



**CSA
Group**

ANSI/CSA HGV 4.4-2013

**Standard for breakaway devices for
compressed hydrogen dispensing
hoses and systems**

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Standards Update Service

ANSI/CSA HGV 4.4-2013

March 2013

Title: *Standard for breakaway devices for compressed hydrogen dispensing hoses and systems*

Pagination: **26 pages**, each dated **March 2013**

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AMERICAN NATIONAL STANDARD
ANSI/CSA HGV 4.4-2013

First Edition - 2013

APPROVED



March 14, 2013
American National Standards Institute, Inc.

Standard Developer

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Published in March 2013 by CSA Group

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Preface

This publication represents a standard for safe operation, substantial and durable construction and performance testing of fueling hose breakaway devices for use in hydrogen gas fueling applications.

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 The Development Of ANSI HGV 4.4

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

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 fueling hose breakaway devices for use in hydrogen gas fueling applications. The development of such a standard was necessary based on industry needs and feedback:

(1) There were no standards available for hydrogen fueling hoses breakaway devices with 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 fueling hoses breakaway devices standard established performance based requirements for the construction and performance of newly manufactured hydrogen fueling hose breakaway devices for use in hydrogen gas fueling applications.

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 TAC 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 4.4 hydrogen fueling hose breakaway device 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 4.4 hydrogen fueling hose breakaway device standard, and was approved by the American National Standards Institute, Inc. on March 14, 2013.

Previous editions of this standard are as follows:

CSA America F. CV 4.4-2009 TIR.

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ANSI/CSA HGV 4.4-2013
***Breakaway devices for compressed hydrogen
dispensing hoses and systems***



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Published in March 2013 by CSA Group
A not-for-profit private sector organization
5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6
1-800-463-6727 • 416-747-4044

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ISBN 978-1-77139-006-4

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NOTE

This standard contains SI (Metric) equivalents to the yard/pound quantities, the purpose being to allow the 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 10 or Metric Practice Guide, CAN/CSA Z234.1 are used as a guide in making metric conversion from yard/pound quantities.) If a value for a measurement and an equivalent value in other units, the first stated is to be regarded as the requirement. The given equivalent value may be approximate. If a value for a measurement and an equivalent value in other units, are both specified as a quoted marking requirement, the first stated unit, or both shall be provided.

ANSI/CSA HGV 4.4-2013

Standard for Breakaway devices for compressed hydrogen dispensing hoses and systems

Part I: Construction

1.1 Scope

1.1.1

This standard contains safety requirements for the design, manufacture and testing of fueling hose breakaway devices for use in hydrogen gas fueling applications, hereinafter referred to as devices. This standard applies to newly manufactured devices.

1.1.2

This standard does not apply to:

- a. Residential Fueling Facility and/or Vehicle Fueling Appliances for hydrogen gas vehicles.
- b. Dispenser Breakaway Devices (Shear Valves)
- c. Vehicular Breakaway Components

1.1.3

Devices covered by this standard are intended to perform the following functions when a vehicle is driven off with the nozzle attached to the vehicle's fueling receptacle.

- a. Minimize the escape of gaseous hydrogen by automatically shutting off the flow of gas from the dispenser and controlling the depressurization of the hose; and
- b. Minimize damage to the vehicle and dispenser.

1.1.4

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.

1.1.5

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

1.1.6

Except as otherwise stated, testing at room temperature will be conducted between 15°C (59°F) minimum and 30°C (86°F) maximum.