



FIRE & CEILING RADIATION DAMPER TERMINOLOGY AND DEFINITIONS

Access Door: All installed fire dampers must be accessible for inspection and/or testing by the local authorities. If fire dampers are not accessible from a grill or register, an access door in the ductwork is required.

Ceiling Radiation Damper: A device designed to impede the spread of fire through openings in ceiling membranes. Its construction includes a galvanized steel frame and a fusible link, a heat sensitive device (usually set at 165° F). When the fusible link opens, it releases the damper components to close. When the damper components close, the damper will restrict the migration of fire. Ceiling radiation dampers are required in fire rated floor/ceiling and roof/ceiling assemblies and where local codes dictate.

Collar: On a Type-C damper, the collar is the portion of the damper that attaches to the duct. Collars can be round, oval or square/rectangular.

Dynamic Ceiling Radiation Damper: A dynamic ceiling damper that is listed and approved for applications where the HVAC system blower may continue to run during an alarm or event of fire. Dynamic ceiling radiation dampers are rated to close with and/or against moving air measured in feet-per-minute (fpm) velocity.

Dynamic Fire Damper: A fire damper that is listed and approved for applications where the HVAC system blower may continue to run during an alarm. Dynamic fire dampers are rated to close with and/or against moving air measured in feet-per-minute (fpm) velocity.

Fire Damper: A device designed to impede the spread of fire through walls, floors and partitions. Its construction includes a galvanized steel frame and a fusible link, a heat sensitive device (usually set at 165°F). When the fusible link opens it releases the damper components to close. When the damper components close the damper will restrict the migration of fire. Fire damper products are listed with hourly ratings, see “Fire Rating” below. They are also listed as standard (static) dampers or dynamic dampers.

Fire Damper Installation:

Fire dampers are required in the penetrations of fire-rated walls, floors and partitions. All fire dampers must be sleeved and all sleeves must be secured in place with retaining angles (and break away connections when attached to duct systems). See installation instructions for detailed information.

Fire Rating of 1.5 Hours: Fire dampers must have a rating that is at least 75% of the rating of the barrier so a 1.5 hour-rated damper can be installed in a fire barrier rated for 2 hours or less.

Fire Rating of 3 Hours: Fire dampers with a 3-hour rating can be installed in fire barriers rated at 4 hours or less.

Frame: The portion of the fire damper that houses the damper blades, fusible link, locking ramps, transitions and springs (if springs are required).

Framed Retaining Angles: Framed retaining angles attach to the sleeve on both sides of the fire rated floor, wall or partition to secure it in place. The framed retaining angle must also cover the openings between the outside of the sleeve and the inside of the hole in the fire rated barrier. Framed retaining angles do not attach to the fire rated barrier (See Installation Instructions).

Fusible Link: A temperature sensitive device that holds the damper components in the open position, which in turn, allows air to pass through. When the fusible link opens, it releases the damper components to close, and they will stay closed until a new fusible link is installed. The temperature rating of the standard fusible link is 165° F. Different temperature ratings are available.

Locking Ramp: On a fire damper, the locking ramp catches and locks the leading blade of the curtain when it closes. They are installed on all fire dampers that have stainless steel springs. There are two locking ramps per damper, one on each side.

Micro-Switch: The micro-switch is a single pole, double throw switch with a set of normally open contacts and a set of normally closed contacts. The micro-switch will trip when the fire damper or ceiling radiation damper curtain closes. When the switch is tripped, the contacts that close can complete an alarm circuit to a control station that alerts the operator of which fire damper or ceiling damper is closed. Also, the contacts that open can shut down the HVAC system blower motor.

Pressure, Low: 2 inches w.c. or less, the joints of the transition and collar are not sealed with caulk.

Pressure, Medium: 3 inches w.c. and higher, the joints of the transition and collar are sealed with caulk or metal tape.

Pressure, High: Up to 10 inches w.c., the joints of the transition and collar are welded.

Sleeve: A metal housing for the fire damper that the framed retaining angles are to be attached. Sleeves are required on all fire dampers mounted in fire-rated walls, floors or partitions. See the installation instructions for details. The sleeve and damper assembly may be fabricated at the factory, in a shop or at the job site. The sleeve will always be smaller than the hole in the fire rated barrier so it can expand and contract without an adverse effect on proper operation of the damper.

Spring: Different stainless steel springs are used to positively close the fire damper curtain when the fusible link opens. Springs are required for all fire dampers used in horizontal applications and all dynamic fire dampers. They are installed on both sides of the fire damper.

Standard Fire Damper: A fire damper that is listed and approved for use in duct systems where the HVAC system blower will be cycled off during an alarm (probably turned off by means of an automatic fire detector). Also referred to as a static fire damper.

Static Ceiling Radiation Damper: A static ceiling damper that is listed and approved for use in duct systems where the HVAC system blower will be cycled off during an alarm or event of fire (for example: probably turned off by means of an automatic fire detector). Also referred to as a static ceiling radiation damper.

Transition (Enclosure): On a Type-C damper, the rectangular piece of metal where the collar is attached. It will have a round, oval, square or rectangular hole where the collar attaches. In effect, a transition with a collar will convert an Type-A fire damper into a Type-C fire damper.

Type-A Fire Damper: Used when the airflow interruption from the stack of blades in the fire damper frame is not a prime concern or consideration. Type-A dampers are the easiest and fastest type to install and are mostly used in low-pressure part of duct systems (up to 2" w.c.).

Type-B Fire Damper: Used when airflow or velocity in the duct is a concern. The stack of blades in the fire damper frame is kept out of the air stream. Compared to an Type-A damper, the total square inches of free area in a Type-B damper is increased and the pressure drop is reduced.

Type-C Fire Damper: Used in applications where a fire damper with 100% free area is desired. Usually with medium-to-high air velocities (3,000 fpm) or when the duct static pressure will exceed 3" w.c.

Velocity Rating (For Dynamic CRDs): The velocity rating is established by heat exposure and dynamic closure tests performed to UL555C and AMCA-500D for Dynamic Ceiling Radiation Dampers. Air velocity is determined by the air speed (feet per minute) that is measured at the plenum opening which penetrates the ceiling membrane and which is determined by damper frame area (not the duct collar cross sectional area which in most cases would be less).