



**OUT OF WALL COMBINATION FIRE/SMOKE DAMPER  
FOR THROUGH PENETRATIONS  
(DUCTED BOTH SIDES)  
1 1/2 HR. LABEL • ULTRA-LOW LEAKAGE  
MODEL: 1221-DOW**



**QUALIFICATIONS:**

- **UL 555 & CAN/ULC-S112 CLASSIFIED DYNAMIC FIRE DAMPER** 1 1/2 hr. Label (File # R9492).
- **UL 555S CLASSIFIED SMOKE DAMPER (File # R9492) Leakage Class I** at 250°F or 350°F elevated temperature.
- **City of New York MEA #366-03-M.**
- **California State Fire Marshal: Fire Damper Listing No. 3225-0935:106.**
- **Meets NFPA 80, 90A, 92A, 92B, 101 and 105 as well as IBC and NBC (Canada) Building Code requirements.**
- **Maximum velocity: Up to 4000 fpm @ 8" w.g.**

The Model 1221-DOW combination fire/smoke damper is specially designed for "out of wall" (vertical mount) or "out of floor" (horizontal mount) through penetration applications (ductwork is connected to both sides) where the damper cannot be installed within the plane of the wall or floor.

The 1221-DOW is 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 2 hours and also require a leakage rated damper for operational smoke control in static or dynamic smoke management systems.

The 1221-DOW offers premium performance with the lowest leakage class available and is qualified for installation with airflow in either direction. 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.

**STANDARD SPECIFICATION:**

**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:** 21" x 20 ga. (533 x 1.0) galvanized steel standard.

**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) 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.

**Sizes (Damper W x H):**

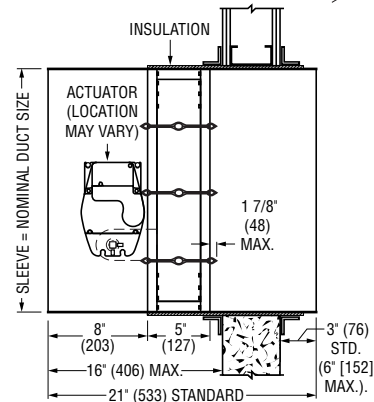
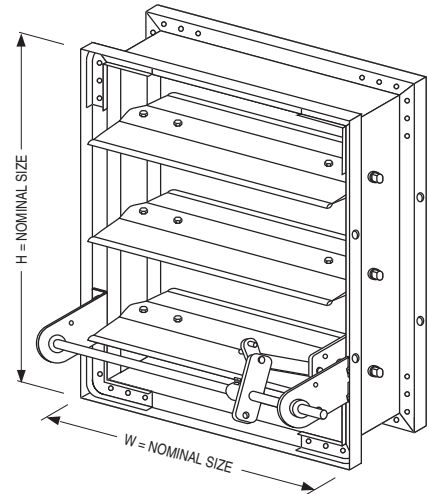
Velocity/ Pressure Rating	Elevated Temp. °F	Minimum Single Section		Maximum Single Section	
		Vertical/Horizontal	Vertical	Horizontal	Horizontal
24, 34, 36, 46	250/350	8" x 8" (203 x 203)	36" x 48" (914 x 1219)	32" x 48" (813 x 1219)	
48	250		36" x 48" (914 x 1219)	32" x 48" (813 x 1219)	
48	350		36" x 24" (914 x 610)	32" x 24" (813 x 610)	

**BASE MODEL SELECTION:**

- 1221-DOW** Std. factory sleeve. (caulked to UL requirements) See above.
- 1221-DOW** Non-standard sleeve. Specify \_\_\_\_\_ length \_\_\_\_\_ ga.

**LEAKAGE CLASS/ELEVATED TEMPERATURE:**

- I @ 250°** (Standard)  **I @ 350°** (Optional)



**NOTE:**

STANDARD SLEEVE/DAMPER (FOR 4" [102] WALL) PROVIDES 1" (25) OFFSET FROM WALL FACE TO EDGE OF DAMPER FRAME. FOR THICKER WALLS OR TO OFFSET DAMPER FARTHER FROM WALL FACE (MAX. 8" [203]) LENGTHEN SLEEVE ACCORDINGLY.

**DYNAMIC VELOCITY/  
PRESSURE RATING:**

- 24** 2000 fpm @ 4" w.g. (Standard)
- 34** 3000 fpm @ 4" w.g.
- 36** 3000 fpm @ 6" w.g.
- 46** 4000 fpm @ 6" w.g.
- 48** 4000 fpm @ 8" w.g. } (Optional)

**ACTUATOR SELECTION:**

- Electric**  **Pneumatic**

**ACTUATOR LOCATION:**

- External**  **Internal** (in the airstream)

**ACTUATOR FAIL POSITION: Closed.**

**OPTIONS:**

- BS** Stainless steel bearings
- MLS-300** Position indicator switch pack
- QS2** Quick-set retaining angles (pair)
- TDF1** TDF Flange (one end) } (20 ga. sleeves only)
- TDF2** TDF Flange (both ends) }

For installation instructions, see IOM-1221DOWINST.  
Dimensions are in inches (mm).

<b>SCHEDULE TYPE:</b>	<b>DATE</b>	<b>B SERIES</b>	<b>SUPERSEDES</b>	<b>DRAWING NO.</b>
<b>PROJECT:</b>	<b>5 - 7 - 12</b>	<b>1200</b>	<b>3 - 28 - 11</b>	<b>1221-DOW</b>
<b>ENGINEER:</b>				
<b>CONTRACTOR:</b>				



**OUT OF WALL COMBINATION FIRE/SMOKE DAMPER**  
**GRILLE MOUNT WITH ACTUATOR ACCESS**  
**1 1/2 HR. LABEL • ULTRA-LOW LEAKAGE**  
**MODEL: 1221-OW**



**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) 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 Listing No. 03225-0935:106.
- City of New York. MEA# 366-03-M.
- Maximum velocity: Up to 4000 fpm @ 8" w.g.
- For use in vertical or horizontal concrete partitions and vertical steel stud partitions only.

The Model 1221-OW is an "out of wall" high performance combination fire/smoke damper. It is specifically designed for supply or return ducts that terminate at a grille and provides through the grille access to the damper, actuator and other components. Standard sleeve length accommodates most commercial supply and return grilles/registers.

The 1221-OW is 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 2 hours and also require a leakage rated damper for operational smoke control in static or dynamic smoke management systems.

The 1221-OW 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.

**STANDARD SPECIFICATION:**

- 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:** **Damper 16" tall and under:** 20" x 20 ga. (508 x 1.0) galvanized steel with 3/4" (19) flange on one end.  
**Damper over 16" tall:** 16" x 20 ga. (406 x 1.0) galvanized steel with 3/4" (19) flange on one end.  
**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) standard. 165°F (74°C), 212°F (100°C) and 350°F (176°C) available.

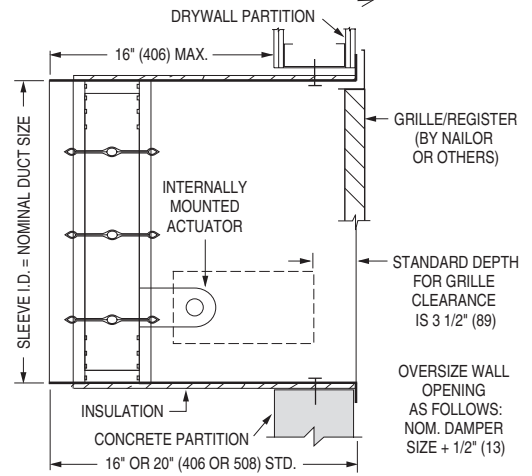
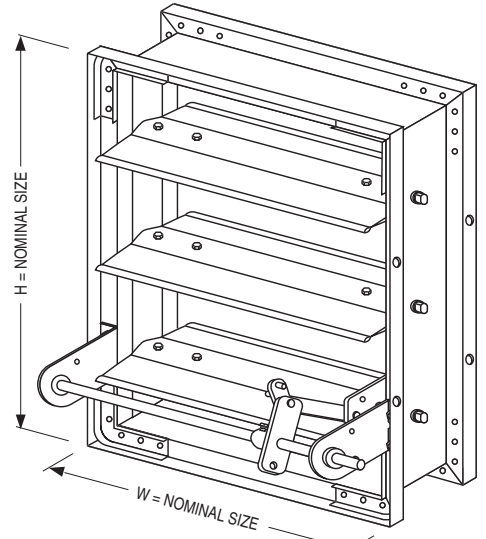
PRL (Pneumatic Replaceable Link) is standard on dampers with pneumatic actuators: 212°F (100°C) standard. 165°F (74°C) and 280°F (138°C) available.

**Sizes (Damper W x H):**

Velocity/ Pressure Rating	Elevated Temp. °F	Minimum		Maximum	
		Single Section		Single Section	
		Vertical/Horizontal	Vertical	Horizontal	Horizontal
24, 34, 36, 46	250/350	8" x 8" (203 x 203) with internal electric actuator.	36" x 48" (914 x 1219)	32" x 48" (813 x 1219)	
48	250	8" x 20" (203 x 508) with internal pneumatic actuator.	36" x 48" (914 x 1219)	32" x 48" (813 x 1219)	
48	350		36" x 24" (914 x 610)	32" x 24" (813 x 610)	

**BASE MODEL SELECTION:**

- 1221-OW** Standard length sleeve as described under "Sleeve:" under "Standard Specification:".
- 1221-OW** Non standard sleeve. Specify length \_\_\_\_\_. Shorter sleeve lengths are available (down to 14" [350]) dependant on height. Contact factory for limitations.



**LEAKAGE CLASS/ELEVATED TEMPERATURE:**

- I @ 250° (Standard)       I @ 350° (Optional)

**DYNAMIC VELOCITY/PRESSURE RATING:**

- 24 2000 fpm @ 4" w.g. (Standard)
- 34 3000 fpm @ 4" w.g. } (Optional)
- 36 3000 fpm @ 6" w.g. }
- 46 4000 fpm @ 6" w.g. }
- 48 4000 fpm @ 8" w.g. }

**ACTUATOR SELECTION:**

- Electric     Pneumatic

**ACTUATOR FAIL POSITION: Closed.**

**OPTIONS:**

- BS** Stainless steel bearings
- MLS-300** Position indicator switch pack
- MLS-400** Electric Fire Sensor (Re-openable control system). Includes dual heat sensors (165°F and 250°F or 350°F) and position indicator switch pack.
- QS1** Quick-set retaining angle (one side)

For installation instructions, see IOM-1221OWINST.  
 Dimensions are in inches (mm).

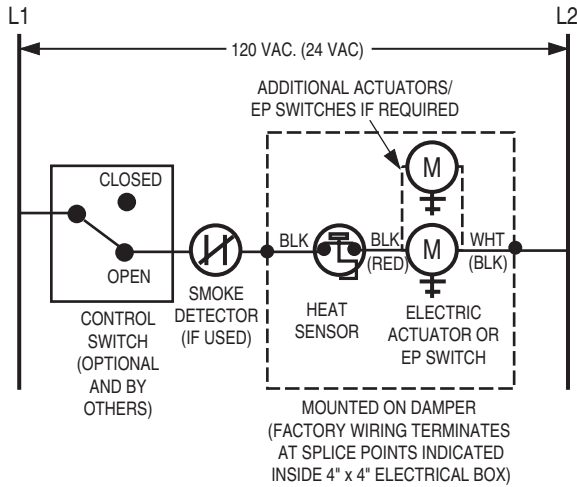
**SCHEDULE TYPE:**

**PROJECT:**

**ENGINEER:**

**CONTRACTOR:**

DATE	B SERIES	SUPERSEDES	DRAWING NO.
10 - 18 - 22	1200	12 - 17 - 20	1221-OW



**APPLICATION AND OPERATION:**

The ERL Electric Resettable Link (heat sensor) is standard on all Nailor combination fire/smoke dampers 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 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°F and 212°F (74°C and 100°C) ERL are also available. Local codes have specified 165°F (74°C) widely in the past.]

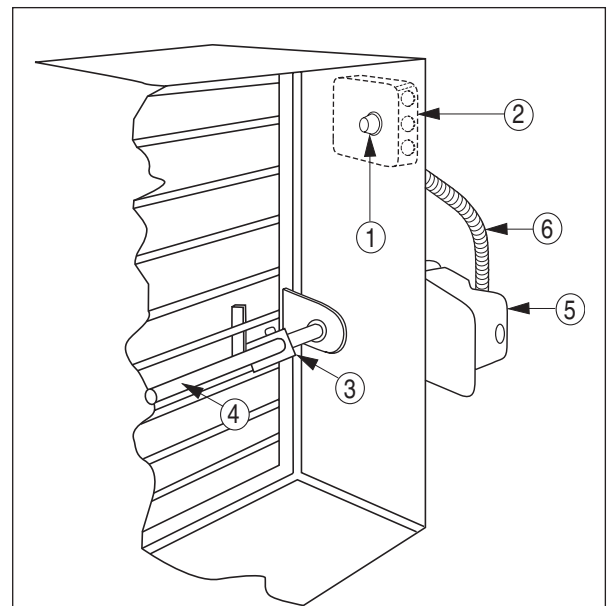
The ERL's function is to sense an abnormally high temperature, as caused by a fire and allow the damper to close in order to prevent the spread of fire and smoke. The sensor interrupts power to the actuator and the actuator's spring return mechanism causes the damper to close and lock.

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 anytime by placing a control switch (optional and by others) in the closed position.

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 sensor is of the manual reset type and can be reset after the temperature has cooled down below the sensor set point. 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 requires factory installation and wiring together with the associated actuator to meet UL requirements. If the damper is provided with a pneumatic actuator, an EP switch is required.



**DESCRIPTION:**

1. ERL 165, 212, 250, 350 Electric Resettable Link (heat sensor)
2. Electrical Junction Box (and EP Switch with Pneumatic Actuator)
3. Over-Center Knee Lock
4. Jackshaft
5. Actuator
6. Flexible Conduit

<b>SCHEDULE TYPE</b>				
<b>PROJECT</b>				
Dimensions are in inches (mm).				
<b>ENGINEER</b>	<b>DATE</b>	<b>B SERIES</b>	<b>SUPERSEDES</b>	<b>DRAWING NO.</b>
<b>CONTRACTOR</b>	9 - 9 - 20	FD-ACC	9 - 23 - 02	ERL

**"QUICK-SET" RETAINING ANGLES BOTH SIMPLIFY AND SPEED INSTALLATION,  
 SAVING BOTH TIME AND MONEY.**

**BENEFITS:**

- One piece angles are fastened together in the corners. Only two sets of angles to handle per damper (rather than four separate angles per side).
- Angles are shipped with damper - no sorting or matching.
- Provided with pre-drilled fastening holes on 2" (51) centers to ensure correct angle/sleeve attachment.
- Factory fabricated by Nailor to suit the individual fire damper.
- Reduced cost when compared to conventional retaining angles.
- Dampers can ship directly to the job site complete with all necessary installation sheet metal hardware (saves on double handling at contractor's shop).
- 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 and ship with the individual damper for ultimate convenience. "Quick-Set" angles are supplied with correctly spaced pre-drilled screw-holes to ensure a quick, easy and accurate installation for all integral sleeve Nailor fire and combination fire/smoke dampers - no measuring required.

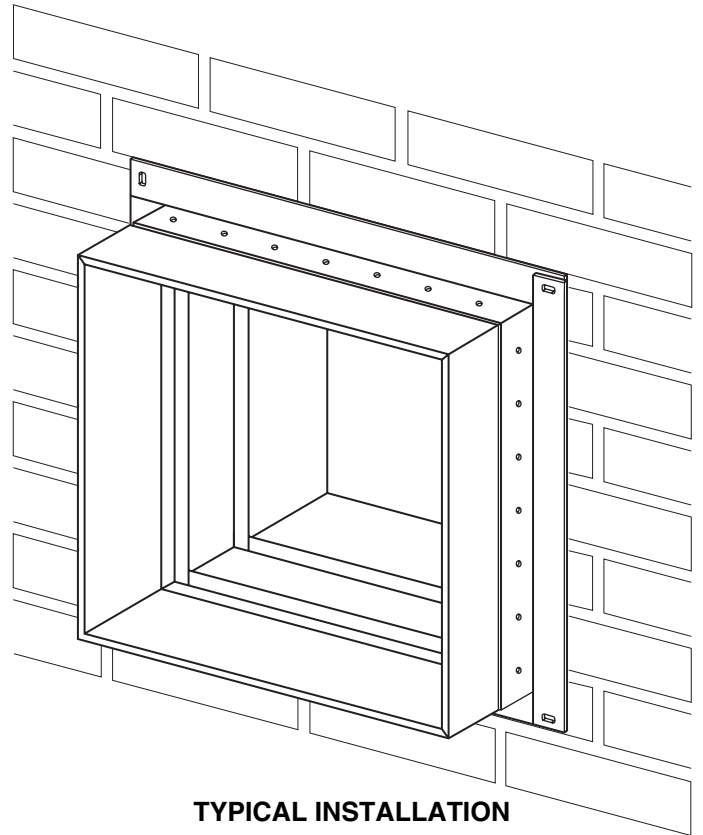
"Quick-Set" retaining angles provide the "complete" installation package. Simple, fast, convenient.

**MODELS:**

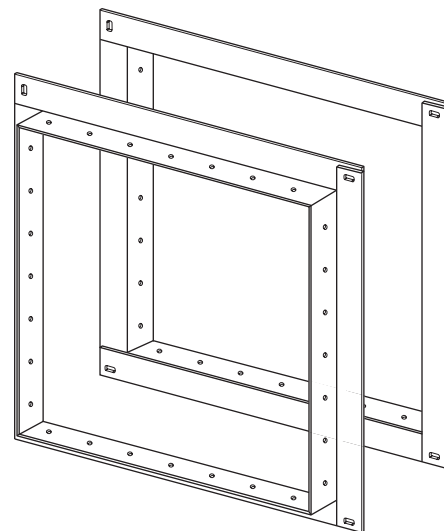
Nailor "Quick-Set" retaining angles are an accessory option for all dampers ordered with factory sleeves.

**QS2:** Two sides (pair). For standard installations where angles are installed on both sides of the fire partition.

**QS1:** One side (single set). For use in single side retaining angle installations and with grille mount and "out of wall" damper models.



**TYPICAL INSTALLATION**

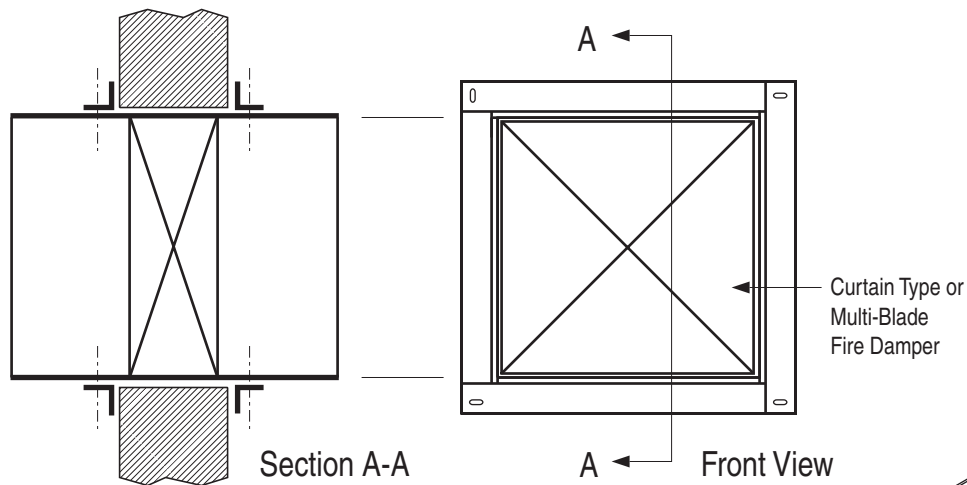


**TYPICAL PAIR OF PRE-ASSEMBLED  
 QUICK-SET' RETAINING ANGLES**

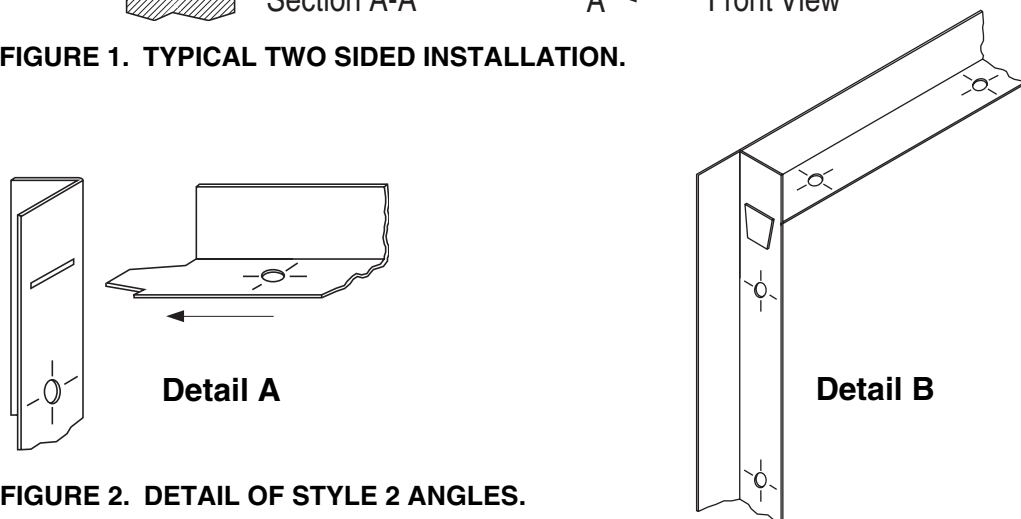


<b>SCHEDULE TYPE:</b>
<b>PROJECT:</b>
<b>ENGINEER:</b>
<b>CONTRACTOR:</b>

Page 1 of 2 Dimensions are in inches (mm).			
<b>DATE</b>	<b>B SERIES</b>	<b>SUPERSEDES</b>	<b>DRAWING NO.</b>
2 - 26 - 09	FD-ACC	6 - 5 - 03	QSRA



**FIGURE 1. TYPICAL TWO SIDED INSTALLATION.**



**FIGURE 2. DETAIL OF STYLE 2 ANGLES.**

**APPLICATION:**

The Nailor Quick-Set Retaining Angle System may be used in lieu of conventional retaining angles on all Nailor Fire and Combination Fire/Smoke Dampers.

Quick-Set angles are supplied in one of two styles, dependent upon fire resistance label, damper size and installation method.

**Style 1:** 1 1/2" x 1 1/2" x 20 ga. (38 x 38 x 1.0) Four sides are connected together with rivets in three corners.

Standard for the majority of applications with the following limitations:

- 1 1/2 hour label fire dampers.
- Maximum Size: 36" x 36" (914 x 914)
- Two sided installation only

**Style 2:** 1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.6) Slot and tab design. The retaining angle assembly for each side has four angles, each with a tab end and a slot end (Detail A).

The tabs are to be inserted into the slots and knocked down either before or after fastening to the sleeve (Detail B).

- 1 1/2 or 3 hour label fire dampers
- Maximum Size: 90" x 48" (2286 x 1219) or 48" x 90" (1219 x 2286)
- Single side (1 1/2 hour only. Refer to Single Side Retaining Angles Supplementary Installation Instructions for size limitations) or two sided installation

**Refer to the Following Installation Instructions:**

Quick-Set Retaining Angles	FDQSRA
Curtain Type Fire Dampers (D)0100 & (D)0500	FDINST
Curtain Type Fire Dampers 0200 & 0500 Thinline	FDTINST
Multi-Blade Fire Dampers 1200 & 1250	MBFDINST
Combination Fire/Smoke Dampers 1220	1220INST
Combination Fire/Smoke Dampers 1270	1270INST
Single Side Retaining Angles	FDSSRAINST

<b>SCHEDULE TYPE:</b>		Page 2 of 2			
<b>PROJECT:</b>		Dimensions are in inches (mm).			
<b>ENGINEER:</b>		<b>DATE</b>	<b>B SERIES</b>	<b>SUPERSEDES</b>	<b>DRAWING NO.</b>
<b>CONTRACTOR:</b>		2 - 26 - 09	FD-ACC	5 - 5 - 03	QSRA



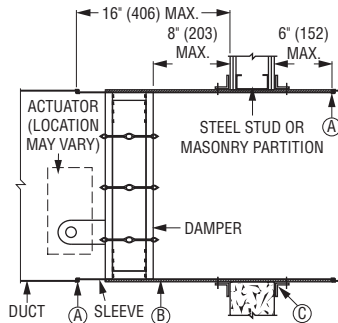
## TYPICAL INSTALLATION DETAILS:

### ITEMS:

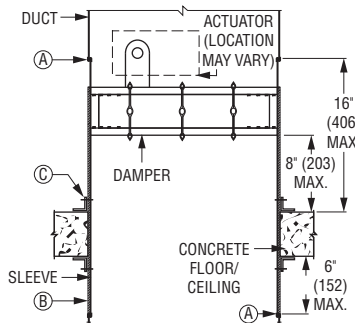
- A** Duct/sleeve connection.
- B** Intumescent material (insulation).
- C** Retaining angles and fasteners.

### APPLICATION:

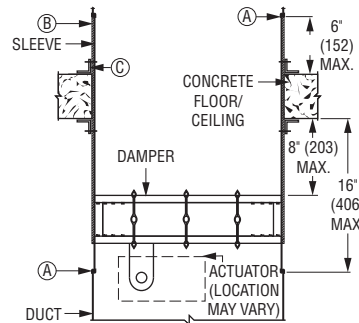
Model 1221-DOW fire/smoke damper is specially designed for "out of wall" (vertical mount) or "out of floor" (horizontal mount) through penetration applications (ductwork is connected to both sides) where the damper cannot be installed within the plane of the wall or floor.



**VERTICAL INSTALLATION**



**ABOVE FLOOR INSTALLATION**



**BELOW FLOOR INSTALLATION**

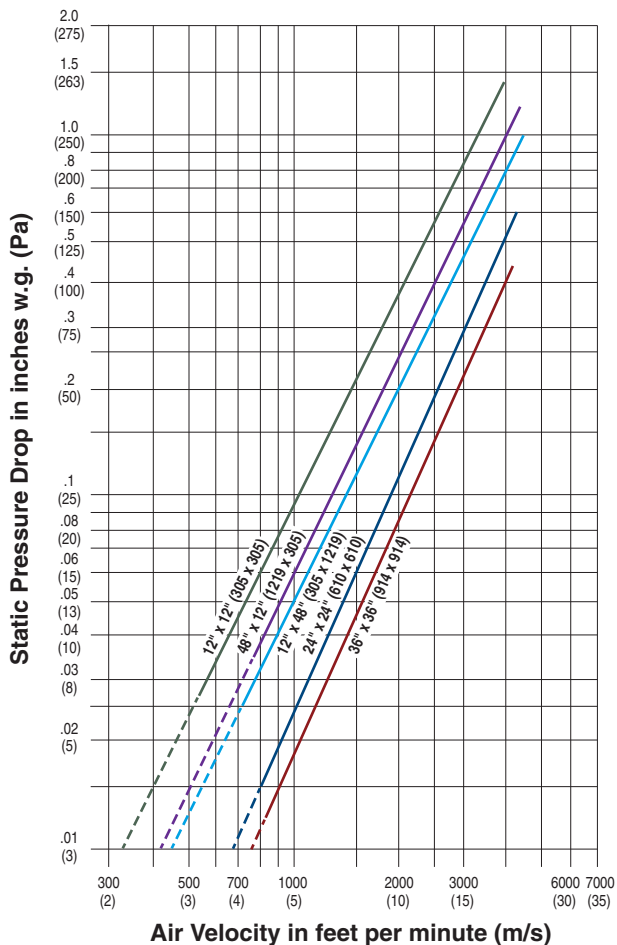
## PERFORMANCE DATA:

### MODEL SERIES: 1221-DOW - 1 1/2 HOUR LABEL

### LEAKAGE CLASS:

The 1221-DOW Series Out of Wall 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 (currently the lowest available) with all damper/actuator assemblies having been tested successfully at an elevated temperature of 250°F (121°C) or 350°F (177°C), dependent on actuator, under airflow of 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa). The 1221-DOW Series has also qualified under extended testing up to 4000 fpm (20 m/s) and 8 w.g. (2 kPa), with some size and actuator restrictions.

### PRESSURE DROP:



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

1221-DOW Series - Maximum Performance Ratings	
UL 555 Fire Rating	1 1/2 Hour
UL 555S Leakage Rating	Class I
Maximum Velocity	4000 fpm (20 m/s)
Maximum Pressure	8 in. w.g. (2 kPa)
Maximum Temperature	350°F (177°C)

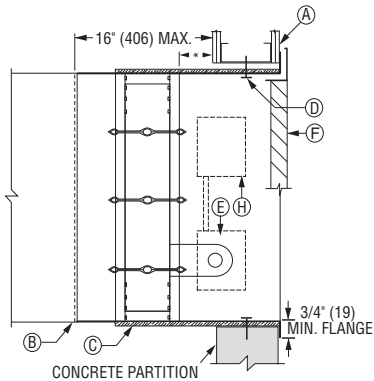
COMBINATION FIRE/SMOKE DAMPERS



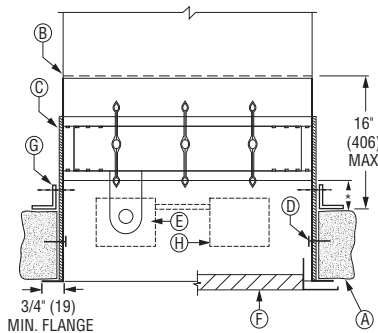
**TYPICAL INSTALLATION DETAILS:**

**ITEMS:**

- A** Typical 2 hour rated vertical steel stud construction or horizontal concrete fire partition.
- B** Duct connection.
- C** Intumescent material.
- D** #10 sheet metal screws.
- E** Actuator
- F** Grille/Diffuser
- G** Rear retaining angle (required for horizontal mounting).
- H** ERL Electric Resettable Link (Heat Sensor)



**VERTICAL MOUNT**



**HORIZONTAL MOUNT**

**\* Important Note:**  
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.

**PERFORMANCE DATA:**

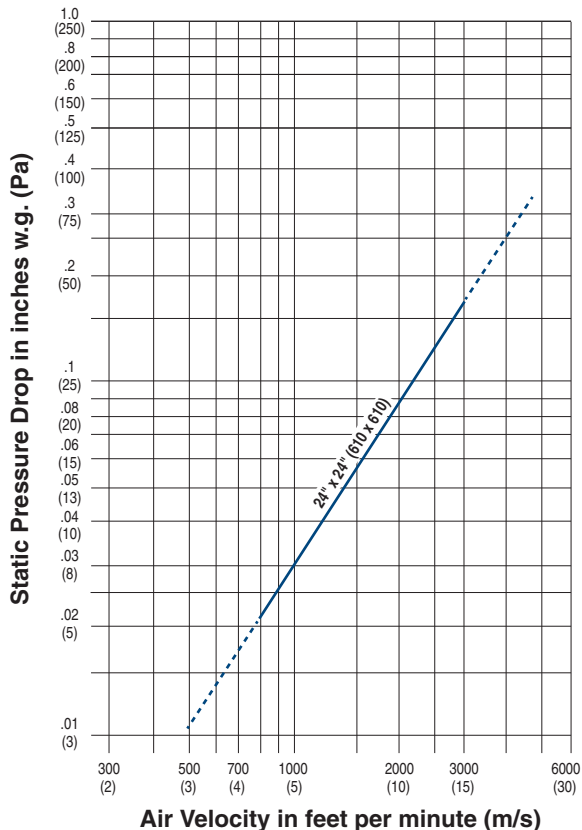
**MODEL SERIES: 1221-OW - 1 1/2 HOUR LABEL**

**LEAKAGE CLASS:**

The 1221-OW Series Out of Wall 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 (currently the lowest available) with all damper/actuator assemblies having been tested successfully at an elevated temperature of 250°F (121°C) or 350°F (177°C), dependent on actuator, under airflow of 2000 fpm @ 4" w.g. (10 m/s @ 1 kPa). The 1221-OW Series has also qualified under extended testing up to 4000 fpm (20 m/s) and 8 w.g. (2 kPa), with some size and actuator restrictions.

1221-OW Series - Maximum Performance Ratings	
UL 555 Fire Rating	1 1/2 Hour
UL 555S Leakage Rating	Class I
Maximum Velocity	4000 fpm (20 m/s)
Maximum Pressure	8 in. w.g. (2 kPa)
Maximum Temperature	350°F (177°C)

**PRESSURE DROP:**



Pressure drop tested per AMCA Standard 500-D, Figure 5.2.  
Data corrected to standard air density of 0.075 lbs/ft.<sup>3</sup>

**COMBINATION FIRE/SMOKE DAMPERS**

