

A GUIDE TO

FIRE DAMPER

INSPECTIONS



A professional guide to fire damper inspections,
maintenance and NFPA regulations.

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TYPES OF FIRE DAMPERS

A fire damper is a component of an HVAC system designed to stop the spread of fire throughout partitions and other areas of a facility. Fire dampers come in a variety of shapes and sizes. The three most common types of fire dampers are: Standard, Dynamic and Ceiling Radiation.

Standard Fire Dampers



Standard fire dampers are designed to operate with the HVAC system blower off during an alarm. They are also referred to as static fire dampers.



Dynamic Fire Dampers



Dynamic fire dampers allow HVAC system blower to continue to circulate during an alarm. These dampers close against air flow measured in feet-per-minute (fpm) velocity.



Ceiling Radiation Dampers



Ceiling radiation dampers intended to stop fire from spreading throughout openings in ceiling membranes.



Some fire dampers are also categorized by alphabetic reference as Type A, B & C:

Type A

Type-A fire dampers are most typically used in low pressure duct systems when airflow disruption from the damper blades are not a prime concern. They are the fastest and easiest type of damper to inspect.

Type B

Type-B fire dampers are used when velocity is not a concern and damper blades are not in the airflow.

Type C

Type-C fire dampers are commonly used when duct static pressure is exposed to medium to high air velocities.



FIRE DAMPER INSPECTIONS

Fire dampers play a crucial role in the life safety and the HVAC systems in a facility. Fire damper maintenance ensures that the damper is working properly and would help prevent the spread of smoke and fire throughout a building in the event of a fire. It can be difficult to assure optimal performance of a fire and smoke damper due to the complex structure of the damper.



A thorough inspection is required by NFPA to ensure a fire damper is properly maintained and in working order to stop the spread of a fire. Upon inspection, the building management must be provided a detailed report of every fire damper.

If a fire damper fails inspection, it must *immediately* be repaired.

The frequency of damper inspection is dependent upon the type of building. The mandatory NFPA standards require fire damper inspections 1 year after their installation, then every 4 years after that (except for hospitals, where they must be inspected every 6 years). The standards also detail specific and mandatory requirements on how the inspections must be conducted and documented. By having an expert perform your required fire damper inspections, you can ensure that all NFPA standards are met.



FIRE DAMPER MAINTENANCE

There are a variety of reasons a damper may fail an inspection. Some of the most common reasons a fire damper fails an inspection are listed below.

Alignment issues

Any alignment issue can cause a damper to fail inspection. If the damper components are not correctly in-line, the damper may not close completely if a building fire occurs. During an inspection, the technician will ensure all parts of the damper are correctly aligned. Because fire dampers are complex, there are many working apparatuses that must remain in pristine condition to ensure the damper will pass inspection.

Corrosion or Rust

Rust or corrosion can compromise the integrity of a damper. Any amount of imperfection on the damper may result in a malfunction and cause the damper to fail inspection. Built-up rust may be able to be removed from the damper. The amount of rust or corrosion may result in replacing the entire damper. This ensures the dampers will help halt the spread of a fire throughout a facility.

Failed damper fusible links

A fusible link is a temperature sensitive device that holds the damper open, allowing air to circulate. Once the link is exposed to a certain temperature, it will open. This causes the damper to close which prevents smoke and fire from passing through in the event of a fire. While there are different temperature ratings available, 165 F is the standard temperature rating for fusible links. Once the link is open, it will keep the damper closed until the fusible link is replaced.

Malfunctioning actuators

Damper actuators provide electronic or pneumatic control to detect heat and/or smoke. Once exposed to these elements, the actuator closes the damper and alerts a control system in the building, typically a fire alarm, and in effect warning occupants of the potential hazard. If the actuator fails, the damper may not close and occupants may not be aware of a fire in the building.

While these may seem like easy fixes, remember, it is always best to have a qualified professional inspect and repair your dampers. The NFPA requires that all building dampers are professionally inspected, and a detailed report is provided.



FIRE DAMPER REGULATIONS



The Joint Commission Standard CS.5.40 Element of Performance 14

The frequency for inspection of fire and smoke dampers is six years for health care occupancies and four years for business, ambulatory and residential treatment facilities.

NFPA 80

NFPA 80 regulates the installation & maintenance of assemblies and devices used to protect openings in walls, floors and ceilings against the spread of fire and smoke within, into, or out of buildings.

NFPA 105

The NFPA 105 standard that prescribes minimum requirements for smoke door assemblies for use in providing safety to life and protection of property from smoke.



TERMINOLOGY

Access Door – Mandatory right of entry for inspectors and technicians to reach fire damper.

Blades – Panel(s) of damper that closes when fusible link opens.

Ceiling Radiation Damper – A device intended to stop fire from spreading throughout openings in ceiling membranes.

Collar – Oval, rectangular, round or square portion of Type-C damper that attaches to the duct.

Dynamic Fire Damper – A damper that allows HVAC system blower to continue to circulate during an alarm. These dampers close against air flow measured in feet-per-minute (fpm) velocity.

Fire Damper – A component of an HVAC system designed to stop the spread of fire throughout partitions and other areas of a facility.

Fire Damper Actuator – Device that provides electronic or pneumatic control to detect heat and/or smoke. Once exposed to these elements, the actuator closes the damper and alerts a control system in the building

Fire Damper Inspection – A careful examination required by NFPA to ensure a fire damper is properly maintained and in working order to stop the spread of a fire. A professional must perform the inspection and provide a detailed report of every fire damper.

Fire Damper Installation – Setting up fire dampers in required areas. Fire dampers must be tested immediately after installation, one year after installation and reoccurring every four* years after. Fire dampers installed in healthcare settings are reoccur every six years.

Fire Rating – There are two types of fire ratings - 1.5 hours and 3 hours. 1.5 hour dampers are required to have a rating equal to or greater than 75% of the barrier. 3 hour dampers are installed in barriers rated less than or equal to 4 hours.

Fire Wall – A fire rated wall with protected openings that extends from the building foundation to the roof to impede the spread of fire.

Frame – The portion of the fire damper that house the damper: blades, fusible link, locking ramps, transitions and (when applicable) springs.



TERMINOLOGY

Framed Retaining Angles – Section of damper that is attached to the sleeve on each side of the fire rated wall/area to secure the damper in place.

Fusible Links – A temperature sensitive device that holds the damper open, allowing air to circulate.

Locking Ramp – Part of damper that locks blade in place when fire damper closes. There are two locking ramps per fire damper.

NFPA 80 — Standard which regulates the installation and maintenance of assemblies and devices used to protect openings in walls, floors, and ceilings against the spread of fire and smoke within, into, or out of buildings.

NFPA 105 - Standard that prescribes minimum requirements for smoke door assemblies for use in providing safety to life and protection of property from smoke.

Pressure – Measured in three categories: low (2" w.c. or less), medium (3" w.c. or higher), high (up to 10" w.c.), where the damper joints of the transition and collar are not airtight with caulk.

Sleeve – Mandatory metal framed retaining angle of fire damper that is smaller than the hole in the fire rated wall/barrier.

Spring – Stainless steel part of fire damper that completely seals blades when fusible link opens.

Standard Fire Damper – A damper that operates during an alarm when the HVAC system blower is off.

Static Fire Damper – See Standard Fire Damper.


Transition – A rectangular shaped metal piece that attaches to a Type-C fire damper collar. An oval, rectangular, round or square hole that attaches to the collar.

Type-A Fire Damper – Fastest and easiest type of damper that is most commonly used in low pressure duct systems when airflow disruption from the damper blades are not a prime concern.

Type-B Fire Damper – Type of damper that is used when damper blades are not in the airflow and velocity is a concern.

Type-C Fire Damper – Type of damper typically used when duct static pressure is exposed to medium to high air velocities.

REQUEST A
FIRE DAMPER
INSPECTION TODAY!



Have questions on fire damper maintenance and inspections?
Call 800-849-5646 to speak with a fire damper expert now!

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