

AS/NZS 5601.2:2020
(Incorporating Amendment No. 1)



Australian/New Zealand Standard™

Gas installations

Part 2: LP Gas installations in caravans and boats for non-propulsive purposes



AS/NZS 5601.2:2020

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- Access Canberra
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- Australian Building Codes Board
- Australian Gas Association
- Caravan Industry Association of Australia
- Department of Natural Resources, Mines and Energy, Qld
- Energy Networks Australia
- Energy Safe Victoria
- Gas Appliance Manufacturers Association of Australia
- Gas Energy Australia
- Gas Technical Regulators Committee
- Gas Utilisation Institute, New Zealand
- LPG Association of New Zealand
- Master Plumbers and Mechanical Services Association of Australia
- Master Plumbers, Gasfitters and Drainlayers New Zealand
- Victorian Building Authority
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Australian/New Zealand Standard™

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Preface

This Standard was prepared by the Standards Australia/Standards New Zealand Committee AG-006, Gas Installations, to supersede AS/NZS 5601.2:2013.

Ⓐ *This Standard incorporates Amendment No. 1 (February 2021). The start and end of changes introduced by the Amendment are indicated in the text by tags including the amendment number 1. Ⓐ*

If a Standard is referenced in legislation, the legislative instrument or regulation specifies when the Standard or Amendment comes into effect. Regulatory Authorities have indicated 12 months, following the date of publication, as an appropriate transition period for [Clauses 1.3.59, 2.3.1, 5.2.8, 5.2.9](#), and [Table 5.1.4.3](#), with respect to the cylinder quick-connect device.

General gas installation requirements for applications other than caravans and boats can be found in AS/NZS 5601.1, *Gas installations, Part 1: General installations*.

The objective of this Standard is to provide essential requirements and deemed-to-conform solutions to promote uniform standards of gas installation, and to provide a stand-alone Standard for LP Gas installations in caravans and boats for non-propulsive purposes.

This Standard is based on the general installation requirements of AS/NZS 5601.1.

This Standard is not to be regarded as a design specification or an instruction manual for untrained persons.

This Standard has no legal standing in its own right, but may acquire legal standing in either of the following circumstances:

- (a) Where adopted by a Government or other authority having jurisdiction over relevant installations.
- (b) Where adopted as part of an installation specification.

Regulatory bodies (Technical Regulators) may adopt this Standard.

Matters of an advisory or explanatory nature are indicated in the following manners:

- (i) The word “NOTE” followed by a statement(s).
- (ii) By inclusion in an informative appendix.
- (iii) By inclusion in examples or caution statements.

Words that are indicated by italics in the body of the text are terms defined in [Clause 1.3](#). This indication of italics does not apply to the text in the Preface, headings or figures. [Section 1](#) contains the definitions of such terms as they apply to this Standard.

This Standard includes a statement that its requirements do not apply retrospectively.

[Section 2](#) of this Standard details the various aspects of a gas installation that contribute to its safety, stating performance criteria for compliance with legislative requirements for safety of gas installations. [Sections 3](#) to [9](#) provide more detailed information on conformance to the performance criteria.

The means of conformance in [Sections 3](#) to [9](#) are not the only means of conformance to the performance criteria in [Section 2](#).

Major changes from AS/NZS 5601.2:2013 include the following:

- (A) The terms “pipe”, “piping”, “tube” and “tubing” are used throughout this Standard. They are to be considered to have the same meaning.

- (B) Where the term “installation” is used, it is deemed to include the appliances, flues, ventilation, piping, components and other ancillary items.
- (C) Introduction of definitions for “controlled area”, “domestic caravan”, “encapsulated”, “ignition source”, “non-sparking by nature”, “quick-connect device (cylinder)” and “toughened safety glass”.
- (D) Prohibition of *in situ* fill cylinders on caravans, see [Clause 2.4.5](#) and [Clause 3.1.5.1](#).
- (E) Introduction of requirement for orientation of cylinders on caravan drawbars to allow for unobstructed relief of cylinder pressure, see [Clause 3.1.4](#).
- (F) Figures showing “controlled area” and clearances on caravan drawbars for ignition sources, see [Clause 3.1.8](#).
- (G) A figure showing venting through a drain outlet from a cylinder compartment in a caravan, see [Figure 3.3.1\(B\)](#).
- (H) Introduction of the requirement for shut-off solenoid valves to be “encapsulated” in LP Gas cylinder compartments, see [Clauses 3.3.1\(g\)](#) and [3.3.3\(i\)](#).
- (I) Clarification of access to internal cylinder compartments in caravans, see [Clause 3.3.4.1](#).
- (J) Allowance of hard drawn copper for use on houseboats on inland waterways on the low pressure side of the gas installation, see [Clause 5.1.4.2](#).
- (K) Limitations of hose assembly pigtails to only be class F, see [Clause 5.1.4.3](#).
- (L) Prohibition on the use of press-fit connections, see [Clause 5.1.4.4\(g\)](#).
- (M) Introduction of requirements for “encapsulated” electrical devices, see [Clause 5.3](#).
- (N) Introduction of increased requirements for new installations of distance between cookers and rangehoods, see [Clause 6.11.1](#).
- (O) Introduction of requirement of carbon monoxide detectors in boats to conform with referenced internationally recognized Standards, see [Clause 7.5](#).
- (P) Additional requirements for thermal protection of combustible surfaces, see [Appendix B](#).
- (Q) New pipe sizing tables allowing for more flow capacity, see [Appendix C](#).
- (R) Additional requirements for gas leakage tests for appliances with interlocks, see [Clause E.3.2\(b\)](#).
- (S) Introduction new appendix on purging, see [Appendix L](#).
- (T) The inclusion of references to a cylinder quick-connect device.

The terms “normative” and “informative” have been 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.

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Australian/New Zealand Standard

Gas installations

Part 2: LP Gas installations in caravans and boats for non-propulsive purposes

Section 1 Scope and general

1.1 Scope, exclusions and application

1.1.1 Scope

This Standard specifies requirements and means of conformance for the design, installation, repair, alteration, modification, replacement and *commissioning* of *LP Gas installations in caravans and boats* for non-propulsive purposes.

The requirements cover —

- (a) *caravans*;
- (b) mobile homes, mobile holiday homes, campervans and motor homes;
- (c) transportable structures with fixed *gas installations*, other than transportable homes and classroom units;
- (d) trucks and trailers incorporating fixed *gas installations*;
- (e) *boats*;
- (f) houseboats;
- (g) floating restaurants, whether fixed or mobile; and
- (h) catering vehicles, whether self-propelled or towed.

NOTE 1 A mobile home includes what is often referred to as a “tiny house”, which is a relocatable home as distinct from a permanent structure that is transported from one fixed location to the next (see exclusions below).

NOTE 2 Where commercial catering equipment is to be installed, refer to AS/NZS 5601.1 for specific appliance installation requirements downstream of the appliance installation valve.

1.1.2 Exclusions

This Standard does not apply to —

- (a) installations covered by statutory requirements such as the New Zealand *Maritime Transport Act 1994* and the Australian Maritime Safety Authority, *National Standard for Commercial Vessels*;
- (b) the use of *LP Gas* as a fuel for automotive or propulsion purposes;
- (c) installations in transportable homes and classroom units;
- (d) installation of commercial catering equipment;
- (e) portable or mobile gas appliances (such as barbeques or patio heaters) that are connected to an *LP Gas cylinder*, other than where an *LP Gas cylinder(s)* is connected to *pipings*; and
- (f) the service or repair of a gas appliance.

1.1.3 Application

1.1.3.1 Conformance

The user of this Standard is expected to be familiar with the properties and characteristics of *LP Gas* and the principles of combustion, ventilation and flueing applicable to the safe installation and operation of *gas appliances*.

The requirements of this Standard shall be used in conjunction with, but do not take precedence over, statutory regulations that may apply in any area. Where no requirement is given, good practice shall apply.

NOTE 1 In a matter of uncertainty, advice should be sought.

This Standard applies to new installations, alterations and extensions commenced after its publication date or the date of adoption by the relevant *Technical Regulator*. It does not apply retrospectively to existing installations or to their repair. However, modifications to existing installations shall conform to the requirements of this Standard.

NOTE 2 Although this Clause does not apply to the repair of a *gas appliance* in an existing installation, immediate steps should be taken to make safe any unsafe *gas appliance(s)* or *gas installation*.

NOTE 3 The *Technical Regulator* may require a risk assessment and HAZOP to be conducted on the *gas* installation. This will ensure that appropriate safety measures, additional to those specified in this Standard, are provided. The scope of this analysis will depend on the size, nature and complexity of the *gas installation*.

[Section 2](#) of this Standard contains the mandatory performance requirements for the design, installation, and *commissioning of gas installations*. It includes, in [Clauses 2.9.2](#) and [2.10.2](#), some specific prohibitions, as the performance requirements cannot be reliably met if those prohibitions are breached.

[Sections 3](#) to [9](#) of this Standard contain a means of conformance for the design, installation, and *commissioning of gas installations*, including location of storage cylinders, high and low pressure *pipework* systems and appliances.

1.1.3.2 Application in Australia

Approval for any variation to the requirements of [Sections 3](#) to [9](#) or the normative appendices may need to be obtained from the *Technical Regulator*.

1.1.3.3 Application in New Zealand

The *Technical Regulator* does not provide approvals for variations to the means of conformance in [Sections 3](#) to [9](#). References to approval by the *Technical Regulator* are not applicable. The installation certifier is responsible for ensuring that the installation, including any variations, meets the requirements in [Section 2](#).

Where a Standard is cited as part of a means of conformance, any Standard with equivalent performance requirements may be used as an alternative means of conformance.

1.1.3.4 Interpretation

The terms “*caravan*” and “*boat*” are used to include various types of vehicle or marine craft. The user of this Standard is expected to be familiar with the properties and characteristics of *LP Gas* and the principles of combustion, ventilation and flueing applicable to the safe installation and operation of *gas appliances*.

Where the term “installation” is used it is deemed to include the pipework, *appliances*, *flues*, air ducts and other ancillary items.

1.2 Normative references

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

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1357.1, *Valves primarily for use in heated water systems, Part 1: Protection valves*

AS 1397, *Continuous hot-dip metallic coated steel sheet and strip—Coatings of zinc and zinc alloyed with aluminium and magnesium*

AS 1432, *Copper tubes for plumbing, gasfitting and drainage applications*

AS 1530.1, *Methods for fire tests on building materials, components and structures, Part 1: Combustibility test for materials*

AS 1572, *Copper and copper alloys—Seamless tubes for engineering purposes*

AS 1906.1, *Retroreflective materials and devices for road traffic control purposes, Part 1: Retroreflective sheeting*

AS 2030 (series), *Gas cylinders*

AS 2473.2, *Valves for compressed gas cylinders, Part 2: Outlet connections (threaded) and stem (inlet) threads*

AS 2738, *Copper and copper alloys—Compositions and designations of refinery products, wrought products, ingots and castings*

AS 3688, *Water supply and gas systems—Metallic fittings and end connectors*

AS 3814, *Industrial and commercial gas-fired appliances*

AS 4617, *Manually operated gas valves*

AS 4621, *Regulator for use with liquefied petroleum—Vapour phase*

AS 4623, *Jointing compounds and materials for use in gas pipe joints*

AS 4627, *Quick-connect devices for gas*

AS 4629, *Automatic shut off valves and vent valves*

AS D26, *Tube fittings with Dryseal American standard taper pipe and unified threads for automotive and industrial use*

AS ISO 7.1, *Pipe threads where pressure-tight joints are made on the threads, Part 1: Dimensions, tolerances and designation*

AS/NZS 1530.3, *Methods for fire tests on building materials, components and structures, Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release*

AS/NZS 1596, *The storage and handling of LP Gas*

AS/NZS 1734, *Aluminium and aluminium alloys—Flat sheet, coiled sheet and plate*

AS/NZS 1869, *Hose and hose assemblies for liquefied petroleum gases (LP Gas), natural gas and town gas*

AS/NZS 2208, *Safety glazing materials in buildings*

AS/NZS 60079.14, *Explosive atmospheres, Part 14: Design selection, erection and initial inspection*

AS/NZS 60079.25, *Explosive atmospheres, Part 25: Intrinsically safe electrical systems*

AS/NZS 60079.29.2, *Explosive atmospheres, Part 29.2: Gas detectors—Selection, installation, use and maintenance of detectors for flammable gases and oxygen*

ASTM A269, *Specification for seamless and welded austenitic stainless steel tubing for general service*

ASTM C518, *Test method for steady-state thermal transmission properties by means of the heat flow meter apparatus*

EN 50291-2, *Electrical apparatus for the detection of carbon monoxide in domestic premises, Part 2: Electrical apparatus for continuous operation in a fixed installation in recreational vehicles and similar premises including recreational craft — Additional test methods and performance requirements*

NZS 3501, *Specification for copper tubes for water, gas and sanitation*

UL 144, *Standard for LP-Gas Regulators*

UL 2034, *Standard for Single and Multiple Station Carbon Monoxide Alarms*

1.3 Terms and definitions

For the purposes of this Standard, the following definitions apply.

1.3.1

accessibility

1.3.1.1

accessible

access can be gained without hazard or undue difficulty for inspection, repair, testing, renewal, or operational purposes

1.3.1.2

readily accessible

access can be gained without hazard, undue difficulty, or use of a tool

1.3.2

appliance

In New Zealand — same meaning as “gas appliance” in the *Gas Act 1992*

In Australia — assembly, other than a vehicle refuelling *appliance*, part of which uses *gas* to produce flame, heat, light, power or special atmosphere

1.3.2.1

Type A appliance

In Australia only — *appliance* for which a *certification* scheme exists

1.3.2.2

Type B appliance

In Australia only — *appliance*, with *gas consumption* in excess of 10 MJ/h, for which a *certification* scheme does not exist

1.3.2.3

flueless appliance

appliance designed to operate without a *flue*

1.3.2.4

freestanding cooking appliance

cooking *appliance* comprising an oven or ovens, a number of open *burners* and usually a grill *burner*, which is designed to be installed on a floor

1.3.2.5**room-sealed appliance**

indoor *appliance* which is sealed from the room in which it is installed so that it directly discharges *combustion products* to, and takes air for combustion from, outside the caravan or boat

1.3.3**authorized person**

person authorized under the legislation of the appropriate jurisdiction

1.3.4**bedroom**

room or cabin used or intended to be used for sleeping, including any combined living/sleeping area

1.3.5**boat****vessel**

any seagoing or inland water craft including, but not limited to, a motorboat, yacht, cabin cruiser, launch, runabout, trailer-sailer, houseboat, motor-sailer or work-boat

1.3.6**burner**

device that positions a flame in the desired location by delivering *gas* and air to that location in such a manner that controlled, continuous combustion is accomplished

1.3.7**caravan**

structure designed or adapted to be moved from one place to another, whether towed or transported, which is intended for human habitation or use as a workplace, and includes a self-propelled recreational vehicle or mobile home, and any associated annex or similar structure, whether permanently or temporarily attached to, or adjoining the main portion of the structure

Note 1 to entry: A large structure assembled in a factory and transported to a permanent location is not considered a *caravan*, e.g. portable school classrooms or transportable homes. Refer to AS/NZS 5601.1 for conformance requirements relating to such structures.

1.3.8**caravan (domestic)****domestic caravan**

caravan that is not used as a workplace and where no more than two *cylinders* with an individual capacity of no greater than 25 L water capacity (10 kg nominal *LP Gas* capacity) are in use

1.3.9**carbon monoxide detector**

device capable of detecting carbon monoxide (CO), and which provides an alarm signal

1.3.10**certified****certification**

In Australia — assessed by a *certifying body* and having a certificate number to demonstrate conformance to a Standard

In New Zealand — product satisfying the performance requirements of the cited Standard or an equivalent Standard

1.3.11**certifying body**

body, acceptable to the *Technical Regulator*, that provides assurance of conformance of *appliances* and components with nominated Standards and other accepted safety criteria

1.3.12**combustible material**

material that will ignite and burn, and includes material that has been flame-proofed

1.3.13**combustible surface**

any material or object made of, or surfaced with, materials that are capable of being ignited and burned

1.3.14**combustion products**

constituents resulting from the combustion of a fuel with air, oxygen or mixture of the two, including the inert *gases* associated with the fuel and the air but excluding any other diluent or contaminant

1.3.15**commissioning**

process by which a gas installation (which is installed or is complete or near completion) is tested to verify that it functions according to its design objectives and its specifications

1.3.16**competent person**

person or body who, through training, qualification or practical experience, or a combination of these, and understanding of the equipment and processes, is able to verify conformance with this Standard

1.3.17**controlled area**

region surrounding an *LP Gas cylinder(s)* that is regulated so that the adverse effects of any gas leakage are reduced

Note 1 to entry: [Figure 3.1.8\(A\)](#) shows an example of a *controlled area* for *LP Gas cylinders* on the draw bar of a *domestic caravan*.

1.3.18**cylinder**

container for the storage of *LP Gas* with a capacity of more than 120 mL but not more than 500 L, and does not include an aerosol container

Note 1 to entry: Capacity is often referred to as “water capacity” and is the total internal volume.

1.3.18.1**cylinder (*in situ* fill)****[*in situ* fill] cylinder**

cylinder that is filled from a tanker

1.3.19**cylinder compartment****compartment**

enclosed area or a partitioned-off space primarily used for the installing of a *gas cylinder*, *pressure regulator* and other associated equipment

1.3.20**deck**

floor or platform extending from side to side of a *boat* (see [Figure 1.3.21](#))

1.3.20.1**upper deck**

that part of the decking designed to prevent water entering the hull of a *boat*, generally at the gunwale line

1.3.20.2**main deck**

level immediately below the *upper deck*

1.3.20.3**lower deck**

level immediately below the *main deck*

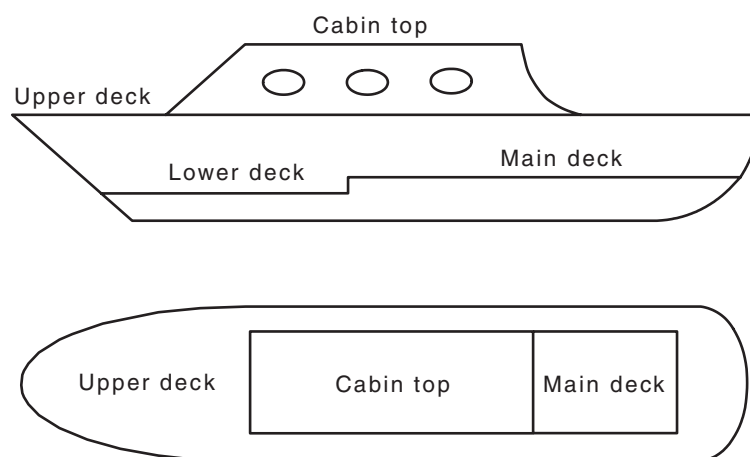


Figure 1.3.21 — Views of boat showing decks

1.3.21**DN****nominal diameter**

see *nominal size*

1.3.22**encapsulated**

form of protection whereby parts that could be capable of igniting an explosive atmosphere by either sparking or heating are fully enclosed in a compound in such a way as to avoid becoming a source of ignition

Note 1 to entry: Requirements for *encapsulated* items are in [Clause 5.3](#).

1.3.23**exhaust fan**

mechanical device other than a *range hood* for moving contaminated air from one interior space to another, or to outside of the space

1.3.24**explosive limits****1.3.24.1****upper explosive limit****UEL**

concentration of flammable *gas*, vapour or mist in air above which an explosive gas atmosphere will not be formed

Note 1 to entry: *LP Gas*: nominal UEL 10 %.

1.3.24.2**lower explosive limit****LEL**

concentration of flammable gas, vapour or mist in air below which an explosive gas atmosphere will not be formed

Note 1 to entry: *LP Gas*: nominal LEL 2 %.

1.3.25**fire resistant material**

material having thermal and physical properties that protect a *combustible surface*

1.3.26**flame safeguard system**

system consisting of a flame detector(s) plus associated circuitry, integral components, valves and interlocks, the function of which is to shut off the *gas* supply to the *burner(s)* in the event of ignition failure or flame failure

1.3.27**flue**

passage through which *flue gases* are conveyed from an *appliance*, excluding draught diverter, barometric device, fan or similar part

1.3.27.1**natural draught flue**

flue in which the draught is provided by the buoyancy effect of the hot *gases* within it

1.3.27.2**open flue**

flue system containing a draught diverter or canopy

1.3.27.3**power flue**

flue system in which *combustion products* are removed from the *gas appliance* by a fan in the *flue*

1.3.28**flue cowl**

device placed at the end of a *flue* designed to prevent the entry of rain and minimize the disturbing effect of wind while not hindering the discharge of *flue gases*

1.3.29**flue gases**

combustion products plus all diluents and contaminants

Note 1 to entry: These include, where applicable, excess air, dilution air, process air and waste products from the process.

1.3.30**flue terminal**

point at which *flue gases* discharge from a *flue*

1.3.31**gas****liquefied petroleum gas****LP Gas**

gas composed predominantly of any of the following hydrocarbons, or any combination of them in the vapour phase: propane, propene (propylene), butane, butene (butylene) and pentane

1.3.32**gas consumption**

rate at which *gas* is consumed by an *appliance* under specific conditions and expressed in megajoules per hour (MJ/h)

1.3.33**gas detector**

electronic device capable of indicating the presence of LP Gas at specified concentrations, which provides an audible or visual warning

Note 1 to entry: For guidance on *gas detectors*, refer to AS/NZS 60079.29.2.

1.3.34**gas installation**

combination of the following used or intended to be used in the supplying and utilization of *gas*, taken as separate items or as a whole: *piping*, fittings, components, *appliances*, *flues*, apparatus or other devices and associated requirements

1.3.35**gas load**

total *gas consumption* of all downstream *appliances*

1.3.36**gas pressure regulator**

device that automatically regulates the outlet *pressure* of the *gas* passing through it to a predetermined value

1.3.36.1**automatic changeover regulator**

combination valve/*gas pressure regulator*, fitted to an *LP Gas* multiple-cylinder installation, which will automatically change over from a *cylinder(s)* in use to a reserve *cylinder* at a predetermined *pressure*

1.3.36.2**piping gas pressure regulator**

gas pressure regulator installed in the *piping* to reduce the *gas pressure* to a section of *piping*

1.3.36.3**cylinder regulator**

gas pressure regulator on a *cylinder* installation that is subjected to the *gas pressure* directly from the *cylinder*

1.3.37**gastight**

condition of a *gas installation* or *piping* in which there is no leakage of *gas*

1.3.38**hazardous area**

area in which an explosive gas atmosphere is or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of equipment

Note 1 to entry: This definition aligns with AS/NZS 60079.10.1, which should be referred to for hazardous area requirements.

1.3.39**hob**

part of a *gas* cooking *appliance* that supports the *trivet* and is usually constructed of enamelled steel, stainless steel or *toughened safety glass*

1.3.40**hose assembly**

flexible tube or pipe complete with end couplings

1.3.41**ignition source**

source of energy that can ignite an explosive atmosphere

Note 1 to entry: Such sources include, but are not limited to flames, incandescent material, electric sparks, hot surfaces and mechanical impact sparks.

Note 2 to entry: For the purposes of *domestic caravans* and *boats*, items of equipment within a controlled area that are *non-sparking by nature* or *encapsulated* are NOT considered to be *ignition sources*.

Note 3 to entry: For hazardous areas, equipment that is selected and *installed* according to AS/NZS 60079.14 is not considered to be an *ignition source*.

1.3.42

LP Gas locker

fully enclosed compartment for the storage of *LP Gas cylinders* and associated equipment

Note 1 to entry: See “*cylinder compartment*”.

1.3.43

main run

run of *pipng* from the outlet of the first *pressure* regulator at the *LP Gas cylinder* to the furthest *appliance* position

1.3.44

manual shut-off valve

manually operated valve that allows an *appliance* or a section of *pipng* to be shut off

1.3.45

manufacturer's instructions

manufacturer's specifications

document supplied with, and relevant to, the *appliance* or equipment that provides authoritative instructions on matters such as installation, *commissioning*, testing, maintenance and operation of the *appliance* or equipment

1.3.46

may

indicates the existence of an option

1.3.47

nominal size

nominal diameter

DN

numerical designation of size, in millimetres, which is common to all components in a *pipng* system other than components designated by outside diameters or by thread size

Note 1 to entry: It is a convenient round number for reference purposes and is only loosely related to manufacturing dimensions.

1.3.48

non-sparking by nature

device that does not have electrical contacts that move, i.e. “make” or “break” during normal operation, and thus presents a lower risk of ignition of a flammable atmosphere

Note 1 to entry: Devices such as plugs, fixed terminals and *encapsulated* solenoids are considered *non-sparking by nature*. Devices such as mechanical switches, commutating motors, relays and contactors are considered sparking by nature.

1.3.49

operating pressure

gas pressure that any part of the *gas installation* is or will be subjected to under normal operating conditions

1.3.50

outdoor(s)

above-ground open-air situation with natural ventilation, without stagnant areas, and where *gas* leakage and products of combustion are rapidly dispersed by wind and natural convection

Note 1 to entry: [Appendix K](#) provides diagrammatical representations of *outdoor* areas.

1.3.51**oxygen-depletion sensor****ODS****oxygen depletion device**

device designed and installed to shut off the *gas* supply to a *gas appliance* when the oxygen content of the ambient air is depleted to a specified concentration

1.3.52**pigtail**

short length of small bore copper pipe or a *hose assembly* (to allow flexibility) used for the high-pressure connection between an *LP Gas cylinder* and the *cylinder regulator* or the *cylinder manifold*

1.3.53**piping**

system of pipes, fittings, components and equipment that conveys *gas* from a *cylinder regulator* to the *appliance* inlet

1.3.54**POL fitting**

LP Gas union connection having only a left-hand thread

Note 1 to entry: The specification for a *POL fitting* is that of Type 21 in AS 2473.2.

1.3.55**pressure**

pressure above atmospheric *pressure* (*gauge pressure*)

1.3.56**proprietary system**

manufacturer-specific system using matched components, which may require special tools for installation

Note 1 to entry: *Proprietary systems* may be incompatible with those of other manufacturers and may include *piping*, *flues*, and fittings.

1.3.57**purge****purging**

with respect to *piping* —

- (a) replacing the air in *piping* with *gas* or inert *gas*; or
- (b) removing the *gas* from *piping* by replacing the *gas* with either air or an inert *gas*.

Note 1 to entry: The purpose of *purging* is to prevent the presence in the *piping* of an explosive mixture of *gas* and air.

1.3.58**quick-connect device**

two-part mating plug and socket assembly for connecting a *gas appliance* to a gas supply without the use of tools

Note 1 to entry: Type 1 *quick-connect devices* are sometimes referred to as “bayonet fittings”.

1.3.59**quick-connect device (cylinder)****cylinder quick-connect device**

quick-connect device designed to connect with an *LP Gas* cylinder valve with an external thread

Note 1 to entry: In Australia the cylinder quick-connect device conforms with AS 4627, Type 27.

Note 2 to entry: In New Zealand the cylinder quick-connect device conforms with UL 2061.

Note 3 to entry: For New Zealand, acceptable valve types are defined in the Health and Safety at Work (Hazardous Substances) Regulations.

1.3.60

range hood

mechanical extraction unit to collect contaminated air from above a cooking *appliance*, pass the air through a filtration system and then either discharge it from the space or recirculate it back into the space

1.3.61

rated working pressure

maximum allowable inlet *pressure* of any *gas appliance*, or pipe fitting, or any section of gas pipework

1.3.62

safety shut-off valve

valve within a safety shut-off system that stops *gas* flow

1.3.63

semi-rigid connector

assembly of semirigid pipe, with permanently attached end fittings, that is designed for infrequent movement

1.3.64

shall

indicates that a statement is mandatory

1.3.65

should

indicates a recommendation

1.3.66

Technical Regulator

government appointed person, body or authority that has jurisdiction over *gas* safety legislation (or other entity authorized by that person, body or authority)

1.3.67

toughened safety glass

glass that has been processed by controlled thermal treatments to increase its strength

Note 1 to entry: For requirements on toughened safety glass, see [Clause B.3](#).

1.3.68

trivet

pan support

grid located over the open *burners* of a *gas* cooking *appliance* to support vessels being heated

1.3.69

vapour barrier

wall or other barrier constructed and placed with the objective of preventing the passage of vapour from any one place to some other place, to achieve the separation distances required to ignition sources or openings into structures

1.3.70

vent line

pipe that is connected to a *gas pressure regulator*, relief valve or a safety shut-off system, and will convey escaping *gas* to a safe location

1.3.71**water heater**

appliance for the supply of water at a temperature not exceeding 99 °C

1.4 Work health and safety

Safe working practices shall be employed when working on *gas installations*. Work health and safety (WHS) requirements shall form the basis of the process of installing *gas appliances*. These requirements pertain to all aspects of access, installation, operation and maintenance. Persons installing *gas appliances* need to be aware of their responsibilities in accordance with local WHS requirements. Precautions shall be taken to avoid any electrical hazards present in the *gas installation*.

CAUTION — SAFETY PRECAUTIONS NEED TO BE OBSERVED WHEN CUTTING INTO PIPEWORK OR DISCONNECTING FITTINGS AND DEVICES ON PIPEWORK. THERE HAVE BEEN FATALITIES AND INJURIES THAT HAVE BEEN ATTRIBUTED TO GAS SERVICES CARRYING AN ELECTRICAL CURRENT.

1.5 System of units

International System of Units (SI) is used in this Standard.

NOTE [Appendix A](#) provides a list of conversion factors for other commonly used units.

Section 2 Essential safety and performance-based design requirements

2.1 General

Where *gas installations* are designed based on the performance requirements of this Section, rather than by using the means of conformance under [Sections 3 to 9](#), the level of safety, convenience and efficiency of operation shall be not less than an installation carried out according to [Sections 3 to 9](#). Such designs shall be capable of being independently verified. Any justification for conformance using [Section 2](#) shall be documented and kept for 7 years.

NOTE 1 For performance based designs some *Technical Regulators* will require to be consulted prior to work commencing.

NOTE 2 Written design specification and drawings together with justification for the deviation of the means of conformance may be required by the *Technical Regulator*.

NOTE 3 Where the installation is of a complex nature, the *Technical Regulator* may require the design to be verified by a *competent person*.

NOTE 4 See [Appendix I](#) for a list of symbols for use in diagrams of *gas* control systems.

2.2 General work

2.2.1 Verification of gas supply

Before commencing an installation, the *LP Gas* type and *pressure* shall be verified to ensure the *gas* is —

- (a) compatible and safe for the *gas appliances* and pipe fittings to be installed; and
- (b) available at a flow rate that meets the anticipated maximum *gas load*.

2.2.2 Work on a gas installation

Any *gas installation*, or part affected, that contains *gas* shall be isolated and, if necessary, safely *purged* before any gasfitting commences on that *gas installation*.

During work on the *gas installation*, all parts of an unattended *gas installation* shall be left in a safe condition.

All air and contaminants shall be *purged* from the *pipings* after work on the *pipings* has been completed, and before any attempt to commission the *gas installation* or operate any connected *gas appliance*.

Piping shall be free of debris or other harmful material before that *pipings* is connected to a *gas appliance*.

Immediate steps shall be taken to make safe any unsafe *gas installation* or *gas appliance* that may be discovered. The consumer or operator shall be notified.

NOTE 1 In New Zealand, the Gas (Safety and Measurement) Regulations 2010 require that when a licensed person has reasonable grounds to believe that an installation presents an immediate danger to life and property they are required to notify the owner or occupier of the property and the *Technical Regulator*.

NOTE 2 In Australia, the *Technical Regulator* may require to be informed.

2.2.3 Sealing of open ends

All open ends of *pipings* and outlets intended for future connections of *gas appliances* shall be sealed to be *gastight* and prevent ingress of deleterious materials.

NOTE The closing of a valve will not satisfy this requirement unless the outlet of the valve is sealed to be *gastight*.

2.2.4 Testing of gas installations for leakage

Gas installations shall be tested and confirmed to be *gastight* before connection to the *gas* supply.

2.2.5 Acceptable substances for testing

Air, the *gas* for which the system is designed, or an inert *gas* shall be the only substances used within *pipings* for testing purposes. Oxygen is not to be used as a substitute for air.

2.2.6 Safe practices and WHS

Safe work practices shall be employed when working on *gas installations*.

2.2.7 Decommissioning

Every *gas installation*, or part of a *gas installation*, that is permanently decommissioned shall be disconnected from the *gas* supply and *purged*.

2.3 LP Gas cylinders

2.3.1 Cylinders and cylinder valves

Cylinders and *cylinder* valves shall be fit for purpose for the environment in which they are used.

Adaptors on the cylinder valve outlet are considered to be hazardous due to the risk of leakage and inadvertent separation. Adaptors to convert a Type 21 to a cylinder *quick-connect device* shall not be used.

2.3.2 Corrosion

Cylinders shall be protected from corrosion.

2.3.3 Cylinder orientation

A *cylinder* shall be installed in accordance with its specific design requirements.

2.3.4 Multi-cylinder installations

In multi-*cylinder* installations, service and reserve *cylinders* shall be connected to a common manifold which permits a *cylinder* to be removed without shutting down the system.

NOTE Solenoid valves may be used if suitably rated.

2.4 Location of LP Gas cylinders

2.4.1 Restriction on location of cylinders

LP Gas cylinders shall be *readily accessible* and installed in areas where an accumulation of gas cannot occur.

2.4.2 Required clearances around a cylinder

Clearances shall be maintained to ensure separation from *ignition sources*, *openings* and heat sources.

2.4.3 Mounting and stowage

LP Gas cylinders and all high pressure piping shall be located in a position which is protected from impact and minimizes the risk of *LP Gas* entering the interior of the *caravan* or *boat*.

2.4.4 Cylinder restraint

Cylinders shall be restrained to restrict movement of the *cylinders* and their attachments.

2.4.5 Use of [in situ fill] cylinders

[In situ fill] cylinders shall not be installed or stored on or in a *caravan*. *[In situ fill] cylinders* shall not be installed or stored on or in a *boat* unless it can be demonstrated to the *Technical Regulator* that by its design or location that the *gas installation* is safe.

2.5 Cylinder compartments and LP Gas lockers

2.5.1 Design and construction

Cylinder compartments and *gas lockers* shall be designed and constructed to —

- (a) be sized to house the *cylinders* and their associated equipment;
- (b) allow safe removal and reconnection and be capable of securing the *cylinder/s*;
- (c) allow sufficient ventilation of the compartment or locker to prevent buildup of *LP Gas* in case of a leak; and
- (d) be readily accessible.

NOTE A key is not regarded as a tool.

Cylinder compartments and *gas lockers* shall be constructed of materials that are fit for purpose for the environment in which they are located.

2.5.2 Identification of cylinder compartment or LP Gas locker

Cylinder compartments and lockers shall have durable and legible identification on the outside.

2.6 Materials and fittings

2.6.1 Material and components

Materials, fittings and components shall be free of damage, contamination and defects.

Materials, fittings and components selected for a *gas installation* shall be compatible and fit for purpose for use with —

- (a) the *gas* being conveyed;
- (b) the *pressure* to which they may be subjected; and
- (c) the environment in which they will be installed.

2.6.2 Proprietary systems

Proprietary systems, where permitted, shall be installed as a complete entity in accordance with the relevant *manufacturer's instructions*.

2.6.3 Jointing

All interconnecting materials of jointed fittings and *piping* shall be compatible. Jointing compounds and sealing materials shall be fit for purpose for their application.

2.7 Piping

2.7.1 General

Piping shall be designed and installed to —

- (a) convey *gas* at a predetermined *pressure* and volume;
- (b) be *gastight*;
- (c) avoid damage by corrosion, stress or other means; and
- (d) not adversely affect the structural strength and fire resistance of any *caravan* or *boat*.

2.7.2 Design

Piping shall be —

- (a) designed to ensure a *gas* velocity that minimizes adverse impacts;
- (b) installed to avoid any obstruction to the *gas* flow;
- (c) installed to safely supply the flow of *gas* at the *pressure* required; and
- (d) designed to ensure the minimum required supply *pressure* is attained at each *appliance* with all *appliances* operating.

2.7.3 Location

Piping shall —

- (a) be installed in a manner and in a location that protects it from damage;
- (b) be designed and located to minimize any hazardous buildup of *gas* if leakage occurs;
- (c) be placed in locations where it would not prejudice egress from a *boat* or *caravan*;
- (d) be sufficiently clear of other services to ensure they can be safely operated and maintained and to minimize any hazard arising from the failure of either the *gas piping* or any other service; and
- (e) when passing through partitions, be installed in a manner that avoids any escaping *gas* passing from one space to another.

2.7.4 Support of piping

Piping shall be securely supported and restrained to minimize stress from differential movements, with particular regard to those caused by vibration, flexing and thermal effects.

2.7.5 Gas pressure regulation

A means of regulating *gas pressure* shall be provided where the *pressure* supplied to any part of a *gas installation* may exceed the *rated working pressure* of that part.

Where provided, the means of regulating *gas pressure* shall —

- (a) provide and maintain control of the *operating pressure* to all parts of the *gas installation* that it is intended to control; and
- (b) be securely mounted and positioned in a safe location and *accessible* for maintenance and adjustment.

2.7.6 Over-pressure protection

Where an unsafe situation may occur in the event of malfunction or failure of any means of *gas pressure* regulation, over-pressure protection shall be provided.

2.7.7 Pressure test points

Pressure test points shall be provided to ensure all parts of the *gas installation* can be safely tested, *purged*, commissioned, operated and maintained.

2.7.8 Gas venting

Gas venting devices, vents or *vent lines* shall be installed to ensure vented *gas* discharges freely to a safe location. Spaces that contain *gas* venting devices shall either be ventilated to prevent any hazardous accumulation of gas or be free from all sources of ignition. Any *vent line* shall not affect the performance of the device or *gas installation* to which it is connected and shall terminate at a safe location.

2.8 Flues

2.8.1 General

Every *gas appliance* that requires a *flue* for safe operation shall be fitted with a *flue*. *Flues* shall be designed and installed to safely discharge outdoors *combustion products* from all connected *appliances*. The construction of a *flue* shall in no way impair the design strength or the fire resistance of the *boat* or *caravan*.

2.8.2 Design

Flues shall be designed, constructed and installed to permit all connected appliances to operate safely and effectively, taking into account the types of *appliance* to be connected, their location and energy input.

If condensate is likely to accumulate, an *accessible* means of safely draining the *flue* or *appliance* shall be provided.

2.8.3 Materials

Materials and jointing methods used for the construction of the *flue* shall be fit for purpose.

2.8.4 Installation

Flues shall be supported independently of the *gas appliance* unless the *gas appliance* has been designed to support the weight of the *flue*.

Flues shall be fastened to a robust structure capable of ensuring stability and to prevent stressing of joints.

Any penetration of the *boat* or *caravan* shall be sealed to prevent ingress of water.

2.8.5 Location

The *boat* or *caravan* shall be protected from the thermal effects of *flues*.

Flues shall be located to prevent damage or interference to or by any other utility or service.

2.8.6 Flue terminals

Flue terminals shall be —

- (a) constructed of materials that are fit for purpose and for the environment in which they are installed;
- (b) constructed and located to prevent ingress of any material or substance that could impair the performance of either the *flue* or any connected *gas appliance*;
- (c) constructed to prevent ingress of any material or substance that could impair the performance or place at risk the safety or integrity of the *boat* or *caravan*;
- (d) located to minimize entry of *combustion products* into any *boat* or *caravan* and to minimize the effects of adverse draught on the performance of the *gas appliance*;
- (e) located so as to prevent harm to persons; and
- (f) installed in a way that does not adversely affect the structural strength and fire resistance of the caravan or boat.

2.9 Installing gas appliances

2.9.1 Pre-installation

Gas appliances shall be checked before they are installed to ensure they will operate safely on the *gas* type being supplied.

2.9.2 General installation requirements

General installation requirements are as follows:

- (a) *Gas appliances* and equipment shall be installed in accordance with the *manufacturer's instructions*.
- (b) The space in which a *gas appliance* is installed shall be ventilated to the extent required to ensure the safe and effective operation.
- (c) *Gas appliances* shall be installed so that their operation is not affected by the operation of mechanical devices used to displace air, either within the same space or within a connected space.
- (d) All *manufacturer's instructions* accompanying the *gas appliance* shall be provided.
- (e) *Gas appliances* shall be installed so that adjacent *combustible surfaces* are protected from damage resulting from the thermal effects of their operation.
- (f) *Gas appliance* shall be connected to existing *gas piping* only if that *gas appliance* does not affect the safety or effectiveness of any *gas installation*.
- (g) Any safety device or system that permits a *gas appliance* to be operated remotely, automatically or unattended shall be of a type that ensures the *gas appliance* fails safe.
- (h) *Gas appliances* shall be supported or secured to prevent stressing of the *gas piping* unless the *gas piping* has been specifically designed and constructed to safely support the *gas appliance*.

- (i) An *appliance* shall be accessible so that it can be serviced.

NOTE 1 Removal of a panel or door to give access to a control compartment is acceptable.

- (j) An *appliance* shall not cause a hazard to walls, nearby surfaces, curtains, furniture or opened doors, and shall not obstruct the free movement of persons.

- (k) *Gas appliances* shall include a system that prevents the uncontrolled release of *gas*.

NOTE 2 Electrical supplies to *gas appliances* should have a *readily accessible* and identifiable means of isolation located adjacent to the *appliance*. Requirements for means of electrical isolation are in AS/NZS 3000.

2.9.3 Gas appliance location

Gas appliances shall be located to —

- (a) avoid or be protected against the effects of corrosive and/or physical damage;
- (b) permit functional adjustment, safe ignition, access for operation and maintenance;
- (c) avoid any hazard to the *boat* or vehicle, or to the contents of the *boat* or vehicle;
- (d) avoid undue restriction of the movement of persons;
- (e) minimize the risks associated with the storage, use or release of hazardous or flammable substances in the vicinity or be protected; and
- (f) minimize the risk of harm to persons.

A *gas appliance* shall be installed only in a location or on a structure capable of supporting the weight of the *gas appliance*.

2.9.4 Ventilation of the gas appliance space and air supply to gas appliances

Ventilation shall ensure proper operation of the *gas appliance* and flueing system and maintain safe ambient conditions.

The air supply to *gas appliances* shall provide for complete combustion of the *gas*.

The air supply to *gas appliances* shall be free of any substance that could adversely affect the safe operation or durability of the *gas appliance*.

Where the required air supply relies on a mechanical system, the *gas installation* shall include an interlock that prevents the operation of the *gas appliance* if the mechanical air supply system fails.

2.9.5 Gas appliance connection and isolation

A means of disconnection and isolation from the *pipework* shall be provided for all *gas appliances*.

The means of isolation shall be *readily accessible*.

A means of isolation shall be provided to prevent the flow of *gas* when an *appliance* is stowed.

2.9.6 Commissioning

Every *gas appliance* shall be commissioned upon installation to ensure safe start-up and operation, and shall include checks of safety and operating controls.

NOTE 1 See [Appendix H](#) for guidelines for *gas appliance commissioning*.

NOTE 2 See [Appendix J](#) for a checklist for checking conformance of the installation prior to and during *commissioning*.

2.9.7 Fire resistant material

Fire resistant material shall be fit for purpose.

2.9.8 Flue materials

Flue materials and jointing methods shall be fit for purpose.

2.9.9 Jointing compounds and materials

Jointing compounds and materials shall be fit for purpose.

2.10 Hose assemblies

2.10.1 General

Hose assemblies shall be of a minimum practicable continuous length and installed so that —

- (a) they are protected from exposure to ultraviolet light; and
- (b) the possibility of damage by vermin attack is minimized.

2.10.2 Use of a hose assembly

In general, other than for *hose assemblies* between *cylinders* and regulators, *hose assemblies* shall be used only between the regulator and rigid *piping*, and between rigid *piping* and *appliances*. Flexible hoses shall be one continuous length and as short as practicable for the intended application in order to prevent kinking and damage to the hose. Flexible hose inside a *caravan* or *boat* shall be *accessible*. *Hose assemblies* shall not be connected to each other.

For *caravans* with a slide out section (e.g. for additional living space), a *hose assembly* is permitted between the rigid *piping* of a *caravan* and the rigid *piping* of the slide out section.

Where the flexible hose is concealed (e.g. behind an *accessible* panel), information shall be supplied with the *caravan* instructions that state its location and the need for regular inspection by a *competent person*.

2.10.3 Hose assembly — Operating conditions

A *hose assembly* shall not be installed where, under normal operating conditions, it is —

- (a) exposed to a temperature exceeding the maximum temperature specified in the *hose manufacturer's instructions*;
- (b) subject to stress, abrasion, kinking or permanent deformation; or
- (c) subject to damage by vermin.

2.10.4 Hose assembly connecting an appliance

A *hose assembly* for an *appliance* shall be —

- (a) permanently connected to the *appliance* by a threaded or other metal connection; and
- (b) permanently connected to the *piping* by a threaded or other metal connection.

2.11 Shut-off valves

Shut-off valves, whether manual or automatic, shall be fit for purpose.

2.12 Quick-connect devices

2.12.1 General

A *quick-connect device* shall be installed so as to avoid entry of water, dust or other debris.

2.12.2 Restriction on installation

A *quick-connect device* socket shall not be installed inside a *caravan* or *boat*.

2.13 Essential safety requirements

2.13.1 Prohibition of earthing through piping

Piping shall not be used as an earth for any electrical supply system.

NOTE This Clause does not preclude the application of equipotential bonding in accordance with AS/NZS 3000.

2.13.2 Restriction on use of thread sealant

Thread sealant, or any other sealing material, shall not be applied to a compression joint.

NOTE A compression joint includes a flare, a union, and any *fitting* for connection to a *cylinder* valve.

2.13.3 Requirements for gas appliances

2.13.3.1 New Zealand requirements

The *gas appliance* shall be checked to ensure that the *gas appliance* markings and instructions indicate that it is designed to operate on the *gas* to be supplied to the installation and at the range of *pressures* supplied.

NOTE Gas (Safety and Measurement) Regulations 2010 cover requirements for *certification* or approval of *appliances*.

2.13.3.2 Australian requirements

Type A appliances shall conform to the current applicable specifications, standards of performance and *certification* requirements. The *appliance* shall be designed for use with the type of *gas* to be connected and —

- (a) be *certified* as being in accordance with the applicable Standard; or
- (b) be acceptable to the *Technical Regulator*.

Type B appliances shall conform to the requirements of AS 3814 and be acceptable to the *Technical Regulator*.

Before a second-hand *gas appliance* is installed, the *appliance* shall satisfy the safety requirements of the *Technical Regulator*.

2.13.3.3 Prohibition on installation

Except as provided below, the following *appliances* and equipment shall not be installed inside a *caravan* or *boat*:

NOTE 1 Inside a *boat* includes an enclosed area or an outside area that does not include any provision for the drainage of leaking *gas* to outside the *boat*.

- (a) An *appliance* which is designed to operate on an unregulated *gas* supply or at a *pressure* exceeding 2.75 kPa.
- (b) In Australia, a *water heater*, other than a room-sealed type.
- (c) In New Zealand, *water heaters* other than room-sealed types shall only be installed in *caravans* or *boats* subject to the following requirements:
 - (i) The input of any flueless *water heater* shall not exceed 0.4 MJ/h/m³ of room volume (100 W/m³).
 - (ii) Flueless *water heaters* shall not be fitted underneath projecting shelves or cupboards, nor with a clearance less than 150 mm from side walls, and the *flue terminals* shall not be less than 300 mm below ceilings.
 - (iii) Instantaneous *water heaters* shall not be installed in *bedrooms* or areas used for sleeping unless the *water heater* is of the room-sealed type. There shall be no ventilation openings or other connections between any area used for sleeping and any compartment in which an instantaneous *water heater* is located if the *water heater* is not of the room-sealed type.

NOTE 2 An area used for sleeping includes any combined living/sleeping area.

- (d) A space heater, other than a room-sealed type, see Note 3.

NOTE 3 In Australia, for a space heater installation on a houseboat, the *Technical Regulator* should be contacted, as a flueless space heater may be permitted in the living area of the houseboat where the area can be isolated from the sleeping area. The heater needs to be fitted with a flame safeguard, tilt safety switch and *oxygen depletion device*. The maximum *gas consumption* of the heater is not to exceed 0.2 MJ/h for each cubic metre of room volume.

2.13.3.4 Appliance location

An *appliance* shall not be installed in a location where it may ignite flammable vapours or materials or where chemicals may combine with combustion air and cause corrosion or malfunction of the *appliance*.

NOTE 1 Such materials include some cleaning solvents and some chemicals used in dry-cleaning processes.

NOTE 2 An *appliance* that is permanently fixed in place or an *appliance* that is fitted in a location where it is intended to be used or likely to be used is deemed to be installed.

2.13.4 Materials and components

2.13.4.1 Prohibited fittings

The following fittings or jointing systems shall not be used in *pipng*:

- (a) Croxed joints.
- (b) Compression fittings with non-metallic olives.
- (c) Compression fittings with metallic olives if not approved for use with *gas* in the *manufacturer's instructions*.
- (d) Longscrew connectors.
- (e) Capillary fittings containing soft-solder.
- (f) Plain nipples, e.g. running nipples with parallel threads, except where no practical alternative is available.

NOTE 1 A brass external parallel thread to a brass internal parallel thread may be used, provided the joint is welded or a permanent quick-setting thread compound is used and a means of disconnection is provided immediately downstream. Wherever possible, the fitting should be secured against disturbance.

- (g) In Australia, multilayer (composite) systems.
- (h) In Australia, press-fit connectors.
- (i) Threaded and welded steel pipe and fittings.

NOTE 2 In New Zealand, multilayer (composite) *pipng* system may be used if the product *certification* provides for their use in *boats* and *caravans*.

Section 3 Means of conformance — Cylinders

3.1 General

3.1.1 Cylinders and cylinder valves

In Australia, *cylinders* and *cylinder valves* shall conform to the AS 2030 series and shall be fit for purpose for the environment in which they are installed.

In New Zealand, *cylinders* are required by the Health and Safety at Work (Hazardous Substances) Regulations 2017 to be of a registered type.

3.1.2 Restriction on cylinder capacity

LP Gas cylinders installed as part of a *domestic caravan or boat gas installation* shall be limited to an individual maximum water capacity of 25 L (nominal 10 kg). *LP Gas cylinders* of a greater capacity may be utilized in commercial applications, but they shall be transported, supplied, installed and exchanged in line with the requirements of the applicable dangerous and hazardous substances goods code, *LP Gas* suppliers and AS/NZS 1596.

NOTE Confirmation (e.g. engineering report) may be required to ensure the chassis and draw-bar construction will support the load of larger cylinders on commercial vehicles.

3.1.3 Corrosion

To prevent corrosion of *cylinders* under anchor straps, a rubber strip or similar non-metallic protection shall be positioned between *cylinders* and anchor straps.

NOTE 1 Checks should be made for the legislative requirements relating to the rendering safe, repair, retesting and disposal of faulty, damaged or severely corroded *cylinders*.

NOTE 2 *Cylinders* bearing the coating identification mark are unlikely to have corrosion resistance required for marine applications.

3.1.4 Cylinder orientation

A *cylinder* shall be installed upright.

NOTE *Cylinders* installed on a *caravan* drawbar should be orientated so that the *cylinder* relief valves of both *cylinders* discharge away from both the caravan and the towing vehicle, as shown in [Figure 3.1.4](#).

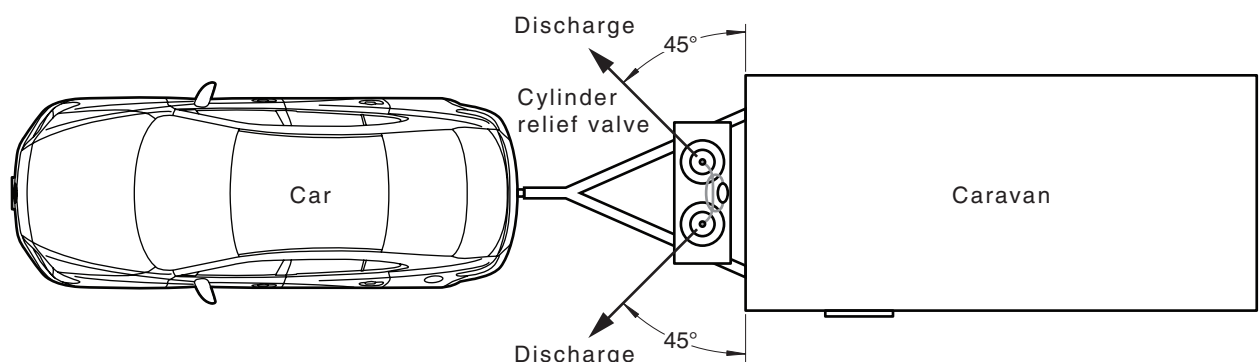


Figure 3.1.4 — Direction of cylinder relief valve discharge