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

Part 4: Manual valve

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

Partie 4: Valve manuelle

ICS 43.060.40

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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.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 12614-4 was prepared by Technical Committee 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 copper and its alloys*

— *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*

Road vehicles — Liquefied natural gas (LNG) fuel system components — Part 4: Manual Valve

1 Scope

This part of ISO 12614 specifies tests and requirements for the manual valve, a liquefied natural gas fuel system component intended for use on the types of motor vehicles defined in ISO 3833.This part of ISO 12614 is applicable to vehicles using natural gas in accordance with ISO 15403 (mono-fuel, bi-fuel or dual-fuel applications). It is not applicable to the following:

a) fuel containers;

b) stationary gas engines;

c) container mounting hardware;

d) electronic fuel management;

e) refueling 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 a fuel of 1,6 MPa [16 bar[1)]]. Other working pressures can be accommodated by adjusting the pressure by the appropriate factor (ratio). For example 2 MPa (20 bar) working pressure system will require pressures to be multiplied by 1,25

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 12614. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 12614 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3833, Road vehicles — Types — Terms and definitions.

ISO 12614-1, *Road vehicles — Liquefied natural gas (LNG) fuel system components — Part 1: General requirements and definitions*.

ISO 12614-2, *Road vehicles — Liquefied natural gas (LNG) fuel system components — Part 2: Performance*

1) *1bar=0,1MPa=105Pa;1MPa=1N/mm2*

and general test methods.

3 Terms and definitions

For the purposes of this part of ISO 12614, the terms and definitions given in ISO 12614-1 apply.

4 Marking

Marking of the component shall provide sufficient information to allow the following to be traced:

a) the manufacturer's or agent's name, trademark or symbol;

b) the model designation (part number);

c) the working pressure or pressure and temperature range.

The following additional markings are recommended:

d) the direction of flow (when necessary for correct installation);

e) the type of fuel;

f) electrical ratings (if applicable);

g) the symbol of the certification agency;

h) the type approval number;

i) the serial number or date code;

j) reference to this part of ISO 12614.

NOTE This information can be provided by a suitable identification code on at least one part of the component when it consists of more than one part.

5 Construction and assembly

The manual valve shall comply with the applicable provisions of ISO 12614-1 and ISO 12614-2, and with the tests specified in clause 6 of this part of ISO 12614.

6 Test

6.1 Applicability

The tests required to be carried out are indicated in Table 1.

Table 1 — Tests applicable

Test	Applicable	Test procedure as required by ISO 12614-2	Specific test requirements of this part of ISO 12614
Hydrostatic strength	X	X	X (see 6.2)
Leakage	X	X	X (see 6.3)
Excess torque resistance	X	X	
Bending moment	X	X	
Continued operation	X	X	X (see 6.4)
Corrosion resistance	X	X	
Oxygen ageing	X	X	
Electrical overvoltages			
Non-metallic synthetic immersion	X	X	
Vibration resistance	X	X	
Brass material compatibility	X	X	

6.2 Hydrostatic strength

Test the manual valve according to the procedure for testing hydrostatic strength specified in ISO 12614-2. The test pressure shall be 2,5 times the working pressure.

6.3 Leakage

Test the manual valve at the temperatures and pressures given in Table 2.

Table 2 — Test temperatures and pressures

Temperature °C	Pressure Factor X Working Pressure	
	First	Second
less -160	1.0xWP	0.25xWP
20	0.25xWP	1.5xWP
85 or 120	0.25xWP	