

Technical Information

boullletin

Issue No. 1

Calor Recommendations for LPG Installations within Touring and Motor Caravans

1. INTRODUCTION

This guidance captures the latest knowledge and design features gained from experience and investigative work. The purpose of the Guidance is to:

- Assist with the reduction of plasticizers (phthalates) from LPG systems
- Assist with the prevention of condensate at the regulator
- Assist with the selection of suitable equipment and fittings

The installation should comply with EN:1949:2002 with the following additional recommendations

2. PRESSURE SYSTEMS

The LPG installation shall have a pressure reduction system installed and this shall be fitted before the vehicle is first sold to the consumer.

For touring and motor caravans with LPG cylinder supply, the pressure regulation system shall meet the relevant requirements of EN:12864 for cylinder regulators or EN:13786 for Change Over Regulators.

Pressure regulations systems in touring and motor caravans manufactured to EN:1949 shall have a fixed working pressure of 30mbar and comply with the requirements of EN 12864:2001 annex D or EN:13786 Annex B for Change Over Regulators. The maximum capacity of an Annex D regulator is 1.5kg/h (20kWh). Make sure that the maximum LPG demand from the entire installation, including all appliances installed by the manufacturer, does not exceed the regulator's stated capacity i.e. 20kWh or the maximum cylinder offtake.

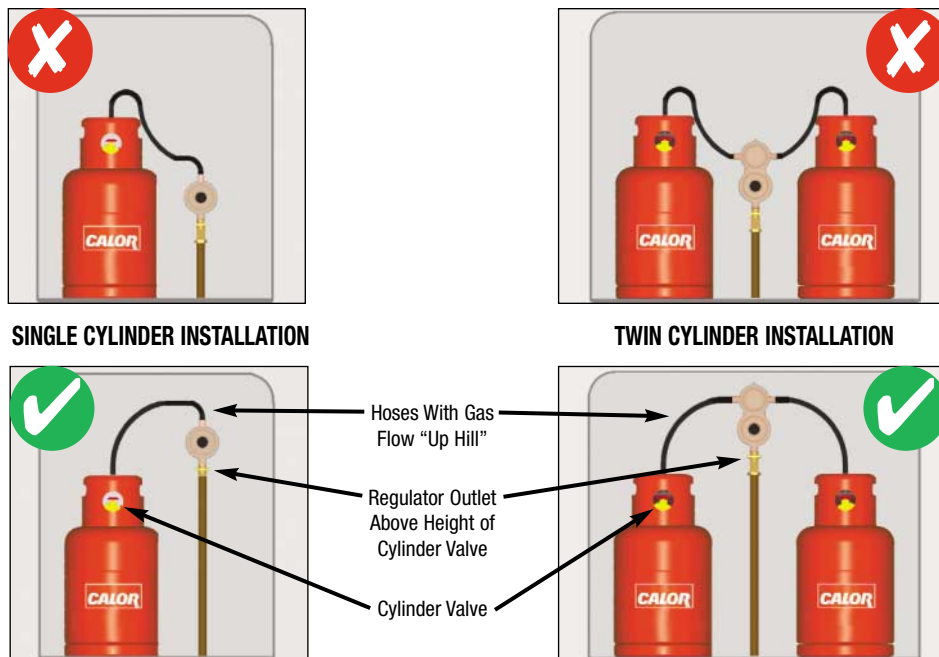
Regulators should be selected to avoid the possibility of liquid LPG (condensed gas) becoming trapped within the body of the regulator. This is to prevent internal components of the regulator, particularly diaphragms and valves being adversely affected by liquid LPG if it should accidentally collect inside.

Where a cylinder compartment is provided it shall be designed to contain the pressure regulation system. The pressure regulation system shall be designed to be fitted either:

- a) directly to the LPG cylinder valve
- b) remotely from the cylinders. The connection shall be by high pressure flexible hose which shall be as short as possible, not exceeding 400±50mm in length. Where a pull-out tray for the placement of cylinders is provided, a maximum length of 750±50mm hoses permitted.

Regulators should be:

- a) rigidly fixed to the cylinder, or adequately supported independently of the cylinder and mounted with the diaphragm vertical or horizontal and the vent pointing vertically downward;
- b) when fitted remotely, the regulator should be connected to the cylinder by pipe-work i.e. copper or stainless steel or hoses in accordance with section 3.
- c) protected from entry and accumulation of water and other foreign matter.
- d) when fitted remotely the minimum height of the regulator above the cylinder valve should be 75±5mm (see diagram below)
- e) position the hose so that the gaseous LPG travels "up-hill" from the cylinder outlet valve to the inlet of the regulator. This will allow any liquid LPG (condensed gas) inside the hose to flow "down hill" into the cylinder. The liquid LPG (condensed gas) must not be allowed to flow to the regulator inlet (see diagram overleaf)



To avoid dismantling of a fixed pressure regulation system for pressure test purposes it is recommended to install a closing device with a testing nipple downstream of the pressure regulation system.

MARKING OF THE WORKING PRESSURE

Any supply line shall be permanently identified with a label at the connection to pressure regulation system with the working pressure in mbar. This is normally a label affixed to the bulkhead of the gas locker adjacent to the regulator.

DEVICES TO PROTECT AGAINST OVER-PRESSURE

For touring and motor caravans a device/devices shall be provided within the installation or integral with the pressure regulation device to ensure that a pressure greater than 150 mbar is not supplied to any appliance.

If an over-pressure relief valve is fitted it shall be arranged to vent into the cylinder compartment or directly to the outside.

EN12864:2001 Annex D requires this to be integral with the regulator.

Connection of pressure regulators to rigid pipework – Low pressure supply

Low pressure flexible hoses with a maximum length of 400±50mm may be fitted between pressure regulators and the rigid pipework within the LPG cylinder compartment. Where a pull-out tray for the placement of cylinders is provided, a maximum length of 750±50 mm hose is permitted.

CONNECTION OF A DUAL CYLINDER SYSTEM

Cylinder compartments which contain a dual cylinder system shall be provided with an automatic device e.g. non return valve (NRV) to prevent the escape of unburned gas when either cylinder is disconnected.

NRV's should be in the cylinder end of the hose.

These are normally integral with both the Automatic Chageover Regulator and Hose.

3. HOSES

Only hose assemblies appropriate for the first country of destination (e.g. temperature resistance, colour coding) complying with the requirements of the country shall be used.

All hoses should:

- a) have a maximum extractable materials of no more than 2%
- b) be manufactured to an appropriate Standard, such as BS3212 type 2 or BS EN1763 Type 3
- c) be no longer than 400 ± 50 mm or 750 ± 50 mm if a pull out tray is provided
- d) include an excess flow valve and non-return valve.

4. EXTERNAL SUPPLY SOCKETS

Where a plug in socket is provided to supply a gas appliance external to the caravan e.g. a BBQ or awning heater, the following must be considered:

- a) The socket shall be marked with the nominal supply pressure and maximum load in kWh.
- b) The system pipework should be correctly sized for the maximum load.
- c) The socket shall be protected from dirt and damage by means of a cover.
- d) The socket shall have an interlock which prevents gas flow without the correct connector plugged in.
- e) The user instructions should advise that the additional load from the external appliance may exceed the capacity of the on board regulator, if the internal appliances are also to be used.

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