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

Part 15:

**Excess flow valve**

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

*Partie 15: Soupape de débit excédentaire*

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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 nongovernmental, 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)).

All 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 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 the following URL: [www.iso.org/iso/foreword.html](http://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](http://www.iso.org/members.html).

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

## Part 15: Excess flow valve

### 1 Scope

This document specifies general requirements of the liquefied petroleum gas fuel component, excess flow valve, 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) 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 rich 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 20766-1:2018, *Road vehicles — Liquefied petroleum gas (LPG) fuel systems components — Part 1: General requirements and definitions*

### 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 Marking

Marking of components described herein 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 operating specifications (working pressure, temperature range, excess flow valve type, activation flow or  $\Delta P$ , maximum flow when activated);
- d) 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;
- the serial number or date code;
- a reference to this document, i.e. ISO 20766-15.

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

5.1 The excess flow valve shall be designed to withstand the maximum working pressure as applicable.

5.2 The excess flow valve shall be designed to withstand a temperature between the minimum operating temperature and the maximum operating temperature as defined in ISO 20766-1:2018, Table 1.

5.3 The excess flow valve shall be designed with a means to allow for equalization of pressures on either side of the valve. The area of the bypass hole shall not exceed that of a No. 60 size drill (1,02 mm diameter).

## 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	
<sup>a</sup> If applicable.			

Table 1 (continued)

Test	Applicable	Test procedure as required by ISO 20766-2	Specific test requirements of this document
External leakage	X	X	
Operation test	X		X (see 6.2)
Non-metallic material immersion (LPG compatibility)	X <sup>a</sup>	X	
Corrosion resistance	X	X	
Room temperature cycling test	X	X	
High-temperature cycling test	X	X	
Low-temperature cycling test	X	X	
Vibration resistance	X	X	
Brass material compatibility	X	X	
Automotive fluids exposure	X <sup>a</sup>	X	
Electrical overvoltages	X <sup>a</sup>	X	
Insulation resistance	X <sup>a</sup>	X	
<sup>a</sup> If applicable.			

## 6.2 Operation test

**6.2.1** An excess flow valve shall close at no more than 10 % above, nor less than 20 % below the rated closing flow capacity specified by the manufacturer, and shall close automatically at a pressure differential across the valve of no more than 105 kPa during the operation tests described below. Compliance with these requirements shall be determined by taking the average of the trials and samples in the vertical, horizontal and inverted fluid flow directions.

**6.2.2** Three samples of each size and style of valve shall be subjected to these tests. A valve intended for use only with liquid shall be tested with water, otherwise the tests shall be made both with air and with water. Except as indicated in 6.2.3, separate tests shall be run with each sample installed in vertical, horizontal and inverted fluid flow direction through the excess flow valve. The tests with air shall be made without piping or other restrictions connected to the outlet of the test sample.

**6.2.3** A valve intended for installation in one position (flow direction) only may be tested only in that position.

## Bibliography

- [1] ISO 3833, *Road vehicles — Types — Terms and definitions*
- [2] ISO 9162, *Petroleum products — Fuels (class F) — Liquefied petroleum gases — Specifications*

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