ANSI/CSA HGV 4.3-2016

Test methods for hydrogen fueling parameter evaluation

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Preface

This is the first edition of ANSI/CSA HGV 4.3, *Test methods for hydrogen fueling parameter evaluation*. It replaces the previous edition published in 2012 as CSA HGV 4.3.

This Standard was prepared by the Technical Subcommittee on Standards for Temperature Compensation Devices for Natural Gas and Hydrogen Dispensing Systems, under the jurisdiction of the Automotive Technical Committee.

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.*

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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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Test methods for hydrogen fueling parameter evaluation

1 Scope

1.1

This Standard establishes the test method, criteria, and apparatus to evaluate a field installed hydrogen fueling station dispensing system (hereinafter referred to as a "dispenser") as it relates to achieving the protocols specified in the SAE J2601 Standard, *Fueling Protocols for Light Duty Gaseous Hydrogen Surface Vehicles*, and the SAE J2799 Standard, *Hydrogen Surface Vehicle to Station Communications Hardware and Software* with light duty vehicle hydrogen storage systems less than 248.6 liters (10 kg H70). The testing evaluation applies to dispensers designed to fill vehicle storage systems following the prescribed protocols defined in SAE J2601 that targets rapid fills, while respecting temperature, pressure, and fuel density safety limits.

Note: *This Standard is a minimum requirement. Manufacturers may take additional safety precautions.*

1.2

This Standard was developed for and is intended to be used with the specific version of SAE J2601 and SAE J2799 documents as referenced in Clause 2.

1.3

For fueling dispensers with the capability for communications with the vehicle, these test methods include the approach to confirm the requirements specified in SAE J2799 and SAE J2601.

1.4

It is recommended that newly manufactured hydrogen fueling dispensers be tested according to this Standard prior to initial operation of the dispenser for fueling vehicles. This Standard is also intended to provide test methods for validation of existing hydrogen fueling dispensers.

1.5

Unless otherwise specified, the requirements in this Standard apply to the verification of SAE J2601 compliant Hydrogen Fueling Stations (HFS).

1.6

In the case of conflict between this Standard and Federal, Provincial, State, or Local requirements, the governmental requirements take precedence.

1.7

This Standard contains SI (Metric) units with corresponding yard/pound quantities, the purpose being to allow the standard to be used in SI (Metric) units. 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

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other units are both specified as a quoted marking requirement, the first stated unit, or both are to be provided.

Note: *IEEE/ASTM SI 10 or ISO 80000-1 was used as a guide in making metric conversions to yard/pound quantities.*

1.8

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

1.9

In this Standard, "shall" is used to express a requirement, i.e., a provision that the user shall satisfy in order to comply with the standard; "should" is used to express a recommendation or that which is advised but not required; "may" is used to express an option or that which is permissible within the limits of the standard; and "can" is used to express possibility or capability.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

2 Reference publications

This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

CSA Group

ANSI/CSA HGV 2-2014
Compressed hydrogen gas vehicle fuel containers

HGV 3.1-2013
Fuel system components for compressed hydrogen gas powered vehicles

ANSI/CSA HGV 4.1-2013
Standard for hydrogen dispensing systems

ANSI/CSA HPRD 1-2013
Thermally activated pressure relief devices for compressed hydrogen vehicle fuel containers

ASME (American Society of Mechanical Engineers)

ASME B31-2014
Piping Code

ASTM International

IEEE/ASTM SI 10-2010
American National Standard for Metric Practice