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Guidance

Pressure Systems Safety Regulations SI 2000 No 128

Examination Requirements for LPG Systems on Fork Lift Trucks

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1. INTRODUCTION

This guideline is intended to assist operators and Competent Persons when determining what types of examinations should be applied to the liquefied petroleum gas (LPG) fuel system on certain fork lift trucks and other mechanical handling equipment.

Typically the fuel tank for this type of equipment is either a fixed tank permanently attached to the equipment or a standard gas cylinder. In the case of the gas cylinder this can be either installed with the intention of filling it directly from a refuelling facility (multi-opening type) in the same way as a fixed tank, or removed from the equipment for refilling or exchange when they are empty (single opening type).

The remainder of the system comprises the filling and/or delivery pipework to the engine. This may include such fittings as flexible hose, filler valve, automatic stop fill device, service valve and relief valve. The fuel tank may also include a content gauge. Typical examples of fuel systems are shown in the Appendix (section 6).

2. LEGAL REQUIREMENTS

If an LPG powered fork lift truck operates within a factory or other place of work and is not used as a road vehicle, the LPG systems (cylinder/tank, pipework and protective devices) fall within the Pressure Systems Safety Regulations (PSSR). This is because the exclusion under Schedule 1, Part 1, item 15 of PSSR (gas propulsion systems) only applies to vehicles within the meaning of section 185(1) of the Road traffic Act 1998, that is to say it is a vehicle which is used on a public road. This means that for an LPG powered fork lift truck (or similar equipment) working entirely within the confines of say a factory, the pressure system comes under PSSR and the relevant parts may need to be examined by a competent person in accordance with a written scheme of examination (WSE).

The above exemption from PSSR does result in an inconsistent approach to the LPG fuel systems. For those systems that come within the Road Traffic Act 1998, there is no specific requirement within this legislation relating to periodic examination of the LPG fuel system. However for all such trucks, regardless of where they are used, the equipment as a whole also comes under Provision and Use of Work Equipment Regulations (PUWER). As such the requirements of PSSR can be regarded as good practice when considering requirements for inspection under Regulation 6 of PUWER

There are two different classifications for fuel tanks:

There is the type where the fuel tank is removable (i.e. one that can typically be removed without the use of tools) and refuelling is carried out by either refilling from a bulk tank in situ or replacements by a full LPG cylinder. For this classification the cylinder does not form part of the pressure system on the truck. It would be examined in accordance with the Carriage of Dangerous Goods and the Use of Transportable Pressure Equipment Regulations (Carriage Regulations) under the responsibility of the cylinder owner. In such cases the remainder of the pressure system (pipework, liquid expansion valve, vaporiser etc) may need to be considered for inclusion in a WSE where appropriate. For typical LPG fuelled propulsion systems it is not likely that failure of these parts would give rise to danger from the release of stored energy and can therefore be excluded from a WSE.

For types of equipment where the fuel tank remains in place (fixed tank) (i.e. one that is typically not easily removed without the use of tools) the refuelling is performed at the operator's filling plant. The fuel tank in this instance can be regarded as a permanent fixture on the truck and PSSR is considered to apply. In such cases the fuel tank is of a size and pressure that would require it to be included in a WSE along with any associated protective devices (e.g. pressure relief valves). The pipework is typically of a size that could justify exclusion from a written scheme but this would need to be determined by the Competent Person. Certain installations could contain an expansion relief valve on liquid lines between isolation valves. This valve would not require including in the WSE. In any event these other parts of the pressure system would still need to be adequately maintained.

In the case of a standard cylinder which remains in place for refuelling, it will have been designed, constructed and possibly initially used as transportable pressure equipment. It is also attached to the structure of the equipment by clamps or clips which unlike the fixed tank makes it easily demountable. It is therefore considered appropriate to treat it as a transportable gas cylinder for the purpose of periodic examination. As with the removable gas cylinder the remainder of the system is a Pressure System as defined in PSSR.

3. DUTIES AND RESPONSIBILITIES

LPG systems on fork lift trucks are treated as mobile pressure systems under PSSR and as such the Owner as opposed to the User is responsible for ensuring there is a written scheme in existence and that it is examined by a Competent Person in accordance with the WSE. Hence in the case of a leased fork lift truck the Owner would be the leasing company. The Owner is also responsible for providing operating instructions and carrying out maintenance.

Where the operator is the Owner he will need to fulfil these duties and involve a Competent Person. However if the gas cylinder mounted on the truck is owned by another party then they would be responsible for this part of the fuel system.

4. GUIDANCE FOR OWNERS

The current practice with gas suppliers is to carry out periodic checks of the customer's filling plant (and in some cases filling operation). At these visits it is also normal practice to check that the gas cylinders on the fork lift trucks are within the inspection date. Any that are beyond this date are exchanged and sent off for inspection. Whilst this practice should hopefully ensure the cylinder is periodically inspected it is strongly recommended that the Owner has control measures in place within his maintenance regime to ensure cylinders are dismounted and sent to a suitably accredited test house for periodic examination when they become due for examination. The due date for periodic examination is marked on the cylinder. Where the cylinder is owned by the gas supplier it should be returned to the gas supplier or his agent.

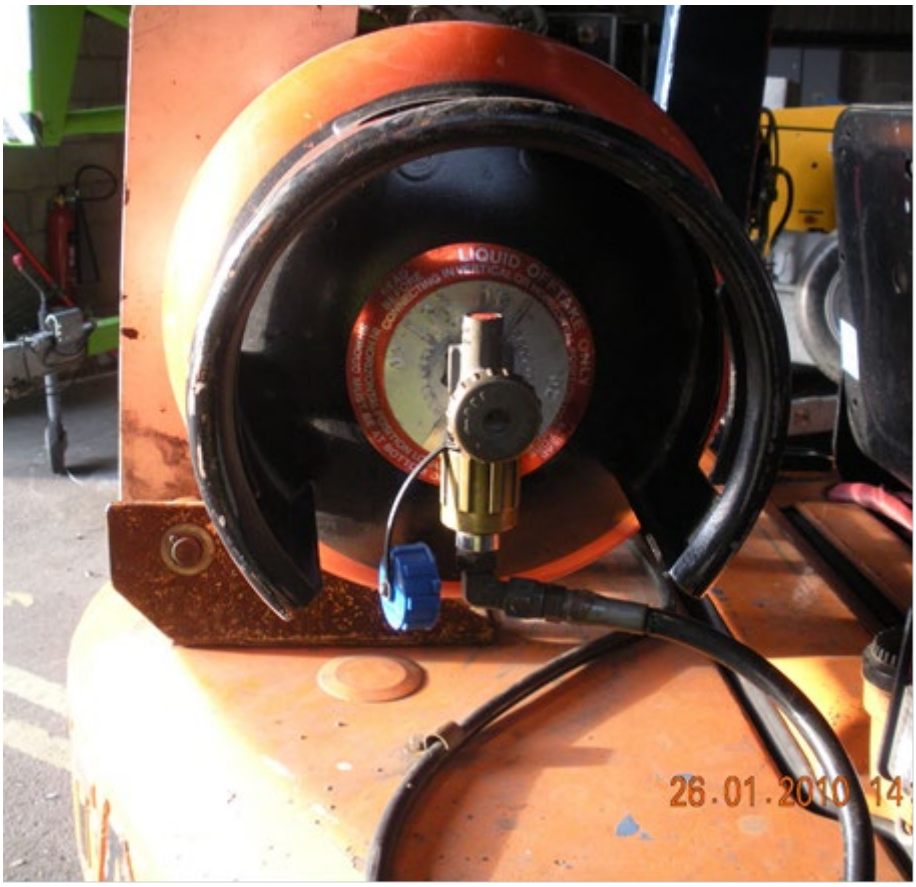
Fixed tanks will need to be included in a WSE and it is likely they will need to be taken off the equipment to permit inspection. Other parts of the pressure system referred to in Section 1 may or may not need to be included in the scheme. Where the competent person determines that parts can be excluded then this should be recorded.

5. FURTHER INFORMATION

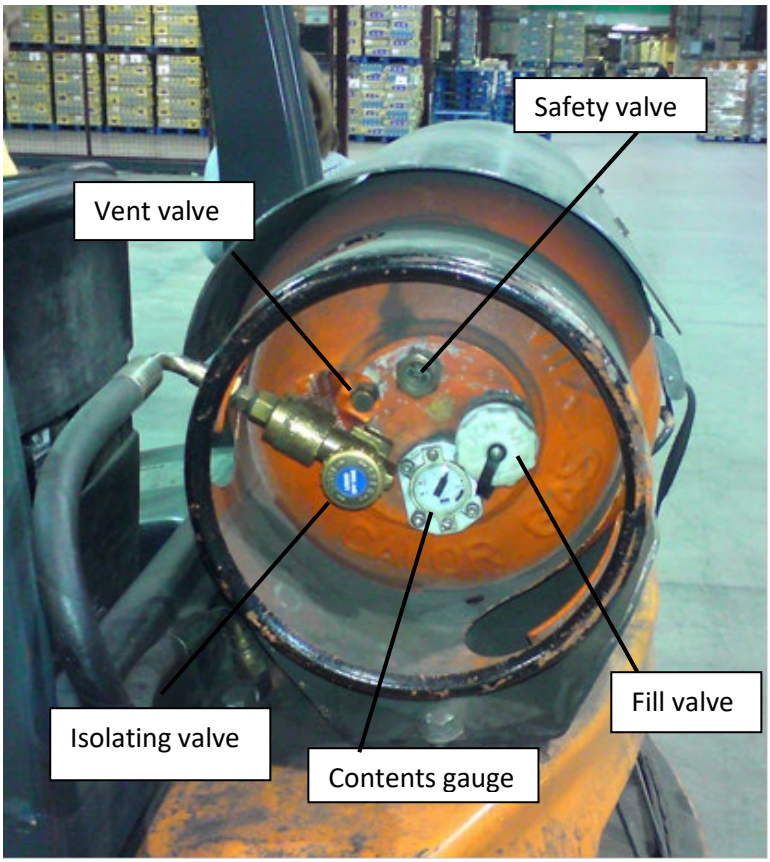
Further information concerning LPG fuel systems and cylinders can be found in the following publications:

- UK LPG Code of Practice 30 – Gas installations for motive power on mechanical handling and maintenance equipment
- BS EN 1439- LPG Equipment and accessories- Procedure for checking LPG cylinders before, during and After Filling
- BS EN 1440 - LPG Equipment and accessories – Periodic inspection of transportable refillable LPG cylinders

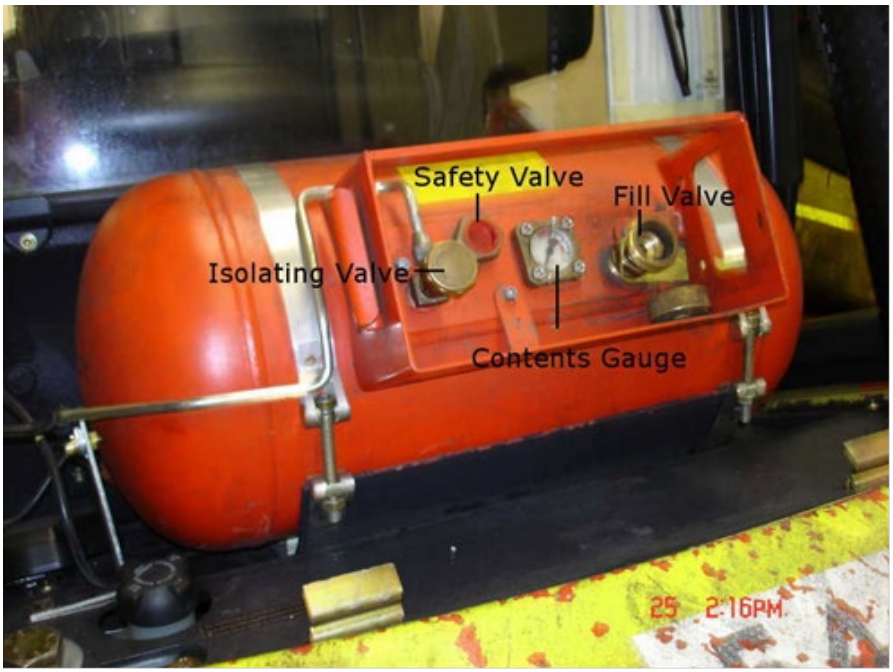
6. APPENDIX 1 – TYPICAL FUEL SYSTEMS



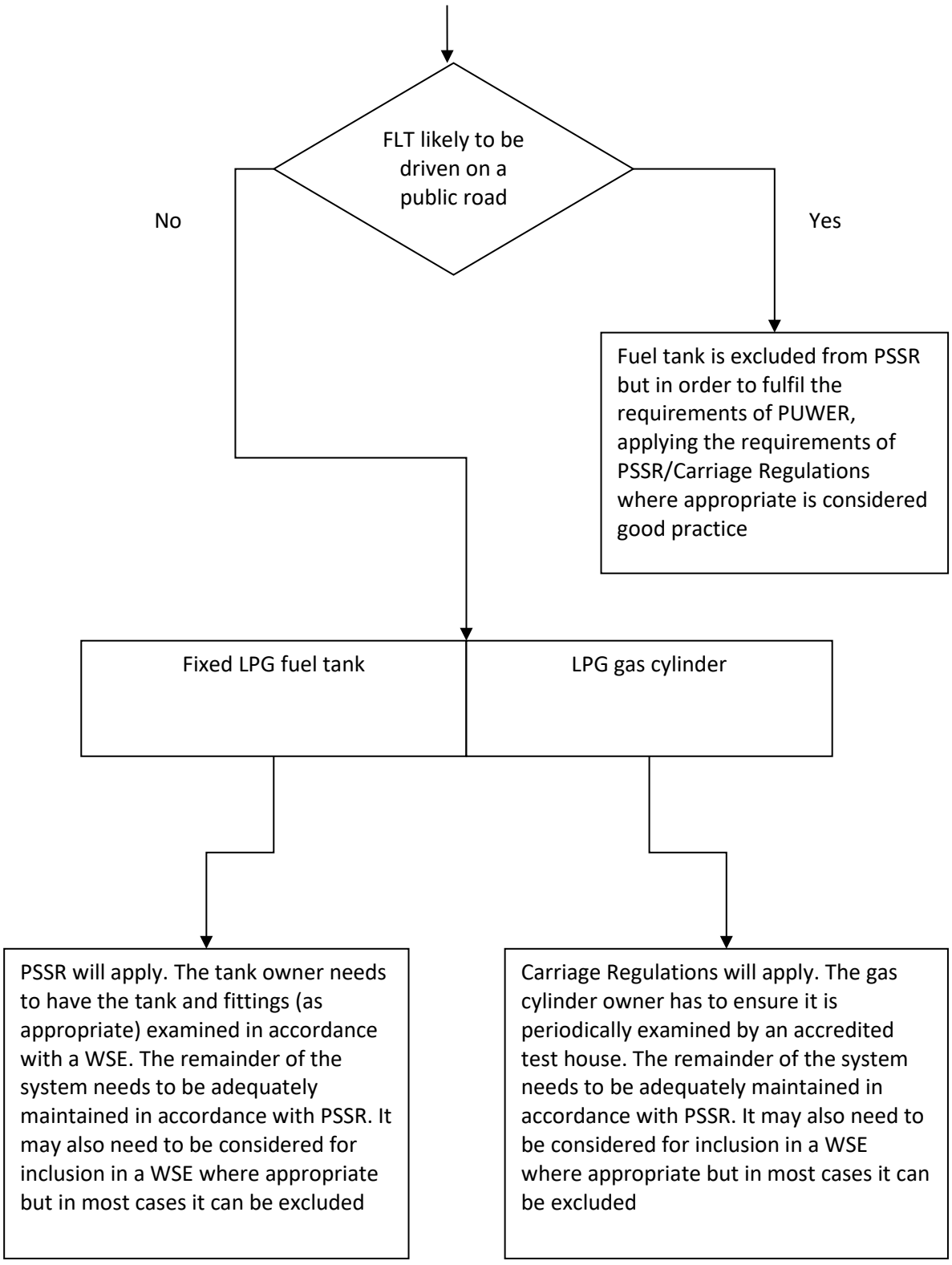
Single opening demountable gas cylinder



Multiple opening gas cylinder for on-truck filling



Fixed tank


FLT likely to be driven on a public road
No
Yes
Fuel tank is excluded from PSSR but in order to fulfil the requirements of PUWER, applying the requirements of PSSR/Carriage Regulations where appropriate is considered good practice
Fixed LPG fuel tank
LPG gas cylinder
PSSR will apply. The tank owner needs to have the tank and fittings (as appropriate) examined in accordance with a WSE. The remainder of the system needs to be adequately maintained in accordance with PSSR. It may also need to be considered for inclusion in a WSE where appropriate but in most cases it can be excluded
Carriage Regulations will apply. The gas cylinder owner has to ensure it is periodically examined by an accredited test house. The remainder of the system needs to be adequately maintained in accordance with PSSR. It may also need to be considered for inclusion in a WSE where appropriate but in most cases it can be excluded