SLOVENSKI STANDARD
oSIST prEN 12979:2020

01-november-2020

Oprema in pribor za utekočinjeni naftni plin (UNP) - Sistemi za pogon motornih vozil na UNP - Zahteve za vgradnjo

LPG equipment and accessories - Automotive LPG-systems - Installation requirements

Flüssiggas-Geräte und Ausrüstungsteile - Systeme für mit flüssiggas betrieben (LPG) Fahrzeugen - Einbauvorschriften

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Équipements pour GPL et leurs accessoires - Véhicules à Gaz de Pétrole Liquéfiés (GPL) - Exigences d'installation

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ICS:

43.060.40 Sistemi za gorivo Fuel systems

oSIST prEN 12979:2020 **en,fr,de**

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT prEN 12979

November 2020

ICS 43.060.40

Will supersede EN 12979:2002

English Version

LPG equipment and accessories - Automotive LPG-systems - Installation requirements

Équipements pour GPL et leurs accessoires - Véhicules à Gaz de Pétrole Liquéfiés (GPL) - Exigences d'installation

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 286.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (prEN 12979:2020) has been prepared by Technical Committee CEN/TC 286 “Liquefied Petroleum Gas equipment and Accessories”, the secretariat of which is held by NSAI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12979:2002.

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Introduction

This document specifies requirements for the installation of equipment for the use of Liquefied Petroleum Gas (LPG) in automotive propulsion systems.

This document calls for the use of substances and procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Protection of the environment is a key political issue in Europe and elsewhere. For CEN/TC 286 this is covered in CEN/TS 16765, *LPG equipment and accessories – Environmental considerations for CEN/TC 286 standards*, and this Technical Specification should be read in conjunction with this standard.

It has been assumed in the drafting of this document that execution of its provisions is entrusted to appropriately qualified and experienced people.

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1 Scope

This document specifies the requirements for the installation of automotive LPG components that comply with EN 12805 and EN 12806.

These requirements are to ensure safe operation of such components.

This document does not cover type approval of LPG motor vehicles.

NOTE Type approval requirements are covered in UN/ECE Regulations and EU legislation.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 589, *Automotive fuels - LPG - Requirements and test methods*

ISO 630, *Structural steels - Plates, wide flats, bars, sections and profiles*

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread*

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EN 12805, *Automotive LPG components - Containers*

EN 12806, *Automotive liquefied petroleum gas components - Other than containers*

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EN 16942, *Fuels - Identification of vehicle compatibility - Graphical expression for consumer information*

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EN 60529, *Degrees of protection provided by enclosures (IP Code)*

EN 16652-1, *LPG equipment and accessories - Automotive LPG vehicles workshops - Part 1: Working areas and procedures*

EN 16652-2, *LPG equipment and accessories - Automotive LPG vehicles workshops - Part 2: Personnel competence and training*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
automotive LPG
motor fuel according to EN 589

3.2
container
pressure vessel used for the storage of automotive LPG

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3.3
electronic control unit
device that controls the LPG supply to the engine

3.4
excess flow valve
device that cuts off the flow of LPG in case of a pipe fracture or hose rupture

3.5
filling unit
device to be connected with the filling nozzle and enable the filling of the LPG container

3.6
fuel rail
pipe or flexible hose that supplies the fuel to the injection devices

3.7
gas-tight housing
device that protects the components fitted on the container from minor physical damage

Note 1 to entry: It also collects and ducts any leaks to the outside of the vehicle, where necessary through a connecting hose and a lead-through.

3.8
level indicator
device that indicates the liquid level in the container

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3.9
Liquefied Petroleum Gas (LPG)
mixture of light hydrocarbons, gaseous under normal atmospheric conditions which can be liquefied by increased pressure or decreased temperature, the main components are propane, propene, butane and butene isomers

3.10
non-return valve
valve designed to close automatically to restrict reverse flow

3.11
power supply bushing
gas-tight, insulated, electrical power conductor for components installed inside the container

3.12
pressure relief device (i.e. fusible plug)
device protecting the container from bursting, when exposed to fire, by venting LPG at a pre-set temperature and/or pressure

3.13
pressure relief valve
self-closing valve which automatically, without the assistance of any energy other than that of the vapour concerned, discharges vapour at a predetermined pressure, and operates with a pop action

Note 1 to entry: This is known as a “safety valve” in ADR.

3.14
remote-controlled service valve
device that controls the LPG supply to the pressure regulator/vaporiser which is operated remotely

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3.15
test pressure
pressure to which the component or an assembly of components is subjected during the test procedure

3.16
type of automotive LPG-system
LPG-system or family of LPG-systems which have the following characteristics in common:

— automotive LPG-system manufacturer;

— pressure regulator/vaporizer type and manufacturer;

— gas fuelling system type and manufacturer, i.e. induction mixer, injector device, vapour or liquid, single or multipoint injection system:

  — sensors;

  — container type and manufacturer;

  — container accessories type and manufacturer;

  — container frame;

  — ECU (Electronic Control Unit) type by the same manufacturer;

  — basic software as far as safety issues are concerned;

  — installation manual;

  — user manual.

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3.17
venting tube
duct that connects the gastight housing to the atmosphere

3.18
vehicle type
vehicle or family of vehicles which have the following characteristics in common:

— the manufacturers type designation;

— the essential aspects of design and construction;

— chassis/floor-pan;

— installation of the LPG equipment.

3.19
working pressure
pressure under normal operating conditions

3.20
80 % stop valve
device that limits the filling of the container to 80 % of the water capacity and acts as a non-return valve

Note 1 to entry: the 80 % stop valve can be combined with the filling unit.

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3.21
overfill protection device
OPD
device designed to automatically reduce the filling rate to a minimal flow when the fill level reaches a predetermined amount

Note 1 to entry: In automotive applications the predetermined amount is 80 % of the water capacity.

4 Symbols and abbreviated terms

EMC Electro-Magnetic Compatibility

g acceleration due to gravity

PRV Pressure Relief Valve

PRD Pressure Relief Device

5 Installation requirements

5.1 General requirements

The installer of the LPG-system shall ensure that:

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— they possess the expertise and the equipment necessary for the proper installation of the LPG-system, according to EN 16652 requirements or national regulation,

— they operate according to a quality control system that ensures that the installation of the LPG-system meets the requirements of this standard,

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— they maintain records of the leak test and start-up operations that are carried out after the installation,

— the LPG-system installed in the vehicle functions in such a manner that the pressure for which it has been designed and approved cannot be exceeded,

— all components of the automotive LPG-system comply with EN 12805 and EN 12806

— additional equipment required for the effective operation of the engine, not covered by EN 12805 and EN 12806 are installed only in parts of the LPG-system where the pressure is less than 20 kPa,

— all parts of the system are securely fastened,

— the LPG-system has been tested and corrected for leaks,

— the LPG-system is installed so that it is adequately protected against damage due to moving vehicle components, collision, grit or to the loading or unloading of the vehicle or the shifting of those loads,

— all components are installed so that it is possible to inspect them and the relevant markings can be read.

— excluding the container, no component of the LPG-system, including any protective material that form part of such components, projects beyond the external surface of the vehicle, with the exception of the vehicle connector if this does not project more than 10 mm beyond the nominal line of the body panel.

— no component of the LPG-system, including its protective material if applicable, excluding the container, is installed below the lower edge of the vehicle.

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— no component of the LPG-system is located within 100 mm of the exhaust or similar heat source, unless adequate shielding against heat is provided,

— the installation of the automotive LPG-system complies with the relevant electro-magnetic compatibility (EMC) requirements.

In case of a retrofit installation of the LPG-system, the manufacturer of the system shall supply installation instructions to the installer of the LPG-system.

5.2 Connections to LPG-system

No appliances shall be connected to the propulsion system other than those strictly required for the proper operation of the engine of the motor vehicle.

Motor vehicles of categories M_2, M_3, N_2, N_3 and M_1 having a maximum total mass of more than 3 500 kg fitted with a compartment heating system which is connected to the LPG-system shall be adequately protected against unintended gas escape and the operation of the LPG propulsion system shall not be affected.

NOTE For vehicle categories, refer to Directive 2007/46/EC.

Cooking appliances connected to the vapour phase of the container shall be adequately protected against unintended gas escape and the operation of the LPG propulsion system shall not be affected.

Heating and/or cooking system shall not be connected to the liquid phase of the container. The vapour take-off system shall be protected by a manual or remotely controlled shut-off valve incorporating an excess flow, fitted to the container.

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If a mono fuel vehicle with a petrol limp home system is equipped with a service coupling in the LPG-system then this coupling shall be adequately protected by the installation of a non-return valve between the container and the service coupling and it shall be possible to only operate the engine via this coupling. Vehicles provided with a service coupling shall have a sign in the form of a sticker in accordance with Annex B, near the service coupling.

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5.3 Identification mark for LPG vehicles

If required by national legislation, LPG vehicles shall be identified accordingly.

NOTE Other marking is described in national annexes to EN 16942.

5.4 Changes to the vehicle structure

If any change is made to the vehicle structure to facilitate the installation of the LPG-system, or if the container is fitted on the roof of the motor vehicle, then a written agreement, accompanied by a detailed drawing, shall be obtained from the manufacturer of the motor vehicle or his authorized representative.

5.5 Container installation

The container shall:

— not be installed in the engine compartment;

— be securely fastened to the motor vehicle;

— be installed in the correct position according to the container manufacturer instructions.

The container shall have permanent fixing points to secure it to the motor vehicle or the container shall be secured to the motor vehicle by a container frame and container straps. The container shall be installed so that there is no metal to metal contact, other than at permanent fixing points fitted by the container manufacturer.