CSA Group

ANSI/CSA HGV 4.8-2012
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Hydrogen gas vehicle fueling station compressor guidelines

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The standards set forth herein apply to the first edition of the Standard for Hydrogen gas vehicle fueling station compressor guidelines, HGV 4.8. Following their preparation by the supervising Technical Committee, they were accepted by the American National Standards Institute (ANSI).

American National Standards Institute, Inc.

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American National Standards Institute, Inc.
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New York, NY
10036

Preface

This publication represents a standard for safe operation, substantial and durable construction and performance testing of the mechanical features of newly manufactured compressors for use in gaseous hydrogen vehicle fueling stations.

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 which 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 may show it is necessary and desirable.

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History Of Development Of ANSI HGV 4.8

(This History is informative and is not part of the standard.)

NOTE: This is the first edition of ANSI/CSA HGV 4.8.

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 hydrogen gas vehicle fueling station compressors. The development of such a standard was necessary based on industry needs and feedback:

(1) There were no standards available for hydrogen applications at the 700 bar pressure levels.

(2) 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 hydrogen gas vehicle fueling station compressor standard established performance and safety based requirements for the material, design, manufacture and testing of hydrogen gas vehicle fueling station compressors.

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 4.8 Hydrogen gas vehicle fueling station compressor 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 4.8 hydrogen gas vehicle fueling station compressor guideline standard, and was approved by the American National Standards Institute, Inc. on November 29, 2012.

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1 Scope

1.1

This standard contains safety requirements for material, design, manufacture and testing of gaseous hydrogen compressor packages used in fueling station service. This standard applies to newly manufactured equipment designed primarily to provide compressed hydrogen for vehicle fueling stations.

This standard does not apply to:

a) Vehicle Fueling Appliances for HGV

b) Compressor packages used for non-vehicular fuel applications (e.g. power generation units)

c) Internal combustion engine driven compressor

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

If the value for measurement as given in this standard is followed by an equivalent value in other units, the first stated value is to be regarded as the specification.

Test gas as specified in these requirements shall be:

- hydrogen or helium for leak tests,
- liquids (e.g., water or oil) for hydrostatic strength tests,
- hydrogen, helium, nitrogen, or dry air for all other tests.

1.2 Applications

1.2.1
Except as stated in this standard, compressor packages shall be designed, manufactured, and tested in accordance with the applicable requirements of the standards referenced. Unless otherwise indicated in this standard, the latest edition of any referenced standard/code shall be used.

1.2.2
In applications where multiple compressor packages are installed in parallel, these packages shall be considered as independent units.

1.2.3
In applications where multiple compressors are required in series, all compressors shall be considered as a single package.