



# CSA/ANSI HGV 4.1:20

National Standard of Canada  
American National Standard



## Standard for hydrogen-dispensing systems



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# Preface

This is the second edition of CSA/ANSI HGV 4.1, *Hydrogen dispensing systems*. It supersedes the previous edition published in 2013.

This edition of CSA/ANSI HGV 4.1 harmonizes with other North American requirements, including those referenced in the Canadian Hydrogen Installation Code. Additional changes to this edition include alignment with CSA HGV 4.9, *Standard for hydrogen fuelling stations*, and the addition of Annex [A](#).

This Standard represents a standard for safe operation, substantial and durable construction, and performance testing of the mechanical and electrical features of newly manufactured hydrogen gas-dispensing systems for vehicles, intended primarily to dispense fuel directly into the vehicle fuel storage container.

This Standard is based on engineering principles, research, and the combined expertise of manufacturers, users, and others having specialized experience.

Nothing in this Standard is to be considered in any way as indicating a measure of quality beyond compliance with the provisions it contains. It is designed to allow compliance of products that may exceed that specified in the provisions herein. In its preparation, full recognition has been given to possibilities of improvement through ingenuity of design. This Standard is subject to revision as further experience and investigation might show that it is necessary and desirable.

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CSA Group acknowledges that the development of this Standard was made possible, in part, by the financial support of Natural Resources Canada.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Subcommittee on Dispensing Systems for Hydrogen Gas Vehicles, under the jurisdiction of the Technical Committee on Hydrogen Transportation Technical Committee and the Strategic Steering Committee on Transportation, and has been formally approved by the Technical Committee and the Interprovincial Gas Advisory Council.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group. This Standard has been approved by the American National Standards Institute (ANSI) as an American National Standard.

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- 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](mailto:inquiries@csagroup.org) and include "Request for interpretation" in the subject line:
- define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;
  - provide an explanation of circumstances surrounding the actual field condition; and
  - 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](http://standardsactivities.csa.ca).

- 5) This Standard is subject to review within five years from the date of publication. 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](mailto:inquiries@csagroup.org) and include "Proposal for change" in the subject line:
- Standard designation (number);
  - relevant clause, table, and/or figure number;
  - wording of the proposed change; and
  - rationale for the change.

# CSA/ANSI HGV 4.1:20

## Standard for hydrogen-dispensing systems

### 1 Scope

#### 1.1

This Standard specifies mechanical and electrical requirements for dispensers of compressed hydrogen gas intended for fuel storage systems integral to fuel cell vehicles at pressures of 25, 35, 50, and 70 MPa.

Dispensing systems covered by this Standard include

- a) HGV dispensers that integrate all dispensing system components in a single unit, including fuel metering and registering, flow control and safety management devices, heat exchangers, and vehicle fuel cylinder over-fill and over-pressure protection with listed hoses with nozzles (see Figure [A.1](#)); or
- b) HGV dispensers that are primarily the customer facing unit with fuelling hose assembly listed hoses, nozzles, and operator interface, and where the key components of flow metering and over-pressure and over-fill protection are located in a separate unit or part of the hydrogen fuelling station system (see Figure [A.2](#)).

The following service pressures are applicable: 25, 35, 50, and 70 MPa.

Each dispensing system could have multiple valve trains allowing fuelling of multiple vehicles.

#### 1.2

Dispensing systems covered by this Standard are intended for use with fuel meeting the requirements in SAE J2719 and ISO 14687-2.

#### 1.3

This Standard applies to dispensers that protect the vehicle storage for over-pressure, over-temperature, and over-fill (i.e., over-density) situations.

#### 1.4

This Standard also applies to dispensing systems that are part of a modular fuelling station with remote fuel metering, registering, control and management devices, and vehicle fuel storage over-fill and over-pressure protection included in an integrated fuelling station control system. For these applications, refer to CSA HGV 4.9.

#### 1.5

This Standard does not apply to dispensers intended for the refuelling of hydrogen-powered industrial trucks.

**Note:** CSA HPIT 2 addresses dispensers intended for the refuelling of hydrogen-powered industrial trucks.

#### 1.6

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