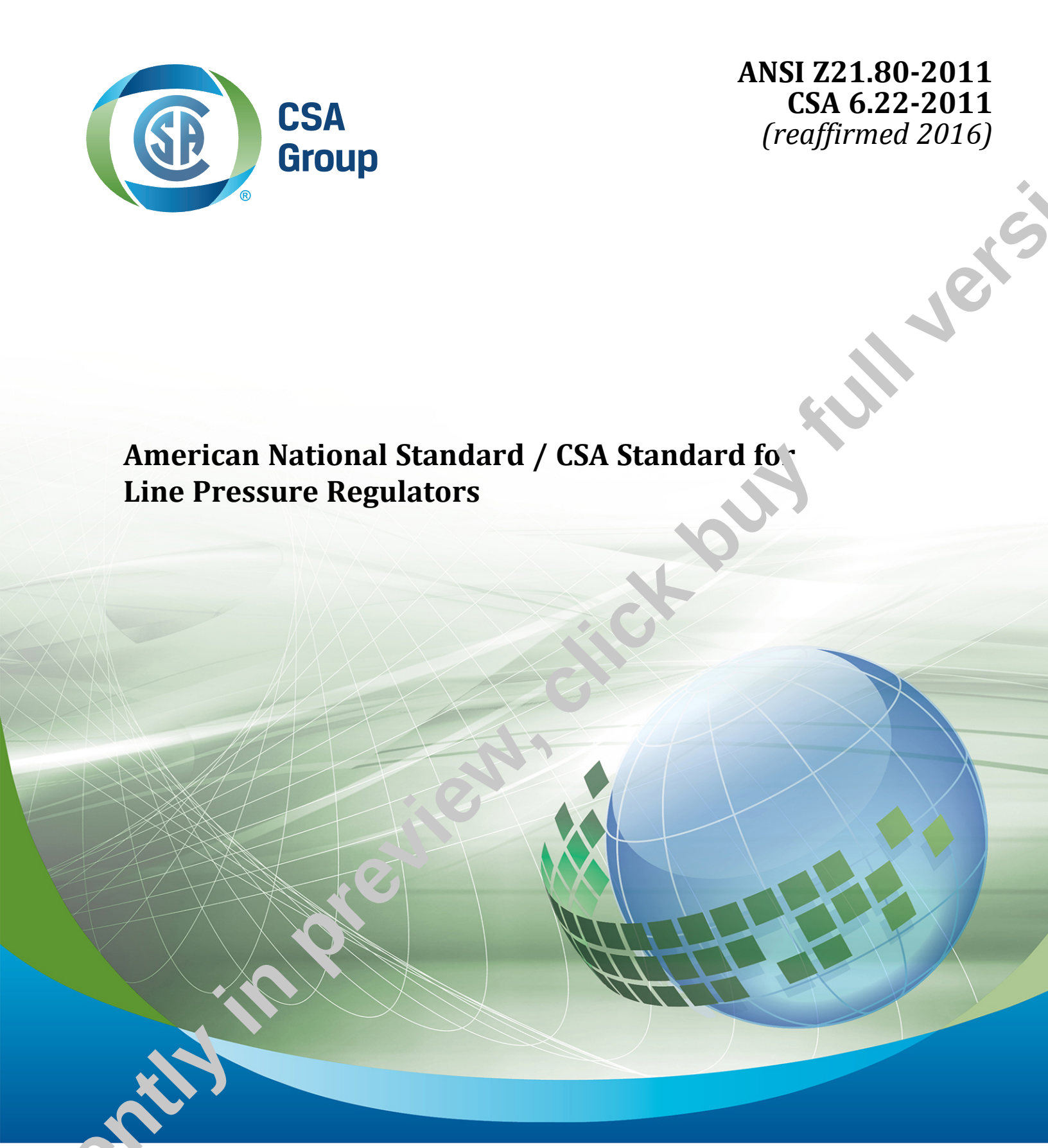
CSA Group

ANSI Z21.80-2011
CSA 6.22-2011
(reaffirmed 2016)

American National Standard / CSA Standard for Line Pressure Regulators



AMERICAN NATIONAL STANDARD
ANSI Z21.80-2011

CSA STANDARD
CSA 6.22-2011

Third Edition - 2011
This Standard is based on the Standard for
Line Pressure Regulators

ANSI Z21.80-2003 • CSA 6.22-2003,
Addenda ANSI Z21.80a-2005 • CSA 6.22a-2005 and
ANSI Z21.80b-2010 • CSA 6.22b-2010

APPROVED

November 16, 2011
American National Standards Institute, Inc.

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Standards Developer

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Canadian Standards Association

The Canadian Standards Association (CSA), under whose auspices this National Standard has been produced, was chartered in 1919 and accredited by the Standards Council of Canada to the National Standards system in 1973. It is a not-for-profit, nonstatutory, voluntary membership association engaged in standards development and certification activities.

CSA standards reflect a national consensus of producers and users — including manufacturers, consumers, retailers, unions and professional organizations, and governmental agencies. The standards are used widely by industry and commerce and often adopted by municipal, provincial, and federal governments in their regulations, particularly in the fields of health, safety, building and construction, and the environment.

Individuals, companies, and associations across Canada indicate their support for CSA's standards development by volunteering their time and skills to CSA Committee work and supporting the Association's objectives through sustaining memberships. The more than 7000 committee volunteers and the 2000 sustaining memberships together form CSA's total membership from which its Directors are chosen. Sustaining memberships represent a major source of income for CSA's standards development activities.

The Association offers certification and testing services in support of and as an extension to its standards development activities. To ensure the integrity of its certification process, the Association regularly and continually audits and inspects products that bear the CSA Mark.

In addition to its head office and laboratory complex in Toronto, CSA has regional branch offices in many centres across Canada and inspection and testing agencies in eight countries. Since 1919, the Association has developed the necessary expertise to meet its corporate mission: CSA is an independent service organization whose mission is to provide an open and effective forum for activities facilitating the exchange of goods and services through the use of standards, certification and related services to meet national and international needs.

L'Association canadienne de normalisation (CSA), sous les auspices de laquelle cette Norme nationale a été préparée, a reçu ses lettres patentes en 1919 et son accréditation au sein du Système de Normes nationales par le Conseil canadien des normes en 1973. Association d'affiliation libre, sans but lucratif ni pouvoir de réglementation, elle se consacre à l'élaboration de normes et à la certification.

Les normes CSA reflètent le consensus de producteurs et d'usagers de partout au pays, au nombre desquels se trouvent des fabricants, des consommateurs, des détaillants et des représentants de syndicats, de corps professionnels et d'agences gouvernementales. L'utilisation des normes CSA est très répandue dans l'industrie et le commerce, et leur adoption à divers ordres de législation, tant municipal et provincial que fédéral, est chose courante, particulièrement dans les domaines de la santé, de la sécurité, du bâtiment, de la construction et de l'environnement.

Les Canadiens d'un bout à l'autre du pays témoignent de leur appui au travail de normalisation mené par la CSA en participant bénévolement aux travaux des comités de la CSA et en appuyant ses objectifs par leurs cotisations de membres de soutien. Les quelque 7000 volontaires faisant partie des comités et les 2000 membres de soutien constituent l'ensemble des membres de la CSA parmi lesquels ses administrateurs sont choisis. Les cotisations des membres de soutien représentent une source importante de revenu pour les services de soutien à la normalisation volontaire.

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Outre son siège social et ses laboratoires à Toronto, la CSA possède des bureaux régionaux dans des centres vitaux partout au Canada, de même que des agences d'inspection et d'essai dans huit pays. Depuis 1919, l'Association a parfait les connaissances techniques qui lui permettent de remplir sa mission d'entreprise, à savoir la CSA est un organisme de services indépendant dont la mission est d'offrir une tribune libre et efficace pour la réalisation d'activités facilitant l'échange de biens et de services par l'intermédiaire de services de normalisation, de certification et autres, pour répondre aux besoins de nos clients, tant à l'échelle nationale qu'internationale.

For further information on CSA services, write to

Canadian Standards Association
5060 Spectrum Way, Suite 100
Mississauga, Ontario, Canada L4W 5N6

Pour plus de renseignements sur les services de la CSA, s'adresser à
Association canadienne de normalisation
5060, Spectrum Way, bureau 100
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The American National Standards Institute (ANSI), Inc. is the nationally recognized coordinator of voluntary standards development in the United States through which voluntary organizations, representing virtually every technical discipline and every facet of trade and commerce, organized labor and consumer interests, establish and improve the some 10,000 national consensus standards currently approved as American National Standards.

ANSI provides that the interests of the public may have appropriate participation and representation in standardization activity, and cooperates with departments and agencies of U.S. Federal, state and local governments in achieving compatibility between government codes and standards and the voluntary standards of industry and commerce.

ANSI represents the interests of the United States in international nontreaty organizations such as the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). The Institute maintains close ties with regional organizations such as the Pacific Area Standards Congress (PASC) and the Pan American Standards Commission (COPANT). As such, ANSI coordinates the activities involved in the U.S. participation in these groups.

ANSI approval of standards is intended to verify that the principles of openness and due process have been followed in the approval procedure and that a consensus of those directly and materially affected by the standards has been achieved. ANSI coordination is intended to assist the voluntary system to ensure that national standards needs are identified and met with a set of standards that are without conflict or unnecessary duplication in their requirements.

Responsibility of approving American National Standards rests with the

American National Standards Institute, Inc.
25 West 43rd Street, Fourth Floor
New York, NY
10036

Preface

This publication represents a basic standard for safe operation, substantial and durable construction, and acceptable performance of a line pressure regulator. It is the result of years of experience in the manufacture, testing, installation, maintenance, inspection and research on line pressure regulators. 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 a line pressure regulator, the safety construction and performance of which may exceed the various provisions specified herein. In its preparation, 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 CSA America, 8501 East Pleasant Valley Road, Cleveland, Ohio 44131, or Canadian Standards Association, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6.

Safe and satisfactory operation of line pressure regulators 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* or 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 levels. 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 AND BY THOSE APPLYING THE EQUIPMENT AND BY THOSE RESPONSIBLE FOR ITS 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.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute, Inc., require that action be taken to reaffirm, revise or withdraw this standard no later than five (5) years from the date of approval. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute, Inc., 25 West 43rd Street, Fourth Floor, New York, N.Y. 10036, (212) 642-4900.

EFFECTIVE DATE: An organization using this standard for product evaluation as a part of its certification program will normally establish the date by which all products certified by that organization should comply with this standard.

History Of The Development Of The Standard For Line Pressure Regulators

(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. In accordance with American National Standards Institute procedures for joint subcommittees, operating procedures were developed and subsequently approved by ANSI on April 1, 1993.

During its July 12-13, 1994 meeting, the Joint Automatic Gas Controls Subcommittee adopted the harmonized draft standard for line pressure regulators, Z21.80 • CSA 6.22, for distribution for review and comment. The harmonized draft standard for line pressure regulators was based on American National Standard for Gas Appliance Pressure Regulators, ANSI Z21.18-1993.

During its August 15, 1995 meeting, the Automatic Gas Controls Subcommittee (formerly the Automatic Gas Controls Subcommittee and the Thermostat and Gas Ignition Systems Subcommittee) reconsidered the proposed draft harmonized standard in light of comments received. The proposed harmonized standard was revised and recommended to Accredited Standards Committee Z21 and the Canadian Standards Steering Committee for approval.

The Z21 Committee approved the proposed harmonized standard by letter ballot dated January 31, 1996, for submittal to the American National Standards Institute, Inc. The Canadian Standards Steering Committee approved the proposed harmonized standard by letter ballot dated May 8, 1996, for submittal to the Interprovincial Gas Advisory Council.

The Interprovincial Gas Advisory Council (IGAC) approved the proposed harmonized standard by letter ballot dated June 28, 1996. Thus the first edition of the harmonized standard for line pressure regulators was approved as American National Standard by the American National Standards Institute, Inc. (ANSI) on March 13, 1997.

The second edition of the harmonized line pressure regulator standard was approved by the IGAC on August 25, 2002 and ANSI on November 14, 2002.

This the third edition of the line pressure regulator standard was approved by the IGAC on April 1, 2011and by ANSI on November 16, 2011.

Previous editions of the harmonized line pressure regulator standard, and addenda thereto approved by the IGAC and ANSI are as follows:

ANSI Z21.80-1997 • CSA 6.22-M97
ANSI Z21.80a-2000 • CSA 6.22a-M00
ANSI Z21.80b-2000 • CSA 6.22b-2000
ANSI Z21.80-2003 • CSA 6.22-2003
ANSI Z21.80a-2005 • CSA 6.22a-2005
ANSI Z21.80b-2010 • CSA 6.22b-2010

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

ANSI Z21.80-2011 • CSA 6.22-2011

Note: This edition of Z21.80 • CSA 6.22 incorporates changes to the 2003 edition of Z21.80 • CSA 2.22 and addenda thereto. Changes are denoted by a vertical line in the margin.

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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 I0* 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.

American National Standard/ CSA Standard For Line Pressure Regulators

Part I: Construction

1.1 Scope

1.1.1
This standard applies to line pressure regulators, (see Part V, Definitions), constructed entirely of new, unused parts and materials, hereinafter referred to as regulator(s), either individual or in combination with over pressure protection devices, hereinafter referred to as device(s), intended for application in gas piping systems between the service regulator, or LP-gas 2 psi service regulator, and the gas utilization equipment.

1.1.2
This standard applies to regulators for operation with natural, manufactured and mixed gases, liquefied petroleum gases, and LP gas-air mixtures.

1.1.3
This standard applies to regulators classified in accordance with their intended application with reference to inlet and outlet pressures as follows.

Rated	Maximum Outlet Pressure	
Inlet Pressure	Class I	Class II
2 psi (13.8 kPa)	$^1/_2$ psi (3.5 kPa)	—
5 psi (34.5 kPa)	$^1/_2$ psi (3.5 kPa)	2 psi (13.8 kPa)
10 psi (68.9 kPa)	$^1/_2$ psi (3.5 kPa)	2 psi (13.8 kPa)

1.1.4
This standard applies to regulators and devices intended for use in one or more of the following mounting classifications (also see 1.12-a):

Upright—single position on a horizontal axis with respect to the inlet connection, as specified by the manufacturer.

Horizontal—any position on a horizontal axis with respect to the inlet connection.

Vertical—any position on a vertical axis with respect to the inlet connection.

Limited Horizontal—any position from upright to 90 degrees (1.57 rad) from upright on a horizontal axis with respect to the inlet connection.

Multipoise—any position on a horizontal, vertical or intermediate axis with respect to the inlet connection.

The tests specified herein shall be conducted with the regulator mounted in the manufacturer's specified upright position, unless otherwise specified herein.