CSA/ANSI Z23551-4:22
(ISO 23551-4:2018, MOD)
National Standard of Canada
American National Standard

CSA/ANSI Z23551-4:22
Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 4: Valve-proving systems for automatic shut-off valves

(ISO 23551-4:2018, MOD)

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CSA/ANSI Z23551-4:22
June 2022

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National Standard of Canada
American National Standard

CSA/ANSI Z23551-4:22

Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 4: Valve-proving systems for automatic shut-off valves

(ISO 23551-4:2018, MOD)

Prepared by
International Organization for Standardization

Reviewed by

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Interprovincial Gas Advisory Council

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CSA Preface

This is the first edition of CSA/ANSI Z23551-4, *Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 4: Valve-proving systems for automatic shut-off valves*, which is an adoption, with North American deviations, of the identically titled ISO (International Organization for Standardization) Standard 23551-4 (second edition, 2018-04).

For brevity, this Standard will be referred to as "CSA/ANSI Z23551-4" throughout.

This Standard is intended to be used in conjunction with CSA/ANSI Z23550, *Safety and control devices for gas and/or oil burners and appliances – General requirements* (adopted ISO 23550:2018, with North American deviations). This Standard supplements or modifies the corresponding clauses in CSA/ANSI Z23550 to establish the requirements for valve-proving systems (VPS).

This Standard represents a modified adoption of an ISO Standard as defined by the ANSI policy on adoption of ISO Standards. This means that this Standard is modified in relation to the ISO Standard where technical deviations are permitted, provided that they are clearly identified and described. This Standard maintains the format and structure of the ISO Standard being adopted.

Regional requirements for Canada and the USA can be found in Annex G.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was reviewed for North American adoption by the Z21/CSA Joint Subcommittee on Standards for Automatic Gas Controls, under the jurisdiction of the CSA Z21/83 Technical Committee on Performance and Installation of Gas-Burning Appliances and Related Accessories, the CSA Technical Committee on Gas Appliances and Related Accessories, and the CSA Strategic Steering Committee on Fuels and Appliances. It has been formally approved by the CSA Technical Committees and the Interprovincial/Territorial Gas Advisory Council.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group. This Standard has been approved by the American National Standards Institute (ANSI) as an American National Standard.

Interpretations: The Strategic Steering Committee on Fuels and Appliances has provided the following direction for the interpretation of standards under its jurisdiction: "The literal text shall be used in judging compliance of products with the safety requirements of this Standard. When the literal text cannot be applied to the product, such as for new materials or construction, and when a relevant CSA committee interpretation has not already been published, CSA Group's procedures for interpretation shall be followed to determine the intended safety principle."

Inquiries regarding this American National Standard/National Standard of Canada should be addressed to
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a) *Standard designation (number);*
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c) *wording of the proposed change; and*
d) *rationale for the change.*

North American deviations

The following deviations are intended to meet local product requirements and to align with requirements for gas and oil-burning appliances of relevant North American regulators.

International Standard ISO 23551-4:2018 (second edition) forms the basis for CSA/ANSI Z23551-4, which contains the following deviations in addition to those shown in CSA/ANSI Z23550.

[Replace all references to "ISO 23550" with "CSA/ANSI Z23550"]

1 Scope

[Replace the reference to "ISO 23551-1" with "CSA/ANSI Z21.21/CSA 6.5 or UL 429"]

[Delete the third paragraph]

The maximum working pressure is unlimited.

2 Normative references

[Add the following]

In this Standard, any reference to International Standards shall be replaced by the relevant National Standard of Canada or American National Standard.

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CSA Group

CSA/ANSI Z21.21/CSA 6.5
Automatic valves for gas appliances

The following National Standards of Canada, published by CSA Group, are adoptions of IEC and ISO Standards. The requirements of these CSA Group Standards shall take precedence over the International Standards on which they are based. Any reference within CSA/ANSI Z23551-4 to the International Standard shall be replaced by a reference to the equivalent Canadian Standard.

CSA E60730-1:15 (R2020)
Automatic electrical controls — Part 1: General requirements

CAN/CSA-IEC 61000-4-5
Electromagnetic Compatibility (EMC) — Part 4-5: Testing and Measurement Techniques — Surge Immunity Test

CSA/ANSI Z23550
Safety and control devices for gas and/or oil burners and appliances — General requirements

UL (Underwriters Laboratories Inc.)
429
Electrically Operated Valves

60730-1:2013
Automatic Electrical Controls — Part 1: General Requirements

7 Performance

7.1 General

[Delete the word "International" from the second sentence]

7.7 Endurance

7.7.2.2 Long-term performance test

[Replace the word "control" with "VPS programming unit" in the first and second paragraphs]

[Replace "250 000 cycles" with "100 000 cycles" in the first paragraph]

Annex G (normative)
Specific regional requirements in Canada and USA

G.2.4 Addition to 7.7.2.1

[Delete this Clause]

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INTERNATIONAL STANDARD

ISO 23551-4

Second edition
2018-04

Safety and control devices for gas burners and gas-burning appliances — Particular requirements —

Part 4: Valve-proving systems for automatic shut-off valves

Dispositifs de contrôle et de sécurité pour les brûleurs à gaz et pour les appareils utilisant le gaz — Exigences particulières —

Partie 4: Systèmes de contrôle d'étanchéité pour robinets automatiques de sectionnement

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Contents

Page

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 161, *Controls and protective devices for gas and/or oil.*

This second edition cancels and replaces the first edition (ISO 23551-4:2005), which has been technically revised. The main changes compared to the previous edition are as follows:

— alignment to the structure of ISO 23550:2018;

— inclusion of updated references to IEC 60730-1:2013+AMD1:2015;

— inclusion of requirements for “faults during lockout or safety shutdown”;

— inclusion of software and hardware design requirements;

— inclusion of requirements for reset devices;

— updated EMC immunity requirements.

Introduction

This document is designed to be used in combination with ISO 23550. Together with ISO 23550, this document establishes the full requirements for valve-proving systems for automatic shut-off valves. Where needed, this document adapts ISO 23550 by stating in the corresponding clause:

— "with the following modification";

— "with the following addition";

— "is replaced by the following"; or

— "is not applicable".

In order to identify specific requirements that are particular to this document, that are not already covered by ISO 23550, this document may contain clauses or subclauses that are additional to the structure of ISO 23550. These subclauses are indicated by the introductory sentence: "Subclause (or Annex) specific to this document.".

To ensure global relevance of this document, the differing requirements resulting from practical experience and installation practices in various regions of the world have been taken into account. The variations in basic infrastructure associated with gas and/or oil controls and appliances have also been recognized, some of which are addressed in Annexes F, G and H. This document intends to provide a basic framework of requirements that recognize these differences.

Safety and control devices for gas burners and gas-burning appliances — Particular requirements —

Part 4: Valve-proving systems for automatic shut-off valves

1 Scope

This document specifies safety, constructional and performance requirements of valve-proving systems (VPS), intended for use with gas burners and gas-burning appliances. It also describes the test procedures for checking compliance with these requirements and provides information necessary for the purchaser and user.

This document is applicable to all types of VPS which are used for the automatic detection of leakage in a gas burner section having at least two valves designed in accordance with ISO 23551-1 and which give a signal if the leakage of one of the valves exceeds the detection limit.

This document is applicable to VPS with a maximum working pressure up to and including 500 kPa for use in systems using fuel gases.

This document is not applicable to VPSs for use in explosive atmospheres.

NOTE Provisions for production control are not part of the ISO 23551 series.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 23550, *Safety and control devices for gas burners and gas-burning appliances — General requirements*

IEC 60730-1:2013+AMD1:2015, *Automatic electrical controls — Part 1: General requirements*

IEC 61000-4-5, *Electromagnetic compatibility (EMC) — Part 4-5: Testing and measurement techniques — Surge immunity test*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 23550 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
valve proving system
VPS
system to check the closure of automatic shut-off valves by detecting leakage, that often consists of a programming unit, a measuring device, valves and other functional assemblies