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**Tubeless tyres — Valves and  
components —**

Part 2:  
**Clamp-in tubeless tyre valve — Test  
methods**

*Pneumatiques sans chambre — Valves et composants —*

*Partie 2: Méthodes d'essai pour les valves à visser*

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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)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 9, *Valves for tube and tubeless tyres*.

This second edition cancels and replaces the first edition (ISO 14960-2:2014), which has been technically revised.

The main changes are as follows:

- all test methods have been revised;
- terms and definitions have been added ([Clause 3](#));
- test fixture and valve hole dimensions Clause has been added ([Clause 4](#));
- leakage test method has been added ([5.2](#));
- radial force resistance test has been added ([5.6.3](#));
- clauses and subclauses have been renumbered as necessary.

A list of all parts in the ISO 14960 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).

# Tubeless tyres — Valves and components —

## Part 2:

# Clamp-in tubeless tyre valve — Test methods

## 1 Scope

This document specifies test methods for clamp-in tubeless tyre valves.

These methods are defined to determine the minimum level of performance requested.

This document applies to the tyre valve assembled on the rim hole with diameter of 11,3 mm for passenger cars or for light duty vehicles.

This document does not include tyre pressure monitoring system (TPMS) valves.

## 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 3877-2, *Tyres, valves and tubes — List of equivalent terms — Part 2: Tyre valves*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

ISO 9413, *Tyre valves — Dimensions and designation*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3877-2, ISO 9413 and the following 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/>

### 3.1

#### clamp-in valve

type of valve for tubeless tyre, designed to be used with a valve core, a cap, an O-ring or a rubber grommet and to be fixed with a hexagonal nut and potentially a ring washer

### 3.2

#### valve assembly

*clamp-in valve* (3.1) (with a valve core, a cap, a nut, an O-ring or a rubber grommet and potentially a washer) fixed on the test fixture

## 4 Test fixture and valve hole dimensions

For each test, the material and the test fixture should be representative of the actual rim.

Break both edges on both sides of the valve hole either by a 45° chamfer or a radius from 0,3 mm to 0,4 mm. Emery cloth or suitable tooling is recommended. The material of rim or fixture shall be aluminium alloy or steel.

Unless otherwise stated, for all the tests, the conditions in [Table 1](#) shall be applied for the installation of the valve.

**Table 1 — Test Fixtures**

Test	Nominal hole diameter 11,3 mm	
	Test hole diameter mm	Test plate thickness mm
Valve to rim seal leakage tests (see <a href="#">5.5</a> )	Specific fixture, see <a href="#">5.5</a>	
Over torque nut test (see <a href="#">5.6.1</a> )	11,7 <sup>+0</sup> <sub>-0,05</sub>	3,5 ± 0,05
High pressure test (see <a href="#">5.6.2</a> )	11,7 <sup>+0</sup> <sub>-0,05</sub>	3,5 ± 0,05
Radial force resistance (see <a href="#">5.6.3</a> )	11,3 <sup>+0,05</sup> <sub>-0</sub>	3,5 ± 0,05
Ozone test (see <a href="#">5.7.1</a> )	Ozone test on seal alone: Specific fixture, see <a href="#">5.7.1</a> Ozone test on complete assembly valve: 11,3 <sup>+0,05</sup> <sub>-0</sub>	Ozone test on seal alone: Specific fixture, see <a href="#">5.7.1</a> Ozone test on complete assembly valve: 3,5 ± 0,05
Neutral salt spray test (see <a href="#">5.7.2</a> )	11,3 <sup>+0,05</sup> <sub>-0</sub>	3,5 ± 0,05

## 5 Test methods and performance requirements

### 5.1 General

#### 5.1.1 Appearance

If not otherwise defined between customer and supplier, the appearance shall be as follows.

- Valve external aspect: no visible valve crack, spot or scratch is allowed. No visible defect of the anodizing layer is allowed. No deep marks coming from shocks or machining are allowed. All these defects can be judged with naked eye at 1 m distance in final configuration (valve assembled on rim).
- Sealing element aspect shall be uniform: no bubble, no rubber lack, no crack visible or any other defect that can affect the performance is allowed.
- No oil, grease, corrosion or other substance that can affect the performance is allowed.

Before performing any test, check the quality of the samples.

#### 5.1.2 Operating pressure

All pressures mentioned in this document are gauge pressures.

Nominal operating pressure: 0 kPa to 830 kPa (refer to the valve manufacturer indication.)

By default, the maximum operating pressure is the maximum pressure as described in ISO 9413 for valves CQ07 and CQ08: 1 400 kPa. This maximum operating pressure can be replaced for each test by the real maximum operating pressure according to the valve's specification pressure.