

# ISO 18119:2018 (E)

## Gas cylinders — Seamless steel and seamless aluminium-alloy gas cylinders and tubes — Periodic inspection and testing

---

### Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Abbreviated terms and symbols
5	Intervals between periodic inspections and tests
6	List of procedures for periodic inspections and tests
7	Identification of cylinder and preparation for inspection and tests
8	Depressurization and de-valving procedures
8.1	General
8.2	Cylinders requiring de-valving
8.3	Cylinders not requiring de-valving
8.4	Cylinders requiring shot blasting
9	External visual inspection
9.1	Preparation
9.2	Inspection procedure
10	Inspection of cylinder neck
10.1	Cylinder-to-valve threads
10.2	Other neck surfaces
10.3	Damaged internal neck threads
10.4	Neckring and collar attachment
11	Check of internal condition
11.1	General
11.2	Internal visual inspection
11.2.1	Preparation
11.2.1.1	General
11.2.1.2	Suitable cleaning methods for seamless steel cylinders
11.2.1.3	Suitable cleaning methods for seamless aluminium-alloy cylinders
11.2.2	Inspection requirements
11.2.3	Cylinders with footrings
11.2.4	Cylinders with internal coatings
12	Supplementary tests
12.1	General
12.2	Additional test for seamless aluminium-alloy cylinders possibly subjected to heat damage
12.3	Hammer test on cylinders with footrings
13	Cylinder repairs

- 14 Pressure test or UT**
  - 14.1 General**
  - 14.2 Proof pressure test**
    - 14.2.1 General**
    - 14.2.2 Test equipment**
    - 14.2.3 Test criteria**
    - 14.2.4 Acceptance criteria**
  - 14.3 Hydraulic volumetric expansion test**
  - 14.4 UT**
    - 14.4.1 General**
    - 14.4.2 Requirements**
      - 14.4.2.1 General**
      - 14.4.2.2 Examination equipment**
      - 14.4.2.3 Manual ultrasonic unit**
      - 14.4.2.4 Cylinders**
      - 14.4.2.5 Personnel**
    - 14.4.3 Calibration**
      - 14.4.3.1 General**
      - 14.4.3.2 Defect detection**
        - 14.4.3.2.1 UT notch requirements and dimensions**
        - 14.4.3.2.2 Internal inspection notch requirements**
        - 14.4.3.2.3 Calibration procedures**
      - 14.4.3.3 Wall thickness**
      - 14.4.3.4 Frequency of calibration**
    - 14.4.4 Performing the examination**
      - 14.4.4.1 Defect detection in cylindrical section by automated installation**
      - 14.4.4.2 Wall thickness measurements in cylinder end of cylinders with footrings**
        - 14.4.4.2.1 Cylindrical part of the cylinder**
        - 14.4.4.2.2 Cylinder base**
        - 14.4.4.2.3 Wall and base thickness measurements by automated installation**
        - 14.4.4.2.4 Base thickness measurements by manual testing**
    - 14.4.5 Interpretation of results**
    - 14.4.6 Records**
- 15 Inspection of valve and other accessories**
- 16 Replacement of cylinder parts**
- 17 Final operations**
  - 17.1 Drying, cleaning and painting**
    - 17.1.1 Drying and cleaning**
    - 17.1.2 Painting and coating**
      - 17.1.2.1 General**
      - 17.1.2.2 Seamless steel cylinders**
      - 17.1.2.3 Seamless aluminium-alloy cylinders**
  - 17.2 Re-valving of the cylinder**
  - 17.3 Check of cylinder tare**
  - 17.4 Retest marking**
    - 17.4.1 General**
    - 17.4.2 Stamping**
  - 17.5 Reference to next periodic inspection and test date**
  - 17.6 Identification of contents**
  - 17.7 Records**
- 18 Rejection and rendering cylinder unserviceable**
  - 18.1 General**
  - 18.2 Cylinders with a valve attached**
  - 18.3 Cylinders with no valves attached**

**Annex A (informative) Periodic inspection and test periods**

**Annex B (normative) Description, evaluation of defects and conditions for rejection of seamless steel and seamless aluminium-alloy cylinders at the time of periodic inspection**

- B.1**        **General**
- B.2**        **Physical or material defects**
- B.3**        **Corrosion**
- B.3.1**      **General**
- B.3.2**      **Types of corrosion**
- B.3.3**      **Technical basis for establishing maximum allowable imperfection sizes by UT**
- B.4**        **Neck and shoulder cracks**
- B.4.1**      **General**
- B.4.2**      **Neck cracks**
- B.4.3**      **Shoulder cracks**

**Annex C**    (informative) List of gases corrosive to cylinder material

**Annex D**    (informative) Volumetric expansion testing of cylinders

- D.1**        **General**
- D.2**        **Test equipment**
- D.3**        **Water jacket volumetric expansion test**
- D.3.1**      **General**
- D.3.2**      **Water jacket volumetric expansion test — Levelling burette method**
- D.3.2.1**    **General**
- D.3.2.2**    **Test procedure**
- D.3.3**      **Water jacket volumetric expansion test — Fixed burette method**
- D.4**        **Non-water jacket volumetric expansion test**
- D.4.1**      **General**
- D.4.2**      **Requirement for testing**
- D.4.3**      **Test method**
- D.4.4**      **Calculation of compressibility of water**
- D.4.5**      **Calculation example**

**Annex E**    (informative) Test date rings for cylinders

**Annex F**    (informative) Cleaning of seamless aluminium-alloy cylinders

- F.1**        **Internal**
- F.2**        **External**

Page count: 55