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Road vehicles — Liquefied petroleum gas (LPG) fuel system components —

Part 25: Gas connections

Véhicules routiers — Équipements pour véhicules utilisant le gaz de pétrole liquéfié (GPL) comme combustible —

Partie 25: Raccordements gaz

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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).

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).

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

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road Vehicles*, Subcommittee SC 41, *Specific aspects for gaseous fuels*.

A list of all parts in the ISO 20766 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Road vehicles — Liquefied petroleum gas (LPG) fuel system components —

Part 25: Gas connections

1 Scope

This document specifies general requirements and definitions of the gas connection component of liquefied petroleum gas fuel, it is 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 document is applicable to vehicles (mono-fuel, bi-fuel or dual-fuel applications) using gaseous fuels in accordance with ISO 9162. It is not applicable to the following:

a) fuel containers;

b) stationary gas engines;

c) container mounting hardware;

d) electronic fuel management;

e) refuelling receptacles.

It is recognized that miscellaneous components not specifically addressed herein can be examined for compliance with the criteria of any applicable part of the ISO 20766 series, including testing to the appropriate functional tests.

All references to pressure in this document are considered gauge pressures unless otherwise specified.

This document applies to devices which have a service pressure in the range of 110 kPa (butane rich at 20 °C) and 840 kPa (propane at 20 °C), hereinafter referred to in this document. Other service pressures can be accommodated by adjusting the pressure by the appropriate factor (ratio).

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.

ISO 20766-1, *Road vehicles — Liquefied petroleum gas (LPG) fuel systems components — Part 1: General requirements and definitions*

ISO 20766-2, *Road vehicles — Liquefied petroleum gas (LPG) fuel systems components — Part 2: Performance and general test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20766-1 apply.

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

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

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

4 Markings

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 working pressure and temperature range;

d) the serial number or date code; and

e) the direction of flow (when necessary for correct installation).

The following additional markings are recommended:

— the type of fuel;

— the electrical ratings (if applicable);

— the symbol of the certification agency;

— the type approval number; and

— a reference to this document.

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.

In the event that a component cannot accommodate all marking requirements listed in this document, the manufacturer shall include missing marking information with the packaging of the component.

5 Construction assembly

The gas connections shall comply with the applicable provisions of ISO 20766-1 and ISO 20766-2, and with the tests specified in Clause 6.

Soldered or welded joints are not permitted. Soldering or welding can be permitted for connecting the individual parts of detachable couplings to the gas tube or component.

Gas tubes shall only be connected by compatible fittings with regard to corrosion.

Gas tubes and couplings should mate to avoid galvanic corrosion.

Distributing-blocks shall be made of corrosion-resistant material.

Gas tubes shall be connected by appropriate joints or fittings. Under no circumstances joints or fittings may be used whereby the tube will be damaged. The burst pressure of the joints or fittings shall be the same or higher as specified for the tube.

The number of joints or fittings shall be limited to a minimum.

Any joints shall be made in locations where access is possible for inspection.

There shall be no gas-conveying connections in the passenger compartment or enclosed luggage compartment with the exception of:

a) the connections in the gas-tight housing; and

b) the connection between the gas tube or hose and the filling unit if this connection is fitted with a sleeve which is resistant against LPG and any leaking gas will be discharged directly into the atmosphere.

6 Tests

6.1 Applicability

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

Table 1 — Applicable tests

Test	Applicable	Test procedure as required by ISO 20766-2	Specific test requirements of this document
Hydrostatic strength	X	X	X (see 6.2)
Leakage	X	X	
Excess torque resistance	X	X	
Bending moment	X	X	
Continued operation	X	X	X (see 6.3)
Corrosion resistance	X	X	
Operational test			
Vibration resistance	X	X	
Brass material compatibility	X	X	
Oxygen ageing	X	X	
Non-metallic material immersion	X	X	
Ozone ageing	X	X	
Resistance to dry-heat			
Pull-off	X		X (see 6.4)
Temperature cycle test	X	X	

6.2 Hydrostatic strength

Test the gas connections according to the procedure for testing hydrostatic strength specified in ISO 20766-2. The test pressure shall be 2,25 times the working pressure.

6.3 Continued operation

Test the gas connections in accordance with the procedure for testing continued operation given in ISO 20766-2 for a total of 100 000 cycles.

6.4 Pull-off

Test the gas tube and gas connections according to the following procedure and acceptance criteria.

Secure the subject specimen in an appropriate test fixture, then statically apply a tensile load along the gas tube axis at a maximum rate of 250 N/min until the gas tube separates from the connections.

The force (F), in newtons, required to pull apart the gas tube from its connections shall be calculated as:

$$F = (\pi \times d^2 \times P)/10$$

where

d is the internal diameter, in millimetres;

P is the maximum working pressure, in MPa (bar).