

# Technical Publication

## Guidelines for the Safe Use of LPG in Mobile Catering Installations and Vehicles

The main hazards in the storage and use of LPG are leakage, which leads to possible fire or explosion risks; and inadequate ventilation, which leads to the build-up of toxic gases due to incomplete combustion.

### Cylinder Storage

Cylinders should be installed in the vertical position in either a suitable compartment on the Unit/Vehicle or located in a suitable outdoor position.

#### Any compartment must be:

- Located in a position that minimises the risk of damage in the event of a road accident.
- Accessible only from the outside.
- Properly ventilated at both high and low level.
- Secure against unauthorised access.
- Contain only cylinders, regulators, manifold change-over devices and pipework.
- Gas-tight to the interior of the unit.
- Have 30-minute fire resistant walls or lining (**BS:476 Parts 20-22**) with any joints fire stopped to maintain fire resistance.
- Displaying a Red Diamond sign showing a fire symbol and the words "Extremely Flammable LPG".

#### Any open-air installation must be:

- ♦ On firm and level ground with cylinders secure in the upright position.
- ♦ Secure against unauthorised interference.
- ♦ Sited at least 1 metre, measured horizontally, from any ventilation openings or accessible compartments of any adjacent permanent, temporary buildings, structures, or other possible sources of ignition.
- ♦ Displaying a Red Diamond sign showing a fire symbol and the words "Extremely Flammable LPG".

#### **NOTE: -**

- ♦ **Do** handle a cylinder with care to ensure that it and the valve is not damaged. A damaged valve could result in a leak.
- ♦ **Do** return the cylinder when empty or when not in use for long periods.
- ♦ **Do** be careful when lifting cylinders. Full cylinders weigh approximately twice the net weight shown on the cylinder.
- ♦ **Don't** subject a cylinder to direct heat because the pressure inside the cylinder could build up to a point beyond the designed safety limit. If necessary, protect the cylinders from radiant heat by insulating screens.
- ♦ **Don't** smoke, operate electrical switches or use a mobile phone when changing a cylinder.
- ♦ **Don't** obstruct access to cylinders.
- ♦ **Don't** use tools to turn cylinder valves on or off.

**The number of cylinders should be kept to the minimum necessary for the type and number of appliances served. Any reserve cylinders in stock should be on a 1 for 1 replacement basis.**

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### Regulators and Pipework

A suitably rated regulator must be included in the connection between the cylinder and the appliance and be correctly matched to both the type of gas and the appliances in use i.e., 37mbar for Calor Propane or 28-30mbar for Calor Butane. The regulator is precisely set to control the pressure of the supply and **Must Not Be Adjusted**.

**New Regulators should be clearly marked to BS: EN:16129. This Standard has superseded regulators previously marked to BS:3016 or BS:EN:12864.** Replace any regulator, which is not working properly, or after 10 years of life. (N.B. Any regulator marked BS:3016 will be over 10 years old so should be replaced).

**All regulators and changeover devices shall have Over Pressure Shut Off protection (OPSO), in order to protect the downstream pipework and appliances from a maximum incidental pressure greater than they are designed to withstand.** Exceptions are: -

- Portable and outdoor appliances with pre-installed regulator and hose, with a heat input of 1,5kg/h (21kW) or less, supplied by the manufacturer may have no OPSO fitted, and shall only be connected to a single cylinder. Operation shall be in accordance with the appliance manufacturer's instructions, with due consideration to the location of use and ventilation requirements.

Where a regulator is not supplied by the manufacturer with the appliance(s), and the appliance(s) have a capacity of more than 1,5kg/h (21kW) and supplied by one or more cylinders connected to fixed pipework assembly or hose assembly in excess of 1,5 metres OPSO protection shall be installed.

Any Automatic Changeover Device (ACOD) (when 2 or more cylinders are in use) should incorporate a non-return valve and **be clearly marked to BS: EN:16129**.

A suitably labelled emergency shut off valve should be located at the exit to the installation/vehicle unless the cylinder valve is readily accessible.

All fittings and threads which connect to the cylinder must be clean and undamaged.

Sealants must never be used. Where spanners are in use, they must be those produced for the purpose (e.g., Calor Heavy Duty Spanner to aid in the connection of a screw on regulator or a standard propane POL fitting to a gas bottle)

Any **high-pressure pipework** between cylinder and regulator must be:

- of minimum practical length with the minimum number of fittings, preferably solid drawn copper with copper or copper alloy fittings or stainless steel tube
- If flexible, use factory manufactured LPG hose assemblies with integrally threaded end connections.
- Use only marked and certified hoses to **BS:EN:16436-1 Class 3 which has superseded BS:3212 Type 2**, and which bear the year and name of the manufacturer (as LPG attacks and erodes natural rubber) or stainless steel convoluted hoses marked **BS:EN:ISO:10380**.
- Flexible rubber hose should be armoured or braided hose to give extra protection against general wear, sharp objects and rodent attack.

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Any **low-pressure pipework** beyond the regulator must be:

- of minimum practical length, less than 2 metres and, wherever possible, of suitable rigid material (solid drawn copper or stainless-steel tube), properly secured at 1 metre intervals, except soft copper which must be secure at 0.5 metre intervals.
- If flexible, use factory manufactured LPG hose assemblies with integrally threaded end connections or, if appropriate, be otherwise **permanently secured by hose clips** (see Liquid Gas UK Consumer Guidance Sheet No.17).
- Use only marked and certified hoses to **BS:EN:16436-1 Class 2/3 which has superseded BS:3212 Type 2**, and which bear the year and name of the manufacturer (as LPG attacks and erodes natural rubber) or stainless steel convoluted hoses marked **BS:EN:ISO:10380**.
- Consideration given to the use of armoured or braided hose to give extra protection against general wear, sharp objects and rodent attack.

Extensions to flexible pipes are NOT recommended but, if unavoidable, must be installed by Gas Safe® Registered Gas Installers.

Each and every LPG supply must terminate with an accessible emergency shut off valve immediately before the appliance.

Further advice on LPG pipework is contained in **Liquid Gas UK Code of Practice No. 22**.

### Catering Appliances

Catering appliances must: -

- Be securely fastened or supported in the unit
- Be manufactured to a recognized British or European standard and carry the CE or UKCA mark.
- Be fitted as the manufacturer recommends. (**see also BS:EN:1949 or BS:6173**)
- Have adequate ventilation for the type of appliance.
- Preferably be fitted with a properly designed flue
- Have canopies or extractor hoods if appropriate. (Always for fryers & ranges)
- Have fixed ventilation appropriate to the size of appliance, (NOT doors, windows, hatches, or skylights), which must NEVER be less than a total of 4000 sq mm (- equivalent to 2" by 4").
- Protected with a flame failure device.
- **NOT** be located to obstruct passageways or exits or endanger emergency escape routes from the unit.

In addition: -

- Only fixed space heaters should be used, preferably room sealed, and which incorporate an atmospheric sensing device.
- Refrigerators should be flued to the outside with additional ventilation in the vehicle floor immediately below the refrigerator. If a deep fat fryer or fish & chip range is fitted, it should have a thermostatic gas cut-off valve which operates if the temperature of the frying medium exceeds 230°C.

**N.B. No Gas Appliance must be operated whilst a vehicle is in motion.**

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### Maintenance

A visual examination of all cylinders, pipework, appliances, vents and flues should be made daily.

An inspection of the installation should be made by a Gas Safe® Registered Gas Installer at least once a year.



**NOTE:** It is illegal for any person who is not a registered Gas Safe® installer to interfere with, service or modify any LPG installation used for a commercial purpose. The changing of cylinders does not constitute work and may be done by a person who is trained to do so, but need not be a Gas Safe® registered installer.

### Operation

All persons working in Mobile Catering Units must have been adequately trained in the hazards associated with LPG, safe methods of cylinder changing, including checking for gas soundness using leak detection solution, and the proper use of catering appliances. Written details of emergency measures should be kept easily accessible in the unit.

### Fire Precautions

Fire extinguishers in accordance with **BS:EN:3** should be carried. The minimum is a 9kg Dry Powder Extinguisher (this is suitable for both LPG and fat fires) and a Fire Blanket.

The extinguisher must be located in a position near an exit.

#### In the Event of Fire

- Immediately raise the alarm. **Dial 999** and call the **Fire Brigade** advising them of the presence of LPG.
- If safe to do so, shut all valves on cylinders.
- Keep cylinders cool by water spray if possible.
- Ring the **Calor Gas Emergency Service** number **03457 444 999**

### Carbon Monoxide

Carbon monoxide (CO) is a highly poisonous gas which can be produced if an appliance is not working correctly. It is difficult to recognise as it has no colour, smell or taste. Carbon Monoxide detectors (complying with **BS:EN:50291**) are widely available and it is recommended that one is fitted. CO detectors have a lifetime of 5 to 10 years and should be tested regularly.

Symptoms of CO poisoning are similar to that of a viral infection. It affects the mental ability causing a person to become incapable without knowing.

#### Symptoms of exposure to Carbon Monoxide

- Tightness across the forehead and/or headache
- Severe headache, weakness, dizziness, nausea, vomiting.
- Coma, intermittent convulsions
- Depressed heart action, slowed respiration.
- If the exposure has been severe, it may cause death.

If you suspect you are suffering from the symptoms below call the Calor Gas Emergency Service number on **03457 444 999**.

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### Further Information

Further information is given in: -

- The Gas Safety (Installation and Use) Regulations
- The Nationwide Caterers Association Codes of Practice for Mobile Catering & Static Site Catering
- Liquid Gas UK Code of Practice 24 Part 3 "Use of LPG Cylinders: The Use of LPG in Mobile Catering Vehicles and Similar Commercial Units" 2017.
- Liquid Gas UK Consumer Guidance Sheet No.17: 'Use of Clips to Secure Vapour Phase LPG Hose and Tubing to BS EN 16436-1 (Classes 1, 2 and 3) to End Fitting'

Liquid Gas UK produce over 30 Industry Codes of Practice and Guidance. For a comprehensive publication list please go to the Liquid Gas UK website:

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