

DRAFT INTERNATIONAL STANDARD

ISO/DIS 23551-10

ISO/TC 161

Secretariat: DIN

Voting begins on:

Voting terminates on:

2015-10-22

2016-01-22

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

Part 10: Vent valves

Titre manque

ICS:

iTeh STANDARD PREVIEW
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<https://standards.iteh.ai/catalog/standards/sist/868e512a-c1e3-4c6f-9fba-0dea3fa22d02/iso-23551-10-2016>

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Reference number
ISO/DIS 23551-10:2015(E)

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Contents

Page

1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Classification	3
4.1	Classes of controls	3
4.2	Groups of controls	3
5	Test conditions	3
6	Construction	3
6.1	General	3
6.2	Construction requirements	3
6.2.1	Appearance	3
6.2.1.1	Design	3
6.2.2	Holes	3
6.2.3	Breather holes	3
6.2.4	Screwed fastenings	3
6.2.5	Jointing	3
6.2.6	Moving parts	3
6.2.7	Sealing caps	4
6.2.8	Dismantling and reassembling for servicing and/or adjustment	4
6.2.9	Auxiliary channels	4
6.2.101	Open position indicator switch	4
6.2.102	Controls assembled to a valve	4
6.3	Materials	4
6.3.1	General material requirements	4
6.3.2	Housing	4
6.3.3	Springs	4
6.3.4	Resistance to corrosion and surface protection	4
6.3.5	Impregnation	4
6.3.6	Seals for glands for moving parts	5
6.3.101	Closure member	5
6.4	Gas connections	5
6.4.1	Making connections	5
6.4.2	Connection sizes	5
6.4.3	Threads	5
6.4.4	Union joints	5
6.4.5	Flanges	5
6.4.6	Compression fittings	5
6.4.7	Nipples for pressure tests	5
6.4.8	Strainers	5
6.101	Pneumatic and hydraulic actuating mechanisms	5
7	Performance	5
7.1	General	5
7.2	Leak-tightness	6
7.2.1	Criteria	6
7.2.2	Test for leak-tightness	6
7.3	Torsion and bending	6
7.4	Rated flow rate	6
7.5	Durability	6
7.6	Functional requirements	6

7.6.1	Requirement	6
7.6.2	Test of opening function	7
7.7	Endurance	7
7.7.1	Requirement	7
7.7.2	Endurance test	7
7.7.3	Endurance test for open position indicator switch	8
7.101	Opening force	8
7.101.1	Requirement	8
7.101.2	Test of opening force	8
7.102	Opening time	8
7.102.1	Requirement	8
7.102.2	Test of opening time	8
7.103	Delay time and closing time	9
7.103.1	Requirement	9
7.103.2	Test of delay time and closing time	9
7.104	Open position indicator switch	9
7.104.1	Requirement	9
7.104.2	Test of open position indicator switch	9
8	EMC/Electrical requirements	9
9	Marking, installation and operating instructions	9
9.1	Marking	9
9.2	Installation and operating instructions	10
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
F.1	General	16
F.2	Additional requirements and modifications	16
F.7.2.2	Test for leak-tightness	16
Annex G (normative)	Specific regional requirements in Japan	17
Tables		
Table 1	— Operating cycles	8

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 23551-10 was prepared by Technical Committee ISO/TC 161, *Control and protective devices for gas and oil burners and gas and oil burning appliances*.

ISO 23551 consists of the following parts, under the general title *Safety and control devices for gas burners and gas-burning appliances — Particular requirements*:

- *Part 1: Automatic and semi-automatic valves*
- *Part 2: Pressure regulators*
- *Part 4: Valve-proving systems for automatic shut-off valves*
- *Part 5: Manual gas valves*
- *Part 6: Thermoelectric flame supervision controls*
- *Part 7: Pressure sensing devices*
- *Part 9: Mechanical gas thermostats*
- *Part 10: Vent valves*

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 document may contain Clauses or Sub-clauses 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 full 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.

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Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 10: Vent Valves

1 Scope

This International Standard specifies the safety, design, construction and performance requirements and testing for automatic vent valves (hereafter referred to as "valves") for use with gas burners, gas appliances burning one or more gaseous fuels.

This International Standard is applicable to valves with declared maximum inlet pressures up to and including 500 kPa (5 bar) of nominal connection sizes up to and including DN 100 (4").

This International Standard is applicable to

- normally open valves;
- electrically operated valves and to valves actuated by fluids where the control valves for these fluids are actuated electrically, but not to any external devices for switching the control signal or actuating energy;
- valves fitted with open position indicator switches.

This International Standard is not applicable to

- valves for burners and appliances using renewables and/or waste gases (i. e. gases having corrosive characteristics), and

NOTE 1 In case valves are in contact with renewables and, or waste gases, it is recommend to use this standard only if explicit information is provided and relevant test methods and requirements are specified.

- valves for appliances intended to be installed in the open air and exposed to the outdoor environment, and
- valves that are connected directly to mains pipe-work or to a container that maintains a standard distribution pressure, and
- valves suitable with oil.

This International Standard is applicable to type testing only.

NOTE 2 Provisions for final product inspection and testing by the manufacturer are not specified.

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 purpose of this document, the terms and definitions given in ISO 23550:2011 and the following apply.

3.101

automatic vent valve

device which closes when energised and opens automatically when de-energised

3.102

actuating mechanism

part of the valve which moves the closure member

3.103

open position indicator switch

device fitted to a valve which indicates when the closure member is in the open position

3.104

actuating energy

required energy for the actuating mechanism to move the closure member to the closed position

Note 1 to entry: The actuating energy can have an external source (electrical, pneumatic or hydraulic) and can be transformed inside the valve.

3.105

opening force

force required to open the valve, independent of any force provided by fuel gas pressure

3.106

frictional force

largest force required to move the actuating mechanism and the closure member from the closed position to the open position with the opener spring removed, independent of any force provided by fuel gas pressure

3.107

actuating pressure

hydraulic or pneumatic pressure supplied to the actuating mechanism of the valve

3.108

opening time

time interval between de-energising the valve and the closure member attaining the open position

3.109

closing time

time interval between energising the valve and the closure member attaining the closed position

3.110

delay time

time interval between energising the valve and the start of the closure member moving to the closed position

3.111

control valve

device which controls the fluid (e.g. compressed air) supplied to the actuating mechanism

3.112

rated voltage

voltage as stated in the installation and operating instructions at which the valve may be operated

3.113**rated current**

current as stated in the installation and operating instructions at which the valve may be operated

4 Classification**4.1 Classes of controls**

ISO 23550:2011, 4.1 is not applicable.

4.2 Groups of controls

Shall be according to ISO 23550:2011, 4.2.

5 Test conditions

Shall be according to ISO 23550:2011, 5.

6 Construction**6.1 General**

Shall be according to ISO 23550:2011, 6.1.

6.2 Construction requirements**6.2.1 Appearance**

Shall be according to ISO 23550:2011, 6.2.1.

6.2.1.1 Design

There shall be no exposed shafts or operating levers which could adversely affect the ability of valves to open.

6.2.2 Holes

Shall be according to ISO 23550:2011, 6.2.2.

6.2.3 Breather holes

Shall be according to ISO 23550:2011, 6.2.3.

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.

6.2.101 Open position indicator switch

Open position indicator switches, where fitted, shall not impair the correct operation of valves. Adjusters shall be sealed to indicate interference. Any drift of the switch and actuating mechanism from its setting shall not impair correct valve operation.

6.2.102 Controls assembled to a valve

Other controls assembled to a valve shall not interfere with its opening function.

6.3 Materials

6.3.1 General material requirements

Shall be according to ISO 23550:2011, 6.3.1.

6.3.2 Housing

Shall be according to ISO 23550:2011, 6.3.2.

6.3.3 Springs

ISO 23550:2011, 6.3.3 is replaced by the following:

Opening force shall be provided by spring action.

Springs providing the opening force for any closure member of the valve shall be calculated and designed in such a way as to withstand oscillating loads and at least 10^6 operations.

If a satisfactory calculation cannot be submitted to the test laboratory, the springs shall be subjected to an endurance test of 2×10^6 operations under normal operating conditions.

Springs with a diameter up to and including 2,5 mm shall be made from corrosion-resistant materials.

Springs with wire diameter above 2,5 mm shall be made either from corrosion-resistant materials or shall be protected against corrosion.

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.