

Australian Standard™

Twin wall metal flues—Gas appliances



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Australian Liquefied Petroleum Gas Association
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Twin wall metal flues—Gas appliances

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PREFACE

This Standard was reviewed by the Standards Australia Committee, AG-006, Gas Installation Committee, to supersede AG 605—1987, *Approval Requirements For Twin Wall Metal Flues*. The Standard is republished without technical alterations.

The objective of this Standard is to provide manufacturers, designers, regulatory authorities, testing laboratories and similar organizations with uniform minimum requirements for the safety, performance and use of twin wall metal flues.

This Standard should not be regarded as a design specification or as an instruction manual.

In its preparation, consideration has been given to—

- (a) continuity of satisfactory operation;
- (b) the prevention of fire hazards, and explosions;
- (c) the prevention of injury to persons or property;
- (d) gas rules and regulations now in force; and
- (e) relevant International Standards.

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 the Standard, whereas an ‘informative’ appendix is only for information and guidance.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard.

CONTENTS

	<i>Page</i>
SECTION 1 GENERAL	
1.1 SCOPE	4
1.2 CLASSIFICATION	4
1.3 DEFINITIONS	4
SECTION 2 DESIGN AND CONSTRUCTION	
2.1 MATERIALS	6
2.2 CONSTRUCTION.....	6
2.3 DESIGN	6
2.4 MARKINGS.....	7
2.5 INSTRUCTIONS	8
SECTION 3 REQUIREMENTS FOR TYPE 1 TWIN WALL FLUES	
3.1 COMPONENTS	9
3.2 SIZES	9
3.3 SUPPORT PLATES	9
3.4 FLUE CONNECTION ELBOW AND ELBOW HOUSING	9
SECTION 4 REQUIREMENTS FOR TYPE 2 TWIN WALL FLUES	
4.1 COMPONENTS	11
4.2 SIZES	11
4.3 SUPPORT PLATES	11
4.4 FLUE CONNECTION ELBOW AND ELBOW HOUSING	11
SECTION 5 REQUIREMENTS FOR TYPE 3 TWIN WALL FLUES	
5.1 COMPONENTS	13
5.2 SIZES	13
SECTION 6 PERFORMANCE	
6.1 GENERAL	14
6.2 OPERATING CHARACTERISTICS	14
6.3 MECHANICAL STRENGTH	14
APPENDICES	
A FIGURES	15
B METHODS OF TEST.....	22
C LIST OF REFERENCED DOCUMENTS	30

STANDARDS AUSTRALIA

Australian Standard
Twin wall metal flues—Gas appliances

SECTION 1 GENERAL

1.1 SCOPE

These requirements cover twin wall flue and components, excluding flue cowls (refer AS 4566), used for flueing gas appliances with a maximum flue gas temperature of 270°C.

Flue approved in accordance with these requirements is not suitable for installation where it is inaccessible and subject to continuous condensation.

1.2 CLASSIFICATION

Twin wall flues shall be classified according to type as follows:

- (a) Type 1 Rectangular twin wall flues designed for installation within standard wall cavities of 75 mm nominal width and for appliances with a gas consumption not exceeding 50 MJ/h.
- (b) Type 2 Twin wall flues designed for installation within standard wall cavities of 95 mm nominal width and for appliances with a gas consumption not exceeding 50 MJ/h.
- (c) Type 3 Other twin wall flues not exceeding 300 mm nominal diameter or equivalent.

1.3 DEFINITIONS

For the purpose of this Standard, the following definitions apply:

1.3.1 Approved

Acceptable to, and meeting the prescribed standards of, the authority having jurisdiction.

1.3.2 Authority

The authority having jurisdiction or such authority as delegated. (Technical regulator).

1.3.3 Base plate

A device used to support the weight of the appliance and to locate it.

1.3.4 Certified

Assessed by a certifying body and having a certificate number to demonstrate compliance with a Standard.

1.3.5 Certifying body

A body acceptable to the technical regulator that provides assurance of compliance of appliances and components with nominated Standards and other accepted safety criteria.

1.3.6 Draught diverter

A device, without moving parts, fitted in the flue of an appliance for isolating the combustion system from the effects of pressure changes in the secondary flue.

1.3.7 Flue

The passage through which flue gases are conveyed from an appliance to a discharge point excluding draught diverter, barometric device, fan or similar part.

1.3.8 Flue connection

A device incorporated in an appliance for the connection of a flue or draught diverter, barometric device, fan or similar part.

NOTE: Where the draught diverter, barometric device, fan or similar component is an integral part of the appliance, the discharge point of the integral part shall be deemed to be the flue connection.

1.3.9 Flue connection elbow

A right angle piece between the flue connection and the flue.

1.3.10 Flue connection elbow housing

A device for supporting and positively locating a twin wall flue within a wall cavity, and for housing and positively locating a flue connection elbow for a space heater.

1.3.11 Flue system

The passage through which flue gases are conveyed from an appliance to a discharge point including draught diverter, barometric device, fan or similar part.

1.3.12 Header assembly

A device for supporting and positively locating a twin wall flue within a wall cavity for a wall furnace.

1.3.13 Header plate

A device for positively locating a twin wall flue within a wall cavity.

1.3.14 Outer casing

The case enclosing the inner flue conduit of a twin wall flue.

1.3.15 Sealing plate

A plate used to support and seal the transition piece to the flue. It prevents the entry of excess air into the flue.

1.3.16 Support bracket

A metal bracket attached to the outer skin of the flue and intended to support and locate the sealing plate and the transition piece.

1.3.17 Technical regulator

The Government appointed person, body or authority that has jurisdiction over gas safety legislation (or other entity authorized by that person, body or authority).

1.3.18 Top plate support

The device for positively positioning the flue where it passes through or into the ceiling space and for bracing the top plate.

1.3.19 Twin wall flue

A type of flue in which the inner flue conduit is encased by an outer casing of specific dimensions.

SECTION 2 DESIGN AND CONSTRUCTION

2.1 MATERIALS

2.1.1 Non-combustible and corrosion-resistant

A gas flue part shall be made of non-combustible corrosion-resistant materials. Metals shall not be used in combinations such as to cause detrimental galvanic action which will adversely affect any part of the assembly.

2.1.2 Sheet metal thickness

The minimum thickness of sheet metal, including any coatings, shall comply with Table 2.1, unless otherwise specified.

TABLE 2.1
MINIMUM THICKNESS OF SHEET METAL

Materials	mm
Aluminium alloys (1100, 3003) - inner pipe	0.30
Aluminium alloys (1100, 3003) - other use	0.40
Galvanized steel (275 g of zinc per m ²)	0.45
Aluminium coated steel (122 g per m ²)	0.45
Stainless steel (Type 430 and 300 Series)	0.30
Zinc/Aluminium alloy coated steel (150 g per m ²)	0.45

2.1.3 Aluminium alloys

Aluminium alloys containing more than 1.0% magnesium shall not be used if the reflectivity of the material is utilized to reduce fire hazard.

2.1.4 Durability and resistance

A flue gas conveying conduit shall be of material having durability and resistance to corrosion and heat equivalent to that of Type 1100 aluminium or Type 430 stainless steel conforming to the requirements contained herein. Other parts in contact with the flue gases or subject to condensation shall be of material having durability and resistance to corrosion and heat equivalent to Type 1100 aluminium or aluminium-coated steel.

2.2 CONSTRUCTION

An outer casing or other structural part (exclusive of the flue gas conveying conduit) whose failure would cause the gas flue to collapse or fail, shall be made of material having durability and resistance to damage, atmospheric corrosion and fire equivalent to that of galvanized steel having a coating of zinc of 275 (nominal) grams per square metre.

2.3 DESIGN

2.3.1 Nominal cross-sectional

The nominal cross-sectional area of the flue gas passage of a flue pipe fitting shall be not less than that of the flue piping with which it is intended to be used.

2.3.2 Minimum wall gap

The gap between the two walls of a twin wall flue pipe section or flue pipe fitting shall not be less than 6 mm in width.

2.3.3 Joints

A joint shall—

- (a) be a tight fit (metal to metal) when made up in accordance with the manufacturer's instructions;
- (b) not materially reduce the capacity of the flue piping; and
- (c) be designed not to retain or leak condensation.

2.3.4 Top plate supports and spacers

A twin wall gas flue intended for installation within a wall cavity with other than zero clearance shall be provided with top plate supports designed to locate the flue in the wall cavity. Each length of flue shall include integral spacers that will maintain the minimum required clearance between the outer casing of the flue and the inner surfaces of walls. Such spacers are to be located so that, when lengths are joined, there will be spacers on both sides of and directly adjacent to each joint.

2.3.5 Ready attachment

Each part of a gas flue shall be designed for ready attachment of one to the other without requiring alteration, cutting, threading, drilling, welding or similar task by the installer, except that a length of flue pipe may be shortened by cutting if sufficient instructions and/or parts are available to enable the cut length to comply with these requirements.

2.3.6 Definite relationship between flue parts

Any parts of a flue which bear a definite relationship to any other for proper and safe use shall be arranged and constructed to permit them to be incorporated into the complete assembly only in the correct relationship with each other and without the need for alteration or alignment, or such parts shall be assembled and shipped from the factory as one element.

2.3.7 Assembly by manufacturers

Each gas flue part (such as a flue pipe section, elbow, coupling, tee etc.) shall be completely assembled by the manufacturer at the factory.

2.3.8 Spacer strength

All spacers shall have sufficient strength and bearing surface to maintain the required clearance between the flue pipe, parts of joists, ceiling and floor material, and the inner surface of walls.

2.3.9 Securing supports

A support assembly intended to be secured by nails or screws shall be arranged so that such holding means will be in shear.

2.3.10 Use of screws

Where screws are employed to field-join assemblies, the assemblies shall readily receive screws without being field-punched or field-drilled and a screw shall not extend into a flue inner conduit. Screws and instructions shall be supplied.

2.3.11 Damage free

An assembly intended to support the flue pipe shall not be damaged, nor shall the security of its attachment to the building structure be impaired.

2.4 MARKINGS

Each length of flue or component shall be clearly and permanently marked and such marking shall include the following:

- (a) Manufacturer's name and/or trade mark.

- (b) Type or designation.
- (c) Certificate of compliance number obtained from a certifying body.
- (d) Direction of flow, if applicable.

Markings shall remain legible and durable during normal handling and installation, e.g. to abrasion, humidity and temperature.

2.5 INSTRUCTIONS

Instructions in English shall be available, which shall include:

- (a) Type or designation.
- (b) Manufacturer's or agent's name and address.
- (c) Illustrations, directions and information for attaining proper and safe installation of the gas flue components including the details below:
 - (i) Parts required and the process for installing the gas flue, methods of support, and maintenance of clearances to wall, floor, ceiling, roof, joist construction and building insulation.
 - (ii) Methods and parts to be employed for maintaining ventilation and air circulation where required.
 - (iii) Any limitations with respect to installation and use, such as maximum height, the jointing of two or more parts to constitute a safe assembly etc.
 - (iv) Cutting and joining of lengths (where applicable).
 - (v) Essential external and internal dimensions.

SECTION 3 REQUIREMENTS FOR TYPE 1 TWIN WALL FLUES

3.1 COMPONENTS

Minimum components needed for approval of Type 1 flue systems:

- (a) Flue lengths of approximately 300, 900, 1200 and 1500 mm and an adjustable length unless the flue is designed to be cut.
- (b) Flue connection elbow and elbow housing for 75 mm stud walls.
- (c) Top plate flue support.
- (d) Adaptor for twin wall rectangular flue to circular flue.

3.2 SIZES

3.2.1 Inner conduit dimensions

The inner conduit of the flue or fitting shall have—

- (a) an internal cross-sectional area of not less than 70 cm²; and
- (b) internal dimensions of—
 - Width 225 $\begin{smallmatrix} +5 \\ -0 \end{smallmatrix}$ mm
 - Depth 33 $\begin{smallmatrix} +3 \\ -0 \end{smallmatrix}$ mm

3.2.2 External dimensions

The assembled joint shall be capable of passing through a rectangular aperture measuring 65 mm × 270 mm.

3.2.3 Dimensions diagram

A flue connection elbow and elbow housing shall incorporate the dimensions shown in Figure A1.

3.3 SUPPORT PLATES

3.3.1 Top plate supports

Top plate supports shall be—

- (a) capable of positively locating the twin wall flue within the wall cavity; and
- (b) made of at least 1 mm gauge galvanized steel, stiffened along the longitudinal edges with a minimum turn up of 6 mm. The longitudinal length shall not be less than 600 mm.

3.3.2 Header plates

Header plates shall be capable of positively—

- (a) locating the twin wall flue within the wall cavity; and
- (b) locating and retaining the appliance flue outlet.

3.4 FLUE CONNECTION ELBOW AND ELBOW HOUSING

3.4.1 Flue connection elbow

A flue connection elbow shall be made of stainless steel with a minimum thickness of 0.60 mm or material having equivalent strength.

3.4.2 Flue connection elbow housing

A flue connection elbow housing shall be—

- (a) made of galvanized steel with a minimum thickness of 0.80 mm, or a material having equivalent strength, and shall meet the requirements of Clause 2.2; and
- (b) be capable of positively—
 - (i) locating and retaining the twin wall flue within the wall cavity; and
 - (ii) locating the flue connection elbow.