

# INSTALLATION INSTRUCTIONS

## Series 10 Combination Fire and Smoke Damper

### General Notes:

Combination Fire & Smoke Dampers are approved for use in static or dynamic systems and may be installed vertically or horizontally as long as the axes of the blades are horizontal. Series 10 dampers are UL rated for 1½ hours. Aire Technologies' combination fire & smoke dampers are bi-directional and may be installed with the jackshaft either upstream or downstream. For proper operation, all dampers must be installed square and free from racking. Dampers are to be arranged to operate automatically and are controlled by smoke detector, which is optional. Multi-section dampers should be wired in parallel to allow for actuators to operate simultaneously (page M-4). Damper must be cycled twice after installation is complete to verify operation.

### Opening Preparation:

1. The opening shall be enlarged by 1/8" per linear foot of both damper width and height to allow for thermal expansion (minimum 1/4"). Maximum opening size shall not exceed 1" larger than damper or sleeve assembly.

For installation steel stud/gypsum board partitions, see section on drywall partitions. (Page M-2)

### Factory-Sleeve Duct Connection:

The installation of the damper and all duct connections to the damper sleeve shall conform to NFPA-90A and SMACNA Fire, Smoke and Radiation Damper Installation Guide. All duct connections shall also conform to UL 555. Connection ducts shall not be continuous but shall terminate at the damper sleeve. Duct connections to the sleeve will either be of breakaway or rigid types. Breakaway types are listed on page M-3.

The following determines if the connections are to be rigid or breakaway. For rigid type duct connection, sleeve shall be a minimum of 16 gauge on dampers not exceeding 36" wide or 24" high or 24" diameter and sleeve shall be a minimum 14 gauge on larger units. Dampers supplied with thinner sleeves shall be a breakaway connection of the following type: plain "S" slip, double "S" slip. Ductmate-type connections as shown on page M-3 and all connections not listed as breakaway shall be considered rigid. Breakaway joints types are shown on page M-3. Sleeves shall not extend more than 6" beyond the partition and 16" on opposite side for actuator mounting and/or access doors. Sleeve may extend up to 16" on both side of partition if actuator is installed on one side and access door on opposite side.

### Single-Section Maximums:

Model 10V - 3V Crimped Blades:

Vertical Max: 36"W x 48"H

Horizontal Max: 36"W x 36"H

Model 10F - Airfoil Blades:

Vertical Max: 36"W x 48"H

Horizontal Max: 36"W x 36"H

### Multi-Section Maximums:

Model 10V - 3V Crimped Blades:

Vertical Crimped Blades: 144"W x 48"H

Horizontal Crimped Blades: 72"W x 36"H

Model 10F - Airfoil Blades:

Vertical Airfoil Blades: 108"W x 48"H

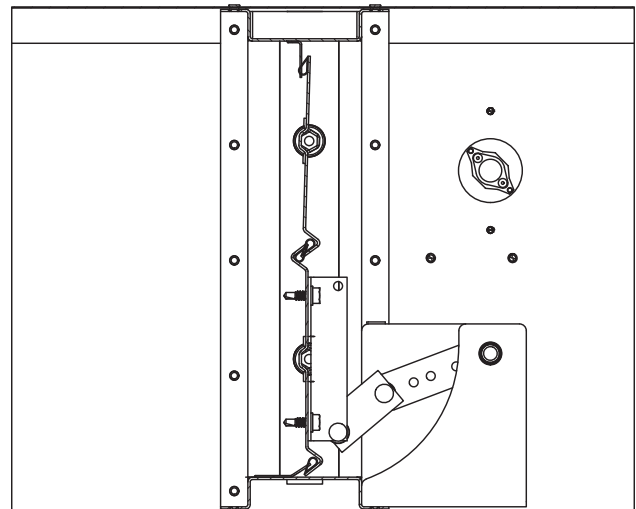
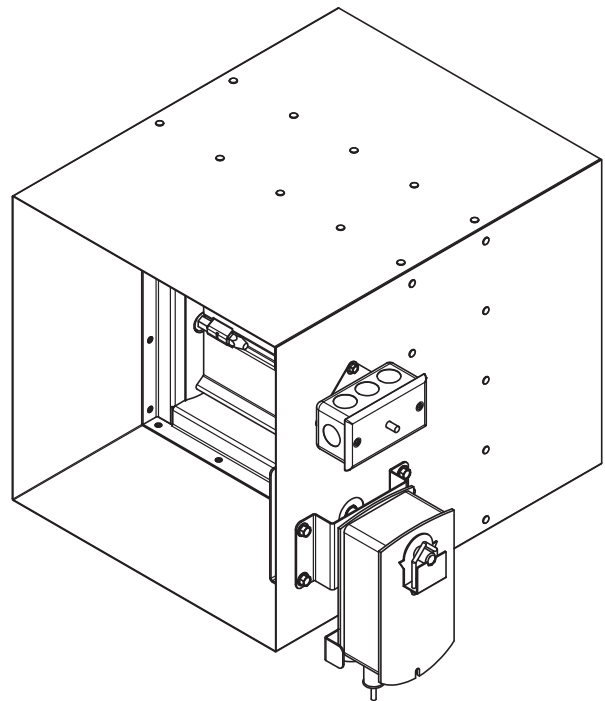
See section on Breakaway Connections (Page M-3)

See section on Retaining Angles (Page M-4)

See section on Sleeves (Page M-4)

See section on Multi-Section Dampers (Page M-4)

See section on Actuator Wiring (Page M-5)



Installation Instructions In Conformance To Underwriters Laboratories Requirements

These instructions have been reviewed by UL and found to comply with all applicable requirements of UL 555 & 555S at the time of evaluation.

**ALL INSTALLATIONS ARE SUBJECT TO LOCAL AUTHORITY APPROVAL PRIOR TO ORDERING DAMPERS AND DAMPER INSTALLATION**

# INSTALLATION INSTRUCTIONS

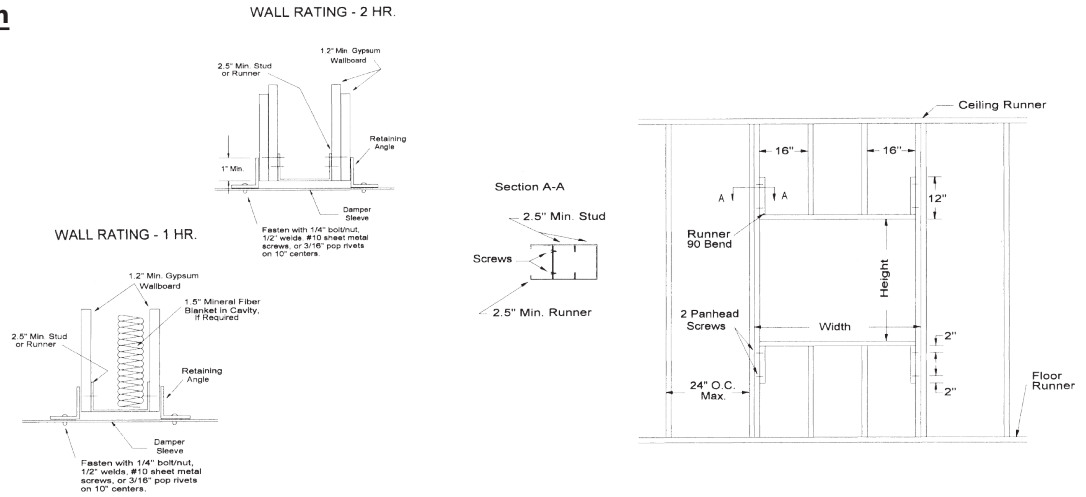
## For Fire Dampers Installed Into Metal or Wood Framed Fire Barriers With Ratings of Less Than 3 Hours

### Supplemental Installation - Metal Stud Framing for Fire/Smoke Dampers in Drywall Partitions:

These supplemental installation instructions are for curtain, out-of-wall, or multi-blade dampers. Refer to the installation instructions provided in these pages for details concerning sleeve thickness, sleeve length, duct connections, multi-section assembly, and opening tolerances. Filler pieces are optional in metal stud framing (consult local code to see if filler pieces are required). Filler pieces are to be double screwed (or nailed to wooden studs) on 12" maximum centers to the web of runners and studs.

### Details of Opening Preparation and Fire Damper Installation:

Note: Gypsum panels screwed to all stud and runner flanges, 12" OC, maximum surrounding opening.

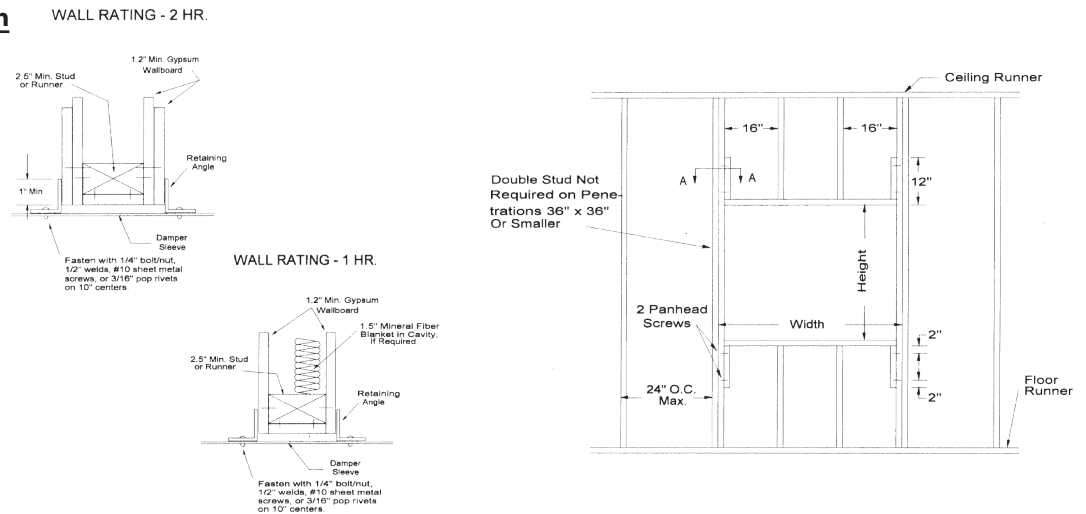


### Supplemental Installation - Wood Stud Framing for Fire/Smoke Dampers in Drywall Partitions:

These supplemental installation instructions are for curtain or multi-blade dampers. Refer to the installation instructions provided on the previous pages for details concerning sleeve thickness, sleeve length, duct connections, multi-section assembly, and opening tolerances. When wooden studs are used, filler pieces shall be installed around entire opening. Filler pieces are to be double screwed or nailed to wooden studs on 12" max centers to the web of runners and studs.

### Details of Opening Preparation and Fire Damper Installation:

Note: Gypsum panels screwed to all stud and runner flanges, 12" OC, maximum surrounding opening.



**CLASSIFIED**

**UL**

**US**

**UL File No. R5543**

See Details on UL Classification Marking on Enclosed Product.

These instructions have been reviewed and accepted by Underwriters Laboratories.

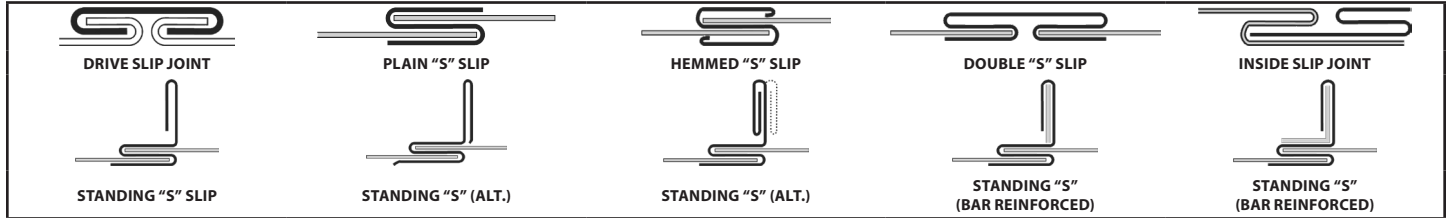
# INSTALLATION INSTRUCTIONS

## Breakaway Connections

Breakaway connections shall have no more than 2 No. 10 (4.8mm) diameter sheet metal screws on each side and on the top and bottom located in the center of the slip pocket and shall penetrate both sides of the slip pocket. Breakaway joints of the type shown on page M-3 are permitted on the top and bottom of horizontal ducts (vertical dampers) with flat slips not exceeding 20 inches (508mm) in length on the sides.

### Breakaway Style Transverse Joints:

- Transverse joints illustrated at right have always been approved as breakaway connections. SMACNA testing has also approved the following variations as breakaway connections (see below).
- Standing "S" joints can be applied with No. 10 sheet metal screws (through joint and duct) subject to the following limitations: maximum 2 screws in each side and in bottom joint.
- Transverse joints illustrated can be applied as top and bottom joints with drive slip – side joints in duct heights up to 20 inches.



### Round and Oval Duct Breakaway:

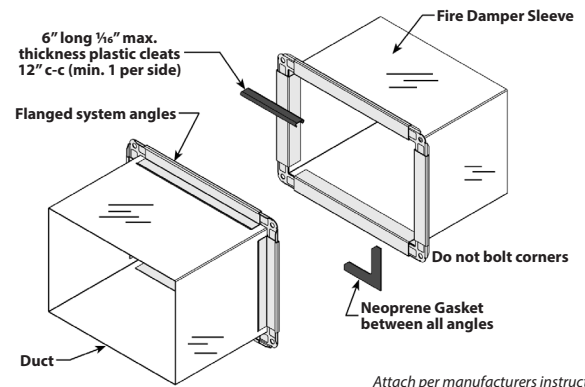
Round or flat oval ducts connected to type R, C, or O damper collars may use No. 10 sheet metal screws as follows:

- Ducts to 22" wide (or dia.) and smaller may use 3 screws
- Ducts larger than 22" wide (or dia.) may use 5 screws

Note: All breakaway connections described may have duct sealant applied in accordance with SMACNA recommendations.

### Manufactured Flange System Breakaway Connections:

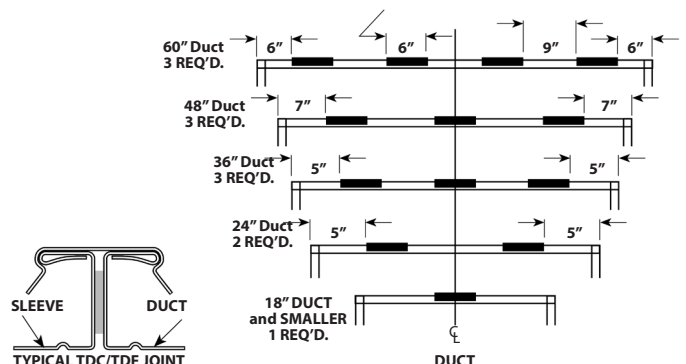
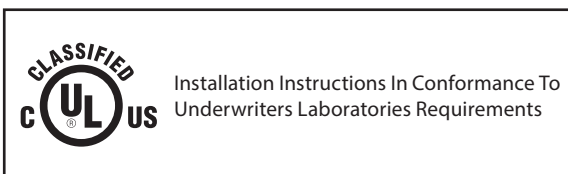
Flanged connection systems manufactured by Ductmate, Ward, and Nexus are approved as breakaway connections when installed as illustrated.



### Proprietary Flange System Breakaway Connections:

#### (TDC by Lockformer, TDF by Engle)

TDC and TDF systems are approved as breakaway connections when installed as described in the TDC or TDF addendum to the SMACNA Duct Construction Standards except the corners may not be bolted. Standard 5" metal clips may be used with spacing as shown in diagram.



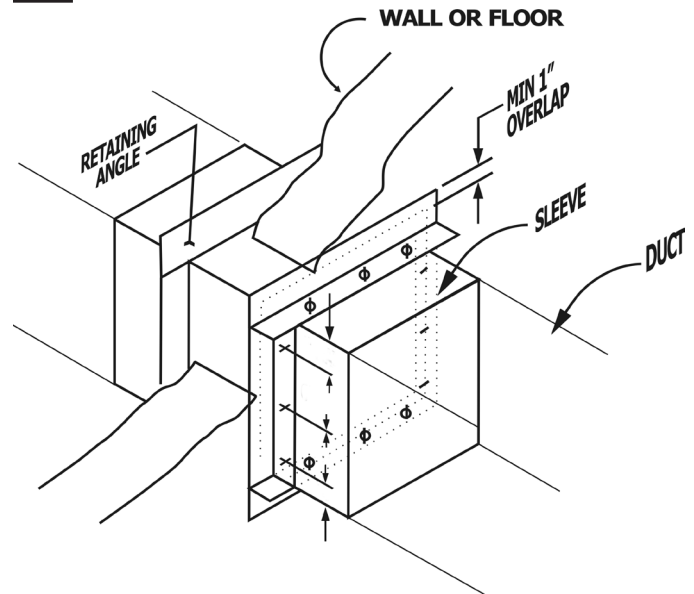
# INSTALLATION INSTRUCTIONS

## Securing Fire/Smoke Damper and Sleeves to Wall and Floor Opening

Fire damper and sleeve assemblies shall be installed in wall and floor openings using retaining angles on each side of the wall or floor as described below:

- Retaining angles shall be a minimum of 16 gauge steel and have a minimum 1½" x 1½" legs.
- The angles shall be attached to all 4 sides of the sleeve with butt joints at each corner. Fasteners (No. 10 bolts or screws, 3/16" steel rivets or ½" tack welds) are required on each side, top, and bottom and shall be spaced 6" center-to-center staggered intermittently on both sides of the damper. The angles need not be attached to each other at the corners.
- Retaining angles shall completely cover the clearance space between the sleeve and the wall/floor opening, plus overlap the wall/floor a minimum of 1". This coverage includes all corners (fig. 2).
- Retaining angles should not be fastened to the wall/floor material. The angles should only sandwich the wall/floor and allow for damper/sleeve expansion during periods of intense heat.
- For grille installation, angle legs may be reversed and one leg inserted into the wall/floor opening, provided the required clearance is maintained between angle leg fasteners and the wall opening.

fig. 2



### Multi-Section Damper Assembly:

Multi-section dampers are only installed in the vertical position only. When joining single section tall dampers, the sections are to be fastened together using 1/4" – 20 bolts or No. 10 screws spaced 8" center-to-center. The fasteners shall be staggered intermittently on both sides, reversing direction on every other fastener. Attach the damper to the sleeve with 1/4" – 20 bolts, No. 10 screws, or 1/2" welds spaced 6" center-to-center, staggered intermittently on both sides.

Dampers two sections tall require a 14 gauge reinforcing plate unless they are less than 36" wide. The dampers are to be bolted together using 1/4" – 20 bolts spaced 12" center-to-center, staggered intermittently on both sides through the 14 gauge plate and both dampers. When using 2 individually sleeved units, the sleeve acts as the reinforcing plate and no additional plate is required.

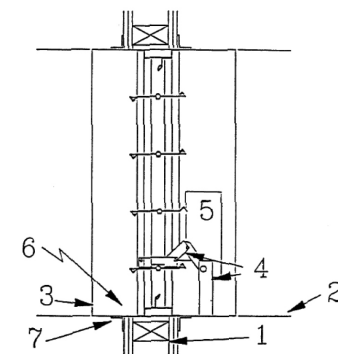
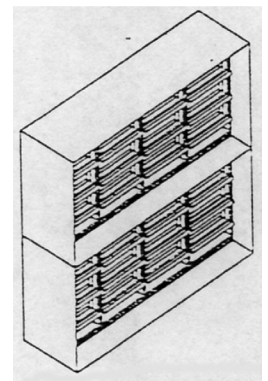
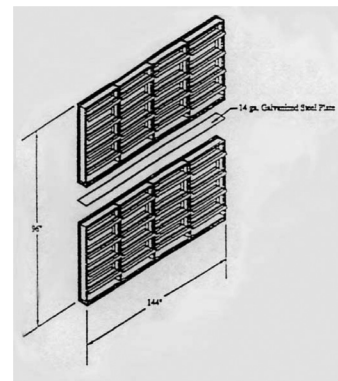
When joining multiple damper assemblies, a continuous 1/8" bead of Dow-Corning® 100% silicone rubber, Dow-Corning® Silastic 732, or GE RTV 108 sealant shall be applied on the mullion joint. Press the surface of the sealant in place to dispel any air. Another bead of the same sealant shall be applied between the damper and the sleeve in the same manner. Only one side of the damper requires caulk/sealant. Note the sealant is not required when dampers are supplied for fire applications only and are not required to be leakage rated.

### Access:

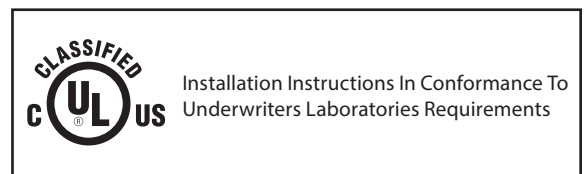
Suitable access shall be provided for damper inspection and service. Where it is not possible to achieve sufficient size access, it will be necessary to install a removable section of duct.

### Maintenance:

Dampers shall be maintained in intervals as stated in NFPA 90A, Appendix B, unless local codes require more frequent inspections. Check the fuse link, stainless steel closure springs where furnished, cycle damper, check for free operation and complete closure, clean with mild detergent or solvent, and secure damper open with fusible link.



| Item | Description       |
|------|-------------------|
| 1.   | Fire Wall         |
| 2.   | Duct              |
| 3.   | Sleeve            |
| 4.   | Fusible Device    |
| 5.   | Operator/Actuator |
| 6.   | Chalking Material |
| 7.   | Retaining Angle   |



# INSTALLATION INSTRUCTIONS

## Retaining Angles

### Mounting Angles

Secure mounting angles to the sleeve and not to the wall or floor. Mounting angles to frame the four sides of the sleeve on both faces. When reverse mounting angles are used the size of the opening must be increased to maintain the specified expansion clearance between the angle/fasteners and the opening. Angles shall be a minimum of 1½" x 1½" x 16 ga. on dampers 36" x 50" and smaller. For dampers greater than 36" x 50", angles to be a minimum of 1½" x 1½" x 14 ga. Fasten angles to the sleeve using 1/4" dia. bolts and nuts or by welding with beads ½" in length, or with No. 10 steel sheet metal screws. Fasteners or weld beads shall be 6"(single section) or 4"(multi section) maximum on centers.

### Access

Suitable access must be provided for damper inspection and servicing. Where it is not possible to achieve sufficient size access, it will be necessary to install a removable section of duct.

### Duct Connection

The installation of the damper and all duct connections to the damper sleeve shall conform to NFPA-90A and the SMACNA Fire, Smoke and Radiation Damper Installation Guide. All duct connections shall also conform to UL555. Connecting ducts shall not be continuous but shall terminate at the damper sleeve. Duct connections to the sleeve will be either of the breakaway or rigid types, breakaway types are listed below. The following determines if the connections are to be rigid or breakaway. For rigid type duct connections, sleeve shall be a minimum of 16 ga. on dampers not exceeding 36" wide or 24" high or 24" diameter and 14 ga. on larger units. Dampers supplied with thinner sleeves will require a breakaway connection of the following type. Plain "S" slip, double "S" slip shown below. Ductmate type-connections as shown on page 12, all connections not listed as breakaway shall be considered as rigid. Breakaway joints of the types shown below shall have no more than two No. 10 (4.8mm) diameter sheet metal screws on each side and on the top and bottom located in the center of the slip pocket and shall penetrate both sides of the slip pocket. Breakaway joints of the type shown below are permitted on the top and bottom of horizontal ducts (vertical dampers) with flat slips not exceeding 20 inches (508 mm) in length on the sides.

### Maintenance

Dampers shall be maintained in intervals as stated in NFPA-90A, Appendix B, unless local codes require more frequent inspections. Check the fuse link, check the stainless steel closure springs where furnished, cycle damper and check for free operation and complete closure, clean with mild detergent or solvent, secure damper open with fusible link.

### Single-Side Retaining Angle Installation Option

Application: Single section dampers may be installed using single-side retaining angles in lieu of conventional 2-sided retaining angle installation up to a maximum section size of 36" x 36". Single-side retaining angles may be field fabricated.

Installation: Single-sided retaining angles should be a minimum of 1-½" x 1-½" x 16 gauge steel. The retaining angles should be attached to the damper sleeve (18 gauge maximum thickness and 22 gauge minimum thickness) with ¾" #10 screws at 3" maximum spacing and 2" maximum from the corners. Coarse threaded standard drywall screws with a minimum length of 1-5/8" should be used to attach the retaining angle to steel or wood framed walls with a maximum screw spacing of 3". Attach retaining angle to concrete or masonry partitions with x" concrete screws with a maximum spacing of 12". Ensure that the annular space between the damper sleeve and wall opening is maintained according to UL555 requirements (1/8" per lineal foot of damper). The closed plane of the damper blades must remain within the plane of the wall. Single-side retaining angles shall be installed on the top side of a ceiling/floor for horizontal mounting.



PLAIN "S" SLIP



DOUBLE "S" SLIP



INSIDE SLIP JOINT



HEMMED "S" SLIP



STANDING "S" SLIP




STANDING "S" SLIP  
(BAR REINFORCED)



STANDING "S" SLIP  
(ANGLE REINFORCED)



STANDING "S" SLIP

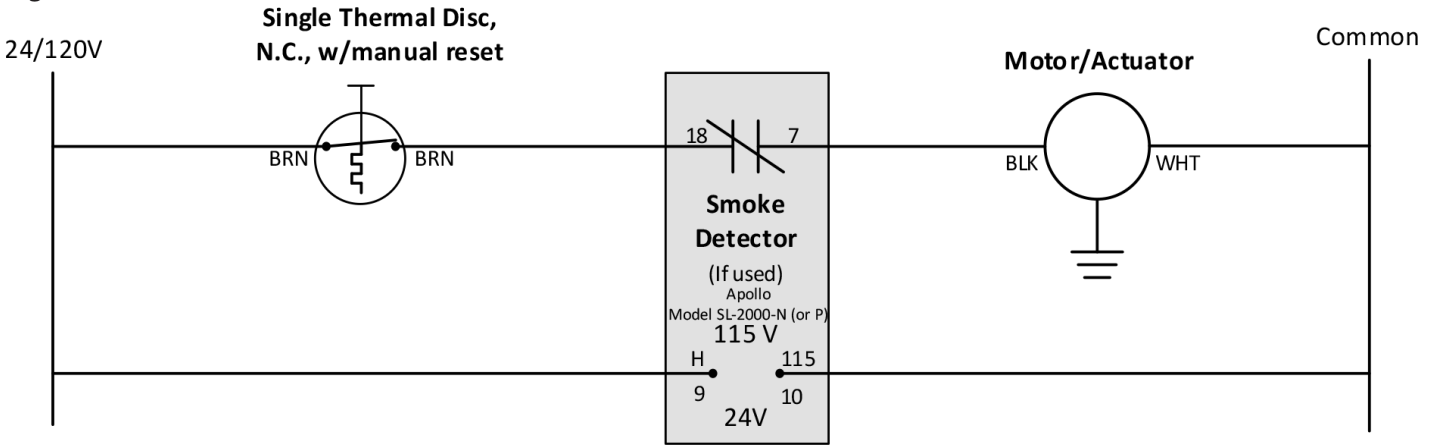


Installation Instructions In Conformance To  
Underwriters Laboratories Requirements

# INSTALLATION INSTRUCTIONS

## Wiring Diagram

Figure 1.



**Figure 1**  
Basic unit with optional smoke detector

**Actuators:**

Aire Technologies' combination fire & smoke dampers are equipped with factory-installed actuators which operate on the detection of heat or loss of actuator power.

Once damper is installed, it must be cycled several times to ensure proper function.

**WARNING** – do not open actuator housing!

