# ISO 23551-2:2018 (E)

# Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 2: Pressure regulators

## Contents

Foreword

## Introduction

- 1 Scope
- 2 Normative references
- 3 Terms and definitions
  - 3.1 Pressure regulators
  - 3.2 Pressures
  - 3.3 Flow rates
  - 3.4 Component parts
  - 3.5 Performance

## 4 Classification

- 4.1 Classes of control
- 4.2 Groups of controls
- 4.3 Types of DC supplied controls
- 5 Test conditions

## 6 Construction

- 6.1 General
- 6.2 Construction requirements
- 6.2.1 Appearance
- 6.2.2 Holes
- 6.2.3 Breather holes
- 6.2.4 Vent limiters
- 6.2.5 Screwed fastenings
- 6.2.6 Moving parts
- 6.2.7 Sealing caps
- 6.2.8 Disassembling and assembling for servicing and/or adjustment
- 6.2.9 Auxiliary channels and orifices
- 6.2.10 Pre-setting device
- 6.2.11 Adjustments
- 6.2.12 Resistance to pressure
- 6.2.13 Blockage of canals and orifices
- 6.2.14 Signal tube connections
- 6.3 Materials
- 6.3.1 General material requirements
- 6.3.2 Housing
- 6.3.2.1 General
- 6.3.2.2 Requirements
- 6.3.2.3 Test
- 6.3.3 Springs providing closing force and sealing force
- 6.3.4 Resistance to corrosion and surface protection
- 6.3.5 Impregnation
- 6.3.6 Seals for glands for moving parts
- 6.3.7 Jointing
- 6.4 Connections
- 6.4.1 General
- 6.4.2 Connection sizes

- 6.4.3 **Connection types**
- Threads 6.4.4
- 6.4.5 Union joints
- Flanges 6.4.6
- **Compression fittings** 6.4.7
- 6.4.8 Flare connections
- 6.4.9 Nipples for pressure test
- Strainers 6.4.10
- General 6.4.10.1 6.4.10.2 Requirements
- 6.4.10.3 Test
- 6.4.11 Gas connections by GQC
- 6.5 Gas controls employing electrical components in the gas way

#### 7 Performance

- 7.1 General
- 7.2 Leak-tightness
- 7.2.1 General
- 7.2.2 Requirements
- 7.2.3 Test
- 7.2.3.1 General
- 7.2.3.2 Test for external leak-tightness
- 7.2.3.3 Test for internal leak-tightness of controls
- Torsion and bending 7.3
- 7.4 Rated flow rate
- 7.4.1 General
- 7.4.2 Requirements
- 7.4.3 Test
- Apparatus 7.4.3.1
- **Test procedure** 7.4.3.2
- 7.4.3.3 Conversion of air flow rate
- 7.5 Durability
- 7.6 **Functional requirements**
- 7.7 Endurance
- 7.8 Vibration test
- Putting the regulator out of action 7.9
- Requirement 7.9.1
- 7.9.2 Test putting the regulator out of action
- 7.10 Endurance
- 7.11 Lock-up pressure
- 7.11.1 Requirement
- Lock-up pressure test 7.11.2
- **Optional EP-rating** 7.12
- 7.12.1 General
- 7.12.2 External leakage resistance
- 7.12.2.1 Requirement
- 7.12.2.2 Test
- 7.12.3 Internal flow resistance
- Requirement 7.12.3.1
- Test 7.12.3.2
- 8 **Electrical requirements**

#### 10 Marking, installation and operating instructions

- 10.1 Marking
- Installation and operating instructions 10.2
- Warning notice 10.3

#### Annex A (informative) Leak-tightness test - Volumetric method

(informative) Leak-tightness test - Pressure-loss method Annex B

<sup>9</sup> Electromagnetic compatibility (EMC)

- Annex C (normative) Conversion of pressure loss into leakage rate
- Annex D (normative) Gas quick connector (GQC)
- Annex E (normative) Elastomers/requirements resistance to lubricants and gas
- Annex F (normative) Specific regional requirements in European countries
- Annex G (normative) Specific regional requirements in Canada and USA
- Annex H (normative) Specific regional requirements in Japan
- Annex I (informative) Regulator application examples
- Annex J (normative) Functional requirements and regulator performance testing Method A
  - J.1 General
  - J.2 General test procedure
  - J.2.1 General
  - J.2.2 Apparatus
  - J.2.3 Conversion of the air flow rate
  - J.2.4 Methods of test
  - J.2.5 Class A pressure regulator performance
  - J.2.5.1 Requirement
  - J.2.5.2 Test
  - J.2.6 Class B pressure regulator performance
  - J.2.6.1 Requirement
  - J.2.6.2 Test
  - J.2.7 Class C pressure regulator performance
  - J.2.7.1 Requirement
  - J.2.7.2 Test
  - J.2.8 Class D pressure regulator performance
  - J.2.8.1 Requirement
  - J.2.8.2 Test
  - J.2.9 Pressure drop
  - J.2.10 Endurance
  - J.2.10.1 Requirement
  - J.2.10.2 Test
  - J.2.10.2.1 Regulator Classes A, B and C and ratio regulators Cycling and temperature
  - J.2.10.2.2 Regulators Class D Cycling and Temperature
  - J.3 Summary of requirements and test procedures
  - J.3.1 Requirements
  - J.3.2 Test procedure

Annex K (normative) Functional requirements and regulator performance testing - Method B

- K.1 Requirements
- K.1.1 Mounting regulator for test
- K.1.2 Outlet pressure range
- K.1.3 Range of regulation capacity
- K.1.4 Regulators designated to operate at pilot flow rate
- K.1.5 Integrity of operation
- K.1.6 Enduranace
- K.2 Test
- K.2.1 General test procedures
- K.2.2 Outlet pressure range
- K.2.2.1 General
- K.2.2.2 Non-adjustable regulator
- K.2.2.3 Convertible regulator
- K.2.2.4 Adjustable regulator
- K.2.3 Range of regulation capacity
- K.2.3.1 Non-adjustable regulator
- K.2.3.2 Convertible regulator
- K.2.3.3 Adjustable regulator
- K.2.3.4 Multi-stage regulator

- K.2.4 Regulators designated to operate at pilot flow rate
- K.2.4.1 General
- K.2.4.2 Regulation capacity
- K.2.4.3 Pressure variation
- K.2.5 Integrity of operation
- K.2.5.1 Creating base curve
- K.2.6 Endurance

#### Annex L (normative) Pneumatic gas/air ratio pressure regulator performance

- L.1 General
- L.2 General test procedure
- L.2.1 Apparatus
- L.2.2 Conversion of the air flow rate
- L.2.3 Control performance and stability
- L.2.3.1 Control performance requirement
- L.2.3.1.1 General
- L.2.3.1.2 Control pressure variation with signal pressure
- L.2.3.1.3 Control pressure variation with load determining pressure
- L.2.3.2 Stability requirement
- L.2.3.3 Test
- L.2.3.3.1 General
- L.2.3.3.2 Control pressure variation with signal pressure
- L.2.3.3.3 Control pressure variation with load determining pressure
- L.2.3.3.4 Flow variation pneumatic gas/air ratio regulator industrial type
- L.2.3.3.5 Flow variation zero pressure regulator industrial type
- L.2.4 Settling time test
- L.2.4.1 Requirement
- L.2.4.2 Test
- L.2.5 Gas/air ratio adjustment
- L.2.5.1 Requirement
- L.2.5.2 Test
- L.2.6 Offset adjustment
- L.2.6.1 Requirement
- L.2.6.2 Test
- L.2.7 Endurance
- L.2.7.1 Requirement
- L.2.7.2 Test

Annex M (informative) Typical pressure regulators and pressure regulator parts

Page count: 62