

BS ISO 15500-18:2012+A1:2016



BSI Standards Publication

Road vehicles — Compressed natural gas (CNG) fuel system components

Part 18: Filter

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National foreword

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The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee GSE/40, Gas supply equipment for natural gas vehicles.

A list of organizations represented on this committee can be obtained on request to its secretary.

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**Road vehicles — Compressed natural gas
(CNG) fuel system components —**

**Part 18:
Filter**

*Véhicules routiers — Composants des systèmes de combustible gaz
naturel comprimé (GNC) —*

Partie 18: Filtre





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Foreword

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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 15500-18 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 25, *Vehicles using gaseous fuels*.

This second edition cancels and replaces the first edition (ISO 15500-18:2001), which has been technically revised.

ISO 15500 consists of the following parts, under the general title *Road vehicles — Compressed natural gas (CNG) 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: Manual cylinder valve*
- *Part 6: Automatic valve*
- *Part 7: Gas injector*
- *Part 8: Pressure indicator*
- *Part 9: Pressure regulator*
- *Part 10: Gas-flow adjuster*
- *Part 11: Gas/air mixer*
- *Part 12: Pressure relief valve (PRV)*
- *Part 13: Pressure relief device (PRD)*
- *Part 14: Excess flow valve*
- *Part 15: Gas-tight housing and ventilation hose*
- *Part 16: Rigid fuel line in stainless steel*
- *Part 17: Flexible fuel line*
- *Part 18: Filter*
- *Part 19: Fittings*

— *Part 20: Rigid fuel line in material other than stainless steel*

Introduction

For the purpose of this part of ISO 15500, all fuel system components in contact with natural gas have been considered suitable for natural gas as defined in ISO 15403. However, it is recognized that miscellaneous components not specifically covered herein can be examined to meet the criteria of this part of ISO 15500 and tested according to the appropriate functional tests.

All references to pressure in this part of ISO 15500 are considered to be gauge pressures unless otherwise specified.

This part of ISO 15500 is based on a service pressure for natural gas used as fuel of 20 MPa [200 bar¹⁾] settled at 15 °C. Other service pressures can be accommodated by adjusting the pressure by the appropriate factor (ratio). For example, a 25 MPa (250 bar) service pressure system will require pressures to be multiplied by 1,25.

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

Road vehicles — Compressed natural gas (CNG) fuel system components —

Part 18: Filter

1 Scope

This part of ISO 15500 specifies tests and requirements for the filter, a compressed natural gas (CNG) fuel system component intended for use on the types of motor vehicles defined in ISO 3833.

This part of ISO 15500 is applicable to vehicles (mono-fuel, bi-fuel or dual-fuel applications) using natural gas in accordance with ISO 15403. It is not applicable to the following:

- a) liquefied natural gas (LNG) fuel system components located upstream of, and including, the vaporizer;
- b) fuel containers;
- c) stationary gas engines;
- d) container-mounting hardware;
- e) electronic fuel management;
- f) refuelling receptacles.

2 Normative references

The following referenced documents are indispensable for the application 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 15500-1, *Road vehicles — Compressed natural gas (CNG) fuel system components — Part 1: General requirements and definitions*

ISO 15500-2, *Road vehicles — Compressed natural gas (CNG) fuel system 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 15500-1 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;
- d) the direction of flow (when necessary for correct installation).

The following additional markings are recommended:

- the type of fuel;
- electrical ratings (if applicable);
- the symbol of the certification agency;
- the type approval number;
- the serial number or date code;
- reference to this part of ISO 15500.

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

A1 The filter shall comply with the applicable provisions of ISO 15500-1 and ISO 15500-2, and with the tests specified in Clause 6. Tolerances should follow the specifications of ISO 15500-2.

If non-conductive materials are used, the filter shall be designed to take its conductivity into account. **A1**

6 Tests

6.1 Applicability

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

Table 1 — Applicable tests

A1	Test	Applicable	Test procedure as required by ISO 15500-2	Specific test requirements of this part of ISO 15500
	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	
	Oxygen ageing	X		
	Ozone ageing	X	X	
	Heat ageing	X	X	
	Automotive fluids	X	X	
	Electrical over-voltages			
	Non-metallic material immersion	X	X	
	Vibration resistance	X		X (see 6.4)
	Brass material compatibility	X	X	

6.2 Hydrostatic strength

Test the filter according to the procedure for testing hydrostatic strength specified in ISO 15500-2. The test pressure shall be 2,5 times the working pressure.

6.3 Continued operation

Test the filter in accordance with the procedure for testing continued operation given in ISO 15500-2 for a total of 20 000 cycles.

Following cycling testing, perform the hydrostatic strength test in accordance with 6.2 of this part of ISO 15500.

6.4 Vibration resistance

Vibrate the filter, pressurized to its working pressure and sealed at both ends, for 30 min along each of the three orthogonal axes at the most severe resonant frequencies determined as follows:

- by an acceleration of 1,5 g;
- within a sinusoidal frequency range of 10 Hz to 500 Hz;
- with a sweep time of 10 min.

If the resonance frequency is not found in this range, the test shall be conducted at 500 Hz.

At the completion of the test, the filter shall not show any indication of fatigue or component damage, and shall meet the leakage test requirements as specified in Clause 6 of ISO 15500-2. Following the leakage testing, perform the hydrostatic strength test in accordance with 6.2 of this part of ISO 15500.

Bibliography

- [1] ISO 3833, *Road vehicles — Types — Terms and definitions*
- [2] ISO 15403-1, *Natural gas — Natural gas for use as a compressed fuel for vehicles — Part 1: Designation of the quality*
- [3] ISO/TR 15403-2, *Natural gas — Natural gas for use as a compressed fuel for vehicles — Part 2: Specification of the quality*

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