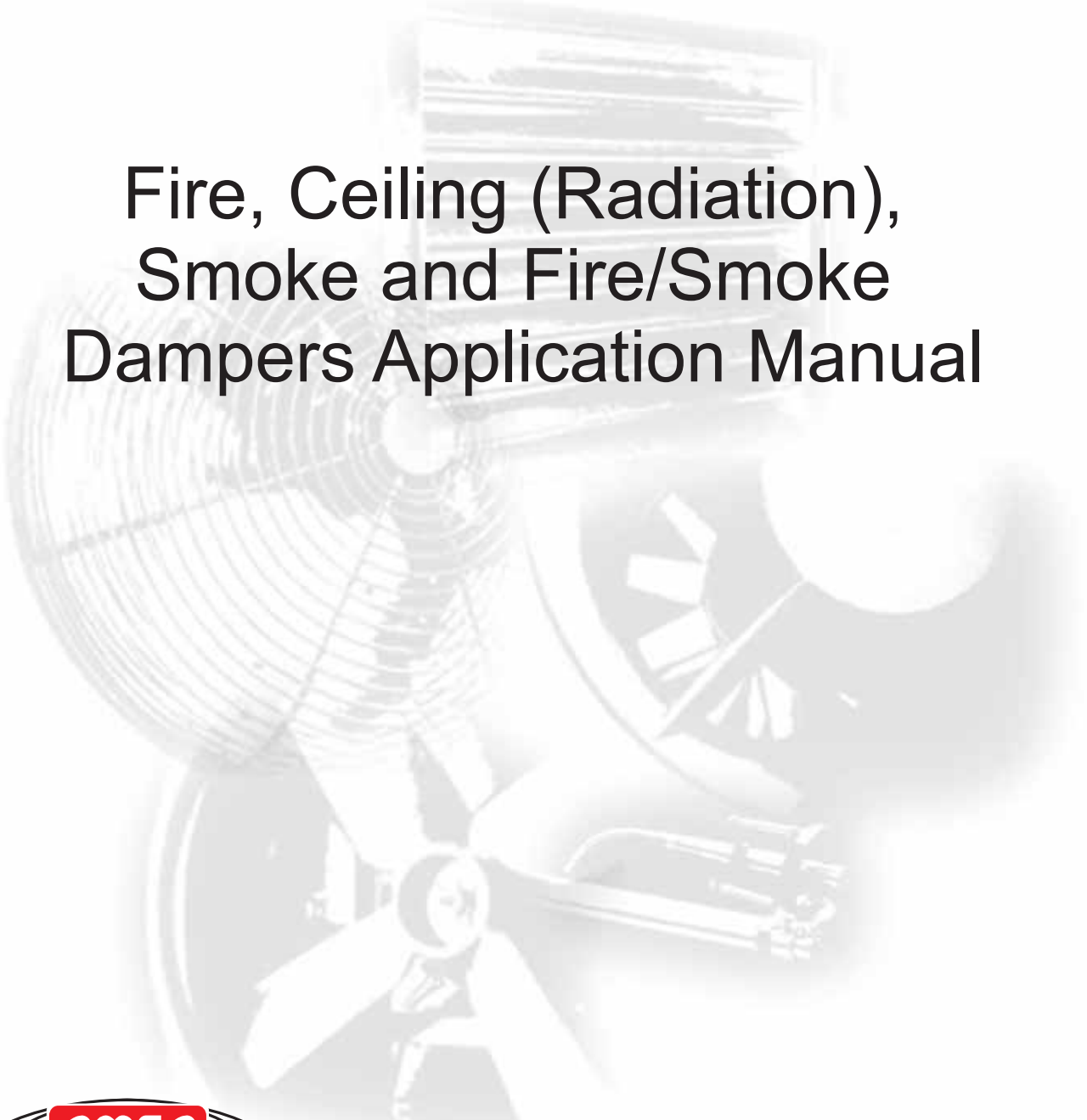
AMCA Publication 503-08

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



AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC.

The International Authority on Air System Components

AMCA PUBLICATION 503-08

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

Air Movement and Control Association International, Inc.
30 West University Drive
Arlington Heights, IL 60004-1893

Authority

This publication was adopted by the membership of Air Movement and Control Association International, Inc. on October 15, 2008.

AMCA 503 Review Committee

Jeff Kirkwold, Chair	Honeywell, Inc.
Bob Van Becelaere	Ruskin Co.
Mike Binkholder	Mestek, Inc.
Dane Carey	United Enertech
Larry Kozak	Ward Industries, Inc.
Marty Gissel	Greenheck Fan Corp.
Eric Gohring	Louvers and Dampers, Inc.
Dan Rau	Ruskin Co.
Tim Orris	AMCA International

Disclaimer

AMCA uses its best efforts to produce standards for the benefit of the industry and the public in light of available information and accepted industry practices. However, AMCA does not guarantee, certify or assure the safety or performance of any products, components or systems tested, designed, installed or operated in accordance with AMCA standards or that any tests conducted under its standards will be non-hazardous or free from risk.

Objections to AMCA Standards and Certifications Programs

Air Movement and Control Association International, Inc. will consider and decide all written complaints regarding its standards, certification programs, or interpretations thereof. For information on procedures for submitting and handling complaints, write to:

Air Movement and Control Association International
30 West University Drive
Arlington Heights, IL 60004-1893 U.S.A.

or

AMCA International, Incorporated
c/o Federation of Environmental Trade Associations
2 Waltham Court, Milley Lane, Hare Hatch
Reading, Berkshire
RG10 9TH United Kingdom

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*

TABLE OF CONTENTS

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