CALOR

LPG cylinders

A guide to safe handling and usage



About this guide

This booklet is intended as a field guide for best practice in the safe use and handling of LPG. For more detailed advice, please consult your Calor account manager.

All persons working with Calor Gas cylinders must be adequately trained in safe methods of cylinder changing and the safety considerations associated with LPG.

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Useful information about LPG

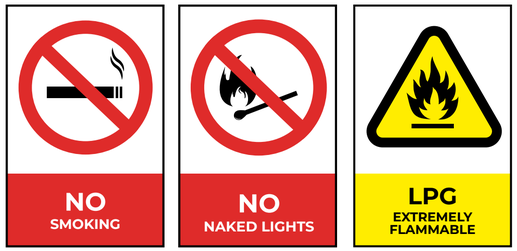
- LPG stands for liquefied petroleum gas
- LPG is a vapour at atmospheric temperature and pressure, but is stored in pressure vessels (cylinders) as a liquid
- Any increase in the temperature of LPG will increase the pressure inside an LPG cylinder. Always protect LPG cylinders from heat sources and keep clear from combustible materials
- LPG is colourless and does not normally smell. A stenching agent is added in production so even a small leak of LPG can be detected by smell
- LPG is heavier than air – any release or leak of gas will fall to the ground and, if not dispersed quickly, could collect at low levels and within confined spaces including drains, cellars and basements
- LPG is non-toxic, but in large volumes or confined areas it can exclude oxygen, causing asphyxiation
- When liquid propane evaporates into a gas it can reach temperatures as low as -42°C. Consequently, it can cause cold burns on contact with exposed skin and eyes
- Propane and butane are the two commercially available forms of LPG



Storing LPG cylinders

Ensure that:

- LPG cylinders are always stored upright on their bases, on firm, level ground and in the open air
- Cylinders are stored well away from heat and ignition sources, and any readily ignitable materials
- The access and exits to the storage area are clear for safe escape routes
- Two dry-powder fire extinguishers are available close to the storage area
- Appropriate warning notices are displayed



EMERGENCY SERVICE NUMBER
03457 444 999

- Storage is secure
- The outlet valve of every cylinder is kept closed while the cylinder is in storage. Plastic caps or plugs must be fitted to cylinders even when they are regarded as empty
- Do not store propane cylinders (red) indoors
- Do not store or use LPG cylinders below ground level, i.e. in cellars or basements
- Do not store LPG cylinders within 2 metres of openings to cellars, buildings and drains
- Do not store cylinders within 3 metres of any corrosive, toxic or oxidant material
- Do not use cylinders for any other purpose than their proper use

For further advice on the safe storage of LPG cylinders, contact your supplier.



Storage and delivery precautions

Safety is our number-one priority at Calor. To ensure you and your business are kept safe at all times, please follow the advice detailed in this leaflet.

- Only vehicles involved with transfer and handling operations should be allowed within the storage area
- Transport vehicles should have their engines and auxiliary electrical equipment (radios, etc.) turned off when cylinders are being loaded or unloaded
- Other vehicles under the occupier's control should be at least 3 metres from the nearest cylinder

Returning cylinders

To arrange the return of your cylinders, please call the relevant number from the below list. Empty cylinders should always be placed on a hard standing area to enable vehicle access for collection.

To ensure you have the most up-to-date number, feel free to check: calor.co.uk/gas-bottles/calor-centres

Allow at least 7 days' notice for collection. Cylinders will only be collected from the delivery point address.

South West and Wales

Bristol
01179 415164

Caernarfon
01286 800414

Coryton
03456 096202

Exeter
01392 203035

Llandysul
01559 362000

Neath
03456 096202

Plymouth
03456 096202

Stalbridge
01963 362542

Truro
01872 270819

South East

Cranbrook
01580 713935

Crawley
01293 880970

Dartford
01322 319520

Edmonton
020 8807 9281

Guildford
01483 300410

Newbury
01635 275420

Sittingbourne
01795 477101

Uxbridge
01895 256882

Scotland and the North

Aberdeen
01224 729954

Carlisle
01228 522144

Glasgow
0141 420 6615

Grangemouth
03456 096202

Immingham
01469 565721

Manchester
0161 259 9164

Port Clarence
03456 096202

Preston
01772 798472

Central Region

Birmingham
0121 565 0703

Norwich
01603 452692

Oxford
01865 268120

Peterborough
01733 262117

Potteries
01782 525580

Spilsby
01790 753544

Stoney Stanton
0345 609 6202

Wirral
0151 666 2177

Worcester
01905 361840



Siting cylinders in use

Your safety, and your customers' safety, is paramount to us. To help ensure it during the siting of cylinders, we've put together this simple yet essential guide.

- Cylinders should be sited in an upright position on firm, level ground to ensure they do not overbalance
- A falling cylinder could damage the hose or pull the regulator from its mounting, causing a gas escape
- Cylinders should be located against a wall or fire-resistant structure for support
- They should be sited at least 1 metre, when measured in the horizontal plane, from any possible sources of ignition, combustible material and openings such as doors, windows, ventilation ducts etc.
- Cylinders must be sited in a well-ventilated area
- They should be accessible at all times
- They should not obstruct thoroughfares
- They should be protected from accidental damage by vehicles/ animals and interference by unauthorised persons
- They should be secure
- Cylinders must not be located within 2 metres of un-trapped drains, cellars or gullies

Regulators

In March 2021 Liquid Gas UK (the industry body for the LPG industry) issued its latest Consumer Guide, in the form of **Consumer Guidance Sheet 39** – Regulators – Safe use.

The review saw the introduction of a more safety-focused standard that recommended that over-pressure shut-off (OPSO) **should be fitted to even a single bottle installation, in most domestic and commercial premises** including holiday homes, mobile homes and static caravans. Any existing installations should be updated to include a regulator incorporating OPSO devices.

The OPSO is a pressure-sensitive device incorporated into a changeover valve. It acts like an electrical fuse and it is there **to prevent excess-pressure gas from entering a property** and reaching appliances in the occasion of a regulator failing.

The OPSO is a **crucial piece of safety equipment** for all LPG-powered domestic or commercial dwellings such as static caravans/mobile homes or holiday lodges. That's why owners of such properties should regularly inspect their gas bottle regulators for signs of damage or wear.

Calor **recommends that all LPG cylinder installations are fitted with an OPSO device** for your protection.

How can you tell if your regulator/changeover valve has OPSO?

This is very simple; on each regulator or changeover valve there is a **DATA plate, detailing the pressures and gas type that the valve is suitable for**. It will clearly state if it has OPSO on the data plate.

To find more details of our guidance to customers, please visit www.calor.co.uk/OPSO



Regulators

Key things to remember:

1. Make sure your cylinder installation features an OPSO device.
2. While the Calor gas bottles belong to us, the regulators (including the OPSO device) and hoses belong to the property owners, who are responsible for ensuring that they are in a safe condition.
3. Always use LPG-qualified and Gas Safe®-registered engineers for installation, maintenance and regular inspection.



Why do we use a regulator?

- To reduce the gas from storage pressure to the working pressure of the appliance
- To provide a consistent flow of gas at a constant pressure
- To provide the required amount (volume) of gas to the appliances

The regulator is precisely set to control the pressure of the supply and must not be adjusted.

Regulators must be replaced when they are:

- Over 10 years old
- Showing signs of wear and tear or damage
- Not working correctly
- Leaking

The replacement regulator must be the correct type and should be marked BS EN 16129.

Never try to force a regulator onto the wrong-sized cylinder valve. Furthermore, don't attempt to unscrew or disconnect the regulator from any cylinder if the flame on the appliance is still alight.

In case of an emergency, call the Calor emergency service number:

03457 444 999

Changeover valves

Calor recommend that for all fixed pipework installations, a changeover valve with OPSO protection should be fitted.

A changeover valve is both a regulator and a pressure switch device. It allows two or more cylinders to be connected to a supply, providing cylinders for supply and cylinders in reserve. The changeover valve should be fitted above the cylinder valve and before the isolation or emergency control valve.

Apart from customers who pay a rental, the changeover valve belongs to the customer and it's their responsibility to check that it's in good condition and replaced when necessary.

To find more details of our guidance to customers, please visit www.calor.co.uk/OPSO

The replacement changeover valve should be the correct type and marked BS EN 16129

Changeover valves must be replaced when:

- They are more than 10 years old
- They show signs of wear and tear or damage
- They are not working correctly
- They are leaking



Positioning the changeover valve

Always ensure the changeover valve is positioned above the cylinder valve, and is securely fixed to a supporting structure.

Changeover valves must be securely attached to either a wall or a fixed post. If the regulator is not secure it can cause strain on the outlet pipe, risking a possible gas leak.

The hoses should not be stretched, but loose enough to allow flexibility for exchanging.

Stretching will put strain on the hose and changeover valve; this could result in damaged equipment and subsequently a risk of LPG leakage.



Changing hoses

The flexible connecting hoses on a changeover valve are referred to as ‘pigtails’. These carry gas at high pressure; it is very important that they are checked regularly and replaced if showing any signs of cracking or wear and tear.

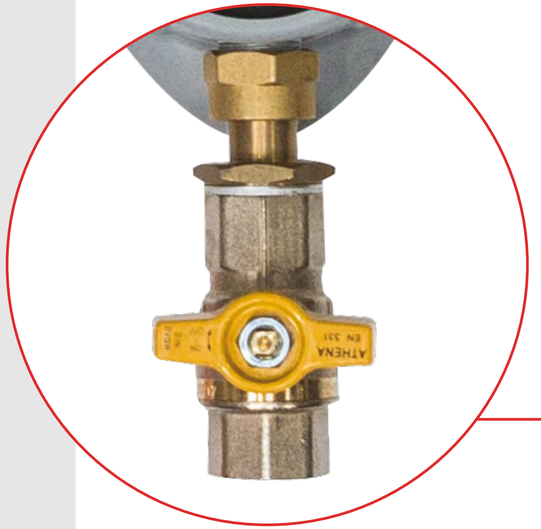
Please note: changing a hose assembly should only be carried out by a competent person who has received suitable training.



POL connector

W20 connector

- Always ensure the gas supply is turned off at the cylinder valves. It is not necessary to turn off the emergency control valve when changing hose assemblies. Doing this will interrupt the supply to the property from the service cylinders
- Remove the old hose using the correct-sized spanner:
  - Disconnect from the cylinder valve first (POL connection)
  - Then disconnect from the regulator/changeover valve end (W20 connection)
- Ensure that the new hose has the sealing washer in place, is of the correct type, is in date and is in good condition
- Thread the W20 connection onto the regulator by hand and then tighten this connection with the correct-sized spanner
- Connect the POL connection end of the pigtail to the cylinder valve by hand and then tighten with the correct-sized spanner. Remember this is a left-hand thread – turn anticlockwise to tighten up
- Turn on the cylinder valve slowly and check for leaks using a leak detection fluid; if all okay then rinse off the leak detection fluid with water
- As a final check, always inspect leak detection solution for signs of bubbling, which will indicate a leak
- In the event of any leaks, turn off the cylinder valve and re-tighten all connections, then leak-test again
- If the leak cannot be stopped, turn off the cylinder valve and contact your gas supplier



Isolation or emergency control valve (ECV)

Shown here in closed position

Connecting hoses

Flexible connecting hoses can be used between a cylinder and a regulator (e.g. wall-mounted regulator/COD on a property or in a touring caravan), or a regulator and an appliance (e.g. mobile heater, barbecue, gas torches etc.)

Flexible hoses can be vulnerable to damage and wear and tear. It is therefore important only to use flexible hoses suitable for LPG, and to inspect them regularly.



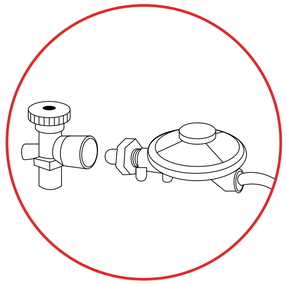
All flexible hoses used for LPG must be:

- Suitable for LPG, and must conform to **BS EN 16436-1 Class 2 or 3 Vapour Hose** standard, bearing the year of manufacture and name of the manufacturer:
  - **16436-1 Class 2** only suitable for use after a pressure-regulating device. Max working pressure of 10 bar
  - **16436-1 Class 3** is suitable for use as pigtails (i.e. on changeover devices). Max working pressure of 30 bar
  - **16436-1 Class 1** is classified as vapour tubing and only for use downstream of a low-pressure regulating device and has a maximum working pressure of 200 mbar
  - Stainless steel flexible hoses to **BS EN ISO 10380** can also be used for pigtails
- Inspected regularly and replaced if they show signs of wear and tear, damage or cracking
- Replaced if over 5 years old. If stainless steel pigtails are used, this can be extended to 10 years
- Used in the shortest lengths. Hose lengths should always be kept to a minimum
- Secured at both ends with hose clips (except on pigtails used on changeover devices)
- Protected from hot spots or excessive heat

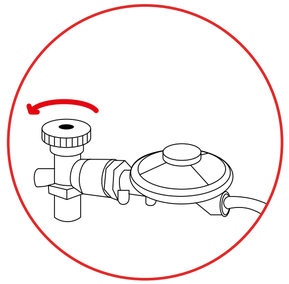
LPG will corrode natural rubber and some plastics. Only ever use approved LPG hoses.

Connecting a single propane cylinder

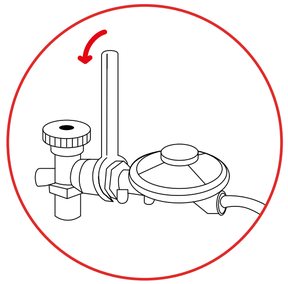
How to connect a propane cylinder:



- Check the handwheel of the cylinder valve is closed by turning clockwise
- Remove protective plug and leave hanging to replace later
- Inspect the bullnose connection on the regulator or hose for damage or contamination before connecting



- Screw the regulator or hose connection into the valve and tighten with the correct-sized spanner – note that the connection is a left-hand thread

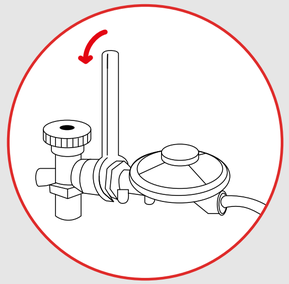


- Turn on the cylinder valve slowly and check for leaks by looking and listening. When gas is required, turn the valve handwheel anticlockwise as shown
- Check for gas soundness using leak detection solution. **Note that a propane cylinder connection MUST be tight**

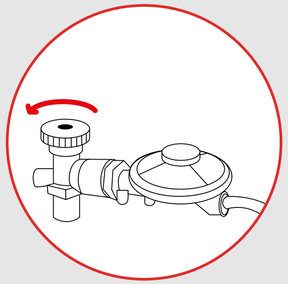
IMPORTANT: these cylinders have a female valve connection. Check the connection is clean and undamaged, and always use the correct-sized spanner.

Disconnecting a single propane cylinder

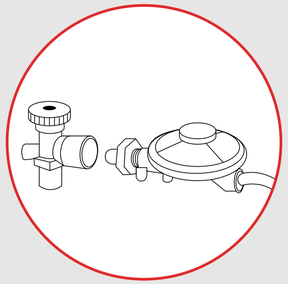
How to disconnect a propane cylinder:



- Close the handwheel of the cylinder valve by turning it clockwise
- Except for multi-cylinder installations with a changeover valve, turn off any gas taps if fitted to the appliances. Wait until the burner and pilot lights have gone out



- For installations with a changeover valve, it is only necessary to turn off the empty cylinder
- Never remove the regulator (or connecting nut) with the cylinder valve open



- Remove the regulator (or connecting nut – left-hand thread) with the correct-sized spanner
- Replace the protective plug into the valve outlet

IMPORTANT: ensure the handwheel of the cylinder valve is closed before disconnecting the regulator or connecting nut. Always use the correct-sized spanner.

Hose and pipework checklist

Any high-pressure hoses between cylinder and regulator must be:

- No greater than 2 metres in length
- Of the correct type to **BS EN 16436-1 Class 3 vapour hose or BS EN ISO 10380** stainless steel flexible hose
- Secured at each end with hose clips if flexible
- Fitted with integrally threaded end connections and secured

Any flexible hose beyond the regulator must be:

- A maximum of 2 metres in length
- Of the correct type to **BS EN 16436-1 Class 2 or Class 1** (LP only) if flexible
- Secured at each end with hose clips

Any rigid metallic low-pressure pipework beyond the regulator must:

- Be installed by a Gas Safe®-registered LPG installer
- Be properly secured at 1-metre intervals, except soft copper which must be secured at 0.5-metre intervals*
- Terminate with an accessible shut-off valve immediately before every appliance
- Be inspected by a Gas Safe®-registered LPG installer at least once a year

Extensions to flexible pipework are NOT recommended, but if unavoidable, must be made by a Gas Safe®-registered and LPG-qualified engineer. Consult a Gas Safe®-registered and LPG-qualified engineer if you are in any doubt about the installation or maintenance of pipework.

*Subject to pipe size and if horizontal/vertical steel pipework is 2 metres and copper 1.5 metres as a guide for horizontal runs.

Manual handling

The following points should be considered when handling Calor cylinders:

- Suitable gloves (such as rigger-type gloves) and protective footwear should be worn. If handling all the time, like cylinder delivery drivers, then gloves should be to BS EN 388 standard
- When lifting a cylinder, ensure a firm grasp on the handhold shroud and base ring
- Cylinders may contain liquid which moves when handled. The grip on the cylinder should be maintained until the liquid movement reduces
- Cylinders are heavy and weigh approx. twice the net weight shown when full – people must be aware of their personal limits
- Do not roll cylinders on their sides; in such conditions they are not under control, which may result in damage or injury
- Do not throw or drop cylinders from vehicles or platforms. They must be lowered or lifted in a controlled manner
- 47kg cylinders should be moved with a trolley or by ‘churning’ – cylinder is tilted on its base and rolled, with one hand on the shroud and the other placed on the sidewall



Personal protective equipment

PPE must be worn when handling, connecting and disconnecting LPG cylinders.



Long-sleeved cotton-rich overalls



Eye protection, such as goggles



Safety footwear



LPG-resistant gloves

In case of an emergency, call the Calor emergency service number: **03457 444 999**

Appliance installation and maintenance

All gas appliances should be serviced regularly to ensure they are working properly and safely. Installation and servicing of gas equipment should only be carried out by competent and qualified persons.

Servicing is needed to ensure that:

- Flues are not blocked
- Air inlets are clear
- Gas consumption is correct
- Gas is being burnt cleanly and efficiently
- Safety devices are working properly
- The appliance is safe to use



Never modify or interfere with gas equipment and do not let unqualified persons tamper with appliances or the gas installation.

Ensure the gas supply is isolated at the isolation or emergency control valve (ECV) before undertaking any installation or servicing work. Ensure the installation is gas tight before opening the ECV.

Ventilation

IMPORTANT: Like people, gas appliances need oxygen from the air. There must be an adequate supply of fresh air for the appliances to work properly, and for the products of combustion to be removed.

- Always ensure that the room or internal space where the appliance is in use has adequate ventilation
- If there are grilles or vents built in for ventilation, do not block them up
- Most rooms and internal spaces have fresh air entering through openings such as doors and windows – but if a room becomes stuffy, condensation builds up on the windows or you start to feel unwell, switch off appliances and open a door or a window immediately
- If in doubt, seek advice



WARNING: inadequate ventilation could lead to poor combustion in the appliance, and the production of carbon monoxide (CO_2). Carbon monoxide is a poisonous gas which is invisible, odourless and tasteless.

Carbon monoxide

- When gas does not burn properly, poisonous carbon monoxide fumes may be produced
- Carbon monoxide fumes are invisible, odourless, colourless and tasteless
- The danger signs on gas appliances are stains, deposits of soot and excessively yellow or orange flames
- Carbon monoxide can cause drowsiness, dizziness, headaches, watering eyes, chest pains or palpitations, sickness, stomach pains and diarrhoea. Ensure a CO alarm is fitted
- Seek medical advice if you persistently suffer from any of the above symptoms after being in a room with a working gas-burning appliance. Isolate any gas-burning appliance and ventilate the area. Do not reinstate the appliances until they have been checked by a Gas Safe®-registered LPG engineer
- Consider the installation of a suitably certified carbon monoxide detector



REMEMBER: gas appliances which are designed, installed and used correctly, regularly serviced and properly flued and ventilated are completely safe.

Action in an emergency

- Some of the most common emergencies are linked to leakage, which can pose possible fire or explosion risks, and inadequate ventilation, which can lead to the build-up of poisonous gases
- If the leak cannot be stopped by closing the valve, inserting the bung or fitting the cap, and if it is safe to do so, carefully remove the cylinder to a well-ventilated, open space clear of drains and buildings, and free from all sources of ignition
- Leave the cylinder with the leak uppermost, marked as faulty, and with notices displayed prohibiting smoking and other naked lights
- Under no circumstances should unqualified persons attempt to dismantle or repair defective cylinder valves

For advice on dealing with an LPG emergency, call the Calor emergency service number:

03457 444 999

In case of a fire

Dial 999 and inform the emergency services that LPG is present.

- Evacuate all persons from the danger area, except those required to deal with the emergency
- Where a fire is near LPG cylinders, remove them to a safe place, providing this can be done without exposing anybody to danger
- If any cylinders cannot be removed, cool them with water
- Always approach any fire or gas leak from upwind, if it is safe to do so, and be aware of the possibility of jets of flame from the pressure relief valves
- Dry powder extinguishers are recommended to fight LPG fires if the leakage cannot be stopped by operating the cylinder's valve



Gas leaks inside your premises

If you suspect or confirm a leak of LPG, you must take the following action:

- Turn off the gas supply at the isolation or emergency control valve (ECV) and the cylinder valves
- Eliminate all ignition points
- Turn off appliances
- Do not operate any electrical equipment
- Do not operate any switches
- LPG is heavier than air so it will collect at a low level within the premises/building. Here, it could form a flammable mixture with air and ignite
- LPG will also exclude air where it collects, and could cause asphyxiation – stay outside in the open air during a gas leak
- In the case of a significant leak, the building/room/premises would need to be ventilated at a low level to disperse the LPG to the atmosphere

You will likely suspect or detect a leak of LPG through one or more of the following:

- Smell
- Audible indication (a hissing sound)
- Bubbling in leak detection solution

Never try to relight your appliance(s) until you are sure the area is free of LPG vapour.

Emergency service

Calor provides an emergency service 24 hours a day, 365 days a year.

In general, the following advice will be given:

- Isolate the gas supply
- Ventilate the building – if the smell of gas is inside
- Extinguish all naked lights and sources of ignition
- Do not operate any electrical switches
- Do not use mobile phones



For advice on dealing with an LPG emergency, call the Calor emergency service number:

03457 444 999

Top safety tips

- Always use cylinders in the upright position and ensure they are stable and secure
- Treat cylinders with care to ensure the valve is not damaged
- Take care handling cylinders; wear suitable gloves and safety footwear
- Return cylinders when empty or not in use for long periods
- Check flexible hoses regularly and replace if showing signs of wear and tear
- Ensure there is an adequate supply of fresh air where the appliances are being used. Do not block up any fixed ventilators
- Keep your appliances clean and serviced regularly by a competent person
- Do not improvise or modify your gas appliance
- In the event of a leak, never try to relight your appliance until you are sure that the building/ room/premises is free of LPG





To find out more, call 0800 626 626
or visit calor.co.uk

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