

Australian/New Zealand Standard™

Gas appliances

Part 1.6: Indirect gas-fired ducted air heaters



AS/NZS 5263.1.6:2020

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 28 November 2019 and by the New Zealand Standards Approval Board on 18 December 2019.

This Standard was published on 24 January 2020.

The following are represented on Committee AG-001:

- Association of Accredited Certification Bodies
- Australian Gas Association
- Australian Industry Group
- Consumer Electronics Suppliers Association
- Consumers Federation of Australia
- Energy Networks Australia
- Gas Appliance Manufacturers Association of Australia
- Gas Association of New Zealand
- Gas Energy Australia
- Gas Technical Regulators Committee
- Gas Utilisation Institute, New Zealand
- Joint Accreditation System of Australia and New Zealand
- NSW Fair Trading
- WorkSafe New Zealand — Energy Safety

This Standard was issued in draft form for comment as DR AS/NZS 5263.1.6:2019.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

www.standards.govt.nz

ISBN 978 1 76072 696 6

Australian/New Zealand Standard™

Gas appliances

Part 1.6: Indirect gas-fired ducted air heaters

Originated in Australia as AG 106—1977.
Previous and first New Zealand edition AS/NZS 5263.1.6:2016.
Second edition 2020.

COPYRIGHT

© 2020 — All rights reserved

© Standards Australia Limited/the Crown in right of New Zealand, administered by the New Zealand Standards Executive 2020

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth) or the Copyright Act 1994 (New Zealand).

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee AG-001, Gas Appliances, to supersede AS/NZS 5263.1.6:2016, *Gas appliances — Part 1.6: Indirect gas-fired ducted air heaters*.

This Standard provides particular requirements for indirect gas-fired ducted air heaters 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 5263.1.6 (this Standard) and AS/NZS 5263.0 supersedes the combination of AS/NZS 5263.1.6:2016 and AS 5263.0—2013.

This Part 1.6 of AS/NZS 5263, supplements or modifies the corresponding clauses of Part 0. The numbering of Clauses in this Part 1.6 is consistent with the numbering in Part 0 for related requirements.

Statements used in this Part 1.6 to explain the relationship of clauses in this Standard to the corresponding clauses 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 1.6 are designated with letters starting from AA, and additional clauses in appendices are numbered beginning from 101 (e.g. ZA.101).

Where an appendix or part of an appendix (i.e. clause, 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 1.6.

This Standard (AS/NZS 5263.1.6), together with the Standard AS/NZS 5263.0 (Part 0), constitute a means of conformance to AS 3645, *Essential requirements for gas equipment*, for indirect gas-fired ducted air heaters.

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 conformance 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 AS/NZS 5601 series of Standards (i.e. AS/NZS 5601.1 or AS/NZS 5601.2).

The terms “normative” and “informative” are used in Standards 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.

Currently in preview, click buy full version

Contents

Preface	ii
Section 1 Scope and general	1
1.1 Scope and application.....	1
1.1.1 Scope.....	1
1.1.2 Application.....	1
1.2 Normative references.....	1
1.3 Terms and definitions.....	1
1.4 Test methods.....	2
Section 2 Design and construction	3
2.1 Scope.....	3
2.2 General design requirements.....	3
2.2.8 Protection of electric lamps.....	3
2.2.14 Provision for moving appliances.....	3
2.3 Materials.....	3
2.4 Design for assembly and installation.....	3
2.5 Design for maintenance.....	3
2.6 Design for operation.....	3
2.7 Controls and safety devices.....	3
2.7.101 Thermostatic control.....	3
2.8 Gas train.....	3
2.9 Combustion air and flue systems.....	3
2.9.101 Fluing.....	3
2.9.102 Circulating air system.....	4
2.10 Fan assisted combustion systems.....	4
2.11 Burners and ignition systems.....	4
2.11.10 Tray type burners-turndown limits.....	4
2.11.101 Programmed ignition.....	4
2.12 Components.....	4
2.13 Cylinders and cylinder compartments.....	4
2.14 Markings.....	4
2.14.14 Markings on packaging.....	4
2.14.101 Design conditions.....	4
2.14.102 Energy label (Australia only).....	4
2.15 Instructions.....	4
2.15.2 Installation.....	5
Section 3 Preliminary tests — Line gases	6
3.1 General.....	6
3.2 Preparation for testing.....	6
3.3 Gas leakage.....	6
3.4 Gas consumption.....	6
3.5 Gas pressure regulators.....	6
3.6 Ignition and safety shut off systems.....	6
3.7 Ignition of draped fabric.....	6
Section 4 Tests under limiting conditions	7
4.1 General.....	7
4.2 CO/CO ₂ ratio limits for any independent surface combustion burner — Underload.....	7
4.3 CO/CO ₂ ratio limits for any independent burner — Overload.....	7
4.4 CO/CO ₂ ratio limits for permanent pilots — Overload.....	7
4.5 Flame characteristics at maximum and minimum limiting conditions.....	7
4.6 Burner ignition at maximum and minimum limiting conditions.....	7
4.7 Delayed ignition at maximum and minimum limiting conditions.....	7
4.8 Reignition at turndown under draught conditions.....	7
4.9 Pilot ignition and stability at maximum and minimum limiting conditions.....	7

4.10	Burner stability when changing setting	7
4.11	Unburnt gas release from burner system	7
4.12	Blocked flueway terminal	7
4.13	Case pressure test	7
4.14	Effect of opening and closing doors at turndown condition	8
4.15	Sooting — Luminous effect appliances	8
4.16	Burner interference at ignition or during combustion	8
Section 5	Performance specifications	9
5.1	Combustion air supply	9
5.2	Flue operation	9
5.3	Condensate	9
5.4	Temperature hazards	9
5.4.2	Appliance operating conditions	9
5.4.6	Temperature limits — Appliance safety	9
5.5	Heat resistance of appliance	9
5.5.1	Resistance to temperatures	9
5.6	Durability	9
5.6.3	Effect of spillover on ignition systems	10
5.6.101	Durability of heat exchangers	10
5.7	Electrical supply variation or failure	10
5.8	Appliance operation under linting conditions	10
5.9	Rain test for outdoor and room sealed appliances	10
5.10	Operation under windy conditions	10
5.11	Strength and stability	10
5.12	Thermal efficiency (Australia only)	10
5.12.101	General	10
5.12.102	Reduction in thermal efficiency with maximum flue length	10
5.12.103	Thermal efficiency in windy conditions	11
5.12.104	Efficiency to be consistent over operating range	11
5.13	Vitiation and emissions	11
5.101	Obstruction of filters	11
5.102	Room air fan performance	11
Appendix AA	(normative) Figures AA.101 to AA.110	12
Appendix BB	(informative) Calculation of thermal efficiency	22
Appendix ZA	(normative) Preliminary test methods	28
Appendix ZB	(normative) Linting conditions test methods	29
Appendix ZC	(normative) Performance test methods	30
Bibliography		60

NOTES

Currently in preview, click buy full version

Australian/New Zealand Standard

Gas appliances

Part 1.6: Indirect gas-fired ducted air heaters

Section 1 Scope and general

1.1 Scope and application

1.1.1 Scope

This Standard provides specific requirements and test methods for indirect gas-fired ducted air heaters with an energy input not exceeding 500 MJ/h.

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:

- (a) The fuel gases are natural gas (as specified in NZS 5440) and general product liquefied petroleum gas (NZLPG) (as specified in NZS 5435).
- (b) The thermal efficiency requirements are informative only, except where they relate to safety.

NOTE 1 Appliances falling within the scope of AS 2658 are not covered by this Standard.

NOTE 2 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 conform with such requirements.

[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 A, ZB](#) and [ZC](#) (see [Clause 1.4](#)).

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 here should 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 conformance to AS 3645.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitute requirements of this document:

NOTE Documents for informative purposes are listed in the Bibliography.

AS/NZS 5263.0, *Gas appliances, Part 0: General requirements*

1.3 Terms and definitions

For the purposes of this Standard the terms and definitions given in AS/NZS 5263.0 and the following apply.