

ISO 23551-1:2024-11 (E)

Safety and control devices for gas burners and gas-burning appliances - Particular requirements - Part 1: Automatic and semi-automatic shut-off valves

Contents		Page
Foreword		vi
Introduction		viii
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
3.1	Terms related to valves	2
3.2	General terms	3
4	Classification	5
4.1	Classes of control	5
4.1.1	Classification based on sealing force	5
4.1.2	Classification based on pressure surge	5
4.1.3	Classification with neither sealing force nor pressure surge	5
4.1.4	Classification of flow control valves for general purpose	5
4.2	Groups of controls	6
4.3	Types of DC supplied controls	6
4.4	Classes of control functions	6
5	Test conditions and tolerances	6
6	Construction	6
6.1	General	6
6.2	Construction requirements	8
6.2.1	Appearance	8
6.2.2	Holes	8
6.2.3	Breather holes	8
6.2.4	Vent limiter	8
6.2.5	Screwed fastenings	8
6.2.6	Moving parts	8
6.2.7	Sealing caps	8
6.2.8	Disassembling and assembling for servicing and/or adjustment for controls	8
6.2.9	Auxiliary channels and orifices	10
6.2.10	Pre-setting device	10
6.2.11	Closed position indication	10
6.2.12	Specific construction	11
6.2.13	Flow rates of valves with modulating control	11
6.2.14	Bypass	12
6.2.15	Semi-automatic shut-off valve	12
6.2.16	Diaphragm type valve	12
6.2.17	Balanced valves with one or two ports	12
6.3	Materials	14
6.3.1	General material requirements	14
6.3.2	Housing	14
6.3.3	Springs providing closing force and sealing force	14
6.3.4	Resistance to corrosion and surface protection	14
6.3.5	Impregnation	14
6.3.6	Seals for glands for moving parts	15

6.3.7	Jointing	15
6.3.8	Closure members	15
6.4	Connections	15
6.4.1	General	15
6.4.2	Connection sizes	15
6.4.3	Connections types	15
6.4.4	Threads	15
6.4.5	Union joints	15
6.4.6	Flanges	15
6.4.7	Compression fittings	15
6.4.8	Flare connections	16
6.4.9	Nipples for pressure tests	16
6.4.10	Strainers	16
6.4.11	Gas connections by GQC	16
6.4.12	Hydraulic and pneumatic actuating mechanisms	16
6.5	Gas controls employing electrical components in the gas way	16
7	Performance	16
7.1	General	16
7.2	Leak-tightness	18
7.2.1	General	18
7.2.2	Requirements	18
7.2.3	Test	18
7.2.4	Pressure surge test	18
7.3	Torsion and bending	18
7.4	Rated flow rate	18
7.4.1	General	18
7.4.2	Requirements	18
7.4.3	Test	18
7.5	Durability	19
7.6	Functional requirements	19
7.6.1	Closing function	19
7.6.2	Opening and closing function of thermoelectric valves	20
7.6.3	Closing force	20
7.6.4	Delay time and opening time	20
7.6.5	Closing time	21
7.6.6	Sealing force	22
7.6.7	Gas cracking	23
7.7	Endurance	23
7.7.1	Requirements	23
7.7.2	Test	25
7.8	Hydrostatic withstand pressure test	27
7.8.1	General	27
7.8.2	Requirements	27
7.8.3	Test	27
7.9	Resistance to permanent damage at excessive supply pressure	28
7.9.1	General	28
7.9.2	Requirement	28
7.9.3	Test	28
8	Electrical equipment	28
8.1	General	28
8.2	Requirements	28
8.3	Test	28
8.4	Protection by enclosure	28
8.5	Electrical components	29
8.5.1	Switches	29
8.5.2	Plug connector	29
8.5.3	Power-saving circuit	29
9	Electromagnetic compatibility (EMC)	30

9.1	Protection against environmental influences	30
9.1.1	General	30
9.1.2	Requirements	30
9.2	Harmonics and interharmonics including mains signalling at a. c. power port, low frequency immunity	30
9.3	Voltage dips, voltage interruptions and voltage variations in the power supply network ...	30
9.4	Test of influence of voltage unbalance	30
9.5	Surge immunity test	30
9.6	Electrical fast transient/burst	30
9.7	Ring wave immunity	31
9.8	Electrostatic discharge	31
9.9	Radio-frequency electromagnetic field immunity	31
9.10	Influence of supply frequency variations	31
9.11	Power frequency magnetic field immunity	31
9.12	Evaluation of compliance	31
10	Marking, installation and operating instructions	31
10.1	Marking	31
10.2	Installation and operating instructions	32
10.3	Warning notice	32
10.4	Annexes	32
	Annex A (normative) Specific regional requirements in Canada and the USA	33
	Annex B (normative) Specific regional requirements in Japan	34
	Bibliography	35