



# **FORKLIFT CYLINDER** FILLING BY DECANTING

LPG guidelines

Issued May 2015

# Contents

<b>Introduction</b>	<b>3</b>
<b>About these guidelines</b>	<b>4</b>
<b>1.0 Safety precautions</b>	<b>5</b>
1.1 General safety precautions for filling cylinders by decanting	5
1.2 Specific information relating to decanting hoses, dead-mans valve and fitting adaptors	7
1.3 Safety Data Sheets	7
<b>2.0 Product knowledge</b>	<b>8</b>
2.1 Liquefied Petroleum Gas	8
2.2 Characteristics of LPG	8
2.3 Pressure and temperature influences on LPG	9
2.4 Equipment freeze	9
2.5 LPG vapour cloud	9
2.6 LPG flammability	10
2.7 Characteristics of LPG storage cylinders (vessels)	10
2.8 Dangers of over-filled LPG cylinders	10
<b>3.0 First aid</b>	<b>11</b>
3.1 Immediate treatment	11
<b>4.0 Installation requirements</b>	<b>12</b>
4.1 Decanting location	12
4.2 Security	13
4.3 Notices	13
<b>5.0 Filling by decanting</b>	<b>14</b>
5.1 Decanting transfer equipment	14
5.2 Inspection of cylinder before filling	14
5.3 Decanting filling procedure	15
5.4 Manual handling of forklift cylinders	19
<b>6.0 Emergency procedures</b>	<b>20</b>
6.1 Leak on valve thread	20
6.2 Leaks on supply cylinder	20
6.3 Over-filled cylinder	20
6.4 Burst decanting hose	21
6.5 LPG fire	21
<b>7.0 How to contact Origin</b>	<b>22</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 forklift 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 Account Manager or call 134 GAS (134 427).

## About these guidelines

The task of filling LPG cylinders for forklifts may be performed only by persons who have received appropriate instruction.

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

There are two types of cylinders fitted to forklifts, one is the permanently mounted type and the other, and more common, is the removable cylinder type. Only cylinders that are removed from the forklift can be filled by decanting.

Filling cylinders by volume by decanting is the method outlined in this procedure. (AS/NZS 1596 Cl 8.2.2(a) Section 8.5 and clauses, 11.2.5 and 11.2.6 and appendix J).

In particular:

- (a) Decanting is limited to cylinders that are fitted with an appropriate liquid level/bleeder valve incorporating a vapour/liquid release mechanism.
- (b) Fuel cylinders used for vehicle engines larger than 50 litres capacity shall not be filled by decanting, this is reduced to 25 litres capacity for all other cylinders.

Refer to the Guideline Booklet “Portable Cylinder (Recreational) Filling by Decanting” if filling of cylinders other than 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 liquid level/bleeder valve during the decanting procedure.

# 1.0 Safety precautions

## 1.1 General safety precautions for filling cylinders by decanting

- 1.1.1 All decanting must take place outdoors.
- 1.1.2 No smoking in the cylinder filling area.
- 1.1.3 Turn off all electrical equipment (such as mobile phones, pagers, radios, etc.).
- 1.1.4 Forklift cylinder to be removed from forklift for filling.
- 1.1.5 Personnel handling LPG 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.

- 1.1.6 A competent operator must remain in attendance at the cylinder filling point during the entire decanting operation.
- 1.1.7 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.
- 1.1.8 Liquid withdrawal cylinders must always stand upright.
- 1.1.9 A forklift cylinder may stand upright or lay in a horizontal position, provided that the safety relief valve is always exposed to the vapour space of the cylinder. That is, the safety relief valve is in the uppermost position.



- 1.1.10 To allow for the discharge of any static electricity, the cylinder being filled should 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.
  - 1.1.11 Forklift cylinders and the filling equipment shall be arranged so that only one cylinder can be filled at a time.
  - 1.1.12 The cylinder being filled must be inspected before filling to ensure it complies with Section 5.2 of these guidelines.
  - 1.1.13 Forklift cylinders greater than 50 litres water capacity must not be filled by decanting.
  - 1.1.14 Cylinders must never be filled above the maximum standard filling level (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.
  - 1.1.16 **Forklift cylinders are not to be transported in enclosed vehicles**
- Note:** Enclosed vehicles include enclosed trucks, taxis, buses, and other public transport, private or business vehicles of any kind (whether windows are open or not) where the cylinder is not substantially located in open air.
- 1.1.17 A dry powder fire extinguisher having a rating of at least 2A 60B(E) (9 kg) shall be located in a prominent and readily accessible position during the filling operation.
  - 1.1.18 Ensure that service valve is turned off before disconnecting the cylinder for removal. The safety relief valve should be capped at all times to prevent fouling.
  - 1.1.19 Filling of a portable LPG cylinder at an automotive refuelling station other than through an Automatic Fill Limiting AFL valve and with the cylinder mounted on the forklift is dangerous and prohibited (AS1596 CL11.12.5)
- Note: All decanting must take place outdoors.**  
**No smoking in the cylinder filling area.**

## 1.2 Specific information relating to decanting hoses, 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 look for:
  - Cuts through the outer rubber casing;
  - Abrasion which exposes the woven material matrix beneath the rubber outer casing;
  - 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 storage 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 Safety Data Sheets

- 1.3.1 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).
- 1.3.2 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 residential 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

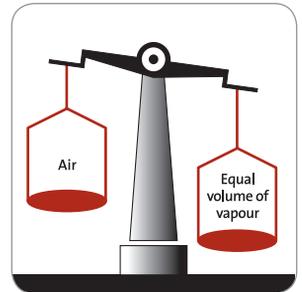
LPG is a colourless liquid when stored under pressure. It is odourless in its natural state. Odourant is added as a safety measure to give the liquid and vapour the characteristic gas smell to aid in the quick detection of leaks.

Other physical properties are printed in the LPG Safety Data Sheet (SDS). Refer to Section 1.2.

### 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 greatest 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 vaporising.



### 2.2.3 Toxicity

LPG is not poisonous or toxic but vaporised LPG when released into confined spaces can cause mild anaesthesia, headaches, 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°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, 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 vaporised, 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 vaporisation, 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 up to 50 times its own volume of air to form a flammable mixture.

LPG vapour / air mixtures ranging between 2 and 10% concentration of LPG 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 cylinders (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 paragraph 2.8). An adequate vapour space must always be maintained above the liquid. This vapour space allows for the 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 LPG 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 is also known 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 forklift 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.

## 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 exchange 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 written approval from 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.



# 5.0 Filling by decanting

**Note:** Filling of a portable LPG cylinder at an automotive refuelling station is dangerous and prohibited unless the filling is via an Automatic Fill Limiting valve AFL and the cylinder is installed on the forklift (AS1596 CL11.12.5). Refer to Section 5.4 for the decant filling procedure.

## 5.1 Decanting transfer equipment (AS/NZS 1596 Cl 8.4.2)

- 5.1.1 The decanting (supply) cylinder must be located away from or protected against accidental impact.
- 5.1.2 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. The forklift cylinder connection should be a male ACME check connector.



**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 Leak detection solution for checking for leaks.

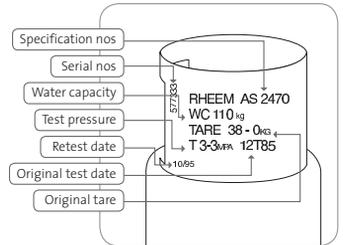
**CAUTION:** The ammonia present in some soaps and detergents can react with brass fittings and cause such fittings to crack after a short period of time. Caution should therefore be exercised when using soap solutions on brass fittings, and all connections should be rinsed thoroughly with fresh water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

- 5.1.4 A dry powder 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 Inspection of cylinder before filling

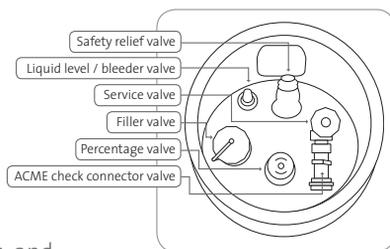
- 5.2.1 Forklift cylinders must comply with the following requirements or they must not be filled:

- 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 (if in doubt, leave segregated from other cylinders and request the supplier to pick up on next visit);
- 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.



5.2.2 Cylinders must comply with AS 2030.1 and AS 2469 or AS 2470 and have the following markings:

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



### 5.3 Decanting filling procedure

Forklift cylinders may only be filled in the vertical orientation (and not the horizontal orientation).

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

Any cylinder intended to be filled by a decanting method that is monitored by means of a fixed liquid level/bleeder valve shall not exceed 25 litre capacity (or 50 litre capacity if used as a fuel container for a vehicle engine). (AS/NZS 1596 CI 4.2.4)

**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.

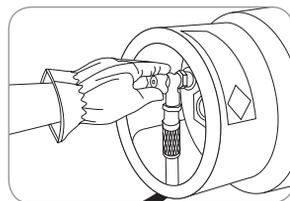
Important additional pre-filling checks:-

- 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 into 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. Have the damaged components replaced.

#### Procedure

5.3.1 Switch off forklift ignition, apply handbrake and turn off all electrical equipment (mobile phones, pagers, radios etc.). No person is to remain on the forklift or vehicle during the filling operation.

5.3.2 Put on thermal protective gloves. Turn off service valve and loosen the female ACME from the service valve and carefully disconnect the forklift service hose from the forklift cylinder. A small amount of vapour trapped between the two check valves will escape.



5.3.3 Unclip and remove cylinder from forklift using correct manual handling techniques.

5.3.4 Check the cylinder to ensure that the test date stamped on the cylinder is within the required 10 year period. If not, do not fill.

5.3.5 Inspect cylinder for corrosion and significant dents. If significant dent or corrosion is present, do not fill.

5.3.6 If in doubt, leave segregated from other cylinders and request the supplier to pick up on next visit.

5.3.7 Check the cylinder has a liquid level/bleeder valve. If it does not have such a valve, do not fill.

5.3.8 Stand the cylinder in a vertical position on the ground or on an earthed stand. **Do not use plastic or timber stands.**

5.3.9 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.

5.3.10 Check that the outlet of the bleeder valve is directed away from the operator and towards a well ventilated area. Check that the cylinder is not full by opening the bleeder half turn and ensuring that no liquid is emitted from the bleeder. If liquid is emitted, then the cylinder is overfull. If overfull, follow instructions in section 6.2

5.3.11 Close the bleeder.

5.3.12 Unlock the supply cylinder if necessary.

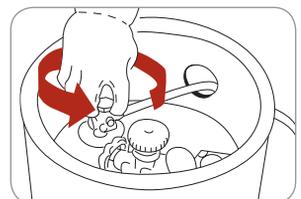
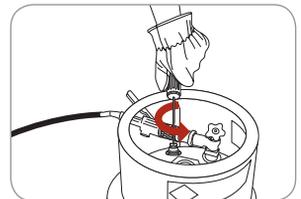
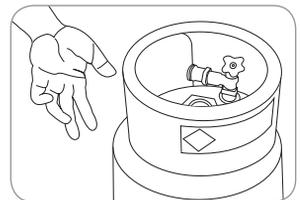
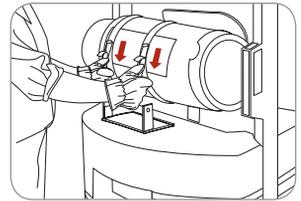
5.3.13 Ensure the dead-man's valve is closed (i.e. lever not de-pressed). Remove the cap from the outlet valve on the supply cylinder. Attach filling assembly hose connection tightly to the liquid supply cylinder.

5.3.14 Connect dead-man's valve end of hose to forklift cylinder being filled using appropriate fitting for service valve and tighten.

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

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

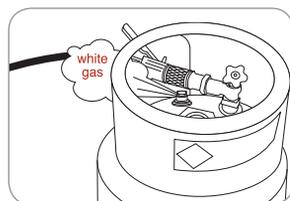
5.3.17 Open the spring loaded dead-man's valve on decanting hose by releasing the safety catch and pressing the handle slowly.



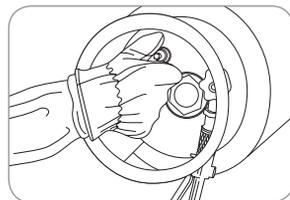
- 5.3.18 Check for leaks. If a leak is observed, immediately cease the decanting operation and close all valves. Vent the hose. Check the o-ring or rubber seals and threads for damage. If no damage is found, reconnect and tighten fittings and repeat from 5.3.13. If the leak persists, stop the transfer, do not fill and contact the supervisor. Have the faulty part replaced, or the cylinder tagged 'OUT OF SERVICE'.
- 5.3.19 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.
- 5.3.20 Open the bleeder screw on the cylinder being filled by 1 turn using the appropriate tool or by hand.

**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 5.3.21 onwards (ignoring step 5.3.22), and place the cylinder in a segregated area for repair. Tag the cylinder as 'OUT OF SERVICE'.

- 5.3.21 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 possible leaks. If a leak is observed, immediately cease decant operations and close all valves, disconnect and vent the hose, check fitting and rubber seal or o-rings. Reconnect and restart the filling process.
- 5.3.22 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.

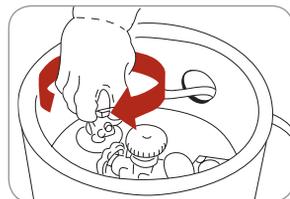


- 5.3.23 Immediately release the handle on the dead-man's valve to stop the liquid LPG transfer.
- 5.3.24 Allow fixed liquid level/bleeder valve to continue to vent until the white cloud/mist disappears and then close the liquid level/bleeder valve.



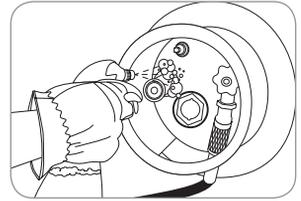
- 5.3.25 Remove gloves and discharge any static electricity by simultaneously touching both the supply cylinder and the filled cylinder with bare skin.
- 5.3.26 Replace gloves and close liquid withdrawal valve on the supply cylinder, and service valve on the forklift cylinder.

- 5.3.27 Loosen decanting hose connection from the forklift cylinder valve and carefully disconnect the hose from the forklift cylinder. A small amount of vapour trapped between the hose connection and the cylinder service valve will escape.



5.3.28 Check the forklift cylinder fittings for leaks by liberally applying a leak detection solution, with a brush or spray bottle, to the following:

- service valve threads and spindle;
- ACME check connector valve;
- liquid level/bleeder valve;
- safety relief valve (SRV) outlet and thread;
- ACME filler valve and thread; and
- percentage gauge.



**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.

5.3.29 Replace all dust caps.

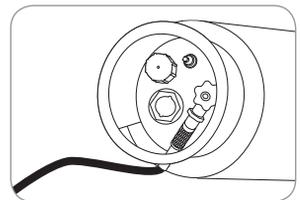
5.3.30 If no further immediate decanting is to be carried out. Close the main valve on the decant storage vessel and safely depressurise the decant hose assembly, ensuring that there are no other personnel who could be affected by the discharge. Partially depress the lever on the dead-mans valve whilst pointing the outlet of the dead-mans valve in a downwind direction and away from any part of the body.

5.3.31 Replace the cap on the outlet valve of the supply cylinder. Lock the cover of the decant vessel.

5.3.32 Refit cylinder into brackets on forklift, using correct manual handling techniques, and secure bracket clips. Ensure cylinder is in the correct alignment with the safety relief valve in the uppermost position.

5.3.33 Ensure service valve is turned off before reconnecting. Reconnect the forklift service hose by connecting it to the ACME check connector on the cylinder service valve.

5.3.34 Open the cylinder service valve and check for leaks.



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

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

## 5.4 Manual handling of forklift cylinders

It is recommended that the following steps be used to handle forklift cylinders, however, a site manual handling risk assessment should first be carried out on the task on site to assess suitability and a record is to be kept.

### Steps

Release the clamps holding the cylinder. **Do not** tilt the cylinder towards you before unlocking the clamps as the cylinder can fall out.

Position your body close to and facing the forklift to eliminate the need for twisting.

Unload the cylinder using safe manual handling techniques such as squatting or lowering the empty cylinder to the ground (one or two person lift as appropriate) with one hand, while resting your free hand on your forward knee.

Keep your back straight.

To load a full cylinder on the forklift, it is recommended that two persons lift the cylinder into place or use mechanical assistance if available.



## 6.0 Emergency procedures

### 6.1 Leak on valve thread, or outlet of forklift cylinder

- 6.1.1 Keep bystanders and vehicles away.
- 6.1.2 Isolate ignition sources. Do not start any engines.
- 6.1.3 Release the spring loaded handle on the dead-man's valve.
- 6.1.4 Close the supply cylinder and forklift service valves.
- 6.1.5 Close the liquid level/bleeder valve on the forklift cylinder. Loosen the decanting hose connection from the forklift cylinder service valve and carefully disconnect the hose from the forklift cylinder. A small amount of vapour trapped between the two check valves will escape.
- 6.1.6 Check sealing washer and 'O' ring in male ACME check connector on service valve.
- 6.1.7 If a fault is found, keep upwind of the leak. If the leak continues, cease decanting, disconnect the hose, and carefully move the forklift cylinder to a safe area.
- 6.1.8 Attach a defect tag to the faulty forklift cylinder valve and advise a responsible person on site that the cylinder is faulty. 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 Isolate ignition sources. Do not start any engines.
- 6.3.4 Move the over-filled cylinder to a safe area where its contents can be slowly vented using the liquid level/bleeder valve, until it reaches its safe fill level.

**Note:** Under no circumstances should an over-filled cylinder be used before its contents are 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 forklift service valves, if safe to do so.
- 6.4.3 Keep bystanders and vehicles away.
- 6.4.4 Isolate ignition sources. Do not start any engines.
- 6.4.5 Keep upwind of the leak.
- 6.4.6 Allow the decanting hose to vent and then disconnect it from both the forklift 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 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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