ANSI Z21.81-2005 • CSA 6.25-2005
(reaffirmed 2020)

American National Standard/CSA Standard for Cylinder Connection Devices

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AMERICAN NATIONAL STANDARD
ANSI Z21.81-2005

CSA STANDARD
CSA 6.25-2005

Second Edition - 2005

This Standard is a revised edition
of the former Standard for

CYLINDER CONNECTION DEVICES
ANSI Z21.81-1997 • CSA 6.25-1997
ANSI Z21.81a-1998 • CSA 6.25a-1998
ANSI Z21.81b-2003 • CSA 6.25b-2003

APPROVED

November 19, 2004
American National Standards Institute, Inc.

February 1, 2005
Interprovincial Gas Advisory Council
Effective in Canada June 1, 2006

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Preface

This publication represents a basic standard for safe operation, substantial and durable construction, and acceptable performance of cylinder connection devices. It is the result of years of experience in the manufacture, testing, installation, maintenance, inspection and research on cylinder connection devices 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 cylinder connection devices, 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/Z83, 8501 East Pleasant Valley Road, Cleveland, Ohio 44131, or the Chairman of CSA Technical Committee, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada, L4W 5N6.

Safe and satisfactory operation of a cylinder connection device 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/NFPA54*; 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 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 CSA Technical Committee and the Interprovincial Gas Advisory Council normally stipulate an effective date for the standard.

History Of The Development Of The Standard For Cylinder Connection Devices

(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.

This standard is a direct result of the outdoor gas cooking appliance (gas grill) industry requiring a connection device which included several safety enhancements that were not available in devices used prior to 1993.

Prior to 1993 the ANSI Z21/83•(Interim CSA) Joint Subcommittee on Outdoor Cooking and Illuminating Appliances prepared several standards proposals for cylinder connection devices. These proposed requirements were intended for inclusion in the harmonized ANSI Z21.58•CGA 1.6 standard on Outdoor Cooking Gas Appliances. The Joint Subcommittee realized that there were several important issues that needed specific standard requirements, including interchangeability, non-proprietary connection to protect the end user, and test criteria to ensure that all requirements of the Z21.58•CGA 1.6 were satisfied. Permission was granted to the Joint Subcommittee to proceed with development with a separate standard for Cylinder Connection Devices.

In 1993 a task group was formed consisting of representatives of valve, cylinder, connector, and appliance manufacturers, all of whom were either members, or actively participated on the Joint Subcommittee. The first meeting of this ask group was held in May 1993.

This standard has evolved through four drafts, the fourth becoming this first edition. At the October 1996 meeting of the Joint Subcommittee, the subcommittee addressed the outstanding comments received on the third draft which was issued for public review and comment in August 1996. At the October 1996 meeting, the Joint Subcommittee agreed to forward the fourth draft, which included amendments made to the third draft, to the parent committees for their approval.

The first edition was approved by the (Interim CSA) Steering Committee on Gas Appliances and Related Accessories in March 1997, and ANSI Z21/83 Committee in April 1997. It was subsequently approved by the Interprovincial Gas Advisory Council in July 1997, and ANSI on October 28, 1997.

This the second edition of the harmonized Z21/CSA Standard for Cylinder Connection Devices was approved by the Canadian Interprovincial Gas Advisory Council on February 1, 2005 and by the American National Standards Institute, Inc. on November 19, 2004.

The previous edition of the Cylinder Connection Devices Standard, and addenda there to, approved by the Canadian Interprovincial Gas Advisory Council and American National Standards Institute, Inc. are as follows:

Z21.81-1997 • CSA 6.25-M97
Z21.81a-1998 • CSA 6.25a-M98
Z21.81b-2003 • CSA 6.25b-2003

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

ANSI Z21.81-2005 • CSA 6.25-2005.

NOTE: *This 2005 edition of Z21.81 • CSA 6.25 incorporates changes to the 1997 edition and addenda there to. Changes, other than editorial, are denoted by a vertical line in the margin.*

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Foreword

This Standard contains basic requirements for products. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

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. (IEEE/ASTM SI 10 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.

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American National Standard/ CSA Standard For Cylinder Connection Devices

Part I: Construction

1.1 Scope

1.1.1 This Standard covers CGA 791 (Type I) and CGA 810 (Type II) cylinder connection devices, as defined in Part IV, Definitions, intended to connect the cylinder valve on portable LP-Gas containers to the inlet of the regulator on outdoor cooking gas appliances. These cylinder connection devices are intended for vapour withdrawal service only.

1.1.2 The cylinder connection devices covered by this standard are used in applications covered by *Standard for Outdoor Cooking Gas Appliances, ANSI Z21.58 • CSA 1.6.*

1.1.3 This Standard does not cover connection devices for engine fuel applications.

1.1.4 A product that contains features, characteristics, components, materials, or systems new or different from those in use when the standard was developed, and that involves a risk of fire, electric shock, or injury to persons, shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the level of safety for the user of the product as originally anticipated by the intent of this standard.

1.1.5 Exhibit A, Items Unique to Canada, contains provisions that are unique to Canada.

1.2 General

1.2.1 Assembly

a. A cylinder connection device shall include all the components necessary for its normal function and use, and shall be furnished in not more than two parts or assemblies: Cylinder portion and Appliance portion.

b. Pipe threads shall be in accordance with the *Standard for Pipe Threads General Purpose (Inch), ANSI/ASME B1.20.1*.

c. Cylinder connection devices shall incorporate means for obtaining a leak-tight connection, without the use of tools, before the flow of gas is permitted.

1. The cylinder portion of a cylinder connection device shall incorporate means for automatic shut off from the gas supply side when the cylinder connection device is disconnected.