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1682 Fire dampers
Part 1—1990 Specification
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Sets out the requirements for the design, manufacture, performance testing and marking of fire dampers whose purpose is to protect ventilation openings in fire-resistant elements of construction.
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Australian Standard 1682—1979

FIRE DAMPERS

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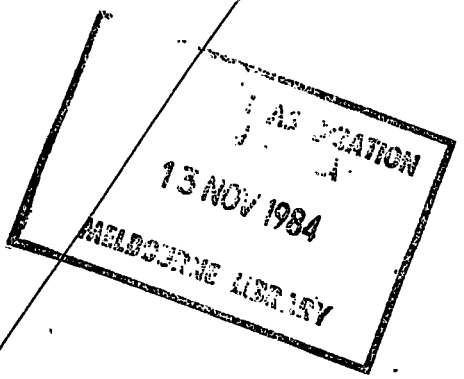

[Title allocated by Defence Cataloguing Authority—
DAMPER, Flue (fire or smoke initiated) ... NSC 4120]

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Association of Consulting Engineers Australia

Australian Gas Association

Australian Institute of Refrigeration, Airconditioning and Heating

Board of Fire Commissioners, N.S.W.

Building Owners and Managers Association of Australia Ltd

CSIRO, Division of Mechanical Engineering

Confederation of Australian Industry

Council of the Airconditioning and Mechanical Contractors Association of Australia

Council of the City of Sydney

Department of Construction

Department of Local Government, N.S.W.

Electricity Supply Association of Australia

Health Commission of N.S.W.

Institution of Engineers Australia

Insurance Council of Australia

Metal Trades Industry Association of Australia

Public Works Departments, N.S.W. and W.A.

Retail Traders Association of N.S.W.

Royal Australian Institute of Architects

University of New South Wales

This standard, prepared by Committee BD/41, Mechanical Ventilation and Air Conditioning in Buildings, was approved on behalf of the Council of the Standards Association of Australia on 28 December 1978, and was published on 1 May 1979.

To keep abreast of progress in industry, Australian standards are regularly reviewed. Suggestions for improvements to published standards, addressed to the head office of the Association, are welcomed.

This standard was issued in draft form for public review as DR 77149.

AUSTRALIAN STANDARD SPECIFICATION

FIRE DAMPERS

AS 1682—1979

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PREFACE

This standard was prepared by the Association's Committee on Mechanical Ventilation and Air Conditioning in Buildings, as a revision of AS 1682—1974.

The standard sets out the requirements for fire dampers required for ductwork penetrations through walls and ceilings by AS 1668, SAA Mechanical Ventilation and Air Conditioning Code, Part 1—Fire Precautions in Buildings with Air-handling Systems.

This revision provides for both pivoted blade and curtain type fire dampers. The appendix relating to the installation of fire dampers that was included in AS 1682—1974 has been deleted from this revision and is now included in the revised edition of AS 1668, Part 1. The dust test that was in the earlier edition has also been deleted. Information from local and overseas testing authorities has shown that no fire damper is likely to be prevented from opening by the accumulation of dust.

This standard may require reference to the following Australian and British standards:

AS 1397	Hot-dipped Zinc-coated or Aluminium/Zinc-coated Steel Sheet in Coil and Cut Lengths
AS 1449	Stainless and Heat-resisting Steel Plate, Sheet and Strip (Coils and Cut Lengths)
AS 1530	Methods for Fire Tests on Building Materials and Structures Part 4—Fire-resistance Test of Structures
AS 1566	Copper and Copper Alloy Plate, Rolled Bar, Sheet, Strip and Foil for General Engineering Purposes
AS 1668	SAA Mechanical Ventilation and Air Conditioning Code Part 1—Fire Precautions in Buildings with Air-handling Systems
AS 1890	Thermally-released Links
BS 1042	Methods for the Measurement of Fluid Flow in Pipes Part 1—Orifice Plates, Nozzles and Venturi Tubes

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard Specification for FIRE DAMPERS

FOREWORD

Although fire rarely starts in the ducts of ventilation and air-conditioning systems, the ductwork provides a ready means by which fire and products of combustion in any part of a building can spread throughout the building. To impede this spread of fire and products of combustion, fire dampers are installed in wall and ceiling penetrations which have been formed to permit the installation of air-handling systems. Thus, a fire damper is intended to restore partially the fire resistance of a wall or ceiling through which a penetration has been made to permit passage of air from an air-handling system.

A fire damper provides an effective barrier to the passage of fire and products of combustion; however, where its operation is initiated by the detection of smoke or other products of combustion, it may be termed a 'smoke damper'. The difference between a fire damper and a smoke damper lies only in the method of initiating the operation.

Fire dampers should be designed and constructed so that minimal resistance to airflow is created in the open position. The blade assembly needs to be of adequate strength to minimize flutter at air velocities up to the maximum recommended by the manufacturer, to obviate noise and metal fatigue problems.

It is recommended in AS 1668, Part 1, that curtain type fire dampers not be used in supply systems which do not have a second outlet, or branch to an outlet, upstream of the damper, unless it has been demonstrated to an approved testing authority that the particular damper is satisfactory in this application. This recommendation applies particularly in high velocity supply systems and is to avoid impedance of closure due to the build-up of excessive air pressure on the curtain during closure.

As fire dampers are required to operate under emergency conditions, an important feature of their design is that their eventual operation is not affected by the effects of corrosion. Conversely, frequent operation of fire dampers in a non-fire situation can be costly in terms of the time needed to locate and reset or repair a damper which has operated, in addition to being inconvenient. The prevention of corrosion has therefore been taken into account in the preparation of this specification. In addition, AS 1668, Part 1 requires that provision be made during installation for convenient access to allow easy removal for periodic inspection and replacement of the release mechanism incorporated in the fire damper assembly.

A code for the inspection and maintenance of air-handling plants is in the course of preparation. It is proposed that this will incorporate the inspection and maintenance requirements for fire dampers.

SECTION 1. SCOPE AND DEFINITIONS

1.1 SCOPE. This specification sets out requirements for the materials, design, manufacture, rating, testing and marking of fire dampers which may be of rectangular or circular face and of single or multiblade construction.

NOTES:

1. Rules for the installation of fire dampers are included in AS 1668, Part 1.
2. In the specifying of a damper, the width should always be quoted first and the height second. (See Clause 1.2 for definitions.)

1.2 DEFINITIONS. For the purposes of this specification, the following definitions apply:

1.2.1 Approved, approval—approved by, or the approval of, the Regulatory Authority concerned.

1.2.2 Regulatory Authority—the authority having statutory powers to control the installation and use of fire dampers in buildings.

1.2.3 Face area—the cross-sectional area normal to and available to airflow, with the damper in the fully open position.

NOTE: Face area includes also the sum of all cross-sectional thicknesses of blade(s), shaft(s), bushes and pivots, that are normal to the airflow, with the damper in the fully open position.

1.2.4 Fire damper—a complete assembly inclusive of casing and casing connections, if any, manufactured completely of non-combustible materials (except paints and similar finishes) and with one or more blades arranged to pivot, slide or otherwise close when released by a sensing device, so as to restrict the passage of fire and products of combustion past it.

NOTE: Where operation of a fire damper is initiated by the detection of smoke, the fire damper may be termed 'smoke damper'.

1.2.5 Diameter—the nominal outside diameter of a circular fire damper.

NOTE: Diameter is related to the outside dimension of the damper casing only and the mounting flange angles are not included.

1.2.6 Height—the nominal outside dimension of a rectangular fire damper measured across the axes of rotation of the blades at right angles to the direction of airflow.

1.2.7 Width—the nominal outside dimension of a rectangular fire damper measured along the axes of rotation of the blades.

NOTE: Height and width are related to the outside dimensions of the damper casing only and the mounting flange angles are not included.

SECTION 2. MATERIALS AND COMPONENTS

2.1 GENERAL. Except as herein specified, all materials shall comply with relevant Australian standards, where such exist. Approval shall be obtained before materials which do not comply with Australian standards are used in the manufacture of fire dampers.

2.2 SHAFTS AND BUSHES. All pivot points, including linkage points, and shafts shall be of stainless steel. All bushes shall be of stainless steel, commercial bronze or brass. Stainless steel shall comply with AS 1449.

2.3 LATCHING DEVICE. The latching device shall be made from—

(a) stainless steel, not less than Grade 301, condition H of AS 1449; or

(b) phosphor bronze, not less than Grade 518B temper H of AS 1566; or

(c) other approved material.

2.4 SPRING-OPERATED CLOSING DEVICE. Springs included in any closing mechanism shall be made from stainless steel of not less than Grade 301, condition H of AS 1449.

2.5 FLANGE, CASING AND BLADES. The flange, casing and blades of the fire damper shall be made from—

(a) stainless steel complying with AS 1449; or

(b) zinc-coated steel sheet complying with AS 1397 with a coating class not less than Z300. (See also Note 3, Clause 3.5.)

2.6 THERMALLY-RELEASED LINKS. Every fire damper shall incorporate a thermally-released link complying with AS 1890.