

AMERICAN NATIONAL STANDARD/CSA STANDARD
FOR
**MANUALLY OPERATED ELECTRIC
GAS IGNITION SYSTEMS
AND COMPONENTS**



AMERICAN NATIONAL STANDARD
ANSI Z21.92-2001

CSA STANDARD
CSA 6.29-2001

First Edition - 2001

This Standard is a New Standard

for

MANUALLY OPERATED ELECTRIC GAS IGNITION SYSTEMS
AND COMPONENTS



August 27, 2001
American National Standards Institute, Inc.

APPROVED

IGAC

July 25, 2001
Interprovincial Gas Advisory Council
Effective in Canada August 1, 2003

Secretariats

CSA America, Inc.
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Published - September 2001

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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 manually operated electric gas ignition systems and components. It is the result of years of experience in the manufacture, testing, installation, maintenance, inspection and research on manually operated electric gas ignition systems and components 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 manually operated electric gas ignition systems and components, 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 the CSA Technical Committee on Gas Appliances and Related Accessories, 178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3.

Safe and satisfactory operation of a manually operated electric gas ignition systems and components 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 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 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 Technical Committee and the Interprovincial Gas Advisory Council normally stipulate an effective date for the standard.

HISTORY OF THE DEVELOPMENT OF THE STANDARD FOR MANUALLY OPERATED ELECTRIC GAS IGNITION SYSTEMS AND COMPONENTS

(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 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.

At its August 11, 1999 meeting the Joint Automatic Gas Controls Subcommittee adopted Z21.92-CSA 6.29 for distribution for review and comment as a harmonized standard. The first draft harmonized manually operated electric gas ignition systems and components standard was distributed for review and comment during June 2000.

Following reconsideration and modification of the proposed harmonized draft standard for manually operated gas ignition systems and components, the joint automatic gas controls subcommittee at its September 27-28, 2000 meeting, recommended the proposed standard to the Z21/83 Committee and the CSA Technical Committee on Gas Appliances and Related Equipment for approval.

The proposed harmonized standard for manually operated electric gas ignition systems and components was approved by the Z21/83 Committee by letter ballot dated June 21, 2001. The CSA Technical Committee approved the proposed harmonized standard for manually operated electric gas ignition systems and components by letter ballots dated April 16, 2001 and June 26, 2001.

The first edition of the harmonized Z21/CSA Standard for Manually Operated Electric Gas Ignition Systems and Components was approved by the Canadian Interprovincial Gas Advisory Council on July 25, 2001 and by the American National Standards Institute, Inc., on August 27, 2001.

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

ANSI Z21.92-2001 · CSA 6.29-2001

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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. Except as noted if in Exhibit A, 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
MANUALLY OPERATED ELECTRIC GAS IGNITION SYSTEMS
AND COMPONENTS**

PART I

CONSTRUCTION

1.1 SCOPE

1.1.1 This standard applies to newly produced manually-operated electric gas ignition systems (see Part IV, Definitions), hereinafter referred to as ignition systems, and ignition system components constructed entirely of new, unused parts and materials, which are intended to form an integral part of a gas appliance. An ignition system shall ignite gas at the main or pilot burner using either spark or hot surface ignition.

a. A spark ignition system shall:

- 1.** Generate high voltage electric energy (spark generator);
- 2.** Transmit the energy (high tension leads); and
- 3.** Utilize the energy to produce arcs (spark electrode).

Components of spark ignition systems submitted for examination under this standard shall perform one or more of the above functions; however, a separate high tension lead(s) is not covered under the scope of this standard.

b. A hot surface ignition system shall:

- 1.** Control energy to an igniter; and
- 2.** Utilize the energy to heat an igniter.

A component of a hot surface ignition system submitted for examination under this standard shall perform one of the above functions.

1.1.2 This standard applies to ignition systems and components for use with one or more of the following gases:

- a.** Natural;
- b.** Manufactured;

- c. Mixed;
- d. Liquefied Petroleum; and
- e. LP gas-air mixtures.

- 1.1.3 Compliance of an ignition system or component with this standard does not imply that either is acceptable for use on gas appliances without supplemental tests with the device(s) applied to the particular appliance design.
- 1.1.4 Each component of an ignition system shall be capable of operation throughout a temperature range of 32°F to 125°F (0°C to 52°C). The manufacturer is allowed to specify temperatures below 32°F (0°C) and above 125°F (52°C).
- 1.1.5 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.
- 1.1.6 Exhibit C contains a list of standards referenced in this standard, and sources from which these reference standards may be obtained.

1.2 GENERAL

- 1.2.1 Construction of an ignition system or component, whether specifically covered by this standard or not, shall be in accordance with reasonable concepts of safety, substantially and durability.

All specifications as to construction set forth herein may be satisfied by the construction actually prescribed or such other construction as will provide at least equivalent performance.
- 1.2.2 Construction shall be such that those parts generally recognized as removable for servicing cannot be assembled incorrectly in a manner that will result in a risk of electric shock.
- 1.2.3 Data to be provided by the manufacturer (as applicable):
 - a. Minimum and maximum spark gaps.
 - b. Minimum and maximum high tension lead lengths. (see 2.1.3.)
 - c. Maximum number of spark electrodes or igniters per each output terminal.
 - d. The minimum and the maximum recommended ambient temperatures for an ignition system or component.
 - e. The maximum recommended operating temperatures and points of measurement thereof, for the individual components of the system.
 - f. Specification of type of burner to be ignited.
 - g. Whether the ignition source is intended for direct exposure to flame envelopment.

- h. The fuel gases for which intended.
- i. Rated input voltage(V), frequency(Hz) and current(A).
- j. Battery voltage(V), type and size.
- k. Endurance cycle rate for hot surface ignition system or component (see 2.5.2).
- l. Type of spark generation, i.e. repetitive, reignition (flame rectification) etc. and the operating sequence.
- m. Documentation relative to the suitability of electrical insulating materials. (See 1.6, Electrical.)

1.2.4 A spark ignition system or component shall comply with the provisions of this standard throughout the spark gap range specified by the manufacturer.

1.2.5 If a complete system (see 1.1.1) is not submitted for examination under this standard, the manufacturer shall provide additional components necessary to complete the system for testing purposes only.

1.2.6 The leads or terminals of an individual component, that are provided for making electrical connections and which are intended to be disconnected in order to replace or service the control, shall be identified by a number(s), letter(s), symbol(s) or combination thereof, in a color which contrasts with the background. This provision does not apply when:

- 1. The individual component incorporates means which will physically prevent miswiring; or
- 2. The individual component incorporates only two terminals or leads, the interchange of which does not change the operation of the component.

1.3 THREADED FASTENERS

Bolts, nuts, screws and other threaded parts used in covers, housings casings and external mounting brackets shall have threads conforming to the Standard for *Unified Inch Screw Threads (UN and UNR Thread Form)*, ANSI B1.1 or the Standard for *Metric Screw Threads - M Profile*, ANSI/ASME B1.13M.

1.4 ADJUSTMENTS

Suitable means for securing all adjustments shall be provided. This may be accomplished by the design of the component or by the use of a separate means.

1.5 MATERIALS

1.5.1 Frames and mounting brackets of devices intended to be exposed to combustion chamber temperatures shall be constructed of material having a melting point of not less than 1450°F (788°C).