



# PORTABLE CYLINDER (RECREATIONAL) FILLING BY DECANTING

LPG guidelines

Issued May 2015

# Contents

Introduction	3
About these guidelines	4
<b>1.0 Safety precautions</b>	<b>5</b>
1.1 General safety precautions for filling portable cylinders by decanting	5
1.2 Specific information relating to LPG hoses, dead-mans valve and fitting adaptors	6
1.3 Transport of LPG cylinders in enclosed vehicles	7
1.4 Safety Data Sheets	9
<b>2.0 Product knowledge</b>	<b>10</b>
2.1 Liquefied Petroleum Gas	10
2.2 Characteristics of LPG	10
2.3 Pressure and temperature influences on LPG	11
2.4 Equipment freeze	11
2.5 LPG vapour cloud	12
2.6 LPG flammability	12
2.7 Characteristics of LPG storage vessels	12
2.8 Dangers of over-filled LPG cylinders	13
<b>3.0 First aid</b>	<b>14</b>
3.1 Immediate treatment	14
<b>4.0 Installation requirements</b>	<b>15</b>
4.1 Decanting location	15
4.2 Security	16
4.3 Notices	16
<b>5.0 Filling by decanting</b>	<b>17</b>
5.1 Decanting transfer equipment	17
5.2 Cylinder types	18
5.3 Inspection of cylinder before filling	19
5.4 Decanting filling procedure when using standard decant equipment	20
<b>6.0 Emergency procedures</b>	<b>24</b>
6.1 Leak on valve thread, or outlet of customer's cylinder	24
6.2 Leaks on supply cylinder	24
6.3 Over-filled cylinder	24
6.4 Burst decanting hose	25
6.5 LPG fire	25
<b>7.0 Approximate capacities of cylinders for LPG (information)</b>	<b>26</b>
<b>8.0 How to contact Origin</b>	<b>27</b>

## Abbreviations

AS/NZS: Australia and New Zealand Standard  
Cl: Clause

# Introduction

## **A leading Australian energy provider**

In Australia, Origin is the largest energy retailer, offering customers market leading capabilities and a depth of experience.

Origin LPG is a truly national LPG supplier, with significant operations in all states and territories. We also operate in New Zealand and the Asia Pacific.

Our network of LPG import facilities and seaboard terminals is unequalled by any other LPG supplier in Australia. Located from Cairns to Hobart, these facilities provide strategic points of supply to our customers.

## **Safety is our first priority**

These guidelines have been produced by Origin to provide you with an overview of the common methods and procedures used for filling portable cylinders by decanting.

The information in these guidelines can help protect the health and safety of yourself, your employees and your customers.

While this information is based on Origin's extensive experience in the LPG business it does not take precedence over any statutory requirement or company health, safety and environmental procedures. Although every care has been taken in compiling these guidelines, it is reliant on the information available to Origin at the date of this release. While Origin believes the information to be correct, it is not in a position to warrant its accuracy or to anticipate every circumstance in which the information might be used. In addition, the law and standards may have changed since the date of this release. Accordingly, you are cautioned to make your own determination of the veracity and suitability of these guidelines to your own circumstances and to obtain independent advice relevant to those circumstances.

These guidelines may be amended by Origin from time to time. They are not to be copied or modified without Origin's prior written consent. For additional details or clarification please contact your Origin LPG Account Manager or call 134 GAS (134 427).

## About these guidelines

**Note:** Filling of a portableLPG cylinder at an automotive refueling station through the filler valve or through the Acme check connector valve using an adapter is dangerous and prohibited (AS1596 CL11.12.5)

The task of filling LPG portable cylinders may be performed only by persons who have received appropriate instructions.

These guidelines should be used in conjunction with AS/NZS 1596 and any other relevant instruction issued by regulatory authorities.

Filling cylinders by volume by decanting is the method outlined in this procedure. (AS/NZS 1596 Cl. 8.2.2, section 8.4 and Cl.11.12.6 Appendix J). In particular:

- (a) Decanting is limited to cylinders that are fitted with an appropriate fixed liquid level/bleeder valve incorporating a vapour/liquid release mechanism.
- (b) Cylinders filled in accordance with these guidelines shall not exceed 25 litres water capacity, or 50 litres capacity if used as a fuel container for a vehicle engine. Refer to the Guideline Booklet “Forklift Cylinder Filling by Decanting” if filling of forklift cylinders is required.

Decanting is the process of filling one cylinder by transferring liquid LPG to it from another cylinder or tank without the use of a mechanical pump. The process requires that a pressure differential between the two cylinders be created and maintained by venting the vapour pressure from the cylinder being filled via the fixed liquid level/bleeder valve during the decanting procedure.

# 1.0 Safety precautions

## 1.1 General safety precautions for filling portable cylinders by decanting

- 1.1.1 All decanting must take place outdoors.
- 1.1.2 Check there are no ignition sources (such as people smoking, naked flames, mobile phones, pagers, radios or machines with electric motors, e.g. fridges) within 5 metres.
- 1.1.3 Ensure that pilot lights in caravans, camper vans and boats etc. are turned off.
- 1.1.4 Both the liquid withdrawal cylinder and the portable cylinder must stand upright so as the pressure safety relief valve (SRV) is in the vapour space of the cylinder.
- 1.1.5 Cylinder valves must be kept closed regardless of whether the cylinders are empty or filled.
- 1.1.6 When not in use, keep the cylinder outlet valve capped or plugged. The safety valve should be capped at all times to prevent fouling.
- 1.1.7 Personnel performing LPG decanting must wear:
  - approved thermal protective gloves;
  - long sleeved shirts and long trousers made from natural materials (non synthetic);
  - safety eye wear; and
  - appropriate closed-in footwear.

**Note:** All staff supplied with protective clothing and safety equipment have a responsibility to themselves and their fellow workers to use this equipment correctly and to keep it in an operative condition.

- 1.1.8 A competent operator must remain in attendance at the cylinder filling point during the entire decanting operation.
- 1.1.9 A clear means of egress in more than one direction and not less than one metre wide shall be maintained from the filling point clear of the area where cylinders are being filled or stored.



- 1.1.10 A dry powder fire extinguisher with a rating of not less than 2A 60B(E) (9 kg) shall be provided in a prominent and readily accessible position during the filling operation.
- 1.1.11 To allow for the discharge of any static electricity, the cylinder being filled must not be standing on any insulating material, such as plastic, rubber etc. The operator must touch both the supply cylinder and the cylinder being filled with bare hands before commencing decanting to earth down and remove any static electricity on the operator's body.
- 1.1.12 Cylinders and the configuration of the filling equipment shall be arranged so that only one cylinder can be filled at a time.
- 1.1.13 The cylinder being filled must be inspected before filling to ensure it complies with Section 5 of these guidelines.
- 1.1.14 Cylinders must never be filled above the liquid level/bleeder valve (80%) as this decreases the vapour space and may cause either vapour or liquid LPG to discharge from the safety relief valve – without warning – during transportation or storage of the cylinder.
- 1.1.15 Spare cylinders must be stored outdoors or in a well ventilated enclosure.

## **1.2 Specific information relating to decanting hose, dead-mans valve and filling adaptors**

- 1.2.1 Hoses for decanting LPG shall be approved for use with LPG and comply with the requirements of AS1869.
- 1.2.2 Dead-mans valves and filling adaptors should be purchased from the hose supplier to ensure correct thread form and quality of fitting.
- 1.2.3 It is important that the hose, its end connections and any filling adaptors are inspected thoroughly at the beginning of the day to identify any wear on threads, or faults which could lead to an incident through leakage or total failure.
- 1.2.4 Inspection of LPG hoses should typically look for:
  - Cuts through the outer rubber casing;
  - Abrasion which exposes the woven material matrix beneath the rubber coating;
  - Indication that the hose is separating from the end coupling / fitting;
  - Degradation due to prolonged exposure to sunlight (UV). Note: significant UV degradation shortens hose life and may lead to failure.
- 1.2.5 Storage of hoses: Refer to section 4 of these guidelines for specific installation and security requirements. Note that in addition to these requirements, it is recommended that LPG hoses are stored under cover at all times when not in use to reduce UV degradation.

### 1.3 Transport of LPG cylinders in enclosed vehicles

Enclosed vehicles means any vehicle where there is not adequate ventilation. This applies whether or not the vehicle is used for private or business purposes or is used for providing public transport and whether or not one or more of the vehicles windows are open. For example, it can include boots or passenger compartments, enclosed trucks, taxis, buses and other public transport, private or business vehicles of any kind where the cylinder is not located substantially in open air.

Adequate ventilation is when the ventilation produces a flow of air that circulates throughout the compartment, in particular throughout the highest and lowest parts of the compartment, and is must allow for the air to be released from the compartment after the air has circulated.

#### 1.3.1 For private use or private vehicles:

The maximum aggregate quantity of LPG cylinders that may be transported for private use is 65 litres water capacity (equivalent to 26.5 kg of LPG). However, see 1.2.3 below for restrictions relating to enclosed transport. Refer to Appendix O in AS1596 for additional guidance.

#### 1.3.2 For commercial or trade use:

The maximum aggregate quantity of cylinders that may be transported on a vehicle for commercial or trade use without placarding / signage, safety equipment, and owners insurance, all in compliance with the specific requirements of the Australian Dangerous Goods Code (ADG) is 250 litres water capacity. Refer to the ADG code for full information on these requirements. Refer also to Appendix P in AS1596 for additional guidance.

#### 1.3.3 Transporting in an enclosed vehicle or compartment:

Irrespective of whether cylinders are being carted for domestic or commercial / trade use, the maximum aggregate quantity that can be transported in an enclosed vehicle or compartment is 33 litres water capacity (13.5 kg of LPG). In Queensland this limit is reduced to 30 litres water capacity (11 kg of LPG).

#### 1.3.4 Numbers and size of cylinders in enclosed vehicle or compartments:

It is recommended that a maximum of 2 cylinders is transported in enclosed vehicles or compartments. This limit of 2 cylinders is mandatory in Queensland.

In Queensland the maximum capacity of any cylinder transported in an enclosed vehicle or compartment is 9 kg LPG capacity, in addition, any 8.5 kg or 9 kg cylinders shall only be transported when being taken to or from an exchange or filling area. This does not apply if the cylinders are transported in a sealed compartment which is vented to the outside air.

In Queensland, when cylinders of 9 kg or smaller are supplied, it shall be ensured that the service valve outlet is screwed tightly closed, and a screwed plug is fitted to the cylinder.

**Note:** this is recommended for all regions.

In Queensland, cylinders shall be supplied with a label to the following effect:

### CYLINDER SAFETY INSTRUCTIONS

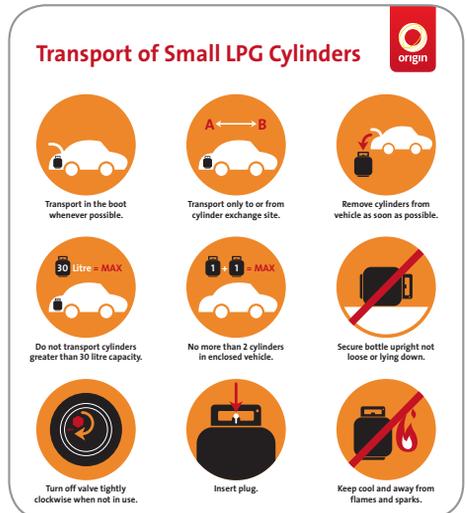
LPG cylinders are safe if used correctly. It is important that:

- a. Cylinders are carried and stored upright at all times
- b. Cylinders are secured upright in vehicles, preferably in the boot, and not more than 2 cylinders are carried at a time
- c. Valves are checked to ensure they are tightly turned off
- d. Cylinders are kept away from heat or direct sun
- e. Contents of cylinder must not be inhaled.

For added safety, fit a screw plug to the cylinder outlet when not in use.

1.3.5 Where a cylinder is to be transported in the passenger compartment of a vehicle, it should be in the rear of the compartment. The cylinder should be restrained in order to prevent movement or physical damage to the cylinder or the vehicle's occupants. Note: Unrestrained cylinders can cause serious injury if the vehicle suddenly brakes or is involved in an accident.

1.3.6 Transport instructions are to be displayed at filling and/or exchange point, similar to the illustrated example. This is mandatory in Queensland.



## 1.4 Safety Data Sheets

- 1.4.1 Safety Data Sheets (SDS) provide the information needed for the safe handling of hazardous substances. These may be obtained from the Origin website at [originlpg.com.au](http://originlpg.com.au).
- 1.4.2 The SDS provides:
- information needed for the safe handling of a hazardous substance;
  - the physical description of the product;
  - health hazard information;
  - precautions for use;
  - personal protection information;
  - actions in the event of an LPG emergency including first aid information; and
  - contact information.

## 2.0 Product knowledge

### 2.1 Liquefied Petroleum Gas

LPG is derived principally from two sources. It is separated from crude oil or natural gas as it leaves the wells, or it is produced from crude oil distillation in the normal refining process. In Australia, LPG is usually propane or butane or a mixture of both. Propane is used for domestic and commercial burners. Butane is also mixed with propane to produce Autogas. Butane is sometimes used for commercial/industrial purposes.

It is important not to use butane or Autogas on appliances designed to burn propane, and vice versa, without obtaining expert advice on such items as jet sizes and regulator pressures, which may require replacement or adjustment.

### 2.2 Characteristics of LPG

#### 2.2.1 Physical properties

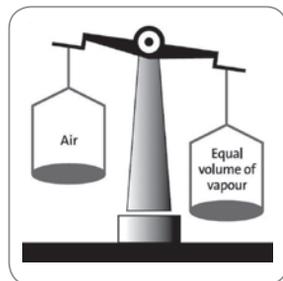
LPG is a colourless liquid when stored under pressure. It is odourless in its natural state. Odourant is added as a safety measure to give the liquid and vapour the characteristic gas smell to aid in the quick detection of leaks.

Other physical properties are printed in the LPG Safety Data Sheet (SDS). Refer to Section 1.3.

#### 2.2.2 Vapour density of LPGs

Propane has a vapour density of 1.5 compared to air which has a vapour density of 1.0. LPG vapour is heavier than air and, therefore, any LPG escape will flow downwards and may accumulate in low-lying areas and be slow to dissipate without ample ventilation and air movement.

If an LPG vapour or liquid leak occurs, the most danger is at or near ground level. The vapour will gravitate to all the lower levels, particularly downwind of the leak. LPG liquid is approximately half the density of water and, therefore, any escape may flow across water before vapourising



### 2.2.3 Toxicity

LPG is not poisonous or toxic but vapourised LPG when released into confined spaces can cause mild anaesthesia, nausea or dizziness. Avoid breathing vapours and mists. It can cause asphyxiation due to the exclusion of oxygen. Deliberate misuse can adversely affect the central nervous system, including confusion and a lack of coordination. All LPG filling installations are required to be well ventilated by being open on at least two sides.

### 2.2.4 Freeze burns

Propane or butane liquid in contact with the skin can cause serious freeze burns (see Section 3 – First aid). Approved thermal protective gloves, safety eye wear, non synthetic long sleeved shirt, trousers and appropriate closed-in footwear must be worn when handling LPG to protect against freeze burns.

## 2.3 Pressure and temperature influences on LPG

LPG vapour, when compressed sufficiently, will change from a vapour to a liquid. Similarly, when vapour is cooled at atmospheric pressure to below its boiling point of  $-42^{\circ}\text{C}$  it will also liquefy.

As the temperature of the LPG in the cylinder varies in line with changes in ambient temperature the pressure inside the cylinder also varies. Temperature increases will cause the pressure to increase; decreases in temperature will cause the pressure to decrease. As vapour is drawn from the cylinder for use, the resultant lowering of the pressure in the cylinder causes any remaining liquid to give off more vapour to restore the pressure in the cylinder.

The expansion ratio of LPG is 1:270. This means that one litre of liquid, if vapourised, will occupy a volume 270 times greater than one litre of its liquid state.

**Note:** Leaking liquid is extremely hazardous due to its large and sudden expansion to vapour.

## 2.4 Equipment freeze

As LPG liquid expands to vapour it can cause surrounding temperatures to drop rapidly. This temperature drop can cause water vapour present in the air to form ice on an open valve, causing it to freeze over and may even close off the valve opening, thus giving a false impression of the state of the system.

## 2.5 LPG vapour cloud

On vapourisation, LPG itself is invisible. However, the escape of LPG liquid promotes condensation of water vapour from the air, and this makes the resulting vapour cloud adjacent to the discharge point visible. Consequently, on very hot dry days the vapour cloud from a liquid escape might not be so readily visible.

## 2.6 LPG flammability

LPG vapour, which is heavier than air, can combine with nearly 50 times its own volume of air to form a flammable mixture.

LPG vapour / air mixtures ranging between 2 and 10% concentration of LPG in air are flammable. If such a mixture of LPG and air is ignited, it will flash back to the source of escape; and if ignited in a confined space it will explode.

## 2.7 Characteristics of LPG storage vessels

LPG is stored as a liquid under pressure in specially designed cylinders.

An important characteristic of all LPG cylinders is that they are designed to never be completely full of liquid. They must never be over-filled (see Section 2.8). An adequate vapour space is always maintained above the liquid. This vapour space allows for expansion of liquid caused by temperature change, such as occurs when the cylinder is exposed to strong sunlight. The pressure is not affected by the amount of liquid in the cylinder, as long as there is adequate vapour space, but is affected by the temperature of the liquid within the cylinder. The maximum standard filling level for propane cylinders is 80%.

All cylinders intended to be filled by decanting are fitted with a liquid level/bleeder valve. The liquid level/bleeder valve:

- indicates when the liquid level in the cylinder reaches 80%; and
- releases the vapour from the cylinder to allow the flow of liquid when filling by decanting.

The liquid level/bleeder valve may be referred to as:

- ullage gauge or valve;
- bleeder valve or screw; or
- fixed liquid level gauge.

Most of the LPG storage cylinders used are designed for propane. Whilst butane can be stored in propane cylinders, propane must not be stored in cylinders designed for butane.

## 2.8 Dangers of over-filled LPG cylinders

When an LPG cylinder is over-filled any rise in ambient temperature will cause the pressure in the cylinder to increase as the liquid expands. This increase could cause the cylinder pressure relief valve to discharge LPG if excessive pressure has developed in the container.

The relief valve will continue to discharge LPG until the pressure inside the cylinder drops to below the relief valve setting. This opening and closing action may occur many times before the liquid level falls sufficiently to provide adequate vapour space inside the cylinder for the existing temperature conditions. Ignition of the gas being discharged could cause a serious fire emergency or explosion.

Over-filling can also pose a danger when the cylinder is reconnected to an appliance. Liquid LPG could flow through regulating equipment thus supplying liquid LPG instead of vapour LPG to the appliance.

This situation is extremely dangerous and could lead to:

- over pressurisation of connected internal pipe work, or hose, and possible rupture;
- incomplete combustion within the appliance and generation of poisonous Carbon Monoxide;
- escaping liquid LPG within, or around, the premises; and
- potential for fire and/or subsequent explosion.

If you suspect that an over-filled condition exists, close the cylinder supply valve and report the situation to your supervisor immediately. If a cylinder is over-filled, the excess liquid will need to be removed and your supervisor will determine the most appropriate course of action.

## 3.0 First aid

This section outlines the actions to follow whenever someone comes into contact with liquid LPG.

Contact temperatures are usually below -30 Degrees Celsius and tissue contact at this temperature results in snap freezing of the affected area causing damage similar to a heat burn.

Contact with equipment at below zero temperatures can cause the skin to stick fast and the flesh may be torn. Direct bodily contact with LPG liquid must be avoided.

### 3.1 Immediate treatment

- 3.1.1 If possible, remove any affected clothing contaminated or splashed with liquid LPG not adhering to the skin, and place the injured person in a warm area.
- 3.1.2 Immediately bathe the affected area with large quantities of warm water for at least 15 minutes to bring the affected areas back to normal body temperature.
- 3.1.3 If possible have the injured person gradually move the injured area to re-establish / maintain circulation to assist in the re-warming process..
- 3.1.4 Seek immediate medical attention for all but superficial injuries, Advise the hospital / doctor of the injury (e.g. freeze burn, inhalation, etc.).

**Note:** If the affected area re-warms too rapidly, further damage may be caused to the tissue. Do not apply direct heat or cold such as heat lamps, hot water, or ice to affected parts. If warm water is not available, tap water will suffice, but be careful not to cause cooling.

- 3.1.5 In cases involving inhalation, remove the contamination source and move the injured person to fresh air. Ensure airways are clear. A qualified person should give oxygen through a face mask if breathing is difficult
- 3.1.6 Eyes: Immediately wash with clean luke warm water for 15 minutes.

**Note:** Record the incident in line with your internal company incident reporting system. For other advice, the Poisons Information Centre may be contacted on 13 11 26 (in Australia).

## 4.0 Installation requirements

### 4.1 Decanting location

#### (AS/NZS 1596 Cl 8.4.3)

A decanting supply cylinder shall not be stored or used indoors, or used in a portable application and shall be located on the ground in an upright static position. Cylinders liable to damage from manoeuvring vehicles shall be protected from impact. Whether decanting from a tank or cylinder, the design of the installation shall be such that the point of connection to the cylinder being filled cannot lie within the following distances:

- 2m** To an opening into a building.
- 5m** To buildings on neighbouring property or to any combustible material stored above ground.
- 3m** To public places (footpaths etc.).
- 3m** To any above ground tank containing dangerous goods.
- 5m** To any above ground LPG storage tank on an automotive filling installation (Cl 10.5.19).
- 3m** To dispensers for any type of fuel.
- 3m** To the entrance to a drain, pit or basement.
- 2m** To any structure limiting the egress past the point of connection to the cylinder.
- 5m** To ignition sources.

**Note:** Distances are horizontal and may be measured around a vapour barrier, provided that the vapour barrier is designed in accordance with the requirements of AS/NZS 1596.

"Decanting point" is at the end of the decanting hose reach area or a clearly marked stand or area where the portable cylinder stands whilst being filled.

If decanting from a tank, the hose connection point to the tank shall not be less than 3 metres from the tank and the decant point not closer to the tank than the hose connection point.

Origin is to be contacted regarding any changes in site conditions, deterioration of, or damage to, equipment or before relocation of the decant supply cylinder, to ensure the installation is compliant with AS/NZS 1596.

In Queensland, in the absence of the written approval of the Chief Inspector, LPG cannot be transferred from one fuel gas container to another at or adjacent to residential premises, if as a result of the transfer, LPG vapour or liquid gas is released into the air.

## 4.2 Security

### Decanting Cylinder (AS/NZS 1596 Cl 8.4.5)

When the decanting (supply) cylinder and equipment are installed in an area accessible to the public and are left unattended they shall be protected from tampering by:

- the whole of the decanting equipment and cylinder being in a locked ventilated enclosure outdoors; or
- \* the decanting hose and cylinder valve being rendered inaccessible, and the decanting equipment shall be disconnected and stored in a secure place; or
- the decanting equipment and supply valve being locked under a lockable cover on top of the cylinder, or housed in a lockable cabinet. Note that if stored in a cabinet the cabinet should provide protection from sunlight to reduce UV degradation of the hose.

## 4.3 Notices

### Decanting Cylinder (AS/NZS 1596 Appendix D1)

The following notices shall be located prominently close to the decanting point:

- in letters at least 50mm high: “FLAMMABLE GAS - NO SMOKING”;
- decanting instructions including a warning for safe fill level; and
- in Queensland, transport instructions including recommendation for fitting of screwed outlet plugs must be displayed where cylinders are filled or exchanged as per paragraph 1.3.5.

**Note:** The sign depicted here is indicative only

**FLAMMABLE GAS  
NO SMOKING**

**DECANTING PROCEDURE NO SELF SERVE**  **origin**

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**BEFORE FILLING**

1. Customers (cylinder holder) shall check the supply with the exception of 10 litre cylinders, shall not be filled by decanting
2. The person decanting gas shall be suitably trained
3. Read the safety instructions on the cylinder and cylinder that come with it and your copy of the operator's manual and be made of non-synthetic material
4. Check the cylinder is not damaged
5. Check that the water level does not exceed 2/3 of the cylinder's capacity
6. Check that the cylinder is not damaged and that the valve is not damaged
7. Check that the cylinder is not damaged and that the valve is not damaged
8. Check that the cylinder is not damaged and that the valve is not damaged
9. Check that the cylinder is not damaged and that the valve is not damaged
10. Check that the cylinder is not damaged and that the valve is not damaged

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**DURING FILLING**



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**AFTER FILLING**

1. The customer shall check the fill level
2. The customer shall check the fill level
3. The customer shall check the fill level
4. The customer shall check the fill level
5. The customer shall check the fill level
6. The customer shall check the fill level
7. The customer shall check the fill level
8. The customer shall check the fill level
9. The customer shall check the fill level
10. The customer shall check the fill level
11. The customer shall check the fill level
12. The customer shall check the fill level

**FLAMMABLE GAS NO SMOKING** 

# 5.0 Filling by decanting

## 5.1 Decanting transfer equipment

### 5.1.1 Supply cylinder

The decanting (supply) cylinder must be located away from or protected against accidental impact.

#### 5.1.1.1 Supply cylinder outlet valve

Supply cylinders shall be fitted with the CGA 555 male thread liquid outlet connection. Note that the withdrawal tube inside the cylinder has an excess flow installed.

### 5.1.2 Decant hose

The decanting hose must be suitable for LPG service and not more than 10mm nominal bore and 1.5 metres long. The hose shall be fitted with an excess flow valve at the upstream end and a spring loaded dead-man's valve on the downstream end.



**Note:** Refer to section 1.2 for more information relating to inspection of LPG hoses to ensure that they are in serviceable condition.

### 5.1.3 POL fitting (left hand thread)

A male POL fitting (left hand thread) is fitted to the outlet of the spring loaded dead-man's valve. There are adaptors for external threads (left hand thread CGA 555) and for internal self sealing right hand threads, which can be connected to the male POL fitting.



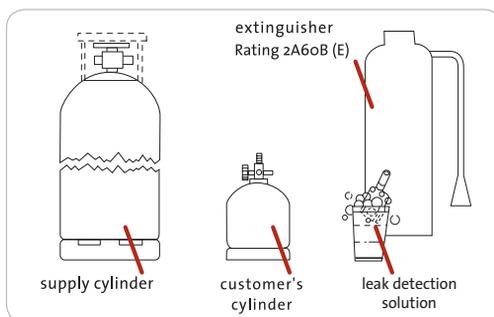
### 5.1.4 Leak detection

Leak detection solution should be used to check for leaks. Bubbles will show the source of the leak.

**CAUTION:** The ammonia present in some soaps and detergents can react with brass fittings and cause such fittings to crack after a short period of time. Caution should therefore be exercised when using soap solutions on brass fittings, and all connections should be rinsed thoroughly with fresh water as soon as possible after the application of the soap solution.

### 5.1.5 Fire extinguisher

A dry chemical fire extinguisher with a rating not less than 2A 60B(E) (9kg) shall be provided adjacent to the cylinder filling area. (AS/NZS 1596 Cl 13.4.2 & 13.7.5)



## 5.2 Cylinder types

Portable cylinders suitable for decanting come in various sizes from the small hand held handyman cylinder through to the 9kg caravan size cylinder. Cylinders with a water capacity greater than 25 litres must not be filled by decanting except for cylinders used for automotive purposes (50 litres max). (AS/NZS 1596 Cl. 4.2.4)

**Note:** Filling of a portable LPG cylinder at an automotive refuelling station through the filler valve or through the Acme check connector valve using an adapter is dangerous and prohibited (AS1596 CL11.12.5)

### 5.2.1 Fitting types

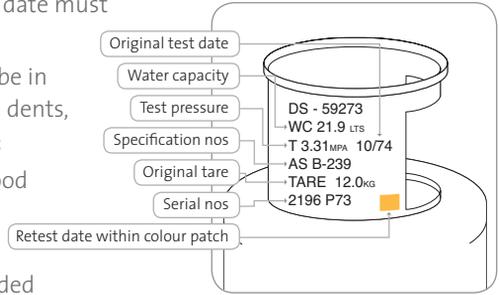
- 5.2.1.1 Internal fitting – female self sealing, right hand (clockwise) threaded outlet. The plunger valve inside the cylinder opens or closes as the nozzle is connected or disconnected.
- 5.2.1.2 External fitting – male left hand (anti-clockwise) threaded outlet fitted to a positive shut off valve.
- 5.2.1.3 Standard fitting – POL (Prestolite) left hand (anti-clockwise) female outlet fitted to a positive shut off valve.



### 5.3 Inspection of cylinder before filling

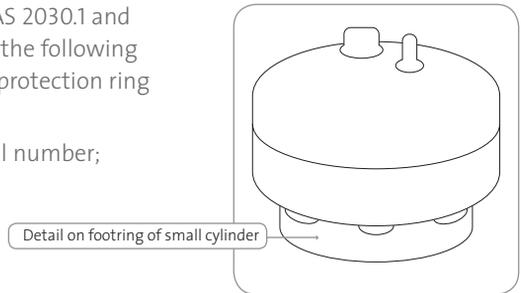
5.3.1 Portable cylinders must comply with the following requirements or they must not be filled:

- the period from the last test date must not be more than 10 years;
- the cylinder must appear to be in good condition and not have dents, gouges or be badly corroded;
- cylinder valves must be in good condition;
- safety relief valve (SRV) must not be damaged, corroded or blocked by foreign material and discharge path must not impinge on valve protection ring; and
- cylinders must have a liquid level/bleeder valve.



5.3.2 Cylinders must comply with AS 2030.1 and AS 2469 or AS 2470 and have the following markings either on the valve protection ring or on the footing:

- manufacturer's mark/serial number;
- specification number;
- water capacity (WC);
- original tare mass;
- original test date; and
- test pressure of 3.3MPa (480psi) or greater
- original and any subsequent test dates.



5.3.3 In Queensland, a safety label should be attached to new and re-tested cylinders, similar to the following:

## Cylinder Safety Instructions

LP Gas cylinders are safe if handled and used correctly. It is important that:

<ul style="list-style-type: none"> <li>● Cylinders are carried and stored upright at all times</li> <li>● Cylinders are secured upright in vehicle, preferably in the boot</li> <li>● No more than 2 cylinders are carried at a time</li> </ul>	<ul style="list-style-type: none"> <li>● Cylinder valves are checked to be tightly closed</li> <li>● Cylinders are kept cool and out of direct sun</li> <li>● LP Gas is not inhaled</li> </ul>
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Origin recommends that for added safety a screwed plug is inserted into the outlet of the cylinder during transport (*this is mandatory in Queensland*) and whenever it is not connected for use. Be careful when inserting and removing.

Unscrew plug clockwise

## 5.4 Decanting filling procedure when using standard decant equipment

Ensure precautions in 5.1 to 5.3 are adhered to prior to completing the procedure. Cylinders shall only be filled when they are in the vertical orientation, and are on the ground or on a non-insulated surface.

Important additional pre – filling checks:

- Inspect the entire length of the hose to ensure that it is in good condition without cuts, significant abrasion or indication that the hose is pulling out of the end connections.
- Inspect the threads on the dead-mans valve and on the connection which screws onto the supply cylinder. Inspect the O-ring on the dead-mans valve for cracks or tears.
- If any equipment is unsuitable do not use it, and have the damaged components replaced.

**Important: Never over-fill a cylinder.**

**Cylinders to be transported as per Section 1.2 of these guidelines.**

Cylinders must never be filled above the maximum standard filling level (80%).

Cylinders shall be filled on the ground or on a non-insulated surface.

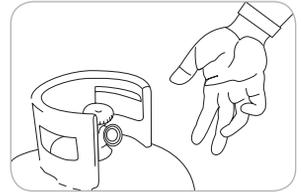
**Note:** The operator must be in attendance for the entire period whilst filling. The spring loaded valve must only be opened by hand and must never be held open by a clip or other means.

### Procedure

- 5.4.1 Check there are no ignition sources (such as people smoking, naked flames, mobile phones, pagers, radios or machines with electric motors, e.g. fridges) within 5 metres.
- 5.4.2 Ensure that pilot lights in caravans, camper vans and boats etc. are turned off.
- 5.4.3 Check cylinder to ensure that the test date stamped on the cylinder is within the required 10 year period. If out of date do not fill and refer the customer to a registered cylinder test station.
- 5.4.4 Inspect cylinder for corrosion and dents paying particular attention to the underside of the cylinder. If significant corrosion or damage is present, do not fill and refer the customer to a registered cylinder test station.
- 5.4.5 Check the cylinder has a liquid level / bleeder valve. If it does not have such a valve, do not fill.
- 5.4.6 Stand the customer's cylinder in a vertical position directly on the ground or on an earthed stand.

**Do not use plastic stands.**

5.4.7 Discharge any static electricity by touching both the cylinder to be filled and the supply cylinder with bare hands before putting on the protective gloves.

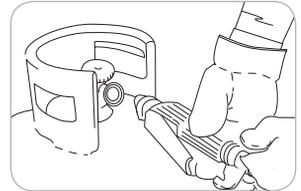


5.4.8 Check that the bleeder valve is directed away from operator and towards a well ventilated area. Check that the cylinder is not full by unscrewing the bleeder half turn and ensuring that no liquid is emitted from the bleeder. If liquid is emitted, the cylinder is over full. Follow instructions in section 6.2.

5.4.9 Close the bleeder.

5.4.10 Ensure the dead-man's valve is closed (i.e. lever not de-pressed) . Remove the cap from the outlet of the valve on the supply cylinder. Attach the filling assembly hose connection tightly to the liquid supply cylinder.

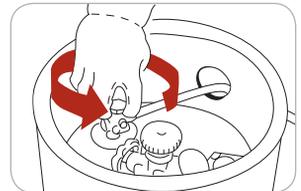
5.4.11 Connect dead-man's valve end of hose to cylinder being filled using appropriate fitting (POL, internal or external outlet thread) and tighten.



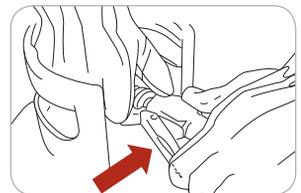
5.4.12 Slowly open the liquid withdrawal valve on the supply cylinder.

5.4.13 Check that there are no leaks on hose or valve connections.

5.4.14 Open the spring loaded dead-man's valve on decanting hose by releasing the safety catch and pressing the handle slowly.

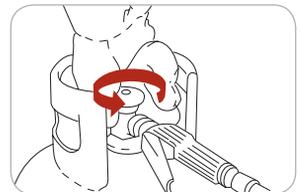


5.4.15 Check for leaks. If a leak is observed, immediately cease the decanting operation and close all valves. Vent the hose. Check the o-ring on the POL connection. Re-tighten the leaking connection and repeat from 5.4.12. If the leak persists, then stop the transfer, do not fill the cylinder and contact the supervisor. Have the faulty fitting replaced or the cylinder tagged 'OUT OF SERVICE'.



5.4.16 Slowly open the main valve on the cylinder being filled. Note that opening the cylinder valve quickly may cause the excess flow valve on the inlet of the hose to shut.

5.4.17 Open the bleeder screw on the cylinder being filled 1 turn using the appropriate tool.



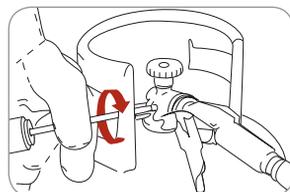
**Note:** If no vapour is being emitted from the bleeder at this stage, then the bleeder is blocked. Close the bleeder and stop the filling operation by following instructions from step 5.4.20 onwards (ignoring step 5.4.21), and place the cylinder in a segregated area for repair. Tag the cylinder as 'OUT OF SERVICE'.



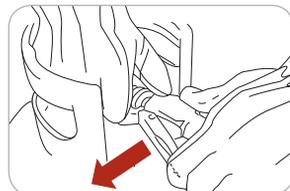
5.4.18 Stay in attendance during the entire process of filling. Do not use any device to hold the dead-man's valve open. Observe the hose and all connections during the filling process for leaks. If a leak is observed, immediately cease decant operations and close all valves, disconnect and vent the hose, check fittings and rubber seals and O-rings (replace if necessary). Reconnect the hose and recommence the filling process.



5.4.19 Allow filling to continue until a solid white cloud/mist discharges from the liquid level/bleeder valve on the cylinder being filled. This indicates that the cylinder maximum fill level has been reached.

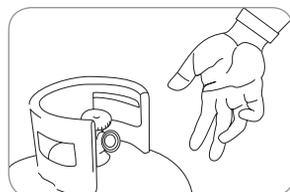


5.4.20 Immediately release the handle on the dead-man's valve to stop the liquid LPG transfer.



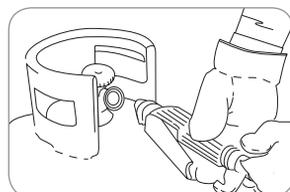
5.4.21 Allow fixed liquid level/bleeder valve to continue to vent until the white cloud/mist disappears and then close the liquid level/bleeder valve.

5.4.22 Remove gloves and discharge any static electricity by simultaneously touching both the supply cylinder and the filled cylinder with bare skin.



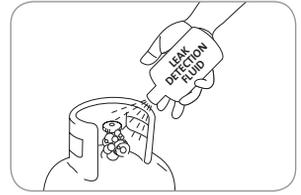
5.4.23 Replace gloves and close liquid withdrawal valve on the supply cylinder, and main valve on the cylinder being filled.

5.4.24 Loosen decanting hose connection from the valve of the filled cylinder and then carefully disconnect the hose completely from the cylinder.



A small amount of vapour trapped between the hose connection and the cylinder valve will escape.

5.4.25 Check the filled portable cylinder fittings for leaks by liberally applying a soapy water solution, with a brush or spray bottle, to the following:



- outlet of the main valve;
- the thread where the main valve is attached to the cylinder;
- bleeder valve opening;
- the spindle of the outlet valve if the outlet valve has a manual shut-off valve safety relief valve (SRV) outlet and thread;
- Safety Relief Valve opening.

**Note:** If a leak is detected, carefully remove filled cylinder (keeping it upright) to an open space. Follow emergency procedure for leaks. Refer to Section 6.

**CAUTION:** The ammonia present in some soaps and detergents can react with brass fittings and cause such fittings to crack after a short period of time. Caution should therefore be exercised when using soap solutions on brass fittings, and all connections should be rinsed thoroughly with fresh water as soon as possible after the application of the soap solution.

- 5.4.26 Plug or cap the cylinder valve outlet; and replace the dust cap on the SRV outlet if this cap is missing or damaged.
- 5.4.27 If no further immediate decanting is to be carried out. Close the main valve on the decant storage vessel and safely depressurise the decant hose assembly, ensuring there are no other personnel who could be affected by the discharge. Partially depress the lever on the dead-mans valve whilst pointing the outlet of the dead-mans valve in a downwind direction and away from any part of the body, to release the liquid LPG to atmosphere.
- 5.4.28 Replace the cap on the outlet valve of the supply cylinder. Lock the cover of the decant vessel.

# 6.0 Emergency procedures

## 6.1 Leak on valve thread, or outlet of customer's cylinder

- 6.1.1 Release the spring loaded handle on the dead-man's valve.
- 6.1.2 Close the supply cylinder and customer cylinder valves.
- 6.1.3 Close the liquid level/bleeder valve on the customer's cylinder. Loosen the decanting hose connection from the cylinder valve and carefully disconnect. A small amount of vapour trapped between the two valves will escape.
- 6.1.4 Check that the 'O' ring on the POL hose is in good condition.
- 6.1.5 If a fault is found keep upwind of the leak. If the leak continues, cease decanting, disconnect the hose, and carefully move the cylinder to a safe area. Slowly vent using the liquid level/bleeder valve until vapour is emitted and contents removed.
- 6.1.6 Attach a defect tag to the faulty cylinder. Do not allow leaking cylinders to be transported for any reason.

## 6.2 Leaks on supply cylinder

- 6.2.1 Close supply valve if safe to do so.
- 6.2.2 Keep bystanders and vehicles away.
- 6.2.3 Isolate ignition sources. Do not start engine.
- 6.2.4 Keep upwind of the leak.
- 6.2.5 Contact Origin on 1800 808 526.

## 6.3 Over-filled cylinder

- 6.3.1 Attach a defect tag and advise a supervisor that the cylinder has been over-filled.
- 6.3.2 Keep bystanders and vehicles away.
- 6.3.3 Move the over-filled cylinder to a safe area where its contents can be slowly vented using the liquid level/bleeder valve, until vapour is emitted and contents reduced to the safe fill level.

**Note:** Under no circumstances let an over-filled cylinder be removed by a customer until its contents have been reduced to the safe fill level.

## 6.4 Burst decanting hose

- 6.4.1 Release the spring loaded handle on the dead-man's valve.
- 6.4.2 Close the supply cylinder valve and customer cylinder valve if safe to do so.
- 6.3.3 Isolate ignition sources. Do not start engine.
- 6.4.4 Keep bystanders and vehicles away.
- 6.4.5 Keep upwind of the leak.
- 6.4.6 Allow the decanting hose to vent, and then disconnect it from both the receiving cylinder and supply cylinder.
- 6.4.7 Attach a defect tag to the hose and advise a responsible person on site that the hose is unserviceable.

## 6.5 LPG fire

**Note: Do not extinguish the flames if the valves cannot be safely closed. If the fire cannot be extinguished readily and safely, evacuate the local area and call the emergency services on 000.**

- 6.5.1 Release the spring loaded handle on the dead-man's valve.
- 6.5.2 Shut all valves, if possible and if safe to do so.
- 6.5.3 Raise the alarm and keep bystanders and vehicles away
- 6.5.4 Use water spray from hose to keep tank or cylinders cool. Approach the cylinder/tank from the upwind side.
- 6.5.5 **Do not** extinguish the fire unless by doing so you can shut valves to shut off fuel supply to the fire.

The basic rule for LPG fires, therefore, is to control the leak before putting out the fire.

The only time you would break this rule would be if putting out the fire first enabled you to control the leak. This would be done by using a dry chemical extinguisher and only if immediate access to isolating valves can be gained to stop the LPG flow.

When sufficient water is not available to keep the cylinder/tank cool, some warning of increased pressure may be noted from an increase in the volume of the fire or from an increase in the noise level of the discharge from the safety relief valve.

**This should be a signal to consider withdrawal of all personnel to a safe area, i.e., at a distance of at least 70 to 200 metres from the site of the fire.**

- 6.5.6 Telephone Origin on 1800 808 526.

## 7.0 Approximate capacities of cylinders for LPG (information)

The approximate masses and volumes (water capacities) of LPG cylinders are provided for information in the table below.

### Approximate capacities of cylinders for LPG

Nominal mass of LPG in cylinder kg	Approximate volume (water capacity) of cylinder L
3	7
4.5	11
5	13
9	22
10	26
13.5	32
15	36
18	44
45	108
90	200
190	454
210	499

# 8.0 How to contact Origin

Customer service e-mail Postal address      **134 GAS (134 427) or call your account manager enquiry@originenergy.com.au GPO Box 1199, Adelaide SA 5001**



LPG orders Telephone Website      **133 LPG (133 574) originlpg.com.au**

## Emergencies or leaking gas 1800 808 526

Your Origin Representative: \_\_\_\_\_

Origin Representative phone number: \_\_\_\_\_

Date: \_\_\_\_\_

Origin Energy Retail Ltd      ABN 22 078 868 425  
Sun Retail Pty Ltd      ABN 97 078 848 549

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