RUSKIN®

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INSTALLATION INSTRUCTIONS

DFD-LP LOW PROFILE LOW PRESSURE DROP DYNAMIC RATED FIRE DAMPER

1½ HOUR RATING FOR USE IN DYNAMIC AND STATIC SYSTEMS

APPLICATION

The DFD-LP dynamic fire damper is designed for use in dynamic (fans on) or static (fan off) systems. The dampers are designed to operate with the blades running horizontally. The standard application is with the leading edge of the closed blade within the wall or masonry floor.

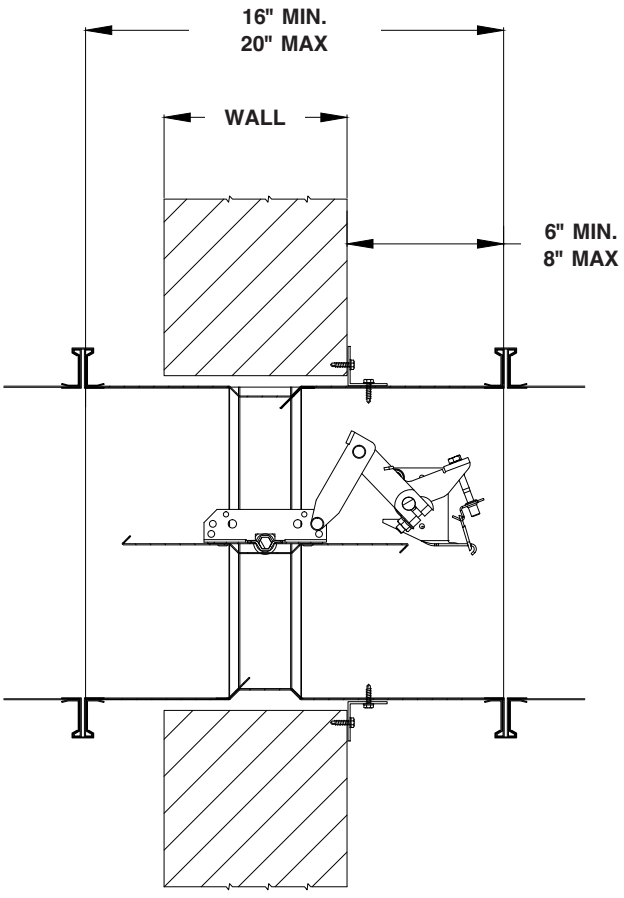
DYNAMIC FIRE DAMPERS

Use in Dynamic (fans on) or Static (fans off) Systems

DFD-LP MAXIMUM UL CLASSIFIED SIZES

Single section vertical and horizontal installation
24"w x 14"h (610 x 356)

Dimensions shown in parentheses ( ) indicate millimeters.



INSTALLATION SUPPLEMENTS

Refer to the 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 installation
- Extension of Fire and Combination Fire and Smoke Damper Sleeves
- Fire and Combination Fire and Smoke Damper Installation in Concrete Floor with Steel Deck
- Flanged System Breakaway Connections
- Cavity Shaft Wall Metal Stud Framing
- SP100 Switch Package

INSTALLATION VIDEOS

Metal Stud Framing Installation
Wood Stud Framing Installation
3 Sided Angle Installation
Metal Stud Installation After Drywall
Metal Stud Installation Before Drywall
Wood Stud Installation Detail

SEE COMPLETE MARKING ON PRODUCT

1. Opening Clearance

The opening in the wall or floor shall be larger than the damper/sleeve assembly to permit installation and 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.

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.

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 blades 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 the jackshaft 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 and 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 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 wallboard 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

To 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.

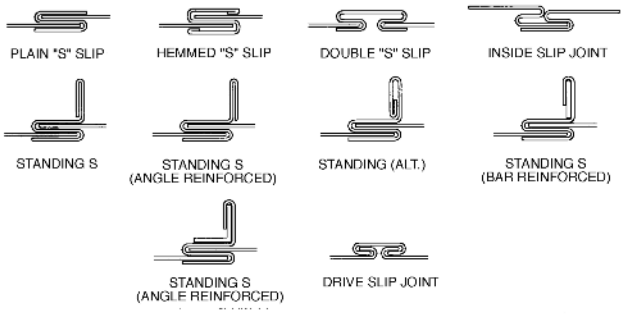
b. Mounting Angle Fastener Spacing

For one angle installations the sleeve fasteners shall be spaced at 6" (152) o.c. and the wall or floor fasteners shall be spaced at 12" (305) o.c. with a minimum of 2 fasteners 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 Systems 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 Systems Breakaway Connections Supplement.

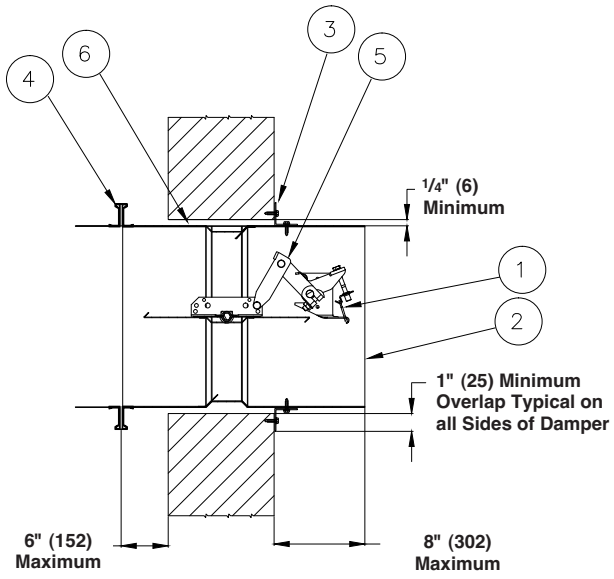
d. Non-Break-away Duct/Sleeve Connections

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.

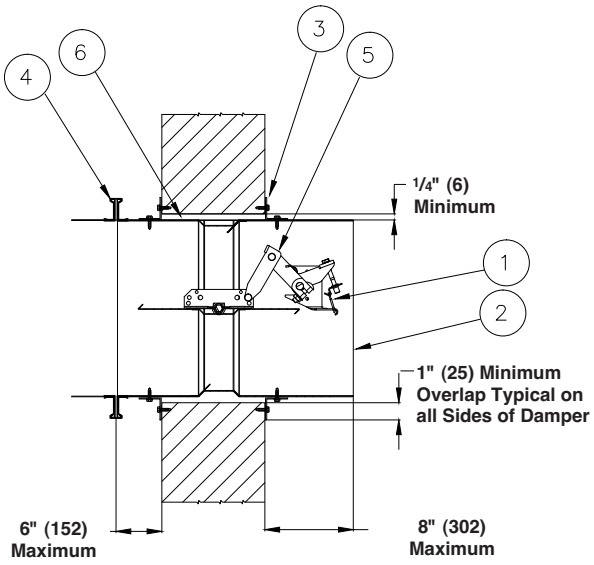
7. Installation and Maintenance

To ensure optimum operation and performance, the damper must be installed so it is square and free from racking. Do not compress or stretch the damper frame into the duct or opening. Lift or handle the damper using sleeve or frame. Do not lift damper using blades or jackshaft. Dampers must be maintained, cycled and tested in accordance with the latest editions of NFPA 80, 90A, 92A, 92B, 105, UL864, AMCA 503 and local codes. Care should be exercised to ensure that such tests are performed safely and do not cause system damage.

VERTICAL INSTALLATION



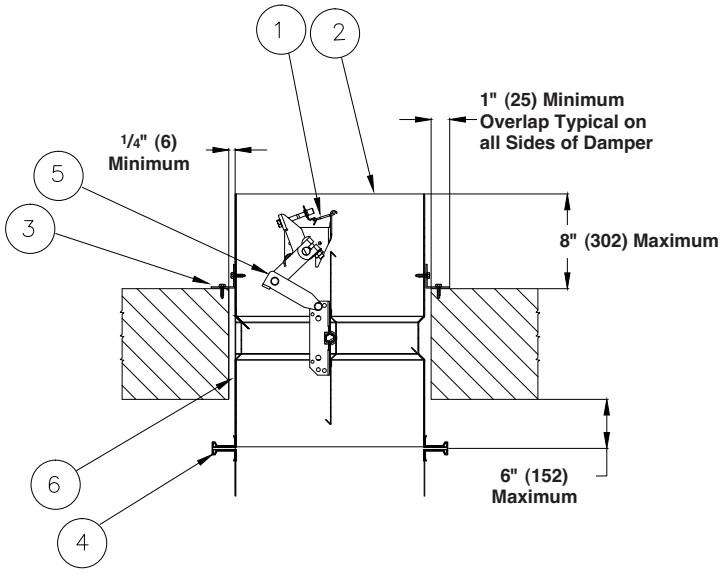
FAST ANGLE (ONE ANGLE) INSTALLATION
Angle may be installed on either side of the partition.



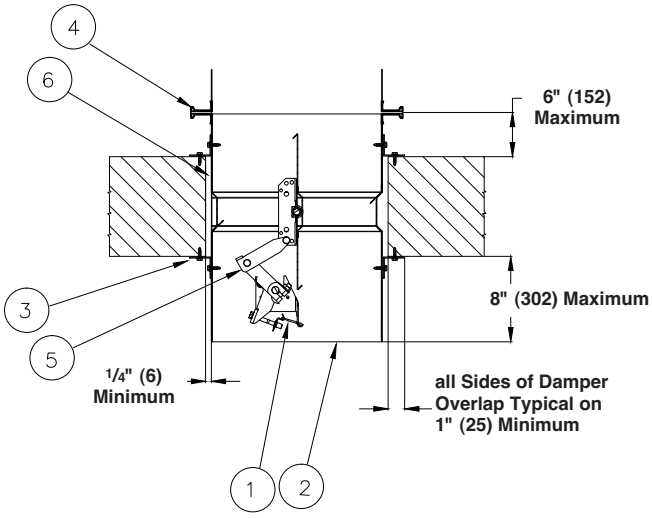
TWO ANGLE INSTALLATION
Angles are required on both sides of the partition.

ITEM	DESCRIPTION
1.	Fusible Link Assembly
2.	Damper Frame/Sleeve
3.	Mounting Angles
4.	Breakaway Connection
5.	Over-center Link
6.	Opening Clearance

HORIZONTAL INSTALLATION



UNITS WITH ONE ANGLE
TOP SIDE OF MASONRY FLOOR
Angles may be installed on top of the floor.



UNITS WITH ANGLE
BOTH SIDES MASONRY FLOOR
Angles are required on both sides of the floor.

IITEM	DESCRIPTION
1.	Fusible Link Assembly
2.	Damper Frame/Sleeve
3.	Mounting Angles
4.	Breakaway Connection
5.	Over-center Link
6.	Opening Clearance

RECOMMENDED FRAMING FOR OPENINGS IN WOOD AND METAL STUD WALLS

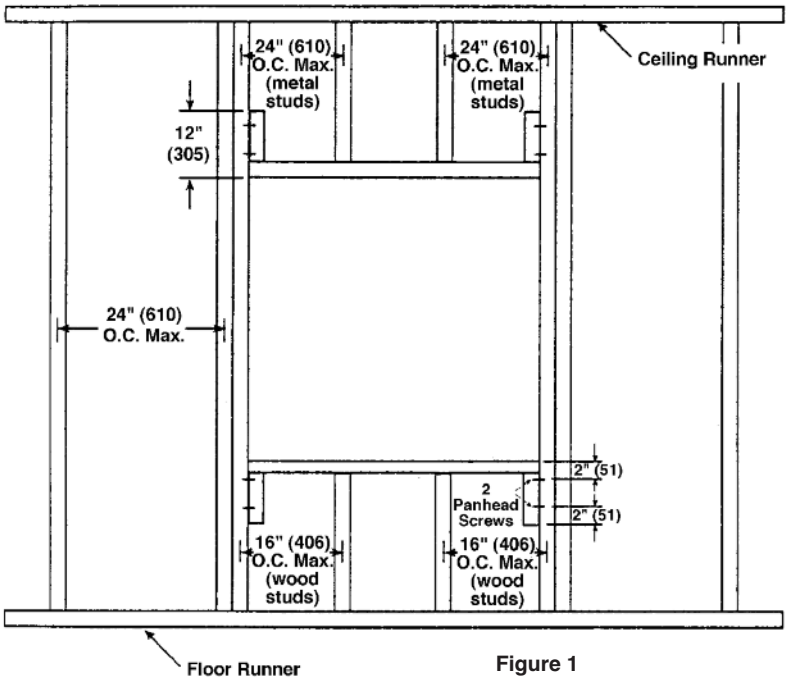
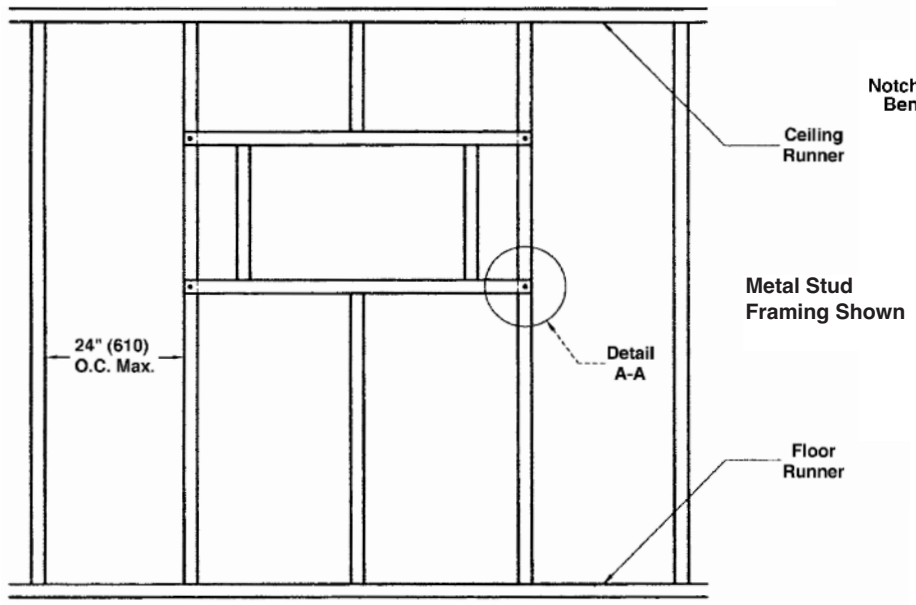


Figure 1

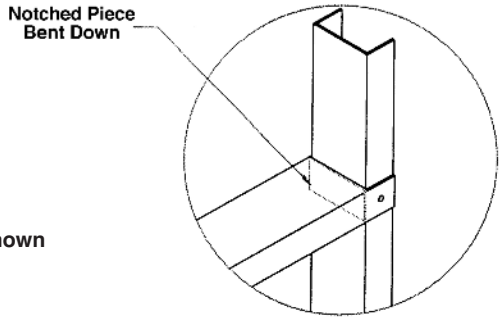
INSTRUCTIONS

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.

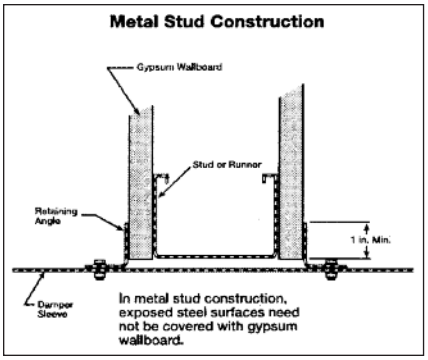


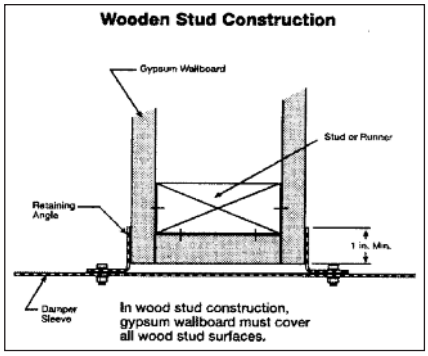
Metal Stud
Framing Shown



A-A

Figure 2





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