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**Road vehicles — Liquefied natural gas  
(LNG) fuel system components —**

**Part 1:  
General requirements and definitions**

*Véhicules routiers — Équipements pour véhicules utilisant le gaz  
naturel liquéfié (GNL) comme combustible —*

*Partie 1: Exigences générales et définitions*

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Published in Switzerland

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 25, *Vehicles using gaseous fuels*.

ISO 12614 consists of the following parts under the general title *Road vehicles – Liquefied natural gas (LNG) fuel system components*:

- *Part 1: General requirements and definitions*
- *Part 2: Performance and general test methods*
- *Part 3: Check valve*
- *Part 4: Manual valve*
- *Part 5: Tank pressure gauge*
- *Part 6: Overpressure regulator*
- *Part 7: Pressure relief valve*
- *Part 8: Excess flow valve*
- *Part 9: Gas-tight housing and ventilation hose*
- *Part 10: Rigid fuel line in stainless steel*
- *Part 11: Fittings*
- *Part 12: Rigid fuel line in material other than stainless steel*
- *Part 13: Pressure control regulator*
- *Part 14: Differential pressure fuel content gauge*
- *Part 15: Capacitance fuel content gauge*

- *Part 16: Heat exchanger - vaporizer*
- *Part 17: Natural gas detector*
- *Part 18: Gas temperature sensor*

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# Road vehicles — Liquefied natural gas (LNG) fuel system components —

## Part 1: General requirements and definitions

### 1 Scope

This part of ISO 12614 specifies general requirements and definitions of liquefied natural gas fuel system components, intended for use on the types of motor vehicles as defined in ISO 3833. It also provides general design principles and specifies requirements for instructions and marking.

This part of ISO 12614 is not applicable to the following:

- a) fuel containers;
- b) stationary gas engines;
- c) container mounting hardware;
- d) electronic fuel management;
- e) fuelling receptacles.

NOTE 1 It is recognized that miscellaneous components not specifically covered herein can be examined to meet the criteria of this part of ISO 12614 and tested according to the appropriate functional tests.

NOTE 2 All references to pressure in this part of ISO 12614 are to be considered gauge pressures unless otherwise specified.

NOTE 3 This part of ISO 12614 is based upon a working pressure for natural gas as fuel of 1,6 MPa [16 bar<sup>1</sup>]. Other working pressures can be accommodated by adjusting the pressure by the appropriate factor (ratio). For example, a 2 MPa (20 bar) working pressure system will require pressures to be multiplied by 1,25.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3833:1977, *Road vehicles — Types — Terms and definitions*

ISO 6722 (all parts), *Road vehicles — 60 V and 600 V single-core cables*

ISO 15500:2012, *Road vehicles — Compressed natural gas (CNG) fuel system components*

### 3 Terms and definitions

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

#### 3.1

##### **burst pressure**

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

1) 1 bar = 0,1 MPa = 105 Pa; 1 MPa = 1 N/mm<sup>2</sup>.

**3.2  
electronic control unit**

**ECU**

device for control of the engine — it is not in the scope of ISO 12614

**3.3  
filter**

component that is intended to remove contaminants from the gas stream

**3.4  
fitting**

connector used in joining a piping, tubing, or hose system

**3.5  
flexible fuel line**

flexible tubing or hose through which natural gas flows

**3.6  
fuel content gauge**

device that shows the liquid fuel level in the fuel tank

**3.7  
differential pressure fuel content gauge**

fuel content gauge based on the difference of the pressure at the top and bottom parts of the fuel tank (the system measures the weight of the liquid)

**3.8  
capacitance fuel content gauge**

fuel content gauge based on the relationship between the mass and electrical capacitance of natural gas

**3.9  
gas-air mixer**

device for mixing the gaseous fuel and intake air for the engine

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**3.10  
gas flow adjuster**

gas flow restricting device, installed downstream of a pressure regulator, controlling gas flow to the engine

**3.11  
gas injector**

device for introducing gaseous fuel into the engine or associated intake system

**3.12  
gas temperature sensor**

device for gas temperature measurement, which is placed downstream of the vaporizer

**3.13  
gas tight housing**

device which vents gas leakage to outside the vehicle including the gas ventilation hose, the clear opening of which is at least 450 mm<sup>2</sup>

**3.14  
heat exchanger - vaporizer**

device for vaporizing the cryogenic liquid fuel and delivering it as gas to the engine with a gas temperature between -40 °C and +85 °C

**3.16  
liquefied natural gas**

**LNG**

natural gas which has been liquefied after processing for storage, transportation, or use as a fuel



**3.17****LNG vehicle**

vehicle which is using liquefied natural gas (LNG) as a source of gaseous fuel for its engine

**3.18****natural gas detector**

device for sensing the presence of natural gas

**3.19****natural gas vehicle****NGV**

road vehicle powered by natural gas

**3.20****pressure regulator**

device used to control the delivery pressure of gaseous fuel to the engine

**3.21****tank pressure regulator**

pressure regulator for controlling pressure in the fuel tank

**3.22****rigid fuel line**

tubing which has been designed not to flex in normal operation and through which natural gas flows

**3.23****tank pressure gauge**

pressurized device which indicates the pressure of the gas space in the fuel tank

**3.24****test pressure**

pressure to which a component is taken during acceptance testing

**3.25****valve**

device by which the flow of a fluid can be controlled

**3.36****manual valve**

valve which is operated manually

**3.37****automatic shut-off valve**

valve which is not operated manually and is used on vaporized gas only for emergency operation

**3.38****check valve**

automatic valve which allows gas to flow in only one direction

**3.39****excess flow valve**

valve which automatically shuts off or limits the gas flow when the flow exceeds a set design value

**3.40****pressure relief valve****PRV**

device which prevents a pre-determined upstream pressure being exceeded

**3.41****service valve**

manual valve which is closed only when servicing the vehicle