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

**Part 6:
Thermoelectric flame supervision
controls**

iTeh STANDARD PREVIEW

(standards.iteh.ai)
*Dispositifs de commande et de sécurité pour brûleurs à gaz et
appareils à gaz — Exigences particulières —*

Partie 6: Équipements thermoélectriques de surveillance de flamme

<https://standards.iteh.ai/catalog/standards/sist/50226d6e-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014>



iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 23551-6:2014](https://standards.iteh.ai/catalog/standards/sist/50226d6e-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014)

<https://standards.iteh.ai/catalog/standards/sist/50226d6e-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2014

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Classification	2
4.1 Classes of controls.....	2
4.2 Groups of controls.....	2
5 Test conditions	2
6 Construction	2
6.1 General.....	2
6.2 Construction requirements.....	3
6.3 Materials.....	3
6.4 Gas connections.....	4
7 Performance	5
7.1 General.....	5
7.2 Leak-tightness.....	5
7.3 Torsion and bending.....	6
7.4 Rated flow rate.....	6
7.5 Durability.....	6
7.6 Functional requirements.....	6
7.7 Endurance.....	8
8 EMC/electrical requirements	9
9 Marking, installation, and operating instructions	9
9.1 Marking.....	9
9.2 Installation and operating instructions.....	9
9.3 Warning notice.....	10
Annex A (informative) Leak-tightness test — Volumetric method	11
Annex B (informative) Leak-tightness test — Pressure-loss method	12
Annex C (normative) Conversion of pressure loss into leakage rate	13
Annex D (normative) Test for immunity to power-frequency magnetic fields	14
Annex E (normative) Specific regional requirements in European countries	15
Annex F (normative) Specific regional requirements in Canada and USA	16
Annex G (normative) Specific regional requirements in Japan	17
Annex H (informative) Types of flame supervision controls	18

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 161, *Control and protective devices for gas and/or oil burners and appliances*.

[ISO 23551-6:2014](https://standards.iteh.ai/catalog/standards/sist/50226d6e-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014)

<https://standards.iteh.ai/catalog/standards/sist/50226d6e-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014>

Introduction

This part of ISO 23551 is designed to be used in combination with ISO 23550. This part, together with ISO 23550, establishes the full requirements as they apply to the product covered by this International Standard. This part adapts ISO 23550, where needed, by stating “with the following modification”, “with the following addition”, “is replaced by the following”, or “is not applicable”, in the corresponding clause. In order to identify specific requirements that are particular to this part, that are not already covered by ISO 23550, this International Standard might contain clauses or subclauses that are additional to the structure of ISO 23550. These clauses are numbered starting from 101 or, in the case of an Annex, are designated AA, BB, CC etc.

In an attempt to develop a fully International Standard, it has been necessary to take into consideration the differing requirements resulting from practical experience and installation practices in various regions of the world and to recognize the variation in basic infrastructure associated with gas and/or oil controls and appliances, some of which are addressed in [Annexes E, F, and G](#). This International Standard intends to provide a basic framework of requirements that recognize these differences.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 23551-6:2014](#)

<https://standards.iteh.ai/catalog/standards/sist/50226d6e-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 23551-6:2014](#)

<https://standards.iteh.ai/catalog/standards/sist/50226d6e-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014>

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

Part 6: Thermoelectric flame supervision controls

1 Scope

This part of ISO 23551 specifies safety, constructional, and performance requirements for thermoelectric flame supervision controls, energized by a thermocouple, intended for use with gas burners and gas-burning appliances, hereafter referred to as “controls”.

This part of ISO 23551 applies to thermoelectric flame supervision controls for gas burners and gas-burning appliances of nominal connection size up to, and including DN 50, that can be used and tested independently of these appliances.

These thermoelectric flame supervision controls are suitable for fuel gases, such as natural gas, manufactured gas, or liquefied petroleum gas (LPG) at inlet pressures up to and including 50 kPa.

This International Standard covers type testing only.

This International Standard is not applicable to

- a) the thermocouple and
- b) controls which use auxiliary energy (e.g. electrical energy supplied externally).

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 23550:2011, *Safety and control devices for gas burners and gas-burning appliances — General requirements*

3 Terms and definitions

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

3.101

thermocouple

thermoelectric flame sensing element that responds to the temperature of the supervised flame, resulting in an electromotive force (e.m.f.)

3.102

thermoelectric flame supervision control

control which, in response to the e.m.f. produced by the thermocouple, maintains the gas way to the main burner; or the main burner and the pilot burner open and which shuts off the gas way after extinction of the supervised flame

Note 1 to entry: For example, see Figure AA.1.

3.103

ignition interlock

part which prevents the igniter from operating as long as the main gas way is open

3.104

re-start interlock

mechanism which prevents the re-opening of the gas way to the main burner or to the main burner and the pilot burner until the armature plate has separated from the magnetic element

Note 1 to entry: For further reference, see Figure AA.1.

3.105

sealing force

force acting on the closure member when the closure member is in the closed position, independent of any force provided by fuel gas pressure

3.106

closed position

position of the closure member(s) in the absence of the thermoelectric energy

4 Classification

4.1 Classes of controls

ISO 23550:2011, 4.1 is replaced by the following:

STANDARD PREVIEW
(standards.iteh.ai)

Controls are classified according to the number of operations:

- 5 000 operations (e.g. central heating);
- 6 000 operations; <https://standards.iteh.ai/catalog/standards/sist/50226d6e-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014>
- 10 000 operations (e.g. space heaters);
- 40 000 operations (e.g. domestic cooking).

NOTE Specific regional requirements are given in [Annexes F](#) and [G](#).

4.2 Groups of controls

Shall be according to ISO 23550:2011, 4.2.

NOTE Specific regional requirements are given in [Annexes F](#) and [G](#).

5 Test conditions

Shall be according to ISO 23550:2011, Clause 5.

6 Construction

6.1 General

Shall be according to ISO 23550:2011, 6.1, with the following addition:

- Controls shall also be designed, so that during ignition, either the gas way to the main burner is open, if there is no pilot burner; or the gas way to the main burner is closed and that to the pilot burner is open.
- Controls shall also be designed so that the sealing force is not decreased by the gas inlet pressure.

6.2 Construction requirements

6.2.1 Appearance

Shall be according to ISO 23550:2011, 6.2.1.

6.2.2 Holes

Shall be according to ISO 23550:2011, 6.2.2.

6.2.3 Breather holes

ISO 23550:2011, 6.2.3 is not applicable.

6.2.4 Screwed fastenings

Shall be according to ISO 23550:2011, 6.2.4.

6.2.5 Jointing

Shall be according to ISO 23550:2011, 6.2.5.

6.2.6 Moving parts

Shall be according to ISO 23550:2011, 6.2.6.

6.2.7 Sealing caps

Shall be according to ISO 23550:2011, 6.2.7.

6.2.8 Dismantling and reassembling for servicing and/or adjustment

Shall be according to ISO 23550:2011, 6.2.8.

6.2.9 Auxiliary channels

Shall be according to ISO 23550:2011, 6.2.9.

6.3 Materials

6.3.1 General material requirements

Shall be according to ISO 23550:2011, 6.3.1.

6.3.2 Housing

6.3.2.1 Housing design

Shall be according to ISO 23550:2011, 6.3.2.1.

6.3.2.2 Test for leakage of housing after removal of non-metallic parts

Shall be according to ISO 23550:2011, 6.3.2.2 with the following addition:

The test shall be performed in accordance with [7.2.2.2](#).

ISO 23551-6:2014(E)

6.3.3 Springs

Shall be according to ISO 23550:2011, 6.3.3.

6.3.4 Resistance to corrosion and surface protection

Shall be according to ISO 23550:2011, 6.3.4.

6.3.5 Impregnation

Shall be according to ISO 23550:2011, 6.3.5.

6.3.6 Seals for glands for moving parts

Shall be according to ISO 23550:2011, 6.3.6.

6.4 Gas connections

6.4.1 Making connections

Shall be according to ISO 23550:2011, 6.4.1.

6.4.2 Connection sizes

Shall be according to ISO 23550:2011, 6.4.2.

6.4.3 Threads

Shall be according to ISO 23550:2011, 6.4.3. [ISO 23551-6:2014
https://standards.iteh.ai/catalog/standards/sist/50226d6e-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014](https://standards.iteh.ai/catalog/standards/sist/50226d6e-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014)

6.4.4 Union joints

Shall be according to ISO 23550:2011, 6.4.4.

6.4.5 Flanges

Shall be according to ISO 23550:2011, 6.4.5.

6.4.6 Compression fittings

Shall be according to ISO 23550:2011, 6.4.6.

6.4.7 Nipples for pressure tests

Shall be according to ISO 23550:2011, 6.4.7.

6.4.8 Strainers

Shall be according to ISO 23550:2011, 6.4.8 with the following addition:

Strainers fitted to controls of DN 25 and above shall be accessible for cleaning or replacement without the need to remove the control body by dismantling threaded or welded pipe work.

7 Performance

7.1 General

Shall be according to ISO 23550:2011, 7.1.

7.2 Leak-tightness

7.2.1 Criteria

ISO 23550:2011, 7.2.1 is replaced by the following:

Controls shall be leak-tight in accordance with the leakage rates given in [Table 1](#).

Table 1 — Maximum leakage rates

Gas connection nominal inlet size DN	Maximum leakage rates of air cm ³ /h			
	Internal leak-tightness		External leak-tightness	
	Closed (de-energized) position	Ignition position	Operating and closed (de-energized) position	Ignition position
DN < 10	20	5 000	20	170
10 ≤ DN ≤ 25	40		40	190
25 < DN ≤ 50	60		60	210

Closure parts shall remain leak-tight after dismantling and reassembly.

NOTE Specific regional requirements are given in [Annexes F and G](#).
<https://standards.iteh.ai/catalog/standards/sist/50220dc6-8710-491f-96de-10ea36c90f2b/iso-23551-6-2014>

7.2.2 Test for leak-tightness

7.2.2.1 General

Shall be according to ISO 23550:2011, 7.2.2.1.

7.2.2.2 External leak-tightness

Shall be according to ISO 23550:2011, 7.2.2.2 with the following addition:

Pressurize the inlet and outlet(s) of the control to the test pressures given in [7.2.2.1](#). Before the test, closure parts which can be dismantled in accordance with [6.2.8](#) shall be dismantled and reassembled five times to the manufacturer's instructions and the leakage rate for each of the mentioned conditions below is measured.

- The control shall be operated such that all closure members in the control are in the open position. Any of the electrical sources can be used during the test. The inlet and outlet(s) of the control shall then be pressurized to the test pressure according to [7.2.2.1](#).
- The test of a) shall then be carried out with the electrical source removed so that the main and pilot gas ways (for protected pilots) in the control are closed.

The test of a) shall then be repeated with any spindle moved during ignition and held in the ignition position.

7.2.2.3 Internal leak-tightness

ISO 23550:2011, 7.2.2.3 is replaced by the following: