

AMERICAN NATIONAL STANDARD/CSA STANDARD
FOR
**RELIEF VALVES FOR
HOT WATER SUPPLY SYSTEMS**



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CANADIAN STANDARDS ASSOCIATION
178 Rexdale Boulevard,
Etobicoke, Ontario, Canada M9W 1R3



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Division of CSA
8501 East Pleasant Valley Rd.
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RELIEF VALVES
FOR HOT WATER SUPPLY SYSTEMS

First Edition - 1999

This Standard is based on
the Standards for

Relief Valves and Automatic
Gas Shutoff Devices for Hot Water
Supply Systems, ANSI Z21.22-1986
and Z21.22a-1990

and

CAN1-4.4-M80 (R1996), Temperature,
Pressure, Temperature and Pressure
Relief Valves and Vacuum
Relief Valves



October 16, 1998
American National Standards Institute, Inc.

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Prepared by

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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.

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PREFACE

This publication represents a basic standard for safe operation, substantial and durable construction, and acceptable performance of relief valves for hot water supply systems. It is the result of years of experience in the manufacture, testing, installation, maintenance, inspection and research on relief valves for hot water supply systems. 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 relief valves for hot water supply systems, 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 Chairman of Accredited Standards Committee Z21/83, 8501 East Pleasant Valley Road, Cleveland, Ohio 44131, or the Chairman of (Interim CSA) Gas Equipment Standards Steering Committee, 178 Rexdale Boulevard, Etobicoke, Ontario, Canada M9W 1R3.

Safe and satisfactory operation of relief valves for hot water supply systems 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*; the *Natural Gas Installation Code, CAN/CGA-B149.1*; the *Propane Installation Code, CAN/CGA-B149.2*.

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 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.

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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. In Canada the Standards Committee and the Interprovincial Gas Advisory Council normally stipulate an effective date for the standard.

HISTORY OF THE DEVELOPMENT OF THE STANDARD FOR RELIEF VALVES FOR HOT WATER SUPPLY SYSTEMS

(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. Joint subcommittees were established to facilitate the standards harmonization process between the United States and Canada.

At its October 24, 1995 meeting, the Z21/CGA Joint Subcommittee on Standards for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems appointed an ad hoc working group to prepare a draft bi-national standard for Relief Valves. By letter ballot dated May 16, 1997, the joint subcommittee approved sending the draft standard for public review and comment.

The first draft harmonized standard was based on current coverage from the American National Standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems, Z21.22-1986, and the Canadian

Gas Association Standard for Temperature, Pressure, Temperature and Pressure Relief Valves and Vacuum Relief Valves, CAN1-4.4-M80 (R1996).

Following reconsideration and modification of the proposed draft standard, in light of comments received, the joint relief valve subcommittee at its September 30, 1997 meeting, recommended the proposed draft standard to Accredited Standards Committee Z21/83 and the (Interim CSA) Standards Steering Committee for approval.

The proposed draft of the harmonized standard for automatic gas shutoff devices, as modified by the joint subcommittee, was approved by the Z21/83 Committee at its April 30, 1998 meeting, and by the CGA Standards Steering Committee by letter ballot dated October 27, 1998.

The first edition of the American National Standard/CSA Standard for Relief Valves for Hot Water Supply Systems was approved by the Canadian Interprovincial Gas Advisory Council on January 21, 1999, and by the American National Standards Institute, Inc., on October 16, 1998.

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

ANSI Z21.22-1999 • CSA 4.4-M99

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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. (*ASTM E380* or *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 RELIEF VALVES FOR
HOT WATER SUPPLY SYSTEMS**

**PART I
CONSTRUCTION**

1.1 SCOPE

- 1.1.1** This standard applies to the following types of relief valves constructed entirely of new, unused parts and materials:
- a.** Temperature relief valves and combination temperature and pressure relief valves for use on storage tanks of hot water supply systems without heater input limitation “T&P” valves, hereinafter called.
 - b.** Valves having only pressure relief features for use on storage tanks of hot water supply systems without heater input limitation.
 - c.** Vacuum relief valves.
- 1.1.2** A temperature relief valve, or a T&P valve shall operate when the temperature sensing element is at 210°F (99°C) or less. A device with a higher operating temperature is not acceptable under this Standard.
- 1.1.3** A vacuum relief valve shall be of a single-purpose type.
- 1.1.4** All references to psi throughout this standard are to be considered gage pressures unless otherwise specified.
- 1.1.5** Exhibit A contains provisions that are unique to Canada.

1.2 GENERAL

- 1.2.1** Sectional or assembly drawings, or blueprints of all relief valves submitted for test shall be supplied in triplicate by the manufacturer. These drawings and notes shall give full details of the operation of the device.
- 1.2.2** The primary thermal actuating element of a temperature relief valve shall be of the automatic reseating type.
- 1.2.3** The construction of a relief valve shall be such that, in the course of normal handling and installation, it will not become damaged to an extent that would prevent its continued compliance with this standard.
- 1.2.4** The construction of parts not covered by this standard shall be in accordance with reasonable concepts of safety, substantiality and durability.