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**Road vehicles — Compressed gaseous  
hydrogen (CGH2) and hydrogen/  
natural gas blends fuel system  
components —**

**Part 8:  
Pressure indicator**

*Véhicules routiers — Composants des circuits d'alimentation pour  
hydrogène gazeux comprimé (CGH2) et mélanges de gaz naturel et  
hydrogène.*

*Partie 8: Indicateur de pression*



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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 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 12619 series can be found on the ISO website.

# Road vehicles — Compressed gaseous hydrogen (CGH<sub>2</sub>) and hydrogen/natural gas blends fuel system components —

## Part 8: Pressure indicator

### 1 Scope

This document specifies tests and requirements for the pressure indicator, a compressed gaseous hydrogen (CGH<sub>2</sub>) and hydrogen/natural gas blend fuel system component intended for use on the types of motor vehicles defined in ISO 3833.

It is applicable to vehicles using CGH<sub>2</sub> in accordance with ISO 14687-1 or ISO 14687-2 and hydrogen/natural gas blend using natural gas in accordance with ISO 15403-1 and ISO/TR 15403-2. It is not applicable to the following:

- a) liquefied hydrogen (LH<sub>2</sub>) fuel system components;
- b) fuel containers;
- c) stationary gas engines;
- d) container mounting hardware;
- e) electronic fuel management;
- f) refuelling receptacles;
- g) fuel cell vehicles.

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

NOTE 2 All references to pressure in this document are considered gauge pressures unless otherwise specified.

### 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 12619-1, *Road vehicles — Compressed gaseous hydrogen (CGH<sub>2</sub>) and hydrogen/natural gas blend fuel system components — Part 1: General requirements and definitions*

ISO 12619-2:2014, *Road vehicles — Compressed gaseous hydrogen (CGH<sub>2</sub>) and hydrogen/natural gas blend 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 12619-1 apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 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:

- the direction of flow (when necessary for correct installation);
- 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 12619-8:2017.

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** Pressure transducers and gauges shall comply with the applicable provisions of ISO 12619-1 and ISO 12619-2 and with the tests specified in [Clause 6](#). Tolerances should follow the specifications of ISO 12619-2.

**5.2** The pressure indicator shall be capable of displaying at least 1,5 times the service pressure.

**5.3** If the pressure indicator is a gauge, it shall be equipped with a shatter-proof lens and possess an external means of pressure relief. Potential release shall not be directed to the front of the gauge.

### 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 12619-2 | Specific test requirements of this document |
|-------------------------------------------------|----------------|-------------------------------------------|---------------------------------------------|
| Hydrostatic strength                            | X              | —                                         | X (see 6.2)                                 |
| Leakage                                         | X              | —                                         | X (see 6.3)                                 |
| Excess torque resistance                        | X              | X                                         | —                                           |
| Bending moment                                  | X              | X                                         | —                                           |
| Continued operation                             | X              | —                                         | X (see 6.4)                                 |
| Corrosion resistance                            | X              | X                                         | —                                           |
| Oxygen ageing                                   | X              | X                                         | —                                           |
| Ozone ageing                                    | X              | X                                         | —                                           |
| N-pentane                                       | X              | X                                         | —                                           |
| Heat ageing                                     | X              | X                                         | —                                           |
| Automotive fluid exposure                       | X              | X                                         | —                                           |
| Electrical over-voltages                        | X <sup>a</sup> | X                                         | —                                           |
| Non-metallic material immersion                 | X              | X                                         | —                                           |
| Non-metallic material compatibility to hydrogen | X              | X                                         | —                                           |
| Ultraviolet resistance of external surfaces     | X              | X                                         | —                                           |
| Vibration resistance                            | X              | X                                         | —                                           |
| Brass material compatibility                    | X              | X                                         | —                                           |
| Insulation resistance                           | X <sup>a</sup> | —                                         | X (see 6.5)                                 |
| Minimum operating voltage                       | X <sup>a</sup> | —                                         | X (see 6.6)                                 |

<sup>a</sup> Applicable only if the pressure indicator has an electrical or electronic component.

## 6.2 Hydrostatic strength

Test the pressure indicator according to the procedure for testing hydrostatic strength specified in ISO 12619-2. The test pressure shall be 2,5 times the working pressure.

## 6.3 Leakage

Test the pressure indicator at the temperatures and pressures given in Table 2.

Table 2 — Test temperatures and pressures

| Temperature<br>°C | Pressure<br>MPa |             |
|-------------------|-----------------|-------------|
|                   | First test      | Second test |
| –40 or –20        | 0,75 × WP       | 0,025 × WP  |
| 20                | 0,025 × WP      | 1,5 × WP    |
| 85 or 120         | 0,05 × WP       |             |

## 6.4 Continued operation

**6.4.1** Test the pressure indicator in accordance with the procedure for testing continued operation given in ISO 12619-2:2014, Clause 9 for 20 000 cycles; a cycle consists of pressurization to working pressure followed by depressurization to less than 0,5 times the working pressure.

**6.4.2** Perform the leakage test in accordance with [6.3](#).

## **6.5 Insulation resistance**

This test is designed to check for a potential failure of the insulation between the two-pin coil assembly and the pressure indicator casing.

Apply 1 000 V DC between one of the connector pins and the housing of the pressure indicator for at least 2 s. The minimum allowable resistance shall be 240 k $\Omega$ .

## **6.6 Minimum operating voltage**

The minimum operating voltage at room temperature shall be  $\leq 8$  V for a 12 V system and  $\leq 16$  V for a 24 V system.

The component shall be pressurized at 0,75 times working pressure during the test and the reading shall be within the manufacturer's specified tolerance.

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