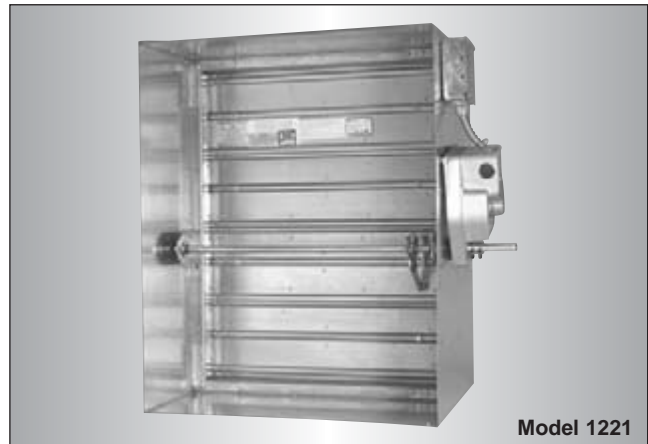
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GENERAL PRODUCT OVERVIEW

As today's modern commercial and industrial building construction becomes increasingly life safety oriented, fire containment and active smoke management systems are being utilized to a higher degree as more sophisticated technology is developed and implemented into building codes. The development process begins with the understanding of fire and smoke behavior through the research and study of real life emergency situations, and culminates in the design, testing of, and ultimate use of new products to better control and manage the ravages of fire and smoke. Thus, resulting property damage is minimized and occupant safety is maximized. Nailor Industries commitment to the development of new and existing fire and smoke control technology has resulted in a comprehensive line of premium quality smoke, fire and combination fire/smoke dampers and accessories, available at a reasonable cost and in a timely fashion.

MODEL SERIES 1220 (1 1/2 HR.) AND 1220-3 (3 HR.) COMBINATION FIRE/SMOKE DAMPER AIRFOIL BLADE • PREMIUM PERFORMANCE

Model Series 1220 provides the ultimate in fire containment and smoke management for both static and dynamic HVAC systems. It 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, it 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.



Model 1221

MODEL 1221-OW COMBINATION FIRE/SMOKE DAMPER AIRFOIL BLADE • OUT OF WALL MOUNTING

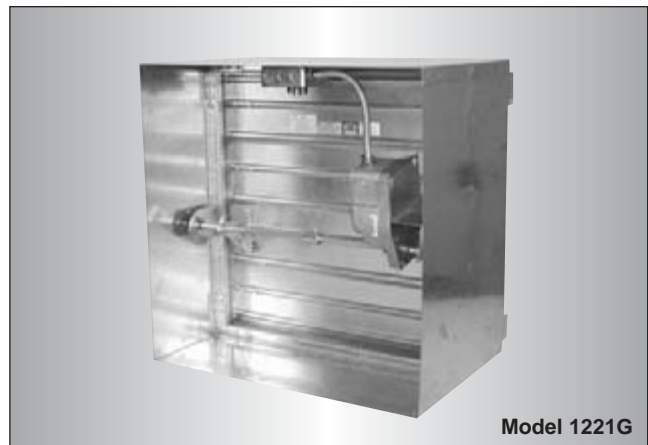
Model 1221-OW is an "out of wall" high performance combination fire/smoke damper specifically designed for supply or return ducts that terminate at a grille. The design allows for through the grille access to the damper, actuator and other components. It is perfect for applications where building codes require both a fire damper for the protection of duct penetrations in walls or floors that have a fire resistance rating of 2 hours or less and also require a leakage rated damper for operational smoke control in static or dynamic smoke management systems. It features Nailor's unique inter-locking double skin airfoil blade design that eliminates combustible seals and provides flame and smoke seal under fire conditions at temperatures up to 2000°F!



Model 1221-OW

MODEL 1221G COMBINATION FIRE/SMOKE DAMPER AIRFOIL BLADE • FOR GRILLE MOUNTING

Model 1221G is a high performance combination fire/smoke damper specifically designed for supply or return ducts that terminate at a grille. The special factory sleeve with unique 3/4" (19) grille mounting flanges simplifies installation, saves on field labor and eliminates the requirements for unsightly front retaining angles which commonly protrude from behind the grille. Steel grille with correctly located countersunk screwholes is available from Nailor and installs over and completely hides the mounting flanges. The damper is offset in the sleeve to accommodate a single or double deflection supply air grille, single deflection supply air register or a return air grille or register.



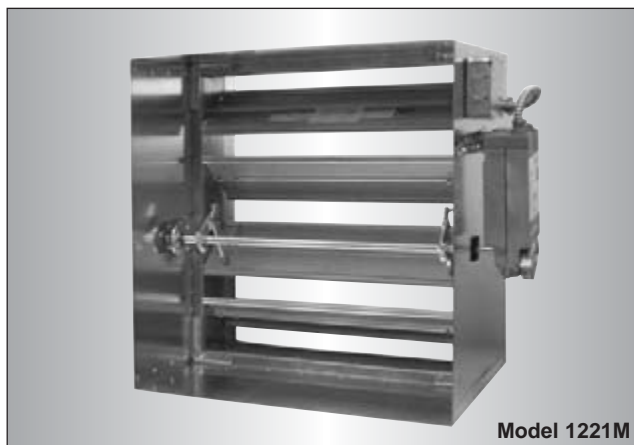
Model 1221G

GENERAL PRODUCT OVERVIEW

MODEL SERIES 1220M (1 1/2 HR.) AND 1220M-3 (3 HR.) COMBINATION FIRE/SMOKE DAMPER MODULATING (VOLUME CONTROL)

The 1220M Series modulating dampers are classified for use as a volume control damper in 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 2 hours and a leakage rated damper for operational smoke control in static or dynamic smoke management systems.

The 1220M Series has been especially designed and tested to provide premium performance. It offers the lowest leakage class available and is qualified for installation with airflow in either direction. Airfoil blade design and elimination of blade sills, top and bottom, provide a low pressure drop design.



MODEL SERIES 1221VB COMBINATION FIRE/SMOKE DAMPER VERTICAL AIRFOIL BLADE

Model 1221VB (Vertical Blade) is a high performance combination fire/smoke damper that provides superior protection and versatility. The vertical blade configuration allows for the actuator to be mounted below the damper and is ideal for applications where bottom access is desired or where there isn't space for a side mounted actuator.

The 1221VB Series dampers are ideal for applications where building codes require both a fire damper for the protection of ductwork penetrations in walls that have a fire resistance rating of up to 2 hours and also require a leakage rated damper for operational smoke control in static or dynamic smoke management systems.

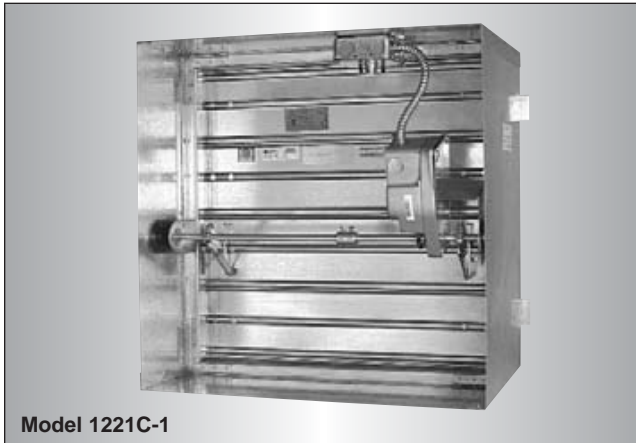


MODEL SERIES 1270 COMBINATION FIRE/SMOKE DAMPER

The 1270 combination fire/smoke damper, with sturdy vee-groove style blades and a rugged mitered corner hat channel frame design that virtually eliminates racking, provides 1 1/2 hour UL labeled fire protection suitable for use where ductwork penetrates a wall or floor with a fire resistance rating of 2 hours or less. The 1270 Series is also UL tested and labeled for use as a Class I or II Leakage Rated Damper for smoke control applications in both static or dynamic HVAC system designs. Available with factory fitted sleeve (Model 1271), and a variety of actuators and options to suit each application, the 1270 series is a versatile and economical performer suitable for most commercial applications.



GENERAL PRODUCT OVERVIEW

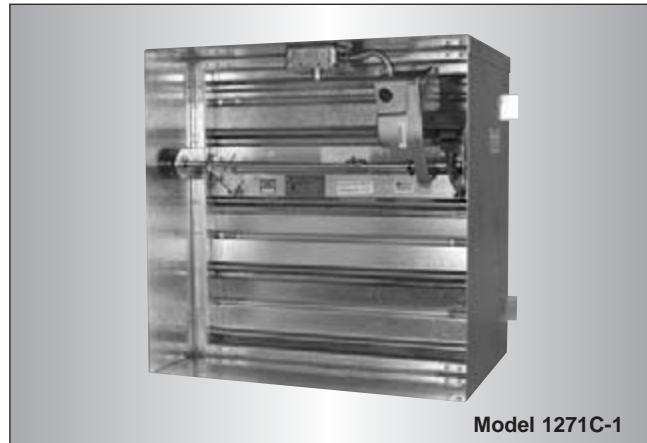


MODELS 1221C-1, 1221C-2 TUNNEL CORRIDOR COMBINATION FIRE/SMOKE DAMPER • AIRFOIL BLADE

Models 1221C-1 and 1221C-2 Airfoil Blade Tunnel Corridor Combination Fire/Smoke Dampers are for use where ductwork penetrates the ceiling of an interior corridor of a building, creating a horizontal opening that requires protection. Model 1221C-1 is suitable for use with a steel grille or diffuser when the duct terminates at the ceiling. Model 1221C-2 is suitable for use when the duct is required to continue down past the ceiling level. Each unit is supplied factory mounted in a suitable sleeve complete with upper retaining angles.

MODELS 1271C-1, 1271C-2 TUNNEL CORRIDOR COMBINATION FIRE/SMOKE DAMPER

Models 1271C-1 and 1271C-2 Tunnel Corridor Combination Fire/Smoke Dampers are for use where ductwork penetrates the ceiling of an interior corridor of a building, creating a horizontal opening that requires protection. Model 1271C-1 is suitable for use with a steel grille or diffuser when the duct terminates at the ceiling. Model 1271C-2 is suitable for use when the duct is required to continue down past the ceiling level. Each unit is supplied factory mounted in a suitable sleeve complete with upper retaining angles.



MODEL 1290FS COMBINATION FIRE/SMOKE DAMPER

Nailor's true round combination fire and smoke damper, Model 1290FS, is ideal for applications where building codes require both a fire damper to protect air system penetrations in walls or floors that have a fire resistance rating of up to 2 hours and also require a leakage rated damper for operational smoke control in static or dynamic smoke management systems. It is an economical true round combination fire/smoke damper designed and qualified for round ductwork passing through metal drywall partitions or masonry walls. Features of the damper include a sturdy beaded casing for superior rigidity and factory supplied retaining plates for fast, secure installation. The 1290FS offers the lowest leakage class available and is approved for vertical or horizontal installation.

- 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



Model 1220

AMCA
LICENSED

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 & CAN/ULC-S112 CLASSIFIED DYNAMIC FIRE DAMPER 1 1/2 & 3 hr. Labels. (File #'s R9492 & R19569).
- UL 555S CLASSIFIED SMOKE DAMPER (File # R9492) Leakage Class I or II at 250°F or 350°F elevated temperature.
- Meets NFPA 80, 90A, 92A, 92B, 101 and 105 as well as IBC and NBC (Canada) Building Code requirements.
- California State Fire Marshall: Fire Damper Listing No. 3225-0935-106.
- City of New York MEA # 366-03-M.
- British/European Standards 10294 and 1366. ISO Standard 10294. Fire Dampers. 4 hr. fire test. Classification ES 240.
- Maximum velocity 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa) (up to 4000 fpm @ 4" 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.

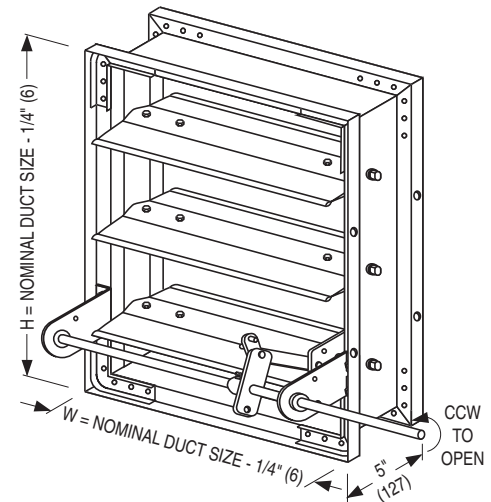
BEARINGS: 1/2" (13) dia. self-lubricating oilite bronze.

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): ERL (Electric Resettable Link) is standard on dampers with electric actuators: 250°F (121°C) std. 165°F (74°C), 212°F (100°C) and 350°F (176°C) available. PRL (Pneumatic Replaceable Link) is std. on dampers with pneumatic actuators: 212°F (100°C) std. 165°F (74°C) and 280°F (138°C) available.



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

| | MODEL 1220 (1 1/2 HR. LABEL) | | MODEL 1220-3 (3 HR. LABEL) |
|------------------------|---|------------------------|--|
| MIN. DUCT SIZE: | Vertical or Horizontal mount: 8" x 8" (203 x 203); 8" x 6" (203 x 152) with low profile frame (max size 18" x 6" [457 x 152]). | MIN. DUCT SIZE: | Vertical or Horizontal mount: 8" x 8" (203 x 203). |
| MAX. DUCT SIZE: | Single Section Vertical mount: 36" x 48" (914 x 1219). Horizontal mount: 32" x 48" (813 x 1219). Multiple Section Assembly Vertical mount: 144" x 96" (3658 x 2438). Horizontal mount: 128" x 96" (3251 x 2438). | MAX. DUCT SIZE: | Single Section Vertical mount: 36" x 48" (914 x 1219). Horizontal mount: 32" x 48" (813 x 1219). 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:

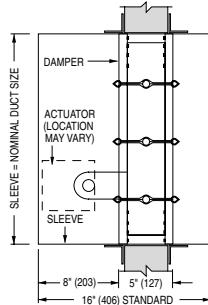
- Airfoil blade, double-skin design, provides extremely low pressure drop for optimal system performance.
- Unique interlocking blade design eliminates the need for seals, maintaining leakage class under fire conditions.
- Largest UL listing in the industry at 96 sq. ft. (8.9 sq. m) eliminates the need 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 (1 1/2 Hr. Label) dampers with duct heights less than 6" (152) (8" [203] if width is over 18" [457]) or Model Series 1220-3 (3 Hr. Label) with duct heights less than 8" (203) require a Type 'B' sleeve enclosure (Model 1222/1222-3). Duct sizes less than 8" (203) in width require a Type 'C' enclosure (Model 1223/1223-3).

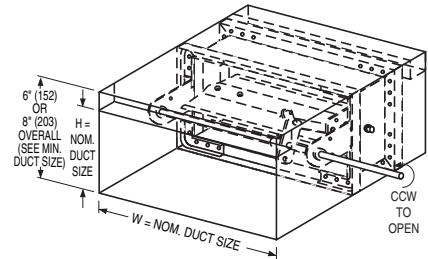
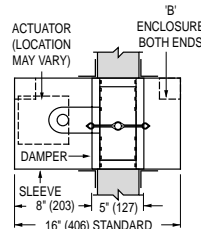
WITH TYPE A SLEEVE: MODELS 1221/1221-3



| 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) [6" (152) on duct sizes 18" x 5 1/2" (457 x 140) and under (1 1/2 Hr. Label Only)]).

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

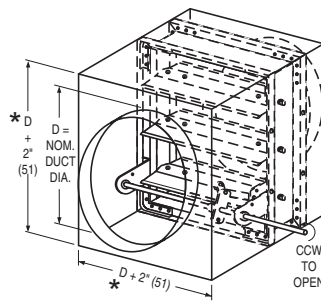
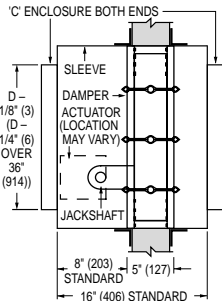
Vertical mount: 144" x 7 1/2" (3658 x 191).

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

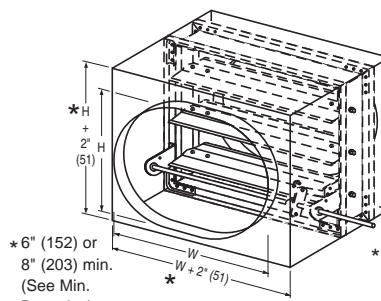
Multiple Section Assembly Model 1222-3

Multiple Section Assemblies are not permitted.

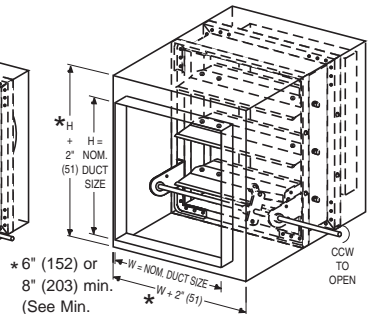
TYPE C SLEEVE ENCLOSURES: MODELS 1223/1223-3



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 6" (203 x 152) (1 1/2 Hr. Label only); 8" x 8" (203 x 203) min. for duct sizes over 4" (102) dia.)

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 width is 8" minimum; minimum overall height is 6" (152) (1 1/2 Hr. Label only) [8" (203) for duct sizes over 16" x 4" (406 x 102)]).

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 4" 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 ² (m ³ /s/m ²) | |
|---------------|--|--------------------------|
| | @ 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) |

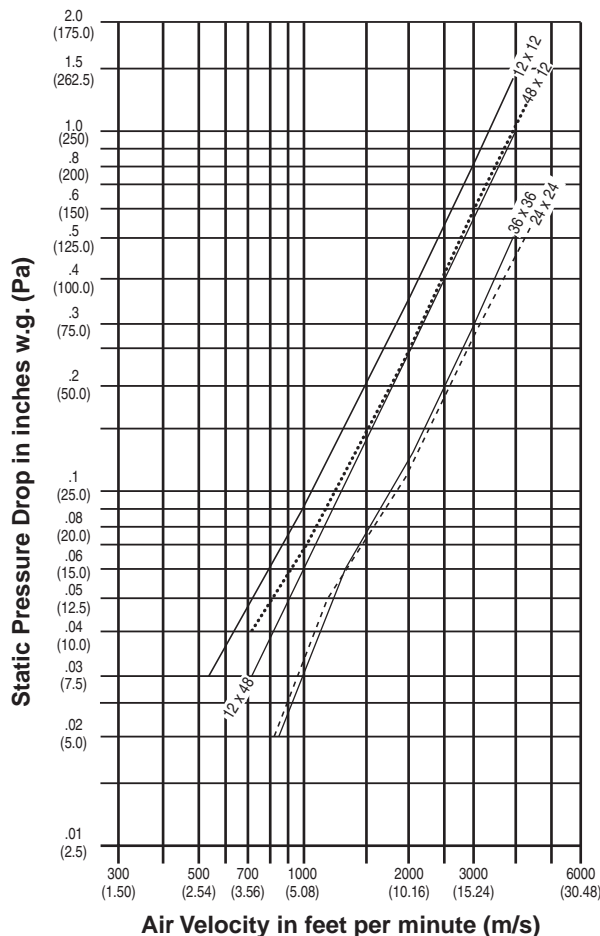


Nailor Industries Inc. certifies that the Models 1220 and 1220-3 Dampers shown herein are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Seal applies to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

G

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.³.

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 H | Vertical Mount (wall) Horizontal Mount (floor) |
| LEAKAGE RATING: | I II | Class I Class II |
| MAXIMUM VELOCITY/ PRESSURE RATING: | 24 34 44 | 2000 fpm @ 4" w.g. 3000 fpm @ 4" w.g. 4000 fpm @ 4" w.g. |
| ELEVATED TEMPERATURE RATING: | 250 350 | 250°F 350°F |
| CLOSURE DEVICE: | ERL ML4 PRL | Electric Resettable Link MLS-400 Fire Sensor Reopenable Control System Pneumatic Replaceable Link |
| CLOSURE TEMPERATURE: | 165 212 250 280 (PRL only) 350 (ERL only) HL (must select with MLS-400) | 165 F (74 C) 212°F (100°C) 250°F (121°C) 280°F (138°C) 350°F (177°C) High=250°F or 350°F/Low=165°F |
| SLEEVE LENGTH/GAUGE: | Specify Sleeve Length: Specify Sleeve Gauge: | 12" (305) to 36" (914). 20G, 18G, 16G, 14G, 10G |
| ACTUATORS: | A wide selection of U.L. tested and approved actuators are available. Contact your representative for further assistance. | |
| ACTUATOR MOUNTING: | EXT INT | External Mount Internal Mount |
| ACTUATOR LOCATION: | RH LH MH | Right-Hand Mount Left-Hand Mount Multi-Hand Mount |
| FAIL POSITION: | CL | Damper to Fail Closed |
| DAMPER LOCATION IN SLEEVE: | L8 L0 | 8" (204) from Sleeve End Specify Dimension from Sleeve End |
| IF MODEL 1223 IS SELECTED, SPECIFY TYPE OF TRANSITION: | CR CO CSR | Round Type C Transitions Oval Type C Transitions Square/Rect. Type C Transitions |
| ACCESSORIES: | CODE | DESCRIPTION |
| POSITION INDICATOR: | 300 | MLS-300 Switch Pack |
| E.P. SWITCH: | EPI EP2 | 120V Siemens 2651008 24V Siemens 2651007 |
| MOTOR MTG. PLATE: | SMP | Side Mounting Plate (required for mounting of actuator without sleeve) |
| RETAINING ANGLES: | QS1 QS2 | One "Quick Set" retaining angle Set of two "Quick Set" retaining angles |
| FLANGED SLEEVE: | TDF1 TDF2 | TDF Flange on One End TDF Flange on Both Ends |
| DAMPER TEST SWITCH: | DTS | Push Button Test Switch |
| DUCT SMOKE DETECTOR: | DSDL DSDN | Low-Flow with Tube No-Flow |

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 RATING CLASS | MAX. VELOCITY/ PRESSURE RATING | ELEVATED TEMP. RATING | CLOSURE DEVICE * | CLOSURE TEMP. ** | SLEEVE LENGTH *** | SLEEVE GAUGE *** | ACTUATOR | ACTUATOR MOUNTING | ACTUATOR LOCATION | FAIL POSITION | DAMPER LOCATION IN SLEEVE | TRANSITION TYPE (MODEL 1213 ONLY) | ACCESSORIES * |
|--------|-----------------|----------|-------------------------|-----------------------------------|--------------------------|---------------------|------------------|----------------------|---------------------|----------|----------------------|----------------------|---------------|------------------------------|--------------------------------------|------------------|
| 1220 | ie: | V | I | 24 | 250 | ERL | 165 | | 20G | | EXT | RH | CL | L8 | CR | 300 |
| 1221 | 36" x 24" | H | II | 34 | 350 | ML4 | 212 | | 18G | | INT | LH | | L0 | CO | EP1 |
| 1222 | or | | | 44 | | PRL | 250 | | 16G | | | MH | | | CSR | EP2 |
| 1223 | 18" dia. | | | | | | 280 | | 14G | | | | | | | SMP |
| 1220-3 | | | | | | | 350 | | 10G | | | | | | | QS1 |
| 1221-3 | | | | | | | HL | | | | | | | | | QS2 |
| 1222-3 | | | | | | | | | | | | | | | | TDF1 |
| 1223-3 | | | | | | | | | | | | | | | | TDF2 |
| | | | | | | | | | | | | | | | | DTS |
| | | | | | | | | | | | | | | | | DSDL |
| | | | | | | | | | | | | | | | | DSDN |

- 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.

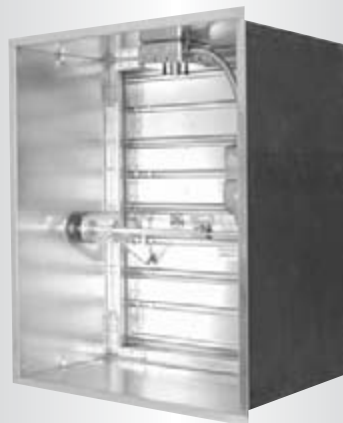
Dampers shall meet the requirements of NFPA 80, 90A, 92A, 92B, 101 and 105. Dampers shall be classified by Underwriter's Laboratories and labeled as a 1 1/2 or 3 hour (specifier select one) Fire Damper under UL 555, and as a Class I or Class II (specifier select one) Smoke Damper under UL 555S at an 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 have been tested for dynamic closure by UL to a minimum velocity/pressure rating of 2000 fpm @ 4" w.g. (or specifier to select 3000 fpm @ 4" w.g. or 4000 fpm @ 4" w.g.).

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).

- “OUT OF WALL” MOUNTING
- ULTRA LOW LEAKAGE
- AIRFOIL BLADE
- UL 555 CLASSIFIED DYNAMIC FIRE DAMPER
- UL 555S SMOKE DAMPER

MODEL: 1221-OW



Model 1221-OW

Nailor's Model 1221-OW is an “out of wall” high performance combination fire /smoke damper specifically designed for supply or return ducts that terminate at a grille. The design allows for through the grille access to the damper, actuator and other components. The 1221-OW is perfect for applications where building codes require both a fire damper for the protection of duct penetrations in walls or floors that have a fire resistance rating of 2 hours or less and also require a leakage rated damper for operational smoke control in static or dynamic smoke management systems. The 1221-OW features Nailor's unique inter-locking double skin airfoil blade design that eliminates combustible seals and provides flame and smoke seal under fire conditions at temperatures up to 2000°F! Model 1221-OW offers premium performance with the lowest leakage class available and a low pressure drop design that is well suited to the majority of commercial applications. Standard sleeve length accommodates most commercial supply and return grilles and registers.

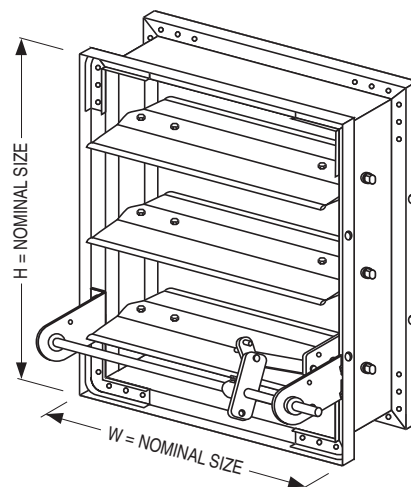
QUALIFICATIONS:

- UL 555 & CAN/ULC-S112 CLASSIFIED DYNAMIC FIRE DAMPER 1 1/2 hr. Label. (File #'s R9492 & R19569).
- UL 555S CLASSIFIED SMOKE DAMPER (File # R9492) Leakage Class I at 250°F or 350°F elevated temperature.
- Meets NFPA 80, 90A, 92A, 92B, 101 and 105 as well as IBC and NBC (Canada) Building Code requirements.
- California State Fire Marshall: Fire Damper Listing No. 3225-0935-106.
- City of New York MEA # 366-03-M.
- Maximum velocity 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa).
- For use in vertical or horizontal concrete partitions and vertical steel stud partitions.

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.
- SLEEVE:** 16" x 20 ga. (406 x 1.0) galvanized steel with 3/4" (19) flange on one end standard for all dampers over 16" (406) high. Dampers 16" (406) high and under have a 20" (508) long sleeve.
- INSULATION:** Intumescent thermal insulation on four sides.
- 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): ERL (Electric Resettable Link) is standard on dampers with electric actuators: 250°F (121°C) std. 165°F (74°C), 212°F (100°C) and 350°F (176°C) available. PRL (Pneumatic Replaceable Link) is std. on dampers with pneumatic actuators: 212°F (100°C) standard. 165°F (74°C) and 280°F (138°C) available.



**MODEL 1221-OW
(DAMPER ONLY SHOWN)**

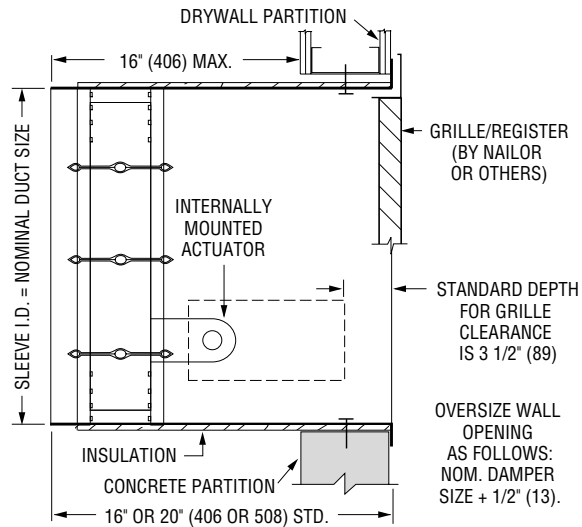
MINIMUM SIZE:

Vertical or Horizontal mount: 12" W x 8" H (305 x 203) or 8" W x 12" H (203 x 305) with electric actuator. 8" W x 20" H (203 x 508) with pneumatic actuator.

MAXIMUM SIZE:

Single Section
Vertical mount: 36" W x 48" H (914 x 1219).
Horizontal mount: 32" W x 48" H (813 x 1219).
Multiple Section Assemblies are not permitted.

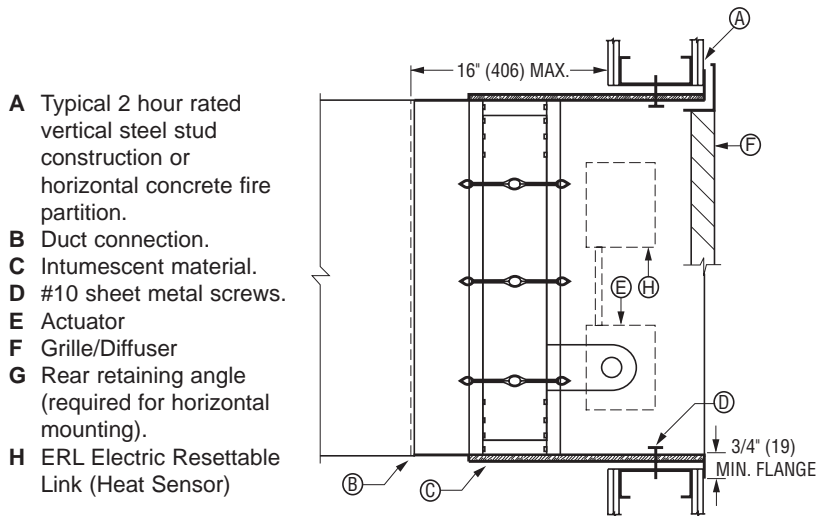
MODEL: 1221 - OW



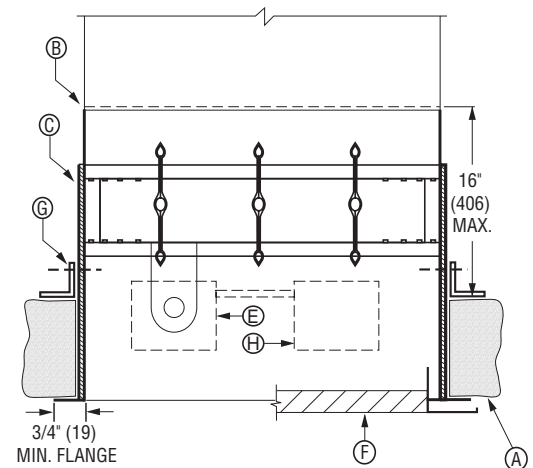
**MODEL 1221-OW
'OUT OF WALL' MOUNTING**

NOTES:

- IMPORTANT: DAMPERS ARE FURNISHED FULL ORDERED SIZE TO FACILITATE GRILLE INSTALLATION. OPENING SIZE IN PARTITION SHOULD BE SIZED 1/2" (13) LARGER IN ALL DIRECTIONS TO ALLOW FOR SLEEVE THICKNESS.**
- FOR PERFORMANCE DATA SEE MODEL 1220.**



VERTICAL MOUNT



HORIZONTAL MOUNT

COMBINATION FIRE/SMOKE DAMPERS

MODEL: 1221-OW

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 |
| CLOSURE DEVICE: | ERL | Electric Resettable Link |
| | ML4 | MLS-400 Fire Sensor |
| | PRL | Reopenable Control System Pneumatic Replaceable Link |
| CLOSURE TEMPERATURE: | 165 | 165°F (74°C) |
| | 212 | 212°F (100°C) |
| | 250 | 250°F (121°C) |
| | 280 (PRL only) | 280°F (138°C) |
| | 350 (ERL only) | 350°F (177°C) |
| | HL (must select with MLS-400) | High=350 F/Low=165 F |
| SLEEVE LENGTH/GAUGE: | Specify Sleeve Length: | See Note 1 below |
| | Specify Sleeve Gauge: | 20G, 18G, 16G, 14G, 10G |
| ACTUATORS: | A wide selection of U.L. tested and approved actuators are available. Contact your representative for further assistance. | |
| ACTUATOR MOUNTING: | INT | Internal Mount |
| FAIL POSITION: | CL | Damper to Fail Closed |
| DAMPER LOCATION IN SLEEVE: | L0 | Specify Dimension from Sleeve End |
| ACCESSORIES: | CODE | DESCRIPTION |
| POSITION INDICATOR: | 300 | MLS-300 Switch Pack |
| E.P. SWITCH: | EPI | 120V Siemens 2651008 |
| | EP2 | 24V Siemens 2651007 |
| RETAINING ANGLE: | QS1 | One "Quick Set" retaining angle |

Notes: 1. Standard sleeve is 16" (406) long (suitable for 4" (102) thick wall) x 20 ga. (1.0) for dampers over 16" (406) in height or 20" (508) long x 20 ga. (1.0) for dampers 16" (406) or less in height. Shorter sleeve lengths are available (down to 14" (356)) dependent on height when actuator mounting orientation can be vertical or required grille depth clearance is reduced. Longer sleeve lengths are available as long as 16" maximum distance from wall to sleeve end is maintained. Standard sleeve provides minimum grille depth clearance of 3 1/2" (89).

HOW TO ORDER OR TO SPECIFY

COMBINATION FIRE/SMOKE DAMPERS

MODEL: 1221-OW

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 | FAIL POSITION | DAMPER LOCATION IN SLEEVE | ACCESSORIES |
|---------|-----------------|----------|-------------------------------|---------------------------------------|-------------------|---------------------|---------------------------------|--|----------------------|---------------|-------------------------------|--------------------------|
| 1221-OW | ie: 24" x 36" | V H | 125 135 | ERL ML4 PRL 280 350 HL | 165 212 250 | SPECIFY LENGTH | 20G 18G 16G 14G 10G | A WIDE SELECTION OF U.L. TESTED AND APPROVED ACTUATORS ARE AVAILABLE | INT | CL | L0 SPECIFY LOCATION | 300 EP1 EP2 QS1 |

- Notes:
- * 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.
 - ** Standard sleeve is 16" (406) long (suitable for 4" (102) thick wall) x 20 ga. (1.0) for dampers over 16" (406) in height or 20" (508) long x 20 ga. (1.0) for dampers 16" (406) or less in height. Shorter sleeve lengths are available (down to 14" (356)) dependent on height when actuator mounting orientation can be vertical or required grille depth clearance is reduced. Longer sleeve lengths are available as long as 16" maximum distance from wall to sleeve end is maintained. Standard sleeve provides minimum grille depth clearance of 3 1/2" (89).
 - IMPORTANT: Damper is furnished full ordered size to facilitate grille installation.
 - MLS-300 is included as part of MLS-400 package.

SUGGESTED SPECIFICATION:

Provide and install, as shown on plans and/or schedules, Combination Fire/Smoke Dampers approved for use where ductwork design penetrates and terminates at a fire separation. Dampers shall be as manufactured by Nailor Industries and shall meet or exceed 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.

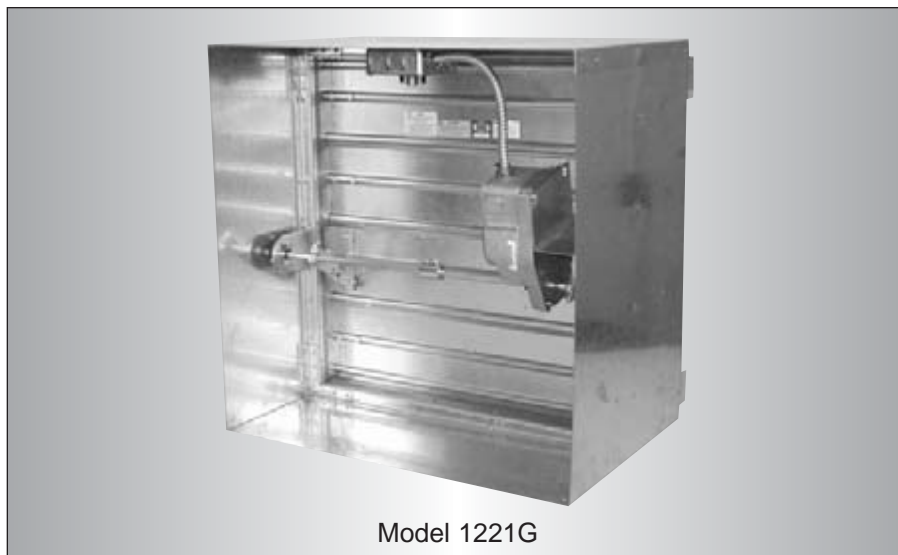
Dampers shall meet the requirements of NFPA 80, 90A, 92A, 92B, 101 and 105. Dampers shall be classified by Underwriter's Laboratories and labeled as 1 1/2 hour Fire Damper under UL 555, and Class I Smoke Damper under UL 555S at an elevated temperature of 250°F (121°C) or 350°F (177°C) (**specifier select one**) for use in dynamic or static Smoke Control Systems. Dampers shall be supplied with factory installed sleeves of minimum 16" (406) length for dampers over 16" (406) in height and minimum 20" (508) length for dampers 16" or less in height, and shall be field verified by contractor, dependent on wall thickness. Sleeves shall be caulked to UL requirements and shall be 20 ga. (1.0) galvanized steel with 3/4" (19) flange on one end. Sleeves shall be insulated on all four sides with intumescent thermal insulation to reduce heat transfer.

Appropriate electrical or pneumatic actuators (**specifier select one**) shall be installed internally 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. Damper and actuator assembly shall be factory cycled a minimum of three times to ensure correct operation.

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. Damper manufacturer shall submit independent test data supporting low pressure drop design. Pressure drop across a 24" x 24" (610 x 610) damper shall not exceed 0.12" w.g. at 2000 fpm. Standard of acceptance: Nailor Industries Model 1221-OW.

- INTEGRAL SLEEVE FOR USE WITH GRILLE
- PREMIUM PERFORMANCE
- AIRFOIL BLADE
- UL 555 CLASSIFIED DYNAMIC FIRE DAMPER
- UL 555S SMOKE DAMPER

MODEL: 1221G



Model 1221G

Model 1221G is a high performance combination fire/smoke damper specifically designed for supply or return ducts that terminate at a grille. The special factory sleeve with unique 3/4" (19) grille mounting flanges simplifies installation, saves on field labor and eliminates the requirements for unsightly front retaining angles which commonly protrude from behind the grille. Steel grille with correctly located countersunk screwholes is available from Nailor and installs over and completely hides the mounting flanges. The damper is offset in the sleeve to accommodate a single or double deflection supply air grille, single deflection supply air register or a return air grille or register. The 1221G offers premium performance with the lowest leakage class available and a low pressure drop well suited to the majority of commercial applications. Unique inter-locking double skin blade design eliminates combustible seals and provides flame and smoke seal under fire conditions at temperatures up to 2000°F.

QUALIFICATIONS:

- UL 555 & CAN/ULC-S112 CLASSIFIED DYNAMIC FIRE DAMPER 1 1/2 hr. Label. (File #'s R9492 & R19569).
- UL 555S CLASSIFIED SMOKE DAMPER (File # R9492) Leakage Class I or II at 250°F or 350°F elevated temperature.
- Meets NFPA 80, 90A, 92A, 92B, 101 and 105 as well as IBC and NBC (Canada) Building Code requirements.
- California State Fire Marshall: Fire Damper Listing No. 3225-0935:106.
- City of New York MEA # 366-03-M.
- Maximum velocity 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa).

CONSTRUCTION DETAILS:

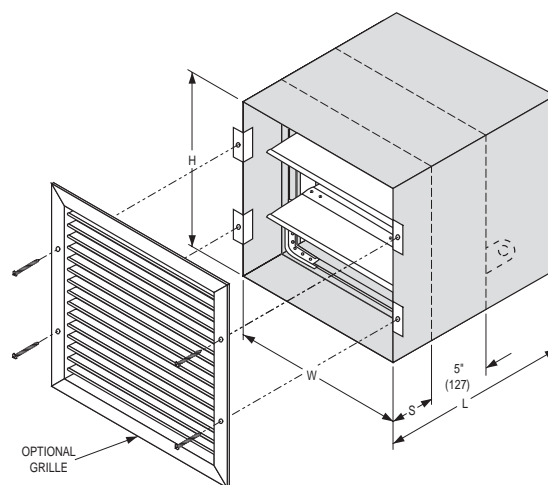
- FRAME:** 5" x 7/8" x 16 ga. (127 x 22 x 1.6) galvanized steel hat channel.
- BLADES:** 14 ga. (2.0) equivalent galvanized steel formed airfoil on 5 1/2" (140) centers. Opposed action.
- SLEEVE:** 16" x 20 ga.. (406 x 1.0) galvanized steel with 3/4" (19) wide grille mounting flanges
- LINKAGE:** Concealed 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): ERL (Electric Resettable Link) is standard on dampers with electric actuators: 250°F (121°C) std. 165°F (74°C), 212°F (100°C) and 350°F (176°C) available. PRL (Pneumatic Replaceable Link) is std. on dampers with pneumatic actuators: 212°F (100°C) standard. 165°F (74°C) and 280°F (138°C) available.

MINIMUM SIZE: 8" x 8" (203 x 203).

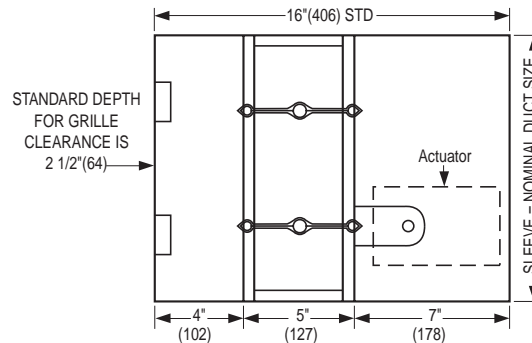
MAXIMUM SIZE: 24" x 24" (610 x 610)

IMPORTANT NOTE: Minimum 6 1/2" (165) wall thickness is required for this installation. Contact factory for non-standard applications.



MODEL 1221G

MODEL: 1221G



STANDARD DAMPER/SLEEVE

VARIABLES / ACCESSORIES

| VARIABLES: | CODE | DESCRIPTION |
|-------------------------------------|--|--|
| MOUNTING: | V H | Vertical Mount (wall) Horizontal Mount (floor) |
| LEAKAGE/ELEV. TEMP. RATINGS: | 125 135 225 235 | Class I @ 250°F Class I @ 350°F Class II @ 250°F Class II @ 350°F |
| CLOSURE DEVICE: | ERL ML4 PRL | Electric Resettable Link MLS-400 Fire Sensor Reopenable Control System Pneumatic Replaceable Link |
| CLOSURE TEMPERATURE: | 165 212 250 280 (PRL only) 350 (ERL only) HL (must select with MLS-400) | 165°F (74°C) 212°F (100°C) 250°F (121°C) 280°F (138°C) 350°F (177°C) High=350 F/Low=165 F |
| SLEEVE LENGTH/GAUGE: | Specify Sleeve Length: Specify Sleeve Gauge: | See Note 1 below 20G, 18G, 16G, 14G, 10G |
| ACTUATORS: | 411 811 296 | Honeywell ML4115 (120V) Honeywell ML8115 (24V) Siemens 331-2961 (25psi) |
| ACTUATOR MOUNTING: | INT EXT | Internal Mount External Mount |
| FAIL POSITION: | CL | Damper to Fail Closed |
| DAMPER LOCATION IN SLEEVE: | L0 | Specify Dimension from Sleeve End |
| ACCESSORIES: | CODE | DESCRIPTION |
| POSITION INDICATOR: | 300 | MLS-300 Switch Pack |
| E.P. SWITCH: | EPI EP2 | 120V Siemens 2651008 24V Siemens 2651007 |
| RETAINING ANGLE: | QS1 | One "Quick Set" retaining angle |
| FLANGED SLEEVE: | TDF1 | Flange on One End |

Notes: 1. Standard sleeve is 16" (406) long x 20 ga. (1.0), provides a grille clearance depth of 2 1/2 (64), and requires a minimum wall thickness of 6 1/2" (165) (closed damper blades must remain within the plane of the wall/floor). Damper position 'S' may be reduced to accommodate a thinner wall but grille clearance will reduce accordingly.

HOW TO ORDER OR TO SPECIFY

COMBINATION FIRE/SMOKE DAMPERS

MODEL: 1221G

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 | FAIL POSITION | DAMPER LOCATION IN SLEEVE | ACCESSORIES |
|-------|-----------------|----------|-------------------------------|----------------|-----------------|---------------------|--------------------|----------|----------------------|---------------|------------------------------|-------------|
| 1221G | ie: 24" x 24" | V H | 125 | ERL | 165 | | 20G | 411 | EXT | CL | L0 | 300 |
| | | | 135 | ML4 | 212 | | 18G | 811 | INT | | | EP1 |
| | | | 225 | PRL | 250 | | 16G | 296 | | | | EP2 |
| | | | 235 | | 280 | | 14G | | | | | QS1 |
| | | | | | 350 | | 10G | | | | | TDF1 |
| | | | | | HL | SPECIFY LENGTH | | | | | SPECIFY LOCATION | |

- Notes: 1. * 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.
2. ** Standard sleeve is 16" (406) long x 20 ga. (1.0), provides a grille clearance depth of 2 1/2" (64), and requires a minimum wall thickness of 6 1/2" (165) (closed damper blades must remain within the plane of the wall/floor). Damper position 'S' may be reduced to accommodate a thinner wall but grille clearance will reduce accordingly.
3. MLS-300 is included as part of MLS-400 package.

SUGGESTED SPECIFICATION:

Provide and install, as shown on plans and/or schedules, Combination Fire/Smoke Dampers approved for use with grilles where ductwork design penetrates and terminates at a fire separation. Dampers shall be as manufactured by Nailor Industries and shall meet or exceed 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 80, 90A, 92A, 92B, 101 and 105. Dampers shall be classified by Underwriter's Laboratories and labeled as 1 1/2 hour Dynamic Fire Damper under UL 555, and 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 16" (406) long factory installed sleeves and shall be field verified by contractor, dependent on wall thickness. Sleeves shall be caulked to UL requirements and shall be 20 ga. (1.0) galvanized steel with 3/4" (19) wide grille mounting flanges on one end.

Appropriate electrical 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. Damper and actuator assembly shall be factory cycled a minimum of three times to ensure correct operation.

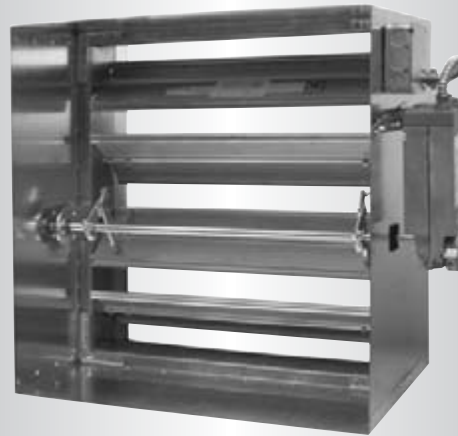
Each damper shall be equipped with a UL Classified heat responsive device that will cause the damper to close in a controlled manner and lock in a closed position by means of an over center/knee lock linkage, when the duct temperature reaches the maximum degradation temperature of the damper/actuator assembly as required by UL 555S. Closure devices that cause instantaneous closure are not acceptable. Damper manufacturer shall submit independent test data supporting low pressure drop design. Standard of acceptance: Nailor Industries Model 1221G.

- MODULATING (VOLUME CONTROL)
- PREMIUM PERFORMANCE
- AIRFOIL BLADE
- UL 555 CLASSIFIED DYNAMIC FIRE DAMPER
- UL 555S SMOKE DAMPER

MODELS:

1220M 1 1/2 HR LABEL

1220M-3 3 HR LABEL



Model 1221M

The 1220M Series modulating dampers are classified for use as a volume control damper in 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 2 hours and a leakage rated damper for operational smoke control in static or dynamic smoke management systems.

The 1220M Series has been especially designed and tested to provide premium performance. It offers the lowest leakage class available and is qualified for installation with airflow in either direction. Airfoil blade design and elimination of blade sills, top and bottom, provide a low pressure drop design.

Unique, inter-locking double skin blade design provides flame and smoke seal under fire conditions.

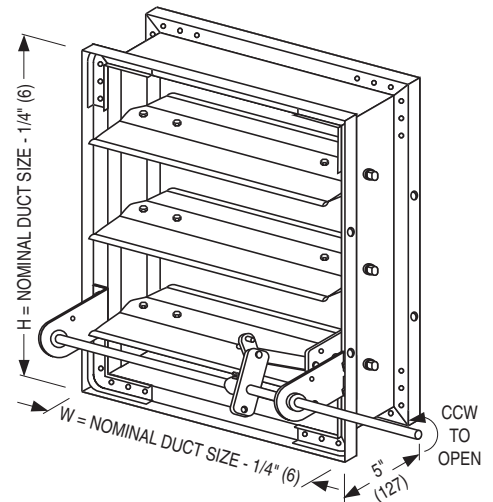
QUALIFICATIONS:

- UL 555 & CAN/ULC-S112 CLASSIFIED DYNAMIC FIRE DAMPER 1 1/2 or 3 hr. Label. (File #'s R9492 & R19569).
- UL 555S CLASSIFIED SMOKE DAMPER (File # R9492) Leakage Class I at 250°F elevated temperature.
- Meets NFPA 80, 90A, 92A, 92B, 101 and 105 as well as IBC and NBC (Canada) Building Code requirements.
- California State Fire Marshall: Fire Damper Listing No. 3225-0935-106.
- City of New York MEA # 366-03-M.
- Maximum velocity 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa).

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): ERL (Electric Resettable Link) is standard on dampers with electric actuators: 250°F (121°C) standard. 165°F (74°C) and 212°F (100°C) available. PRL (Pneumatic Replaceable Link) is std. on dampers with pneumatic actuators: 212°F (100°C) standard. 165°F (74°C) available.



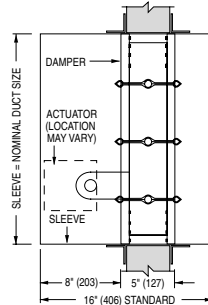
MODEL 1220M 1 1/2 HOUR LABEL
MODEL 1220M-3 3 HOUR LABEL

COMBINATION FIRE/SMOKE DAMPERS

| MODEL 1220M (1 1/2 HR. LABEL) | | MODEL 1220M-3 (3 HR. LABEL) | |
|-------------------------------|---|-----------------------------|--|
| MIN. DUCT SIZE: | Vertical or Horizontal mount: 8" x 8" (203 x 203); 8" x 6" (203 x 152) with low profile frame (max. size 18" x 6" [457 x 152]). | MIN. DUCT SIZE: | Vertical or Horizontal mount: 8" x 8" (203 x 203). |
| MAX. DUCT SIZE: | Single Section Vertical mount: 36" x 36" (914 x 914). Horizontal mount: 32" x 36" (813 x 914). Multiple Section Assembly Vertical mount: 72" x 72" (1829 x 1829). Horizontal mount: 64" x 72" (1626 x 1829). | MAX. DUCT SIZE: | Single Section Vertical mount: 36" x 36" (914 x 914). Horizontal mount: 32" x 36" (813 x 914). Multiple Section Assemblies are not permitted. |

Model Series 1220M (1 1/2 Hr. Label) dampers with duct heights less than 6" (152) (8" [203] if width is over 18" [457]) or Model Series 1220M-3 (3 Hr. Label) with duct heights less than 8" (203) require a Type 'B' sleeve enclosure (Model 1222M/1222M-3). Duct sizes less than 8" (203) in width require a Type 'C' enclosure (Model 1223M/1223M-3).

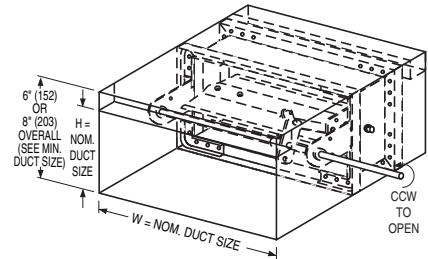
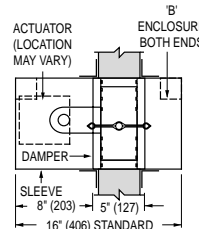
WITH TYPE A SLEEVE: MODELS 1221M/1221M-3



| 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 1222M/1222M-3



Min. Duct Size: 8" x 4" (203 x 102)

(Overall damper height is 8" (203) [6" (152) on duct sizes 18" x 5 1/2" (457 x 140) and under (1 1/2 Hr. Label Only)]).

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).

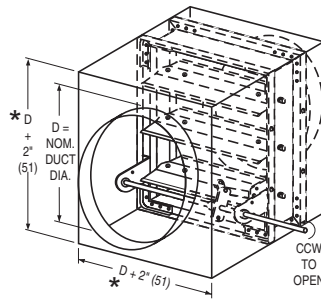
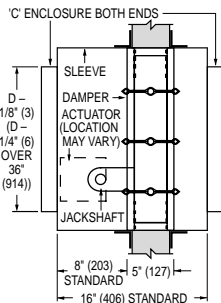
Multiple Section Assembly Model 1222M

Vertical mount: 72" x 7 1/2" (1829 x 191).
Horizontal mount: 64" x 7 1/2" (1626 x 191).

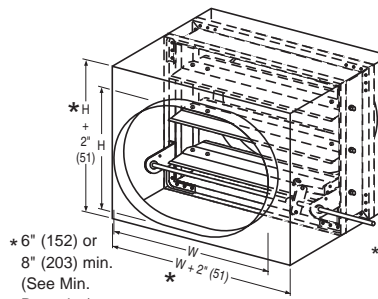
Multiple Section Assembly Model 1222M-3

Multiple Section Assemblies are not permitted.

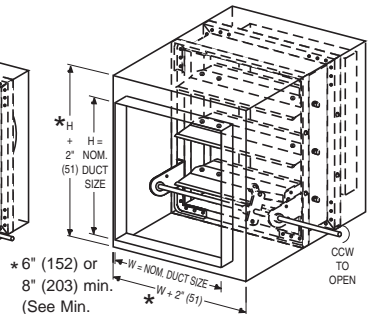
TYPE C SLEEVE ENCLOSURES: MODELS 1223M / 1223M-3



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 6" (203 x 152) (1 1/2 Hr. Label only); 8" x 8" (203 x 203) min. for duct sizes over 4" (102) dia.)

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

Multiple Section Assembly Model 1223M

Vertical mount: 70" (1778) diameter.
Horizontal mount: 62" (1575) diameter.

Multiple Section Assembly Model 1223M-3

Multiple Section Assemblies are not permitted.

Min. Duct Size: Vertical or Horizontal mount:
4" x 4" (102 x 102).
(Overall damper width is 8" minimum; minimum overall height is 6" (152) (1 1/2 Hr. Label only) [8" (203) for duct sizes over 16" x 4" (406 x 102)]).

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

Multiple Section Assembly Model 1223M

Vertical mount: 70" x 70" (1778 x 1778).
Horizontal mount: 62" x 70" (1575 x 1778).

Multiple Section Assembly Model 1223M-3

Multiple Section Assemblies are not permitted.

COMBINATION FIRE/SMOKE DAMPERS

MODELS: 1220M/1221M/1222M/1223M (1 1/2 HOUR LABEL)
1220M-3/1221M-3/1222M-3/1223M-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 |
| CLOSURE DEVICE: | ERL | Electric Resettable Link |
| | ML4 | MLS-400 Fire Sensor |
| | PRL | Reopenable Control System Pneumatic Replaceable Link |
| CLOSURE TEMPERATURE: | 165 | 165 F (74 C) |
| | 212 | 212°F (100°C) |
| | 250 | 250°F (121°C) |
| | HL (must select with MLS-400) | High=250°F/Low=165°F |
| SLEEVE LENGTH/GAUGE: | Specify Sleeve Length: | 12" (305) to 36" (914). |
| | Specify Sleeve Gauge: | 20G, 18G, 16G, 14G, 10G |
| ACTUATORS: | MS7 | Honeywell MS7510A (24 VAC) |
| | 296P | Siemens 331-2961PR (25 psi) |
| ACTUATOR MOUNTING: | EXT | External 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 1223M 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: (MODEL 1221M ONLY) | TDF1 | TDF Flange on One End |
| | TDF2 | TDF Flange on Both Ends |
| DAMPER TEST SWITCH: | DTS | Push Button Test Switch |
| DUCT SMOKE DETECTOR: | DSDL | Low-Flow with Tube |
| | DSDN | No-Flow |

HOW TO ORDER OR TO SPECIFY

COMBINATION FIRE / SMOKE DAMPERS

MODELS: 1 1/2 HOUR LABEL 1220M/1221M/1222M/1223M

3 HOUR LABEL 1220M-3/1221M-3/1222M-3/1223M-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 * |
|--|---------------------------------|----------|-------------------------------|---------------------|-------------------------|----------------------|---------------------------------|-------------|----------------------|----------------------|---------------|------------------------------|---|---|
| 1220M 1221M 1222M 1223M 1220M-3 1221M-3 1222M-3 1223M-3 | ie: 36" x 24" or 18" dia. | V H | 125 | ERL ML4 PRL | 165 212 250 HL | SPECIFY LENGTH | 20G 18G 16G 14G 10G | MS7 296P | EXT | RH LH MH | CL | L8 L0 | CR CO CSR | 300 EP1 EP2 SMP QS1 QS2 TDF1 TDF2 DTS DSDL DSDN |

- 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, modulating combination fire/smoke dampers suitable for volume control 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 80, 90A, 92A, 92B, 101 and 105. 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 Smoke Damper under UL 555S at an elevated temperature of 250°F (121°C). Dampers shall be tested and approved for use as a volume control damper 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 minimum 20 ga. (1.0).

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). 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. Standard of acceptance: Nailor Industries Model 1220M (1 1/2 hour rating) or Model 1220M-3 (3 hour rating).

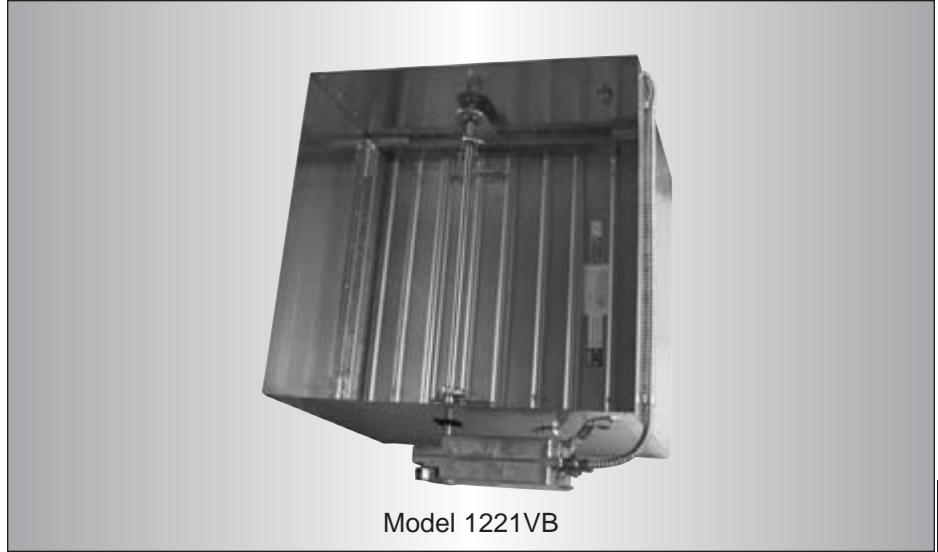
- VERTICAL BLADES
- PREMIUM PERFORMANCE
- ULTRA-LOW LEAKAGE
- UL 555 CLASSIFIED DYNAMIC FIRE DAMPER
- UL 555S SMOKE DAMPER

MODELS:

1221VB TYPE A IN SLEEVE

1222VB TYPE B

1223VB TYPE C



Model 1221VB

Model 1221VB (Vertical Blade) is a high performance combination fire/smoke damper that provides superior protection and versatility. The vertical blade configuration allows for the actuator to be mounted below the damper and is ideal for applications where bottom access is desired or where there isn't space for a side mounted actuator.

The 1221VB Series dampers are ideal for applications where building codes require both a fire damper for the protection of ductwork penetrations in walls that have a fire resistance rating of up to 2 hours and also require a leakage rated damper for operational smoke control in static or dynamic smoke management systems.

The 1221VB Series has been especially designed and tested to provide premium performance. It offers the lowest leakage class available and is qualified for installation with airflow in either direction. Airfoil blade design and elimination of blade sills provide a low pressure drop design.

Unique, inter-locking double skin blade design provides flame and smoke seal under fire conditions at temperatures up to 2000°F.

QUALIFICATIONS:

- UL 555 & CAN/ULC-S112 CLASSIFIED DYNAMIC FIRE DAMPER 1 1/2 Label. (File #'s R9492 & R19569).
- UL 555S CLASSIFIED SMOKE DAMPER (File # R9492) Leakage Class I or II at 250°F elevated temperature.
- Meets NFPA 80, 90A, 92A, 92B, 101 and 105 as well as IBC and NBC (Canada) Building Code requirements.
- California State Fire Marshall: Fire Damper Listing No. 3225-0935-106.
- City of New York MEA # 366-03-M.
- Maximum velocity 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa).

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.

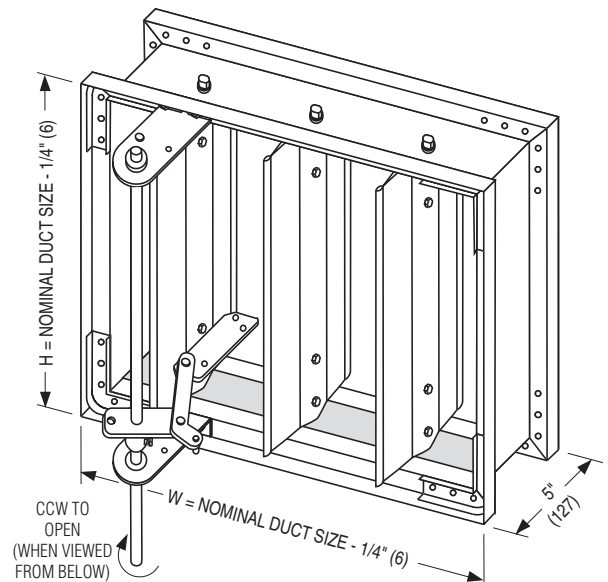
JAMB SEALS: Stainless Steel.

HEAT RESPONSIVE DEVICE (CONTROLLED CLOSURE):

250°F (121°C) standard. 165°F (74°C) and 212°F (100°C) available. ERL (Electric Resettable Link) is standard on all dampers with electric actuators.

Minimum Size: Vertical mount only: 8" x 8" (203 x 203).

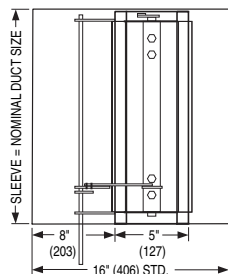
Maximum Size: Single Section
Vertical mount only: 48" x 36" (1219 x 914).
Multiple Section Assemblies are not permitted.



MODEL 1221VB
(Sleeve not shown)

Model Series 1221VB dampers with duct heights less than 8" (203) require a Type 'B' sleeve enclosure (Model 1222VB). Units less than 8" (203) in width only, or in both width and height, require a Type 'C' enclosure (Model 1223VB).

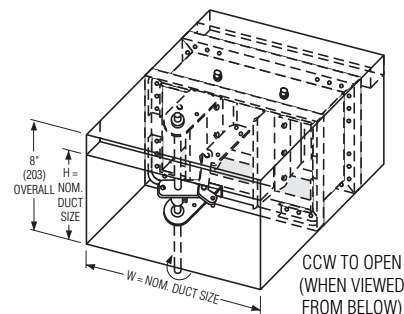
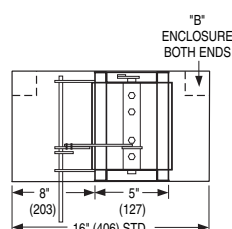
WITH TYPE A SLEEVE: MODEL 1221VB



| 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).

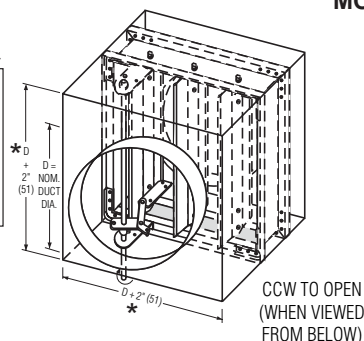
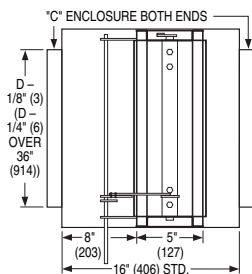
TYPE B SLEEVE ENCLOSURE: MODEL 1222VB



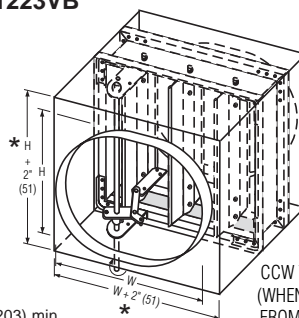
Min. Duct Size: Vertical mount only: 8" x 4" (203 x 102). (Overall damper height is 8" [203]).

Max. Duct Size: Single Section
Vertical mount only: 48" x 7 1/2" (1219 x 191).
Multiple Section Assemblies are not permitted.

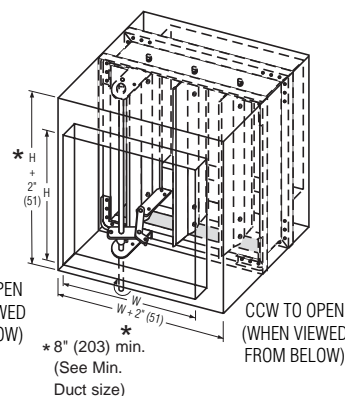
TYPE C SLEEVE ENCLOSURES: MODEL 1223VB



STYLE CR : FOR ROUND DUCT



STYLE CO : FOR OVAL DUCT



STYLE CSR : FOR SQUARE OR RECTANGULAR DUCT

Min. Duct Size: Vertical mount only: 4" (102) diameter. (Overall damper size is 8" x 8" [203 x 203] min.).
Max. Duct Size: Single Section
Vertical mount only: 34" (864) diameter.
Multiple Section Assemblies are not permitted.

Min. Duct Size: Vertical mount only: 4" x 4" (102 x 102). (Overall damper size is 8" x 8" [203 x 203] min.).
Max. Duct Size: Single Section – Vert. mount only: 46" x 34" (1168 x 864).
Multiple Section Assemblies are not permitted.

COMBINATION FIRE/SMOKE DAMPERS

MODELS: 1221VB/1222VB/1223VB

VARIABLES / ACCESSORIES

| VARIABLES: | CODE | DESCRIPTION |
|--|--|--|
| MOUNTING: | V | Vertical Mount (wall) |
| LEAKAGE/ELEV. TEMP. RATINGS: | 125 225 | Class I @ 250°F Class II @ 250°F |
| CLOSURE DEVICE: | ERL ML4 | Electric Resettable Link MLS-400 Fire Sensor Reopenable Control System |
| CLOSURE TEMPERATURE: | 165 212 250 HL (must select with MLS-400) | 165 F (74 C) 212°F (100°C) 250°F (121°C) High=250°F/Low=165°F |
| SLEEVE LENGTH/GAUGE: | Specify Sleeve Length: Specify Sleeve Gauge: | 12" (305) to 36" (914). 20G, 18G, 16G, 14G, 10G |
| ACTUATORS: | 412 812 462 | Honeywell MS4120 (120 VAC) Honeywell MS8120 (24 VAC) Honeywell MS4620 (230 VAC) |
| ACTUATOR MOUNTING: | EXT | External Mount |
| FAIL POSITION: | CL | Damper to Fail Closed |
| DAMPER LOCATION IN SLEEVE: | L8 L0 | 8" (204) from Sleeve End Specify Dimension from Sleeve End |
| IF MODEL 1223VB IS SELECTED, SPECIFY TYPE OF TRANSITION: | CR CO CSR | Round Type C Transitions Oval Type C Transitions Square/Rect. Type C Transitions |
| ACCESSORIES: | CODE | DESCRIPTION |
| POSITION INDICATOR: | 300 | MLS-300 Switch Pack |
| MOTOR MTG. PLATE: | SMP | Side Mounting Plate (required for mounting of actuator without sleeve) |
| RETAINING ANGLES: | QS1 QS2 | One "Quick Set" retaining angle Set of two "Quick Set" retaining angles |
| FLANGED SLEEVE: (MODEL 1221VB ONLY) | TDF1 TDF2 | TDF Flange on One End TDF Flange on Both Ends |
| DAMPER TEST SWITCH: | DTS | Push Button Test Switch |
| DUCT SMOKE DETECTOR: | DSDL DSDN | Low-Flow with Tube No-Flow |

HOW TO ORDER OR TO SPECIFY

COMBINATION FIRE/SMOKE DAMPERS

MODELS: 1221VB/1222VB/1223VB

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 | FAIL POSITION | DAMPER LOCATION IN SLEEVE | TRANSITION TYPE (MODELS 1223/1223-3 ONLY) | ACCESSORIES * |
|----------------------------|---------------------------------|----------|-------------------------------|---------------------|-------------------------|----------------------|---------------------------------|-------------------|----------------------|---------------|------------------------------|---|---|
| 1221VB 1222VB 1223VB | ie: 36" x 24" or 18" dia. | V | 125 225 | ERL ML4 | 165 212 250 HL | SPECIFY LENGTH | 20G 18G 16G 14G 10G | 412 812 462 | EXT | CL | L8 L0 | CR CO CSR | 300 SMP QS1 QS2 TDF1 TDF2 DTS DSDL DSDN |

- 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, vertical blade 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 and shall be oriented vertically to allow for bottom mount actuators. 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 80, 90A, 92A, 92B, 101 and 105. Dampers shall be classified by Underwriter's Laboratories and labeled as a 1 1/2 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) 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 minimum 20 ga. (1.0).

Appropriate electric actuators 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). Actuators shall incorporate an OEM internal spring return mechanism. External after-market spring mechanisms are not acceptable.

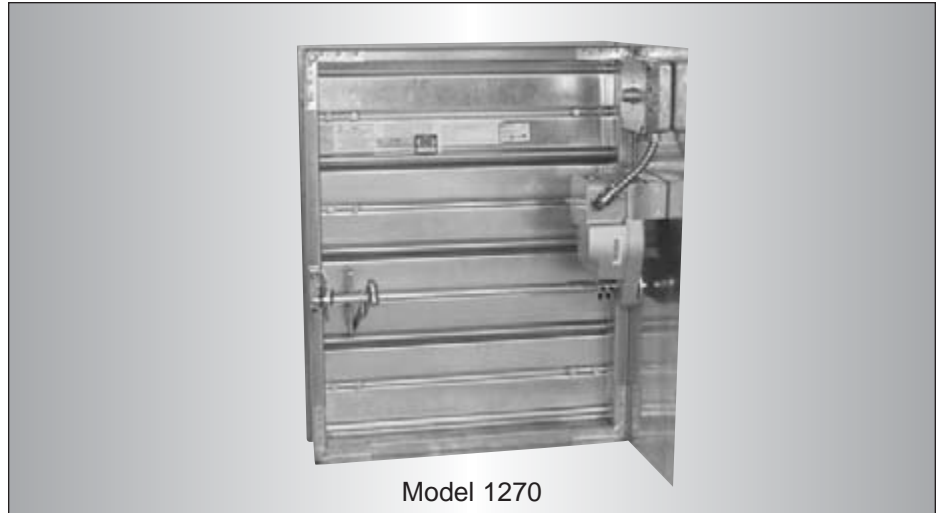
Each damper shall be equipped with a UL Classified heat responsive device that will cause the damper to close in a controlled manner and lock in a closed position by means of an over center/knee lock linkage, when the duct temperature reaches the maximum degradation temperature of the damper/actuator 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. Standard of acceptance: Nailor Industries Model 1221VB.

Notes:

- UL 555 CLASSIFIED DYNAMIC FIRE DAMPER
- UL 555S CLASSIFIED SMOKE DAMPER
- LEAKAGE CLASS I OR II

MODELS:

- 1270 TYPE A
1271 TYPE A IN SLEEVE
1272 TYPE B
1273 TYPE C



Model 1270

G

The Nailor Series 1270 combination fire/smoke damper, with sturdy vee-groove style blades and a rugged mitered corner hat channel frame design that virtually eliminates racking, provides 1 1/2 hour UL labeled fire protection suitable for use where ductwork penetrates a wall or floor with a fire resistance rating of 2 hours or less. The 1270 Series is also UL tested and labeled for use as a Class I or II Leakage Rated Damper for smoke control applications in both static or dynamic HVAC system designs. Available with factory mounted sleeve Model 1271, and a variety of actuators and options to suit each application, the 1270 Series is a versatile and economical performer suitable for use in the majority of commercial applications.

QUALIFICATIONS:

- UL 555 & CAN/ULC-S112 CLASSIFIED DYNAMIC FIRE DAMPER 1 1/2 Label. (File #'s R9492 & R19569).
- UL 555S CLASSIFIED SMOKE DAMPER (File # R9492) Leakage Class I or II at 250°F or 350°F elevated temperature.
- Meets NFPA 80, 90A, 92A, 92B, 101 and 105 as well as IBC and NBC (Canada) Building Code requirements.
- California State Fire Marshall: Fire Damper Listing No. 3225-0935-106.
- City of New York Board of Standards and Appeals. Cal. No. 460-88-SA.
- Maximum velocity 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa).

CONSTRUCTION DETAILS:

FRAME: 5" x 7/8" x 16 ga. (127 x 22 x 1.6) galvanized steel hat channel.
BLADES: 6" (152) wide on 5 1/2" (140) centers. 16 ga. (1.6) galvanized steel vee-groove or double skin design.

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 bolted to blades.

JACKSHAFT: 1/2" (13) dia. cadmium plated steel.

JAMB SEALS: Stainless steel.

BLADE SEALS: Stainless steel on vee groove blade.

HEAT RESPONSIVE DEVICE (CONTROLLED CLOSURE): ERL (Electric Resettable Link) is standard on dampers with electric actuators: 250°F (121°C) standard. 165°F (74°C), 212°F (100°C) and 350°F (176°C) available. PRL (Pneumatic Replaceable Link) is standard. on dampers with pneumatic actuators: 212°F (100°C) standard. 165°F (74°C) and 280°F (138°C) available.

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: 30" x 40" (762 x 1016).

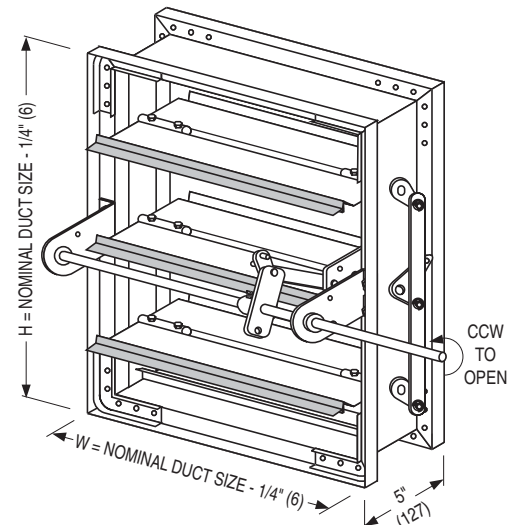
Multiple Section Assembly

Vertical mount: 91" x 40" (2311 x 1016) or

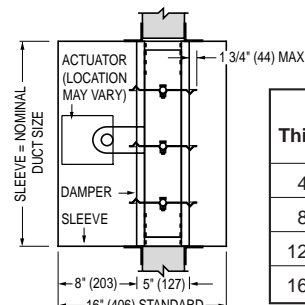
72" x 48" (1829 x 1219).

Horizontal mount: 91" x 40" (2311 x 1016) or

30" x 91" (762 x 2311).



TYPE A: MODEL 1270



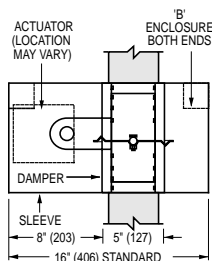
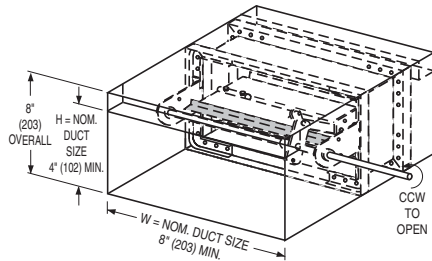
| Wall Thickness | Minimum Sleeve Length |
|----------------|-----------------------|
| 4 (102) | 16 (406) |
| 8 (203) | 20 (508) |
| 12 (305) | 24 (610) |
| 16 (406) | 28 (711) |

TYPE A WITH SLEEVE: MODEL 1271

Standard factory sleeve (caulked to UL requirements) 16" long x 20 ga. (406 x 1.0) (18 ga. 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).

Model Series 1270 dampers with duct heights less than 8" (203) require a Type 'B' sleeve enclosure (Model 1272). Units less than 8" (203) in width only, or in both width and height, require a Type 'C' enclosure (Model 1273).

TYPE B SLEEVE ENCLOSURE MODEL: 1272



Min. Duct Size:

8" x 4" (203 x 102) (Overall damper H is 8").

Max. Duct Size:

Single Section

Vertical mount: 36" x 7 1/2" (914 x 191).

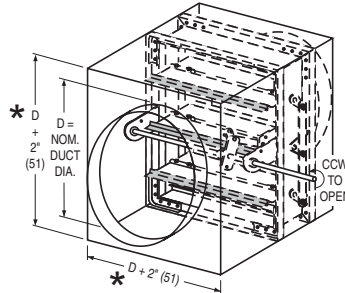
Horizontal mount: 30" x 7 1/2" (762 x 191).

Multiple Section Assembly

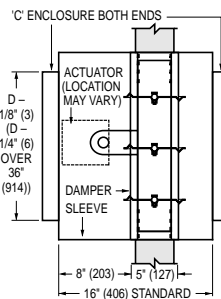
Vertical mount: 91" x 7 1/2" (2311 x 191).

Horizontal mount: 91" x 7 1/2" (2311 x 191).

TYPE C SLEEVE ENCLOSURES MODEL: 1273



STYLE CR: FOR ROUND DUCT



TYPE C SIDE VIEW

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

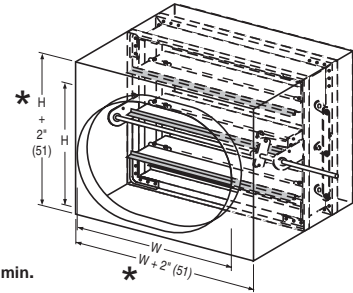
Vertical mount: 34" (864) diameter.

Horizontal mount: 28" (711) diameter.

Multiple Section Assembly

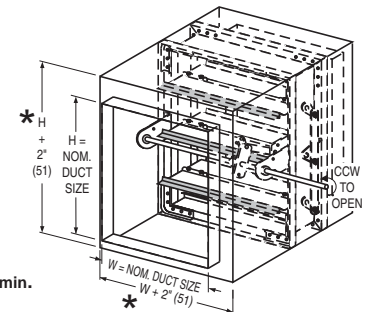
Vertical mount: 46" (1168) diameter.

Horizontal mount: 38" (965) diameter.



* or 8" (203) min.

STYLE CO: FOR OVAL DUCT



* or 8" (203) min.

STYLE CSR: FOR SQUARE or RECTANGULAR DUCT

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: 28" x 38" (711 x 965).

Multiple Section Assembly

Vertical mount: 89" x 38" (2261 x 965) or

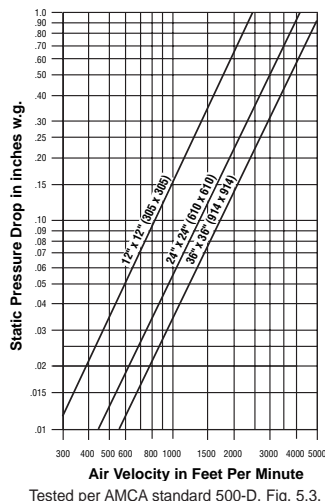
70" x 46" (1176 x 1168).

Horizontal mount: 89" x 38" (2261 x 965)

or 28" x 89" (711 x 2261).

PERFORMANCE DATA:

PRESSURE DROP (damper fully open)



Imperial figures shown.
To convert to SI (metric) system:

Multiply:

CFM x .4719 = liters per second

inches w.g. x .2486 = kilopascals

fpm x .00508 = meters per second

cfm per sq. ft. x 5.08 = liters/second per sq. meter.

LEAKAGE CLASS

The 1270 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 or 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 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 ² (m ³ /s/m ²) | |
|---------------|---|-----------------------|
| | @ 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) |

COMBINATION FIRE / SMOKE DAMPERS

MODELS: 1270/1271/1272/1273

VARIABLES/ACCESSORIES

| VARIABLES: | CODE | DESCRIPTION |
|--|---|--|
| MOUNTING: | V H | Vertical Mount (wall) Horizontal Mount (floor) |
| LEAKAGE / ELEV. TEMP. RATINGS: | 125 135 225 235 | Class I @ 250°F Class I @ 350°F Class II @ 250°F Class II @ 350°F |
| CLOSURE DEVICE: | ERL ML4 PRL | Electric Resettable Link MLS-400 Fire Sensor Reopenable Control System Pneumatic Replaceable Link |
| CLOSURE TEMPERATURE: | 165 212 250 280 (PRL only) 350 (ERL only) HL (must select with MLS-400) | 165°F (74°C) 212°F (100°C) 250°F (121°C) 280°F (138°C) 350°F (177°C) High=350°F/Low=165°F |
| SLEEVE LENGTH/GAUGE: | Specify Sleeve Length: Specify Sleeve Gauge: | 12" (305) to 36" (914). 20G, 18G, 16G, 14G, 10G |
| ACTUATORS: | A wide selection of U.L. tested and approved actuators are available. Contact your representative for further assistance. | |
| ACTUATOR MOUNTING: | EXT INT | External Mount Internal Mount |
| ACTUATOR LOCATION: | RH LH MH | Right-Hand Mount Left-Hand Mount Multi-Hand Mount |
| FAIL POSITION: | CL | Damper to Fail Closed |
| DAMPER LOCATION IN SLEEVE: | L8 L0 | 8" (204) from Sleeve End Specify Dimension from Sleeve End |
| IF MODEL 1273 IS SELECTED, SPECIFY TYPE OF TRANSITION: | CR CO CSR | Round Type C Transitions Oval Type C Transitions Square/Rect. Type C Transitions |
| ACCESSORIES: | CODE | DESCRIPTION |
| POSITION INDICATOR: | 300 | MLS-300 Switch Pack |
| E.P. SWITCH: | EP1 EP2 | 120V Siemens 2651008 24Vac Siemens 2651007 |
| MOTOR MTG. PLATE: | SMP | Side Mounting Plate (required for mounting of actuator without sleeve) |
| RETAINING ANGLES: | QS1 QS2 | One "Quick Set" retaining angle Set of two "Quick Set" retaining angles |
| FLANGED SLEEVE: | TDF1 TDF2 | TDF Flange on One End TDF Flange on Both Ends |
| DAMPER TEST SWITCH: | DTS | Push Button Test Switch |
| DUCT SMOKE DETECTOR: | DSDL DSDN | Low-Flow with Tube No-Flow |

HOW TO ORDER OR TO SPECIFY

COMBINATION FIRE/SMOKE DAMPERS

MODELS: 1270/1271/1272/1273

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 or DIA. | 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 (MODEL 1273 ONLY) | ACCESSORIES * |
|-------|-----------------------|----------|-------------------------------|---------------------|---------------------|----------------------|---------------------|---|----------------------|----------------------|---------------|------------------------------|--------------------------------------|------------------|
| 1270 | ie: 36" x 24" | V | 125 | ERL | 165 | SPECIFY LENGTH | 20G | A WIDE SELECTION OF UL TESTED AND APPROVED ACTUATORS ARE AVAILABLE | EXT | RH | CL | L8 | CR | 300 |
| 1271 | or | H | 135 | ML4 | 212 | | 18G | | INT | LH | | L0 | CO | EP1 |
| 1272 | 18" dia. | | 225 | PRL | 250 | | 16G | | | MH | | | CSR | EP2 |
| 1273 | | | 235 | | 280 | | 14G | | | | | | | SMP |
| | | | | | 350 HL | | 10G | | | | | | | QS1 |
| | | | | | | | | | | | | | | QS2 |
| | | | | | | | | | | | | | | TDF1 |
| | | | | | | | | | | | | | | TDF2 |
| | | | | | | | | | | | | | | DTS |
| | | | | | | | | | | | | | | DSDL |
| | | | | | | | | | | | | | | DSDN |

- 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 of vee-groove design, 16 ga. (1.6) galvanized steel, on 5 1/2" (140) centers and shall be parallel configuration. Blade axles shall be 1/2" (13) dia. plated steel, double bolted at each end of blade to ensure 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. Blade seals shall be stainless steel.

Dampers shall meet the requirements of NFPA 80, 90A, 92A, 92B, 101 and 105. Dampers shall be classified by Underwriters Laboratories and labeled as a 1 1/2 hour Fire Damper under UL 555, and as a **(specifier select one)** Class I or Class II Leakage Rated Smoke Damper under UL 555S at an elevated temperature of **(specifier select one)** 250°F (121°C) or 350°F (177°C). Dampers shall be qualified for use in dynamic or static Smoke Control Systems. Dampers shall be supplied with factory installed sleeves of minimum 16" (406) length, to 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 type)** 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 **(specifier select one)** 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. Damper and actuator assembly shall be factory cycled a minimum of three times to ensure correct operation.

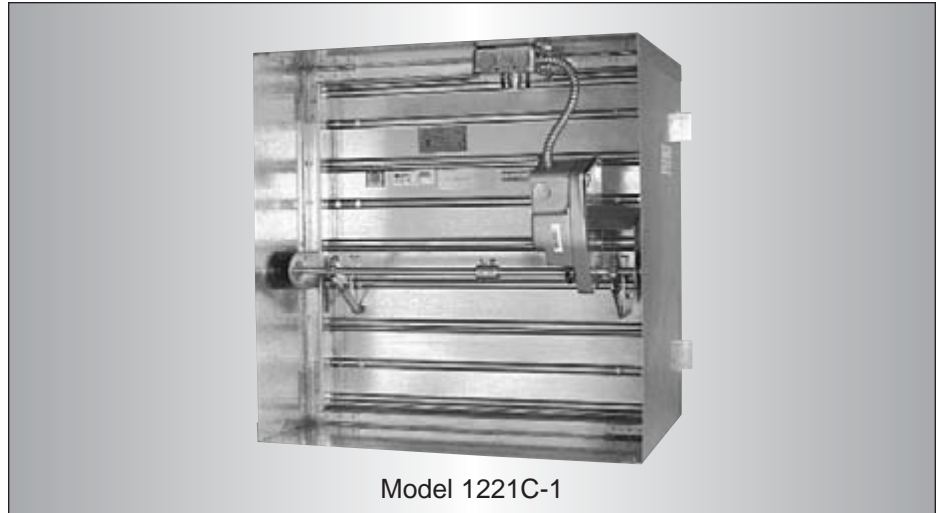
Each damper shall be equipped with a UL Classified heat responsive device that will cause the damper to close in a controlled manner and lock in a closed position by means of an over center/knee lock linkage, when the duct temperature reaches the maximum degradation temperature of the damper/actuator assembly as required by UL 555S. Closure devices that cause instantaneous closure are not acceptable.

Damper manufacturer shall submit independent test data verifying pressure drop, leakage characteristics and airflow conditions. Standard of acceptance: Nailor Industries Model 1270.

CORRIDOR FIRE/SMOKE DAMPERS • AIRFOIL BLADE

- TUNNEL CORRIDOR FIRE/SMOKE DAMPER
- AIRFOIL BLADE
- ULTRA-LOW LEAKAGE
- UL555 1 HR RATING
- UL555S CLASS I AT 250° OR 350°F

**MODELS: 1221C-1
1221C-2**



Model 1221C-1

Nailor Models 1221C-1 and 1221C-2 Tunnel Corridor Combination Fire/Smoke Dampers are for use where ductwork penetrates the ceiling of an interior corridor of a building, creating a horizontal opening that requires protection. Unique interlocking airfoil blade design provides low pressure drop and ultra-low leakage without the use of blade seals that can burn-off during fire conditions. Model 1221C-1 is suitable for use with a steel grille or diffuser when the duct terminates at the ceiling. Model 1221C-2 is suitable for use when the duct is required to continue down past the ceiling level. Each unit is supplied factory mounted in a suitable sleeve complete with upper retaining angles. For applications where the duct terminates at the ceiling, other manufacturers require full length lower retaining angles with minimum 1" (25) ceiling overlap that protrudes past the grille/diffuser frame causing aesthetic difficulties. Model 1221C-1 is provided with lower mounting tabs that are easily covered by available variety of Nailor steel grilles/diffusers, solving this problem. For Model 1221C-2, lower retaining angles are available from Nailor. Either way, Nailor provides complete protection with reduced installation time and cost.

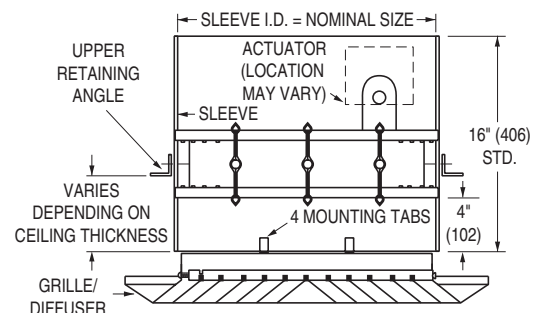
QUALIFICATIONS:

- UL 555 CLASSIFIED CORRIDOR DAMPER
1 hr. Fire Resistance Rating (File # R9492).
- UL 555S CLASSIFIED SMOKE DAMPER
Leakage Class I at 250°F or 350°F elevated temperature (File # R9492).
- California State Fire Marshal: Fire Damper Listing No. 3225-0935:106.
- Meets the requirements of NFPA 90A, NFPA 92A for Fire/Smoke Dampers.
- Meets the requirements of City of Los Angeles, Uniform Building Code.
- Maximum velocity 2000 fpm @ 4" w.g. (up to 3000 fpm with specific actuators. Consult Nailor).

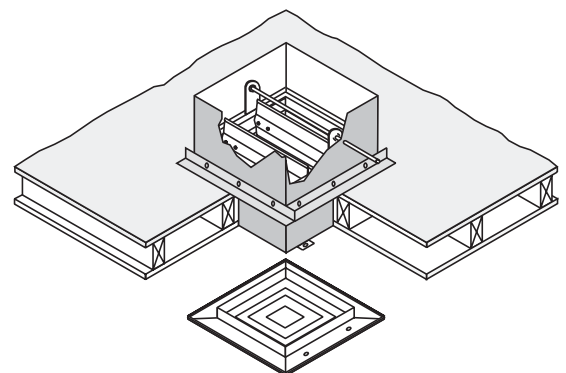
Model: 1221C-1

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.
- SLEEVE:** 16" x 20 ga. (406 x 1.0) standard.
- UPPER RETAINING ANGLES:** 1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.6) galvanized steel (by Nailor).
- LINKAGE:** Concealed in frame.
- BEARINGS:** 1/2" (13) dia. self-lubricating oilite bronze.
- AXLES:** 1/2" (13) dia. plated steel double bolted to blades.
- JAMB SEALS:** Cambered stainless steel.
- HEAT RESPONSIVE DEVICE (CONTROLLED CLOSURE):** 250°F (121°C) std. 165°F (74°C), 212°F (100°C) and, with ERL only, 350°F (176°C) available.
- MINIMUM SIZE:** 8" x 8" (203 x 203).
- MAXIMUM SIZE:** 24" x 24" (610 x 610).



Model 1221C-1 (for use with Steel Grille/Diffuser)

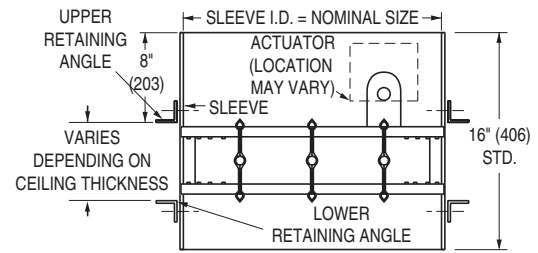


Isometric View of typical Model 1221C-1 in 1 hour wood stud ceiling

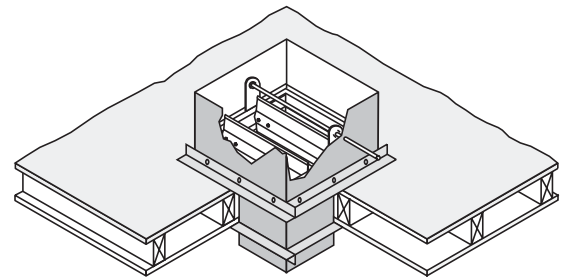
Model: 1221C-2 (For Ducted Installation)

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.
- SLEEVE:** 16" x 20 ga. (406 x 1.0) standard.
- UPPER RETAINING ANGLES:** 1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.6) galvanized steel (by Nailor).
- LOWER RETAINING ANGLES:** 1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.6) galvanized steel by installing contractor (optionally by Nailor).
- LINKAGE:** Concealed in frame.
- BEARINGS:** 1/2" (13) dia. self-lubricating oilite bronze.
- AXLES:** 1/2" (13) dia. plated steel double bolted to blades.
- JAMB SEALS:** Cambered 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.
- MINIMUM SIZE:** 8" x 8" (203 x 203).
- MAXIMUM SIZE:** 24" x 24" (610 x 610).



Model: 1221C-2



Isometric View of typical Model 1221C-2 in 1 Hour wood stud ceiling.

ERL (Electric Resettable Link) is standard on all dampers with electric actuators. PRL (Pneumatic Replaceable Link) is standard on all dampers with pneumatic actuators.

LEAKAGE CLASS

The 1221C Series Tunnel Corridor 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 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) (up to 3000 fpm with specific actuators. Consult Nailor).

| Leakage Class | Maximum Leakage cfm/ft ² (m ³ /s/m ²) | |
|---------------|--|--------------------------|
| | @ 1" w.g. (0.249 kPa) | @ 4" w.g. (0.995 kPa) |
| I | 4 (0.020) | 8 (0.041) |

CORRIDOR COMBINATION FIRE/SMOKE DAMPERS
MODELS: 1221C-1/1221C-2
VARIABLES/ACCESSORIES

| VARIABLES: | CODE | DESCRIPTION |
|--|---|--|
| LEAKAGE RATINGS: | I | Class I |
| MAXIMUM VELOCITY/ PRESSURE RATING: | 24 34 | 2000 fpm @ 4" w.g. 3000 fpm @ 4" w.g. |
| ELEVATED TEMPERATURE RATING: | 250 350 | 250°F 350°F |
| CLOSURE DEVICE: | ERL ML4 PRL | Electric Resettable Link MLS-400 Fire Sensor Reopenable Control System Pneumatic Replaceable Link |
| CLOSURE TEMPERATURE: | 165 212 250 280 (PRL only) 350 (ERL only) HL (must select with MLS-400) | 165°F (74°C) 212°F (100°C) 250°F (121°C) 280°F (138°C) 350°F (177°C) High=350°F or 250°F/ Low=165°F |
| SLEEVE LENGTH/GAUGE: | Specify Sleeve Length: Specify Sleeve Gauge: | 16" (406) to 28" (711). 20G, 18G, 16G, 14G, 10G |
| ACTUATORS: | 411 811 MS4 MS8 4Y0 F12 F24 412 812 462 GD2 GD1 GD3 296 306 | Honeywell ML4115 (120 VAC) Honeywell ML8115 (24 VAC) Honeywell MS4X09 (120 VAC) Honeywell MS8X09 (24 VAC) Honeywell MS4Y09 (230 VAC) Belimo FSNF120 (120 VAC) Belimo FSNF24 (24 VAC) Honeywell MS4120 (120 VAC) Honeywell MS8120 (24 VAC) Honeywell MS4620 (230 VAC) Siemens GGD221 (120 VAC) Siemens GGD121 (24 VAC) Siemens GGD321 (230 VAC) Siemens 331-2961 (25 psi) Siemens 331-3060 (25 psi) |
| ACTUATOR MOUNTING: | EXT INT | External Mount Internal Mount |
| ACTUATOR LOCATION: | RH LH | Right-Hand Mount Left-Hand Mount |
| UPPER ANGLES: | UNM UFM | Not Factory Mounted Factory Mounted |
| ANGLE LOCATION: (Model 1221C-1 only) | When Upper Angles are Factory Mounted, Specify Upper Angle Location on Sleeve | |
| ACCESSORIES: | CODE | DESCRIPTION |
| POSITION INDICATOR: | 300 | MLS-300 Switch Pack |
| E.P. SWITCH: | EP1 EP2 | 120V Siemens 2651008 24Vac Siemens 2651007 |
| LOWER ANGLES: (Model 1221C-2 only) | LNM | Lower Angles supplied loose (not mounted) |
| TRANSITION COLLARS: | SRT SRB (Model 1221 C-2 only) SR2 (Model 1221 C-2 only) | Top Transition for Round Duct Connection - Specify Diameter Bottom Transition for Round Duct Connection - Specify Diameter Both Top and Bottom Transitions For Round Duct - Specify Diameter |

HOW TO ORDER OR TO SPECIFY

CORRIDOR COMBINATION FIRE/SMOKE DAMPERS

MODELS: 1221C-1/1221C-2

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) | LEAKAGE RATING CLASS | MAX. VELOCITY/ PRESSURE RATING | ELEVATED TEMP. RATING | CLOSURE DEVICE | CLOSURE TEMP. | SLEEVE LENGTH * | SLEEVE GAUGE * | ACTUATOR | ACTUATOR MOUNTING | ACTUATOR LOCATION | UPPER ANGLES | ANGLE LOCATION | ACCESSORIES |
|---------|-----------------|-------------------------|-----------------------------------|--------------------------|----------------|---------------|--------------------|-------------------|--|----------------------|----------------------|--------------|------------------|-------------|
| 1221C-1 | ie: 24" x 24" | I | 24 | 250 | ERL | 165 | | 20G | ACTUATORS ARE LISTED ON PREVIOUS PAGE | EXT | RH | UNM | | 300 |
| 1221C-2 | | | 34 | 350 | ML4 | 212 | | 18G | | INT | LH | UFM | | EP1 |
| | | | | | PRL | 250 | | 16G | | | | | | EP2 |
| | | | | | | 280 | | 14G | | | | | | LMN |
| | | | | | | 350 | | 10G | | | | | | SRB |
| | | | | | HL | | SPECIFY LENGTH | | | | | | SPECIFY LOCATION | SRT |
| | | | | | | | | | | | | | | SR2 |

- Notes: 1. Models 1221C-1 and 1221C-2 are for Horizontal Mount applications only.
 2. * Standard sleeve is 16" (406) long x 20 ga. (1.0).
 3. A wide variety of steel GRILLES/DIFFUSERS are available with Model 1221C-1.
 See Air Distribution Catalog or consult Nailor for selection assistance.
 4. MLS-300 Position Indicator is included as part of MLS-400 package.

SUGGESTED SPECIFICATION:

Provide and install, as shown on plans and/or schedules, Corridor 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. Blades axles shall be 1/2" (13) dia. plated steel, double bolted at each end of blade to ensure positive locking connection. Hex or square friction-fit or press-fit axles are not acceptable. Bearings shall be zero-maintenance, concealed in frame, out of airstream. Jamb seals shall be compression type cambered stainless steel.

Dampers shall meet the requirements of NFPA 90A and 92A. Dampers shall be classified by Underwriters Laboratories and labeled as 1 hour fire resistance rated Corridor Damper under UL 555, and as a Class I Leakage Rated Smoke Damper under UL 555S at an elevated temperature of **(specifier select one)** 250°F (121°C) **or** 350°F (177°C). Each damper shall bear a UL label verifying same. Dampers shall be supplied with factory installed sleeves of minimum 16" (406) length, to be field verified by contractor dependent upon ceiling thickness. Factory sleeves shall be caulked to UL requirements and shall be complete with factory supplied upper retaining angles of minimum 1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.6) galvanized steel.

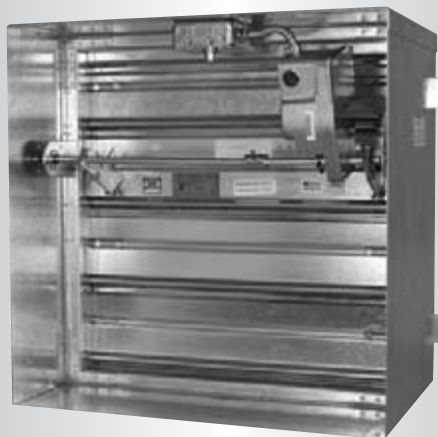
Appropriate electric **or** pneumatic actuators **(specifier select type)** shall be installed by the damper manufacturer in the factory and shall have been tested and classified under UL 555S with the damper, at an elevated temperature of **(specifier select one)** 250°F (121°C) **or** 350°F (177°C). Actuators shall incorporate an OEM internal spring return mechanism. External after-market spring mechanisms are not acceptable. Damper and actuator assembly shall be factory cycled a minimum of three times to ensure correct operation.

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 UL555S. Closure devices that cause instantaneous closure are not acceptable. Damper manufacturer shall submit independent test data verifying pressure drop, leakage characteristics and airflow conditions.

For applications where ductwork terminates at the ceiling, standard of acceptance shall be Nailor Industries Model 1221C-1. For applications where ductwork continues down past ceiling, standard of acceptance shall be Nailor Industries Model 1221C-2.

- TUNNEL CORRIDOR FIRE/SMOKE DAMPER
- UL555 1 HR RATING
- UL555S CLASS I OR II AT 250° OR 350°F

MODELS: 1271C-1
1271C-2



Model 1271C-1

Nailor Models 1271C-1 and 1271C-2 Tunnel Corridor Combination Fire/Smoke Dampers are for use where ductwork penetrates the ceiling of an interior corridor of a building, creating a horizontal opening that requires protection. Model 1271C-1 is suitable for use with a steel grille or diffuser when the duct terminates at the ceiling. Model 1271C-2 is suitable for use when the duct is required to continue down past the ceiling level. Each unit is supplied factory mounted in a suitable sleeve complete with upper retaining angles. For applications where the duct terminates at the ceiling, other manufacturers require full length lower retaining angles with minimum 1" (25) ceiling overlap that protrudes past the grille/diffuser frame causing aesthetic difficulties. Model 1271C-1 is provided with lower mounting tabs that are easily covered by available variety of Nailor steel grilles/diffusers, solving this problem. For Model 1271C-2, lower retaining angles are available from Nailor. Either way, Nailor provides complete protection with reduced installation time and cost.

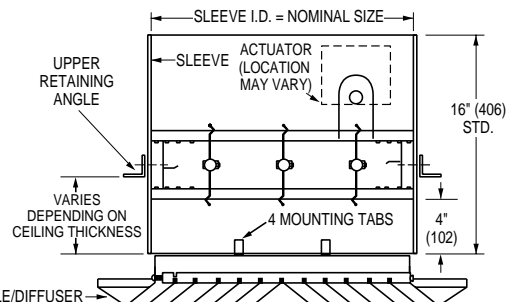
QUALIFICATIONS:

- UL 555 CLASSIFIED CORRIDOR DAMPER
1 hr. Fire Resistance Rating (File # 15441).
- UL 555S CLASSIFIED SMOKE DAMPER
Leakage Class I or II at 250°F or 350°F elevated temperature (File # R9492).
- California State Fire Marshal: Fire Damper Listing No. 3225-0935:110,
Leakage (Smoke) Damper Listing No. 3230-0935:111
- Meets the requirements of NFPA 90A, NFPA 92A for Fire/Smoke Dampers.
- Meets the requirements of City of Los Angeles, Uniform Building Code.
- Maximum velocity 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa).

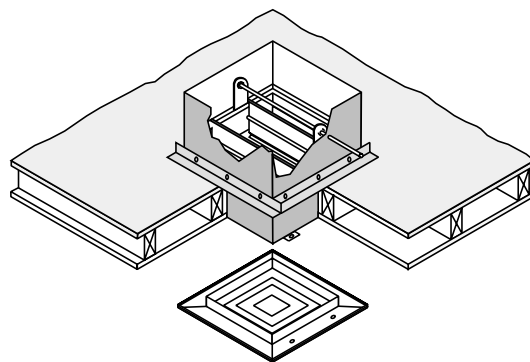
Model: 1271C-1

CONSTRUCTION DETAILS:

- FRAME:** 5" x 7/8" x 16 ga. (127 x 22 x 1.6) galvanized steel hat channel.
- BLADES:** 6" (152) wide on 5 1/2" (140) centers.
16 ga. (1.6) galvanized steel triple-vee design.
- SLEEVE:** 16" x 20 ga. (406 x 1.0) standard.
- UPPER RETAINING ANGLES:** 1 1/2" x 1 1/2" x 16 ga.
(38 x 38 x 1.6) galvanized steel (by Nailor).
- LINKAGE:** Concealed in frame.
- BEARINGS:** 1/2" (13) dia. self-lubricating oilite bronze.
- AXLES:** 1/2" (13) dia. plated steel double bolted to blades.
- JAMB SEALS:** Cambered stainless steel.
- BLADE SEALS:** Stainless steel.
- HEAT RESPONSIVE DEVICE (CONTROLLED CLOSURE):** 250°F (121°C) std. 165°F (74°C), 212°F (100°C) and, with ERL only, 350°F (176°C) available.
- MINIMUM SIZE:** 8" x 8" (203 x 203).
- MAXIMUM SIZE:** 24" x 24" (610 x 610).



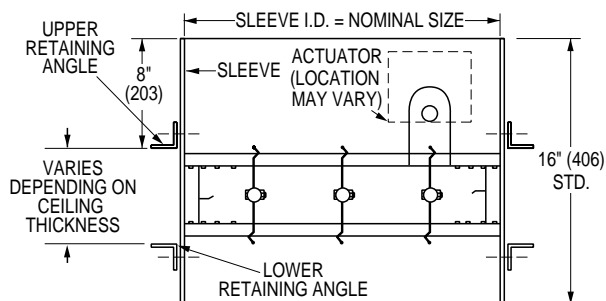
Model 1271C-1 (for use with Steel Grille/Diffuser)



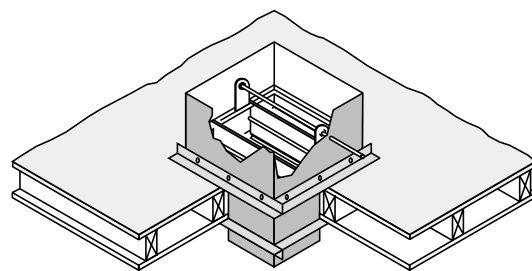
Isometric View of typical Model 1271C-1 in 1 hour wood stud ceiling

Model: 1271C-2 (For Ducted Installation)**CONSTRUCTION DETAILS:**

- FRAME:** 5" x 7/8" x 16 ga. (127 x 22 x 1.6) galvanized steel hat channel.
- BLADES:** 6" (152) wide on 5 1/2" (140) centers. 16 ga. (1.6) galvanized steel triple-vee design.
- SLEEVE:** 16" x 20 ga. (406 x 1.0) standard.
- UPPER RETAINING ANGLES:** 1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.6) galvanized steel (by Nailor).
- LOWER RETAINING ANGLES:** 1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.6) galvanized steel by installing contractor (optionally by Nailor).
- LINKAGE:** Concealed in frame.
- BEARINGS:** 1/2" (13) dia. self-lubricating oilite bronze.
- AXLES:** 1/2" (13) dia. plated steel double bolted to blades.
- JAMB SEALS:** Cambered stainless steel.
- BLADE 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.
- MINIMUM SIZE:** 8" x 8" (203 x 203).
- MAXIMUM SIZE:** 24" x 24" (610 x 610).



Model: 1271C-2



Isometric View of typical Model 1271C-2 in 1 Hour wood stud ceiling.

ERL (Electric Resettable Link) is standard on all dampers with electric actuators. PRL (Pneumatic Replaceable Link) is standard on all dampers with pneumatic actuators.

LEAKAGE CLASS

The 1271C Series Tunnel Corridor 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 or 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).

| Leakage Class | Maximum Leakage cfm/ft ² (m ³ /s/m ²) | |
|---------------|--|--------------------------|
| | @ 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) |

CORRIDOR COMBINATION FIRE/SMOKE DAMPERS

MODELS: 1271C-1 / 1271C-2

VARIABLES / ACCESSORIES

| VARIABLES: | CODE | DESCRIPTION |
|---|---|--|
| LEAKAGE/ELEV. TEMP. | 125 135 225 235 | Class I @ 250°F Class I @ 350°F Class II @ 250°F Class II @ 350°F |
| RATINGS: | | |
| CLOSURE DEVICE: | ERL ML4 PRL | Electric Resettable Link MLS-400 Fire Sensor Reopenable Control System Pneumatic Replaceable Link |
| CLOSURE TEMPERATURE: | 165 212 250 280 (PRL only) 350 (ERL only) HL (must select with MLS-400) | 165°F (74°C) 212°F (100°C) 250°F (121°C) 280°F (138°C) 350°F (177°C) High=350°F or 250°F/ Low=165°F |
| SLEEVE LENGTH/GAUGE: | Specify Sleeve Length: Specify Sleeve Gauge: | 16" (406) to 28" (711). 20G, 18G, 16G, 14G, 10G |
| ACTUATORS: | 411 811 MS4 MS8 4Y0 F12 F24 412 812 462 GD2 GD1 GD3 296 306 | Honeywell ML4115 (120 VAC) Honeywell ML8115 (24 VAC) Honeywell MS4X09 (120 VAC) Honeywell MS8X09 (24 VAC) Honeywell MS4Y09 (230 VAC) Belimo FSNF120 (120 VAC) Belimo FSNF24 (24 VAC) Honeywell MS4120 (120 VAC) Honeywell MS8120 (24 VAC) Honeywell MS4620 (230 VAC) Siemens GGD221 (120 VAC) Siemens GGD121 (24 VAC) Siemens GGD321 (230 VAC) Siemens 331-2961 (25 psi) Siemens 331-3060 (25 psi) |
| ACTUATOR MOUNTING: | EXT INT | External Mount Internal Mount |
| ACTUATOR LOCATION: | RH LH | Right-Hand Mount Left-Hand Mount |
| UPPER ANGLES: | UNM UFM | Not Factory Mounted Factory Mounted |
| ANGLE LOCATION: (Model 1271C-1 only) | When Upper Angles are Factory Mounted, Specify Upper Angle Location on Sleeve | |
| ACCESSORIES: | CODE | DESCRIPTION |
| POSITION INDICATOR: | 300 | MLS-300 Switch Pack |
| E.P. SWITCH: | EP1 EP2 | 120V Siemens 2651008 24Vac Siemens 2651007 |
| LOWER ANGLES: (Model 1271C-2 only) | LNM | Lower Angles supplied loose (not mounted) |
| TRANSITION COLLARS: | SRT SRB (Model 1271 C-2 only) SR2 (Model 1271 C-2 only) | Top Transition for Round Duct Connection - Specify Diameter Bottom Transition for Round Duct Connection - Specify Diameter Both Top and Bottom Transitions For Round Duct - Specify Diameter |

HOW TO ORDER OR TO SPECIFY

CORRIDOR COMBINATION FIRE/SMOKE DAMPERS

MODELS: 1271C-1/1271C-2

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) | LEAKAGE/ELEV. TEMP. RATING | CLOSURE DEVICE | CLOSURE TEMP. | SLEEVE LENGTH * | SLEEVE GAUGE * | ACTUATOR | ACTUATOR MOUNTING | ACTUATOR LOCATION | UPPER ANGLES | ANGLE LOCATION | ACCESSORIES | | |
|--------------------|-----------------|-------------------------------|-----------------------------|---------------------------------|--------------------|---------------------------------|--|----------------------|----------------------|--------------|------------------|---|--|--|
| 1271C-1 1271C-2 | ie: 24" x 24" | 125 135 225 235 | ERL ML4 PRL HL | 165 212 250 280 350 | SPECIFY LENGTH | 20G 18G 16G 14G 10G | ACTUATORS ARE LISTED ON PREVIOUS PAGE | EXT INT | RH LH | UNM UFM | SPECIFY LOCATION | 300 EP1 EP2 LNM SRB SRT SR2 | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

- Notes: 1. Models 1271C-1 and 1271C-2 are for Horizontal Mount applications only.
 2. * Standard sleeve is 16" (406) long x 20 ga. (1.0).
 3. A wide variety of steel GRILLES/DIFFUSERS are available with Model 1271C-1.
 See Air Distribution Catalog or consult Nailor for selection assistance.
 4. MLS-300 Position Indicator is included as part of MLS-400 package.

SUGGESTED SPECIFICATION:

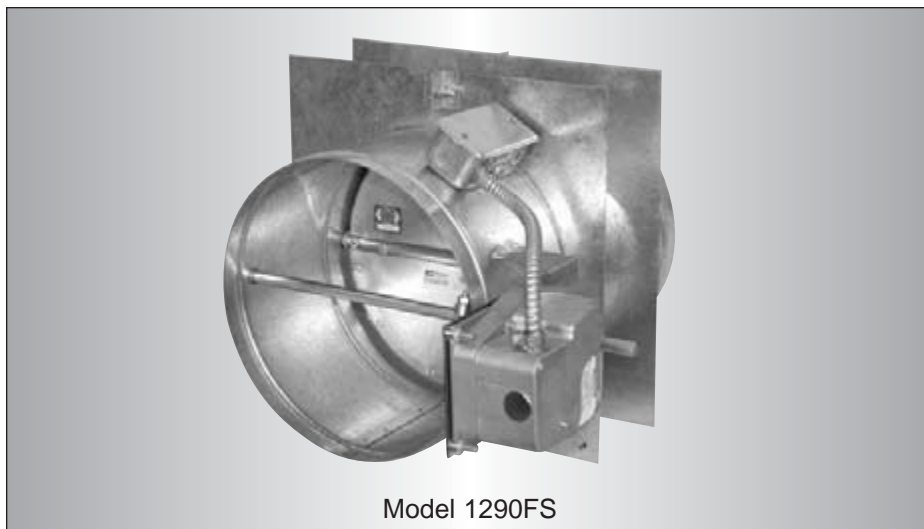
Provide and install, as shown on plans and/or schedules, Corridor Dampers meeting or exceeding the following criteria: Frame shall be constructed of 16 ga. (1.6) galvanized steel hat channel with mitered corners reinforced with die-formed corner gussets for strength. Blades shall be of vee-groove design, 16 ga. (1.6) galvanized steel, on 5 1/2" (140) centers and shall be of parallel configuration. Blades axles shall be 1/2" (13) dia. plated steel, double bolted at each end of blade to ensure positive locking connection. Hex or square friction-fit or press-fit axles are not acceptable. Bearings shall be zero-maintenance, concealed in frame, out of airstream. Jamb seals shall be compression type cambered stainless steel.

Dampers shall meet the requirements of NFPA 90A and 92A. Dampers shall be classified by Underwriters Laboratories and labeled as 1 hour fire resistance rated Corridor Damper under UL 555, and as a Class I or Class II Leakage Rated Smoke Damper under UL 555S at an elevated temperature of **(specifier select one)** 250°F (121°C) **or** 350°F (177°C). Each damper shall bear a UL label verifying same. Dampers shall be supplied with factory installed sleeves of minimum 16" (406) length, to be field verified by contractor dependent upon ceiling thickness. Factory sleeves shall be caulked to UL requirements and shall be complete with factory supplied upper retaining angles of minimum 1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.6) galvanized steel. Appropriate electric **or** pneumatic actuators **(specifier select type)** 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 **(specifier select one)** 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. Damper and actuator assembly shall be factory cycled a minimum of three times to ensure correct operation.

Each damper shall be equipped with a **(specifier select one)** 165°F (74°C) **or** 212°F (100°C) **or** 250°F (121°C) **or** 350°F (177°C) 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 UL555S. Closure devices that cause instantaneous closure are not acceptable. Damper manufacturer shall submit independent test data verifying pressure drop, leakage characteristics and airflow conditions. For applications where ductwork terminates at the ceiling, standard of acceptance shall be Nailor Industries Model 1271C-1. For applications where ductwork continues down past ceiling, standard of acceptance shall be Nailor Industries Model 1271C-2.

- TRUE ROUND DESIGN
- ULTRA LOW LEAKAGE
- UL 555 CLASSIFIED DYNAMIC FIRE DAMPER
- UL 555S CLASSIFIED SMOKE DAMPER

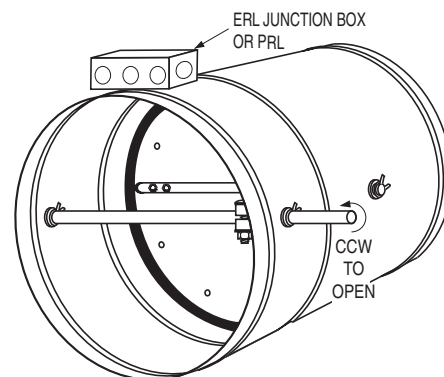
MODEL: 1290FS



Nailor's new round combination fire and smoke damper, Model 1290FS, is ideal for applications where building codes require both a fire damper to protect air system penetrations in walls or floors that have a fire resistance rating of up to 2 hours and also require a leakage rated damper for operational smoke control in static or dynamic smoke management systems. The 1290FS is an economical true round combination fire/smoke damper designed and qualified for round ductwork passing through metal drywall partitions or masonry walls. Features of the damper include a sturdy beaded casing for superior rigidity and factory supplied retaining plates for fast, secure installation. The 1290FS offers the lowest leakage class available and is approved for vertical or horizontal installation.

QUALIFICATIONS:

- UL 555 & CAN/ULC-S112 CLASSIFIED DYNAMIC FIRE DAMPER - 1 1/2 hr. Label. (File #'s R9492 and R19569).
- UL 555S CLASSIFIED SMOKE DAMPER. (File # R9492). Leakage Class I at 250°F or 350°F elevated temperature.
- Meets NFPA 80, 90A, 92A, 92B, 101 and 105 as well as IBC and NBC (Canada) Building Code requirements.
- California State Fire Marshal: Fire Damper Listing No. 3225-0935:106.
- City of New York. MEA # 366-03-M.
- Maximum velocity 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa).



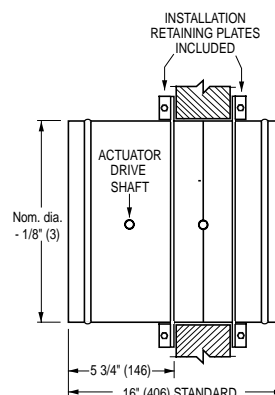
CONSTRUCTION DETAILS:

- FRAME:** 20 gauge (1.0) galvanized steel integral sleeve and retaining plates.
- BLADES:** 2 x 20 gauge (1.0) galvanized steel laminated together, 14 gauge (2.0) equivalent thickness.
- LINKAGE:** Jackshaft to blade.
- 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.
- BLADE SEALS:** Silicone rubber. Peripheral gasket sandwiched between two piece blade.

HEAT RESPONSIVE DEVICE (CONTROLLED CLOSURE):

ERL (Electric Resettable Link) is standard on dampers with electric actuators: 250°F (121°C) standard. 165°F (74°C), 212°F (100°C) and 350°F (176°C) available. PRL (Pneumatic Replaceable Link) is standard on dampers with pneumatic actuators: 212°F (100°C) standard. 165°F (74°C) and 280°F (138°C) available.

AVAILABLE SIZES: 6" (152) through 24" (610) diameter in nominal 2" (51) increments. Vertical or horizontal installation.

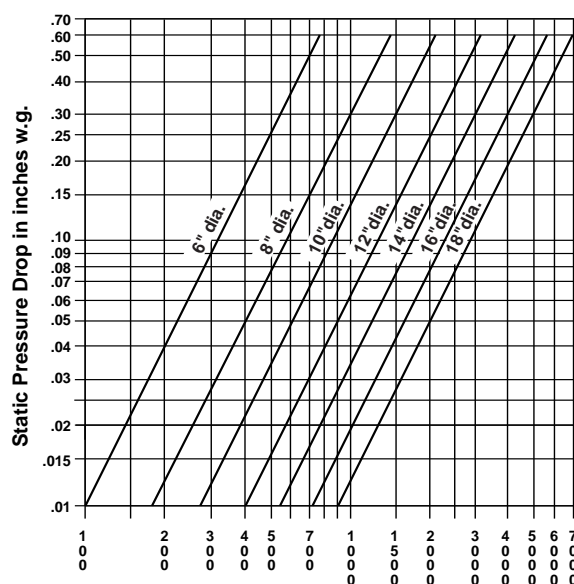


| Wall Thickness | Minimum Sleeve Length |
|-----------------------|-----------------------|
| 4 to 8 (102 to 203) | 16 (406) |
| 10 to 12 (254 to 305) | 19 (483) |
| 14 to 16 (356 to 406) | 23 (584) |

MODEL: 1290FS

PERFORMANCE DATA:

PRESSURE DROP (damper fully open)



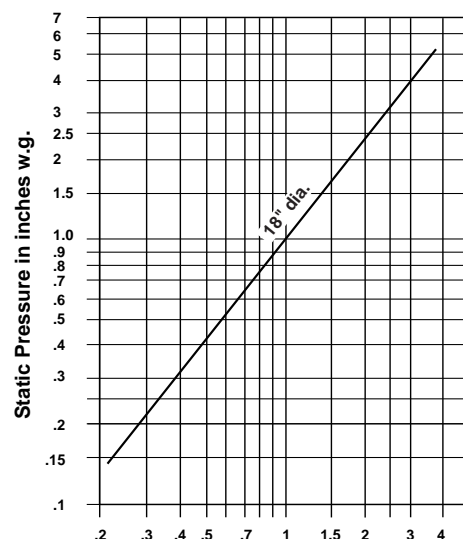
Air Volume in CFM (through face area)

Tested per AMCA standard 500, Fig. 5.5.

Imperial figures shown.
To convert to SI
(metric) system:

Multiply:
CFM x .4719 = liters
per second
inches w.g. x .2486
= kilopascals
fpm x .00508 = meters
per second
cfm per sq. ft. x 5.08 =
liters/second per
sq. meter.

AIR LEAKAGE (damper closed)



Air Leakage in CFM/sq. ft. (through face area)

Leakage information is based upon a pressure differential of 1" w.g. tested per AMCA standard 500-D, fig. 5.5.

HOW TO SPECIFY

SUGGESTED SPECIFICATION:

Provide and install, as shown on plans and/or schedules, Round Combination Fire/Smoke Dampers as manufactured by Nailor Industries, meeting or exceeding the following criteria: Frame/integral sleeve shall be roll-formed from 20 ga. (1.0) galvanized steel, beaded for structural strength and grooved to accept 20 ga. (1.0) galvanized steel retaining plate. Required sleeve length shall be field verified by contractor. Each damper shall be complete with retaining plate and 20 ga. (1.0) galvanized steel damper plate, supplied by the damper manufacturer to ensure proper fit and installation. Blade shall be of two 20 ga. (1.0) galvanized steel pieces laminated together with an equivalent thickness of 14 ga. (2.0). Blade seal shall be silicone rubber sandwiched between blade pieces and shall completely encircle blade periphery. Blade axles shall be 1/2" (13) dia. plated steel double bolted to blade. Hex or square friction-fit or press-fit axles are not acceptable. Bearings shall be self-lubricating oilite bronze type.

Dampers shall meet the requirements of NFPA 80, 90A, 92A, 92B, 101 and 105. Dampers shall be classified by Underwriters Laboratories and labeled as a 1 1/2 hour Dynamic Fire Damper under UL 555, and as a Class I Leakage Rated Smoke Damper under UL 555S at an elevated temperature of 350°F (177°C). Dampers shall be qualified for use in dynamic or static smoke control systems.

Appropriate electrical **or** pneumatic actuators (**specifier select type**) shall be installed by the damper manufacturer in the factory and shall have been tested and classified under UL555S with the damper at an elevated temperature of 250°F (121°C) or 350°F (177°C). Actuators shall incorporate an OEM internal spring mechanism. External after-market spring mechanisms are not acceptable. Damper and actuator assembly shall be factory cycled a minimum of three times to ensure correct operation.

Each damper shall be equipped with 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 UL555S. Closure devices that cause instantaneous closure are not acceptable.

Damper manufacturer shall submit independent test data verifying pressure drop, leakage characteristics and airflow conditions. Standard of acceptance: Nailor Industries Model 1290FS.

ROUND COMBINATION FIRE / SMOKE DAMPER

MODEL: 1290FS

VARIABLES / ACCESSORIES

| VARIABLES: | CODE | DESCRIPTION |
|-----------------------|--|--|
| MOUNTING: | V H | Vertical Mount (wall) Horizontal Mount (floor) |
| ELEVATED TEMPERATURE: | 250 350 | 250°F (121°C) 350°F (177°C) |
| CLOSURE DEVICE: | ERL ML4 PRL | Electric Resettable Link MLS-400 Fire Sensor Reopenable Control System Pneumatic Replaceable Link |
| CLOSURE TEMPERATURE: | 165 212 250 280 (PRL only) 350 (ERL only) HL (must select with MLS-400) | 165°F (74°C) 212°F (100°C) 250°F (121°C) 280°F (138°C) 350°F (177°C) High=350°F/Low=165°F |
| SLEEVE LENGTH: | Specify Sleeve Length: | Minimum sleeve length is 16" (406) (supplied as standard) |
| ACTUATORS: | MS4 MS8 296 | Honeywell MS4X09F (120V) Honeywell MS8X09F (24V) Siemens 331-2961 (25 psi) |
| ACCESSORIES: | CODE | DESCRIPTION |
| POSITION INDICATOR: | 300 | MLS-300 Switch Pack |
| E.P. SWITCH: | EP1 EP2 | 120V Siemens 2651008 24Vac Siemens 2651007 |

HOW TO ORDER

ROUND COMBINATION FIRE / SMOKE DAMPER

MODEL: 1290FS

HOW TO ORDER:

Select model number and size, then select from each variable. Choose accessories as desired. See above for description of variables and accessories.

| MODEL | SIZE (DIA.) | MOUNTING | ELEVATED TEMPERATURE | CLOSURE DEVICE | CLOSURE TEMP. * | SLEEVE LENGTH ** | ACTUATORS | ACCESSORIES |
|--------|-----------------------------------|----------|-------------------------|-------------------|---------------------------------------|---------------------|-------------------|-------------------|
| 1290FS | ie: 12" or 305 (mm) dia. | V H | 250 350 | ERL ML4 PRL | 165 212 250 280 350 HL | SPECIFY LENGTH | MS4 MS8 296 | 300 EP1 EP2 |

- Notes: 1. * Maximum closure temperature allowed is equal to elevated temperature rating. HL (high/low temps.) must be selected when MLS-400 is selected as closure device.
2. ** Standard sleeve is 16" (406) long (suitable for 4" (102) up to 8" (203) thick wall).
3. MLS-300 is included as part of MLS-400 package.

- **TOGGLE SWITCH WITH LIGHTS**
- **FOR USE WITH COMBINATION FIRE/SMOKE DAMPERS WITH MLS-400**

MODEL: DCP1

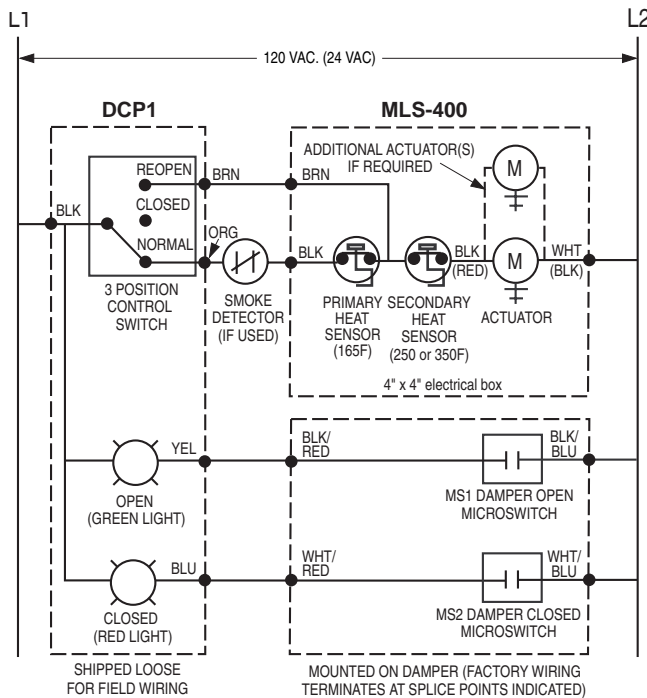
The DCP1 is a toggle switch operated control panel with position indicator lights for use with Nailor Combination Fire/Smoke Dampers equipped with the MLS-400 Reopenable Control Option. The DCP1 provides the ability to open or close the damper in a dynamic smoke management system or to test the damper. Indicator lights on the DCP1 panel provide visual confirmation of the damper position.

The toggle switch is a 3 position control switch with the following options:

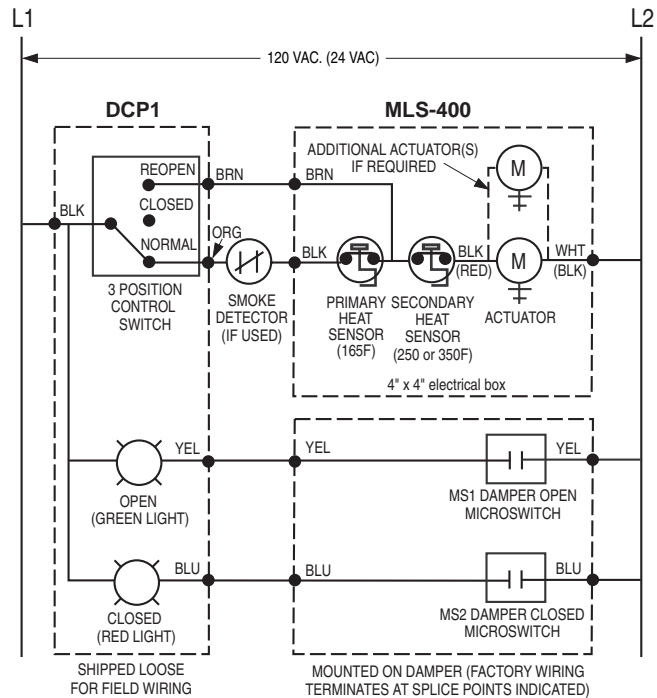
- NORMAL:** Damper remains open until closed by the primary heat sensor or smoke detector signal.
- CLOSED:** Damper closes and remains closed regardless of any sensor signal.
- REOPEN:** The damper opens and remains open (override position) until the secondary hi-limit sensor signals the damper to close and lock.

The DCP1 is shipped loose for field mounting and wiring either near the damper or in a remote location.

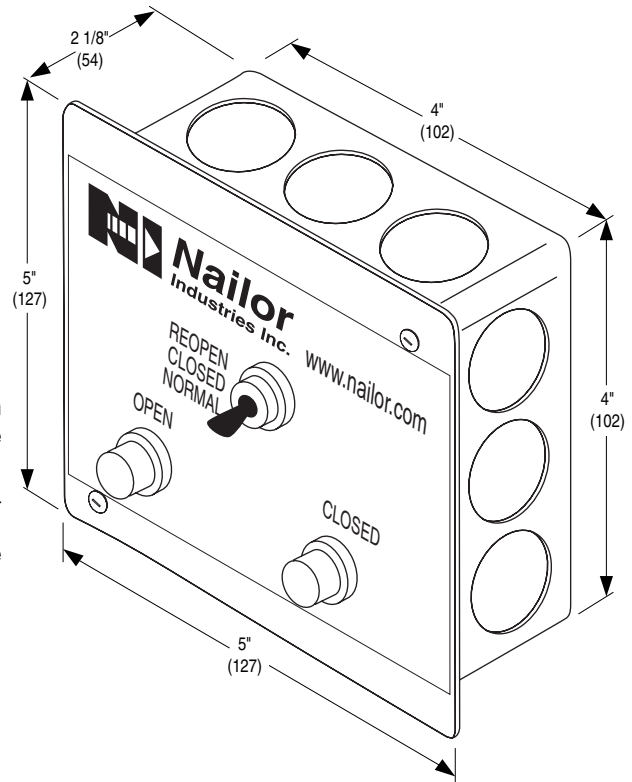
WIRING DIAGRAMS:



DCP1/MLS-400 with Honeywell rotary cam type position indicator package



DCP1/MLS-400 with Nailor or Honeywell built-in (actuator aux. switches) position indicator package



- KEY SWITCH WITH LIGHTS
- FOR USE WITH COMBINATION FIRE/SMOKE DAMPERS WITH MLS-400

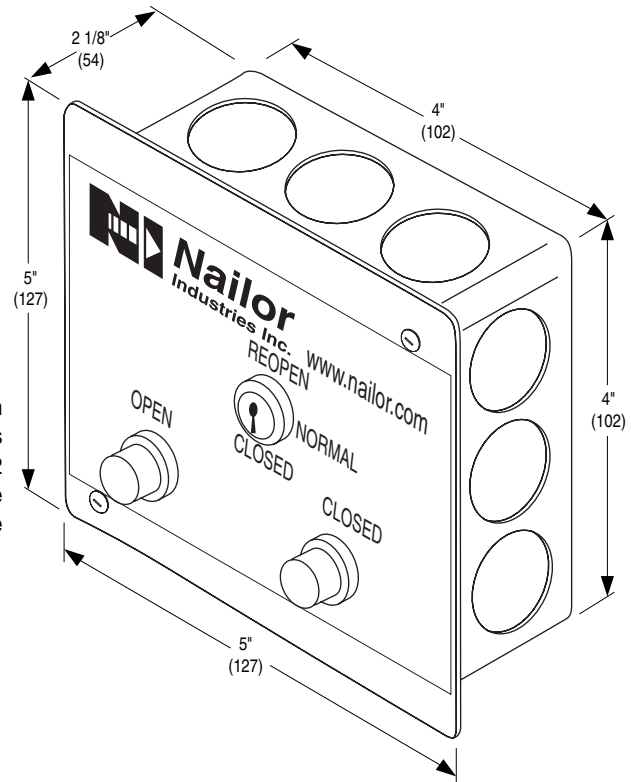
MODEL: DCP2

The DCP2 is a key switch operated control panel with position indicator lights for use with Nailor Combination Fire/Smoke Dampers equipped with the MLS-400 Reopenable Controls Option. The DCP2 provides the ability to open or close the damper in a dynamic smoke management system or to test the damper. Indicator lights on the DCP2 panel provide visual confirmation of the damper position.

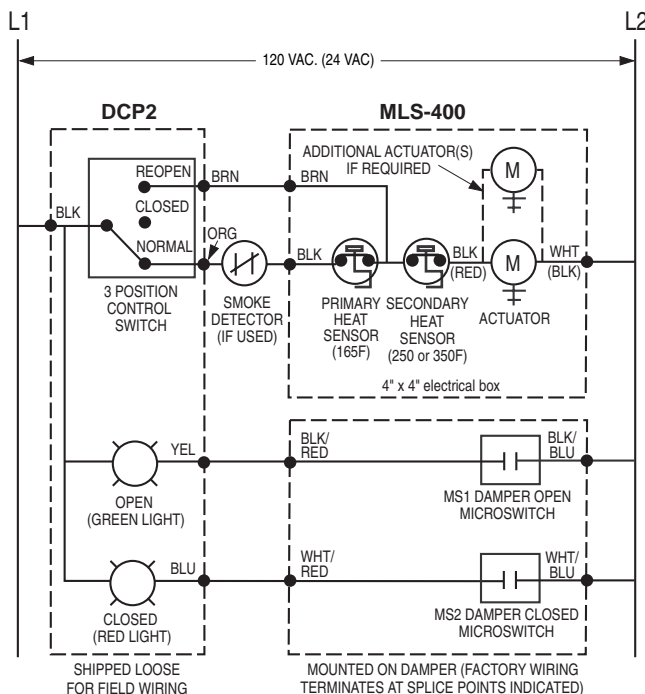
The key switch is a 3 position control switch with the following options:

- NORMAL:** Damper remains open until closed by the primary heat sensor or smoke detector signal.
- CLOSED:** Damper closes and remains closed regardless of any sensor signal.
- REOPEN:** The damper opens and remains open (override position) until the secondary hi-limit sensor signals the damper to close and lock.

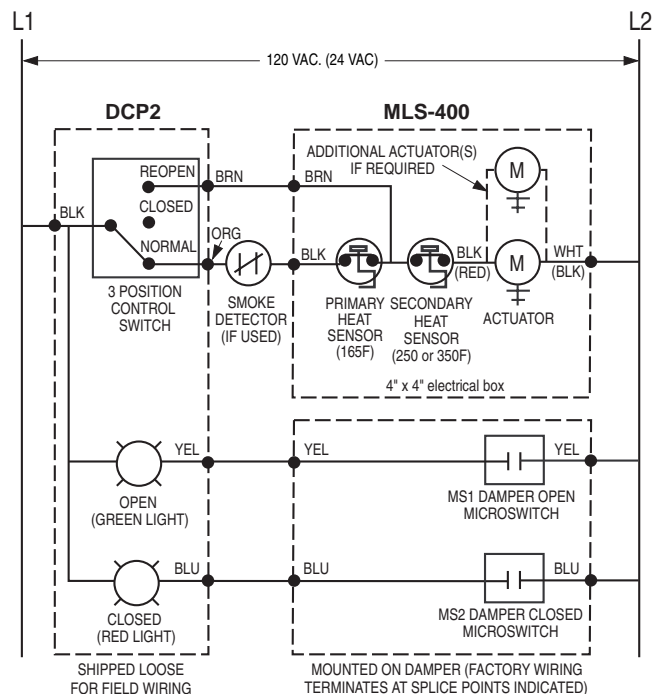
The DCP2 is shipped loose for field mounting and wiring either near the damper or in a remote location.



WIRING DIAGRAMS:



DCP2/MLS-400 with Honeywell rotary cam type position indicator package



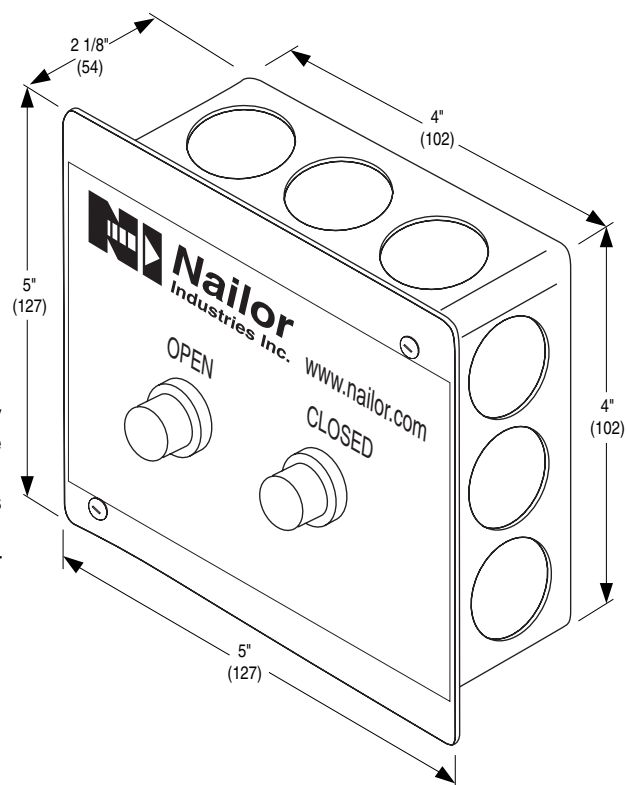
DCP2/MLS-400 with Nailor or Honeywell built-in (actuator aux. switches) position indicator package

- LIGHTS ONLY
- FOR USE WITH ALL SMOKE AND COMBINATION FIRE/SMOKE DAMPERS

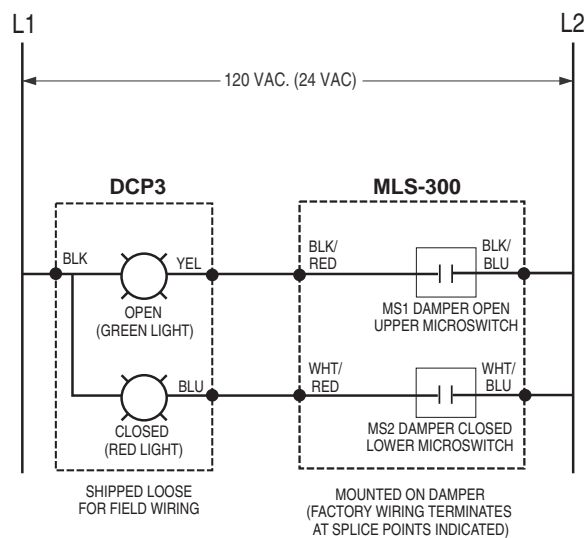
MODEL: DCP3

The DCP3 is a single control panel containing indicator lights only and is for use with Nailor Smoke and Combination Fire/Smoke Dampers equipped with the MLS-300 Position Indicator Package. The green light indicates damper is open and the red light indicates damper is closed.

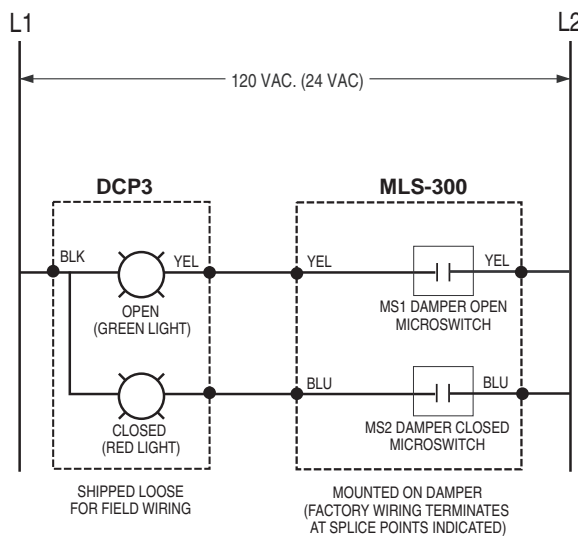
Model DCP3 is shipped loose for field mounting and wiring either near the damper or in a remote location.



WIRING DIAGRAMS:



DCP3 with MLS-300 (Honeywell rotary cam type) position indicator package

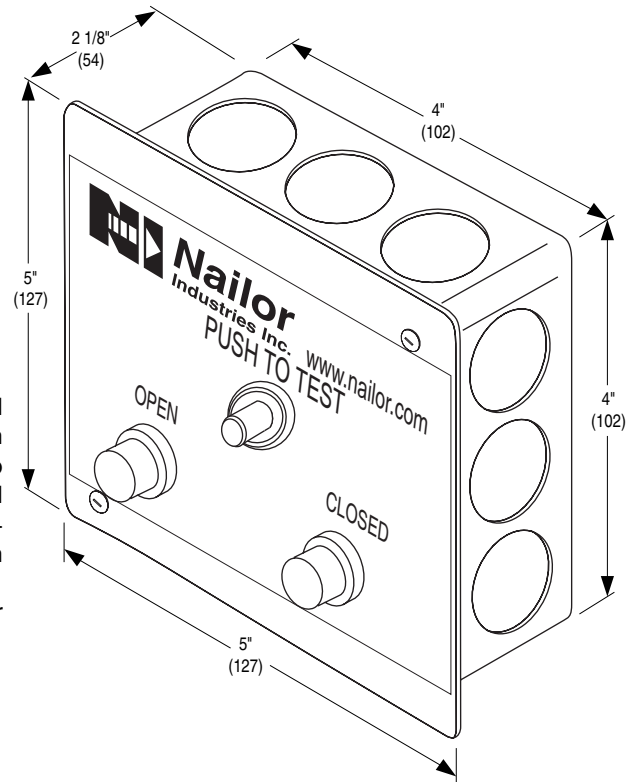


DCP3 with MLS-300 (Nailor or Honeywell built-in aux. switches) position indicator package

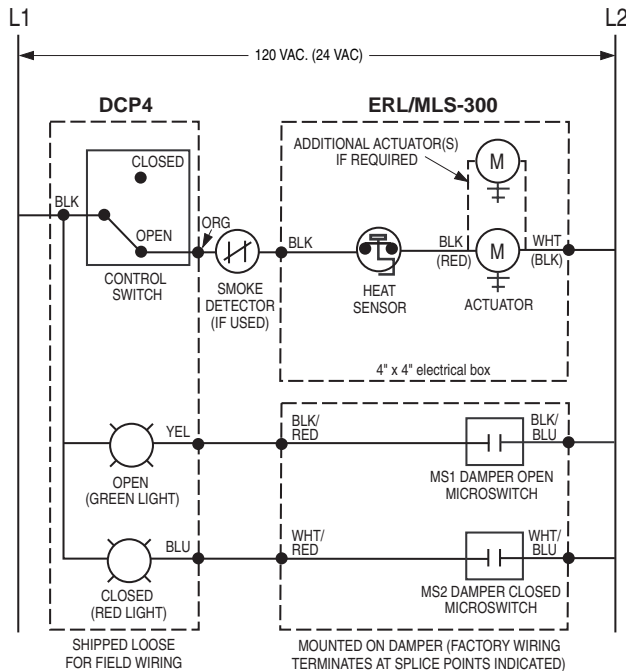
- TEST SWITCH WITH LIGHTS
- FOR USE WITH ALL SMOKE AND COMBINATION FIRE/SMOKE DAMPERS

MODEL: DCP4

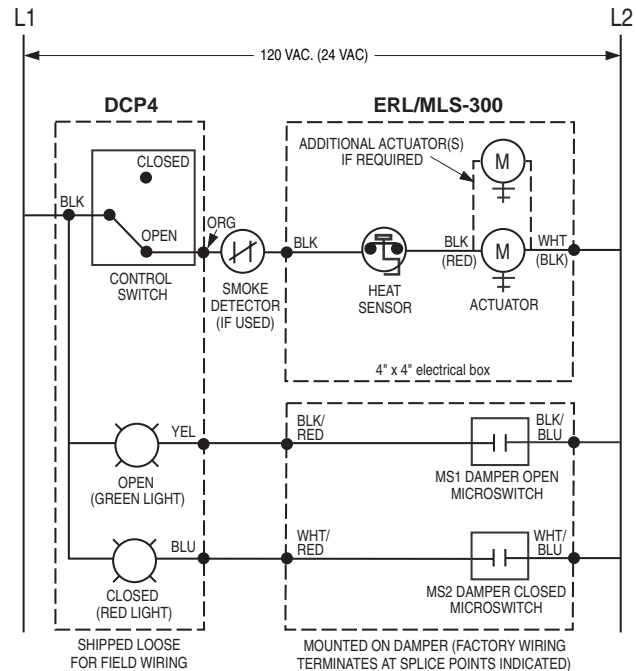
The DCP4 is a "momentary" push button operated control panel with indicator lights for use with all Nailor Smoke and Combination Fire/Smoke Dampers. The push button switch provides the ability to "cycle test" the damper by pushing and holding down the button until the damper has cycled closed. The indicator lights on the DCP4 panel provide a visual confirmation of the damper position when connected to the MLS-300 Position Indicator Package. The DCP4 is shipped loose for field mounting and wiring either near the damper or in a remote location.



WIRING DIAGRAMS:



DCP4 for combination fire/smoke dampers with MLS-300 (Honeywell rotary cam type) position indicator package



DCP4 for combination fire/smoke dampers with MLS-300 (Nailor or Honeywell built-in aux. switches) position indicator package

Options and Variables

Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

CLOSURE DEVICES:

OPTION CODE ERL ELECTRIC RESETTABLE LINK

The ERL Electric Resettable Link (heat sensor) replaces the traditional hi-torque spring/fusible link fire closure mechanism on all Nailor combination fire/smoke dampers ordered with an electric actuator. The ERL is a thermally responsive bimetal disc/thermostat that opens and closes electrical contacts at a specific calibrated temperature. The ERL is a UL Classified Heat Responsive Device.

The standard ERL on Nailor combination fire/smoke dampers has a fixed temperature setting of 250°F (121°C) which is the UL listed elevated/degradation temperature of the damper/actuator assembly. A 350°F (177°C) elevated temperature classification and ERL is available as an option.

A 165 and 212°F (74 and 100°C) ERL are also available. Local codes have specified 165°F (74°C) widely in the past.

The ERL performs the same function as the fusible link it supercedes, that is to sense an abnormally high temperature, as caused by a fire and allow the damper to close in order to prevent the spread of fire and smoke. The sensor interrupts power to the actuator and the actuator's spring return mechanism causes the damper to close and lock.

In smoke control mode, when a signal is detected via a normally closed smoke detector connection, the damper will close and remain closed until the smoke signal ceases. The system will then reset when power is re-applied and the damper will open. The damper may be closed at any time by placing a control switch (optional and by others) in the closed position.

The ERL sensor is of the manual reset type and can be reset after the temperature has cooled down below the sensor set point. This feature is a tremendous advantage where periodic system testing involves application of heat to the sensor to verify correct damper operation. Exposure to actual fire conditions may render these devices unusable. In this case, it is recommended that a careful inspection of the damper, actuator and ERL be performed.

The ERL in combination with all Nailor qualified electric (or pneumatic) actuators provides controlled closure and eliminates the instantaneous damper closure associated with traditional fusible links that can cause damage to the ductwork.

The ERL requires factory installation and wiring together with the associated actuator to meet UL requirements. Note that dampers provided with pneumatic actuators utilize the PRL (see below) as standard (max. 280°F (138°C)) but can be provided with the ERL. An EP switch is required in this case.

OPTION CODE PRL PNEUMATIC REPLACEABLE LINK

The Nailor PRL Pneumatic Replaceable Link is a UL Classified heat responsive device used in conjunction with Nailor combination fire/smoke dampers.

A 212°F (100°C) PRL is supplied as standard on all combination fire/smoke dampers ordered with a pneumatic actuator. A 165°F and 280°F (74°C and 138°C) PRL are also available. An alternative to the PRL would be the Nailor ERL (Electric Resettable Link) with an EP (Electric/Pneumatic) switch.

The PRL is a factory mounted pneumatic release valve/replaceable fusible link assembly. The PRL's function is to sense an abnormally high temperature, as caused by a fire and allow the damper to close in order to prevent the spread of fire and smoke.

Fire Control Mode: The PRL activates when a fire temperature in excess of 165, 212 or 280°F (74, 100 or 138°C) is detected. When the fusible link melts, air from the pneumatic actuator(s) is exhausted and the actuator spring return mechanism causes the damper to close and lock.

Smoke Control Mode: When a signal is detected via a normally closed smoke detector connection, during system testing or if power failure occurs, the damper will close and remain closed. When the smoke signal ceases (smoke detector reset), the test is completed or power is restored, the damper will automatically reset to the open position.

An EP (electric/pneumatic) switch, by others, must be present in the system.

All pneumatic actuators are factory mounted with a fail close (Normally Closed) damper connection.

Notes:

1. The PRL must be installed at the factory and cannot be added in the field, in accordance with UL requirements.
2. A single PRL may be use to control up to a maximum of four pneumatic actuators.
3. Pneumatic actuators are to be field piped per local codes.

Options and Variables

Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

CLOSURE DEVICES:

OPTION CODE **ML4**

MLS-400 FIRE SENSOR
REOPENABLE CONTROL PACKAGE

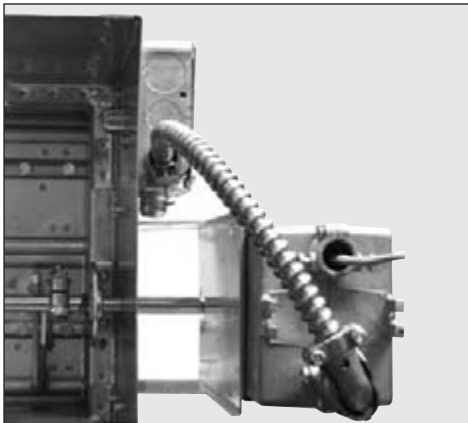
- REOPENABLE SENSOR WITH POSITION INDICATOR SWITCH PACK
- FOR USE IN ENGINEERED SMOKE CONTROL SYSTEMS

The **MLS-400 Fire Sensor** is a UL Classified reopenable control/status indicator package option that is factory installed by Nailor Industries on Model Series 1220, 1270, or 1290FS Combination Fire/Smoke dampers.

HOW THE MLS-400 WORKS:

UL 555 permits Combination Fire/Smoke dampers to be equipped with both a primary (low limit) and secondary (high limit) heat responsive closure device. This allows the appropriate authority (from a remote fire fighters' smoke control station) to bypass/override the primary sensor, usually 165°F (74°C), after fire induced closure or smoke detector signal and reopen the damper as may be required for smoke control functions. The damper can be operated in this 'override mode' until the elevated temperature limit of 350°F (177°C) is sensed at the damper. The secondary heat responsive device, a 350°F (177°C) manually resettable heat sensor, then returns it to the fire protection mode, permanently reclosing the damper and rendering it inoperable, as required by UL 555 and NFPA 90A.

The built-in damper position indicator switch provides positive indication of either fully open or closed damper status.



A WORD ABOUT "REOPENABLE" CONTROLS....

The dual temperature rated reopenable closure option was originally developed during the 1980's to comply with NFPA 90A requirements that mandated the primary (low limit) closure temperature to be a maximum of 286°F (141°C). The dual temperature closure option permits the damper to close when the primary closure temperature rating of 286°F (141°C) or less (usually 165°F (74°C)) is reached, then be reopened to utilize the duct for smoke removal until the secondary (high limit) closure device temperature rating, usually 350°F (176°C) is reached.

The 1996 edition of NFPA 90A revised the maximum primary closure temperature to 350°F (176°C) or the elevated temperature rating of the damper (maximum 350°F (176°C)). This revision virtually eliminates the need for a "reopenable" type control system as the damper can now remain operational during the HVAC system's designed smoke control mode until 350°F (176°C) is reached. However, there is still a misconception that this dual temperature rating option is necessary to meet the requirements of both NFPA and UL, as well as local building codes, in order for the damper to be utilized for smoke removal until its elevated temperature rating is reached. Although it does provide a method of complying with some building codes that require fire dampers to close at 212°F (100°C) or less, while still providing the potential to reopen the damper for smoke removal reasons, in most cases the disadvantages render it obsolete. The cost of the additional wiring and intricate controls required, when compared to the cost of a single 350°F (176°C) closure device, can rarely be justified. Also the complexity of the design may in fact hinder its proper use if personnel are not properly trained, at further cost, to operate it during an emergency.

Therefore, as the dual temperature rated closure option and its associated higher costs are no longer required to comply with NFPA 90A, Nailor recommends using a 350°F (176°C) closure device in engineered smoke control systems as the logical selection. If the system is designed to accommodate damper open/closed status indication, Nailor's MLS-300 Position Indicator option provides a simple, functional means to a complete smoke control package.

Options and Variables

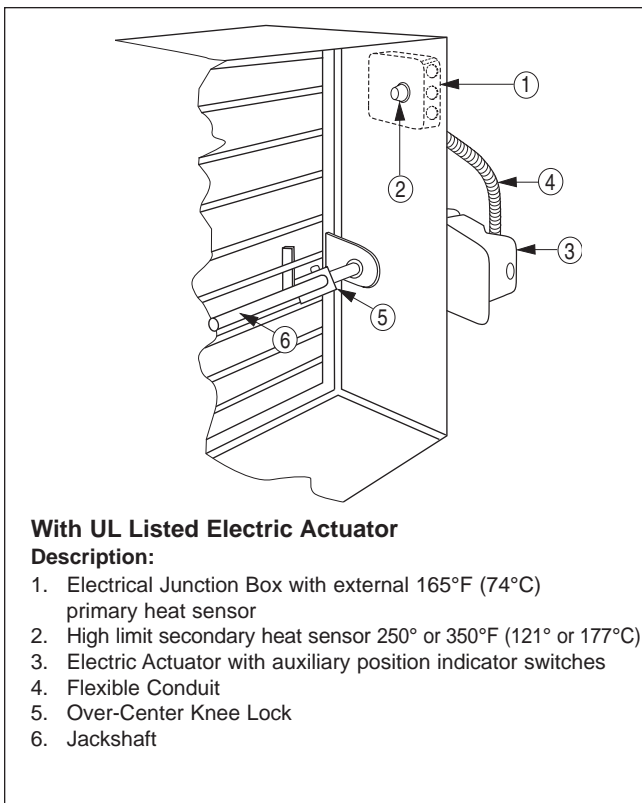
Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

CLOSURE DEVICES:

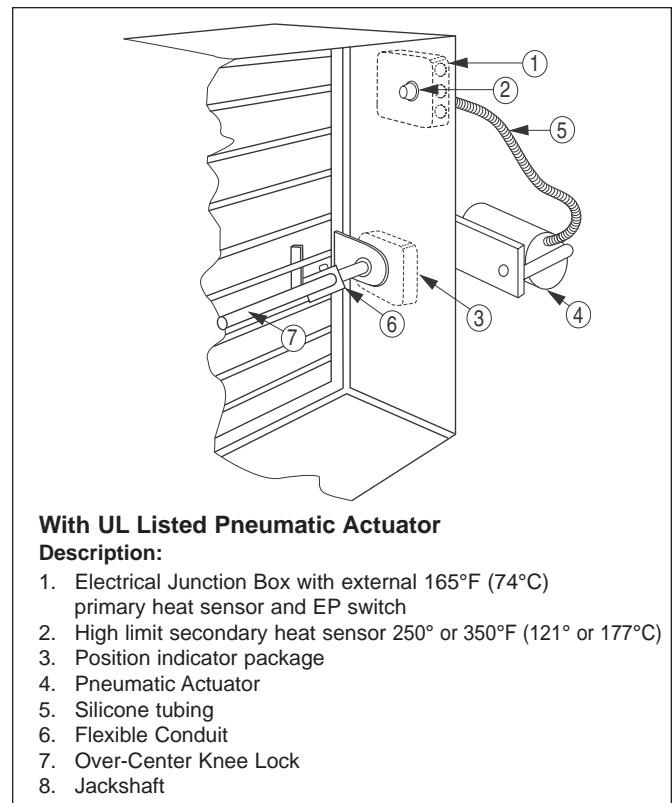
ADVANTAGES OF NAILOR'S EXTERNAL LOW LIMIT HEAT SENSOR

Nailor's **MLS-400 Fire Sensor** features a low-limit heat sensor that is mounted outside the duct adjacent to the actuator rather than inside the duct. As most fires originate outside the duct, which is commonly insulated, an internally mounted heat sensor would not trip as early. And as most actuators and electrical wiring are located on the external surfaces of the sleeve, they could be subjected to damaging temperatures long before an internally mounted heat sensor trips. Nailor's **MLS-400 Fire Sensor** ensures that the damper will close within the temperature limits of the actuator and before any damage to external components can occur.

The MLS-400 may be used with either a UL Listed Electric Actuator or Pneumatic Actuator. Connections to the junction box are the same.



WITH UL LISTED ELECTRIC ACTUATOR



WITH UL LISTED PNEUMATIC ACTUATOR

Options and Variables

Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

CLOSURE TEMPERATURE:

OPTION CODES

165 212 250 280 350

CLOSURE TEMPERATURE

ERL/PRL's for Model Series 1220, 1270, and 1290FS combination fire/smoke dampers are available with a choice of several closure temperature ratings. Nailor combination fire/smoke dampers are equipped as standard with a 250°F (121°C) ERL or a 212°F (100°C) PRL. Available 165°F (74°C), 212°F (100°C) or 350°F (177°C) ERL's and 165°F (74°C) or 280°F (138°C) PRL's can be installed on damper at time of manufacturing.

The National Fire Protection Association Standard 90A requires that combination fire and smoke dampers that are part of an engineered smoke-control system shall have a heat responsive device with a temperature rating approximately 50°F (28°C) above the maximum smoke-control system designed operating temperature, but not to exceed the UL 555S elevated temperature rating of the damper assembly or a maximum of 350°F (177°C).

OPTION CODE HL

HIGH/LOW CLOSURE TEMPS.
FOR MLS-400 FIRE SENSOR

Nailors' MLS-400 Fire Sensor reopenable control package utilizes two separate heat responsive devices to automatically close the damper: a 'low limit' primary device rated at 165°F (74°C) or 212°F (100°C) that closes the damper upon sensing heat at selected temperature, but can be overridden from the fire fighters smoke control station to reopen damper for smoke control purposes; a 'high limit' secondary device of

either 250°F (121°C) or 350°F (177°C) temperature rating that permanently re-closes the damper upon sensing heat at selected temperature, rendering it inoperable, as required by UL 555 and NFPA 90A. The high limit temperature rating cannot be higher than the elevated temperature rating of the damper assembly as determined by UL 555S Standard for Smoke Dampers. As NFPA 90A requires that the closure device shall have a temperature rating approximately 50°F (28°C) above the maximum smoke control system designed operating temperature, the low limit (primary closure device) temperature rating, either 165°F (74°C) or 212°F (100°C) should be selected based on this criteria.

When selecting the high limit secondary device temperature rating (either 250°F (121°C) or 350°F (177°C)), Nailor recommends 350°F (177°C), as this will provide additional time for the damper to be utilized in smoke control mode until it is closed permanently. Remember that the high limit temperature selected can not be higher than the elevated temperature rating of the damper assembly as determined by UL555S.

UL 555 Closure Temperature Requirements

As of July 01 / 2002, UL 555 Safety Standard for Fire Dampers, Sixth Edition (June 1999) requires that combination fire and smoke dampers have a heat responsive device of minimum 160°F (71°C), maximum 350°F (177°C) temperature rating but it cannot be greater than the UL 555S elevated temperature rating of the damper assembly. For reopenable combination fire and smoke dampers the temperature rating of the primary heat responsive device must be minimum 160°F (71°C), maximum 212°F (100°C). The temperature rating of the secondary heat responsive device must be greater than that of the primary device, but cannot exceed 350°F (177°C) or the UL 555S elevated temperature rating of the damper assembly.

Options and Variables

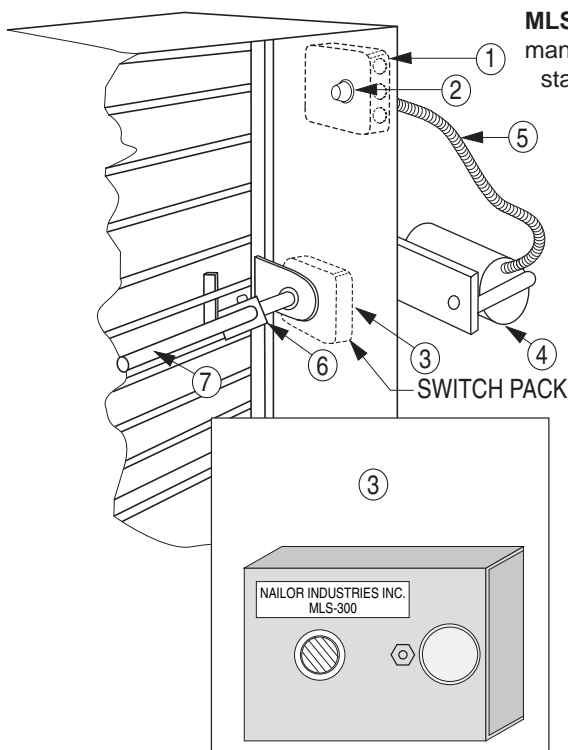
Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

POSITION INDICATORS:

OPTION CODE 300

MLS-300 POSITION INDICATOR SWITCH PACK

The **MLS-300 Series Position Indicator Switch Pack** is generally utilized to indicate open and closed position of the damper blades. It incorporates two SPDT switches that may be used to operate signal lamps or to provide a start/stop circuit for remote fans or to signal alarms.



MLS-300's are used in active smoke control management systems to positively indicate the status of all combination fire/smoke and smoke dampers in the building. The **MLS-300** is available only as a factory installed option on combination fire/smoke and smoke dampers.

Features:

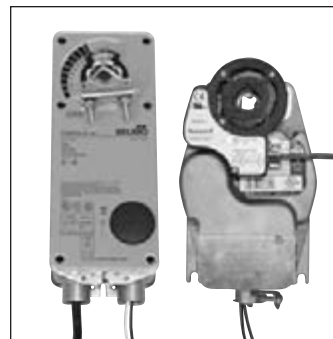
- Operates as a function of the damper blade position.
- Provides remote indication of damper blade position.
- Provides the ability to remotely control ON/OFF fan stations.
- Provides the ability to remotely signal alarms.

Built-in Actuator Switch Packs

Many of the newer application specific actuators designed for use on fire/smoke dampers feature "add-on" component position indicator switches manufactured and UL tested by the actuator manufacturer. Honeywell ML4115/ML8115 and MS4X09/MS8X09 actuators are examples.

Some actuator models have variants with position indicator switches built right in to the actuator. Honeywell MS4120F/MS8120F and Belimo FSNF24S/FSNF120S actuators are examples.

When ordered with the MLS-300 Position Indicator Switch Pack, Nailor combination fire/smoke and smoke dampers that utilize these actuators will usually be supplied with the actuator mounted switch pack, factory installed as required by UL.

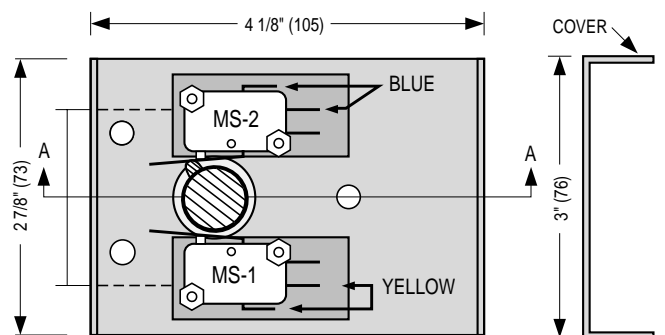


Options and Variables

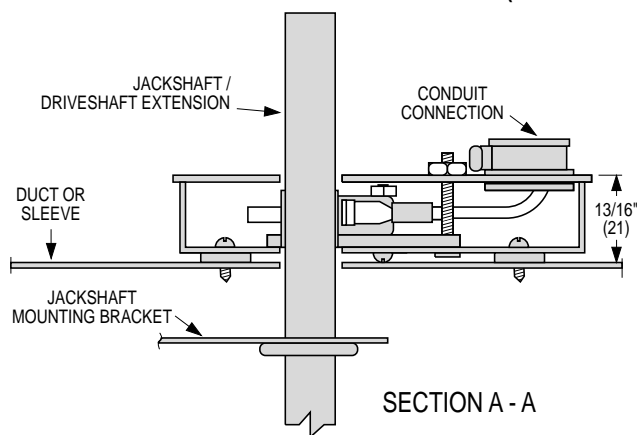
Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

POSITION INDICATORS:

NAILOR MLS-300 SWITCH DETAILS



EXTERNAL RIGHT HAND MOUNTING: FRONT VIEW (LESS COVER)



Position Indicator Microswitch Data:

Switch Type: Single Pole double throw (2)
15 Amps, 1/3 HP, 125, 250 Vac or 24 Vdc.
1/2 Amp, 125 Vdc. 1/4 Amp, 250 Vdc.

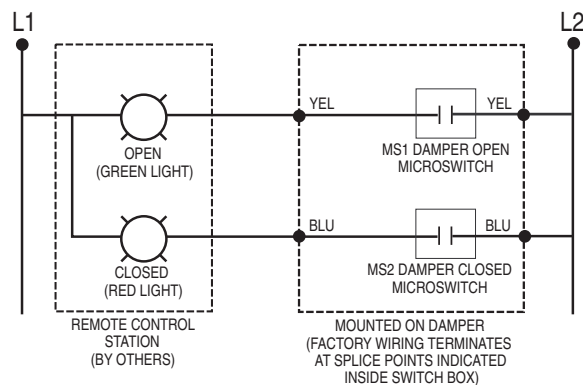
Standard Mounting:

MS1 is damper open signal.

MS2 is damper closed signal.

Non-Standard Mounting:

Important: Installer must double check continuity of MS1 and MS2 before wiring to determine which switch signals the damper's open or closed position.



MLS-300 TYPICAL WIRING DETAILS

Options and Variables

Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

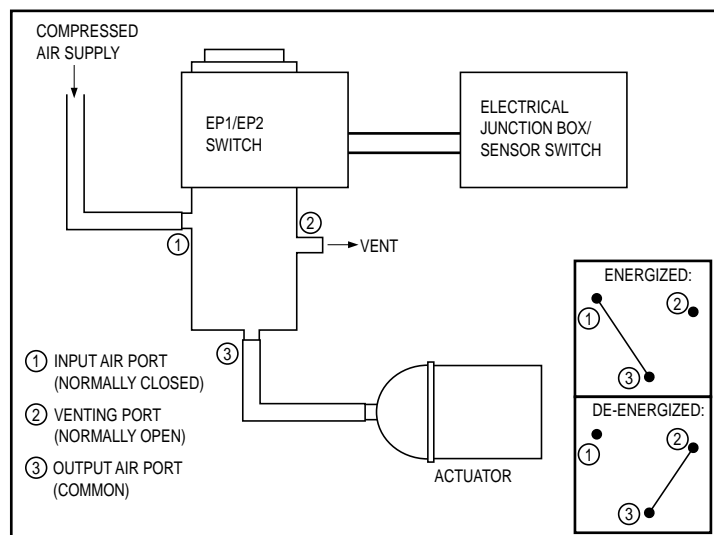
ELECTRO-PNEUMATIC SWITCHES:

OPTION CODES **EP1** and **EP2**
 EP1 120 VAC E/P SWITCH
 EP2 24 VAC E/P SWITCH



Nailor Options **EP1** and **EP2** electro-pneumatic switches are electrically operated, two-position 3-way air valves. They are used to interlock an electrical smoke or fire alarm system with a pneumatic damper actuator. The **EP1 (120 VAC)** and **EP2 (24 VAC)** valves are utilized to alternately apply pressure to, and exhaust pressure from a pneumatic damper actuator by an electrical input that energizes or de-energizes the solenoid of the switch.

Barb type pneumatic piping connections are sized for 1/4" (6) O.D. Polyethylene tubing. Units are UL and CSA approved and may be mounted in any position.



OPERATION:

Input air is connected to port 1 (normally closed) and the output to the actuator is connected to port 3 (common). When the solenoid is energized port 1 connects to port 3 allowing the actuator to be controlled by input air, usually holding the damper in open position. When the solenoid is de-energized, port 2 (normally open) is connected to port 3, exhausting the air from the actuator allowing it to return to its normal fail position (fail open or fail closed).

Options and Variables

Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

RETAINING ANGLES:

FOR USE WITH ALL COMBINATION FIRE/SMOKE DAMPERS EXCEPT MODEL 1290FS

- Maximum Size: 90" x 48" (2286 x 1219) or 48" x 90" (1219 x 2286)

OPTION CODES **QS1, QS2**
'QUICK-SET' RETAINING ANGLES



BENEFITS:

- Factory fabricated by the manufacturer to suit the individual fire damper.
- Dampers can ship directly to the job site complete with all necessary installation sheet metal hardware (saves on double handling at contractor's shop).
- Reduced cost when compared to conventional retaining angles.
- Only two sets of angles to handle per damper (rather than eight).
- Angles ship with individual damper - no sorting or matching.
- Pre-drilled holes on 8" (203) centers to ensure correct angle/sleeve attachment.
- Help ensure a correct installation as per U.L. approved installation instructions.

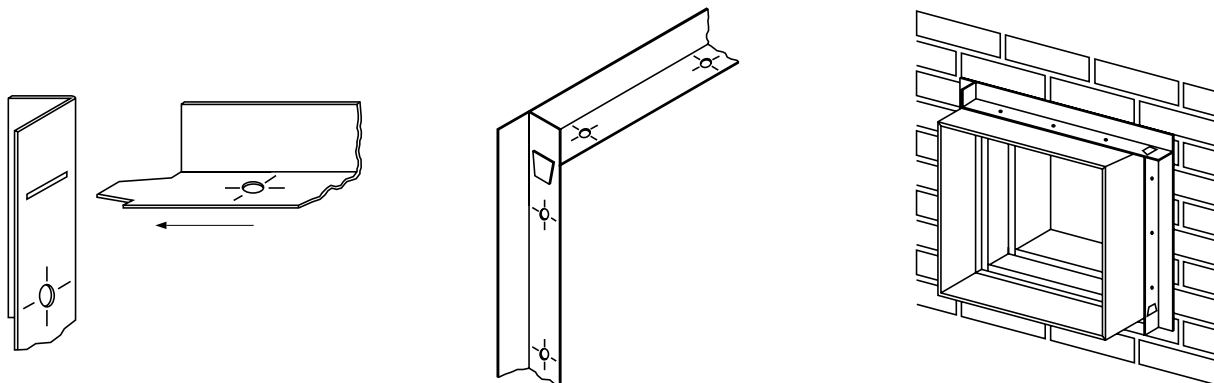
The majority of installing contractors view fire damper installation as a costly time consuming and troublesome procedure. Eight conventional angles must be custom fabricated for each damper either in a sheet metal shop or at the job site and sized to suit each individual damper. Invariably, they are mislaid or lost and must be matched to each factory supplied damper. The Nailor "Quick-Set" solution solves the majority of problems. They are pre-formed to fit each damper and shipped with the individual damper units for ultimate convenience.

Option Code **QS1** provides a single set of angles for applications requiring angles on one side of the damper only.

Option Code **QS2** provides the complete kit of two sets of angles suitable for most applications that require angles on both sides of the damper.

"Quick-Set" angles are supplied with correctly spaced pre-drilled screw-holes to ensure a quick, easy and accurate installation for all Nailor fire dampers - no measuring required.

"Quick-Set" retaining angles when specified and supplied with Nailor integral sleeve fire dampers provide the "complete" installation package. Simple, fast, convenient.



Options and Variables

Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

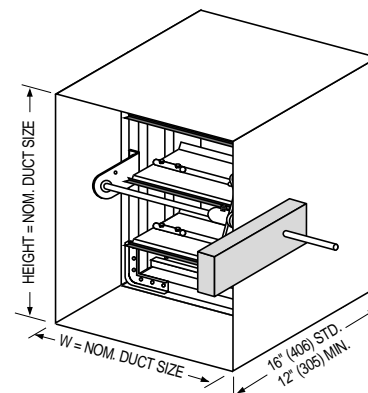
SLEEVES OR SIDE MOUNTING PLATE:

TYPE A SLEEVES MODELS 1221 and 1271

Nailor strongly recommends that all combination fire/smoke dampers including Type A models, are specified and ordered complete with a factory installed full sleeve (Type B and C models are manufactured as standard with transition casing that acts as a sleeve). A factory installed sleeve allows the units to ship directly to jobsite ready for installation, saving time, money and costly field fabrication and mounting, as well as helping to ensure proper installation to UL requirements. As all combination fire/smoke dampers are required to be mounted in a sleeve, and all actuators must be factory mounted (effective June 1, 2000 per UL 555/555S latest editions), a factory installed sleeve provides the easiest and most cost effective method to accomplish this as well as ensuring that the damper/actuator assembly functions properly. Standard sleeve is 16" (406) long. See Models 1221 and 1271 for further damper/sleeve details.

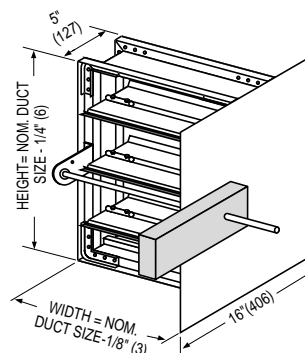
The following indicates model numbers to order for combination fire/smoke dampers with factory fitted Type A sleeves:

| STANDARD MODEL # | WITH TYPE A SLEEVE |
|---------------------|-----------------------|
| 1220 → | MODEL 1221 |
| 1270 → | MODEL 1271 |



OPTION CODE **SMP** SIDE MOUNTING PLATE

Although not recommended, Nailors **SMP** Side Mounting Plate provides a method of factory installing an externally mounted actuator onto Model Series 1220 and 1270 combination fire/smoke dampers. UL 555 and UL 555S safety standards latest editions assert that effective June 1, 2000, actuators shall be factory mounted securely in position. This is to help ensure that the damper/actuator assembly functions properly and eliminates possible jobsite installation errors. As with all combination fire/smoke dampers, an appropriate steel sleeve is required for installation of damper in wall or floor.



**SIDE MOUNTING PLATE FOR COMBINATION
FIRE/SMOKE DAMPERS**

Options and Variables

Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

FLANGED SLEEVE

OPTION CODES **TDF1**, **TDF2**
TDF FLANGE



TDF (by Engle) and **TDC** (by Lockformer) proprietary flange systems are approved as breakaway connections for connecting a combination fire/smoke damper Type A sleeve (22 or 20 gauge) to ductwork. They may be used in place of the approved slip joints shown in standard installation instructions.

For Option **TDF1** the sleeve is factory flanged on one end only.

For Option **TDF2** the sleeve is factory flanged on both ends.

Note that the maximum wall/floor opening size permitted by UL, relative to the damper size, may not physically allow the flange to fit through the opening. Consultation and co-ordination with the wall/floor contractor is recommended. **TDF1**, flange on one end only, will permit the non-flanged end of the sleeve to fit through the opening.

Maximum TDF1/TDF2 Sleeve Size Allowed:

For Curtain Type Fire Damper: 60" wide x 60" high (1524 x 1524).

For Multi-Blade Type Fire Damper: 36" wide x 48" high (914 x 1219).

Options and Variables

Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

DAMPER TEST SWITCH

OPTION CODE DTS
PUSH BUTTON TEST SWITCH

The DTS (Damper Test Switch) is an optional “momentary” push button test switch available on all Nailor smoke and combination fire/smoke dampers. The DTS provides the ability to “cycle test” the damper by pushing and holding down the button until the damper has cycled and closure has been visually verified, either by inspecting the damper through the access door or by confirmation at a remote control panel when equipped with the optional MLS-300 position indicator.

The DTS is mounted right on the damper and enables a single maintenance person to test and cycle the damper, eliminating the need for help from another person in the control room.

When a combination fire/smoke damper is ordered, the DTS is combined with the ERL (Electric Resettable Link), in a common enclosure. If ordered with an MLS-300 position indicator switch package as well, the DTS will be combined with both in a common enclosure.



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COMBINATION FIRE/SMOKE DAMPERS

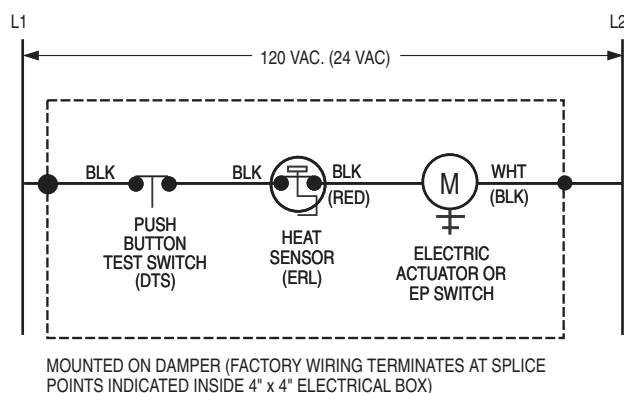


Figure 1. DTS/ERL Damper Test Switch with Electric Resettable Link

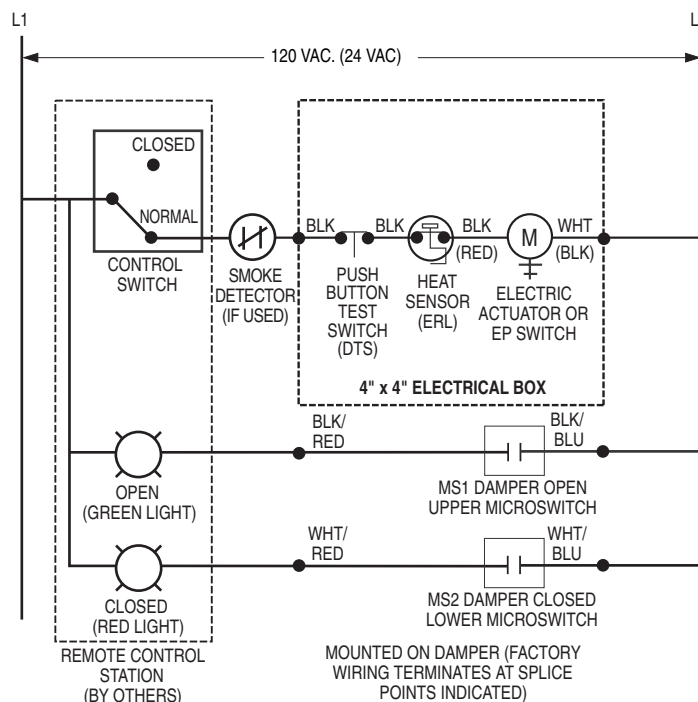


Figure 2. DTS/ERL with MLS-300 (Honeywell) Position Indicator Package (rotary cam type)

Options and Variables

Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

DUCT SMOKE DETECTOR:

OPTION CODE **DSDN**

DSD-NF NO-FLOW
DUCT SMOKE DETECTOR

APPLICATION:

Nailor Model DSD-NF duct smoke detector (no-flow) can be utilized with Nailor UL555S Classified combination fire/smoke dampers to detect the presence of smoke within HVAC ductwork, whether or not there is airflow, and close the damper to prevent the smoke from spreading. As most fatalities resulting from fires can be attributed to the effects of toxic smoke, detecting and controlling the smoke from spreading within the HVAC system is vital to preventing injury as well as limiting property damage, including damage to the HVAC system itself. Refer to NFPA Standards 72, 90A and 92A to determine when and where duct smoke detectors are required.

The DSD-NF detector features a low-profile design for optimum pressure drop and will operate with airflow in either direction. It can be factory installed to top of sleeve (side mounting optional) on Nailor Model Series 1220 and 1270 combination fire/smoke dampers.

OPERATION:

Upon detection of smoke, the smoke detector causes the damper to close by cutting off power to the actuator. The actuator return spring forces the damper closed. The detector can be reset only by a momentary power interruption. The standard model DSD-NF detector and smoke damper combination is designed simply to close the damper upon detection of smoke. For applications requiring the detector to be wired into a fire fighters' smoke-control station (FSCS), contact Nailor.

DSD-NF STANDARD SPECIFICATION:

Model: System Sensor 2151 Low-Profile.

Sensor Type: Photoelectric.

Dimensions: 6" (155) dia. flanged base.

Weight: 3.6 oz. (104 g).

Airflow Velocity Range: 0 to 3000 fpm (0 to 15.24 m/s).

Operating Temperature Range: 32°F to 120°F (0°C to 49°C).

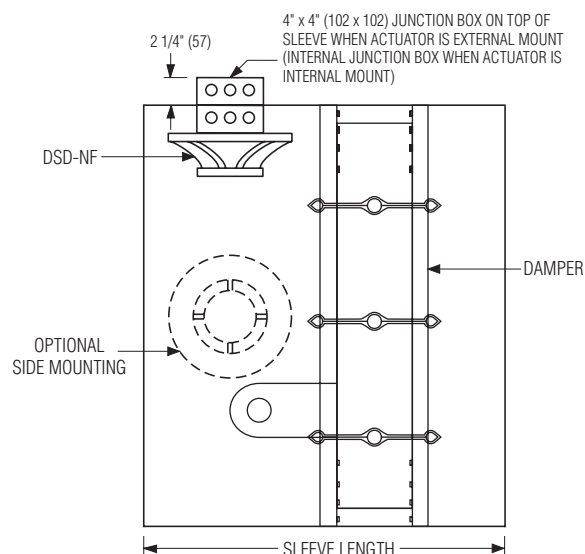
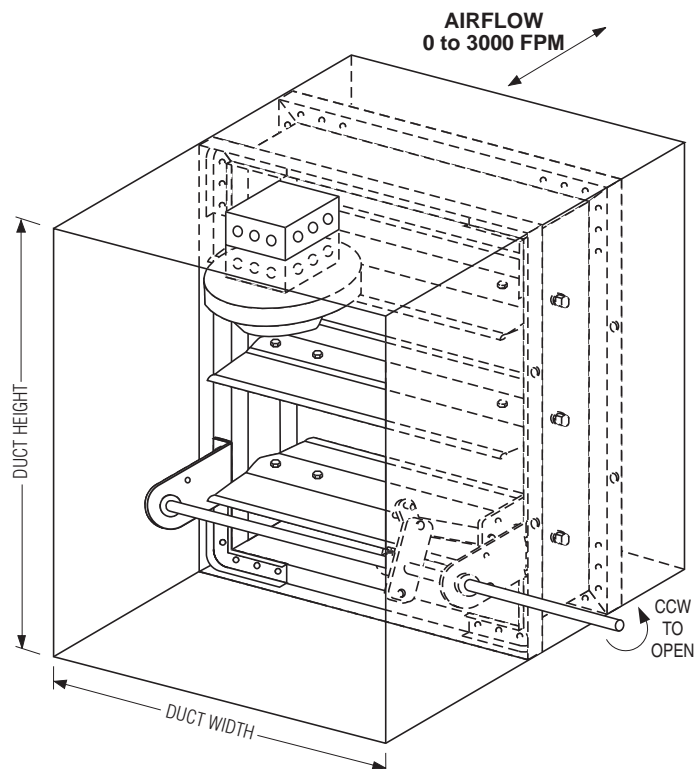
Humidity Range: 10% to 93% Relative Humidity non-condensing.

Sensitivity: 3% \pm .7%/ft

Voltage: 120 VAC or 24 VAC/DC.

Latching Alarm: Reset by momentary power interruption.

Contact Nailor for minimum damper size and sleeve length for your specific application.



Options and Variables

Nailor combination fire and smoke dampers are tested by and listed with Underwriters Laboratories Inc. and are manufactured within UL procedural requirements. Approved variables including a variety of options and accessories are available to suit specific applications.

DUCT SMOKE DETECTOR:

OPTION CODE **DSDL**

DSD-LF LOW-FLOW
DUCT SMOKE DETECTOR

APPLICATION:

Nailor Model DSD-LF duct smoke detector (low-flow) can be utilized with Nailor UL555S Classified combination fire/smoke dampers to detect the presence of smoke within HVAC ductwork and close the damper to prevent the smoke from spreading. As most fatalities resulting from fires can be attributed to the effects of toxic smoke, detecting and controlling the smoke from spreading within the HVAC system is vital to preventing injury as well as limiting property damage, including damage to the HVAC system itself. Refer to NFPA Standards 72, 90A and 92A to determine when and where duct smoke detectors are required.

The DSD-NF detector can be factory installed to side of sleeve on Nailor Model Series 1220 and 1270 combination fire/smoke dampers.

A minimum airflow velocity of 100 fpm (0.5 m/s) is required for Model DSD-LF.

OPERATION:

Upon detection of smoke, the smoke detector causes the damper to close by cutting off power to the actuator. The actuator return spring forces the damper closed. The detector can be reset only by a momentary power interruption. The standard model DSD-LF detector and smoke damper combination is designed simply to close the damper upon detection of smoke. For applications requiring the detector to be wired into a fire fighters' smoke-control station (FSCS), contact Nailor.

DSD-LF STANDARD SPECIFICATION:

Model: System Sensor DH100ACDCLP.

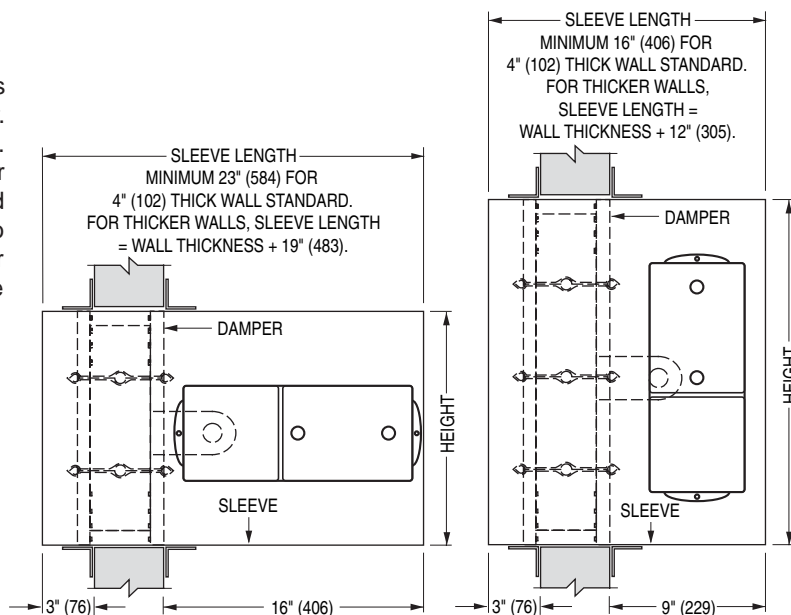
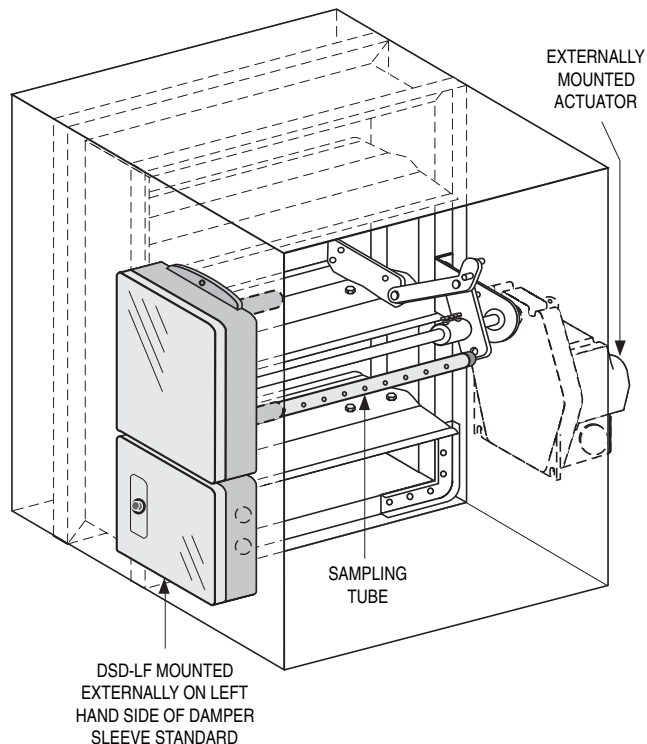
Sensor Type: Photoelectric.

Airflow Velocity Range: 100 to 4000 fpm
(0.5 to 20.3 m/s).

Operating Temperature Range: 32°F to 131°F
(0°C to 55°C).

Operating Humidity Range: 10% to 93% Relative Humidity.

Voltage: 24 VAC/DC or 120/240 VAC.



**TYPICAL MOUNTING FOR
DAMPERS UNDER 20" (508)
IN HEIGHT**

**TYPICAL MOUNTING FOR
DAMPERS 20" (508) AND OVER
IN HEIGHT**

Notes:



COMBINATION FIRE / SMOKE DAMPERS