CSA Group

ANSI/CSA HGV 4.7-2013
(reaffirmed 2018)

Automatic valves for use in gaseous hydrogen vehicle fueling stations

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Preface

This is the First edition of ANSI/CSA HGV 4.7-2013, Automatic Valves for Use in Gaseous Hydrogen Vehicle Fueling Stations. It supersedes the previous edition published in 2009.

This Standard was prepared by the HGV 4.4 Joint Technical Advisory Group on Standards for Breakaway Devices, Manually Operated Valves, and Automatic Valves for use in Hydrogen Gas Dispensing Systems, under the jurisdiction of the Technical Committee on Joint Automotive Technical Committee and the Strategic Steering Committee U.S. Advisory Council on Alternative Energy on Standards, and had been formally approved by the Technical Committee(s), and American National Standards Institute.

Interpretations: The Strategic Steering Committee on Standards for U.S. Advisory Council on Alternative Energy has provided the following direction for the interpretation of standards under its jurisdiction: "The literal text shall be used in judging compliance of products with the safety requirements of this Standard. When the literal text cannot be applied to the product, such as for new materials or construction, and when a relevant committee interpretation has not already been published, CSA's procedures for interpretation shall be followed to determine the intended safety principle."

Notes:

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*

2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*

3) *This Standard was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*

4) *To submit a request for interpretation of this Standard, please send the following information to* ***inquiries@csagroup.org*** *and include "Request for interpretation" in the subject line:*

- a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*
- b) *provide an explanation of circumstances surrounding the actual field condition; and*
- c) *where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.*

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are available on the Current Standards Activities page at ***standardsactivities.csa.ca****.*

5) *This Standard is subject to a review within five years from the date of approval. Suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to* ***inquiries@csagroup.org*** *and include "Proposal for change" in the subject line:*

- a) *Standard designation (number);*
- b) *relevant clause, table, and/or figure number;*
- c) *wording of the proposed change; and*
- d) *rationale for the change.*

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History of development of ANSI HGV 4.7

Note: *This history is informative and is not part of the standard.*

This is the first edition of ANSI/CSA HGV 4.7.

In September 2002, CSA met with the U.S. Department of Energy, Renewable Fuels Group in Washington, D.C. to discuss standards development opportunities in the hydrogen technology area. During this meeting, DOE requested that CSA provide a proposal relating to the development of hydrogen technology standards and codes in the United States.

Industry recognized that an important consideration in the successful commercialization of hydrogen gas as a vehicle fuel was the issue of codes and standards, pertaining to both fueling stations and vehicle fuel system components. CSA undertook the goal of establishing a program for the development of an organized family of coordinated standards that addresses hydrogen gas vehicles and fueling stations.

Industry and CSA recognized there was no standard that addressed safety requirements for automatic valves for use in gaseous hydrogen vehicle fueling stations. The development of such a standard was necessary based on industry needs and feedback:

a) There were no standards available for hydrogen applications at the 700 bar pressure levels.
b) Automotive OEMs driving the application of hydrogen as a fuel for vehicles expressed concern over solutions in demonstration projects in the field.

The focus of the automatic valves for use in gaseous hydrogen vehicle fueling stations standard established performance and safety based requirements for the material, design, manufacture and testing of automatic valves for gaseous hydrogen vehicle fueling stations

CSA has positioned itself as a leader in the fuel cell, hydrogen and natural gas sectors as a Standards Developing Organization (SDO). CSA is aggressively updating and developing national standards, and is playing a major role in the promulgation of US technologies nationally. As US TAG Administrator to IEC TC 105 for Fuel Cell Technologies and as US TAG members of ISO TC 197 and ISO TC 22 / SC 25, CSA is facilitating US technology internationally. CSA organized committees to address technical issues in the development of standards which would affect future expansion of the hydrogen industry.

The HGV 4.7 automatic valves for use in gaseous hydrogen vehicle fueling stations standard was processed as an American National Standard in accordance with procedures of the American National Standards Institute (ANSI).

This is the first edition of the HGV 4.7 automatic valves for use in gaseous hydrogen vehicle fueling stations standard, and was approved by the American National Standards Institute, Inc. on March 26, 2013.

Previous editions of this standard are as follows:

CSA America HGV 4.7-2009 TIR.

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ANSI/CSA HGV 4.7-2013
Automatic valves for use in gaseous hydrogen vehicle fueling stations

1 Scope

This standard contains safety requirements for the material, design, manufacture and testing of automatic valves (see Clause 3) used in gaseous hydrogen vehicle fueling stations. This standard applies to newly manufactured

a) Pneumatically actuated valves
b) Check valves
c) Excess Flow valves
d) Electrically actuated valves

1.1

This standard does not apply to:

a) Hydraulically actuated valves
b) Pressure regulating valves
c) Pressure relief valves; or
d) Fueling nozzle valves as covered by the *Standards for Compressed Hydrogen Surface Vehicle Refueling Connection Device, SAE J2600*, or *ISO 17268*

1.1.1

A valve that complies with the requirements for a Class A valve may be used for a Class B valve application, however, a Class B valve may not be substituted for a Class A valve. (see Clause 3).

1.1.2

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

1.1.3

All dimensions used in this standard are in metric units [International System of Units (SI)], unless otherwise specified. If a value for a measurement, as given in this standard, is followed by an equivalent value in other units, the first stated is to be regarded as the specification.

1.2

This standard contains SI (Metric) corresponding to the yard/pound quantities, the purpose being to allow this standard to be used in SI (Metric) units. (Standard for use of the International System of Units (SI): The Modern Metric System, IEEE/ASTM SI I0 or ISO 80000-1:2009 Quantities and units– Part 1: General are used as a guide in making metric conversion from yard/pound quantities.) If a value for a measurement and a corresponding value in other units are stated, the first stated value is to be regarded as the requirement. The given corresponding value may be approximate. If a value for a measurement and a corresponding value in other units are both specified as a quoted marking requirement, the first stated unit, or both shall be provided.

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