Nailor® Industries Inc.

STATIC MULTI-BLADE FIRE DAMPER
FOR USE IN STATIC SYSTEMS
HIGH PERFORMANCE
1 1/2 HR. LABEL • AIRFOIL BLADE
MODELS: 1200 AND 1201 (TYPE A)

CLASSIFIED C UL US

QUALIFICATIONS:

- **UL 555 & CAN/ULC-S112 CLASSIFIED FIRE DAMPER 1 1/2 hr. Label (File #'s R9492 & R19569).**
- **Meets NFPA 90A, BOCA, SBCCI, UBC, IBC, NBC (Canada) and associated local building code requirements.**
- **California State Fire Marshal Listing No. 03225-0935:101.**
- **City of New York. MEA# 366-03-M.**

The 1200 Series Dampers are ideal for applications where building codes require a fire damper for the protection of ductwork penetrations in walls or floors that have a fire resistance rating of up to 2 hours.

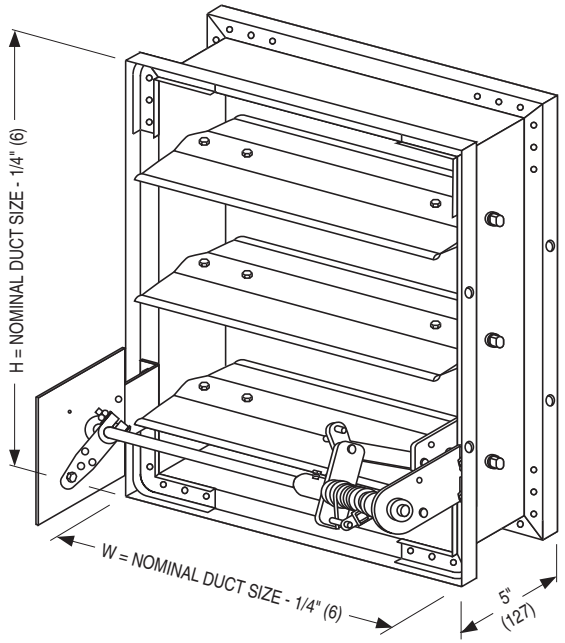
The 1200 Series is classified for use only in static "fans off" systems where the HVAC system is automatically shut down in the event of a fire alarm.

The 1200 Series has been especially designed and tested to provide premium performance. Airfoil blade design and elimination of blade sills, top and bottom, provide a low pressure drop design.

The 1200 Series features the industry proven over-center knee-lock design with high torque spring/fusible link closure.

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

The 1200 is supplied as standard with an internal locking quadrant which holds the damper in the fully open position, but may also be used for system balancing if required.



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.

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.
Internal locking quadrant is factory installed.

Fusible Link: 165°F (74°C) standard. 212°F (100°C) available.

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

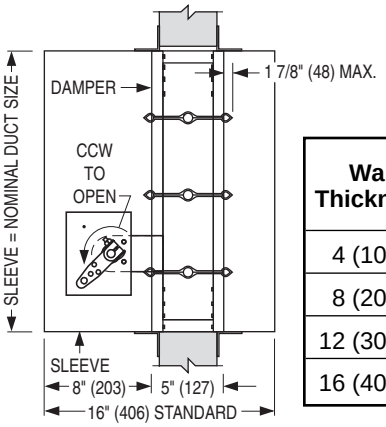
Maximum Size: Single Section
Vertical mount: 36" x 48" (914 x 1219).
Horizontal mount: 32" x 48" (813 x 1219).

Multiple Section Assembly
Vertical or Horizontal mount: 144" x 96" (3658 x 2438).

Dampers with duct heights less than 8" require a Type 'B' sleeve enclosure (Model 1202). Units less than 8" (203) in width only, or in both width and height, require a Type 'C' enclosure (Model 1203).

BASE MODEL SELECTION:

- ❑ **1200** Less sleeve
- ❑ **1201** Standard factory sleeve 16" long x 20 ga. (406 x 1.0).
- ❑ **1201** Non-standard sleeve. Specify _____ length _____ ga. Available up to 36" (914) dependent upon wall thickness and 10 through 20 ga. (3.5 through 1.0).



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

OPTIONS:

- ❑ **SMP** Side mounting plate
- ❑ **BS** Stainless steel bearings
- ❑ **MLS-300** Position indicator switch pack
- ❑ **JSM** Flexible metal jamb seals
- ❑ **QS1** Quick–set retaining angle (one side)
- ❑ **QS2** Quick–set retaining angles (two sides)
- ❑ **TDF1** Flange (one end)
- ❑ **TDF2** Flange (both ends)
- ❑ **Special features** _____ .

For installation instructions, see IOM-MBFDINST.

SCHEDULE TYPE:	Dimensions are in inches (mm).			
PROJECT:				
ENGINEER:	**DATE**	**B SERIES**	**SUPERSEDES**	**DRAWING NO.**
CONTRACTOR:	**1 - 1 - 12**	**1200**	**11 - 21 - 07**	**1200-1**

Nailor® Industries Inc.

STATIC MULTI-BLADE FIRE DAMPER
FOR USE IN STATIC SYSTEMS
HIGH PERFORMANCE
3 HR. LABEL • AIRFOIL BLADE
MODELS: 1200-3 AND 1201-3 (TYPE A)

CLASSIFIED C UL US

QUALIFICATIONS:

- **UL 555 & CAN/ULC-S112 CLASSIFIED FIRE DAMPER 3 hr. Label (File # R9492).**
- **Meets NFPA 80, 90A and 101 as well as IBC and NBC (Canada) Building Code requirements.**
- **California State Fire Marshal Listing No. 03225-0935:101.**
- **City of New York. MEA# 366-03-M.**

The 1200-3 Series Dampers are ideal for applications where building codes require a fire damper for the protection of ductwork penetrations in walls or floors that have a fire resistance rating of up to 4 hours.

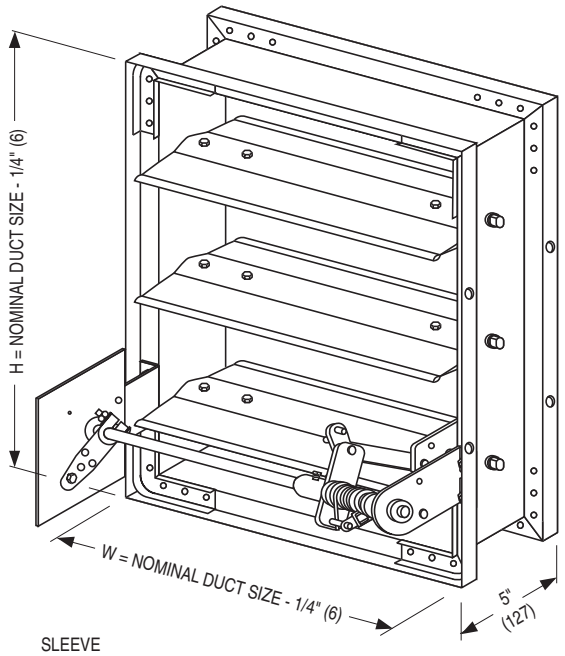
The 1200-3 Series is classified for use only in static "fans off" systems where the HVAC system is automatically shut down in the event of a fire alarm.

The 1200-3 Series has been especially designed and tested to provide premium performance. Airfoil blade design and elimination of blade sills, top and bottom, provide a low pressure drop design.

The 1200-3 Series features the industry proven over-center knee-lock design with high torque spring/fusible link closure.

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

The 1200-3 is supplied as standard with an internal locking quadrant which holds the damper in the fully open position, but may also be used for system balancing if required.



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.

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.
Internal locking quadrant is factory installed.

Fusible Link: 165°F (74°C) standard. 212°F (100°C) available.

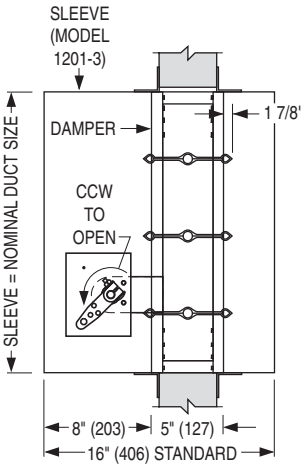
Minimum Size: Vertical or Horizontal mount: 8" x 8" (203 x 203).

Maximum Size: Single Section
Vertical mount: 36" x 48" (914 x 1219).
Horizontal mount: 32" x 48" (813 x 1219).

Multiple Section Assembly

Vertical mount only: 120" x 96" (3048 x 2438) (Individual sections not to exceed 30" x 48" [762 x 1219]).

Dampers with duct heights less than 8" require a Type 'B' sleeve enclosure (Model 1202-3). Units less than 8" (203) in width only, or in both width and height, require a Type 'C' enclosure (Model 1203-3).



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

BASE MODEL SELECTION:

❑ **1200-3** Less sleeve

❑ **1201-3** Standard factory sleeve 16" long x 20 ga. (406 x 1.0) (18 ga. [1.3] for dampers over 84" [2134] in width).

❑ **1201-3** Non-standard sleeve. Specify _____ length _____ ga. Available up to 36" (914) dependent upon wall thickness and 10 through 20 ga. (3.5 through 1.0).

OPTIONS:

❑ **SMP** Side mounting plate

❑ **MLS-300** Position indicator switch pack

❑ **BS** Stainless steel bearings

❑ **JSM** Flexible metal jamb seals

❑ **QS1** Quick–set retaining angle (one side)

❑ **QS2** Quick–set retaining angles (two sides)

❑ **TDF1** Flange (one end)

❑ **TDF2** Flange (both ends)

❑ **Special features** _____ .

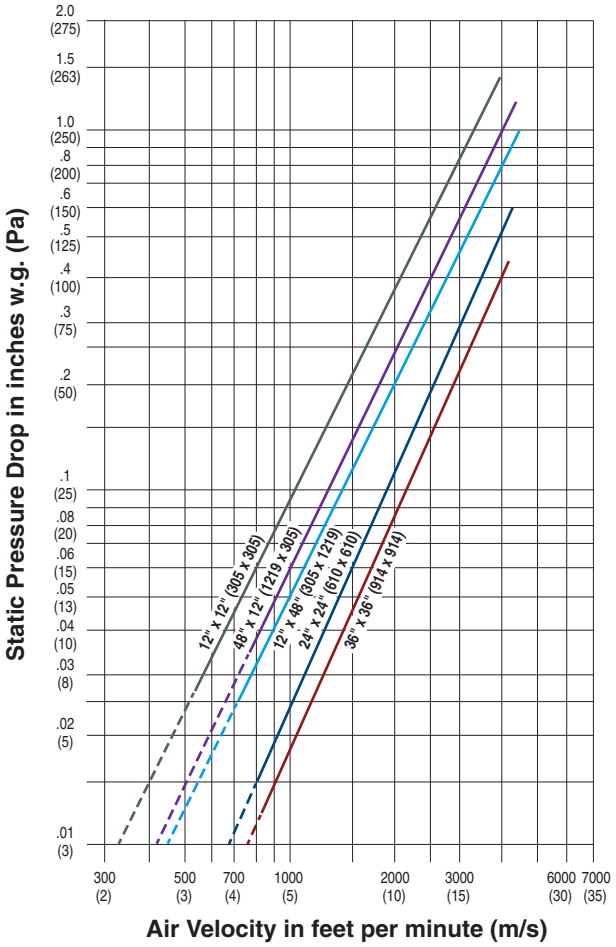
For installation instructions, see IOM-MBFDINST.

SCHEDULE TYPE:	Dimensions are in inches (mm).			
PROJECT:				
ENGINEER:	**DATE**	**B SERIES**	**SUPERSEDES**	**DRAWING NO.**
CONTRACTOR:	**5 - 10 - 11**	**1200**	**NEW**	**1200-3-1**

PERFORMANCE DATA:

MODEL SERIES: 1200 - 1 1/2 HOUR LABEL AND 1200-3 - 3 HOUR LABEL

PRESSURE DROP:



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

HOW TO SPECIFY

SUGGESTED SPECIFICATION:

Provide and install, as shown on plans and/or schedules, Multi-Blade Static Fire Dampers as manufactured by Nailor Industries, Inc. which meet or exceed the following criteria: Fire dampers shall meet the requirements of NFPA 80, 90A and 101 and shall be manufactured, tested and labeled in accordance with UL 555. Each damper shall bear a UL fire resistance rating label of (**specifier select rating**) 1 1/2 hours **or** 3 hours.

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. Blade seals are not acceptable. Blade axles shall be plated steel, double bolted at each end of blade to provide positive locking connection. Hex, 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.

Each fire damper shall be complete with a (**specifier select temperature**) 165°F (74°C) **or** 212°F (100°C) UL Listed fusible link that will cause the damper to close and lock in closed position by means of an over center/knee lock linkage for assured closure. Fire dampers shall each include a steel sleeve of appropriate length/gauge as field verified by contractor, with Nailor 'Quick-Set' retaining angles supplied by damper manufacturer to ensure proper installation in accordance with damper manufacturer's instructions. Each damper shall be supplied with an internal manual quadrant(s) for setting and locking of blades in desired position. Contractor shall provide and install an access door at each fire damper, of appropriate size to allow for inspection, testing and fusible link replacement. Data submitted for approval shall include confirmation of UL qualifications in addition to manufacturer's installation instructions. Each shipment of fire dampers shall include same installation instructions. Standard of acceptance shall be Nailor Model Series (**specifier to select**) 1200 (1 1/2 hour label) **or** 1200-3 (3 hour label).

OPERATION AND MAINTENANCE PROCEDURES MULTI-BLADE AND TRUE ROUND FIRE DAMPERS MODEL SERIES: (D)1200(SS)(-3)(-OW)(-DOW), D1250 AND 1290F(-SS)

Dampers are an essential part of the fire protection system in a building. The NFPA recommends that fire dampers be tested periodically to verify the operational abilities of each installed damper. See NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, for Operational and Periodic Inspection and Testing details.

CAUTION:

High torque helical spring under tension, ensure HVAC fans are turned off. Testing spring assisted fire dampers under airflow conditions is **NOT RECOMMENDED** and may severely damage or destroy ductwork. Use protective eyewear or safety glasses. Keep hands out of the blade path, as this can cause serious injury. Keep any hard objects or tools out of the blade path as they can damage the blades when closing.

Releasing of the fusible link

1. Using a suitable heat source, apply heat at a slightly higher temperature than the rating of the fusible link until the link melts. When applying the heat to the fusible link position the heat source in a manner so no heat is directed towards the spring as the excessive heat can negatively affect the spring performance.

AS SOON AS THE LINK HAS MELTED, THE SPRING WILL FORCE THE BLADES TO CLOSE INSTANTANEOUSLY. THE BLADE PATH MUST BE KEPT CLEAR.

Reloading the spring assembly

2. Loosen the jackshaft from the bolt on crank arm quadrant, located on the jackshaft side opposite of the spring assembly **(A)**. Do not remove the bolt completely. See Detail 1.

3. Attach a pair of vise grips on the jackshaft **(B)** and turn upwards until the two pins on the spring assembly are at a distance at which the new fusible link can be installed **(C)**. This is approximately 90° of rotation. See Detail 2.

Note: On smaller size dampers, two vise grips may be required to open the damper. Use one vice grip to open as much as the duct free area will allow, then set the second vise grips on the jackshaft per above. Unlock the first set of vise grips, remove and turn the second set upwards as free area will allow. Repeat as necessary.

4. Place the new fusible link over the two pins on the spring assembly (making sure temperature rating is visible) and locate in the pin grooves **(C)**. See Detail 2.

Required Items:

(1) Protective eyewear or safety glasses
(1) Pair of work gloves
(1) Suitable heat source
(2) Vise grips
(1) 1/2" (13) wrench
(1) Needle nose pliers
(1) Replacement "Globe" Fusible link per damper section, of the same temperature rating as the original link.

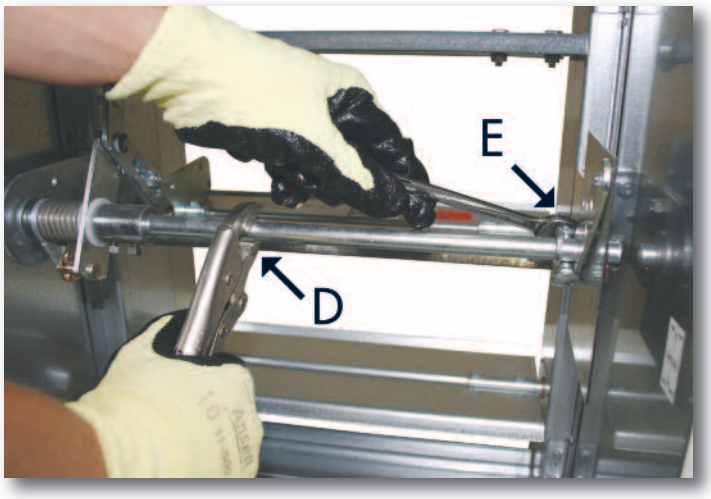
Detail 1

Detail 2

5. Manually open the damper to 100% full open position **(D)**. See Detail 3.

6. Tighten the bolt on the crank arm **(E)**. See Detail 3.

Reopening spring assisted fire dampers may be extremely difficult and in some cases, impossible. If it is determined that the damper is impossible or impractical to test or reopen, a thorough examination of the blade path is required to ensure that nothing will prevent the damper from closing. Common obstructions include: racked damper frames, retaining angle installation screws, construction debris and contaminants.



Detail 3

Periodic Inspection, Testing and Maintenance

Consult your local building code to verify whether there is a required maintenance and testing schedule. Most local jurisdictions reference NFPA 80 for Fire Dampers.

Per NFPA 80, each damper should be inspected 1 year after installation and then every 4 years, except for hospitals, where the frequency is every 6 years.

1. Remove any obstructions, dirt, rust, corrosion, or other observed conditions that could impede proper damper operation. Clean damper blades and other moving parts if necessary. Use of a mild detergent or solvents is recommended for any cleaning required.

2. Check closure springs. If damaged or defective, repair or replace.

3. Linkage and jackshaft bearing brackets should be lubricated with a dry lubricant (such as T.F.E. Dry Lube). Never use a regular lubricating oil on dampers, as it will attract dirt and grit. Blade linkage is concealed in the side jamb out of the airstream and is maintenance free. Bearings are self-lubricating oilite bronze (or stainless steel for -SS models).

4. If firing of the fusible link is not required by local code, cycle damper with its quadrant handle to verify that it fully opens and closes. HVAC fans should be shut down. Care should be exercised to ensure that such tests are performed safely and do not cause system damage.

5. All inspections and testing shall be documented indicating the location of the damper, date of inspection, name of inspector, deficiencies detected, and how deficiencies were corrected.

Receiving, Storage, Preparation

Upon delivery, inspect shipping containers and contents closely. Note any damages on freight carrier's delivery receipt.

Store dampers in a cool, dry and safe location in an orderly manner away from construction site, warehouse traffic, other materials, etc. Cover with plastic sheeting to protect from excessive moisture, dirt and debris.

Inspect dampers prior to installation. Dampers must be cleaned per procedures outlined in this document prior to installation if dirt, rust or corrosion is observed.

SPARE PARTS LIST		PART NUMBER
Fusible Links: Model 1200, 1250, 1290	165°F/74°C 212°F/100°C	B2-037 B2-038

Nailor® Industries Inc.

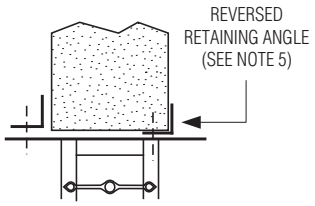
Houston, Texas
Tel: 281-590-1172
Fax: 281-590-3086

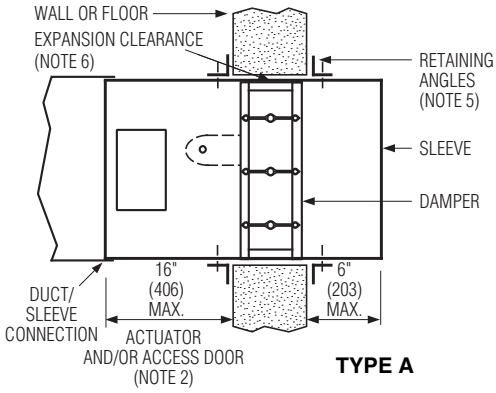
Las Vegas, Nevada
Tel: 702-648-5400
Fax: 702-638-0400

Toronto, Canada
Tel: 416-744-3300
Fax: 416-744-3360

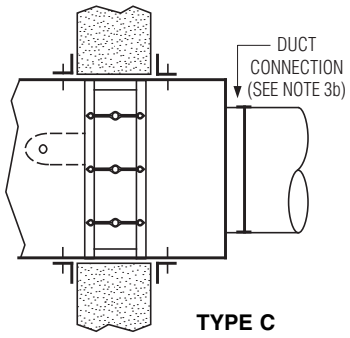
Calgary, Canada
Tel: 403-279-8619
Fax: 403-279-5035

INSTALLATION INSTRUCTIONS
MULTI-BLADE FIRE DAMPERS
1 1/2 & 3 HOUR LABEL • VERTICAL OR HORIZONTAL MOUNTING
MODEL SERIES (D)1200(-3) AND (D)1250





TYPE A



TYPE C ROUND TRANSITION COLLAR

WARNING: STRONG SPRING UNDER TENSION ON ALL UNITS, KEEP HANDS CLEAR.
IN ALL INSTALLATIONS ENSURE THAT OPERATING DRIVE SHAFT IS FREE FROM OBSTRUCTION TO ENSURE EASE OF OPERATION.

QUALIFICATIONS:

- **UL 555 & CAN/ULC-S112 CLASSIFIED FIRE DAMPER 1 1/2 or 3 hr. Label (File # R9492).**
- **Meets NFPA 80, 90A and 101 as well as IBC & NBC (Canada) Building Code requirements.**
- **California State Fire Marshal Listing No. 03225-0935:101.**
- **City of New York Board of Standards and Appeals. Cal. No. 460-88-SA (1250) and 366-03-M (1200).**

Refer to the UL Classification Marking on the Product

NOTES:

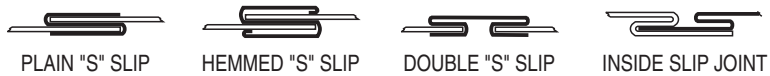
1. Installation shall be in accordance with the appropriate requirements of the National Fire Protection Association Standard NFPA 90A latest edition.

2. Damper Sleeve: Sleeve thickness must be equal to or thicker than the duct connected to it. Sleeve gauge requirements are listed in the SMACNA Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems and in NFPA 90A. If a break-away style duct/sleeve connection is not used, damper sleeves up to 36" wide by 24" (914 x 610) high of not less than 16 gauge (1.61) coated steel, or larger sleeves of not less than 14 gauge (1.99) thick coated steel may be attached to the duct with screws or other types of mechanical fasteners. The maximum sleeve thickness for such rigid joints is 10 gauge (3.51) for coated steel.

The connecting duct shall not be continuous thru the wall or floor opening but shall terminate at the sleeve. Sleeves shall extend a maximum of 6" (152) on either side of the wall or floor opening or 16" (406) on a side intended for use with an actuator and/or an access door. The sleeves may extend 16" (406) on each side for use with an actuator on one side and an access door on the other side.

3. Break-away duct/sleeve connections:

a. Rectangular ducts must use one or more of the following connections if the gauge is less than the requirement in note 2 for rigid connections:


PLAIN "S" SLIP | HEMMED "S" SLIP | DOUBLE "S" SLIP | INSIDE SLIP JOINT


STANDING "S" SLIP | STANDING "S" SLIP (ALT. BAR) | STANDING "S" SLIP (ANGLE REINFORCED) | STANDING "S" SLIP (BAR REINFORCED)

In addition:

- A maximum of two #10 sheet metal screws on each side and on the bottom, located in the center of the slip pocket and penetrating both sides of the slip pocket may be used.
- One of the above connections on the top and bottom joints with flat drive slip connections on the side joints may be used for dampers up to 20" (508) in height.


FLAT DRIVE SLIP

b. Round or oval duct may be attached to the round or oval collar which is part of the damper/sleeve in the following manner:

- Duct diameters 22" (559) and smaller must use three #10 sheet metal screws equally spaced around the circumference.
- Duct diameters over 22" (559) up to and including 36" (914) may use five #10 sheet metal screws equally spaced around the circumference.
- Duct diameters larger than 36" (914) wide or diameter may use eight #10 sheet metal screws equally spaced around the circumference.

Note: When optional sealing of these break-away connections is desired, the duct sealant shall be PA2084T Duct Sealant by Precision or water based DP1010 by Design Polymetrics.

c. For the use of approved alternative Ductmate or TDC/TDF break-away connections, refer to the supplements noted on page 2.

Dimensions are in inches (mm).

4. **Damper/sleeve attachment:** Damper shall be secured to sleeve with 1/4" (6) long welds, 3/16" (4.76) steel rivets, 1/4" (6.35) dia. bolts and nuts, #8 sheet metal screws, or 3/16" (4.76) dia. buttonloks on both sides at 6" (152) on center and a maximum of 4" (102) from the corners of the damper on all four sides. For field assembled sleeves, the inner dimensions of the sleeve shall be equal to the outer dimensions of the damper.
5. **Retaining angles** shall be a minimum of 1 1/2" x 1 1/2" x 16 gauge (38 x 38 x 1.61) for dampers up to 90" (2286) in width and up to 90" (2286) in height. For dampers exceeding these dimensions, the angles shall be a minimum of 2" x 2" x 10 gauge (51 x 51 x 3.51). Secure the retaining angles to the sleeve with 1/2" (12.7) long welds, 1/4" (6.35) dia. bolts and nuts, 3/16" (4.76) dia. steel rivets or #8 sheet metal screws 8" (203) on center and 2" (51) maximum from corner of sleeve on all four sides. The retaining angles must lap the structural opening by 1" (25.4) minimum. When the ductwork terminates at the wall or floor, the retaining angles may be turned inwards, providing the opening size is increased by an amount equal to twice the combined thickness of the angle and the height of the screw or bolthead to maintain the required expansion clearance. Field fabricated retaining angles are not to be mechanically fastened at the corners.
6. **Expansion clearance** between the sleeve and wall or floor shall be a minimum of 1/8" per foot (3.18 per 305) of width or height of the sleeve. The maximum size of the opening shall be 2" (50.8) larger in either dimension than the allowable minimum size. For example; a sleeve dimension of 36" x 36" (914 x 914) shall have an opening size of 36 3/8" x 36 3/8" (924 x 924) minimum and 38 3/8" x 38 3/8" (975 x 975) maximum.
7. **Maximum Size Limitations:** The maximum Type A fire damper sizes are as follows:

Model Series			Single Section	Multiple Section
D1200 (Dynamic)	Vertical	(1 1/2 hr. label)	36" x 48" (914 x 1219)	72" x 96" (1829 x 2438) or 144" x 48" (3658 x 1219)
	Horizontal	(1 1/2 hr. label)	32" x 48" (813 x 1219)	64" x 96" (1626 x 2438) or 128" x 48" (3251 x 1219)
1200 (Static)	Vertical	(1 1/2 hr. label)	36" x 48" (914 x 1219)	144" x 96" (3658 x 2438)
	Horizontal	(1 1/2 hr. label)	32" x 48" (813 x 1219)	144" x 96" (3658 x 2438)
D1200-3 (Dynamic)	Vertical	(3 hr. label)	36" x 48" (914 x 1219)	60" x 96" (1524 x 2438)*
	Horizontal	(3 hr. label)	32" x 48" (813 x 1219)	–
1200-3 (Static)	Vertical	(3 hr. label)	36" x 48" (914 x 1219)	120" x 96" (3048 x 2438)*
	Horizontal	(3 hr. label)	32" x 48" (813 x 1219)	–
D1250 (Dynamic)	Vertical	(1 1/2 hr. label)	36" x 48" (914 x 1219)	72" x 48" (1829 x 1219) or 36" x 96" (914 x 2438)
	Horizontal	(1 1/2 hr. label)	30" x 40" (762 x 1016)	60" x 40" (1524 x 1016) or 30" x 80" (762 x 2032)

*Individual sections not to exceed 30" x 48" (762 x 1219).

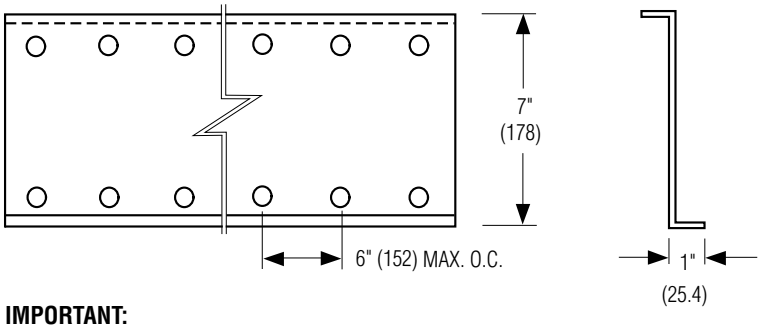
Type B and C dampers have the same overall damper size but the connecting ducts are smaller due to the B or C enclosures. See Type B and Type C specification drawings for maximum duct sizes.

In cases when the openings are larger than specified in note 7, a UL tested and qualified steel mullion must be provided between assemblies (Refer to supplementary installation document FDSMINST). Mullion is for use in 1 1/2 hour static applications only.

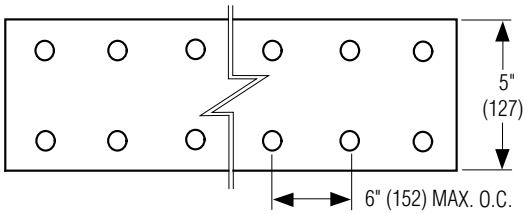
8. **Actuators and accessories:** Nailor multi-blade fire dampers are supplied with an internal locking quadrant as standard to hold damper blades in the open position. If MLS-300 position indicators are used, refer to the proper installation instructions for the MLS-300.
9. **Multiple Section assemblies:** In multiple assemblies of vertical or horizontal dampers, the frames shall be joined together on both sides of the damper using 1/4" (6) long welds, 1/4" (6.35) dia. bolts and nuts, or #8 sheet metal screws. Maximum 6" (152) on center.

Model Series 1200 multi-section horizontal dampers over two sections wide require a 10 ga. (3.51) Z shaped mullion (shown below). One mullion required for dampers up to 144"(3658) wide. Horizontal damper assemblies, two sections high (deep), require a 10 ga. (3.51) flat mullion between sections (shown below). Mullions and damper frames shall be bolted together with 1/4" (6.35) dia. nuts and bolts on a maximum of 6" (152) on center.

Z MULLION:



FLAT MULLION:



IMPORTANT:

DO NOT CAST DAMPER IN PLACE.
DO NOT FASTEN RETAINING ANGLES OR DAMPER DIRECTLY TO WALL OR FLOOR.
DO NOT INSTALL DAMPER OUT OF SQUARE OR OUT OF FLAT.
VERTICAL MOUNTING SHOWN ON MASONRY WALL.
FOR INSTALLATION IN DRYWALL FRAMING, SEE DOC. FDSWSFINST.
HORIZONTAL MOUNTING SIMILAR FOR MASONRY WALL.

Dimensions are in inches (mm).

REFER TO THE APPROPRIATE NAILOR INSTALLATION INSTRUCTION SUPPLEMENTS FOR THE FOLLOWING SPECIAL REQUIREMENTS:

STEEL MULLIONS (for dampers in oversized wall openings)	FDSMINST
SINGLE SIDED RETAINING ANGLES	FDSSRAINST
STEEL AND WOOD STUD FRAMING	FDSWSFINST
CAVITY SHAFT WALL PARTITIONS	FDCSWINST
DUCTMATE BREAKAWAY CONNECTIONS	FDDMINST
TDC/TDF FLANGED DUCT CONNECTION	FDTDCFINST
QUICK-SET RETAINING ANGLES	FDQSRA

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SUPPLEMENTARY INSTALLATION INSTRUCTIONS
FIRE AND COMBINATION FIRE/SMOKE DAMPER
INSTALLATION IN CONCRETE FLOOR WITH STEEL DECK

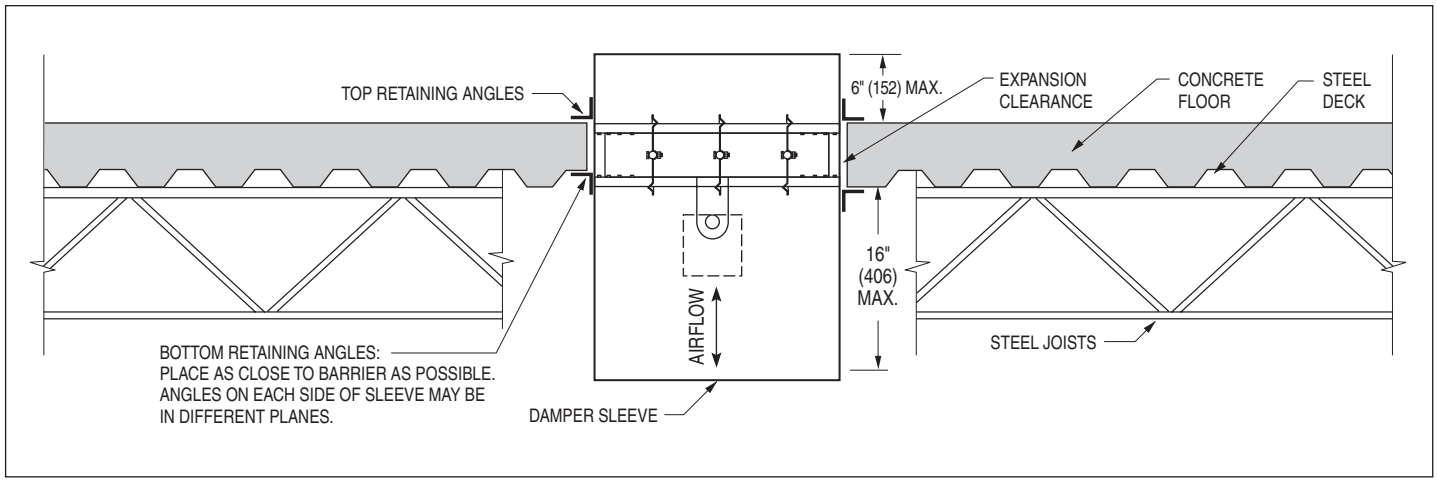


Fig. 1. Floor Opening Detail.

APPLICATION:

Horizontal installation of fire and combination fire/smoke dampers in concrete floors utilizing a steel deck may not allow the bottom angles to be placed against the steel deck on an even plane. This installation details how to properly install the required angles next to the steel deck.

NOTES:

1. Retaining angles are required on top and bottom sides of the damper as detailed in the damper installation instructions for the specific model. Angles may be reversed so that one leg of the angle points into the floor opening provided the required clearance is maintained between angle leg fasteners and the floor opening.
   Important: When positioning damper in floor and attaching retaining angles to sleeve, ensure fasteners clear and do not penetrate damper frame. Failure to do so may prevent correct damper operation or closure due to fouling of linkage or damper blades.
2. Installation of the bottom angle against the uneven steel deck shall be done so the angles on each side of the sleeve are as close to the barrier as possible. The angles may be in different planes relative to each other (see Figures 1 and 2).
3. When viewed from the end of the sleeve, the angles must overlap each other in the corners to prevent "see through".

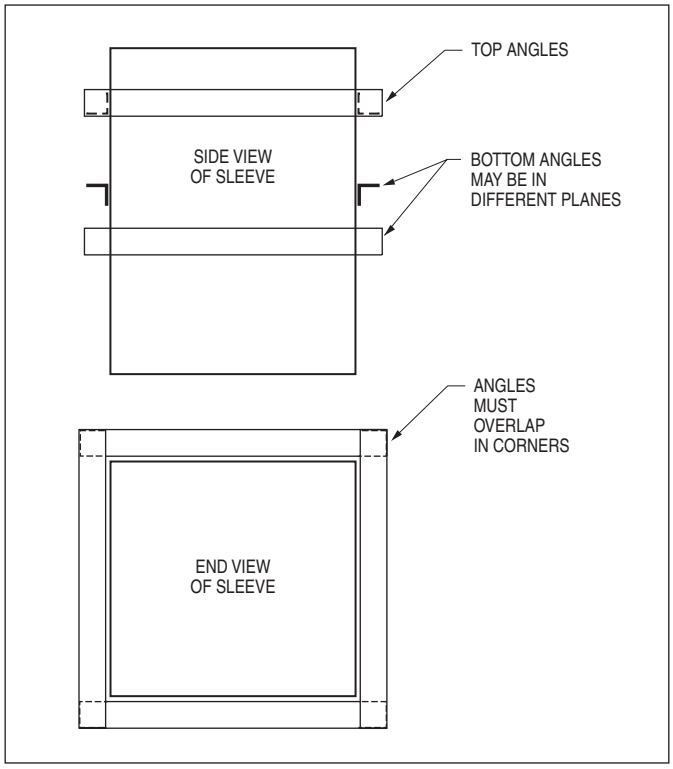


Fig. 2. Retaining Angle Detail

Refer to the Following Installation Instructions:

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

CLASSIFIED C UL US

Refer to the UL Classification Marking on the Product

Dimensions are in inches (mm).

SUPPLEMENTARY INSTALLATION INSTRUCTIONS
UL CLASSIFIED CURTAIN TYPE AND MULTI-BLADE FIRE DAMPERS AND FIRE/SMOKE DAMPERS
1 1/2 HOUR LABEL, VERTICAL MOUNT
IN FIRE RESISTANT CAVITY SHAFT WALL PARTITIONS

APPLICATION:

This vertical fire damper installation is for metal stud framing in UL resistant cavity shaft wall designs (1 and 2 hr.) including Nos. U438, U469 and U497. It differs from conventional fire damper installations in that it requires retaining angles on one side of the wall only, which are fastened to the wall as well as the damper for opening sizes up to 48" W x 36" H (1219 x 914). Larger openings require retaining angles on both sides.

GENERAL INSTALLATION:

1. **Expansion Clearance:** Opening in wall shall be a minimum 1/8" (3) per linear foot larger than overall size of damper and sleeve assembly in either dimension. Maximum opening not to exceed 1/8" (3) per foot plus two inches. Opening shall not be less than 1/4" (6) larger for any size damper and sleeve assembly.
2. **Damper Sleeve:** Sleeve gauge shall be at least equal to the gauge of the duct as defined by the appropriate SMACNA duct construction standard and described in NFPA 90A when one or more of the following duct-sleeve connections are used (TDC/TDF breakaway, ductmate breakaway, plain "S" slip, hemmed "S" slip, standing "S" slip, reinforced standing "S" slip, inside slip joint, and double "S" slip.)

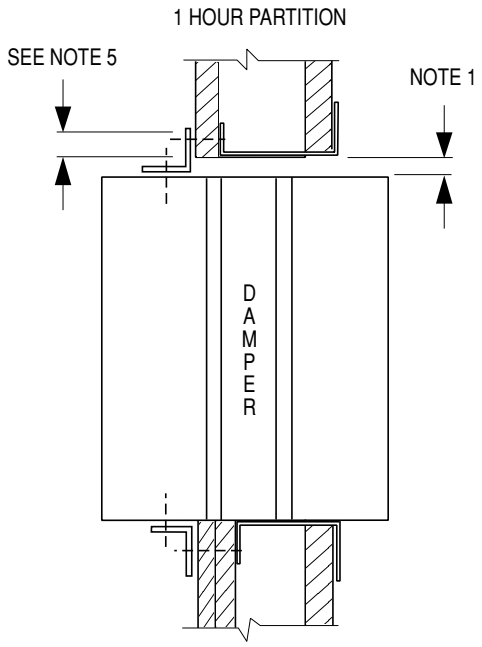
   In addition, the following connections are acceptable:

   A. On rectangular duct, a standing S slip connection, with two #10 sheet metal screws on each side and bottom of the joint and with duct sealant* applied to each connection, may be used.

   B. On rectangular duct, a standing S slip connection on top and bottom joints and flat drive connections on side joints with duct sealant* applied to each connection, may be used for dampers 48" x 20" (1219 x 508) and smaller. Plain S and hemmed S slip connections can also be used in lieu of the standing S connections described above.

   C. A round duct may be attached to the round adapter which is part of the damper sleeve in the following manner:
   (a) Duct diameters 22" (559) and smaller must use three #10 sheet metal screws equally spaced around the circumference and with duct sealant* applied to the connection.
   (b) Duct diameters over 22" (559) up to and including 36" (914) may use five #10 sheet metal screws equally spaced around the circumference and with duct sealant* applied to the connection.
   (c) Duct diameters larger than 36" (914) wide or diameter may use eight #10 sheet metal screws equally spaced around the circumference.

   *The duct sealant must be PA2084T Duct Sealant Adhesive as manufactured by Precision or water based DP1010 by Design Polymetrics.
3. If any other duct-sleeve connections are used, sleeve shall be minimum of 16 gauge (1.6) for dampers up to 36" w x 24"h (914 x 610) and 14 gauge (1.9) if damper width exceeds 36" (914) or height exceeds 24" (610).
4. **Damper/Sleeve Attachment:** Damper shall be secured to sleeve with 1/4" (6) long welds, 3/16" (5) steel rivets, 1/4" (6) bolts and nuts, #8 sheet metal screws, or 3/16" (5) buttonloks on both sides at 6" (152) on center and 2" (51) maximum from the corner of the damper on all four sides. For field assembled sleeves, the inner dimensions of the sleeve shall be equal to the outer dimensions of the damper.



5. **Retaining Angles:**
   A. Shall be a minimum of 1 1/2" x 1 1/2" x 16 gauge (38 x 38 x 1.61) and fastened with #10 bolts or screws, 1/2" (13) long welds, or 3/16" (5) rivets to sleeve at a maximum spacing of 8" (152) O.C. and not more than 2" (51) from each end with a minimum of two connections on each side, top and bottom (See Illustration).
   Nailor 'Quick-Set' Retaining Angles can be used in lieu of conventional mounting angles. Retaining angles must overlap the structural opening by 1" (25) minimum.
   B. Retaining angles screw to wall with #10 screws. Use a minimum of two fasteners per side, top and bottom 12" (305) O.C. maximum.
6. See framing detail on next page for opening preparation.
   Refer to the appropriate installation supplements for the following requirements:

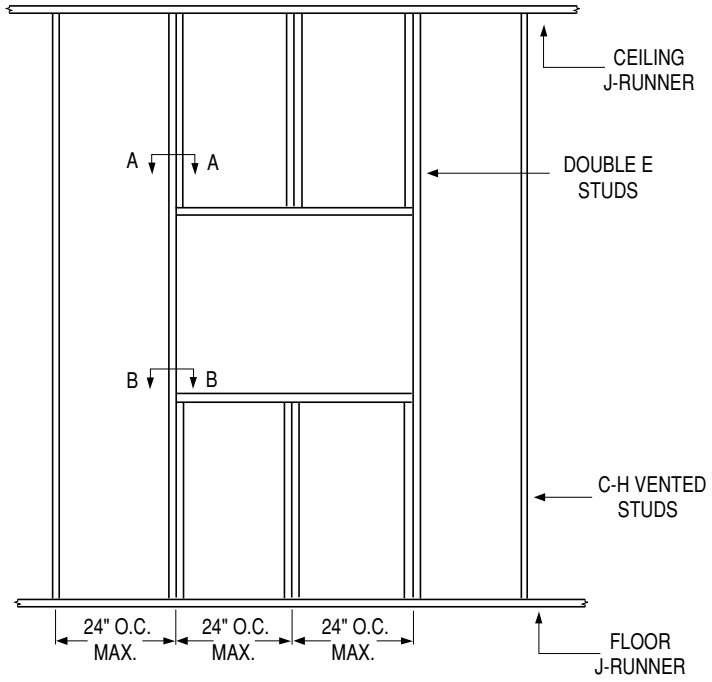
Ductmate Breakaway Connection	Doc. FDDMINST
Flange System Breakaway Connections	Doc. FDTDCFINST
'Quick-Set' Retaining Angles.	Doc. FDQSRA

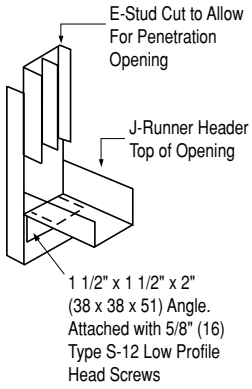
7. Refer to Underwriters Laboratories Inc. Fire Resistance Directory Vol. II for details on UL Design No. U438, U469 and U497.

Refer to the UL Classification Marking on the Product

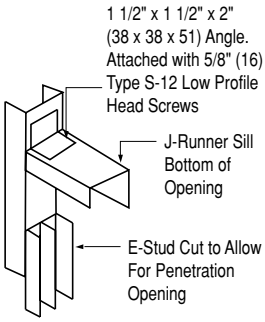
Dimensions are in inches (mm).

FRAMING DETAIL FOR ASSEMBLIES (U438 AND U469)



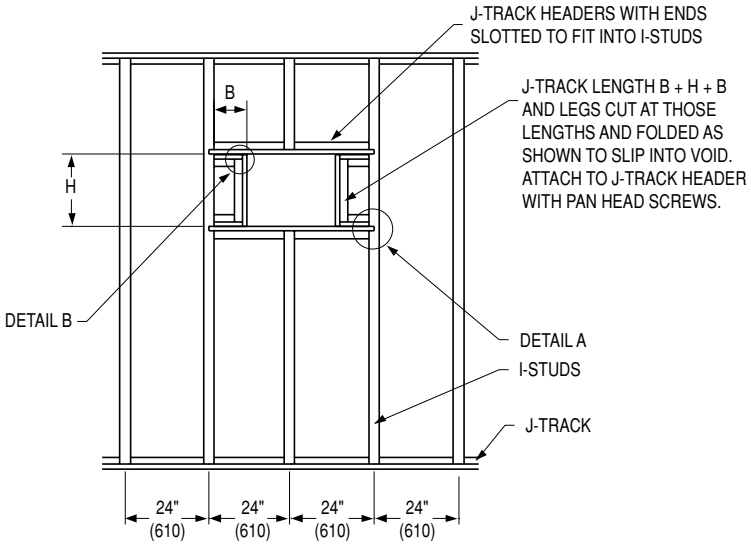


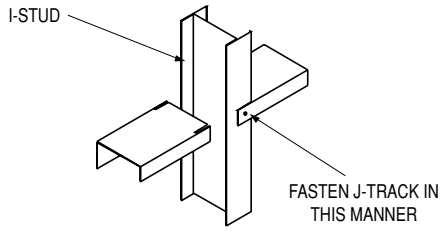
SECTION A-A



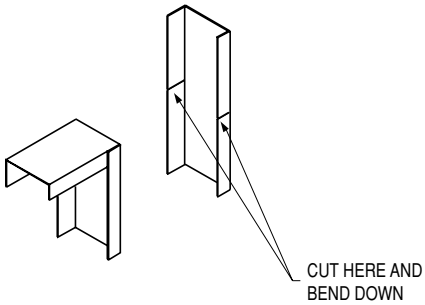
SECTION B-B

FRAMING DETAIL FOR ASSEMBLIES (U497)





DETAIL A



DETAIL B

Dimensions are in inches (mm).

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SUPPLEMENTARY INSTALLATION INSTRUCTIONS FIRE AND COMBINATION FIRE/SMOKE DAMPER FIELD EXTENSION OF FACTORY SLEEVES

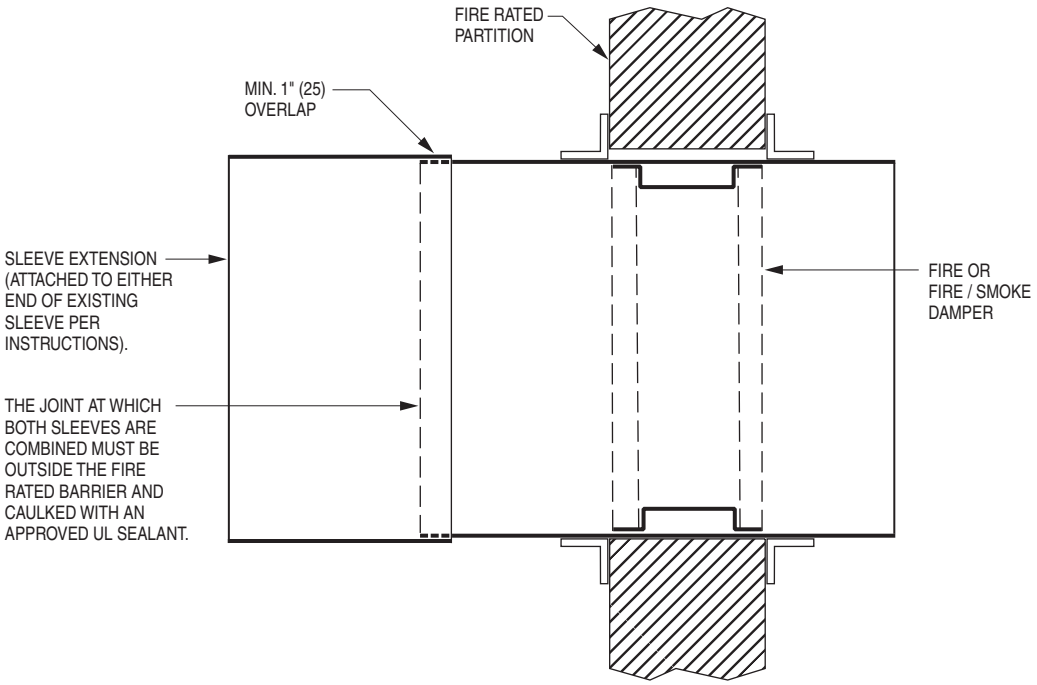


Figure 1. Sleeve Extension Detail

APPLICATION:

Factory installed sleeves may sometimes need to be extended in the field when of insufficient length for ductwork connection relative to the depth of the fire partition. This supplement installation instruction provides details for attachment of the sleeve extension. Consult Authority Having Jurisdiction for approval.

NOTES (Refer to Figure 1):

1. Sleeve extension must be same material and gauge as factory sleeve.
2. The inside dimensions of the sleeve extension must be the same dimensions as the outside dimensions of the factory sleeve.
3. Sleeve extension must overlap the factory sleeve a minimum of 1" (25).
4. All four sides of the sleeve extension must be attached to the factory sleeve. Attachments must be spaced a maximum of 6" (152) on center and a maximum of 2" (51) from corners. A minimum of 2 attachments per side (8 per damper) are required. Attach the sleeve extension using 1/2" (13) long tack or spot welds, #10 sheet metal screws, 1/4" (6.35) dia. bolts and nuts or 3/16" (5) steel pop rivets.
5. Products with a smoke leakage rating require that the joint between the two sleeves be sealed with a continuous 1/8" (3) bead of GE RTV108 or Dow Corning RTV732 silicone sealant.
6. Sleeve extensions can be made to either end of the factory sleeve. However, the sleeve cannot extend beyond the fire partition more than 6" (152) on either side or 16" (406) on one side if equipped with an actuator or integral access door.
7. The joint created by the factory sleeve and sleeve extension cannot be in the plane of the partition.

Refer to the Following Installation Instructions:

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

CLASSIFIED C UL US

Refer to the UL Classification Marking on the Product

Dimensions are in inches (mm).

Nailor® Industries Inc.

FIRE DAMPER INSTALLATION SUPPLEMENT
FLANGED TYPE ALTERNATE BREAKAWAY CONNECTIONS

These instructions provide details for an alternate breakaway connection between a fire damper or combination fire smoke damper sleeve and an adjoining duct. This alternate connection is classified with U.L. under the certification of the damper. These instructions apply to a connection using a manufactured add-on flange system by Ductmate, Ward, or Nexus and a TDC or TDF roll-formed flange system. These connections allow for both the use of the same flange type or the combining of mixed flange types. The following instructions depict the use of metal or plastic cleats and bolted or non-bolted corners:

CLASSIFIED C UL US **SEE COMPLETE MARKING ON PRODUCT**

Classifications filed at U.L under Listing # R9492

1. Install the manufactured flange system onto the damper sleeve or duct per the manufacturer's instructions.
2. To seal the two flange systems together, Neoprene or Butyl gasketing may be applied between the mating surfaces.
3. Align the two flange systems together. An optional 3/8" (9) bolt may be used in the corners to help with the alignment. These bolts do not have to be removed.
4. Install the cleat or #10 tek screw approximately equally spaced, per the following schedule:
   - Width or height less than 24" (610); use one cleat or screw per side
   - Width or height 24" (610) to less than 36" (914); use 2 cleats or screws per side
   - Width or height 36" (914) to less than 54" (1372); use 3 cleats or screws per side
   - Width or height 54" (1372) to less than 72" (1829); use 4 cleats or screws per side
   - Width or height 72" (1829) or greater; use 5 cleats or screws per side

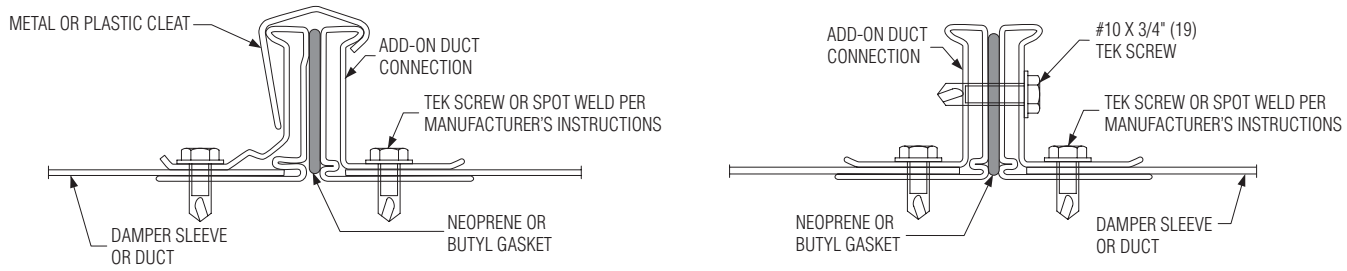


FIGURE 1. ADD-ON/ADD-ON

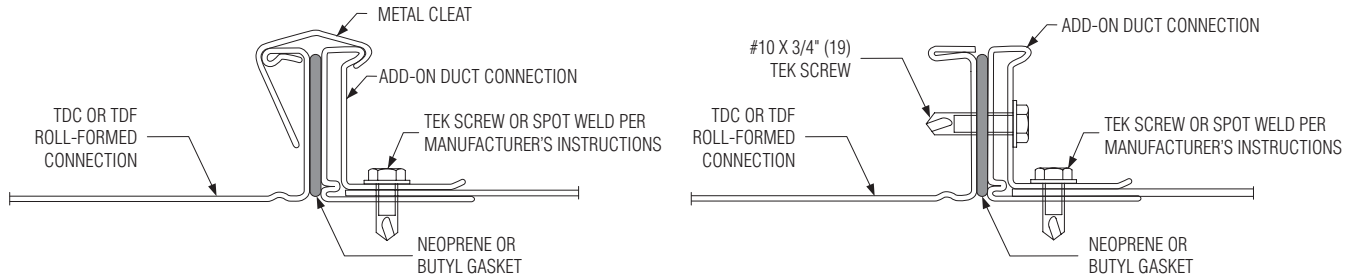


FIGURE 2. ROLL-FORMED/ADD-ON

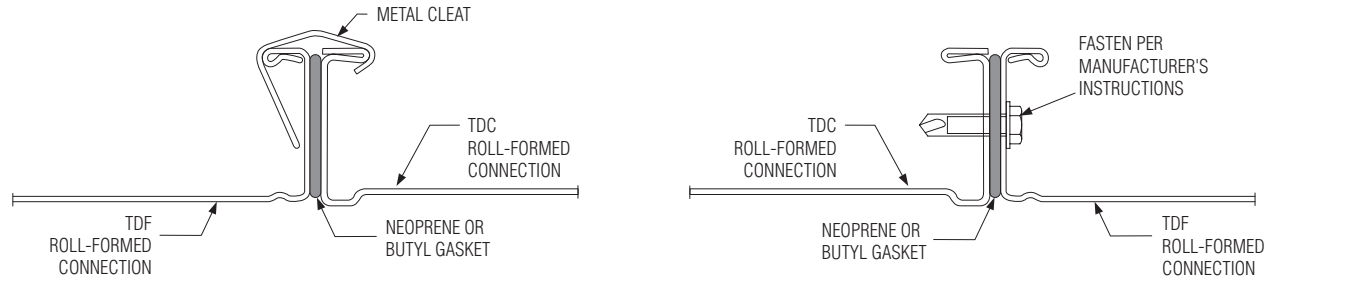


FIGURE 3. ROLL-FORMED/ROLL-FORMED

Dimensions are in inches (mm).

SUPPLEMENTARY INSTALLATION INSTRUCTIONS OPTIONAL SEALING OF FIRE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS IN WALL/PARTITION OR FLOOR OPENINGS

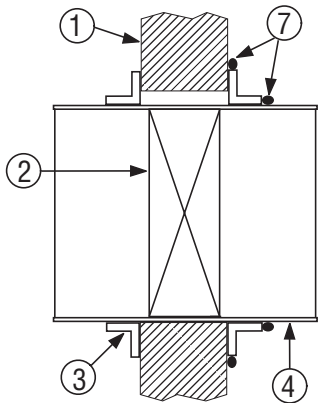


Figure 1. Damper ducted both sides.

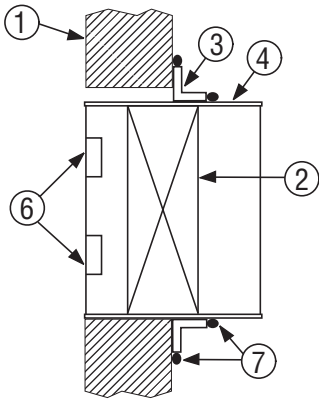


Figure 2. Damper sleeve with tabs for grille mounting

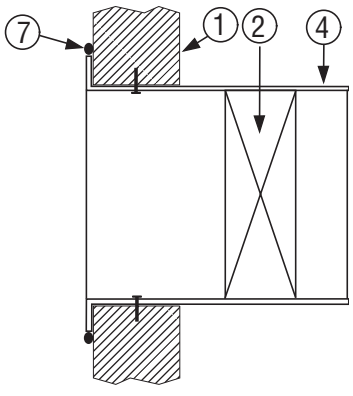


Figure 3. Out of Wall damper with flanged sleeve for grille mounting

APPLICATION:

Application of sealant between the retaining angles, retaining plates, or sleeve retaining flange and the fire rated wall or floor as applicable to the damper installation is not required by UL as a standard procedure. However, if an airtight seal is required by specification or local building code, sealant shall be applied as shown.

METHOD

Follow the sealant manufacturers' directions; remove dirt, grease, and moisture from the surfaces to be sealed. Apply a continuous bead of Dow Corning RTV732, Hilti Corporation FS-One, Nuco Inc. Self-Seal GG-200, Johns Manville Firetemp C1 or GE RTV108 sealant. Location of sealant should be as shown in Figures 1 through 4 and may be applied on one or both sides of the fire separation, as applicable to the model specific installation.

IMPORTANT:

Do not apply sealant within the required expansion gap between the damper and the fire rated wall or floor.

Press the surface of the sealant in place to dispel any air. Allow sealant to set and become tack-free before operating the damper.

Refer to the appropriate damper installation instructions for details on damper installation.

ITEMS

1. Fire Rated Wall or Floor
2. Damper
3. Retaining Angles
4. Sleeve
5. Retaining Plate
6. Mounting Tabs
7. Sealant (refer to text for specific sealant)

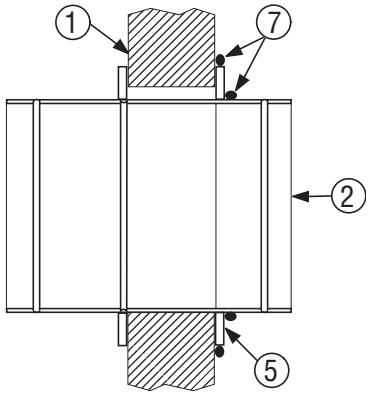


Figure 4. Round damper

Dimensions are in inches (mm).

SUPPLEMENTARY INSTALLATION INSTRUCTIONS STEEL MULLION FOR FIRE DAMPERS IN OVERSIZED WALL OPENINGS

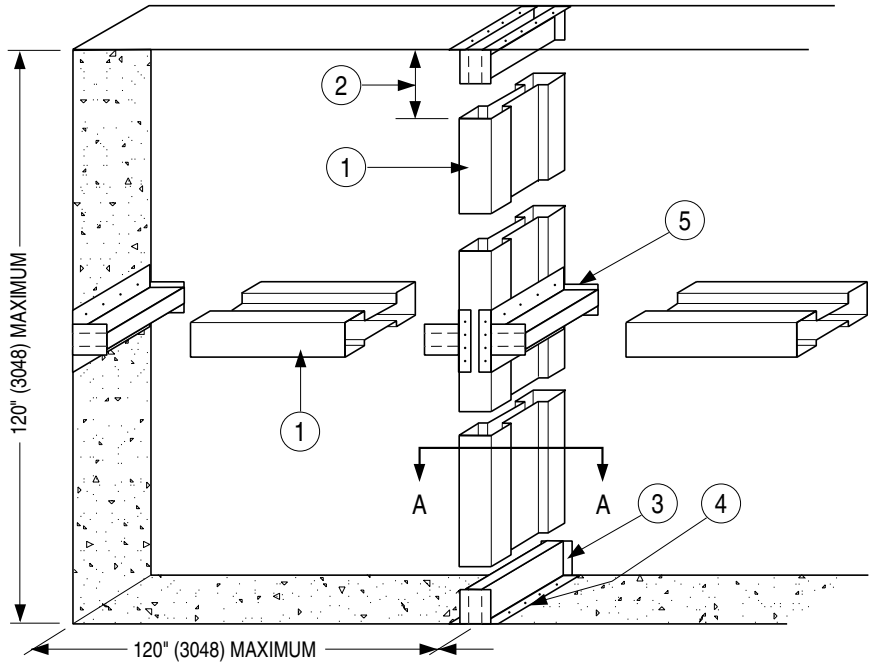
APPLICATION:

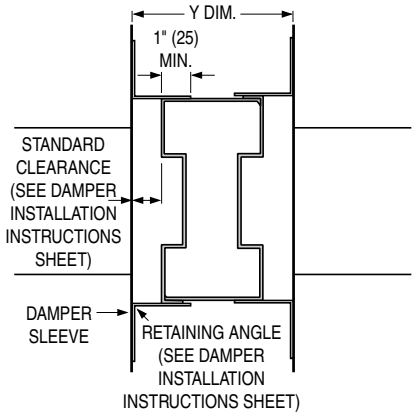
Fire dampers are UL/ULC Classified for their maximum size or maximum assembly size. Generic steel mullions can be used in static HVAC systems to separate vertically mounted 1 1/2 hour labeled galvanized steel fire dampers in vertical wall openings larger than maximum UL/ULC permitted multiple damper assembly size. Fire dampers must not exceed a maximum 120" (3048) height by unlimited width using vertical mullions every 120" (3048) max. Mullions are not intended to be part of the ductwork. (i.e. exposed to airflow).

Whenever the duct size exceeds the maximum damper width or height, the opening must be divided into two or more separate openings with a mullion installed between the damper sections. The mullion consists of a vertical and/or horizontal mullion and mullion caps. One cap for each end of the mullion.

The steel mullion is intended for use only in concrete block or poured walls with 7" (178) minimum and 12" (305) maximum thickness. Hollow concrete block walls are to be suitably filled with minimum 3500 psi concrete for proper securing of mullions.

Important Note: Steel mullions are for use in static systems only. UL/ULC does not acknowledge their use with dynamic fire dampers.





SECTION A–A

FABRICATION AND GENERAL INSTALLATION:

1. Fabricate mullions of 16 ga. (1.6) galvanized steel as shown in **Figure 1**. Two mullion pieces are joined with 3/16" (5) diameter steel pop rivets or 3/4" (19) long welds located 6" (152) maximum from each end and 12" (305) O.C. maximum.
2. The mullion should permit clearance between the mullion and top cap. Required clearance is 1/8" (3) per foot of wall opening height. Minimum permitted clearance is 1/4" (6). Maximum permitted clearance is 1 1/4" (32) (e.g. for an 8 ft. (2438) high opening the permitted clearance is 1/8" (3) x 8 = 1" (25) +).
3. Fabricate two caps for each mullion of 12 ga. (2.8) galvanized steel as shown in **Figure 2** for vertical and horizontal mullions. (Caps must permit mullion to overlap each cap by minimum 3" (76)). Cap height is calculated by adding 3" (76) to permitted mullion expansion clearance which is 1/8" (3) per foot of wall opening height.
   Insert mullion caps into mullion ends allowing mullion to float between the caps. Do not fasten mullion to caps in any way. Locate within opening to provide correct expansion clearance for dampers.
4. Drill holes in caps and concrete for anchoring steel mullion caps with 1/4" (6) – 20 x 5/16" (8) steel screws and 3/8" (10) diameter x 1" (25) concrete expansion anchors. The eight holes to secure the cap (**Figure 3**) are equally spaced, X ÷ 8 from both ends and 1/2" (13) inwards of each side.
5. Set horizontal mullion caps at vertical mullions as shown (**Figure 4**). If steel lintels are present, four 1" (25) welds (two per mullion cap leg) may be used to anchor each mullion cap.

Dimensions are in inches (mm).

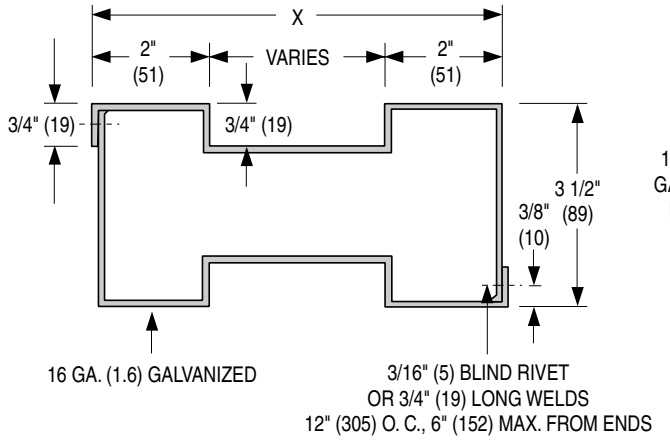


FIGURE 1
MULLION CROSS-SECTION

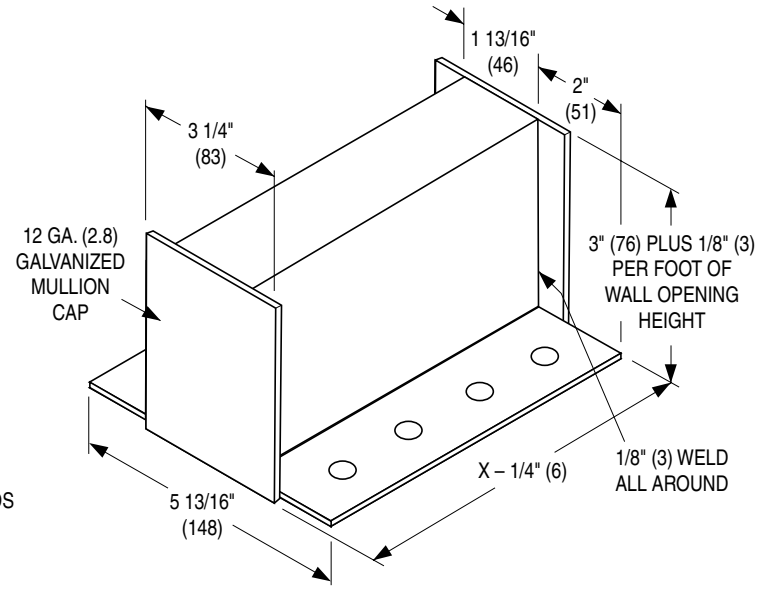


FIGURE 2

X = WALL THICKNESS

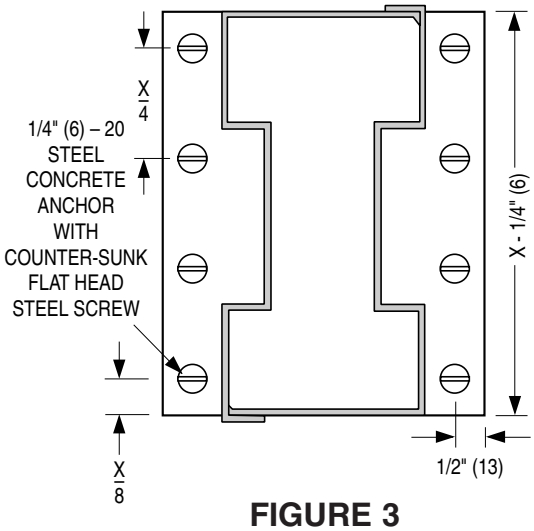


FIGURE 3

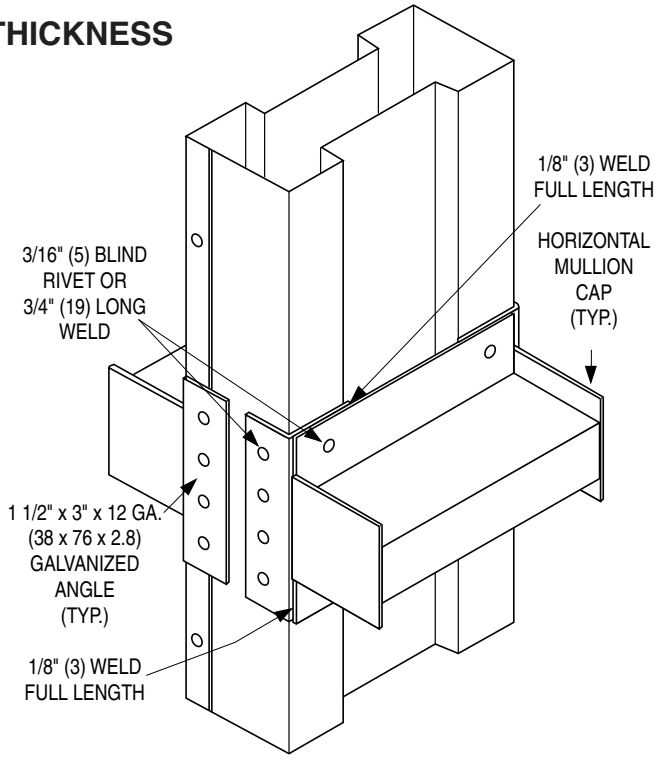


FIGURE 4

Refer to the UL or ULC Classification Marking on the Product

These instructions comply with Underwriters Laboratories Safety Standard 555.

Dimensions are in inches (mm).

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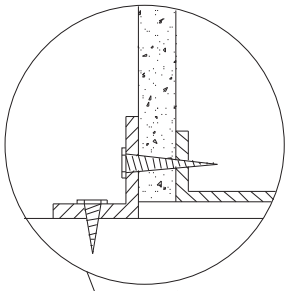
SUPPLEMENTARY INSTALLATION INSTRUCTIONS
SINGLE-SIDE RETAINING ANGLES FOR UL/ULC CLASSIFIED FIRE DAMPERS

1 1/2 HR. LABEL • VERTICAL OR HORIZONTAL MOUNT



Detail 1A
Angle over drywall.

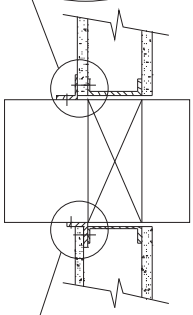
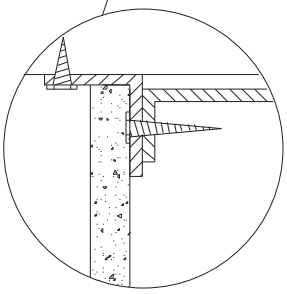


Figure 1
Metal Stud



Detail 1B
Angle under drywall.

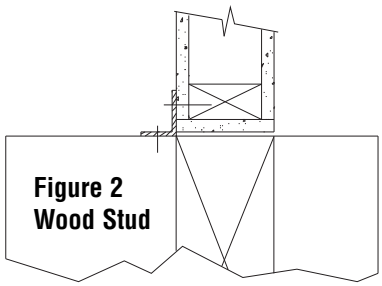


Figure 2
Wood Stud

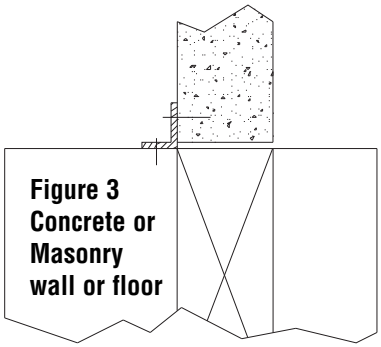


Figure 3
Concrete or Masonry wall or floor

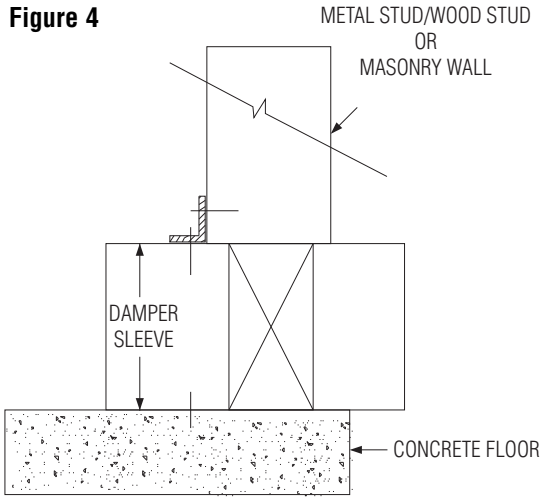
NOTES:

1. For the maximum sizes listed below, all Nailor 1 1/2 hour labeled curtain, multi-blade and combination fire/smoke dampers may be installed using single-side retaining angles in lieu of the conventional two-sided retaining angle method. Retaining angles may be field fabricated or factory supplied and may be installed in metal/wood stud or masonry walls and concrete floors.
2. Install dampers in accordance with the appropriate damper installation instruction sheet in conjunction with this supplement. Replace conventional two-sided retaining angles with single-sided retaining angles as appropriate. Retaining angles may be installed on either side for vertical partition installations, but must be installed on the top side for a floor installation. Retaining angles must be attached to both the sleeve and the wall or floor.
3. Retaining angles required on all four sides unless installed on top of a concrete floor slab (See Note 6).
4. Single-sided retaining angles shall be a minimum of 1 1/2" x 1 1/2" x 16 ga. (38 x 38 x 1.61) steel for metal stud, masonry walls or concrete floors. For wood stud partitions, retaining angles shall be a minimum of 2" x 1 1/2" x 16 ga. (51 x 38 x 1.61) steel. For metal stud partitions only, the single-side retaining angle may be directly attached to the metal stud prior to the installation of the drywall. See Detail 1B.
5. Attach the 1 1/2" (38) leg of the retaining angles to the damper sleeve using 1/2" (13) long welds, 1/4" (6) diameter bolts and nuts, 3/16" (5) diameter steel rivets or #8 sheet metal screws, 6" (152) o.c.. Secure the retaining angles to the structural members of a vertical drywall wall using drywall screws. In the case of wood stud construction (see Figure 2), the screws should be a minimum of 2 1/2" (64) long, with minimum 1 1/4" (32) penetration into framing. In the case of masonry walls or concrete floors (see Figure 3), use 1/4" (6) masonry anchors 1 1/2" (38) minimum length, with minimum 1 1/4" (32) penetration into wall or floor. All fasteners to be on a maximum of 12" (305) o.c. with a minimum of two fasteners per side, top, and bottom.
6. In the case where the damper sits directly on a concrete floor slab, the bottom retaining angle is not required if the damper sleeve is fastened directly to the slab using 1/4" (6) masonry anchors 1 1/2" (38) minimum length, with minimum 1 1/4" (32) penetration into the floor. All fasteners to be on a maximum of 12" (305) o.c. with a minimum of 2 fasteners (See Figure 4).

Refer to the UL or ULC Classification Marking on the Product

Dimensions are in inches (mm).

Figure 4



7. No firestop caulking is required on this product.

Underwriters' Laboratories file # R9492.
Also conforms to NFPA 90A and NFPA 92.
Maximum sizes: 96" W x 36" H (2438 x 914) or
36" W x 96" H (914 x 2438).

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SUPPLEMENTARY INSTALLATION INSTRUCTIONS STEEL AND WOOD STUD FRAMING FOR FIRE DAMPERS IN DRYWALL PARTITIONS

(CURTAIN TYPE, MULTI-BLADE AND COMBINATION FIRE/SMOKE)

NOTES:

1. These details are based upon tests conducted by the Gypsum Association. Consult the local authority having jurisdiction for other acceptable framing methods.
2. Frame wall openings as shown in Figure 1 or 2.
3. Gypsum panels must be screwed to all stud and runner flanges, 12" (305) max. o.c. surrounding opening.
4. All fasteners to be per UL/ULC Classified wall design.
5. UL/ULC wood stud designs require gypsum wallboard filler pieces to be installed around entire opening, screwed 12" (305) o.c. to web of runners and studs, covering all wood stud surfaces.
   In UL metal stud designs, exposed steel surfaces need not be covered with gypsum wallboard. ULC metal stud construction however may still require filler pieces, check with the local authorities.
6. Refer to standard installation instructions sheet for additional details.

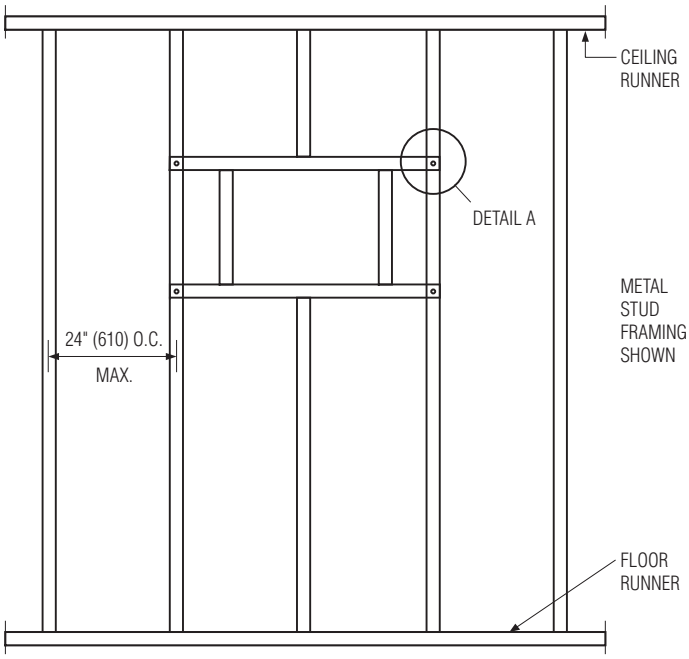
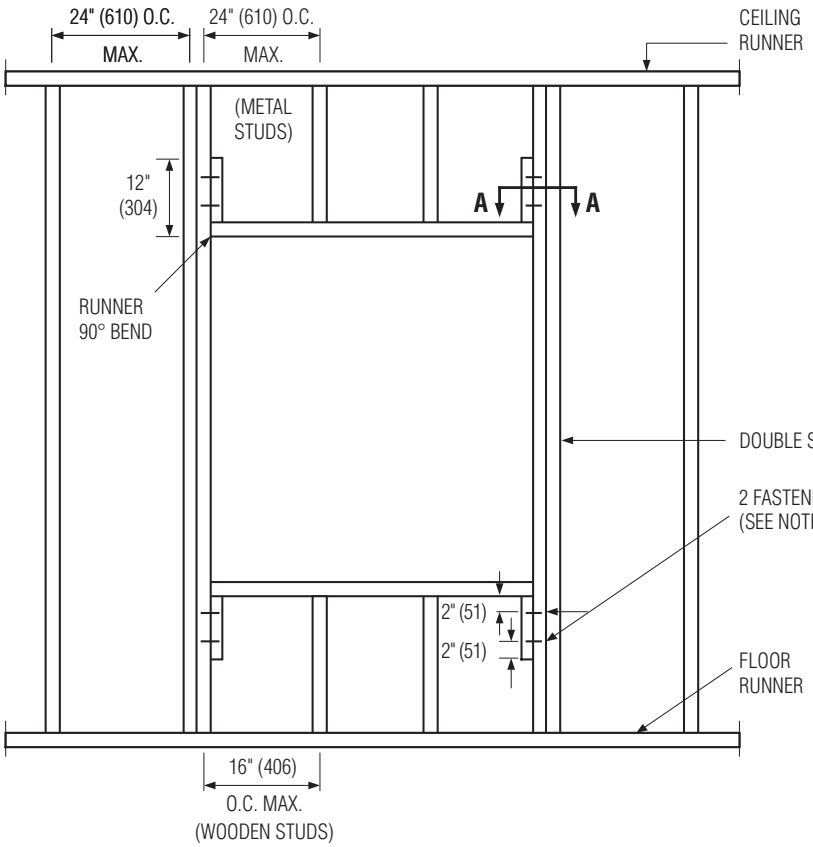
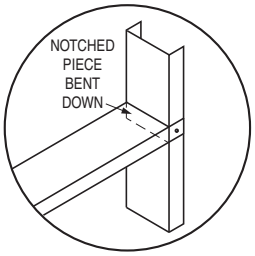
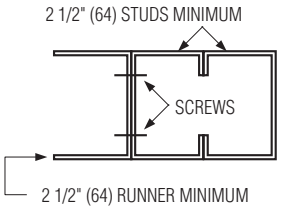


FIGURE 1. SINGLE VERTICAL STUD OPENING PREPARATION DETAILS.
DAMPERS UP TO 36" x 36" (914 x 914).





Detail A



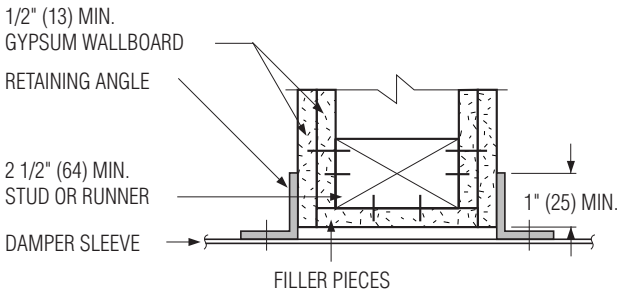
Framing Detail Section A-A

FIGURE 2. DOUBLE VERTICAL STUD OPENING PREPARATION DETAILS.
DAMPERS OVER 36" x 36" (914 x 914).

Dimensions are in inches (mm).

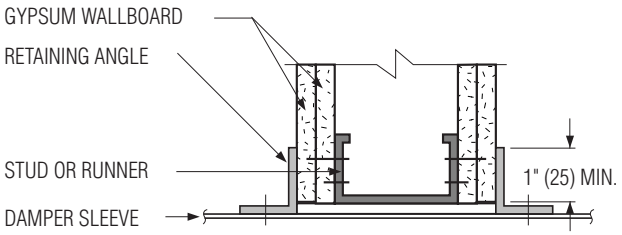
TYPICAL STUD WALL DETAILS (See Notes on Page 1)

WOOD STUD DETAIL

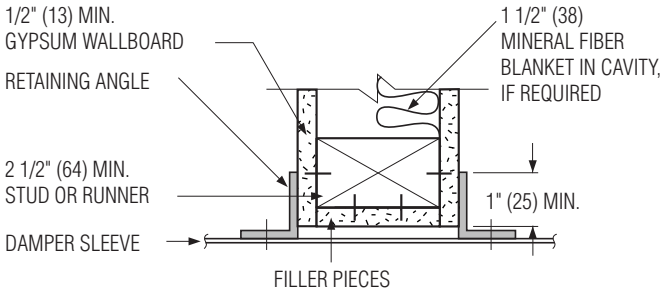


2 Hour Partition Rating

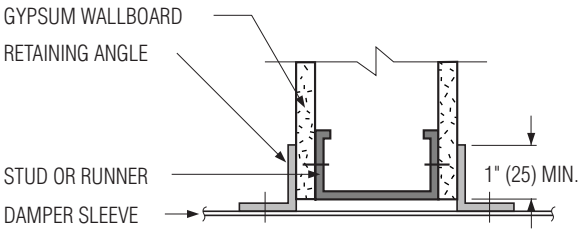
METAL STUD DETAIL (UL DESIGN)



2 Hour Partition Rating



1 Hour Partition Rating



1 Hour Partition Rating

Dimensions are in inches (mm).

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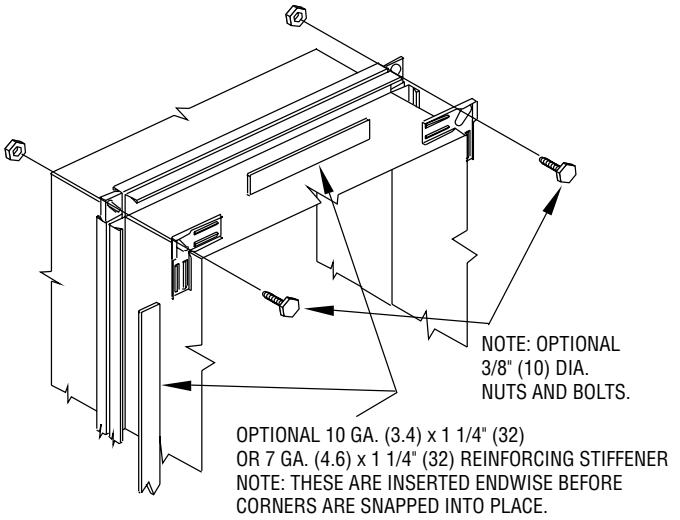
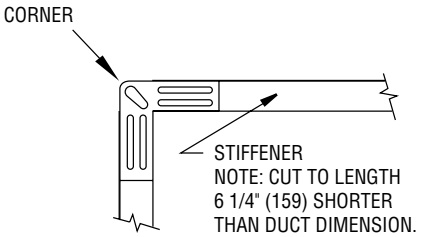
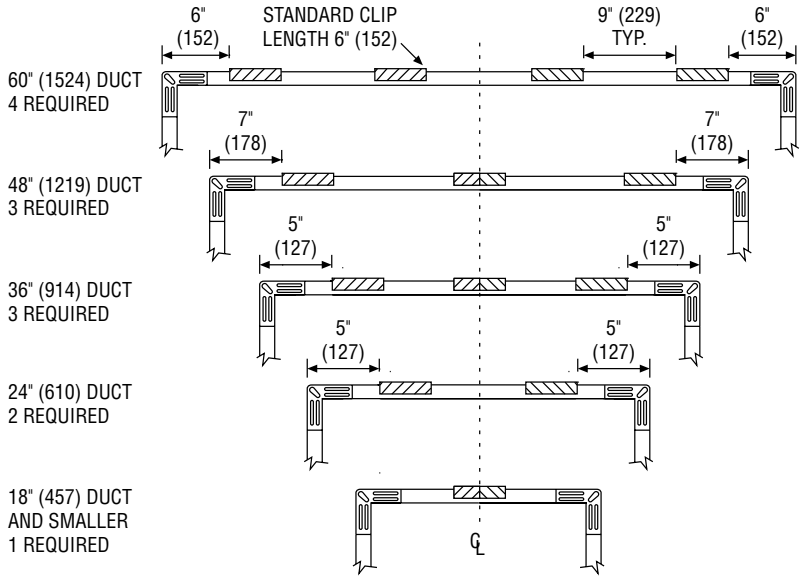
FIRE DAMPER INSTALLATION SUPPLEMENT
TDC/TDF PROPRIETARY FLANGE SYSTEM BREAKAWAY CONNECTIONS
MODEL SERIES: 0100, 0200, 0500, 1200

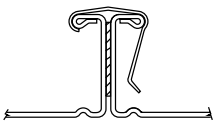




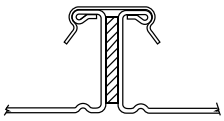
RECOMMENDED CLIP SPACING



CLEAT DETAILS



TDC CROSS SECTION



TDF CROSS SECTION

Damper Type	Max. Size W x H		No. Cleats Per Side
	(inches)	(mm)	
Curtain	18 x 18	457 x 457	1
	24 x 24	610 x 610	2
	48 x 48	1219 x 1219	3
	60 x 60	1524 x 1524	4
Multi-Blade	18 x 18	457 x 457	1
	24 x 24	610 x 610	2
	36 x 48	914 x 1219	3

APPLICATION:

TDC (by Lockformer) and TDF (by Engle) are approved as breakaway connections for joining the fire damper sleeve and the duct. The slip joints shown in standard installation instructions for curtain type fire dampers, multi-blade fire dampers and combination fire/smoke dampers may be replaced by one of these systems.

INSTALLATION:

TDC and TDF roll-formed 4-bolt flanged connections assembled per the manufacturers instructions using gaskets, metal cleats 6" (152) long with spacing as shown and four 3/8" (9.5) metal nuts and bolts. See also the TDC or TDF addendum to the SMACNA Duct Construction Standards.

Dimensions are in inches (mm).

INSTALLATION INSTRUCTIONS • FIRE RESISTANT VENTILATION DUCT ASSEMBLY FOR FIRE DAMPERS AND COMBINATION FIRE/SMOKE DAMPERS

VERTICAL MOUNT

These instructions are for installing vertical mount fire and combination fire smoke dampers in a fire resistant ventilation duct (UL Ventilation duct Assembly HNLN.V-5).

Refer to the UL or ULC Classification Marking on the Product

NOTES:

1. The damper sleeve must slip inside the fire resistant duct spool. Damper sleeve assembly will be 1/4" (6), 1/2" (13) maximum, smaller than duct spool size.

2. Damper is to be supplied with factory mounted sleeve. Sleeve gauge will be minimum of 16 ga. (1.5) for dampers up to 36" wide x 24" high (914 x 610) and 14 ga. (2) for dampers exceeding 36" wide x 24" high (914 x 610).

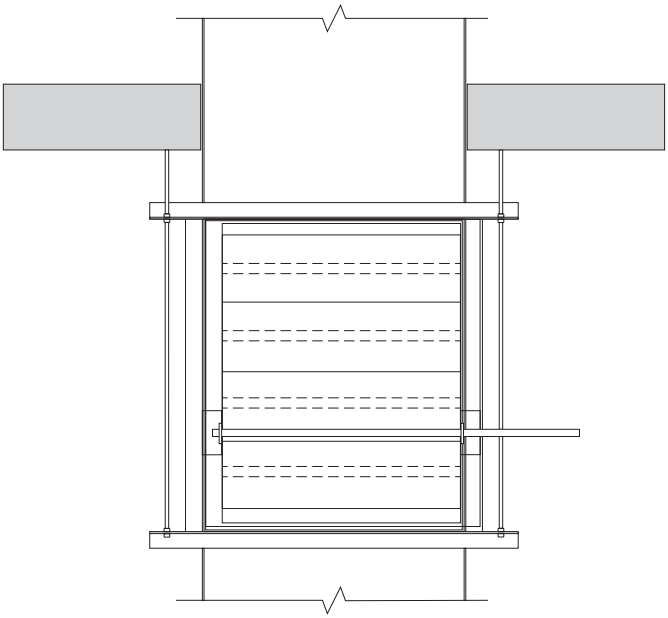
3. Mounting angles need to be the following sizes:
- 1 1/2" x 1 1/2" x 1/4" up to 24" (38 x 38 x 6 up to 610)
- 2" x 2" x 1/4" over 24" up to 32" (51 x 51 x 6 over 610 up to 813)
- 2 1/2" x 2 1/2" x 1/4" over 32" up to 40" (64 x 64 x 6 over 813 up to 1016)
- 3" x 3" x 1/4" above 40" (76 x 76 x 6 above 1016)

4. Mounting angle fasteners:
- #10 bolts or screws
- 3/16" (4.7) steel rivets
- 1/2" (13) long welds

5. Mounting Angle Fasteners Spacing:
- Mounting angles to dampers, space fasteners on 6" (152) on center.
- Mounting angle to spool flange, space fasteners on 12" (305) on center.
- Minimum 2 fasteners per side

6. Hanger rods:
3/8" (10) threaded rod anchored to the floor above and attached to the mounting angles through hole in the angles and secured with hex nut and washer (items 5 & 6). Anchor to masonry per assembly No. V-5.

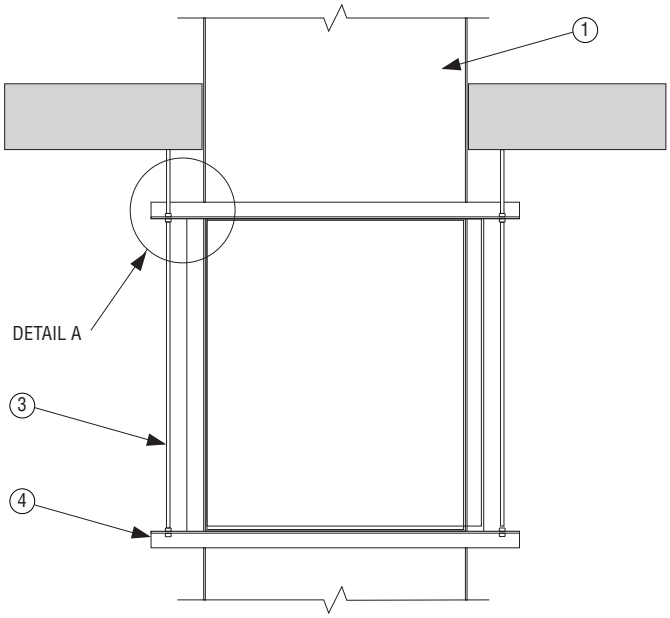
7. Duct to Damper Sleeve Connection:
See the fire damper or the combination fire smoke installation instructions for breakaway, flanged, or non-breakaway connections.



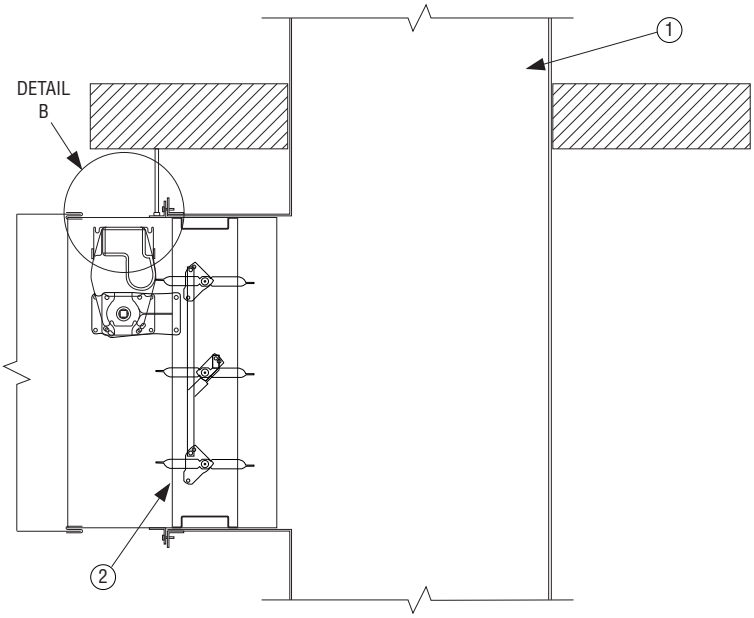
END VIEW

Dimensions are in inches (mm).

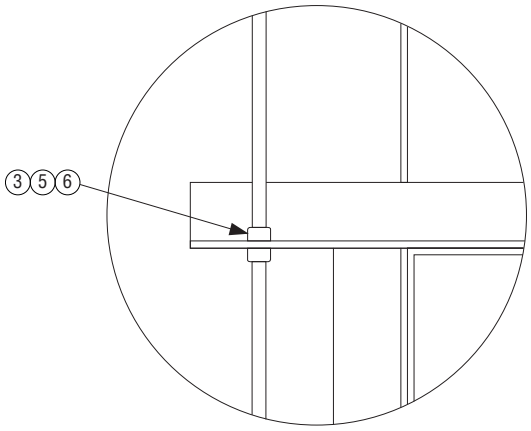
Item	Description
1	Fire Resistant Ventilation Duct (UL HNLN Assembly No. V-5)
2	Fire Damper or Combination Fire/Smoke Damper
3	Hanger rods in accordance with assembly No. V-5
4	Mounting angles (see instruction #3)
5	3/8" (10) hex nuts
6	3/8" (10) flat washer
7	Mounting angle fasteners (see instruction #4)



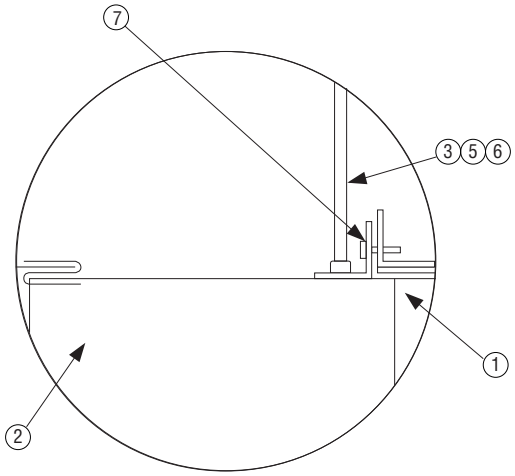
END VIEW



SIDE VIEW



DETAIL A



DETAIL B

Dimensions are in inches (mm).

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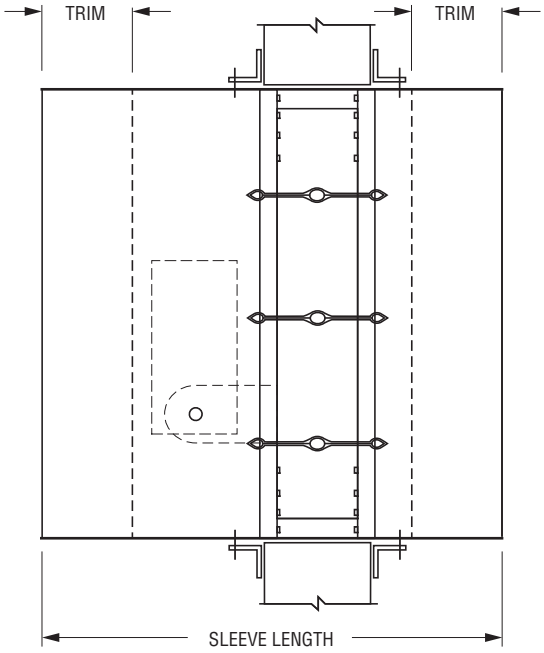
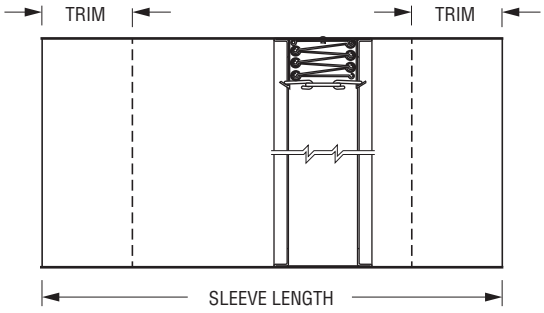
SLEEVE TRIMMING OF FIRE AND COMBINATION FIRE/SMOKE DAMPERS
INSTALLATION INSTRUCTIONS

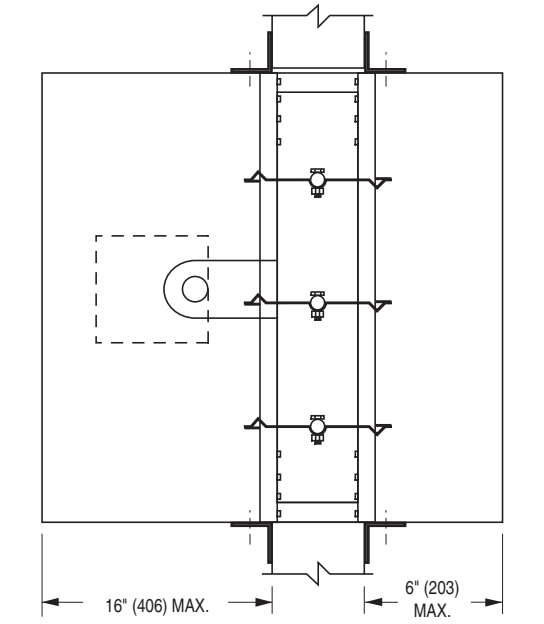
Trimming of factory-supplied sleeves may be necessary to accommodate field conditions or applications. Other damper components such as actuators and fuse links should not be altered.

NOTES:

1. **Sleeve Length on Non-actuator side:** 6" (152) maximum sleeve length beyond fire-rated barrier on non-actuator side.
2. **Sleeve Length on Actuator side:** 16" (406) maximum sleeve length beyond fire-rated barrier on actuator side.







Dimensions are in inches (mm).

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INSTALLATION AND OPERATION INSTRUCTIONS POSITION INDICATOR PACKAGE FOR COMBINATION FIRE / SMOKE AND SMOKE DAMPERS MODEL: MLS-300. For use with ML4X02/8X02, ML4115/8115 and MS4X09/8X09 Electric Actuators

APPLICATION

The MLS-300 Position Indicator Package contains two independent 360° rotary switch cams for use in conjunction with certain Honeywell electric actuators. It provides an on / off signal at two adjustable points in the actuator stroke. This signal can be routed to a Fire Fighters' Smoke-Control Station for remote damper position status in Smoke Control Management Applications.
The MLS-300 is usually factory mounted for Fire / Smoke and Smoke Damper applications, but can be field installed.

ELECTRICAL SWITCH RATINGS:

Switching

Single-pole, double-throw (SPDT) micro switches.

Switching Differential

Three angular degrees maximum.

Electrical Switch Ratings (at 240 Vac):

At or below 240 Vac:
Resistive Load: 8A
Inductive Load: 2A
At 125 Vdc: 0.5A
At 250 Vdc: 0.25A
Pilot Duty: 4A, 125 Vac.

Cable

Double insulated, -40°F to 130°F (-40°C to 54°C).

Conduit (not included)

3/8" flexible.

Operating Temperature

-40°F to 350°F (-40°C to 177°C). UL555/555S

Rating and Approvals:

Base Model: Honeywell 32003532-005
UL Recognized file No. E4436.
UL94-5V Plenum rating
Cable: UL Style 1180 rated 300V, 200 C, 18 gauge.
NEMA2

⚠ CAUTION

Electrical shock or Equipment Damage Hazard.
Can shock individuals or short equipment circuitry.
Discount power supply before installation and always keep device assembled.

⚠ CAUTION

Actuator Damage Hazard.
Turning motor output hub by hand or wrench can damage internal gears.
Forcibly turning the motor shaft damages the gear train.

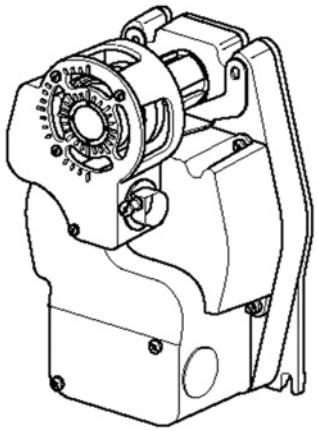

Figure 1. Honeywell ML4X02/8X02, ML4115/8115 or MS4X09/8X09 electric actuators with MLS-300 (Honeywell) position indicator package.

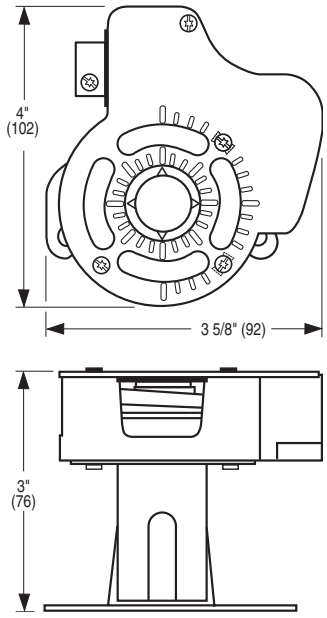

Figure 2. Dimensional detail

Dimensions are in inches (mm).

Factory Installation

When factory installed the switch is factory set for full open and full closed positions.

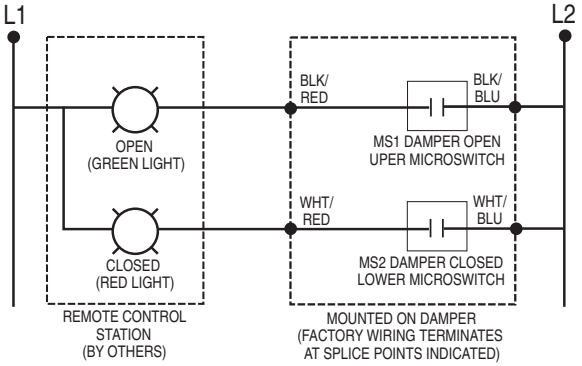

Figure 3. Wiring schematic

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.

Field Installation

Prior to installation first...

1. Read instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check ratings and description given in specification to make sure product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

Procedure:

1. Determine desired switching action (if switch is to energize during clockwise ↻ or counterclockwise ↺ rotation).

Note: With switch cam as shown in Figure 4, the normally closed contact opens during counterclockwise rotation and the normally open switch closes.

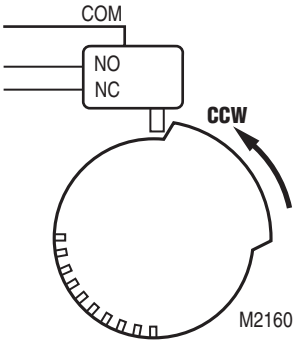

Figure 4. Switching configuration (top view) for counterclockwise ↺ rotation.

Conversely, with the switch cam as shown in Figure 5, the normally closed contact opens during clockwise ↻ rotation and the normally open switch closes.

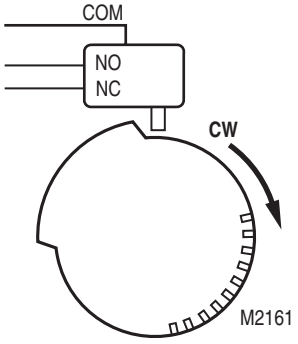

Figure 5. Switching configuration (top view) for clockwise ↻ rotation.

Note: Switches can be set prior to installation on the actuator if angular switch positions are known.

2. Align the switch hub with the setscrews on the actuator. See Figure 1.
3. Mount the switch on the actuator and tighten the two screws.
4. Determine switch position settings based on the angular indications molded into the housing.
5. Move each cam inside switch assembly to the appropriate position. Remember the direction of travel of the cam for switching purposes (see Figure 4 and 5). Monitor the switch closure with an ohmmeter for a continuity check. See Table 1.

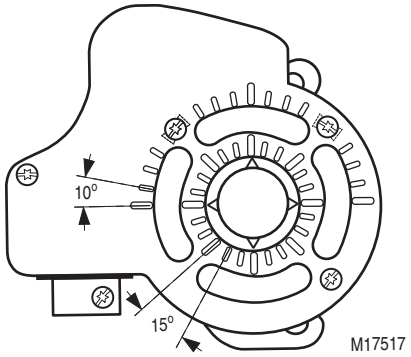

Figure 6. Angular indications of switch

Switch	Normally Open	Normally Closed
Activated	Zero ohm	Infinite ohms
Not Activated	Infinite ohms	Zero ohm

Table 1. Proper continuity measurements.

Connection	Upper Switch	Lower Switch
Common	Black / Red	White / Red
Normally Closed	Black / Yellow	White / Yellow
Normally Open	Black / Blue	White / Blue

Table 2. Position Indicator Switch Wiring Connections.

Dimensions are in inches (mm).

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