

CFD(R)2, 3, 3.5 and 4

Installation Instructions

Ceiling Dampers



APPLICATION

Models CFD(R)2, CFD(R)3, CFD(R)3.5, CFD4 and CFD(R)5 are UL labeled ceiling radiation dampers. When installed as shown, they provide appropriate protection for air inlet or outlet penetrations in the ceiling membrane of floor/ceiling and roof/ceiling assemblies with fire resistance ratings of up to 3 hours. These ceiling dampers are used in lieu of "hinged blade" dampers shown in some designs in the UL Fire Resistance Directory (FRD).

SYSTEM COMPONENTS

The ceiling damper and associated components (air devices, ducts, duct drops, hangar wire, etc.) must be constructed of steel. Flexible duct, if used, must be Class I or Class O type and bear the UL listing mark and be retained by 16 SWG minimum steel wire around the damper frame. The installations and air devices shown in these instructions illustrate general arrangements only. Installation must incorporate applicable requirements for the specific floor/ceiling or roof/ceiling construction in the UL Fire Resistance Directory.

CEILING PENETRATIONS

Ceiling penetrations should be located within ceiling tiles or panels without necessitating cuts in the ceiling suspension main runners or cross tees. If required, a maximum of one runner or cross tee may be cut to enable proper damper location and installation. Each cut end shall be supported by a minimum 12 SWG vertical hangar wire. A 1/2" (13) clearance must be maintained between the air inlet/outlet and the cut end of the runner or cross tee.

CONNECTIONS

Connections must be made using #8 sheet metal screws, 3/16" (4) tubular steel rivets, tack or spot welds spaced 6" (152) on center. Use a minimum of one connection per side for rectangular or square dampers and three equally spaced connections for round dampers. Connections must not interfere with damper blade operation.

CONSTRUCTION DETAILS

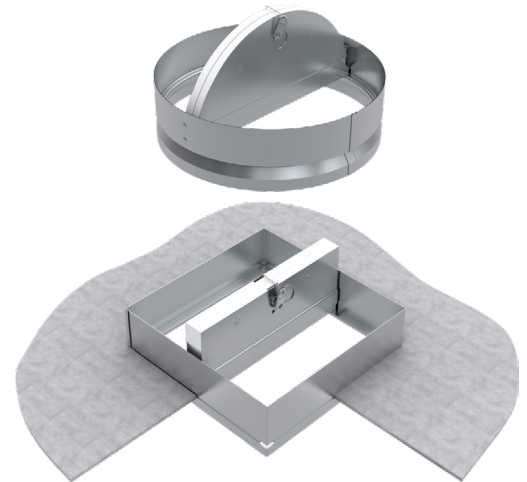
UL Classification testing for ceiling fire dampers measures the heat transmitted through, and temperatures above, ceiling penetrations with ceiling dampers. Smaller dampers meet these criteria without thermal insulation, but larger dampers require insulation to provide acceptable performance.

CFD3 Rectangular dampers with area up to 70 square inches (452) meet UL criteria without blade insulation.

CFD2 Rectangular dampers with area above 70 square inches (452) to 324 square inches (2090) are provided with blade insulation.

CFDR3 Round dampers 10" (254) diameter and under meet UL criteria without blade insulation.

CFDR2 Round dampers above 10" (254) diameter through 20" (508) diameter are provided with blade insulation.



SEE COMPLETE
MARKING ON PRODUCT

California State Fire Marshal Listing No. 3226-0245:0101

UL CLASSIFIED
UL555C Listing R8039

NOTE:

- Dimensions in parentheses () indicate millimeters.

INSTALLATION 1 - UNDUCTED OR FLEX DUCT SURFACE MOUNT SUPPORTED FROM STRUCTURE

- ▶ Opening in ceiling membrane may be up to one inch larger than the nominal size of the ceiling radiation damper. For example a 12" x 12" (305 x 305) ceiling radiation damper could have a maximum ceiling membrane opening of 13" x 13" (330 x 330).
- ▶ Connection of ceiling radiation damper and air device may be satisfied in three ways:
 1. Ceiling radiation damper may be connected directly to the air device and supported by steel channel (see Detail 1).
 2. Ceiling radiation damper may be connected directly to the air device and supported by hanger straps (see Detail 2) or the hanger strap may be eliminated and the wires looped directly around the sheet metal screws. (see Loop Detail)
 3. Ceiling radiation damper may be connected directly to the air device and supported by direct suspension with wires looped through holes in the damper frame before tying (see Detail 3).

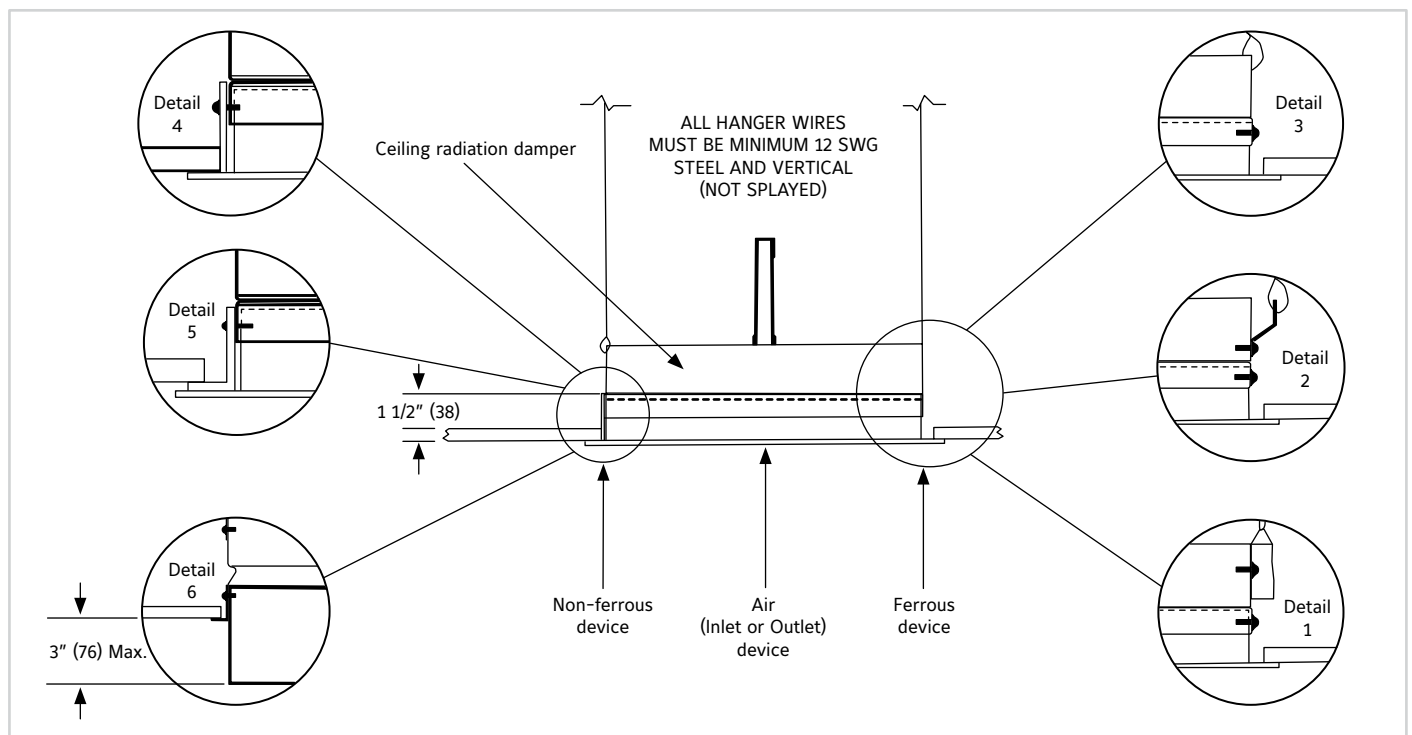
Non-Ferrous Air Devices

Ceiling membrane openings that utilize air device constructed from material other than steel require one of the following:

1. A steel extension should extend from the ceiling radiation damper to the bottom surface of the ceiling membrane and the opening in the ceiling membrane should be equal to the outside of the steel extension (see Detail 4).
2. A steel angle should be attached to the bottom of the ceiling radiation damper and span the gap from the ceiling radiation damper to the bottom of the ceiling membrane. The steel angle should overlap the ceiling membrane (see Detail 5). Note the steel angle may be installed on top or bottom of the ceiling membrane.

Ceiling Membrane Penetration

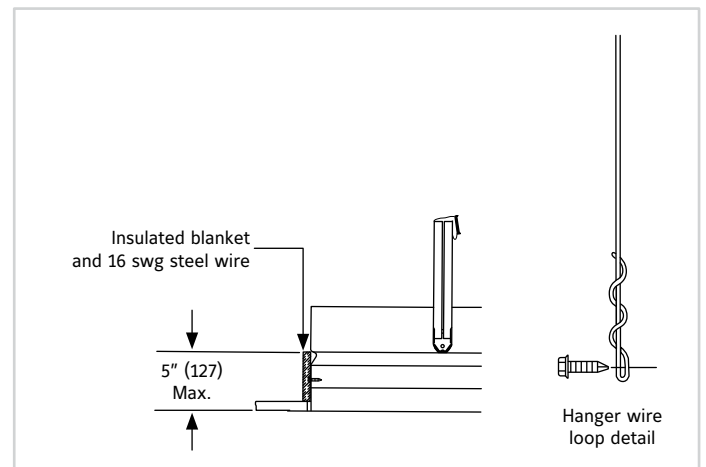
Penetrating the ceiling membrane may be accomplished by extending the damper frame or sleeve below the ceiling surface. Steel or flex duct may be attached to the damper/sleeve extension. (Rectangle steel duct may be attached with 'S'-Slip connectors and round steel duct to be attached with maximum of 3 - #8 sheet metal screws). A steel angle is required per note 2 above. (Detail 6.)



Important Thermal Blanket Note

This installation requires a thermal blanket if:

- ▶ The distance from the face of the ceiling to the bottom of the closed damper blades exceed 1 1/2" (38). In which case a thermal insulating blanket must wrap around the damper (from top of ceiling membrane to closed damper blades) and be retained by a 16 SWG steel wire (refer to installation 4). The distance from the face of the ceiling to the bottom of the closed damper blades cannot exceed 5" (127) when a thermal blanket has been added as described.



INSTALLATION 2 - DUCTED SURFACE MOUNT SUPPORTED FROM DUCTWORK

- ▶ Opening in ceiling membrane may be up to one inch larger than the nominal size of the ceiling radiation damper. For example a 12" x 12" (305 x 305) ceiling radiation damper could have a maximum ceiling membrane opening of 13" x 13" (330 x 330).
- ▶ Connection of ceiling radiation damper, grille and steel duct drop may be satisfied in two ways:
 1. Ceiling radiation damper and grille neck may be connected directly to the duct drop (see Detail 1).
 2. Ceiling radiation damper may be connected directly to the grille neck and then the duct drop connected to the damper (see Detail 2).

Non-Ferrous Air Devices

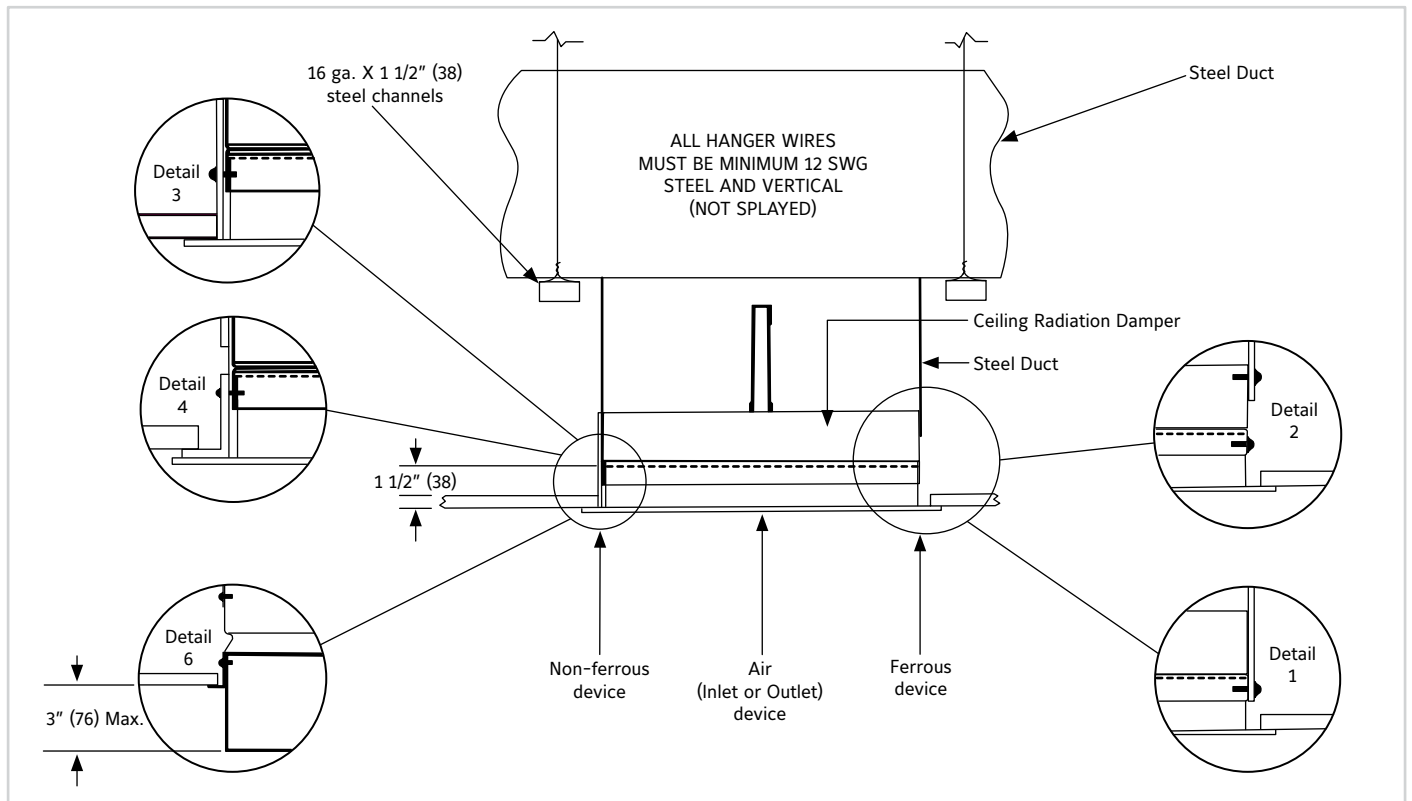
Air devices that have non-ferrous frames.

Ceiling membrane openings that utilize air device constructed from material other than steel require one of the following:

1. A steel duct drop should extend to the bottom surface of the ceiling membrane and the opening in the ceiling membrane should be equal to the outside of the duct drop (see Detail 3).
2. A steel angle should be attached to the bottom of the ceiling radiation damper and span the gap from the ceiling radiation damper to the bottom of the ceiling membrane. The steel angle should overlap the ceiling membrane (see Detail 4). Note the steel angle may be installed on top or bottom of the ceiling membrane.

Ceiling Membrane Penetration

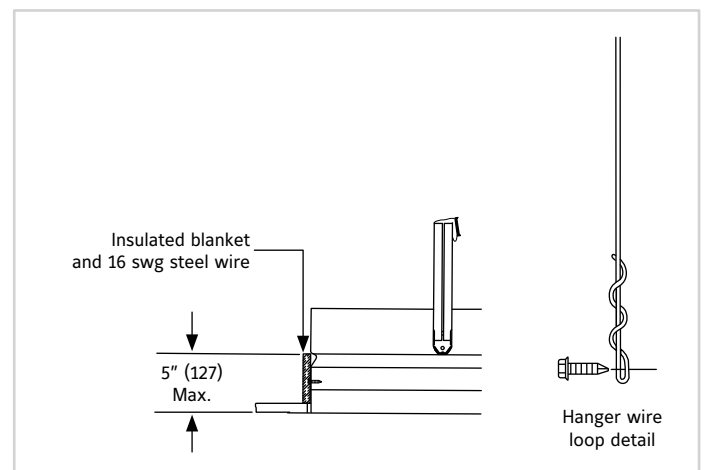
Penetrating the ceiling membrane may be accomplished by extending the damper frame or sleeve below the ceiling surface. Steel or flex duct may be attached to the damper/sleeve extension. (Rectangle steel duct may be attached with 'S'-Slip connectors and round steel duct to be attached with maximum of 3 - #8 sheet metal screws). A steel angle is required per note 2 above. (Detail 5)



Important Thermal Blanket Note

This installation requires a thermal blanket if:

- ▶ The distance from the face of the ceiling to the bottom of the closed damper blades exceed 1 1/2" (38). In which case a thermal insulating blanket must wrap around the damper (from top of ceiling membrane to closed damper blades) and be retained by a 16 SWG steel wire (refer to installation 4). The distance from the face of the ceiling to the bottom of the closed damper blades cannot exceed 5" (127) when a thermal blanket has been added as described.



INSTALLATION 3 - DUCTED SURFACE MOUNT SUPPORTED FROM STRUCTURE

- ▶ Opening in ceiling membrane may be up to one inch larger than the nominal size of the ceiling radiation damper. For example a 12" x 12" (305 x 305) ceiling radiation damper could have a maximum ceiling membrane opening of 13" x 13" (330 x 330).
- ▶ Connection of ceiling radiation damper and air device may be satisfied in three ways:
 1. Ceiling radiation damper and air device may be connected directly to the duct drop (see Detail 1).
 2. Ceiling radiation damper may be connected directly to the air device and then the duct drop connected to the damper (see Detail 2).

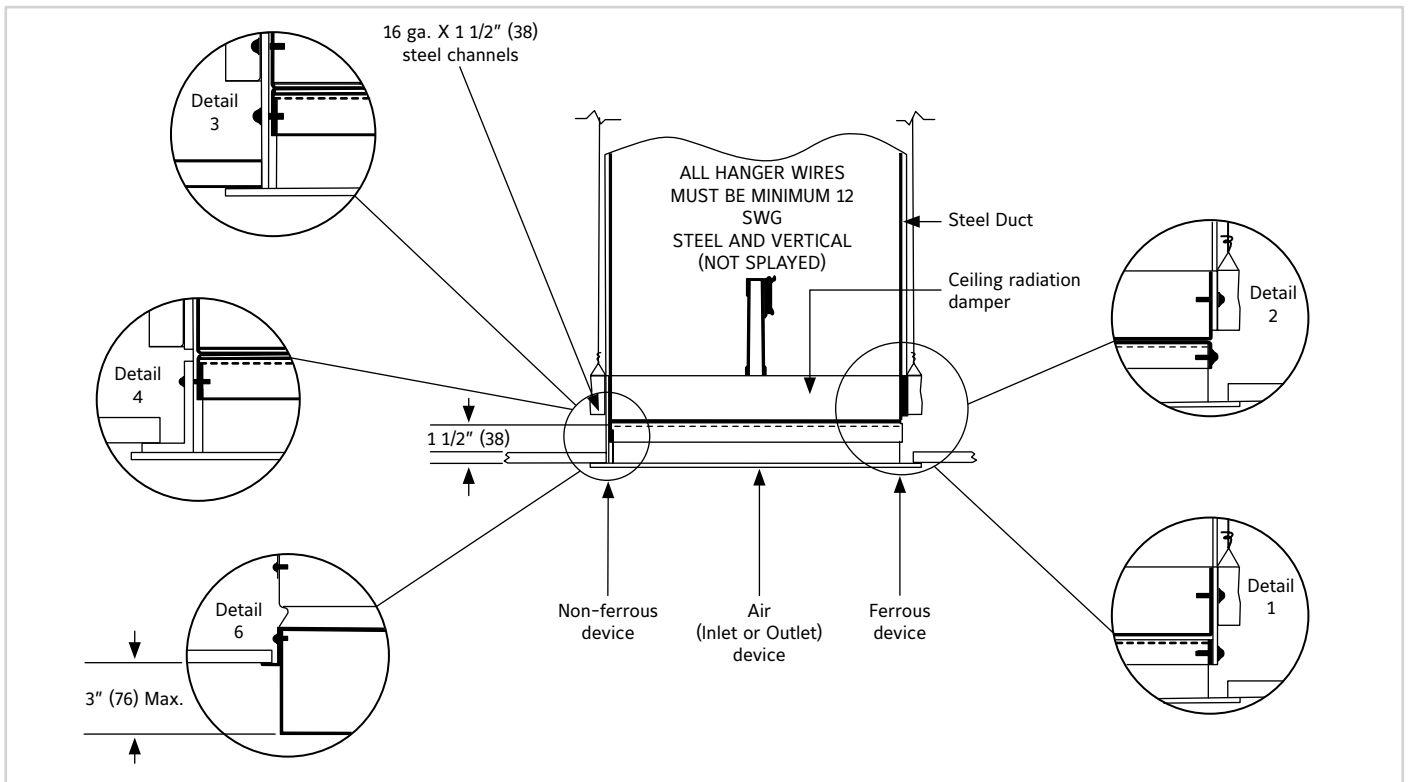
Non-Ferrous Air Devices

Ceiling membrane openings that utilize air device constructed from material other than steel require one of the following:

1. A steel duct drop should extend to the bottom surface of the ceiling membrane and the opening in the ceiling membrane should be equal to the outside of the steel extension (see Detail 3).
2. A steel angle should be attached to the bottom of the ceiling radiation damper and span the gap from the ceiling radiation damper to the bottom of the ceiling membrane. The steel angle should overlap the ceiling membrane (see Detail 5). Note the steel angle may be installed on top or bottom of the ceiling membrane.

Ceiling Membrane Penetration

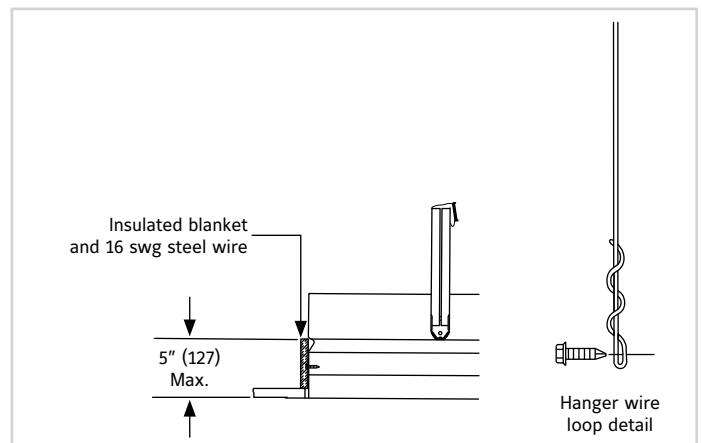
Penetrating the ceiling membrane may be accomplished by extending the damper frame or sleeve below the ceiling surface. Steel or flex duct may be attached to the damper/sleeve extension. (Rectangle steel duct may be attached with 'S'-Slip connectors and round steel duct to be attached with maximum of 3 - #8 sheet metal screws). A steel angle is required per note 2 above. (Detail 5)



Important Thermal Blanket Note

This installation requires a thermal blanket if:

- ▶ The distance from the face of the ceiling to the bottom of the closed damper blades exceed 1 1/2" (38). In which case a thermal insulating blanket must wrap around the damper (from top of ceiling membrane to closed damper blades) and be retained by a 16 SWG steel wire (refer to installation 4). The distance from the face of the ceiling to the bottom of the closed damper blades cannot exceed 5" (127) when a thermal blanket has been added as described.



LINKS TO IMPORTANT DOCUMENTS

Document Title
Quick Select Sheet
Product Data/submittals



3900 Doctor Greaves Road
Grandview, MO 64030
Website: www.ruskin.com
Phone: (816) 761-7476