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**Industrial Process/Power Generation:
Heavy Duty Dampers for
Isolation and Control**



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

The International Authority on Air System Components

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Industrial Process/Power Generation: Heavy Duty Dampers for Isolation and Control



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Authority

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Foreword

The Air Movement and Control Association International, Inc. (AMCA) is an international trade association representing manufacturers of industrial and commercial fans, airflow control devices such as backdraft dampers, louvers and dampers, airflow measurement stations, and acoustic attenuation devices.

This publication covers dampers such as are used in industrial process systems, and power generation facilities, where flue gas or air is the primary medium. This publication contains base-line information on applications and provides specification guidelines that may be supplemented by designers, specifiers and users to encompass their specific needs.

Disclaimer

This manual has been prepared by the Air Movement and Control Association International, Inc. (AMCA). The information contained in this manual has been derived from many sources and is believed to be accurate. Please note that the recommendations contained herein do not necessarily represent the only methods or procedures appropriate for the situation discussed, but rather are intended to present consensus opinions and practices of the air movement and control industry which may be helpful, or of interest to those who design, test, install, operate or maintain fan-duct systems. Thus, AMCA disclaims any and all warranties, expressed or implied, regarding the accuracy of the information contained in this manual and further disclaims any liability for the use or misuse of this information. AMCA does not guarantee, certify or assure the performance of any fan-duct system designed, tested, installed, operated or maintained on the basis of the information provided in this manual.

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RELATED AMCA STANDARDS

For Air Performance:

ANSI/AMCA Standard 210 *Laboratory Method of Testing Fans for Aerodynamic Performance Rating*

AMCA Standard 803 *Industrial Process/Power Generation Fans: Site Performance Test Standard*

For Sound:

AMCA Standard 300 *Reverberant Room Method for Sound Testing of Fans*

AMCA Standard 301 *Methods for Calculating Fan Sound Ratings from Laboratory Test Data*

For Balance and Vibration:

ANSI/AMCA Standard 204 *Balance Quality and Vibration Levels for Fans*

Industrial Process / Power Generation Series:

AMCA Publication 801 *Industrial Process/Power Generation Fans: Specification Guidelines*

AMCA Publication 802 *Industrial Process/Power Generation Fans: Establishing Performance Using Laboratory Models*

AMCA Standard 803 *Industrial Process/Power Generation Fans: Site Performance Test Standard*

Fan Application Manual:

AMCA Publication 200 *Air Systems*

AMCA Publication 201 *Fans and Systems*

AMCA Publication 202 *Troubleshooting*

AMCA Publication 203 *Field Performance Measurement of Fan Systems*

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1. Purpose

The purpose of this publication is to provide basic pertinent information in order to simplify communications between damper manufacturers and designers, specifiers and users of such equipment.

2. Scope

The scope of the products covered in this application guide includes dampers that are used to control a flow of gas (be it a specific gas, a mixture of gas and air, or air alone), or to isolate one section of a duct system from another section of that system. The scope narrows to those dampers generally described as "heavy duty" or "severe service", because such dampers are normally used in applications where extreme temperature, erosion and/or corrosion conditions exist.

3. Terms and Definitions

This section defines terms that have special meaning or significance in damper applications and within the damper industry. Most are specific to the dampers under discussion in this publication. For the reader's convenience, terms that are defined in this section are shown in capital letters when used in the definition of a related term.

3.1 Accessory. An accessory is an item purchased by the damper manufacturer and either mounted on the DAMPER at the factory or supplied with the damper for field installation by others. An accessory is generally an item used to enhance or improve the performance of a damper. An accessory may be an ACTUATOR, a SEAL AIR system, a PURGE AIR system, a limit switch, a flow sensor (or system), positioning equipment, or some other item associated with powering, sensing or signaling.

3.2 Actuator. A mechanical accessory item attached to a DAMPER for the purpose of moving the damper BLADES(s) to either the open position, the closed position, or to an intermediate position to achieve low

modulation. An actuator may be manually, electrically, pneumatically or hydraulically powered. The output force of an actuator is delivered in either a linear or a rotary direction.

3.3 Actuator torque. The rated torque capability of an actuator.

3.4 Airfoil (blade). A double-skinned damper BLADE, the blade skins meeting at the leading and trailing edges of the blade with no substantial protrusions external to either blade skin.

3.5 Area of restriction. The total cross-sectional area of DAMPER components that are permanently located within the gross FREE AREA provided for gas flow through the DAMPER frame. The restrictive cross-sectional area of each component is determined by its position when the damper is fully open. Generally, in the full open position, a component will present the smallest frontal area to the direction of the gas flow.

3.6 Blade. In strict terms, the moveable component within the DAMPER frame. The purpose of a blade is to restrict a gas flow for modulation (control), or for closure (isolation).

3.7 Blade entry seal. In a GUILLOTINE DAMPER, the sealing arrangement through which the damper BLADE passes.

3.8 Blade support. A structural member inside the frame of a GUILLOTINE DAMPER. The member supports a portion of the BLADE when the damper BLADE is in the closed position.

3.9 Bonnet, open. The portion of a GUILLOTINE DAMPER frame that supports the BLADE when the damper BLADE is in the open position. An OPEN BONNET does not have an enclosed blade.

3.10 Bonnet, fully enclosed (or sealed). The enclosed portion of a GUILLOTINE DAMPER frame that supports the BLADE when the damper blade is in the fully open position.

3.11 Butterfly damper. A LOUVER DAMPER having a round single BLADE.

3.12 Control damper. A DAMPER which has the purpose of modulating or regulating one or more gas flow parameters such as PRESSURE DROP, rate of gas flow, or airflow distribution.