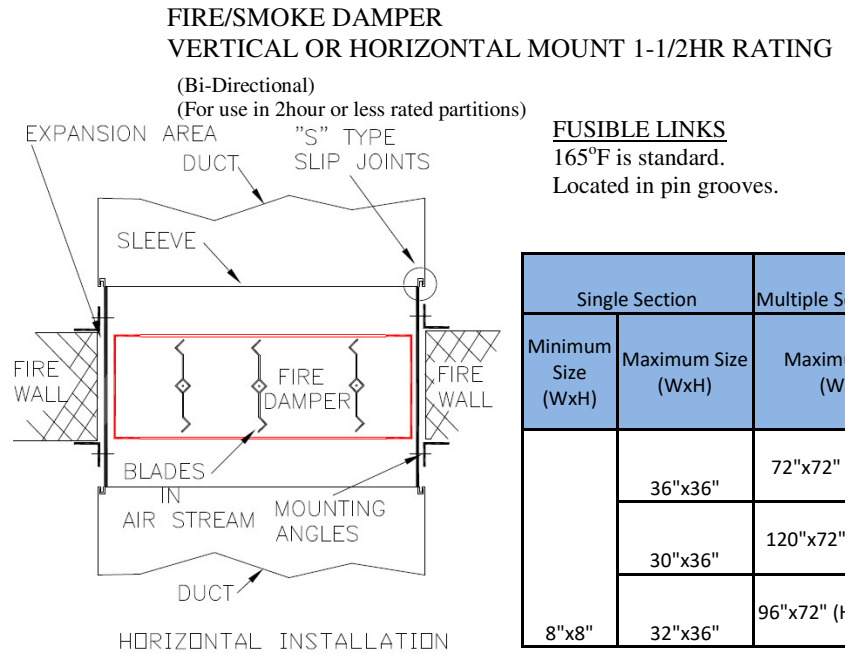
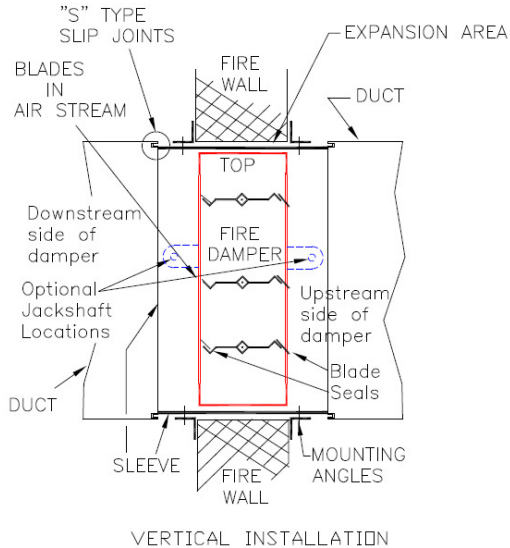




INSTALLATION INSTRUCTIONS

1-1/2 HOUR FIRE/SMOKE DAMPER



FUSIBLE LINKS
165°F is standard.
Located in pin grooves.

| Single Section | | Multiple Section |
|--------------------|--------------------|----------------------|
| Minimum Size (WxH) | Maximum Size (WxH) | Maximum Size (WxH) |
| 8"x8" | 36"x36" | 72"x72" (vertical) |
| | 30"x36" | 120"x72" (vertical) |
| | 32"x36" | 96"x72" (Horizontal) |

Damper shall be fastened to sleeve with No.10 or No.8 x 3/4" sheet metal screws on 6" centers (max). No further than 2" from either end. See notes 2 and 3 regarding duct connections.

Angles shall be a minimum of 1-1/2" x 1-1/2" x 1/16" and fastened to the sleeve and damper only. Must be fastened on all (4) sides with 1/4" bolts, 1/2" long welds or No.10 or No.8 sheet metal screws on 8" maximum centers. (See Note #4 for expansion clearance and overlap.)

Angles shall not be fastened to each other at the corners or fastened to the fire wall.

Angles may be reversed when diffusers or grills require flush mounting.

Installation per NFPA90A, UL555 and SMACNA Fire Smoke and Radiation Installation Guide.

FASTENERS MUST BE PLACED WHERE THEY DO NOT INTERFERE WITH DAMPER OPERATION

Notes:

- Sleeves shall be of the same gauge or heavier than the duct to which it is attached. Gauges shall conform to SMACNA or ASHRAE standards.
- When the follow sleeve connections are used, the minimum gauge of the sleeve shall be 16Ga on dampers not exceeding 36"W x 24"H and 14Ga on larger dampers.
 - Angle reinforced standing seam.
 - Angle reinforced pocket lock.
 - Companion angles.
 - Metal fasteners approximately 16" on centers.
- The following breakaway sleeve connections may be used on all systems:
 - Plain "S" Slip
 - Hemmed "S" Slip
 - Bar Slip
 - Standing "S" Slip
 - Reinforced Bar Slip
 - Angle Slip
 - Inside Slip Joint
 - Double "S" Slip
- Clearance for expansion of 1/8" per foot of sleeve dimension is required. Angles should lap masonry a minimum of 1" around the entire opening.
- Maximum sleeve extension from the wall or floor opening is 6" on the damper side without actuator. Maximum sleeve extension from the wall or floor opening is 16" on the damper side with actuator.
- Dampers may be installed in wall or partition (masonry, gypsum wallboard) or concrete floor.
- The connection ducts shall not be continuous, but shall terminate at the sleeve or frame.
- Dampers are supplied with factory mounted actuators designed to close automatically upon loss of power.
- The jackshaft side of the damper may be installed either "upstream" or "downstream".
- A continuous bead of Dow Corning RTV-732, Dow Corning 999A, GE-1200 Silicone Rubber Sealant (or approved equal) shall be applied between the damper and the sleeve for its entire profile on one side of the installation as a minimum.
- Installed damper units require operational checks upon completion to ensure proper functioning.
- An access door is a NFPA requirement for damper inspection and testing.
- For use in static and dynamic systems up to the maximum rated temperature, velocity and water gauge.
- Electric actuator connections shall conform to the National Electric Code.
- Pneumatic actuators require metallic airline connections, and a minimum of 20PSI supply air. (Not to exceed 30PSI)
- CAUTION: THE HEAVY DAMPER CLOSURE SPRING IS UNDER LOAD.**



INSTALLATION INSTRUCTIONS

3 HOUR FIRE/SMOKE DAMPER

Damper shall be fastened to sleeve with No.10 or No.8 x 3/4" sheet metal screws on 6" centers (max). No further than 2" from either end.
See notes 2 and 3 regarding duct connections.
Angles shall be a minimum of 1-1/2" x 1-1/2" x 1/16" and fastened to the sleeve and damper only. Must be fastened on all (4) sides with 1/4" bolts, 1/2" long welds or No.10 or No.8 sheet metal screws on 8" maximum centers. (See Note #4 for expansion clearance and overlap.)
Angles shall not be fastened to each other at the corners or fastened to the fire wall.
Angles may be reversed when diffusers or grills require flush mounting.
Installation per NFPA90A, UL555 and SMACNA Fire Smoke and Radiation Installation Guide.

FASTENERS MUST BE PLACED WHERE THEY DO NOT INTERFERE WITH DAMPER OPERATION

Notes:

- Sleeves shall be 16 gauge or heavier than the duct to which it is attached. Gauges shall conform to SMACNA or ASHRAE standards.
- When the follow sleeve connections are used, the minimum gauge of the sleeve shall 14 gauge.
 - Angle reinforced standing seam.
 - Angle reinforced pocket lock.
 - Companion angles.
 - Metal fasteners approximately 16" on centers.
- The following breakaway sleeve connections may be used on all systems:

| | |
|----------------------|------------------------|
| a. Plain "S" Slip | e. Reinforced Bar Slip |
| b. Hemmed "S" Slip | f. Angle Slip |
| c. Bar Slip | g. Inside Slip Joint |
| d. Standing "S" Slip | h. Double "S" Slip |
- Clearance for expansion of 1/8" per foot of sleeve dimension is required. Angles should lap masonry a minimum of 1" around the entire opening.
- For multiple section damper assemblies larger than 72" x 72", refer to the mullion installation instruction sheet for fire dampers.
- Maximum sleeve extension from the wall or floor opening is 6" on the damper side without actuator.
Maximum sleeve extension from the wall or floor opening is 16" on the damper side with actuator.
- Dampers may be installed in wall or partition (masonry, gypsum wallboard) or concrete floor.
- The connection ducts shall not be continuous, but shall terminate at the sleeve or frame.
- Dampers are supplied with factory mounted actuators designed to close automatically upon loss of power.
- The jackshaft side of the damper may be installed either "upstream" or "downstream".
- A continuous bead of Dow Corning RTV-732, Dow Corning 999A, GE-1200 Silicone Rubber Sealant (or approved equal) shall be applied between the damper and the sleeve for its entire profile on one side of the installation as a minimum.
- Installed damper units require operational checks upon completion to ensure proper functioning.
- An access door is a NFPA requirement for damper inspection and testing.
- For use in static and dynamic systems up to the maximum rated temperature, velocity and water gauge.
- Electric actuator connections shall conform to the National Electric Code.
- Pneumatic actuators require metallic airline connections, and a minimum of 20PSI supply air. (Not to exceed 30PSI)
- CAUTION: THE HEAVY DAMPER CLOSURE SPRING IS UNDER LOAD.**

MULTIPLE SECTION DAMPER VERTICAL MOUNT 3HR RATING

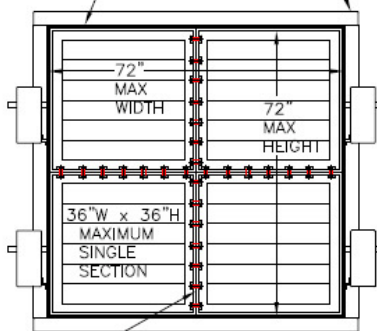
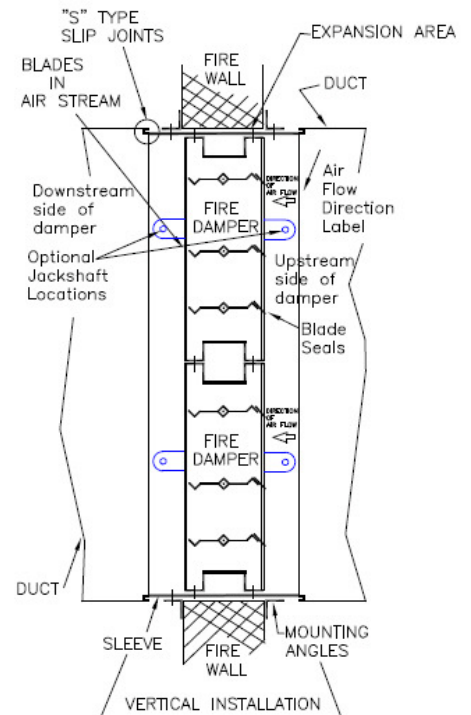
(For use in 4 Hour or less rated partitions)

| MAXIMUM MULTIPLE SECTION SINGLE UNITS IN INCHES | |
|--|--------|
| Width | Height |
| 72 | 72 |

FUSIBLE LINKS
Temperature rating is not to exceed 250°F. 165°F is standard. Located in pin grooves.

| MAXIMUM SINGLE SECTION SINGLE UNITS IN INCHES | | |
|--|-------|--------|
| | Width | Height |
| Vertical/ Horizontal | 36 | 36 |
| Vertical | 30 | 48 |

*Each single section damper shall be supplied with an independent motor operator.



DAMPER FRAME TO DAMPER FRAME ASSEMBLY 1/4" BOLTS AND NUTS ON 8" CENTERS MAXIMUM.





INSTALLATION INSTRUCTIONS

FIRE/SMOKE DAMPER

Damper shall be fastened to sleeve with No.10 or No.8 x 3/4" sheet metal screws on 6" centers (max). No further than 2" from either end.
See notes 2 and 3 regarding duct connections.
Angles shall be a minimum of 1-1/2" x 1-1/2" x 1/16" and fastened to the sleeve and damper only. Must be fastened on all (4) sides with 1/4" bolts, 1/2" long welds or No.10 or No.8 sheet metal screws on 8" maximum centers. (See Note #4 for expansion clearance and overlap.)
Angles shall not be fastened to each other at the corners or fastened to the fire wall.
Angles may be reversed when diffusers or grills require flush mounting.
Installation per NFPA90A, UL555 and SMACNA Fire Smoke and Radiation Installation Guide.

FASTENERS MUST BE PLACED WHERE THEY DO NOT INTERFERE WITH DAMPER OPERATION

Notes:

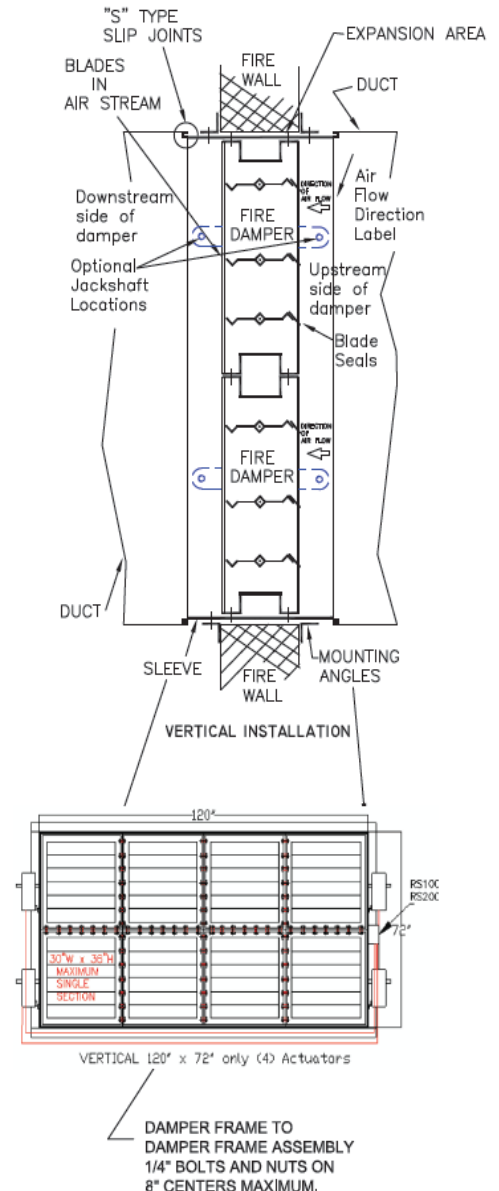
- Sleeves shall be 16 gauge or heavier than the duct to which it is attached. Gauges shall conform to SMACNA or ASHRAE standards.
- When the follow sleeve connections are used, the minimum gauge of the sleeve shall 14 gauge.
 - Angle reinforced standing seam.
 - Angle reinforced pocket lock.
 - Companion angles.
 - Metal fasteners approximately 16" on centers.
- The following breakaway sleeve connections may be used on all systems:

| | |
|----------------------|------------------------|
| a. Plain "S" Slip | e. Reinforced Bar Slip |
| b. Hemmed "S" Slip | f. Angle Slip |
| c. Bar Slip | g. Inside Slip Joint |
| d. Standing "S" Slip | h. Double "S" Slip |
- Clearance for expansion of 1/8" per foot of sleeve dimension is required. Angles should lap masonry a minimum of 1" around the entire opening.
- For multiple section damper assemblies larger than 72" x 72", refer to the mullion installation instruction sheet for fire dampers.
- Maximum sleeve extension from the wall or floor opening is 6" on the damper side without actuator.
Maximum sleeve extension from the wall or floor opening is 16" on the damper side with actuator.
- Dampers may be installed in wall or partition (masonry, gypsum wallboard) or concrete floor.
- The connection ducts shall not be continuous, but shall terminate at the sleeve or frame.
- Dampers are supplied with factory mounted actuators designed to close automatically upon loss of power.
- The jackshaft side of the damper may be installed either "upstream" or "downstream".
- A continuous bead of Dow Corning RTV-732, Dow Corning 999A, GE-1200 Silicone Rubber Sealant (or approved equal) shall be applied between the damper and the sleeve for its entire profile on one side of the installation as a minimum.
- Installed damper units require operational checks upon completion to ensure proper functioning.
- An access door is a NFPA requirement for damper inspection and testing.
- For use in static and dynamic systems up to the maximum rated temperature, velocity and water gauge.
- Electric actuator connections shall conform to the National Electric Code.
- Pneumatic actuators require metallic airline connections, and a minimum of 20PSI supply air. (Not to exceed 30PSI)
- CAUTION: THE HEAVY DAMPER CLOSURE SPRING IS UNDER LOAD.**

FUSIBLE LINKS
Temperature rating is not to exceed 250°F.
165°F is standard.
Located in pin

MULTIPLE SECTION DAMPER VERTICAL MOUNT 1-1/2HR RATING

| Single Section | | Multiple Section |
|--------------------|--------------------|----------------------|
| Minimum Size (WxH) | Maximum Size (WxH) | Maximum Size (WxH) |
| 8"x8" | 36"x36" | 72"x72" (vertical) |
| | 30"x36" | 120"x72" (vertical) |
| | 32"x36" | 96"x72" (Horizontal) |

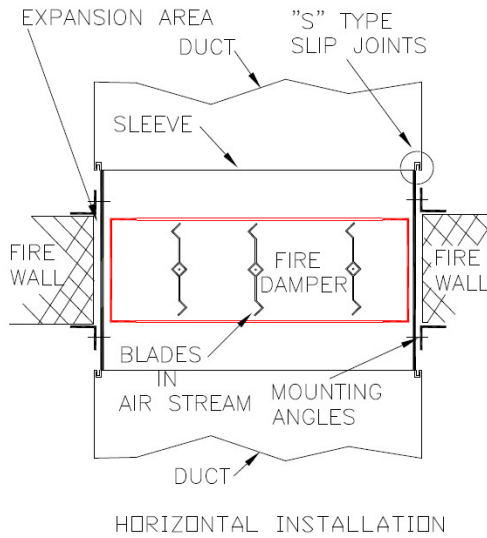
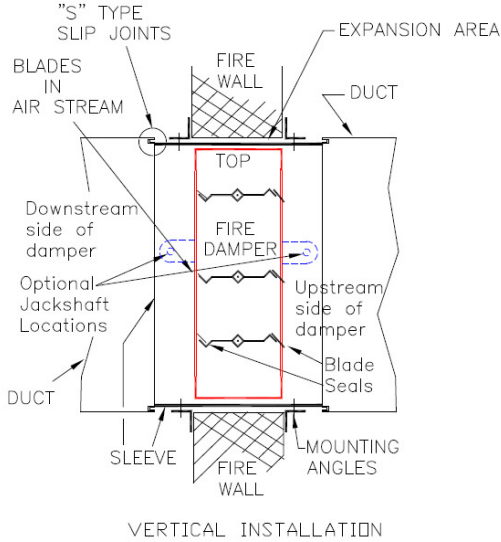




INSTALLATION INSTRUCTIONS

3HOUR FIRE/SMOKE DAMPER

**MULTIPLE SECTION DAMPER
VERTICAL or HORIZONTAL MOUNT 3HR RATING**



| MAXIMUM MULTIPLE SECTION | | |
|---|--------|--------|
| SINGLE UNITS IN INCHES | | |
| Width | Height | |
| 72 | 72 | |
| MAXIMUM SINGLE SECTION (MODEL:FSDL-111) | | |
| SINGLE UNITS IN INCHES | | |
| | Width | Height |
| Vertical/ Horizontal | 36 | 36 |
| Vertical | 30 | 48 |

*Each single section damper shall be supplied with an independent motor operator.

FUSIBLE LINKS
Temperature rating is not to exceed 250°F. 165°F is standard. Located in pin grooves.

Damper shall be fastened to sleeve with No.10 or No.8 x 3/4" sheet metal screws on 6" centers (max). No further than 2" from either end. See notes 2 and 3 regarding duct connections.

Angles shall be a minimum of 1-1/2" x 1-1/2" x 1/16" and fastened to the sleeve and damper only. Must be fastened on all (4) sides with 1/4" bolts, 1/2" long welds or No.10 or No.8 sheet metal screws on 8" maximum centers. (See Note #4 for expansion clearance and overlap.)

Angles shall not be fastened to each other at the corners or fastened to the fire wall.

Angles may be reversed when diffusers or grills require flush mounting.

Installation per NFPA90A, UL555 and SMACNA Fire Smoke and Radiation Installation Guide.

FASTENERS MUST BE PLACED WHERE THEY DO NOT INTERFERE WITH DAMPER OPERATION

Notes:

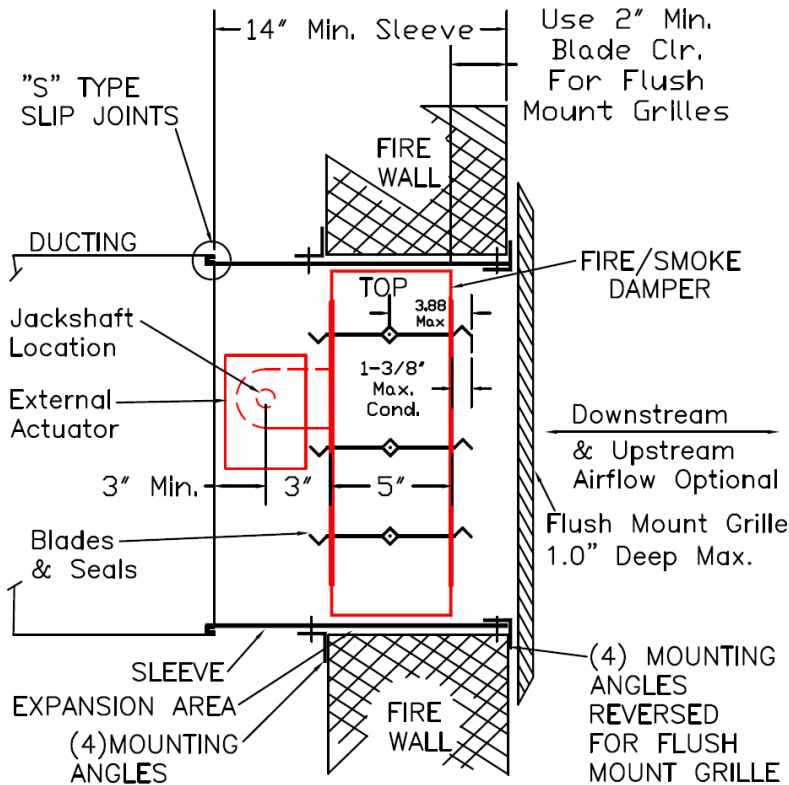
- Sleeves shall be of the same gauge or heavier than the duct to which it is attached. Gauges shall conform to SMACNA or ASHRAE standards.
- When the follow sleeve connections are used, the minimum gauge of the sleeve shall be 16Ga on dampers not exceeding 36"W x 24"H and 14Ga on larger dampers.
 - Angle reinforced standing seam.
 - Angle reinforced pocket lock.
 - Companion angles.
 - Metal fasteners approximately 16" on centers.
- The following breakaway sleeve connections may be used on all systems:
 - Plain "S" Slip
 - Hemmed "S" Slip
 - Bar Slip
 - Standing "S" Slip
 - Reinforced Bar Slip
 - Angle Slip
 - Inside Slip Joint
 - Double "S" Slip
- Clearance for expansion of 1/8" per foot of sleeve dimension is required. Angles should lap masonry a minimum of 1" around the entire opening.
- Maximum sleeve extension from the wall or floor opening is 6" on the damper side without actuator. Maximum sleeve extension from the wall or floor opening is 16" on the damper side with actuator.
- Dampers may be installed in wall or partition (masonry, gypsum wallboard) or concrete floor.
- The connection ducts shall not be continuous, but shall terminate at the sleeve or frame.
- Dampers are supplied with factory mounted actuators designed to close automatically upon loss of power.
- The jackshaft side of the damper may be installed either "upstream" or "downstream".
- A continuous bead of Dow Corning RTV-732, Dow Corning 999A, GE-1200 Silicone Rubber Sealant (or approved equal) shall be applied between the damper and the sleeve for its entire profile on one side of the installation as a minimum.
- Installed damper units require operational checks upon completion to ensure proper functioning.
- An access door is a NFPA requirement for damper inspection and testing.
- For use in static and dynamic systems up to the maximum rated temperature, velocity and water gauge.
- Electric actuator connections shall conform to the National Electric Code.
- Pneumatic actuators require metallic airline connections, and a minimum of 20PSI supply air. (Not to exceed 30PSI)
- CAUTION: THE HEAVY DAMPER CLOSURE SPRING IS UNDER LOAD.**





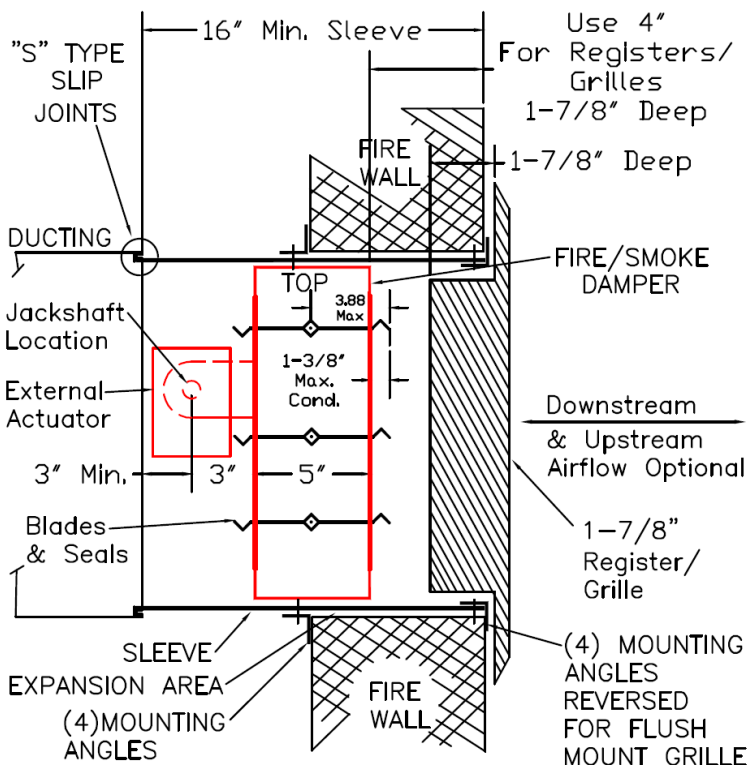
INSTALLATION INSTRUCTIONS

FIRE/ SMOKE DAMPER



Vertical & Horizontal installation with flush mount grille.

Note:
Installation fasteners must not interfere with damper operation and sealing.



FIRE/ SMOKE DAMPER- EXTERNAL MOUNT MOTORS

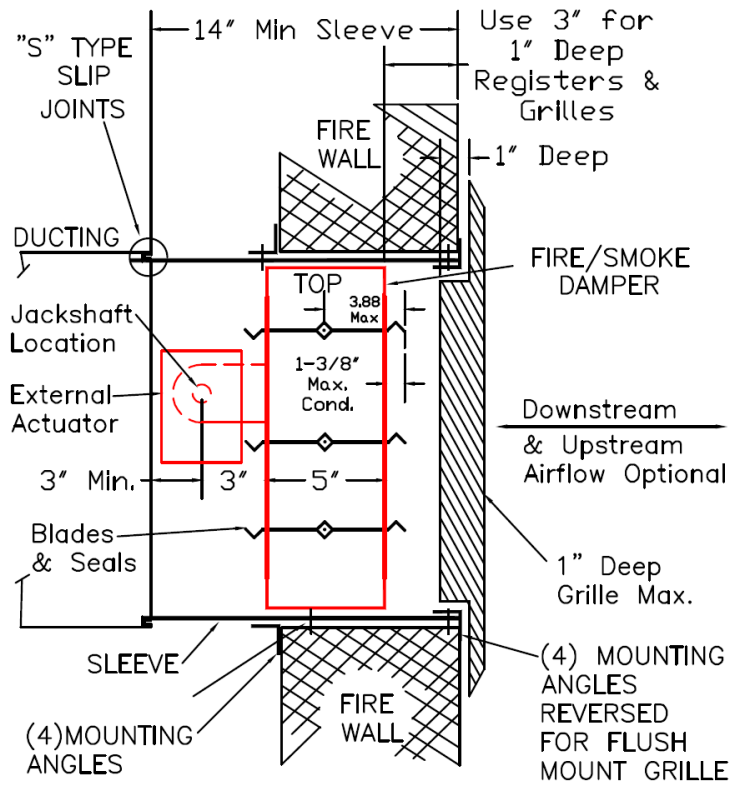
Minimum sleeve for vertical & horizontal installation with up to 1-7/8" deep registers/grills

Note:
Installation fasteners must not interfere with damper operation and sealing.





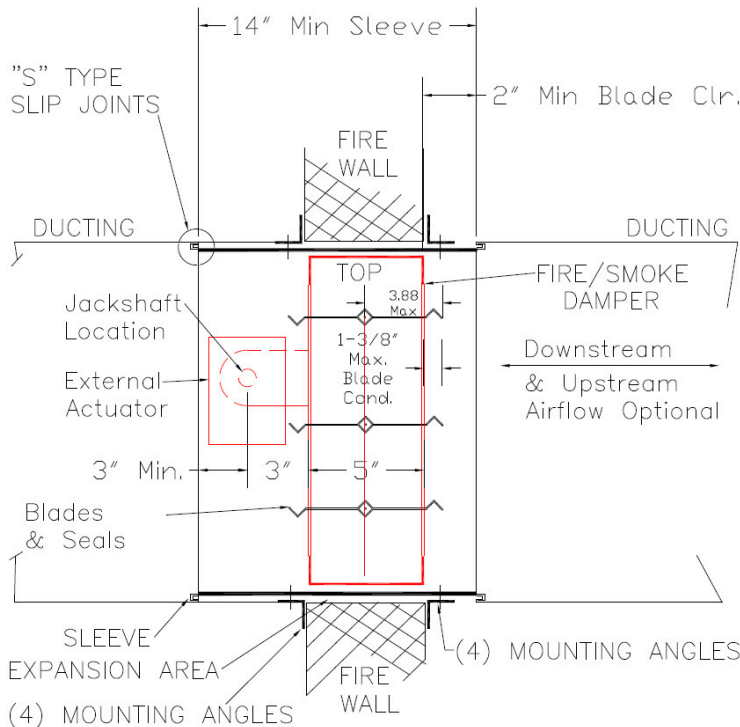
INSTALLATION INSTRUCTIONS



FIRE/ SMOKE DAMPER
FSD-111-1-PB
FSD-111-2-PB
FSD-111-3-PB

Minimum sleeve for vertical & horizontal installation with up to 1' deep registers/ grilles

Note:
Installation fasteners must not interfere with damper operation and sealing.



FIRE/ SMOKE DAMPER

Minimum sleeve for vertical & horizontal installation with standard ducting both sides

Note:
Installation fasteners must not interfere with damper operation and sealing.

