

INSTALLATION INSTRUCTIONS
FSD35, FSD36 AND FSD37
COMBINATION FIRE and SMOKE DAMPERS

1 1/2 HOUR UL555 RATED UL555S LEAKAGE RATED CLASS 1, 2 AND 3

APPLICATION

The FSD35, FSD36 and FSD37 are combination fire and smoke dampers designed to restrict the passage of flame and resist the passage of smoke. These combination fire and smoke dampers are designed for installation with the blades running horizontally. The standard installation is with the leading edge of the blade within the walls, partitions or masonry floors with ratings of less than 3 hours. For out of the wall or grille access installations refer to the GA or OW version of the FSD35 and FSD36.

FSD35 and FSD36 MAXIMUM UL CLASSIFIED SIZES – OPPOSED BLADES

Single section vertical or horizontal – 36"w x 48"h (914 x 1219)
Multiple section vertical – 126"w x 96"h (3200 x 2438) or 72"w x
122"h (1829 x 3099)
Multiple section horizontal – 144"w x 96"h (3658 x 2438)

FSD37 MAXIMUM UL CLASSIFIED SIZES – OPPOSED BLADES

Single section vertical – 32"w x 48"h (813 x 1219)
Single section horizontal – 30"w x 48"h (762 x 1219)
Multiple sections vertical – 120"w x 96"h (3048 x 2438)
Multiple sections horizontal – 144"w x 96"h (3658 x 2438)

Dimensions shown in parentheses () indicate millimeters.

INSTALLATION SUPPLEMENTS

Refer to the appropriate Ruskin installation instruction supplements for additional information or special requirements:

- Optional Sealant of Dampers in Fire Rated Wall or Floor Openings
- Transfer Openings and Duct Terminations
- Optional FireStop Material
- Extension of Fire and Combination Fire and Smoke Damper Sleeves
- Fire and Combination Fire and Smoke Damper Installation in Concrete Floor with Steel Deck
- Drivemate No. 14880 Breakaway Connection
- Flanged System Breakaway Connections
- Cavity Shaft Wall Metal Stud Framing
- TS150 FireStat for "Reopenable" Combination Fire and Smoke Dampers
- SP100 Switch Package
- EFL Electric Resettable "Fuse" Link
- EFL/SP100 Electric Resettable "Fuse" Link
- PFL Pneumatic Fuse Link
- DSDF Flow Rated Duct Smoke Detector
- DSDN No-Flow Rated Duct Smoke Detector



SEE COMPLETE MARKING
ON PRODUCT

California State Fire Marshal Listing No.

FSD35 – 3235-0245:0125

FSD36 – 3235-0245:0124

FSD37 – 3235-0245:0127

NYC Department Of Building MEA 252-05-E

1. Opening Clearance

The opening in the wall or floor shall be larger than the damper/sleeve assembly to permit installation or expansion. For two angle installations the opening shall be a minimum of 1/8" per foot (3 per 305) larger than the overall size of the damper/sleeve assembly. The maximum opening size shall not exceed 1/8" per foot (3 per 305) plus 2" (51), nor shall the opening be less than 1/4" (6) larger than the damper/sleeve assembly. For one angle installations, the opening shall be a minimum of 1/4" (6) to a maximum of 1" (25) larger than the overall size of the damper/sleeve assembly. The opening may be as much as 2" (51) larger than the damper/sleeve assembly if a 16ga (1.6) mounting angles is utilized.

2. Fasteners and Multiple Section Assembly

When joining multiple damper assemblies or fastening the damper to the sleeve, dampers shall be fastened with 1/4-20 (M6) bolts, number 10 (M5) screws, or 1/2" (13) long welds staggered intermittently on both sides. Space fasteners 6" (152) on center and a maximum 2" (51) from the ends of the joining sections or from each corner. When joining multiple damper assemblies, a continuous 1/8" (3) bead of Dow-Corning 700, Silastic 732 RTV, 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 sleeve in the same manner. Only one side of the damper requires caulking. Note the sealant is not required when dampers are supplied for fire damper applications only and are not required to be leakage rated. Multiple section high vertical mount dampers include a 14 gage x 5" (2 x 127) wide steel mullion plate sandwiched between the damper frames where required. The mullion plate must be the same material as the dampers.

3. Damper Sleeve

Sleeve thickness must be equal to or thicker than the duct connected to it. Sleeve gage requirements are listed in the SMACNA Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems and in NFPA90A. If a breakaway style duct/sleeve connection is not used, the sleeve shall be a minimum of 16 gage (1.6) for dampers up to 36" (914) wide by 24" (610) high and 14 gage (1.9) for dampers exceeding 36" (914) wide by 24" (610) high. Damper sleeve shall not extend more than 6" (152) beyond the fire wall or partition unless damper is equipped with an actuator and/or factory installed access door. Sleeve may extend up to 16" (406) beyond the fire wall or partition on sides equipped with actuator and/or factory installed access door. Sleeve shall terminate at both sides of wall within dimensions shown.

4. Damper Orientation

Damper is designed to operate with blades running horizontally and must be installed with center line of damper frame within the wall or floor when they are in the closed position. Use "Mount With Arrow Up" label as a guide for proper damper orientation. Horizontal mount dampers may be installed with actuator above or below the floor.

5. Mounting Angles

Mounting angles shall be a minimum of 1 1/2" x 1 1/2" x 20 gage steel (38 x 38 x 1.0). For openings in metal stud, wood stud and concrete/masonry walls of sizes 90" x 49" or 49" x 90" (2286 x 1245 or 1245 x 2286) and less mounting angles are only required on one side of the wall or top side of the floor and must be attached to both the sleeve and the wall. Mounting angles may be installed directly to the metal stud under the wall board on metal stud wall installations only. Larger openings installations require mounting angles on both sides of the partition and must be attached only to the sleeve. Mounting angles must overlap the partition a minimum of 1" (25). Do not weld or fasten angles together at corners of dampers. Ruskin fire/smoke dampers may be installed using Ruskin FAST angle for one angle installation or Ruskin PFMA for two angle installations.

a. Mounting Angle Fasteners

Sleeve: #10 bolts or screws, 3/16" (5) steel rivets or 1/2" (13) long welds.

Masonry/Wall or Floor: #10 self-tapping concrete screws. Wood/Steel Stud Wall: #10 screws

b. Mounting Angle Fastener Spacing

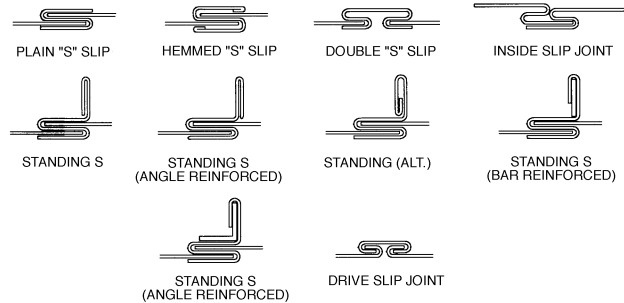
For one angle installations the sleeve fasteners shall be spaced at 6" (152) o.c. and the wall fasteners shall be spaced at 12" (305) o.c. with a minimum of 2 on each side, top and bottom. Screw fasteners used in metal stud must engage the metal stud

a minimum of 1/2" (13). Screw fasteners used in wood stud must engage the wood stud a minimum of 3/4" (19). Screw fasteners used in masonry walls or floors must engage the wall or floor a minimum of 1 1/2" (38). For two angle installations the fasteners shall be spaced at 8" (203) o.c.

6. Duct/Sleeve Connections

a. Break-away Duct/Sleeve Connections

Rectangular ducts must use one or more of the connections depicted below



A maximum of two #10 (M5) sheet metal screws on each side and the bottom, located in the center of the slip pocket and penetrating both sides of the slip pocket may be used. Connections using these slip joints on the top and bottom with flat drive slips up to 20" (508) long on the sides may also be used.

b. Round and Oval Break-away Connections

Round and flat oval break-away connections must use either a 4" (102) wide drawband or #10 (M5) sheet metal screws spaced equally around the circumference of the duct as follows:

- Duct diameters 22" (559) and smaller – maximum 3 screws.
- Duct diameters over 22" (559) and including 36" (914) – maximum 5 screws.
- Duct diameters over 36" (914) and up to and including 191" (4851) total perimeter – maximum 8 screws.

For flat oval ducts, the diameter is considered the largest (major) dimension of the duct. These connections are depicted in the SMACNA Fire, Smoke, and Radiation Damper Installation Guide.

Note: When optional sealing of these joints is desired, the following sealants may be applied in accordance with the sealant manufacturer's instructions:

Design Polymerics – DP 1010

Precision – PA2084T

Hardcast, Inc. – Iron Grip 601

Eco Duct Seal 44-52

c. Flanged Break-away Style Duct/Sleeve Connections.

Flanged connection systems manufactured by Ductmate, Nexus or Ward are approved break-away when installed as shown on the Flanged System Breakaway Connections Supplement.

TDC and TDF roll-formed flanged connections using 3/8" (10) steel bolts and nuts, and metal cleats, as tested by SMACNA, are approved break-away connections when installed as shown on the Flanged System Breakaway Connections Supplement.

d. Non-Break-away Duct/Sleeve Connections

If other duct/sleeve connections are used, the sleeve shall be a minimum of 16 gage (1.6) for dampers up to 36" (914) wide x 24" (610) high and 14 gage (2.0) for dampers 36" (914) wide x 24" (610) high.

7. Actuator Connections

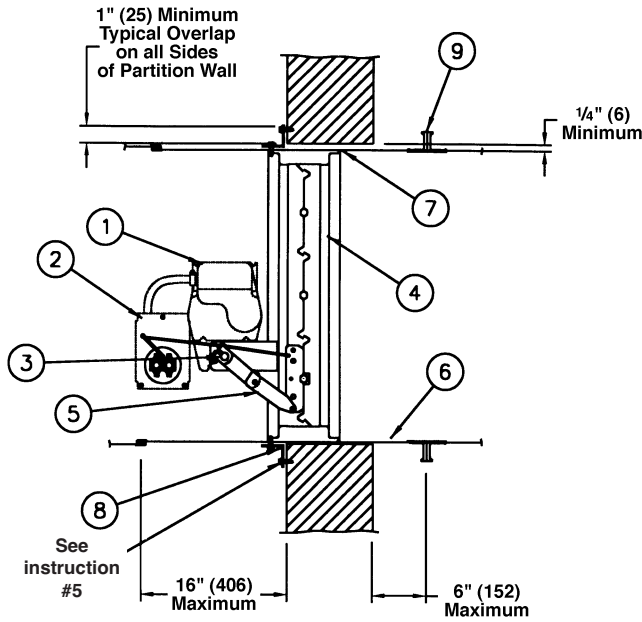
Electric and pneumatic actuators are to be connected in accordance with wiring and piping diagrams developed in compliance with applicable codes, ordinances and regulations.

8. Installation and Maintenance

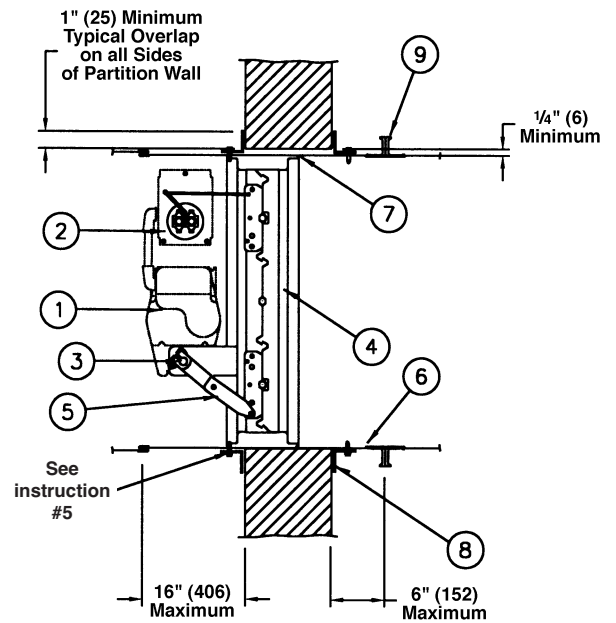
To ensure optimum operation and performance, the damper must be installed so it is square and free from racking. Each fire/smoke damper should be maintained, cycled and tested at intervals not less than every six months and in accordance with the latest editions of NFPA 90A, 92A, UL864, local codes and in accordance with actuator manufacturer recommendations. Care should be exercised to ensure that such tests are performed safely and do not cause system damage.

VERTICAL INSTALLATION

Damper may be installed with actuator on either side of the partition in accordance with the mounting label on the damper.



FAST ANGLE (ONE ANGLE) INSTALLATION
Angle may be installed on either side of the partition.



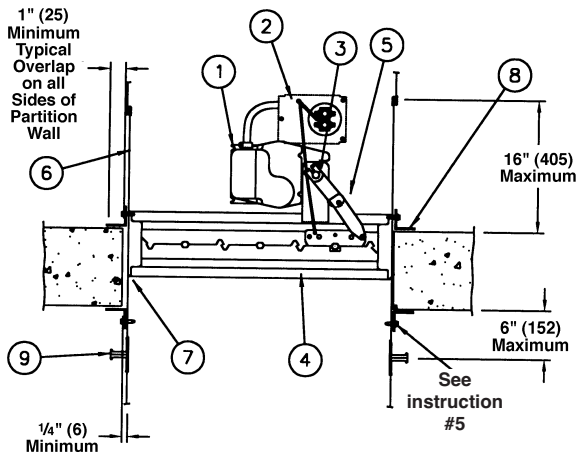
TWO ANGLE INSTALLATION
Angles are required on both sides of the partition.

ITEM	DESCRIPTION
1.	Actuator (location may vary).
2.	Optional FireStat or SP-100.
3.	Auxiliary Operating Jackshaft
4.	Damper
5.	Over-Center Link

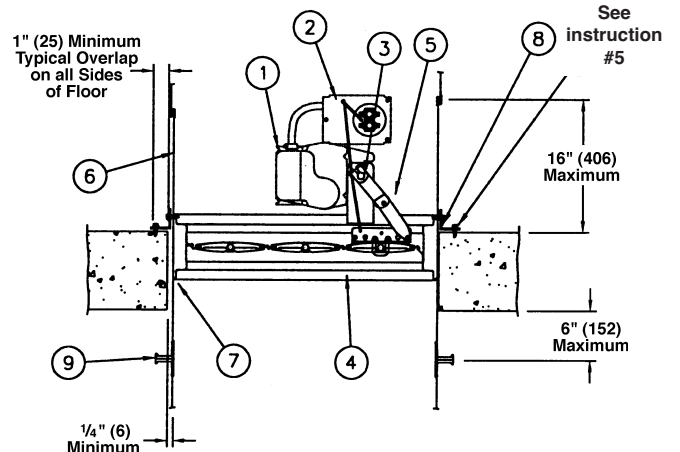
ITEM	DESCRIPTION
6.	Sleeve
7.	Caulking Material (may be on either side of damper frame).
8.	Mounting Angles (PFMA, FAST or conventional angles)
9.	Duct/sleeve connection.

HORIZONTAL INSTALLATION

Damper may be installed with actuator on either side of the floor in accordance with the mounting label on the damper.



TWO ANGLE INSTALLATION
Angles are required on both sides of the floor.



FAST ANGLE (ONE ANGLE) INSTALLATION
Angle may be installed on top of floor.

RECOMMENDED FRAMING FOR OPENINGS IN WOOD AND METAL STUD WALLS

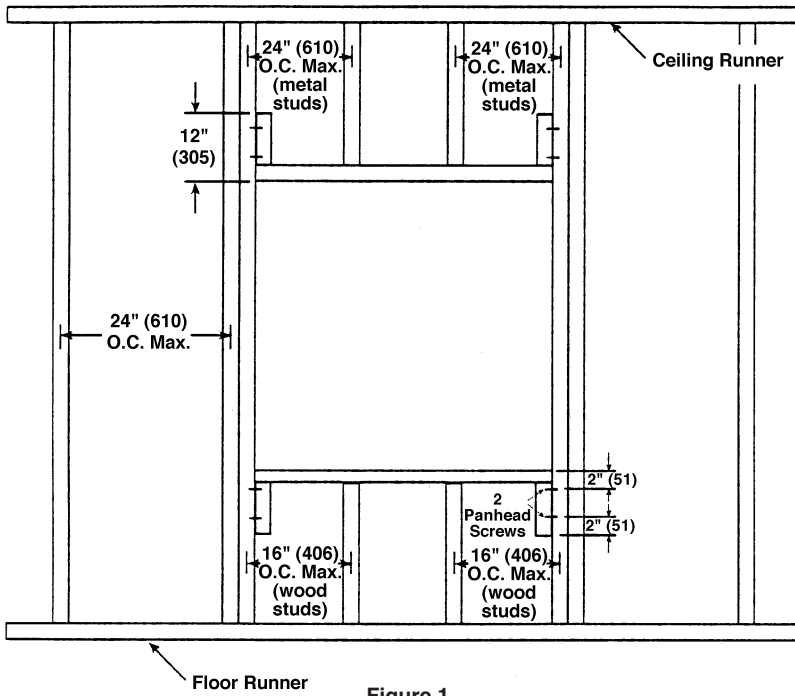


Figure 1

INSTRUCTIONS

1. Frame wall openings as shown.
2. Double vertical studs are not required for openings 36" w x 36" h (914 x 914) or smaller.
3. All construction and fasteners must meet the requirements of the appropriate wall design and/or local codes.
4. Consult the authority having jurisdiction for other acceptable framing methods.

NOTE:

The Metal Stud Construction and Wood Stud Construction figures at the bottom of the page depict mounting angles installed on both sides of the partition. A single angle may be sufficient. Refer to the instructions for single angle installation requirements.

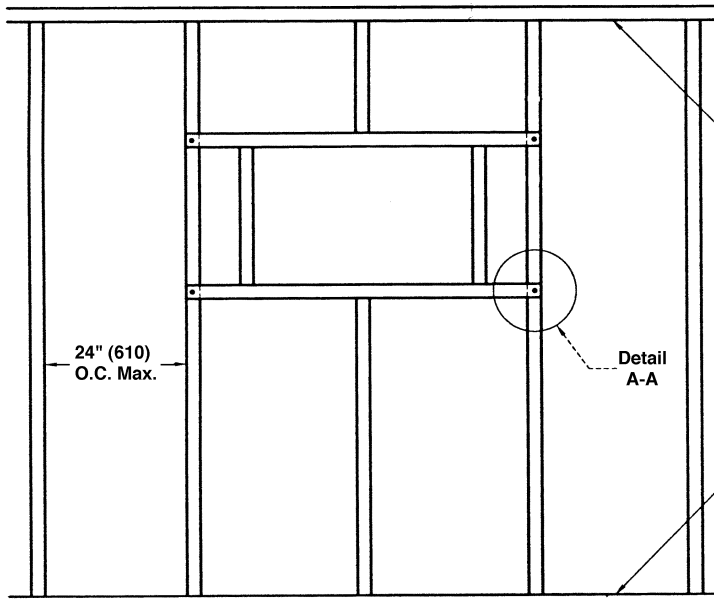


Figure 2

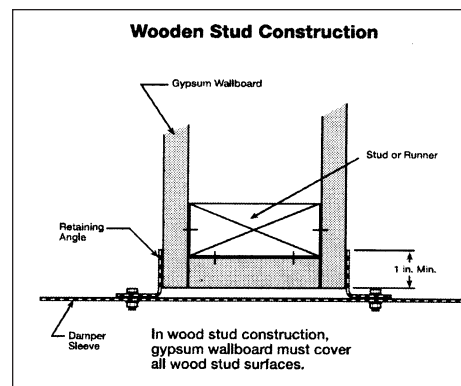
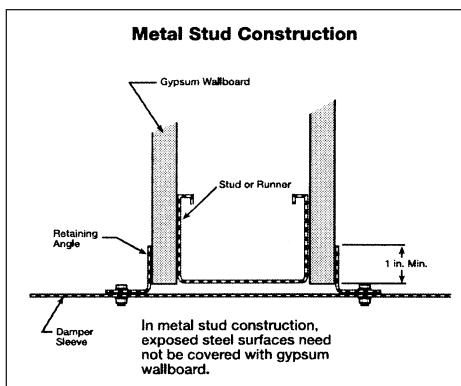
Notched Piece Bent Down

Ceiling Runner

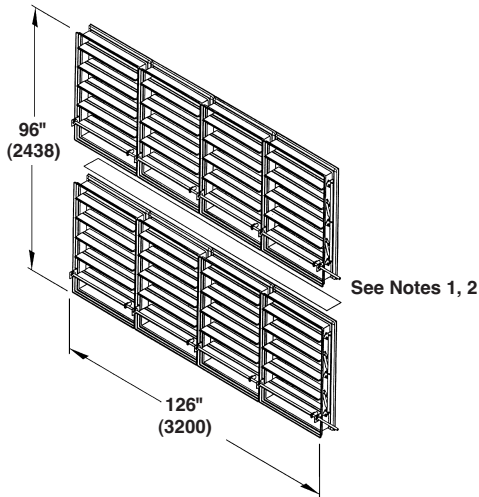
Metal Stud Framing Shown

A-A

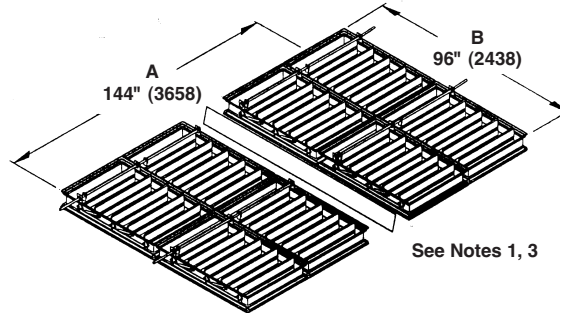
Floor Runner



**MAXIMUM UL CLASSIFIED SIZE
(Vertical Installation)
FSD36**



**MAXIMUM UL CLASSIFIED SIZE
(Horizontal Installation)
FSD36**



Notes:

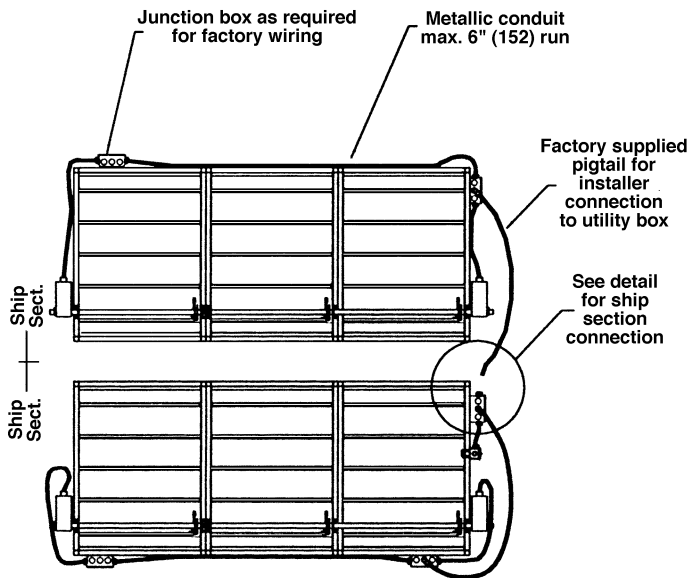
1. All multiple section dampers are constructed of equal single section sizes no greater than the maximum single section sizes indicated above.
2. Two section high dampers require a 14 gage reinforcing plate unless overall height is less than 91" (2311) and width is less than 32" (813). When using two individually sleeved units, the

sleeve acts as the reinforcing plate, therefore no plate is required.

3. Horizontal dampers over 3 sections wide and 1 section high require a 14 gage reinforcing plate. When using two individually sleeved units, the sleeve acts as the reinforcing plate, therefore no plate is required.

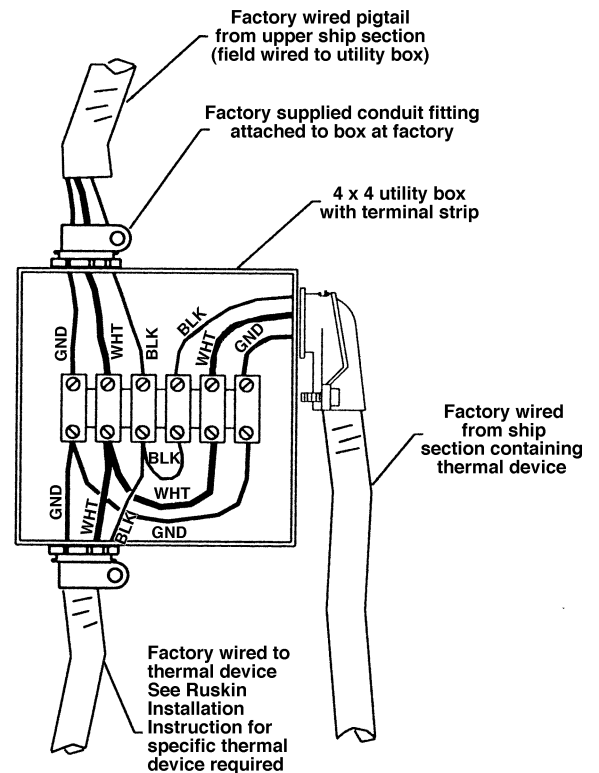
MULTIPLE ACTUATOR DAMPER ASSEMBLIES

Damper assemblies requiring more than one actuator must have all actuators wired to single heat actuated device (EFL or TS150) as shown below. This is required for simultaneous closure of all sections.



TYPICAL SHIP SECTION DETAIL

Note: All actuators must be wired to single thermal device.



SHIP SECTION FIELD CONNECTION

Note: Installer to run supply power to damper assembly thru thermal device.

RUSKIN[®]

3900 Dr. Greaves Rd.
Kansas City, MO 64030
(816) 761-7476
FAX (816) 765-8955
www.ruskin.com