



**SLOVENSKI STANDARD**  
**oSIST prEN 17278:2018**  
**01-september-2018**

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**Vozila na zemeljski plin - Polnilne naprave za vozila na zemeljski plin**

Natural gas vehicles - Vehicle fuelling appliances

Erdgasbetriebene Fahrzeuge - Fahrzeugbetankungsgeräte

Véhicules fonctionnant au gaz naturel - Applications de remplissage de véhicules

**Ta slovenski standard je istoveten z: prEN 17278**

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**ICS:**

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**prEN 17278**

August 2018

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English Version

## Natural gas vehicles - Vehicle fuelling appliances

Fuellanlagen fuer Erdgasfahrzeuge

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 326.

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**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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**prEN 17278:2018 (E)**

## **European foreword**

This document (prEN 17278:2018) has been prepared by Technical Committee CEN/TC 326 “Natural Gas Vehicles - Fuelling and Operation”, the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

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## 1 Scope

This document covers the design and manufacturing, installation and testing, operation and maintenance of vehicle fuelling appliances (VFA) for domestic fuelling of vehicles with compressed natural gas (CNG).

This document is applicable to VFAs having the following technical limits:

- maximum compressing capacity: 20 Nm<sup>3</sup>/h (NTP);
- maximum internal storage volume for outdoor installation: 400 l;
- maximum gas outlet pressure: 200 bar at 15 °C;

This document is applicable to VFAs supplied with natural gas as defined in local applicable gas composition regulations or EN 16723-2, or with other gases meeting these requirements including biomethane, upgraded coal-bed methane (CBM) and gas from liquefied natural gas (LNG) vaporizer (on-site or off-site).

This document applies to VFAs not incorporating gas outlet metering systems.

## 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 16723-2:2017, *Natural gas and biomethane for use in transport and biomethane for injection in the natural gas network – Part 2: Automotive fuels specification*

EN 60204-1, *Safety of machinery - Electrical equipment of machines – Part 1: General requirements*  
<https://standards.iteh.ai/catalog/standards/sist/2c71cc14-ef31-4b20-8325->

EN ISO 16923:2018, *Natural gas fuelling stations - CNG stations for fuelling vehicles (ISO 16923:2016)*

## 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:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 3.1

#### **automatic restart**

system designed to initiate a fuelling sequence without a physical action by a person at the appliance

### 3.2

#### **biomethane**

gas comprising principally methane, obtained from either upgrading of biogas or methanation of bio-syngas

[SOURCE: EN 16723-2:2017, 3.3]

**prEN 17278:2018 (E)****3.3****fuelling pressure discharge system**

VFA built-in system designed to reduce the pressure of CNG in the fuelling nozzle to allow safe disconnection from the NGV

Note 1 to entry: A fuelling pressure discharge system is mandatory in VFAs.

**3.4****boosting system**

VFA built-in system intended for forced emptying of a VFA storage system

Note 1 to entry: A boosting system is optional in VFAs.

**3.5****burst pressure**

pressure which causes failure and consequential fluid loss through the component envelope

[SOURCE: EN ISO 19623:2018, 3.8]

**3.6****breakaway device**

coupling which separates at a predetermined section when required and each separated section contains a self-closing shut-off valve which seals automatically

[SOURCE: EN ISO 16923:2018, 3.5]

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**3.7****competent person**

person having the ability, appropriate training, knowledge and experience, to supervise or carry out the work being undertaken in a safe and proper manner

[SOURCE: EN ISO 19623:2018, 3.11]

**3.8****compressed natural gas**

natural gas that has been compressed and stored for use as vehicle fuel

[SOURCE: EN ISO 16923:2018, 3.12]

**3.9****compressor**

component of a VFA, which increases the pressure of gas from a lower to a higher level

**3.10****cylinder**

pressure vessel designed to store CNG in accordance with EN ISO 16923

**3.11****domestic**

intended for private use in residential and small commercial premises



**3.12****dryer**

equipment which decreases the water vapour content (moisture) of natural gas

[SOURCE: EN ISO 19623:2018, 3.18]

**3.13****fuel delivery system**

VFA built-in system intended for CNG delivery from the VFA to the vehicle, including a fuelling hose, a fuelling nozzle and a break-away device

Note 1 to entry: A fuel delivery system is mandatory in VFAs.

**3.14****hose**

pipeline of flexible material with end fittings attached

[SOURCE: EN ISO 16923:2018, 3.31]

**3.15****isolated vented hose**

hose being placed in a flexible casing, which is hermetically connected to the vehicle receptacle by its one side and its other side left open to outdoors (atmosphere)

Note 1 to entry: Isolating the hose in this way prevents penetration of possible gas leakages indoors, allowing the possible gas leakages to escape by free flow and dissipate in the open air (atmosphere).

**3.16****locking system**

integral system of the VFA designed to block the activation of VFA functions for unauthorized access

Note 1 to entry: A locking system is mandatory for VFAs installed outdoors.

**3.17****maximum allowable pressure**

maximum pressure to which a component or system is designed to be subjected during normal operation

**3.18****natural gas**

complex gaseous mixture of hydrocarbons, primary methane, but generally includes ethane, propane and higher hydrocarbons, and some non-combustible gases such as nitrogen and carbon dioxide

Note 1 to entry: Natural gas can also contain components or containments such as sulfur compounds and/or other chemical species.

[SOURCE: EN 16723-2:2017, 3.12]

**3.19****storage system**

VFA built-in system intended to store CNG

**prEN 17278:2018 (E)****3.20****temperature compensation system**

system or device intended to limit the maximum settled pressure to safe limits depending on the ambient temperature according to EN ISO 16923

**3.21****user**

person who is intended to use the VFA and has received information of use for safe operation of the VFA from the VFA installer

**3.22****vehicle fuelling appliance**

device being manufactured, tested and certified as a single appliance, intended for own use by a private NGV owner, allowing private NGV fuelling with CNG by dispensing the natural gas directly into the fuel tank of the NGV

**4 Abbreviations**

CNG	compressed natural gas
NGV	natural gas vehicle
VFA	vehicle fuelling appliance

**5 General principles of design****5.1 General construction**

The general design of VFAs is shown in Figure 1.

**Key**

- a VFA system (connected to an NGV)

**Figure 1 — General design of VFA**

In the case of combinations of interconnected VFAs or VFAs connection to an internal storage system and/or to a dispenser, EN ISO 16923 shall be applied.

The VFA shall be equipped with a:

- fuel delivery system;
- fuelling pressure discharge system;

- c) locking system, if intended for outdoor installation, in which the locking system shall not block the activation of the “EMERGENCY STOP” button and the “STOP” button.

The VFA can also be equipped with one or more of the following components:

- a compressor;
- a boosting system;
- a storage system;
- a dryer;
- a temperature compensation system.

The following requirements apply in the VFA design:

- 1) The number of connections and other possible points of leakage or release of gas to the atmosphere in the installation and equipment shall be minimized.
- 2) The generation of the possibility of a confined explosive atmosphere shall be avoided. Fire and explosion risk prevention shall take into account foreseeable malfunctions and misuse.
- 3) Pressure piping system shall have provision for safe manual depressurization, only to be performed by a competent person in accordance with the manufacturer's recommendations. Depressurization shall not be performed by opening pipe joints.
- 4) The mounting of equipment shall be suitable for local conditions.
- 5) Barriers or other mechanisms to protect the VFA from collision damage shall be provided, if the VFA is exposed to the risk of vehicle collision.
- 6) The VFA shall shut down safely in the event of a loss of power.
- 7) A means of ensuring that oil carryover from the compressor, dust, water and other contaminants in the gas stream shall meet the requirements of EN 16723-2.
- 8) The specific climatic conditions of the site location and expected minimum and maximum temperatures during operation shall be taken into account.

All VFA components, piping and fittings shall be manufactured, marked and assembled in a manner suitable for their intended use, for the full range of pressures, temperatures, weather conditions and loadings which can occur under normal and fault conditions.

## 5.2 Materials

All materials shall be suitable for their intended application and shall be resistant to the rated temperature extremes, corrosion, moisture, natural gas or biomethane and aging.

The manufacturer of the VFA shall ensure that all materials used for the construction of the components conform to their specifications. The manufacturer of the VFA shall document the compliance with the material specifications by using materials which either comply with harmonized standards or are covered by a European approval of pressure equipment materials.