

Australian Standard™

**Pressure and temperature limit devices  
for use with gas burners**



This Australian Standard was prepared by Committee AG-011, Gas Components and Industrial Equipment. It was approved on behalf of the Council of Standards Australia on 14 April 2005. This Standard was published on 1 June 2005.

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Australian Standard™

## Pressure and temperature limit devices for use with gas burners

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## PREFACE

This Standard was reviewed by the Standards Australia Committee, AG-011, Gas Components and Industrial Equipment, to supersede AG 213 - 1998, *Approval requirements for pressure and temperature limit devices*. 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 pressure and temperature limit devices.

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 a 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.

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## STANDARDS AUSTRALIA

## Australian Standard

## Pressure and temperature limit devices for use with gas burners

## SECTION 1 SCOPE AND DEFINITIONS

**1.1 SCOPE**

These requirements apply to pressure and temperature limit devices intended to be used with gas or multi-fuel burners.

Compliance with these requirements does not imply acceptability for use without supplemental tests in an intended application.

A limit device incorporating electrical components shall comply with the requirements of the appropriate electrical authority.

Requirements for mechanically operated over-pressure and under-pressure cut-off devices are published in AS 4632.

**1.2 DEFINITIONS****1.2.1 Authority**

Means the authority having jurisdiction or such authority as delegated. (Technical Regulator).

**1.2.2 Certified**

Assessed by a Certifying Body, and having a certificate number to demonstrate compliance with a Standard.

**1.2.3 Certifying body**

A body acceptable to the Technical Regulator that provides assurance of compliance of appliances and components with nominated standards or other accepted safety criteria.

**1.2.4 Gas**

A combustible fuel gas which may be one of the following:

**1.2.4.1 Natural gas (NG)**

A hydrocarbon gas, consisting mainly of methane.

**1.2.4.2 Simulated natural gas (SNG)**

A gas comprising a mixture of LPG and air, in the approximate proportions of 55% gas and 45% air for commercial propane.

**1.2.4.3 Town gas (TG)**

A gas manufactured from coal or petroleum feedstocks.

**1.2.4.4 Tempered liquefied petroleum gas (TLP)**

A gas comprising a mixture of LPG and air, in the approximate proportions of 27% gas and 73% air for commercial propane.

#### **1.2.4.5** *Liquefied petroleum gas (LPG)*

A gas composed predominantly of any of the following hydrocarbons, or any combination of them in the vapour phase; propane, propene (propylene), butane, butene (butylene).

#### **1.2.5** **Limit device**

An automatic control responsive to changes in pressure or temperature and normally set beyond the operating range for limiting the operation of the controlled equipment.

#### **1.2.6** **Rated working pressure**

The maximum allowable inlet pressure specified by the manufacturer.

#### **1.2.7** **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).

## SECTION 2 DESIGN AND CONSTRUCTION

### 2.1 MATERIALS

#### 2.1.1 Continuity of satisfactory operation

Materials used in the construction shall be such that continuity of satisfactory operation can be expected during normal usage within the manufacturer's specification.

#### 2.1.2 Suitability of materials for conditions of use

Materials and finishes, including dressings and lubricants, used in the construction, shall be suitable for the conditions of use (e.g. corrosion, temperature, handling, etc.).

#### 2.1.3 Materials in contact with gas

Materials in contact with the gas, including lubricants, dressings and jointing compounds, shall be suitable for use with all gases.

At the completion of testing in accordance with M.O.T. 2.1.3, the device shall satisfy the requirements of Clauses 3.1.3 and 3.5.1.

#### 2.1.4 Melting point of materials

The body of a limit device intending to contain gas shall be made of metallic materials with a melting point not less than 430°C.

#### 2.1.5 Parts in contact with water

All parts that are in contact with water shall have a corrosion resistance not inferior to alpha inhibited brass. (Refer to AS 1056.1.)

#### 2.1.6 Brass parts

Brass parts shall be resistant to season cracking when tested in accordance with AS 2136.

#### 2.1.7 Component parts materials selected to appropriate Standards

Alloys used for component parts shall be selected from appropriate Australian Standards or their equivalent.

### 2.2 CONSTRUCTION

#### 2.2.1 Continuity of satisfactory operation

Construction shall ensure the continued safe operation of the unit during usage within the manufacturer's specification.

#### 2.2.2 Castings and hot pressings

All castings and hot pressings shall be clean and sound, free from laps, blow holes and pitting and all surfaces not machine finished shall be clean, smooth and free from sand.

#### 2.2.3 Sealing of porous castings or cracks

Porous castings or cracks in gas-carrying parts shall not be sealed other than by an accepted method for the impregnation of castings, e.g. vacuum impregnation.

#### 2.2.4 Assembled device to be clean

The assembled unit shall not contain dirt, casting sand, swarf or other foreign matter. There shall be no excess diaphragm dressing or jointing compound in the unit.

### **2.2.5 Accidental displacement of parts**

Every part shall be secure against accidental displacement and shall be constructed to maintain a fixed relationship between essential parts under normal and reasonable conditions of handling and usage so as to ensure continued compliance with this Standard.

### **2.2.6 Prevention of accidental shift after calibration**

Means provided for factory calibration shall be factory sealed to prevent accidental shifting after calibration.

### **2.2.7 Attachment of knobs, handles, dials and pointers**

Knobs, handles, movable dials and pointers, where supplied, shall be securely attached to their spindles.

### **2.2.8 Springs**

Springs shall be resistant to corrosion. The ends of a helical spring shall be flat and in a plane perpendicular to the axis of the spring. The coils of a cylindrical helical spring shall not be able to overlap.

### **2.2.9 Securing of parts**

Adhesives shall not be used for securing parts together without additional mechanical fixing means, except for labels.

### **2.2.10 Sharp edges**

Constituent parts shall be free from sharp edges that may cause damage or injury.

### **2.2.11 Holes for assembly or mounting**

Holes for screws, pins, etc., intended for the assembly of parts or for mounting shall not open into gasways and shall provide a minimum wall thickness of 1 mm from gasways.

### **2.2.12 Permanent sealing of non-functional holes**

Non-functional holes used for manufacture and which form a passage between gasways and the atmosphere shall be permanently sealed by mechanical means.

### **2.2.13 Self-tapping screws**

Self-tapping screws, other than those that form a fully swaged machine type thread, shall not be used to secure together the external joint of a gas-carrying component that may be removed in servicing. The application of thread-forming screws shall be limited to malleable materials and shall not result in deformation or cracking of the component.

### **2.2.14 Construction of parts not covered by this Standard**

The construction of parts not covered by this Standard shall be in accordance with reasonable concepts of safety, substantiality and durability. The general assembly shall be of a neat and workmanlike character with all parts well fitted.

### **2.2.15 Tightening of a gland or any other adjustments**

The tightening of a gland or any other adjustment will not destroy the ability of the unit to meet this Standard.

## **2.3 DESIGN**

### **2.3.1 Fail-safe type**

All safety functions shall be of a fail-safe type.

### **2.3.2 Safety device cannot be overridden**

No means shall be incorporated to bypass, hold open or partly open any safety function when it should be closed.

### **2.3.3 Accessibility of integral parts**

Integral parts that may require adjustment shall be accessible for adjustment.

### **2.3.4 Adjusting devices**

Adjusting devices shall be arranged to prevent movement other than manual adjustment.

### **2.3.5 Locking device**

The tightening of a locking device shall not alter the setting.

### **2.3.6 Components requiring servicing**

Components requiring servicing during normal use shall be accessible and shall be manufactured so that parts cannot be incorrectly assembled.

### **2.3.7 Special tools not required for servicing or replacement**

Special tools beyond those normally carried by service personnel shall not be required for field servicing or replacement.

### **2.3.8 Venting**

The venting of the atmospheric pressure chamber of a gas pressure-limiting device shall occur through a vent limiter or there shall be provision for connecting a vent line unless a flow limiter is provided in the gas pressure-sensing connection.

Where a flow limiter or a vent limiter is fitted, the orifice shall have a maximum diameter of 0.4 mm for LP gases and 0.7 mm for all other gases.

A vent limiter shall be so constructed and located that it cannot easily become blocked and that a cleaning device inserted into the vent limiter cannot readily damage the diaphragm.

### **2.3.9 Protection of mechanism**

The mechanism of a limit device shall be protected by an enclosure to avoid damage to or interference with operating parts.

### **2.3.10 Knobs and movable dials**

Knobs and movable dials shall be so designed as to avoid accidental change of setting in service.

### **2.3.11 Connections**

Except when the unit is supplied with special purpose fittings for a specific appliance, the connections shall be in accordance with an approved standard and, if threaded, shall be provided with spanner flats.

### **2.3.12 Pressure test points**

Pressure test points shall accept 6 mm bore tubing and the orifice shall be no greater than 0.7 mm diameter.

### **2.3.13 Connections suitable for rated working pressure**

Pressure-sensing line connection(s) shall be suitable for the rated working pressure of the limit device.