

Filling of Stationary LPG Tanks

In engineering, the term 'failsafe' can be defined as "device that is capable of compensating automatically and safely for a failure".

In this respect, there has been considerable progress within the field of vehicle refuelling, among others due to modern LPG nozzles.

For the filling of LPG tank storage facilities though, there is vast room for improvement. Often simple ball valves or nozzles are in use where (when uncoupled) an unintentional actuation of the lever leads to an unwanted release of gas. This risk is not theoretical, but unfortunately several incidents like these have occurred.

LPG High Flow Nozzle GG10 for Improved Safety

The Australian company L.G.Equipment (GasGuard), since 2010 a daughter company of Elaflex Hiby, developed the GasGuard GG10 High Flow nozzle to prevent these risks. With the development of the GG10 there is now a safe solution for the filling of small to medium sized LPG tank storage facilities.

The prototype presentation at Automechanika 2010 the nozzle has passed extensive field testing, become UL Listed (Underwriters Laboratories) product and is now ready for global distribution. The GG10 is based on 1 3/4" ACME threaded nozzles commonly used for vehicle refuelling. For this reason the nozzle is also suitable for the LPG refuelling of trucks and buses.

In its main field of application, the filling of above and underground LPG storage tanks, the GG10 is fitted to bobtail (tank truck) hose reels. The integrated easy rotating swivel scores with improved handling properties. The connection nut is heavily ribbed to allow easy gripping also by gloved hands.

The flow rate of up to 380 l/min ensures for a fast refuelling. Operators will also appreciate the moderate product loss on disconnect and the controlled release of this discharged gas.

The most important feature of the GG10 is being failsafe: the nozzle will not open to atmosphere when actuated in an uncoupled state. If the nozzle is handled between tank truck and tank, an unwanted actuation of the lever cannot lead to a discharge of gas.



Picture 1: Filling a stationary tank with GG10

Interesting features for design engineers and tank operators: the valve shut down mechanism uses a piston dashpot which minimises the line shock spike that is a common problem with other nozzles. Internal dust and blow back seals prevent the ingress of dust and dirt to moving parts and stops product blow back on disconnect.

Technical Data of the GG10

- Max. working pressure 25 bar
- Flow rate up to 380 l/min
- 1 3/4" ACME coupling
- Hose sided integrated 1" oder 1 1/4" NPT female swivel of stainless steel
- failsafe: no discharge when not coupled correctly
- UL listed
- Product loss on disconnection 7 cm³
- Temperature range -40° up to +80° C
- Weight 3,1 kg incl. swivel



Picture 2: GG10 High Flow Nozzle with LPG Hose Assembly DN 32

Back-Check Valve LG11: Useful Supplement for the GG10 Nozzle

Due to cost pressure, stationary tanks often are fitted with substandard check valves. Additionally, tank filler necks often are not capped hence unprotected against dirt and weathering.

During LPG bulk filling operations, tank truck operators may encounter failing fill point check valves. In these circumstances the nozzle must be retightened and the truck operator has to wait until the tank operator provides a solution. This can take several hours.

The solution: the back-check valve LG11, an adapter with incorporated check valve, screwed in between filler neck and nozzle.

When encountering a leak on the tank sided check valve, the adapter can be left on the filler neck, the nozzle is removed and the truck operator can drive to the next fill point, avoiding any delay.



Picture 3: LG11 Back-Check Valve

In combination with the GG10 nozzle, the LG11 adapter is failsafe. Without a correct coupling to the fill point, an uncontrolled discharge of gas is not possible. When the adapter is coupled to the nozzle and the nozzle is handled from or to the tank truck, an unwanted actuation of the nozzle lever will not lead to a discharge of gas.

Technical Data of the LG11

- Max. working pressure 25 bar
- Minimal pressure loss
- Failsafe in combination with the GG10 nozzle - no discharge without correct coupling
- Large ribs for easy, tight connection by hand
- UL listed
- will also function safely without a fill point gasket (fill point seal)
- Compact body of red bronze, PU/Viton seals
- Weight 0,47 kg



Picture 4: GG10 High Flow Nozzle with LG11 Back-Check Valve on a Stationary LPG Tank

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