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AS/NZS 5263.1.4:2017

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Australian/New Zealand Standard™

Gas appliances

Part 1.4: Radiant gas heaters



AS/NZS 5263.1.4:2017

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee AG-001, Gas appliances. It was approved on behalf of the Council of Standards Australia on 6 August 2017 and by the New Zealand Standards Approval Board on 6 September 2017.

This Standard was published on 13 October 2017.

The following are represented on Committee AG-001:

Association of Accredited Certification Bodies
Australian Gas Association
Consumer Electronics Suppliers Association
Consumers Federation of Australia
Energy Efficiency and Conservation Authority of New Zealand
Energy Networks Association
Gas Appliance Manufacturers Association of Australia
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This Standard was issued in draft form for comment as DR AS/NZS 5263.1.4:2016.

Australian/New Zealand Standard™

Gas appliances

Part 1.4: Radiant gas heaters

Originated in Australia in part as AS 4565/AG 405—2001 and AG 115—1985.
Previous editions AS 4565—2004 and AS 4643—2007.
Jointly revised, amalgamated and redesignated as AS/NZS 5263.1.4:2017.

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Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, PO Box 1473, Wellington 6140.

ISBN 978 1 76035 890 7

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee AG-001, Gas Appliances, to supersede AS 4565—2004, *Radiant gas heaters for outdoor and non-residential indoor use*, and AS 4643—2007, *Overhead radiant tube gas heaters*.

This Standard provides particular requirements for radiant gas heating appliances that apply in addition to or in place of the general requirements for gas appliances set out in AS/NZS 5263.0, *Gas appliances, Part 0: General requirements*. The combination of AS/NZS 5263.1.4 and AS/NZS 5263.0 supersedes AS 4565—2004 and AS 4643—2007.

This Part 1.4 of AS/NZS 5263, supplements or modifies the corresponding clauses of Part 0. The numbering of Clauses in this Part 1.4 is consistent with the numbering in Part 0 for related requirements.

Statements used in this Part 1.4 to explain the relationship of clauses in this Standard to the corresponding Clause of Part 0 are as follows:

- (a) ‘This Clause of AS/NZS 5263.0 applies’, in which case the corresponding Clause of Part 0 and its subclauses are used without modification.
- (b) ‘This Clause of AS/NZS 5263.0 applies, except as modified below’, in which case the corresponding Clause of Part 0 and its subclauses are used but with the modifications, as listed in this document.
- (c) ‘Not applicable’, in which case the corresponding Clause of Part 0 is not used in this context.

Otherwise the text in this Standard replaces the corresponding Clause of Part 0.

Any Clauses in this Standard that are additional to the requirements of Part 0 are numbered beginning from 101 (except for additional definitions, which begin from 201). Additional Appendices in this Part 1.4 are designated with a letter starting from AA, or numbered beginning from 101 (e.g. ZA101).

Where an Appendix, or part of an Appendix (i.e. Paragraph, Figure, or Table) is cited in this Standard, reference should first be made to Part 0 for the content of the Appendix, which may be modified by this Part 1.4.

The objective of this Standard is to provide manufacturers, designers, regulatory authorities, conformity assessment bodies and similar organizations with uniform minimum requirements for the safety, performance and use of gas appliances.

This Standard should not be regarded as a design specification or as an instruction manual. Consideration has been given to—

- (i) continuity of satisfactory operation;
- (ii) the prevention of fire hazards and explosions;
- (iii) the prevention of injury to persons or property;
- (iv) gas rules and regulations now in force; and
- (v) relevant international Standards.

AS/NZS 5601 series of Standards provides essential requirements and means of compliance for gas installations. Any reference to ‘AS/NZS 5601’ in AS/NZS 5263 series of Standards should be considered as reference to the appropriate part of the AS/NZS 5601 series of Standards (i.e. AS/NZS 5601.1 or AS/NZS 5601.2).

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 and footnotes to tables and figures are deemed to be requirements of this Standard.

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Gas appliances

Part 1.4: Radiant gas heaters

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE AND APPLICATION**1.1.1 Scope**

This Standard provides specific requirements and test methods for—

- (a) flueless, radiant gas heating appliances with energy input not exceeding 70 MJ/h, intended for operation in outdoor areas and non-residential indoor areas. These may be for portable use or fixed installation.
- (b) overhead radiant tube heaters with energy input not exceeding 500 MJ/h, for fixed installation only.

For Australia, the fuel gases are natural gas (as described by AS 4564), town gas, liquefied petroleum gas (LP Gas, as described by AS 4670), simulated natural gas (SNG) and tempered liquefied petroleum gas (TLP).

For New Zealand—

- (i) The fuel gases are natural gas (as specified in NZS 5442) and general product liquefied petroleum gas (NZLPG) (as specified in NZS 5435).
- (ii) The thermal efficiency requirements are informative only, except where they relate to safety.

Appendix AA provides figures referenced in this Standard that are in addition to those in AS/NZS 5263.0.

Test methods are set out in Appendices ZA, ZB and ZC (see Clause 1.4).

NOTE: Other statutory or regulatory requirements may be applicable to a product that falls within the scope of this Standard. It is the responsibility of the manufacturer, importer or distributor (as appropriate) to ensure that products comply with such requirements.

1.1.2 Application

This Standard is complementary to, and is intended to be used in conjunction with AS/NZS 5263.0. The requirements given herein shall take precedence over corresponding requirements in that Standard.

AS 3645 specifies essential requirements for gas equipment that requires regulatory approval before sale. This Standard, together with AS/NZS 5263.0, is intended to provide a means of demonstrating compliance with AS 3645.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard.

AS

- 3645 Essential requirements for gas equipment
- 4564 Specification for general purpose natural gas
- 4670 Commercial propane and commercial butane for heating purposes

AS/NZS

- 5263 Gas appliances
- 5263.0 Part 0: General requirements
- 5601 Gas installations
- 5601.1 Part 1: General installations
- 5601.2 Part 2: LP Gas installations in caravans and boats for non-propulsive purposes

NZS

- 5442 Specification for reticulated natural gas
- 5435 Specification for liquefied petroleum gas

1.3 DEFINITIONS

The definitions of AS/NZS 5263.0 and the following apply.

1.3.201 Area heater

An outdoor space heating appliance other than a table top appliance where the burner and combustion product outlet are less than 1.8 m from the ground.

1.3.202 Dome

A component fitted above the radiant element of an appliance, other than an overhead radiant tube heater, for the reflection of heat. The dome may also protect the burner/radiant element from the effects of rain.

1.3.203 Integral LP Gas supply

The supply of LP Gas to the appliance from a gas container that is mounted on, or housed within, the appliance.

1.3.204 Non-residential indoor area

An indoor area that is not part of domestic premises.

1.3.205 Overhead radiant heater

A space heater installed at a high level and designed to provide an effective output mainly of radiation below the level of the heater.

1.3.206 Overhead radiant tube heater

An overhead radiant heater that employs a heated tube as the radiant element.

1.4 TEST METHODS

The modified and new test methods applicable for this Standard are located in the following Appendices; apart from these, the test methods of AS/NZS 5263.0 apply.

Appendix ZA—Preliminary test methods (applicable for Section 3)

Appendix ZA of AS/NZS 5263.0 applies.

Appendix ZB—Limit condition test methods (applicable for Section 4)

- ZB1: Determination of CO/CO₂ ratio limits for any independent surface combustion burners—Underload test
- ZB2: Determination of CO/CO₂ ratio limits for any independent burner—Overload test
- ZB3: Determination of CO/CO₂ ratio for permanent pilots—Overload test
- ZB4: Flame characteristics at maximum and minimum limiting conditions test
- ZB5: Burner ignition at maximum and minimum limiting conditions test
- ZB6: Delayed ignition at maximum and minimum limiting conditions test

Appendix ZC—Performance test methods (applicable for Section 5)

- ZC19: Wind test—Outdoor attended appliances
- ZC29: Operation of oxygen depletion system test
- ZC30: Vitiation test
- ZC31: Combustion at low appliance inlet pressure test
- ZC101: Thermal efficiency test

SECTION 2 DESIGN AND CONSTRUCTION

2.1 SCOPE

This Clause of AS/NZS 5263.0 applies.

2.2 GENERAL DESIGN REQUIREMENTS

This Clause of AS/NZS 5263.0 applies, except as modified below.

2.2.14 Provision for moving appliances

Portable and mobile appliances shall be provided with means to facilitate moving the appliance safely.

An area heater or table top heater shall not be a mobile appliance and shall not have provision for the fitting of wheels or castors.

2.2.101 Locking of dampers

Dampers, where fitted, for the control or adjustment of combustion air flow or flue gas flow shall be fitted with a minimum stop and with a locking feature to obtain sufficient air at minimum burner output.

2.2.102 Maximum gas consumption

Table top appliances shall have a gas consumption not exceeding 20 MJ/h.

2.2.103 Maximum dome dimension

The maximum dimension for the dome of a table top appliance shall not exceed 600 mm.

2.2.104 Means to lock appliance wheels

Appliances having more than two casters or wheels shall have means to lock the appliance in a stationary position.

2.3 MATERIALS

This Clause of AS/NZS 5263.0 applies.

2.4 DESIGN FOR ASSEMBLY AND INSTALLATION

This Clause of AS/NZS 5263.0 applies, except as modified below.

2.4.101 Locking position of variable position burners

Variable position burners shall be provided with means to lock them in each working position.

2.5 DESIGN FOR MAINTENANCE

This Clause of AS/NZS 5263.0 applies.

2.6 DESIGN FOR OPERATION

This Clause of AS/NZS 5263.0 applies.

2.7 CONTROLS AND SAFETY DEVICES

This Clause of AS/NZS 5263.0 applies.

2.8 GAS TRAIN

This Clause of AS/NZS 5263.0 applies.

2.9 COMBUSTION AIR AND FLUE SYSTEMS

This Clause of AS/NZS 5263.0 applies.

2.10 FAN ASSISTED COMBUSTION SYSTEMS

This Clause of AS/NZS 5263.0 applies.

2.11 BURNERS AND IGNITION SYSTEMS

This Clause of AS/NZS 5263.0 applies.

2.12 COMPONENTS

This Clause of AS/NZS 5263.0 applies.

2.13 CYLINDERS AND CYLINDER COMPARTMENTS

This Clause of AS/NZS 5263.0 applies, except as modified below.

2.13.1 Indoor appliances

An indoor appliance, other than an appliance for non-residential indoor use, shall not have a cylinder compartment.

2.13.6 Protection from spillover

Not applicable.

2.13.101 LP Gas cylinder mounting means

The appliance shall have means to support any integral gas cylinder and protect its connections from undue strain.

This requirement is deemed to be satisfied if the appliance includes—

- (a) an integral mounting means for a cylinder; or
- (b) a cylinder compartment.

2.13.102 Non-refillable cartridges and canisters

Appliances shall not be designed for use with non-refillable cartridges or canisters.

2.14 MARKINGS

This Clause of AS/NZS 5263.0 applies, except as modified below.

2.14.2 Permanent markings on appliances

NOTE: Other marking requirements (e.g. wiring diagrams, identification of certification body and certificate number) may be applicable to a product that falls within the scope of this Standard. It is the responsibility of the manufacturer, importer or distributor (as appropriate) to check other marking requirements.

Appliances shall be provided with clear and permanent markings readily accessible and easy to read, and such markings shall include the following:

- (a) Name, trade mark or identification mark of the manufacturer or responsible vendor.
- (b) Model designation.
- (c) Month and year of manufacture or serial number where this is documented to show month and year of manufacture.

- (d) Gas or gases for which the appliance is intended to be used.
- (e) Total nominal gas consumption, in MJ/h, and test point pressure, in kPa, for each gas nominated in (d) above, or in the case of range-rated appliances the maximum and minimum values.
- (f) For main burners with an adjustable bypass and which are ignited by a pilot, the main burner test point pressure, in kPa, at the bypass rate for each gas nominated in (d) above.
- (g) Where manufacturer's instructions require an appliance to be installed on fire resistant material, the marking: 'TO BE INSTALLED ON FIRE RESISTANT MATERIAL'.
- (h) For appliances suitable for indoor installation only, the text: 'SUITABLE ONLY FOR INDOOR INSTALLATION'.
- (i) For appliances suitable for outdoor installation only, the text: 'SUITABLE ONLY FOR OUTDOOR INSTALLATION'.
- (j) Where an appliance is to be connected to a gas cylinder via a flexible hose, the marking: 'DO NOT OPERATE THIS APPLIANCE BEFORE LEAK CHECKING HOSES AND GAS CYLINDER CONNECTION'.
- (k) For appliances designed for use with a portable LP Gas cylinder, except those intended for use in non-residential indoor areas, the marking: 'FOR OUTDOOR USE ONLY'.
- (l) The appropriate warning labels as shown in Figures AA101 to AA104, or for overhead radiant tube heaters, the appropriate warning label as shown in Figure A9.
- (m) For area heaters and outdoor appliances designed for use with a portable LP Gas cylinder, a danger label containing at least the information as shown in Figure A10.
- (n) Instructions as required in Clause 2.15.3.1, Item (e).
- (o) For New Zealand, for natural gas appliances the minimum gas inlet pressure required for the appliance to operate safely where this is greater than 1.13 kPa.
- (p) For New Zealand, for LPG appliances, where the New Zealand gas consumption is marked on the appliance, the value determined in accordance with this Standard.
- (q) For overhead radiant tube heaters, either—
 - (i) 'THIS APPLIANCE MUST BE FLUED'; or
 - (ii) 'ADEQUATE VENTILATION MUST BE PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPROPRIATE AUTHORITY', if the appliance is intended for use as a flueless appliance.

2.14.12 Label on guard

Other than an overhead radiant tube heater, an appliance that is fitted with a primary guard shall have a label attached that carries the following minimum information in bold capital letters not less than 3 mm in height:

THE GUARD IS FITTED TO THIS APPLIANCE TO REDUCE THE RISK OF FIRE OR INJURY FROM BURNS AND NO PART OF IT SHOULD BE PERMANENTLY REMOVED.

FOR PROTECTION OF YOUNG CHILDREN OR THE INFIRM, A SECONDARY GUARD IS REQUIRED.

2.14.101 Label related to domestic use

For overhead radiant tube heaters, the following text shall be marked on the packaging of the appliance and permanently in a prominent position on the appliance:

‘THIS APPLIANCE IS UNSUITABLE FOR INDOOR DOMESTIC USE’

NOTE: Where there is no packaging or the packaging is transparent, it is sufficient to place this marking on the appliance, as long as it is visible.

2.14.102 Location of warning labels

For appliances other than overhead radiant heaters, warning labels shall be located on the outside of the appliance in a position where they are clearly visible to the user when operating the appliance in the installed/operating position.

2.14.103 Warning label for hot surfaces

Where a warning label is used to comply with the requirements of Clause 5.4.101(a), a permanent label as shown in Figure AA105 shall be attached to the appropriate component(s), except that domes shall have at least three labels, equally spaced around the dome and placed in positions where they can be easily seen when the appliance is in the operating position.

The label material shall be suitable for the temperature in the area where it is fitted.

2.14.104 Additional markings on packaging

For appliances other than overhead radiant tube heaters, the packaging shall also be marked in a prominent position with:

- (a) In the case of appliances for outdoor use, the text—
 - (i) ‘Do not operate in an enclosed area’;
 - (ii) ‘Do not operate in an unventilated area’; and
 - (iii) ‘Do not operate indoors’.
- (b) In the case of appliances for indoor use, the text—
 - ‘Do not operate this appliance in an unventilated area’.

2.15 INSTRUCTIONS

This Clause of AS/NZS 5263.0 applies, except as modified below.

2.15.2 Installation

2.15.2.1 Instructions supplied with the appliance

Each appliance shall be supplied with installation instructions that include the items specified in this clause of AS/NZS 5263.0 and the following:

- (aa) In the case of appliances intended for outdoor use:
 - (i) The diagrams in Appendix G.
 - (ii) The following text:

‘Only use this appliance in an above ground open-air situation with natural ventilation, without stagnant areas, where gas leakage and products of combustion are rapidly dispersed by wind and natural convection.’
 - (iii) The following text:

‘Any enclosure in which the appliance is used shall comply with one of the following:

- (a) An enclosure with walls on all sides, but at least one permanent opening at ground level and no overhead cover.
- (b) A partial enclosure that includes an overhead cover and no more than two walls.
- (c) A partial enclosure that includes an overhead cover and more than two walls, where:
 - at least 25% of the total wall area is completely open, and
 - at least 30% of the remaining wall area is open and unrestricted.

In the case of balconies, at least 20% of the total wall area is required to be open, and remain open and unrestricted.'

- (bb) In the case of appliances intended for non-residential indoor use, other than overhead radiant tube heaters:

- (i) The following text:

'Do not use this appliance in a room smaller than V cubic metres.

Where V = Five (5) times the rated gas consumption (MJ/h).'

- (ii) The following text:

'Only use this appliance in a well ventilated area.'

- (cc) For an overhead radiant tube heater:

- (i) In the case of a flueless appliance, details of the necessary ventilation requirements in accordance with AS/NZS 5601.

- (ii) Flueing of appliance, details of the following:

- (A) Size of flue.

- (B) Position of flue outlet.

- (C) Materials and methods which may be used and respective locations, i.e. termination of all types of flueing recommended.

- (iii) Ventilation, details of the following:

- (A) Size and location of combustion air openings.

- (B) Size and location of openings for draught diverter dilution.

- (C) Where an appliance can be installed in a housing or is designed to be installed in a housing, diagrams showing method of installation, ventilation requirements, clearances and minimum dimensions of housing.

- (dd) For appliances that are supplied in kit form, assembly instructions that include at least the following:

- (i) Step-by-step instructions of the assembly of the relevant components, with sufficient text and/or illustrations to ensure correct assembly.

- (ii) List of parts, including nuts, bolts, screws, washers, etc., with illustrated identification means.

- (iii) List of tools necessary for assembly.

- (iv) Specific instruction to test for soundness using soapy water or other appropriate method after assembly.

2.15.3 Operation

2.15.3.1 General

Each appliance shall be supplied with operation instructions that include the items specified in this Clause of AS/NZS 5263.0 and the following:

- (aa) Where the appliance is fitted with a primary guard, the full text of the primary guard warning label, as shown in Clause 2.14.12.
- (bb) Information on properly locating the gas hose, including, in the case of hoses connecting appliances to fixed piping systems, locating the hose out of pathways or in areas where the hose may be subject to accidental damage.

2.15.3.2 Warning statements

The instructions shall contain the statements specified in this Clause of AS/NZS 5263.0, and the following:

- (aa) In the case of appliances intended for outdoor use, the statement—
‘DO NOT INSTALL OR USE THIS APPLIANCE INDOORS’
- (bb) A warning statement to the effect that certain materials or items, when stored under or near the appliance, will be subjected to radiant heat and could be seriously damaged.
- (cc) A warning statement to inspect the hose assembly before each use of the appliance.

2.15.3.101 Warnings to be shown in a prominent manner

For appliances other than overhead radiant tube heaters, the instructions shall include the following minimum information presented in a readily readable, obvious and prominent manner, such as by being underlined, encircled or printed in a large or different colour type:

- (a) A warning about the hazards of high surface temperatures, burns and clothing ignition.
- (b) A warning to carefully supervise young children when they are in the area of the appliance.
- (c) A warning to not hang clothing or other flammable materials from the appliance, or placed on or near the appliance.
- (d) Instruction to replace any guard or other protective device removed for servicing the appliance prior to operating the appliance (see Clause 2.14.12).
- (e) The recommended period between inspections by a qualified service person.
- (f) A statement that more frequent cleaning may be required as necessary.
- (g) A statement that it is imperative that control compartment, burners and circulating air passageways of the appliance be kept clean.
- (h) The definition of outdoor (see Clause 1.3.96) including the diagrams in Appendix G.

2.15.3.102 Appliances designed for use with an integral LP Gas supply system

For flueless radiant gas heating appliances intended for operation in outdoor areas and non-residential indoor areas, and designed for use with an integral LP Gas supply system, the instructions shall include the following:

- (a) The specific size(s) and capacity(ies) of the cylinder to be used.
- (b) In the case of appliances intended for outdoor use:
 - (i) Instructions to the effect that the appliance be used only in an outdoor area and not be used in an enclosed area.