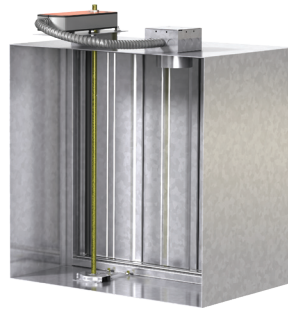


Installation, Operation and Maintenance Manual

Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with these instructions will result in voiding of the product warranty and may result in personal injury and/or property damage.



These instructions apply to 1½ and 3 hour rated fire and combination fire smoke dampers mounted in: 1) masonry, block, or stud walls and 2) concrete floors. Specific requirements in these instructions are mandatory. Dampers must be installed in accordance with these instructions to meet the requirements of UL 555 and/or UL 555S.

Note: Combination fire smoke and fire dampers are manufactured and labeled for either vertical or horizontal installation. The dampers must be installed in accordance with labeling.

Receiving and Handling

Upon receiving dampers, check for both obvious and hidden damage. If damage is found, record all necessary information on the bill of lading and file a claim with the final carrier. Check to be sure that all parts of the shipment, including accessories, are accounted for.

Dampers must be kept dry and clean. Indoor storage and protection from dirt, dust and the weather is highly recommended. Do not store at temperatures in excess of 100°F (38°C).

Safety Warning

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating, and maintenance instructions thoroughly before installing or servicing this equipment.

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General Information

“UL CLASSIFIED (see complete marking on product)”
“UL CLASSIFIED to Canadian safety standards (see complete marking on product)”
Standard 555 & 555S (Listing #R13317)

Online version to this Installation instructions at www.vencoproducts.com.

[Multi-blade Fire and Combination Fire Smoke Dampers](#)



Electrical Guidelines

Electrical Guidelines

All wiring shall be done in accordance with the National Electrical Code ANSI/NFPA-70 latest edition, any local codes that may apply, and wiring diagrams developed in compliance with the job or project design and specifications.

Important!

Electrical input may be needed for this equipment. This work should be performed by a qualified electrician. Verify power before wiring actuator. Venco is not responsible for any damage to, or failure of the unit caused by incorrect field wiring. To avoid causing death or serious bodily harm to building occupants, follow all instructions carefully. Dampers must close completely to preserve the integrity of the fire smoke separation.

Pre-Installation Guidelines

The following items will aid in completing the damper installation in a timely and effective manner.

- 1) Check the drawings for proper damper locations within the building. Visually inspect the damper for damage and verify that the Reusable Resettable Link (RRL) is in place and has not activated if provided. These electric links have a button for resetting. Visually inspect the fusible link (if provided) to verify its not missing or broken. Replace link as necessary.
- 2) Lift or handle damper using sleeve or frame. Do not lift damper using blades or actuators.
- 3) Damper has label on outside of sleeve indicating a 'No Screw' area. Do not install screws into this area as screws may interfere with unexposed blade linkage and prevent damper blades from opening and/or closing.
- 4) Damper has label indicating position of damper and sleeve assembly in the wall. Install accordingly to comply with manufacturer's appropriate UL Classification file number.
- 5) Damper must be installed into duct or opening square and free of twist or other misalignment. Out of square, racked, twisted or misaligned installations can cause excessive leakage and/or torque requirements to exceed damper/actuator design.
- 6) Damper and actuator must be kept clean and protected from dirt, dust and other foreign materials prior to and after installation. Examples of such foreign materials include but are not limited to:
 - a) Mortar dust
 - b) Drywall dust
 - c) Firesafing materials
 - d) Wall texture
 - e) Paint overspray
- 7) Damper should be sufficiently covered as to prevent overspray if wall texturing or spray painting will be performed within 5 feet of the damper. Excessive dirt or foreign material deposits on the damper can cause excessive leakage and/or torque requirements to exceed damper/actuator design.
- 8) Caulking is not necessary, nor is it allowed, between the damper sleeve and the wall or floor opening (annular space). However, caulking may be applied to the retaining angles.
- 9) ACCESS: Suitable access (such that RRL's and actuators can be maintained, etc.) 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. (Refer to NFPA 90A).
- 10) The Code Authority Having Jurisdiction (AHJ) must evaluate and provide approval of final installation where variations to these instructions are necessary.

Preparation of Openings

- Frame wall openings as shown below (see Figure 1, 2, and 2A).
- Gypsum wall board must be fastened 12 in. (305 mm) on center to all stud and runner flanges surrounding opening.
- Prepare opening between studs and sleeve assembly as shown below (see Figure 3 & 4).
- All construction and fasteners must meet the requirements of the appropriate wall design (See UL Fire Resistance Directory) and/or local codes.

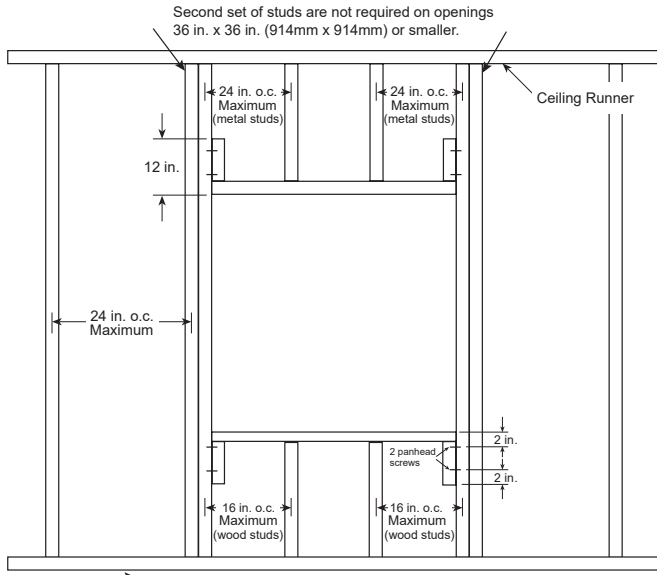


Figure 1

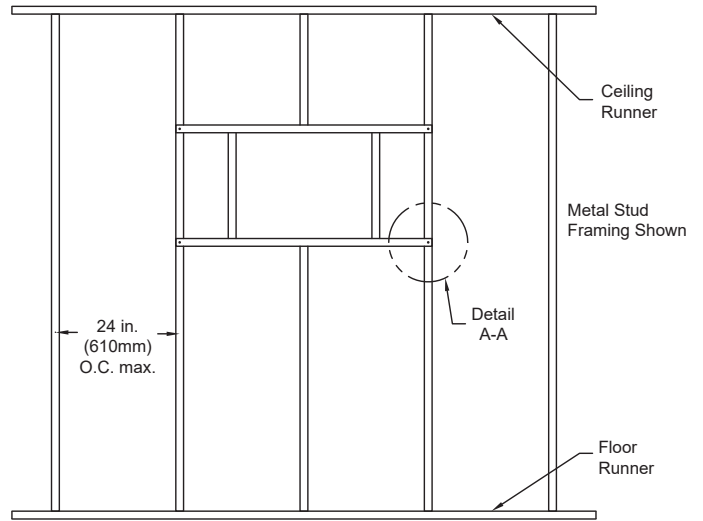


Figure 2 Metal stud only

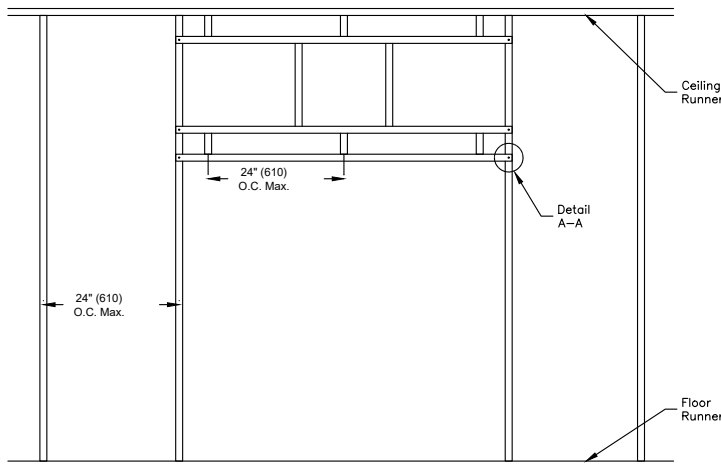


Figure 2A

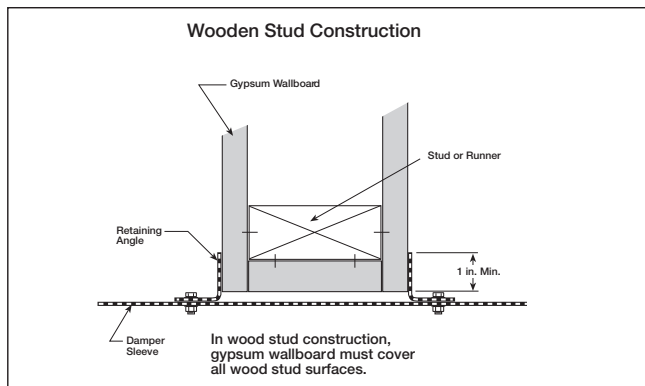
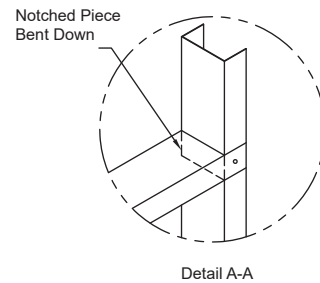


Figure 3 (2 sided angle installation shown)

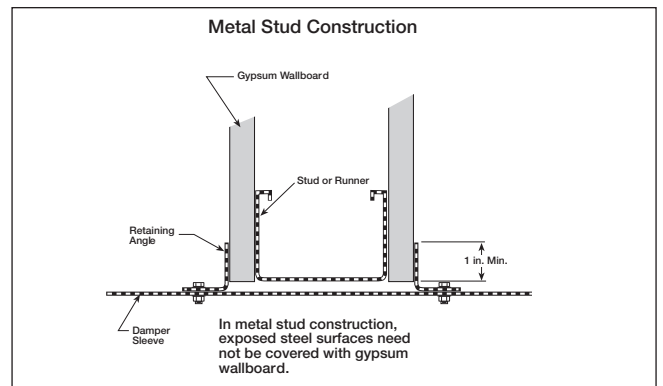


Figure 4 (2 sided angle installation shown)

Clearances Required Between Damper Sleeves & Wall/Floor Openings

Two-Sided Angle Installation

Two-sided angle installations require clearances for thermal expansion between the damper sleeve and the wall/floor opening. The minimum required clearances are:

- For galvanized steel dampers and sleeves: $\frac{1}{8}$ in. per foot (3 mm per .3 m) of damper width and $\frac{1}{8}$ in. per foot (3 mm per .3 m) height with a minimum clearance of $\frac{1}{4}$ in. (6 mm). The total gap may be up to 6 in. (152 mm) larger than the damper, with a maximum gap between the damper and the opening of 3 in. (76 mm) per side as long as the retaining angles overlap the wall/floor by a minimum of 1 in. (25 mm).
- For stainless steel dampers and stainless steel or galvanized sleeves: $\frac{3}{16}$ in. per foot (5 mm per .3 m) of damper width and height with a minimum clearance of $\frac{1}{4}$ in. (6 mm), maximum of 2 in. (51 mm).

These are total clearances (ignoring fastener heads) and do not need to be equally spaced around the damper.

Example:

A 12 in. x 12 in. (305 mm x 305 mm) will require a minimum clearance of $\frac{1}{4}$ in. (6 mm) width and $\frac{1}{4}$ in. (6 mm) on height
A 48 in. x 12 in. (1219 mm x 305 mm) damper will require a minimum clearance of $\frac{1}{2}$ in. (13 mm) on width and $\frac{1}{4}$ in. (6 mm) on height.

Although the minimum requirements are listed above, for ease of installation the following are the recommended clearances for galvanized dampers:

- Width/Height of 48 in. (1219 mm) or less - $\frac{1}{2}$ in. (13 mm) clearance
- Width/Height between 48.01 in. (1220 mm) and 96 in. (2438 mm): 1 in. (25 mm) clearance
- Width/Height greater than 96 in. (2438 mm): $1\frac{1}{2}$ in. (38 mm) clearance

Single Side Angle Installation

On vertical mount single side angle installations there are no minimum clearance requirements between the wall opening and the damper sleeve. However, to facilitate installation, the width and height of the opening in the wall may be up to $1\frac{1}{2}$ in. (38 mm) greater than the width and height of the damper.

On horizontal mount single side angle installations a minimum clearance is required between the outside of the damper sleeve and the floor opening of $\frac{1}{8}$ in. per foot (3 mm per .3 m) of damper width and $\frac{1}{8}$ in. per foot (3 mm per .3 m) height with a minimum clearance of $\frac{1}{4}$ in. (6 mm). The width and height of the opening in the floor may be up to $1\frac{1}{2}$ in. (38 mm) greater than the width and height of the damper.

Installing Multiple Section Damper Assemblies

A damper assembly is not restricted to a maximum number of sections, but must not exceed the section sizes and overall sizes shown (see chart on page 5).

Some multiple section high damper assemblies require additional structural support between the damper frames. The following multiple section high damper assemblies require the use of either a support mullion between the damper frames as shown in **Figure 5** or individual sleeves around each row of dampers as shown in **Figure 6**:

- All horizontal mount dampers
- All vertical mount dampers over 72 in. (1829 mm) high and greater than 2 sections wide
- All vertical mount dampers rated for more than 4 in. wg (1 kPa)
- All vertical mount dampers that use fusible links as a closure device

The damper sections must be attached together with #10 ($\frac{3}{4}$ in. max. [19 mm]) sheet metal screws, $\frac{1}{4}$ in. (6 mm) diameter nuts and bolts, tack or spot welds, or $\frac{3}{16}$ in. (48 mm) diameter steel pop rivets. Attachments must be spaced a maximum of 6 in. (152 mm) O.C. and a maximum of 2 in. (51 mm) from corners. Attachments must be made on front face and back face (air entering and air exiting side) of damper sections.

Note: Dampers ordered for individual installation may not be installed together. The full assembly size must be specified at the time the dampers are ordered.

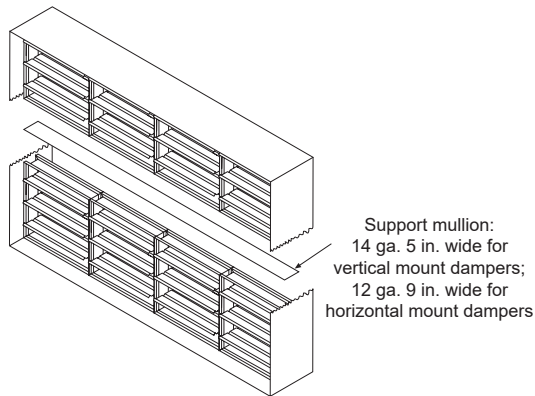


Figure 5: Single sleeve around outside with support mullion

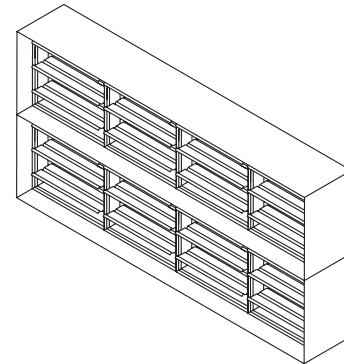


Figure 6: Two individually sleeved units with no mullions

Multiple Section Damper Wiring

Dampers greater than 84 in. (2134 mm) high will ship in two ship sections. Conduit whips from ship section will need to be wired to junction box on ship section with the closure device (see Figure 7).

When fire and fire smoke dampers are ordered with an open/close blade position indicating device (included with the OCI, RRL/OCI, and TOR accessories) one device is provided per row of damper sections. For example, a two section high damper assembly will be provided with two open/closed indicating devices.

Note that all damper sections on a given row are operated by a single jackshaft and thus forced to operate in unison. On two section high dampers, although the two open/closed indicators are not factory wired together, it is common industry practice to field wire the two open switches in series and the two closed switches in series so that the system monitoring the damper will detect a fault if either row of dampers fails to reach the end of stroke condition.

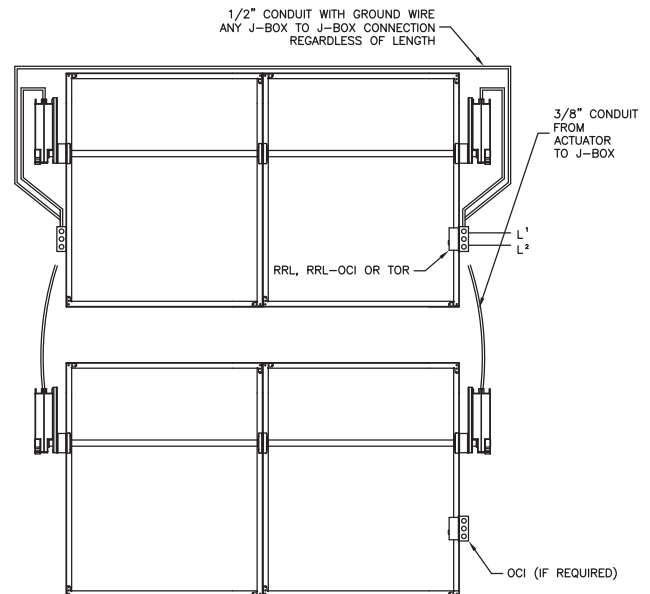


Figure 7: Multiple section damper wiring

Maximum Assembly Tables

Horizontal Mount

Damper Model	Maximum Single Section Size (inches)	Maximum Overall Size for Multi-Section Dampers (inches)
DFD-210	36 x 36 or 32 x 50	128 x 96
DFDAF-310	32 x 50	144 x 96
FSD-211, 212, 213	36 x 48 or 32 x 50	144 x 96
FSD-211M	30 x 36	144 x 72
FSD-231	36 x 36	72 x 48
FSD-311, 312	32 x 50	144 x 96
FSD-311M	32 x 50	128 x 96
FSD-331, DFDAF-330	30 x 48	144 x 96
SEDFD-210, SEFSD-211	24 x 30	48 x 30
SSFSD-211	24 x 30	48 x 30

Vertical Mount

Damper Model	Maximum Single Section Size (inches)	Maximum Overall Size for Multi-section Dampers (inches)
DFD-210	36 x 36 or 32 x 50	128 x 100
DFDAF-310	32 x 50	128 x 100
FSD-211, 212, 213	36 x 48 or 32 x 50	128 x 100
FSD-311, 311M, 312	32 x 50	128 x 100
FSD-311V	50 X 32	100 x 32
FSD-331, DFDAF-330	32 x 36 or 30 x 48	120 x 96
SEDFD-210	24 x 30 or 22 x 36	48 x 30
SEFSD-211 SSFSD-211	24 x 30 or 22 x 36	88 x 72

Note: FSD model dampers fitted with a fusible link closure device are limited to single section sizes.

Inserting Damper into Wall/Floor Openings

Insert the sleeved damper assembly into the prepared opening. Refer to label on outside of sleeve for the recommended location of the damper in the wall or floor (see Dimension A and Detail 1, **Figure 8**).

Special attention must be paid to ensure the following:

- 1) The C_L (centerline) of the damper frame remains within the plane of the wall or floor
- 2) Attachments made through the retaining angle do not penetrate the 'No Screw' area designated on the damper sleeve.
- 3) The sleeve does not extend more than 16 in. (406 mm) beyond the wall or floor on the actuator side of the damper and 6 in. (152 mm) on the side opposite the actuator. The sleeve may also extend up to 16 in. (406 mm) beyond the wall or floor if the damper has a factory supplied access door.

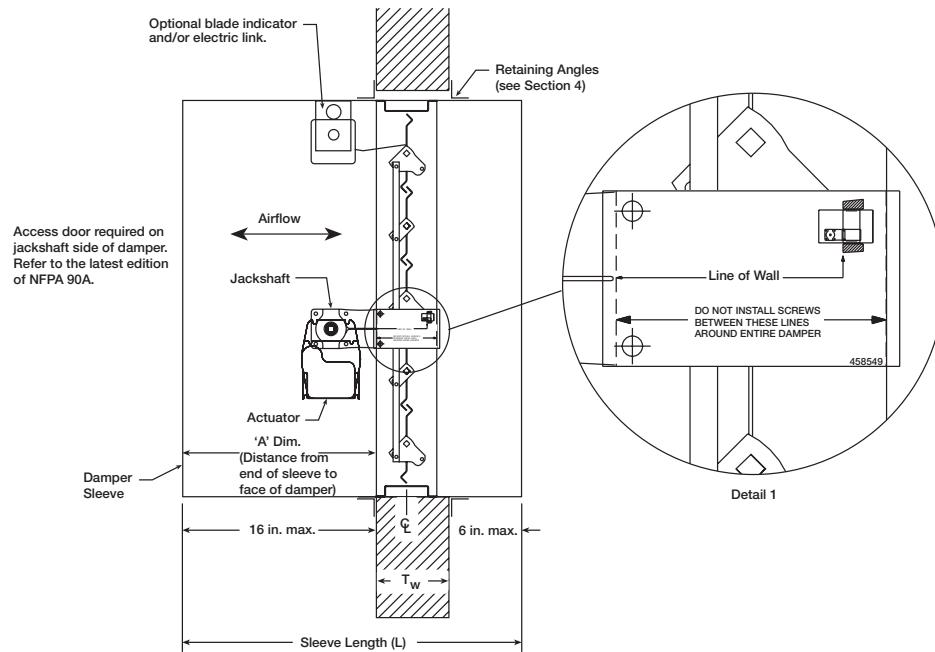


Figure 8: Properly installed combination fire smoke damper

Most fire and combination fire smoke dampers come with factory supplied sleeves. For field supplied sleeves, see the Field Supplied Sleeves supplement at www.vencoproducts.com.

Securing the Damper/Sleeve Assembly to Wall/Floor Openings

All fire and combination fire smoke dampers may utilize the two sided angle installation method described below. 1½ hour rated fire and combination fire smoke dampers may use the single side angle installation method up to the following maximum sizes:

- Vertical mount: 80 in. W x 50. in. H (2032 mm W x 1270 mm H), 50 in. W x 80 in. H (1270 mm W x 2032 mm H), or 40 in. W x 100 in. H (1016 mm W x 2540 mm).
- Horizontal mount: 144 in. W x 96 in. H (3658 mm W x 2438 mm H)

Retaining Angle Gauge: Retaining angles for 1½ hour rated dampers with a width and height 48 in. (1219 mm) or less must be a minimum of 20 ga. (1 mm). Retaining angles for all 3 hour rated dampers and all dampers with a width or height greater than 48 in. (1219 mm) must be a minimum of 16 ga. (1.5 mm).

Retaining Angle Size: The leg of the retaining angle on the damper sleeve shall be a minimum of 1¼ in. (32 mm). The leg of the retaining angle on the wall/floor shall be long enough to cover the annular space and overlap the wall/floor by a minimum of 1 in. (25 mm).

Retaining Angle Attachment to Sleeve: Retaining angles must be attached to the damper using one or more of the following methods of attachment (refer to label on outside of sleeve for 'No Screw' area):

- Tack or spot welds
- #10 ($\frac{3}{4}$ in. [19 mm] max.) sheet metal screws
- $\frac{1}{4}$ in. (6 mm) bolts and nuts
- $\frac{3}{16}$ in. (5 mm) steel pop rivets

A minimum of two connections per side, top, and bottom, spaced 12 in. (305 mm) on center (O.C.) maximum are required for openings of 48 in. W x 36 in. H (1219 mm x 914 mm) and less. Dampers greater than 48 in. wide (1219 mm) or 36 in. high (914 mm) require the connections to be no more than 6 in. (152 mm) on center.

The angles must be attached to all 4 sides of the sleeve. Ensure that fasteners do not interfere with the operation of the damper. The angles need not be attached to each other at the corners.

Retaining Angle Attachment to Wall/Floor:

Two-Sided Angle Method: For two-sided angle installations the retaining angles shall not be attached to the wall/floor (see Figure 9).

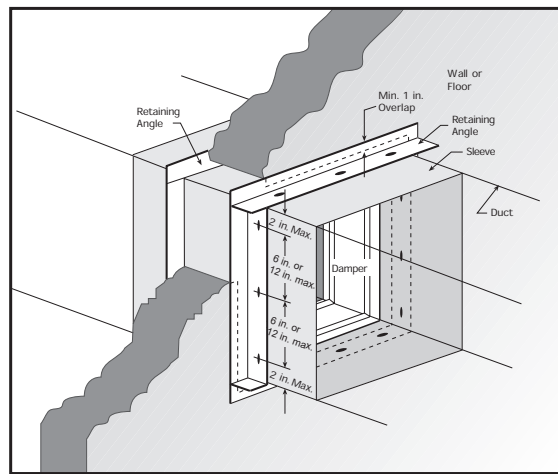


Figure 9: Two-sided angle installation method

Single Side Angle Method: For single side installations the retaining angles must be attached to the wall/floor (see Figures 10-13). For metal stud partitions only, the single side mounting angle may be directly attached to the metal stud prior to the installation of the drywall.

- Retaining angles must be attached to the partition using one of the methods shown below:
 - #10 screws of a length such that the screw engages the steel stud/track by $\frac{1}{2}$ in. (13 mm) (steel framing).
 - #10 screws of a length such that the screw engages the wood stud by $1\frac{3}{4}$ in. (44 mm) (wood framing).
 - Steel anchors, self tapping concrete screws, or #10 masonry screws penetrating masonry or block $1\frac{1}{4}$ in. (31 mm).
- A minimum of two connections per side are required. Additional connections made at a maximum of 12 in. (305 mm) O.C. for openings of 48 in. W x 36 in. H (1219 mm x 914 mm) and less. Dampers greater than 48 in. wide (1219 mm) or 36 in. high (914 mm) require the connections to be no more than 6 in. (152 mm) O.C.

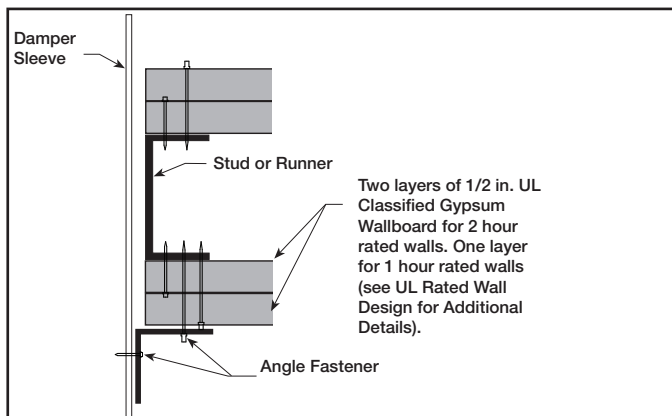


Figure 10: Single Side Angle With Steel Stud Wall - Angle Over Wallboard

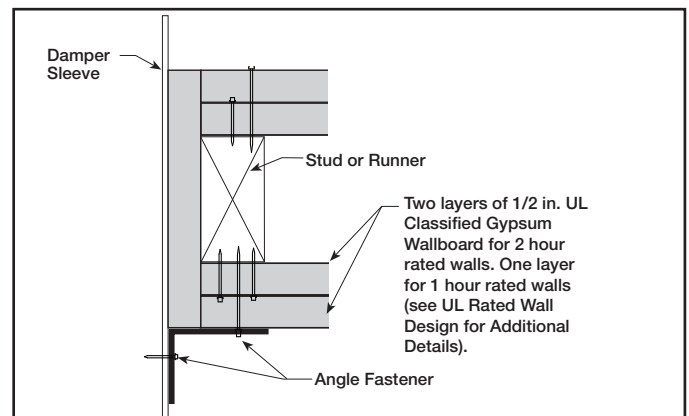


Figure 11: Single Side Angle With Wood Stud Wall

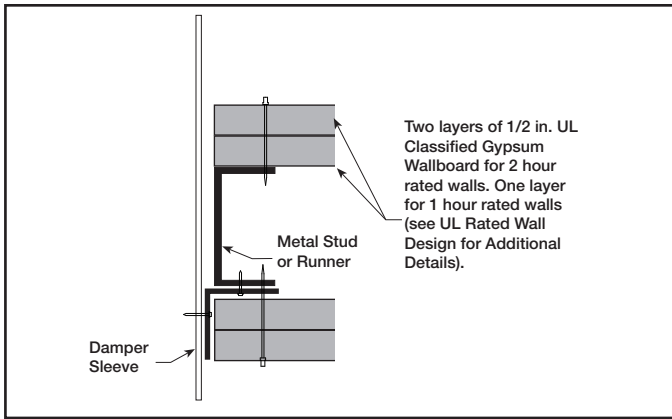


Figure 12: Single Side Angle With Steel Stud Wall - Angle Under Wallboard

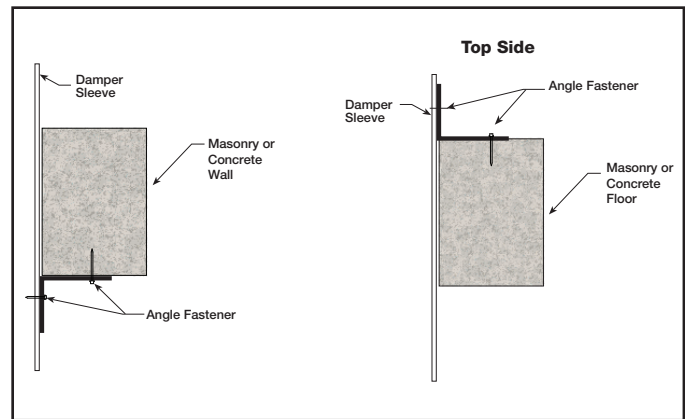


Figure 13: Single Side Angle With Masonry or Concrete Wall and Floor

Grille Installations (Dampers up to 36 in. x 36 in. [914 mm x 914 mm])

Retaining angles used in conjunction with grille installations must be a minimum of $\frac{5}{8}$ in. x 1 in. (15 mm x 25 mm) 16 gauge (1.5 mm) steel. Space screws a maximum of 6 in. (152 mm) O.C. and a maximum of 2 in. (51 mm) from the corners (minimum of 2 screws per side). See **Figure 14** and **Figure 15**.

Note: Screws used to attach grille are allowed to penetrate reversed angle leg.

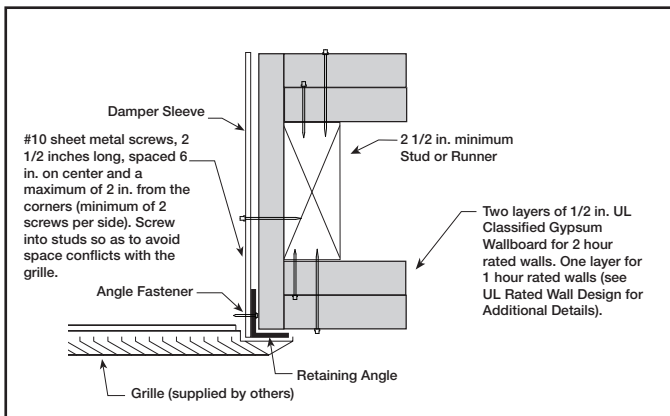


Figure 14: Wood Stud - Grille

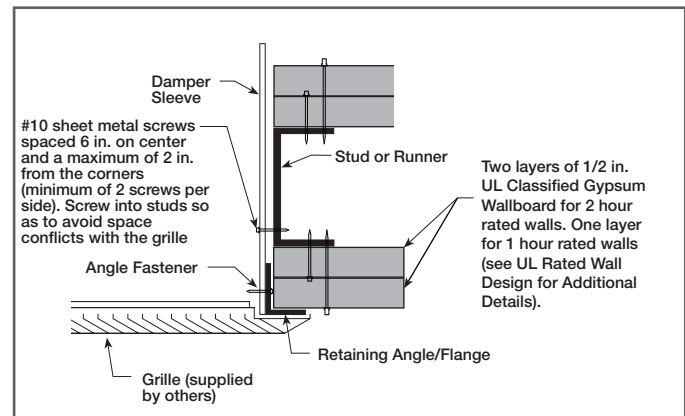


Figure 15: Metal Stud - Grille

Duct to Sleeve Connection

Sleeve Gauge and Connection Type Requirements

The size of the damper/duct determines the required sleeve gauge and the required duct to sleeve connection (see table below). The sleeve thickness must also not be less than the gauge of the connecting duct. Any duct connection other than the breakaway connections described below are considered rigid.

Sleeve Gauge	Duct Dimension	Type of Duct to Sleeve Connection Permitted
14 ga. (0.075 in.) - 10 ga. (0.138 in.) [2 mm - 3.5 mm]	All duct sizes	Rigid or Breakaway
16 ga. (0.060 in.) [1.5 mm]	36 in. (914 mm) max. width 24 in. (610 mm) max. height 24 in. (610 mm) diameter	Rigid or Breakaway
16 ga. (0.060 in.) [1.5 mm]	All duct sizes	Breakaway only
18 ga. (0.048 in.) [1.2 mm]	85 in. (2159 mm) wide and over	
20 ga. (0.036 in.) [0.9 mm]	55 in. - 84 in. wide (1397 mm - 2134 mm)	
22 ga. (.030 in.) [0.76 mm]	31 in. - 54 in. wide (787 mm - 1372 mm)	
24 ga. (0.024) [0.6 mm]	13 in. - 30 in. wide (330 mm - 762 mm)	
26 ga. (0.018 in.) [0.46 mm]	12 in. wide and under (305 mm)	

See Breakaway Connection section for additional information.
UL Standard 555 requires all ducts to terminate at fire damper sleeves.

Approved Breakaway Connections

All breakaway connections described below may utilize the following duct sealants: PA2084T duct sealant adhesive manufactured by Precision, DP1010 water base duct sealant manufactured by Design Polymerics, Grey Pookie, Ductmate PROseal®, or CL Ward S Seal in accordance with SMACNA recommendations.

Transverse Joints

The transverse joints shown below are approved as breakaway connections.

- A maximum of two #10 (19 mm) sheet metal screws on each side and on the bottom may be used. The screws should be located in the center of the slip pocket and penetrate both sides of the slip pocket.
- Dampers up to 20 inches (508 mm) high may use transverse joints on the top and bottom and Drive Slip joints (see Figure 17) on the sides.

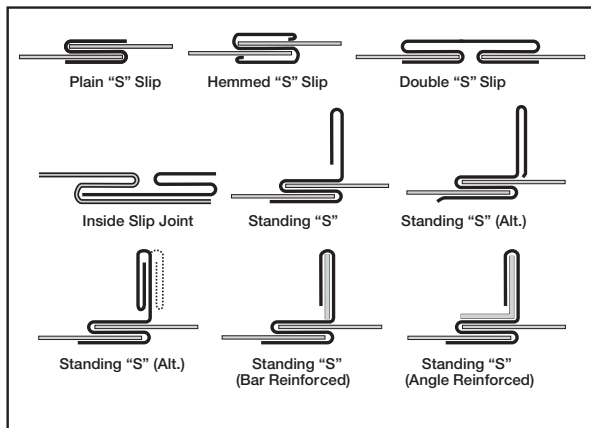


Figure 16 - Transverse Joints



Figure 17

Round and Oval Duct Breakaway Connections

Factory furnished duct collars, type R and O, are also considered breakaway (see Figure 18).

Round or flat oval ducts connected to Type R or O damper collars shall be attached with #10 (19 mm) sheet metal screws as follows:

- Ducts up to 22 in. (558 mm) wide (or dia.) and less shall have three screws.
- Ducts larger than 22 in. (558 mm) wide (or dia.) up to and including 36 in. (914 mm) wide (or dia.) shall have five screws.

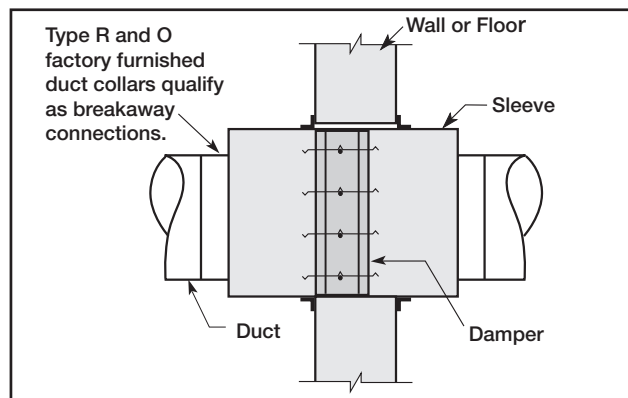


Figure 18: Type R and O Transition

Manufactured Flanged System Breakaway Connections

Flanged connection systems manufactured by Ductmate, Durodyne, Ward, Nexus, Radiant T-35m, and MEZ are approved as breakaway connections when installed as illustrated (see Figure 19).

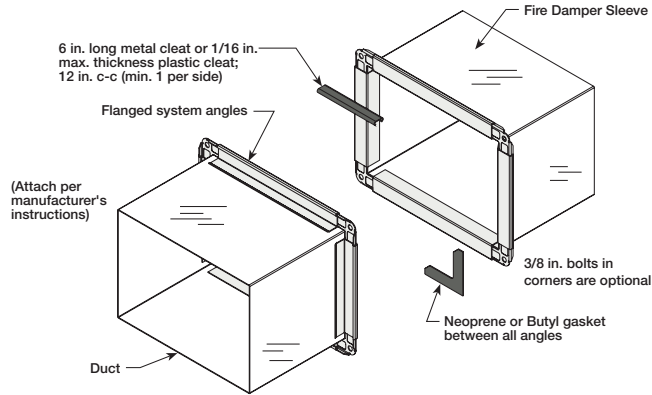


Figure 19

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. Standard 6 in. (152 mm) metal clip may be used with spacing as shown in diagram (see Figure 20 & 21). A 3/8 in. (9.5 mm) metal bolts and nuts may be used to fasten together corner pieces (see Figure 22).

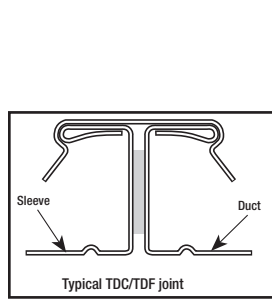


Figure 20

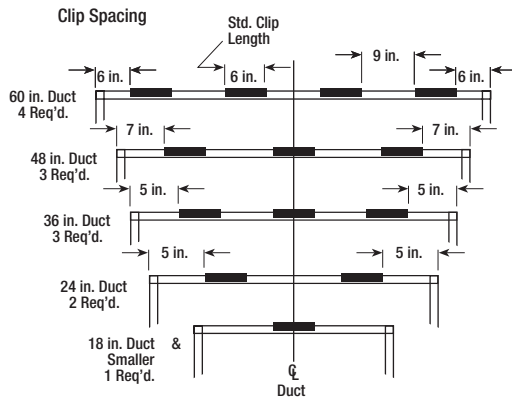


Figure 21

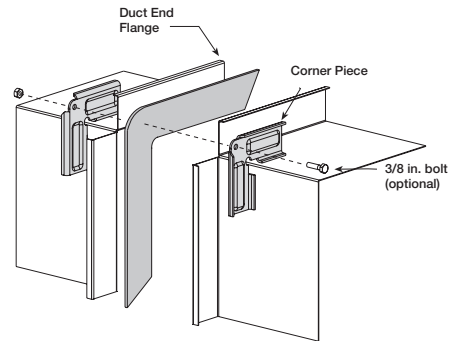


Figure 22

TDC/TDF to Manufactured Flange

Flanged connection systems manufactured by Ductmate, Durodyne, Ward, Nexus, Radiant T-35m, and MEZ can be connected to TDC and TDF system as an alternate breakaway connection. This alternate connection is covered under the UL certification of the damper. See Supplement: Duct-Sleeve Connection (IOM #468502) for more information.

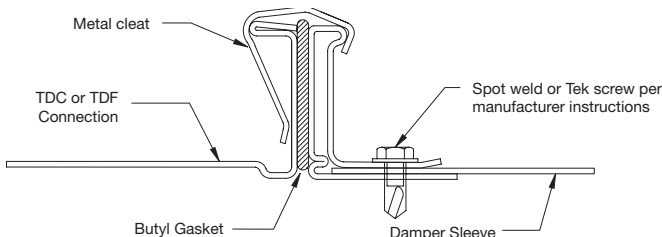


Figure 23: Metal cleat method

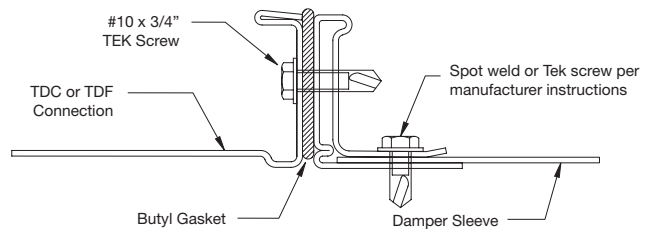


Figure 24: Screw method

Actuator and Temperature Response Device Connections

Actuator Connections

Electrical and/or pneumatic connections to damper actuators should be made in accordance with wiring and piping diagrams developed in compliance with applicable codes, ordinances and regulations (see **Electrical Guidelines**).

Temperature Response Device Connections

RRL: The RRL (resettable link device) incorporates a single thermostat. When the thermostat temperature is reached the sensor interrupts power to the actuator and the actuator's spring return mechanism causes the damper to close. Refer to **Figure 25** for wiring of the RRL thermostat.

OCI: The OCI (open or closed indicator) option contains two single pole single throw switches used to indicate the damper blade position. The switches provide a positive open and closed signal and can be used in conjunction with remote indicator lights. Refer to **Figure 25** for wiring of the OCI option.

RRL/OCI: The RRL/OCI performs the function of an RRL and OCI (see description above). Refer to **Figure 26** for wiring of the RRL/OCI option.

TOR: The TOR (temperature override device) option incorporates two thermostats with fixed settings (usually 165°F [74°C] and 350°F [177°C]). The primary sensor (the sensor with the lower temperature setting) can be bypassed by an external contact closure allowing the damper to reopen until the secondary temperature is reached (the sensor with the higher temperature setting). See **Figure 27**.

The TOR assembly contains two single pole single throw switches used to indicate damper blade position. The switches provide a positive open and closed signal and can be used in conjunction with remote indicator lights. See **Figure 27** for wiring of the TOR thermostats and indicator switches. If either the TOR or the RRL is ordered with a pneumatic actuator, an EP switch is required with an appropriate electric power circuit to allow the electric thermostat to control the pneumatic actuator.

Ratings (Figure 25, 26, 27, & 28)

Integral Switch Type: Single Pole, double throw

Electrical Capacity: 10 Amps, 1/3 hp, 120 or 240 Vac

1/2 Amp, 125 Vdc;

1/4 Amp 250 Vdc

5 Amps, 120 Vac “L” (lamp load)

1.0 Amps, 24 Vac

1.5 Amps, 24 Vdc

Temperature Limit: 165° F (standard primary sensor)

212° F (optional primary sensor)

250° F (secondary sensor)*

350° F (secondary sensor)*

* based on actuator temperature rating

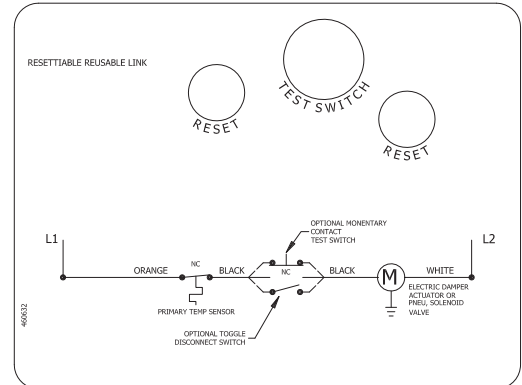


Figure 25: RRL Wiring

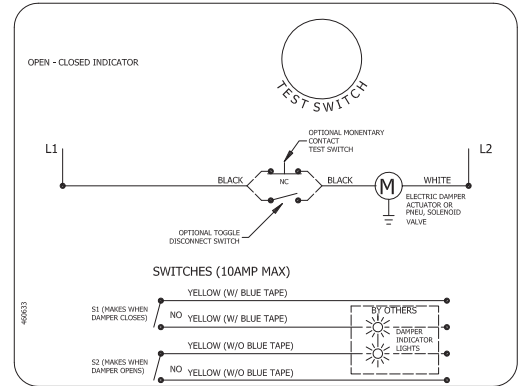


Figure 26: OCI

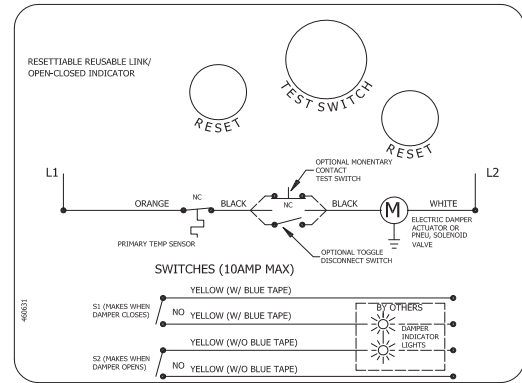


Figure 27: RRL/OCI

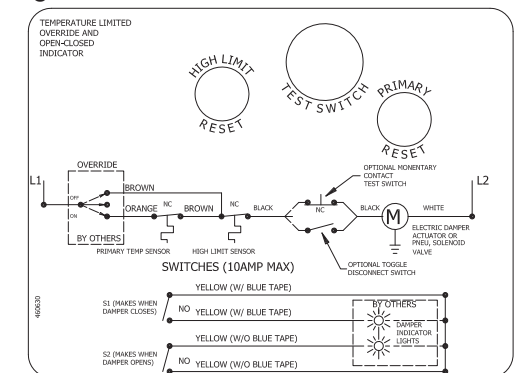


Figure 28: TOR

Damper Commissioning and Periodic Testing

The International Fire Code (IFC) requires fire dampers to be maintained in accordance with NFPA standard 80 and smoke dampers to be maintained in accordance with NFPA standard 105. NFPA 80 and 105 define the frequency and method for periodically testing life safety dampers.

NFPA 80 & 105 do not require heat to be applied to a damper's fusible link or thermostat during periodic testing. Electric or pneumatic actuated dampers are required to be tested by temporarily removing electrical or pneumatic power from the actuator to ensure the damper fully closes and then fully opens once power is restored. Mechanical and gravity operated dampers utilizing a fusible link are required to be tested by removing the fusible link and allowing the damper to fully close and then manually reopening the damper re-installing the fusible link.

Greenheck's life safety dampers shall not be tested by applying heat with uncontrollable heat sources (i.e. heat guns, torches, etc.) as this can permanently damage the thermostat or other parts of the damper.

Damper Maintenance

Dampers do not typically require maintenance as long as they are kept dry and clean. If cleaning is necessary, use mild detergents or solvents. If lubrication is desired for components such as axle bearings, jackshaft bearings and jamb seals, do not use oil-based lubricants or any other lubricants that attract contaminants such as dust.

Dampers and their actuator(s) must be maintained, cycled, and tested at minimum in accordance with:

- The latest editions of NFPA 80, 90A, 92, 101, 105, UL864, AMCA 503-03 and local codes.
- Actuator manufacturer recommendations.

Damper Troubleshooting

The following is a possible cause and correction list for common concerns with the dampers.

Symptom	Possible Cause	Corrective Action
Damper does not fully open and/or close	Frame is 'racked' causing blades to bind on jamb seals	Adjust frame such that it is square and plumb
	Actuator linkage loose	Close damper, disconnect power, adjust and tighten linkage
	Defective motor	Replace
	Screws in damper linkage	Damper installed too far into wall. Move out to line as designated on damper label
	Contaminants on damper	Clean with a non-oil based solvent (see Damper Maintenance)
RRL or TOR sensor tripped	Heat	Push reset button located on backside of RRL or TOR
Damper does not operate	No power supplied to the actuator	Add power supply

Our Commitment

As a result of our commitment to continuous improvement, Venco reserves the right to change specifications without notice.

