



## Commercial catering gas equipment



#### AS 4563:2022

This Australian Standard ® was prepared by AG-001, Gas Appliances. It was approved on behalf of the Council of Standards Australia on 04 February 2022.

This Standard was published on 4 March 2022.

The following are represented on Committee AG-001:

Association of Accredited Certification Bodies

Australian Gas Association

Australian Industry Group

Better Regulation Division (Fair Trading, Safework NSW, TestSafe)

Consumer Electronics Suppliers Association

Department of Mines, Industry Regulation and Safety — Building and Energy WA

Energy Networks Australia

Gas Appliance Manufacturers Association of Australia

Gas Energy Australia

Gas Technical Regulators Committee

Joint Accreditation System of Australia and New Zealand

This Standard was issued in draft form for comment as DR AS 4563:2021.

### **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: <a href="https://www.standards.org.au">www.standards.org.au</a>

ISBN 978 1 76113 678 8

This is a preview. Click here to purchase the full publication.

# Commercial catering gas equipment

Originated as AS 4563—2003 (AG 300). Previous edition AS 4563—2004. Third edition AS 4563:2022.

### © Standards Australia Limited 2022

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).

### **Preface**

This Standard was prepared by the Australian members of Joint Standards Australia/New Zealand Committee AG-001, Gas Appliances to supersede AS 4563—2004, Commercial catering gas equipment.

The objective of this document is to provide manufacturers, designers, regulatory authorities, testing laboratories and similar organizations with uniform minimum requirements for the safety, performance and use of commercial cooking and catering gas appliances.

This document 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 principal differences between this edition and AS 4563—2004 are the addition of—

- (i) specific requirements for high temperature appliances (Section 17);
- (ii) specific requirements for mobile serving appliances (Section 18);
- (iii) updated test methods for burner systems; and
- (iv) temperature limits for adjacent surfaces when the appliance is installed with zero clearance from side and rear walls.

The AS/NZS 5601 series of Standards provides essential requirements and means of conformance for gas installations. Any reference to AS/NZS 5601 in AS 4563 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" are used in Standards to define the application of the appendices to which they apply. A "normative" appendix is an integral part of a Standard, whereas an "informative" appendix is only for information and guidance.

### **Contents**

Preface		ii	
Section 1	Scope and general		
1.1	Scope and application	1	
	1.1.1 Scope	1	
	1.1.2 Application	1	
1.2	Normative references		
1.3	Terms and definitions	2	
1.4	Test methods	16	
Section 2	Design and construction	19	
2.1	General	19	
	2.1.1 Controls and safety components	19	
	2.1.2 Manual shut off valves		
	2.1.3 Classification of safety shut off valves	19	
	2.1.4 Safety devices and interlocks	19	
	2.1.5 Over-temperature cut-out device		
	2.1.6 Main burner automatic shut off valves	19	
	2.1.7 Suitability of bearings	19	
	2.1.8 Protection of bearings		
	2.1.9 Protection of vitreous enamel	20	
	2.1.10 Protection of electric lamps		
	2.1.11 Provision for removal of condensate		
	2.1.12 Appliance base		
	2.1.13 Provision for moving appliances		
	2.1.14 Adequacy of means of support		
	2.1.15 Positioning of removable components	20	
	2.1.16 Provision for an LP Gas cylinder		
2.2	Features specially required	20	
	2.2.1 Provision of pressure regulators		
	2.2.2 Positioning of regulators		
	2.2.3 Means for gas pressure measurement		
	2.2.4 Fitting of flame safeguards	21	
	2.2.5 Bypass for thermostatically controlled burners		
	2.2.6 Control of bleed lines		
	2.2.7 Means to turn off gas supply to pilots		
	2.2.8 Programmable electronic systems		
2.3	2.2.9 Combustion air supply		
2.3	Burners and ignition systems 2.3.1 Aeration adjustment for Universal LP Gas appliances		
	,		
	<ul><li>2.3.2 Protection of ports and injectors</li><li>2.3.3 Restrictions on gauze over primary air ports</li></ul>		
	2.3.4 Positive location of flash ignition tubes		
	2.3.5 Support of pilots, ignitors and flame sensing devices		
	2.3.6 Location of burner mixing tubes		
	2.3.7 Burner supports		
	2.3.8 Securing of removable burner components		
	2.3.9 Fixing of gas manifolds		
	2.3.10 Tray type burner-turndown limits		
	2.3.11 Burners with remote manual ignition		
	2.3.12 Burners with direct manual ignition		
	2.3.13 Manually operated burners enclosed in a compartment		
2.4	Materials		
	2.4.1 Suitability of materials and finishes		
	2.4.2 Resistance to corrosion		
	2.4.3 Materials containing asbestos		

	2.4.4	Materials in contact with gas	23
	2.4.5	Components required to be placed in a flame	23
	2.4.6	Zinc based alloys	24
	2.4.7	Jointing compounds and jointing materials	24
	2.4.8	Thermal insulation	
	2.4.9	Protection of aluminium tubing	
2.5		or assembly and installation	
	2.5.1	Conformance in alternative forms	
	2.5.2	Fixing of gas connections	
	2.5.3	Gas inlet connection	
	2.5.4	Access to connection	
	2.5.5	Appliance connection for appliances connecting directly to an LP	
	2.3.3	Gas cylinder	25
	2.5.6	Gas hose assemblies	
	2.5.7	Protection of hose assembly	
	2.5.8	Restraint where a hose assembly is used	
		Compression fittings	
	2.5.10		
	2.5.11		
	2.5.12	Design to prevent flueway blockage	
	2.5.13	Adequacy of means of support	
0.6	2.5.14	1.1	
2.6		or maintenance	
	2.6.1	Accessibility for adjustment	
	2.6.2	Accessibility for replacement	
	2.6.3	Screwed connections	
	2.6.4	Inaccessible nuts or bolts	
	2.6.5	Insertion and removal of gas injectors	
	2.6.6	Plug and socket connections	
2.7	Design for	or use	
	2.7.1	Accessibility by the user	
	2.7.2	Design of valve handles, movable dials and pointers	
	2.7.3	Protection of control knobs	
	2.7.4	Locking means for adjusting devices	29
	2.7.5	Prevention of injury at ignition	29
	2.7.6	Proving ignition	29
	2.7.7	Dismantling and replacement by the user	
	2.7.8	Sharp edges	29
	2.7.9	Design to minimize contact with hot surfaces	29
		Provision for the collection of grease and food particles	
	2.7.11		29
	2.7.12		
2.8		S	
		Language	
	2.8.2	Permanent markings on appliances	
	2.8.3	Marking of doors and covers	
	2.8.4	Marking of flash ignition tubes	
	2.8.5	Indication of function	
		Identification of gas valves	
		Gas type marking	
	2.8.8	Gas type colour code	
		Markings on packaging.	
		Marking of thermostat dials	
	2.8.11		
2.0	2.8.12	,	
2.9		ONS	
	2.9.1	Language	
	1.4.7	Installation	32

	2.9.3 Operation	
	2.9.4 Maintenance	
Section 3	Preliminary tests — Line gases	
3.1	General 2.1.1 Constitution	
	3.1.1 Gases for testing	
	3.1.2 Test gas composition	
	3.1.3 Test gas properties	
	3.1.5 Burners with displaceable media	
3.2	Preparation for testing	
5.2	3.2.1 Electrical safety requirements	30
	3.2.2 Setting up appliance for testing	
	3.2.3 Appliance regulator not to be removed during testing	
	3.2.4 Protection from accidental draughts	
	3.2.5 Prevention of gas rate variation	
	3.2.6 Turndown gas consumption	40
3.3	Gas leakage	
3.4	Gas consumption	
	3.4.1 Tolerance on determined gas consumption	40
	3.4.2 Total determined gas consumption — All burners operating	40
	3.4.3 Determined gas consumption of permanent pilots	40
3.5	Gas pressure regulators	
3.6	Ignition and safety shut off systems	
	3.6.1 General	
	3.6.2 General requirements	41
	3.6.3 Additional requirements for atmospheric burners with automatic burner	
	ignition systems not based on permanent pilots	42
	3.6.4 Additional requirements for fan assisted combustion systems with	40
	automatic ignition not based on permanent pilots	
Section 4	Tests under limiting conditions	
4.1	General	
4.2	Combustion performance for any independent burner	45
	4.2.1 CO/CO <sub>2</sub> ratio limits for any independent burner — Overload	
4.0	4.2.2 CO/CO <sub>2</sub> ratio and O <sub>2</sub> limits for any independent burner	
4.3	CO/CO <sub>2</sub> ratio limits — Permanent pilots	
4.4	CO/CO <sub>2</sub> ratio limits for any independent surface combustion burner — Underload	
4.5		
4.6	Burner ignition at maximum and minimum limiting conditions	
4.7	Delayed ignition at maximum and minimum limiting conditions	
4.8 4.9	Unburnt gas release from burner system  Burner interference at ignition or during combustion	
4.9		
Section 5	Performance specifications	
5.1	Combustion air supply	
	5.1.1 Proving of means of mechanical air supply	
	5.1.2 Burner shut down following air supply failure	
= 0	5.1.3 Obstruction of air inlets on appliances with fan assisted combustion systems.	
5.2	Flue operation	
	5.2.1 Spillage of combustion products — Flued appliances	49
F 2	5.2.2 Performance with downdraught, updraught and blocked flue	49
5.3	Burner operation Stability to draught	
	5.3.1 Burner flames — Stability to draught	
	5.3.2 Burner stability when changing setting	
	5.3.4 Flame stability — Effect of door operation	
5.4	Condensation	
J.T	5.4.1 Control of condensate	
	5.4.2 Condensate — Interference with combustion	

	5.4.3 Blocked condensate drain	50
5.5	Temperature hazards	
	5.5.1 General	
	5.5.2 Temperature limits — Floor, wall, bench and adjacent surfaces	
	5.5.3 Temperature limits — Surfaces intended to be handled	
	5.5.4 Temperature limits — Surfaces likely to be accidentally touched	
	5.5.5 Temperature limits — Appliance safety	
	5.5.6 Temperature limits — Zero rear clearance installation	
5.6	Heat resistance	
	5.6.1 Normal operation	
	5.6.2 Resistance to temperatures — Burner lightback	
5.7	Response to electrical power variation or failure	53
5.8	Durability	
	5.8.1 Zinc based alloys	
	5.8.2 Permanent markings	54
Section 6	Specific requirements — Boiling tables — Open and closed top, Chinese	
cook	ring tables	55
6.1	Strength — Applied load	
	6.1.1 Appliance	55
	6.1.2 Pan supports	55
6.2	Effect of spillover on ignition system	55
Section 7	Specific requirements — Salamanders, grillers and toasters	<b>E</b> 6
7.1	Provision of grill grids and drip trays	
7.1	Shelves, racks and grids strength — Applied load	50 56
Section 8	Specific requirements — Solid grill plates and griddles	57
Section 9	Specific requirements — Barbecues	58
	Specific requirements — Ovens	
10.1		
10.2		
	10.2.1 Oven doors — Open position	
	10.2.2 Oven shelves	
10.2	Strength — Applied load	
10.3	10.3.1 Appliance	
	10.3.2 Oven shelves	
	10.3.3 Drop down doors	
	10.3.4 Side hinged doors	
	<u> </u>	
Section 11	Specific requirements — Boiling water units	60
11.1	0	
11.2		
11.3	Provision for the collection of corrosion products	60
Section 12	Specific requirements — Atmospheric steamers	61
12.1		
12.2		
	Specific requirements — Stockpots and brat pans	
13.1	The state of the s	
	13.1.1 Temperature of surfaces in contact with cooking oil	
13.2	Pressure vessels	
13.3	Provision of tilt cut-off device	
13.4		
13.5	Drain valves	
13.6		
13.7		
12 Ω	Maans to keen lid in raised position	62

13.9	Strength and stability	
	13.9.1 Stockpots — Applied load	
	13.9.2 Brat pans — Applied force	63
Section 14	Specific requirements — Fryers	64
14.1		
	14.1.1 Temperature of surfaces in contact with cooking oil	
	14.1.2 Flue gas temperature	
14.2		
	14.2.1 Construction of cooking vessel and surround	64
	14.2.2 Provision of oil drain valve	64
	14.2.3 Design of drain valve	64
	14.2.4 Provision of shut off for each cooking vessel	64
	14.2.5 Provision of automatic temperature control	64
	14.2.6 Maximum temperature	
	14.2.7 Automatic filtration systems	
	14.2.8 Provision of over-temperature cut-out device	
	14.2.9 Pressure relief device	
	14.2.10 Copper and copper bearing alloys	
14.3		
	14.3.1 Temperature control	
	14.3.2 Over-temperature cut-out device	
14.4	0	
	14.4.1 Marking of normal working liquid level	
	14.4.2 Warning regarding correct level of cooking oil	
145	14.4.3 Marking of drain valve	65
14.5	Appliance strength — Applied load	65
Section 15	Specific requirements — Food warmers including bains marie	66
15.1		66
	15.1.1 Nominal working temperature	
	15.1.2 Heating performance	
	15.1.3 Resistance to boiling dry — Wet bain marie	
15.2	Strength — Applied load	
	15.2.1 Appliance	
	15.2.2 Food containers	67
Section 16	Specific requirements — Pasta/noodle cookers and rethermalizers	68
	Drain valve	
16.2		
10.2	16.2.1 Marking of normal water level	
	16.2.2 Caution regarding water level	
16.3		
Coation 17		
	Specific requirements — High temperature cookers	09
17.1	Temperature hazards and heat resistance 17.1.1 General	
	17.1.1 General	
172		
17.2	17.2.1 Provision of over-temperature cut-out device	
17.3		
17.3		
17.5		
17.5	17.5.1 Stability	
	17.5.2 Appliance strength — Applied load	
	17.5.2 Appliance strength — Applied load	
	17.5.4 Side hinged loading doors	
	17.5.5 Separation of sections	
0 40	•	
	Specific requirements — Mobile serving appliances	
18.1	Design requirements	/1

	18.1.1	Maximum gas consumption	71
	18.1.2	Provision of hose and regulator assembly	71
	18.1.3	Thermostat maximum temperature	
	18.1.4	Tip-over switch	71
	18.1.5	Water vessel	
	18.1.6	Drain valve	
	18.1.7	Mobility requirements	
	18.1.8		
	18.1.9		71
18		nance requirements	73
	18.2.1	CO/CO <sub>2</sub> ratio limits	
		Containment of hot liquids	
18	_	h and stability	
	18.3.1	Appliance	
		Stability	
18	.4 Marking	gs	73
Appendix	A (normati	ive) Figures A.1 to A.9	74
Appendix	B (normati	ive) Test methods	82
Appendix	<b>C</b> (normati	ive) Meter volume correction factors	152
Appendix	<b>D</b> (normat	ive) Pressure and gas volume test equipment	154
Appendix		tive) Diagrammatic representation of an operating system for matic burners	155
Riblingra	nhv		156