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B109-17

Natural gas for vehicles installation code

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Preface

This is the third edition of CSA B109, *Natural gas for vehicles installation code*. It supersedes the previous edition published in 2014 under the same title and the 2001 edition, published under the title *Natural gas for vehicles installation code — Part 1 Compressed natural gas*.

This Code consists of the following:

- a) CSA B109, Part 1 — *Compressed natural gas*; and
- b) CSA B109, Part 2 — *Liquefied natural gas*.

Changes in this edition include the following:

- a) separated CNG and LNG coverage into standalone distinct sections (Part 1—CNG; Part 2—LNG);
- b) added coverage for dual fuel vehicles to recognize emerging technology;
- c) removed allowance of ISO 11439 containers since these are not recognized by Transport Canada; and
- d) changed protection from heat sources from a prescriptive requirement to a performance requirement

This Code was prepared by the Subcommittee on Natural Gas for Vehicles Installation Code, under the jurisdiction of the Technical Committee on Natural Gas Powered Vehicles and Fuelling under the jurisdiction of the Strategic Steering Committee on Transportation and has been formally approved by the Technical Committee and the Interprovincial Gas Advisory Council.

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 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 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.*

B109-17, Part 1
Compressed natural gas

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B109-17, Part 1

Compressed natural gas

1 Scope

1.1

This Code applies to the installation, inspection, repair, and maintenance of the fuel storage and delivery system installed in powered industrial truck applications and vehicles for use with compressed natural gas (CNG). This includes fuel systems on self-propelled vehicles for the provision of motive power.

Regulatory requirements might supersede the requirements of this Code.

1.2

This Code does not apply to

- a) stationary engines;
- b) mobile equipment using natural gas as a fuel for other than propulsion;
- c) LNG fuel storage systems*;
- d) electronic components of a fuel management system;
- e) storage or utilization of natural gas on marine vessels or rail vehicles;
- f) recreational all terrain vehicles;
- g) motorcycles; and
- h) vehicles (including their containers) qualified under the Canadian *Motor Vehicle Safety Regulations*.

* Part 2 of this Code covers LNG fuel systems.

1.3

The values given in SI units are the units of record for the purposes of this Code. The values given in parentheses are for information and comparison only.

Notes:

- 1) *IEEE/ASTM SI 10 or ISO 80000-1 can be used as a guide when converting Imperial units to metric units.*
- 2) *Where the word "gallon" is used in this Code, it indicates a U.S. gallon equivalent to 3.785 liters water capacity.*

1.4

All references to "psi" throughout this Code are to be considered gauge pressures, unless otherwise specified.

See Annex H for additional information about the units of measurement used in this Code.

1.5

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

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

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Note: Users of this Code should consult with the authority having jurisdiction regarding which edition to reference.

CSA Group

B51 (Part 2)

Boiler, pressure vessel, and pressure piping code; Part 2: High-pressure cylinders for the on-board storage of natural gas and hydrogen as fuels for automotive vehicles

EXP2.1

Best practice for defueling, decommissioning, and disposal of compressed natural gas vehicle fuel containers

ANSI NGV 1/CSA NGV 1

Compressed natural gas vehicle (NGV) fueling connection devices

CSA/ANSI NGV 2

Compressed natural gas vehicle fuel containers

ANSI NGV 3.1/CSA 12.3

Fuel system components for compressed natural gas powered vehicles

ANSI/CSA PRD 1

Pressure relief devices for natural gas vehicle (NGV) fuel containers

ASME (The American Society of Mechanical Engineers)

B1.20.1

Pipe Threads, General Purpose (Inch)

ASTM International

IEEE/ASTM SI 10

American National Standard for Metric Practice

A269/A269M

Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service

A632

Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing (Small-Diameter) for General Service