

AMCA Publication 503-08

Fire, Ceiling (Radiation), Smoke and Fire/Smoke Dampers Application Manual



**AIR MOVEMENT AND CONTROL
ASSOCIATION INTERNATIONAL, INC.**

The International Authority on Air System Components

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Fire, Ceiling (Radiation), Smoke and Fire/Smoke Dampers Application Manual



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Related AMCA Standards and Publications

ANSI/AMCA Standard 500-D *Laboratory Methods of Testing Dampers for Rating*

AMCA Publication 502 *Damper Application Manual for Heating, Ventilating and Air Conditioning*

AMCA Publication 511 *Certified Ratings Program for Air Control Devices*

AMCA Publication 111 *Laboratory Accreditation Program*

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Fire, Ceiling (Radiation), Smoke, and Fire/Smoke Dampers Application Manual

1. Purpose

This publication serves as a guide to understanding the various types and special nature of fire, ceiling (radiation), smoke, and fire/smoke damper products so that they may be properly selected, applied, installed, inspected, and maintained. The information provided herein includes not only general information, but also, important points to consider when designing an installation or when specifications are written for the purpose of such equipment. It is not the purpose of this manual to be used for detailed equipment specifications.

2. Scope

This publication covers damper products tested and rated per the requirements of AMCA International, Underwriters Laboratories, and other independent testing laboratories. The installation and application of these products, specifically fire dampers, smoke dampers, combination fire/smoke dampers, and ceiling radiation dampers, are presented as standard industry tested practices in generic form. There are other listed designs and installations that exist (refer to manufacturers' installation instructions for specific details). General details are given as to the responsibilities of the governing bodies with regard to the testing, application, installation, maintainance, and inspection of these products. A brief overview of the label information on the products is also covered.

3. Definitions

Specific damper designs are used when it is necessary to control the spread of fire, heat or smoke in an air handling system.

Fire damper: A device installed in ducts and air transfer openings of an air distribution or smoke control system, designed to close automatically upon detection of heat. It also serves to interrupt migratory airflow, resist the passage of flame, and maintain the integrity of the fire rated separation. Fire dampers are classified for use in either a static system, which automatically shuts down in the event of a fire, or in a dynamic system, which continues to operate during a fire. A dynamic fire damper is tested and rated for

closure under airflow.

Smoke damper: A device installed in ducts and air transfer openings that is designed to resist the passage of air and smoke. The device operates automatically and is controlled by a smoke detection system. It can also be opened or closed from a remote fire command station, if required.

Combination fire/smoke damper: A device that functions as both a fire damper and a smoke damper.

Ceiling (radiation) damper: A device installed in a ceiling membrane of a fire resistance rated floor/ceiling or roof/ceiling assembly to automatically close to limit the radiative heat transfer through an HVAC penetration.

Corridor damper: A device that is a combination fire/smoke damper which is evaluated for mounting in specific corridor ceiling constructions specified in the manufacturer's installation instructions. It has been evaluated for both a fire resistance rating of 1 hour and a Class I or II leakage rating. Corridor dampers are intended for use where air ducts penetrate or terminate at horizontal openings in the ceiling of interior corridors.

Smoke control systems. A smoke-control system is a series of fans, dampers, and controls used to inhibit the flow of smoke into means of egress, exit passageways, stairwells, areas of refuge, or other similar areas of a building. Smoke control systems are normally activated during the early stages of a fire emergency to maintain a safe environment in the areas to be protected.

4. Codes and Authorities

4.1 Code authorities

Local code authorities usually determine the requirements for fire, smoke, and heat radiation resistive construction. They generally use local codes, which are written and published by local building officials and are usually variations to one or more of the model codes listed in Table 4.1.

Some governmental agencies also have specific standards or codes that must be met when performing construction for these groups. The General Services Administration (GSA), the Department of Health and Human Services (HHS), Housing and Urban Development (HUD), the Corps