Use of connectors to secure vapour phase LPG hose and tubing to BSEN16436-1 and BS3212 to end fittings

Scope
To provide guidance on the correct type of connectors for use with hose and tubing in LPG vapour phase service.

Introduction
UKLPG is aware of some incidents that have been caused by LPG hose or tubing which is used without being secured to the end fittings using correct connectors. The hose/tubing has become detached from the end fittings resulting in fire and serious injury. LPG hose or tubing should only be used with properly secured end fittings.

Types of clips
Crimp clips or worm drive clips are suitable for use with hose or tubing with an internal diameter of less than 8mm, operating at a pressure not greater than 50mbar.

- Only crimp clips of the correct size for the hose or tubing should be used.
- Worm drive clips should secure the hose or tubing but not be over tightened.

Crimp clips are suitable for use with all sizes of hose. They should always be secured using the correct crimping tool/pincer. Worm drive clips shall not be used on hose or tubing with an internal diameter greater than 8.3mm operating at a pressure greater than 50mbar.

Suitably assembled swaged end fittings are suitable for all sizes and pressures.

Hose and tube assemblies should be assembled in accordance with BS3212. British Standard BS3212: 1991 ‘Specification for flexible rubber tubing, rubber hose and rubber hose assemblies for use in LPG vapour phase and LPG/air installations’.
Service Life
All hoses and tubing should be regularly visually inspected for cuts, abrasion, discoloration, deterioration or damage. If any defects are found then the assembly should be immediately replaced.

BS EN 16436 Class 1 tubing – is marked with an expiry date 5 years from the date of manufacture.

BS3212 hose and tubing and BS EN 16436 Classes 2 and 3 hoses – there is no expiry date marked on the hose or tubing. However, it is unlikely that the service life would exceed 10 years, therefore a regular inspection and replacement scheme is recommended.

Note: Hose fitted to cabinet heaters should be replaced after 5 years’ service.

Inspection
It is essential that LPG hose/tubing assemblies are regularly inspected and replaced if showing signs of physical damage, for example:
  o Cuts or abrasion;
  o Cracking;
  o Stretching;
  o Flattening;
  o Kinking.
Where fitted, check for:
  o Missing/worn sealing washers;
  o Damaged cylinder connections.

Environmental deterioration may result in:
  o Stiffening;
  o Cracking;
  o De-lamination of outer covering;
  o Chemical degradation e.g. softening of outer coating by contact with oil.

Hose service failure may result in:
  o Blistering;
  o Soft spots;
  o Rupture.
Where pre-assembled end fittings are used, check for;
  o Corrosion or loosening of swaged fittings.

Further Information
• UKLPG Industry Information Sheet (IIS) 032 - LPG Hoses and Tubing for Use with Vapour Offtake Cylinders
• UKLPG User Information Sheet (UIS) 028 Safe Use of Propane and Butane Cylinders & Cartridges

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