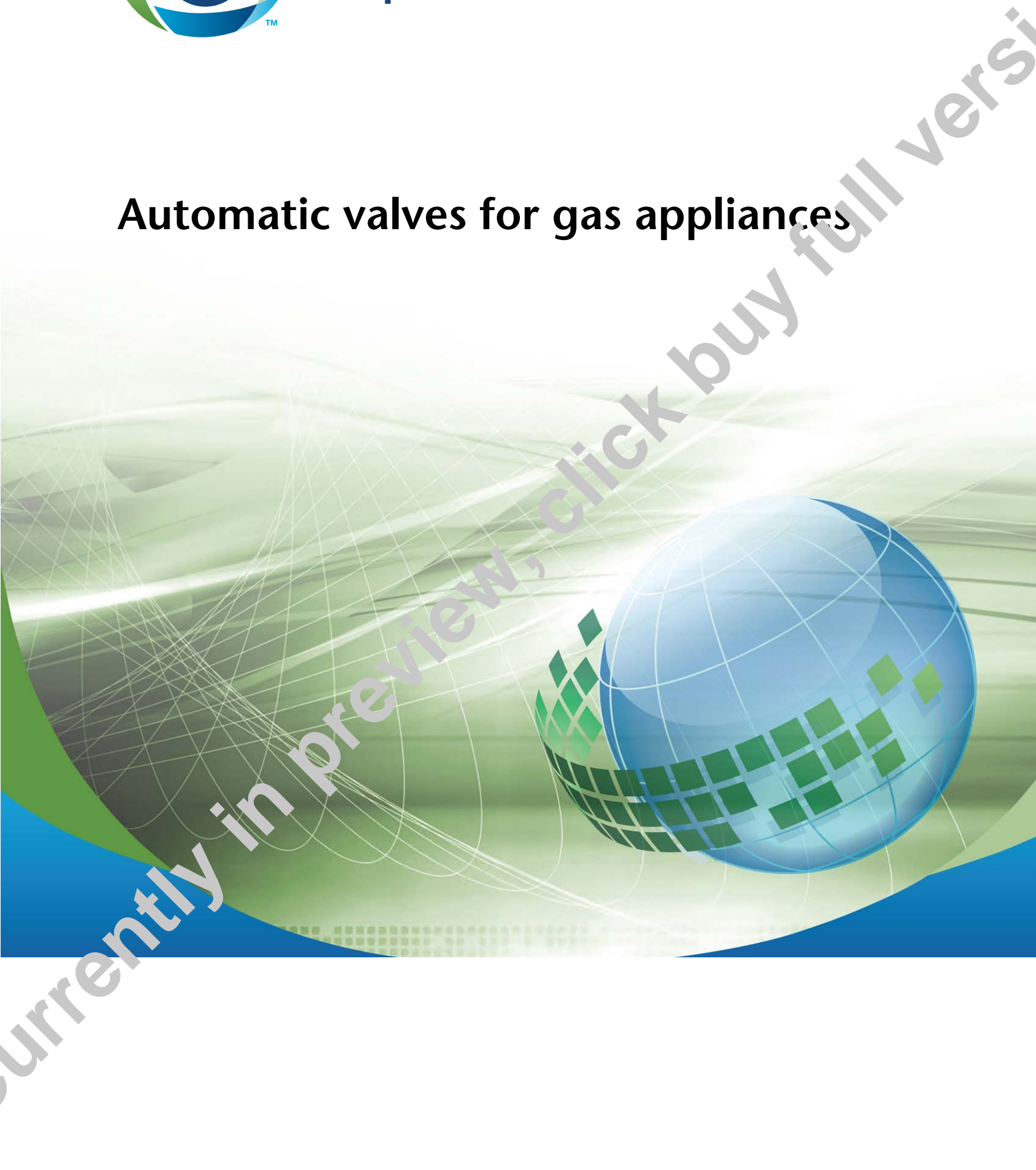




**CSA  
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**ANSI Z21.21-2012  
CSA 6.5-2012**

## **Automatic valves for gas appliances**



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AMERICAN NATIONAL STANDARD  
ANSI Z21.21-2012

CSA 6.5-2012

Fourth Edition - 2012  
This Standard is based on the Standard for  
Automatic valves for gas appliances

ANSI Z21.21-2005 • CSA 6.5-2005  
and Addenda ANSI Z21.21a-2010 • CSA 6.5a-2010, and  
ANSI Z21.21b-2011 • CSA 6.5b-2011

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Standard Developer:

CSA AMERICA INC.,  
Operating as "CSA Group"  
8501 East Pleasant Valley Road  
Cleveland, Ohio 44131

CANADIAN STANDARDS ASSOCIATION,  
Operating as "CSA Group"  
5060 Spectrum Way, Suite 100  
Mississauga, Ontario, Canada L4W 5N6



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10036***

# *Preface*

This publication represents a basic standard for safe operation, substantial and durable construction, and acceptable performance of automatic valves for gas appliances. It is the result of years of experience in the manufacture, testing, installation, maintenance, inspection and research on automatic valves for gas appliances designed for utilization of gas. There are risks of injury to persons inherent in appliances that, if completely eliminated, would defeat the utility of the appliance. The provisions in this standard are intended to help reduce such risks while retaining the normal operation of the appliance.

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 automatic valves for gas appliances, the safety construction and performance of which may exceed the various provisions specified herein. In its preparation, full recognition has been given to possibilities of improvement through ingenuity of design. As progress takes place, revisions may become necessary. When they are believed desirable, recommendations or suggestions should be forwarded to the Chairman of Accredited Standards Committee Z21/83, 8501 East Pleasant Valley Road, Cleveland, Ohio 44131, or the Chairman of CSA Technical Committee on Gas Appliances and Related Accessories, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6.

Safe and satisfactory operation of an automatic valve for gas appliances and automatic safety shut-off gas valves, depends to a great extent upon its proper installation, use and maintenance. It should be installed, as applicable, in accordance with the National Fuel Gas Code, ANSI Z223.1/NFPA 54; the Natural Gas and Propane Installation Code, CSA B149.1.

Users of this American National Standard/CSA Standard are advised that the devices, products and activities within its scope may be subject to regulation at the Federal, Territorial, Provincial, state or local level. Users are strongly urged to investigate this possibility through appropriate channels. In the event of a conflict with this standard, the Federal, Territorial, Provincial, state or local regulation should be followed.

THIS STANDARD IS INTENDED TO BE USED BY THE MANUFACTURING SECTOR, BY THOSE APPLYING THE EQUIPMENT AND BY THOSE RESPONSIBLE FOR THE PROPER INSTALLATION. IT IS THE RESPONSIBILITY OF THESE USERS TO DETERMINE THAT IN EACH CASE THIS STANDARD IS SUITABLE FOR AND APPLICABLE TO THE SPECIFIC USE THEY INTEND.

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# ***History Of The Development Of Standard For Automatic Valves For Gas Appliances***

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

With the onset of the Free Trade Agreement between the United States and Canada on January 2, 1988, significant attention was given to the harmonization of the United States and Canadian safety standards addressing gas-fired equipment for residential, commercial and industrial applications. It was believed that the elimination of the differences between the standards would remove potential trade barriers and provide an atmosphere in which North American manufacturers could market more freely in the United States and Canada. The harmonization of these standards was also seen as a step toward harmonization with international standards.

With the formation of joint subcommittees, a Canadian Gas Association Standards Steering Committee on Gas Burning Appliances and Related Accessories was established to parallel Accredited Standards Committees Z21 and Z83, and to support the formation of joint subcommittees. Operating procedures, in accordance with American National Standards Institute procedures, for joint subcommittees were developed and subsequently approved by ANSI on April 1, 1993.

A comparison document was prepared during 1992 of the American National Standard for Automatic Gas Valves, ANSI Z21.21 including proposed revisions under development, and the National Standards of Canada for Automatic Valves for Gas Appliances, CAN1-6.5, and Automatic Safety Shut-Off Gas Valves, CAN/CGA-3.9. At its July 12-13, 1993 meeting, the Joint Automatic Gas Control Subcommittee adopted the first draft harmonized automatic gas valve standard based on the comparison document for distribution for review and comment during May 1994.

Following reconsideration and modification of the proposed draft standard for automatic gas valves, in light of comments received, the joint automatic gas control subcommittee, at its July 14, 1994 meeting, recommended the proposed draft standard to the Z21 Committee and the CGA Standards Steering Committee, for approval.

The proposed draft of the harmonized standard for automatic gas valves was approved by the Z21 Committee by letter ballot dated January 7, 1995. The CGA Standards Steering Committee approved the proposed draft harmonized standard for automatic gas valves by letter ballot dated April 13, 1995.

The first edition of the harmonized American National Standard/CGA Standard for Automatic Gas Valves was approved by the CGA Standards Advisory Committee and the Canadian Interprovincial Gas Advisory Council on October 16, 1995 and by the American National Standards Institute, Inc., on November 15, 1995.

The second edition of the harmonized American National Standard/CSA Standard for Automatic Gas Valves for Appliances was approved by The Canadian Interprovincial Gas Advisory Council on August 22, 2000 and by the American National Standards Institute, Inc., on September 7, 2000.

The third edition of the harmonized American National Standard/CSA Standard for Automatic Gas Valves for Appliances was approved by The Canadian Interprovincial Gas Advisory Council on April 1, 2005 and by the American National Standards Institute, Inc., on March 9, 2005.

The fourth edition of the harmonized American National Standard/CSA Standard for Automatic Gas Valves for Appliances was approved by The Canadian Interprovincial Gas Advisory Council on September 4, 2012 and by the American National Standards Institute, Inc., on August 22, 2012.

Previous editions of the automatic gas valves for appliances standard, and addenda thereto, approved by the American National Standards Institute, Inc. and the Interprovincial Gas Advisory Council, are as follows:

Z21.21-1995 • CSA 6.5-M95  
Z21.21a-1998 • CSA 6.5a-M98  
Z21.21b-1999 • CSA 6.5b-M99

Z21.21-2005 • CSA 6.5-2005  
Z21.21a-2010 • CSA 6.5a-2010  
Z21.21b-2011 • CSA 6.5b-2011

Z21.21-2000 • CSA 6.5-2000  
Z21.21a-2001 • CSA 6.5a-2001  
Z21.21b-2004 • CSA 6.5b-2004

The following identifies the designation and year of the harmonized standard:

ANSI Z21.21-2012 • CSA 6.5-2012

**Note:** *This edition of Z21.21 • CSA 6.5, incorporates changes to the 2005 edition and addenda thereto. Changes, other than editorial, are denoted by a vertical line in the margin.*

Z21.21-2012 • CSA 6.5-2012  
***Automatic valves for gas appliances***



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# Contents

Interprovincial Gas Advisory Council 3

Z21/83 Committee on Performance and Installation  
of Gas Burning Appliances and Related Accessories 4

CSA Technical Committee On Gas Appliances And Related Equipment 6

Joint Technical Advisory Group On Standards For Automatic Gas Controls 7

## **1 Scope** 8

## **2 List Of Reference Standards** 9

## **3 Definitions** 10

## **4 General** 12

- 4.1 General Construction And Assembly 12
- 4.2 Equipment And Data To Be Furnished By The Manufacturer 13
- 4.3 Assembly 14
- 4.4 Connections 14
- 4.5 Bolts, Nuts And Screws 15
- 4.6 Adjustments 15
- 4.7 Electrical 16
- 4.8 Materials 16
- 4.9 Instructions 16
- 4.10 Marking 17

## **5 Performance: General** 18

- 5.1 General 18
- 5.2 Test Gases 19
- 5.3 Strength And Deformation 19
- 5.4 Leakage 22
- 5.5 Mounting For Testing 23
- 5.6 Capacity 23
- 5.7 Electrical Operating Characteristics 26
- 5.8 Dielectric Strength 28
- 5.9 Integrity Of Operation 28
- 5.10 Gas Cracking 33
- 5.11 Continued Operation 33
- 5.12 Resistance To Permanent Damage At Excessive Supply Pressures 35
- 5.13 Internal Explosion Resistance 36
- 5.14 Marking Material Adhesion And Legibility 37

## **6 Commercial/Industrial Safety Shut-Off Valves - Construction** 38

## **7 Commercial/Industrial Safety Shut-Off Valves - Performance** 40

- 7.1 40
- 7.2 40
- 7.3 Continued Operation 40
- 7.4 Closing Time 41

# Contents

- 7.5 Valve Closure On Gas Pressure Surge 41  
 7.6 Nonmetallic Materials 42

## **8 Manufacturing And Production Tests 43**

## **9 Items Unique To The United States 44**

- 9.1 Electrical 44

## **10 Items Unique To Canada 48**

### **Annexes**

- A** (informative) — Preferred graphic symbols of commonly used items, extracted from ANSI/IEEE Standard 315, graphic symbols for electrical and electronics diagrams, and abbreviations for these items 61

- B** (informative) — Table of Conversion Factors 69

### **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.*

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# *ANSI Z21.21-2012 • CSA 6.5-2012*

## *Automatic valves for gas appliances*

### **1 Scope**

#### **1.1**

This standard applies to newly produced automatic valves (Section 3, Definitions) constructed entirely of new, unused parts and materials. These valves may be individual automatic valves or valves utilized as parts of automatic gas ignition systems.

This standard also applies to commercial/industrial safety shutoff valves (Section 3, Definitions), herein after referred to as C/I valves.

This standard shall not apply to self-contained water heater, cooking appliance, or room heater thermostats, or self-contained automatic gas shutoff valves for hot water supply systems.

Components performing functions other than those of an automatic valve shall comply with applicable American National Standards or Canadian Standards.

Compliance of an automatic valve with this standard does not imply that the automatic valve is acceptable for use on gas appliances without supplemental tests with the automatic valve applied to the particular appliance design.

A control which incorporates two or more automatic valves and no other function, (as defined by combination control, see Section 3, Definitions), may be tested to this standard or the *Standard for Combination Gas Controls for Gas Appliances, ANSI Z21.78 • CSA 6.20*, at the discretion of the manufacturer.

#### **1.2**

The valve operator of an automatic valve may be actuated either directly or indirectly. In addition, it may be actuated by electrical means, by mechanical means, by means of a change of the absolute pressure of gas or air upon a diaphragm, or by other means.

#### **1.3**

This standard applies to automatic valves having maximum operating gas pressure ratings from  $1/2$  psi (3.5 kPa) up to and including 60 psi (413.7 kPa).

#### **1.4**

This standard applies to automatic valves which are to be mounted in the manufacturer's specified upright position or in one (1) or more of the optional mounting positions selected by the manufacturer. (See 5.1.1.)

#### **1.5**

This standard applies to automatic valves which are capable of operation at ambient temperatures of 32°F to 125°F (0°C to 51.5°C), unless a higher temperature, lower temperature, or both, are specified by the manufacturer. (See 5.1.2.)

#### **1.6**

If a 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.