CEILING RADIATION DAMPERS

INSTALLATION INSTRUCTIONS

Models A80/A90 Series ceiling dampers are approved for installations which provide appropriate protection of duct outlets in ceiling/floor or ceiling/roof assemblies that are fire rated at two hours or less. These ceiling dampers when installed as described herein are used in lieu of hinged-blade sheet metal dampers in steel ducts as specified in Underwriters Laboratories Inc.'s Fire Resistance Directory (FRD). The models above are installed in two basic methods:

1. **Lay-in,** in which the damper is supported by the ceiling grid.
2. **Surface Mounted,** in which the damper is supported from structural members above the ceiling surface.

NOTE: Grilles, diffusers or lay-in diffusers mentioned in the following instructions are an accessory item and not included with the damper.

GENERAL REQUIREMENTS FOR SURFACE MOUNTED AND LAY-IN INSTALLATIONS

The following are requirements for all models and installation methods:

1. Grilles, Diffusers or Lay-in Diffusers shall be made of steel.
2. Flexible air ducts shall be Class O or Class 1 and bear the UL Listing Mark. A steel strap or 16 SWG hanger wire shall be used to connect the flexible air duct to the damper assembly.
3. A maximum of 1/8" (1/4" total) clearance may exist between the ceiling damper and a diffuser or grille. A maximum of 1/8" (1/4" total) clearance may exist between a damper and tee bars of a grid supported installation. A maximum of 1/8" (1/4" total) clearance may exist between the ceiling damper and the duct drop. *Note:* These maximum clearances are allowed for fitting purposes.
4. Ceiling dampers shall be overlapped by the duct drop, a minimum 9/16" and fastened with No. 8 sheet metal screws, 3/16" tubular steel rivets or 1/4" tack welds. Square and rectangular dampers shall have a minimum of one fastener, four total, within one inch from each corner. Round ceiling dampers shall have a minimum of three fasteners equally spaced. Screws and rivets shall be located a minimum of 3/16" from the edge of the damper frame, duct drop or collars. *Note:* Do not drive sheet metal screws into the damper frames so as to prevent the blades from closing. We suggest the use of steel pop rivets with the flat head on the inside of the damper frame.
5. Connections of the grille, diffuser or lay-in diffuser to the duct and/or damper shall have minimum 9/16" overlap and fastened with the same minimum requirements of duct drop to damper fasteners described in the preceding paragraph.
6. Hanger wire shall be minimum 12 SWG for all damper/ceiling assembly supports and shall be vertical and not splayed.
7. Opposed Blade Dampers (OBD) may be utilized in any ceiling damper installation. The OBD may be installed into a ceiling damper with an extended lower frame or directly to the duct drop below the damper, however, no installation shall exceed the maximum spacings allowed between the ceiling surface and blades of the ceiling damper.
8. All ceiling dampers are shipped in the closed position. To install the damper, the blades must be manually held open and the free end of the fusible link must be attached, in the field, to the adjacent blade. The lanced tab, provided on uninsulated blades or the fusible link holder, provided on gypsum insulated blades may be bent with pliers or by hand to provide an adequate attachment.
9. The clearance between the lower surface of the ceiling and the lower surface of the damper blades shall not exceed 5" in any type installation.
10. Installations that require extended upper frames for protection of the damper blades may be provided with sleeves in the field. These sleeves shall extend from the damper frame to an elevation above the blades, when they are in the open position and held by the fusible link. The sleeve shall be attached to the damper frame in the same manner as required for the duct drop to damper frame.

LAY-IN INSTALLATION

The ceiling dampers in these applications are supported directly by the ceiling grid. When lay-in diffusers/grilles are to be utilized, the ceiling damper is mounted directly to the diffuser/grille and the diffuser/grille is supported directly by the grid.

A. Lay-in Ceiling Dampers, ductless or ducted, (Models A93). **See Figure 1.** The ceiling damper shall completely fill the opening of a grid module and rest directly on the tee bar grid, (main runners and/or cross tees on four sides). The four corners of the grid module into which the damper is installed shall have a hanger wire support. Openings of 24 x 24, 24 x 18, 24 x 12 and 24 x 6 are the only sizes available for this installation method. When dampers installed in this manner are to be connected to a round or flexible duct, the damper must have an extended upper frame with a square to round adapter.

B. Lay-in Diffuser Ceiling Dampers, ductless or ducted. (Models A89, A91, A95, A97). **See Figure 2.** In this application, lay-in diffuser or lay-in grille fills a full 24 x 24 grid module and the damper mounts on the reduced neck of the device. The following are requirements for installation:

1. The 23 3/4" x 23 3/4" lay-in diffuser shall have a topside surface of 24 MSG steel and have a maximum 20" diameter or 18" square collar.
2. The four corners of the grid module into which the lay-in diffuser is installed shall have a hanger wire support.
3. If flexible duct is used, the round damper shall have an extended upper frame. Square dampers with an extended upper frame and square to round adapter may also be used with flexible duct.
4. The top surface of the lay-in diffuser and the ceiling damper frame below the blade plane shall be insulated. Two methods of insulating this area may be employed when the topside of the diffuser/grille is flat and is raised no more than 1/2" from the face of the ceiling: The first method and most convenient is by the use of our thermal blanket. Simply cut the desired hole and lay the blanket over the diffuser. Next, take an extension piece and wrap it around the damper/diffuser overlap connection. Secure it in place with the use of hanger wire. The blanket shall extend out to the tee grid on all four sides. The second method is to use the same ceiling tile material as is utilized for the remainder of the ceiling. This should be cut to allow the damper/diffuser connections to pass through, however, clearance between the tile and tee grid and between the damper and the tile shall not be greater than 1/4" total. **Exception:** When the topside of the lay-in diffuser is pitched or contains obstruction of greater than 1/2" from the ceiling surface, the thermal blanket must be used.
5. When an Opposed Blade Damper is installed between the ceiling damper and ceiling surface, ensure that the insulation covers the area below the blade plane to the diffuser topside.

SURFACE MOUNTED DIFFUSER OR GRILLE INSTALLATION

The ceiling dampers in these applications are supported by duct drop or hanger wire and not by the ceiling surface in which installed. The ceiling damper/grille assemblies shall also be located in the field of an acoustical panel; but where it is necessary to cut a main runner or cross tee, each cut end shall be supported by a vertical 12 SWG hanger wire. A 1/2" clearance shall be maintained between the duct outlet and each cut end of the main runner or cross tee. Each ceiling damper/grille assembly shall be located so that no more than one main runner or cross tee is cut when penetrating the ceiling membrane. The grille provided shall be of a type that has a flange at least 1" wide to support the surrounding acoustical material. The size of the cutout in the acoustical material shall not be larger than the flanged grille/diffuser. The cutout shall also not be more than 1/2" (1" total) larger than the damper/grille frame.

A. Ductless, Surface Mounted Ceiling Dampers (Models A89, A91,A93, A95, A97). **See Figure 4.** In this application, hanger wire supports are utilized in lieu of a steel duct drop and the flanged grille or diffuser is attached directly to the damper. Square and rectangular dampers shall be supported by a minimum of four each hanger wires, located within 1/2" of each corner. Round dampers shall be supported by a minimum of three each hanger wires, equally spaced. The wires may be attached in two methods as follows:

1. Dampers with extended upper frames may be supported by hanger wires looped through 1/4" holes drilled or punched in the field. There should be a minimum 3/16" spacing between the holes and frame edge.
2. Dampers with standard size frames may be supported with hanger straps, one for each hanger wire. See **Figure 5** for hanger strap details.

B. Ducted, Surface Mounted Ceiling Dampers (Models A89, A91, A93, A95, and A97). **See Figure 3**.

1. A. When a steel duct drop supports the ceiling damper, the grille may be connected directly to the damper frame or the duct drop may extend down to the ceiling line, thus allowing the grille or diffuser to be connected directly to the duct.

   B. Main ducts must be supported adjacent to the duct drops with steel 1 1/2" deep 16 MSG channels on all round installations. However, where square or rectangular duct drops are used, the steel channels may be bolted to opposite sides of the duct drop with 3/16" bolts a minimum of 3/8" in length. Two bolts per side, spaced 6" O.D. are required.

   C. When a sloped or tapered surface mount diffuser or grille is utilized, the diffuser shall be insulated with our thermal blanket. The blanket shall insulate the diffuser from the blade plane down to the top of the ceiling surface. **See Figure 4.**

2. When flex duct is to be connected to a surface mounted ceiling damper/diffuser assembly, an extended upper frame must be provided for this type installation. Square and rectangular dampers shall be supported by a minimum of four each hanger wires, located within 1/2" of each corner. Round dampers shall be supported by a minimum of three each hanger wires, equally spaced. These hanger wires for both the rectangular and round dampers shall support the damper by way of hanger straps, one for each hanger wire. **See Figure 5** for hanger strap details.

All of the Surface Mounted Installations described above are with lay-in acoustical ceiling panels. The damper may also be utilized with all other ceiling material types described for two hour or less designs. One additional general requirement shall be that the hanger wires, which support the damper assembly, be connected to structural supports above the ceiling in accordance with the requirements of the Floor-Ceiling or Roof-Ceiling Design from UL Fire Resistance Directory specified by the customer.

FIG. 1

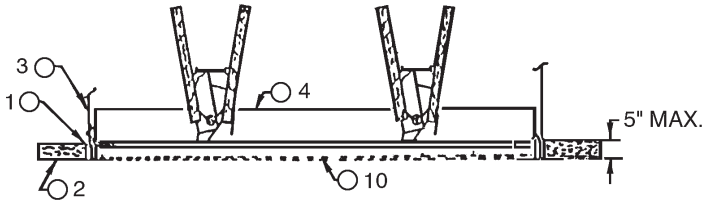


FIG. 2

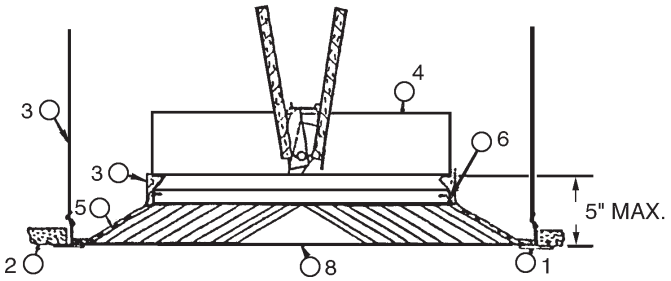
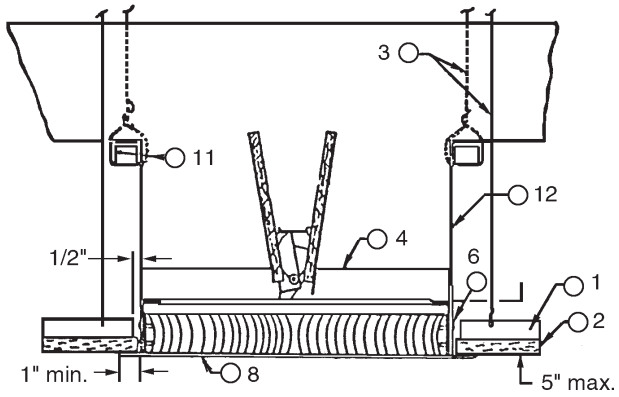


FIG. 3



1. STEEL GRID
2. CEILING PANELS
3. HANGER WIRE
4. CEILING DAMPER
5. CERAMIC BLANKET
6. NO. 8 OR NO. 10 SHEET METAL SCREWS
7. HANGER STRAPS
8. LAY-IN DIFFUSER
9. SLOPED OR TAPERED GRILLE
10. GRILLE
11. 1 1/2" DEEP CHANNELS MIN. 16 GA.
12. DUCT DROP
13. RIVET

FIG. 4

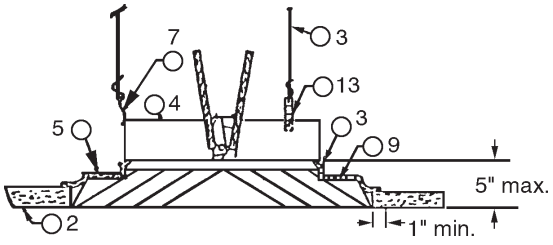


FIG. 5