



Fire, smoke and air dampers

Part 2: Installation



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- Air Conditioning and Mechanical Contractors Association
 - Australasian Fire and Emergency Service Authorities Council
 - Australian Building Codes Board
 - Australian Industry Group
 - Australian Institute of Refrigeration, Air Conditioning and Heating
 - Chartered Institution of Building Services Engineers
 - Consumer Electronics Suppliers Association
 - Department of Health and Human Services, Tas.
 - Engineers Australia
 - Facility Management Association of Australia
 - NATSPEC
 - The Insulation Contractors Association of Australia, NSW
 - Victorian Building Authority
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Australian Standard[®]

Fire, smoke and air dampers

Part 2: Installation

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PREFACE

This Standard was prepared by the Standards Australia Committee ME-062, Ventilation and Airconditioning, to supersede AS 1682.2—1990, *Fire dampers*, Part 2: *Installation*.

The objective of this Standard is to provide requirements on the selection, installation and commissioning of fire, smoke and air dampers for use in air handling systems. Design, manufacturing, and testing requirements for fire dampers are specified in AS 1682.1, *Fire and smoke dampers*, Part 1: *Specification*.

It should be noted that fire collars, typically used for stormwater and waste water drainage systems, are *not* fire dampers and their use in air handling systems is strictly prohibited.

This edition incorporates the following changes from AS 1682.2—1990:

- (a) Priority given to installation instructions as the basis of all installations.
- (b) Installation requirements for smoke dampers and air dampers added.
- (c) Performance requirements for fire damper and smoke damper installations as normative appendices.
- (d) Guidance given for regulatory periodic inspections.
- (e) Breakaway jointing amended.
- (f) Typical commissioning check sheet included.
- (g) Baseline data introduced.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

This Standard includes a commentary on some of the clauses. The commentary directly follows the relevant clause, is designated by ‘C’ preceding the clause number and is printed in italics in a box. The commentary is for information and guidance and does not form part of the Standard.

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STANDARDS AUSTRALIA

Australian Standard

Fire, smoke and air dampers

Part 2: Installation

1 SCOPE

This Standard specifies requirements for the selection, installation and commissioning of fire, smoke and air dampers complying with AS 1682.1.

NOTE: Guidelines on the information that should be supplied by the specifier or purchaser at the time of specifying, enquiring or ordering are given in Appendix D.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

- 1530 Methods for fire tests on building materials, components and structures
- 1530.4 Part 4: Fire-resistance tests of elements of construction
- 1530.7 Part 7: Smoke control assemblies—Ambient and medium temperature leakage test procedure
- 1682 Fire, smoke and air dampers
- 1682.1 Part 1: Specification
- 4254 Ductwork for air-handling systems in buildings
- 4254.2 Part 2: Rigid duct

AS/NZS

- 1668 The use of ventilation and airconditioning in buildings
- 1668.1 Part 1: Fire and smoke control in multi-compartment buildings

3 DEFINITIONS

For the purpose of this Standard, the definitions given in AS 1682.1 apply.

4 PRELIMINARY CONSIDERATIONS

4.1 General

Dampers installed in accordance with this Standard shall comply with AS 1682.1.

4.2 Fire and smoke dampers

Fire dampers, smoke dampers and combined fire and smoke dampers shall be installed into the same type of construction and in the same manner in which the prototypes were tested or assessed by a testing authority to be in accordance with AS 1682.1.

The following conditions shall apply to the installation of fire dampers where the separation is less than that nominated in AS 1530.4:

- (a) Where multiple openings are created in wall or slab, the fire resistance level (FRL) structural adequacy of the wall or slab shall be maintained.
- (b) Where dampers are installed less than 75 mm from an adjacent wall, ceiling slab or floor slab, the installation shall comply with the fire test or opinion

4.3 Air dampers

Air dampers shall be installed in ductwork and shafts where required by AS/NZS 1668.1 or the project specification.

5 SELECTION

5.1 General

This Clause describes the steps required to select fire dampers, smoke dampers or air dampers in accordance with AS 1682.1.

5.2 Fire dampers

5.2.1 Integrity

A fire damper shall have a FRL (integrity) not less than that required of the construction in which it is mounted.

5.2.2 Structural adequacy

A fire damper is not required to have any structural adequacy. Structural adequacy is provided by the element in which it is installed.

5.2.3 Insulation

Where required by AS/NZS 1668.1, a fire damper shall have a FRL insulation not less than that required of the construction in which it is mounted.

C5.2.3 *Fire dampers have historically not been required to have FRL (insulation). This is still the case for many situations.*

Fire dampers are an acceptable method of protecting openings but do not usually meet the FRL insulation criterion. Installation is therefore restricted in most instances to the vertical plane. Horizontal mounting is permitted where the damper is designed to provide a barrier to heat transfer and has achieved the required FRL with respect to both integrity and insulation. Basic dampers are permitted in floors where protection is provided above the damper to prevent ignition of combustibles. Such protection could take the form of a physical barrier to prevent combustibles coming in contact with the duct, fire-resistant ducts or the application of thermal insulation. Designers need to consider the extent of direct exposure a damper could have to a fire below, the likely fire size, and flame and gas temperatures.

5.2.4 Ceiling fire damper

A ceiling fire damper installation shall have a FRL, in terms of integrity, insulation and the incipient spread of fire, not less than that required of the ceiling in which it is mounted. This shall be achieved by specific damper construction, insulated plenum box or by other means, all as tested by a testing authority.

5.2.5 Floor mounted fire damper

A floor mounted fire damper shall have a FRL in terms of integrity and insulation, not less than that required of the construction in which it is mounted. If the damper does not have FRL insulation, the duct above the fire damper shall be insulated in accordance with Clause 6.1(f).

5.3 Smoke dampers

Where required by the relevant building regulations, the smoke damper shall be selected to match the smoke resistance of the construction in which it is mounted.

5.4 Air dampers

Air dampers shall be selected to meet the leakage performance requirements of the specific design.

5.5 Air dampers (smoke exhaust)

Air dampers used for smoke exhaust shall be selected to meet the elevated temperature environment of the specific project application.

6 INSTALLATION REQUIREMENTS

6.1 Fire dampers and combined fire and smoke dampers

The installation shall be in accordance with the manufacturer's installation instructions, an assessment, test report or allowable installation variations in AS 1682.1. In addition, the installation shall comply with the following site specific requirements:

- (a) The method of attachment of ductwork to the fire damper shall include breakaway joints in accordance with Appendix C so that any deformation or collapse of the ductwork in a fire does not dislodge the fire damper or adversely affect its operation or performance. Attachment between damper and riser ducts do not require breakaway joints providing that the riser shaft only contains building services, excluding gas and fuel lines, and is not used in any way for storage of materials.

NOTES:

- 1 See Figure C1 for typical breakaway joints.
- 2 Compliance with the requirements of Appendix C is intended to meet the objectives of Clause 6.1(a) of these installation requirements.
- (b) Damper casing or mounting sleeve shall not extend beyond the face of the wall or floor by more than 150 mm on either side, except in the case where a motorized fire damper (or smoke damper) extends up to 250 mm on the motor side only.
- (c) Installation shall not have any obstruction that prevents closure of the damper.
- (d) Convenient access shall be provided for commissioning and maintenance (inspection, release and reset), both internally and externally.

C6.1(d) Consideration should be given to the size of the access panel to ensure maintainability, e.g. two-sided access panel, or circular clamp, etc.

- (e) Unless stated otherwise in the manufacturer's installation instructions, the maximum size of the opening in the structure shall not exceed damper size by more than the width of one mounting flange on the face of the structure. The minimum size of the opening in the structure shall be not less than that nominated in the manufacturer's instructions. Where the actual penetration exceeds the maximum stated in the manufacturer's installation instructions, or as above, options for correcting this non-compliance are either of the following:
 - (i) Size of opening shall be reduced while maintaining the FRL.
 - (ii) Larger mounting flanges shall be installed such that the width of the flange on the face of the building element is at least twice the clearance between the building element and the damper casing. In this case, width of mounting flanges shall not exceed the maximum width that has been subject to the fire test in AS 1682.1.

C6.1(e) In the case of penetrations requiring larger mounting flanges, consideration should be given to installation of additional packing to ensure that the damper remains central within the penetration.