

### Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	General requirements
4.1	General
4.2	Intended use
4.3	Material requirements
4.4	Product quality
5	General test methods
5.1	General
5.2	Test conditions
5.2.1	Test sample
5.2.2	Pressure
5.2.3	Normal test temperature
5.2.4	Specified test temperature
5.2.5	Test media
5.2.6	Test sequence
5.3	Hydrogen gas pressure cycle test
5.3.1	General
5.3.2	Test method
5.4	Leakage
5.4.1	General
5.4.2	External leakage test
5.4.3	Internal leakage test
5.5	Worst case fault pressure cycle test
5.6	Proof pressure test
5.7	Hydrostatic strength test
5.7.1	Test pressure
5.7.2	Test method
5.8	Excess torque resistance test
5.9	Bending moment test
5.10	Non-metallic materials test
5.10.1	General
5.10.2	Test method
5.11	Cold gas in warm valve test
6	Check valves
6.1	Applicability
6.2	Hydrogen gas pressure cycle test
6.3	External leakage test
6.4	Internal leakage test
6.5	Worst case fault pressure cycle test
6.6	Proof pressure test
6.7	Hydrostatic strength test
6.8	Excess torque resistance test
6.9	Bending moment test
6.10	Non-metallic material test

- 7           **Excess flow valves**
  - 7.1           General
  - 7.2           Tests
    - 7.2.1          Classification
    - 7.2.2          Applicability
    - 7.2.3          Hydrogen gas pressure cycle test
    - 7.2.4          External leakage test
    - 7.2.5          Internal leakage test
    - 7.2.6          Worst case fault pressure test
    - 7.2.7          Proof pressure test
    - 7.2.8          Hydrostatic strength test
    - 7.2.9          Excess torque resistance test
    - 7.2.10         Bending moment test
    - 7.2.11         Non-metallic material test
    - 7.2.12         Operation cycle test
    - 7.2.13         Operation test
    - 7.2.14         Pressure impulse test
  
- 8           **Flow control valves**
  - 8.1           General
  - 8.2           Tests
    - 8.2.1          Applicability
    - 8.2.2          Hydrogen gas pressure cycle test
    - 8.2.3          External leakage test
    - 8.2.4          Worst case fault pressure test
    - 8.2.5          Proof pressure test
    - 8.2.6          Hydrostatic strength test
    - 8.2.7          Excess torque resistance test
    - 8.2.8          Bending moment test
    - 8.2.9          Non-metallic material test
    - 8.2.10         Operation test under full pressure load
  
- 9           **Hose breakaway devices**
  - 9.1           Specific design requirements
    - 9.1.1          General
    - 9.1.2          Electrical conductivity
    - 9.1.3          Containment of/controlled relieving of hydrogen when uncoupled
    - 9.1.4          Separation
  - 9.2           Tests
    - 9.2.1          Applicability
    - 9.2.2          Hydrogen gas pressure cycle test
    - 9.2.3          External leakage test
      - 9.2.3.1         General
      - 9.2.3.2         Test method
    - 9.2.4          Worst case fault pressure test
    - 9.2.5          Proof pressure test
    - 9.2.6          Hydrostatic strength test
      - 9.2.6.1         General
        - 9.2.6.2         Test method (coupled):
        - 9.2.6.3         Test method (uncoupled):
    - 9.2.7          Excess torque resistance test
    - 9.2.8          Bending moment test
    - 9.2.9          Non-metallic material test
    - 9.2.10         Separation test
      - 9.2.10.1        General
      - 9.2.10.2        Test method
    - 9.2.11         Impact test (Applicable to rigid-mount devices)
      - 9.2.11.1        General
      - 9.2.11.2        Test method
    - 9.2.12         Drop test
      - 9.2.12.1        General
      - 9.2.12.2        Test method
    - 9.2.13         Twisting test

- 9.2.13.1 General
- 9.2.13.2 Test method
- 9.2.14 Cold gas in warm valve test
- 10 Manual valves
  - 10.1 Construction and assembly
  - 10.2 Tests
    - 10.2.1 Applicability
    - 10.2.2 Hydrogen gas pressure cycle test
    - 10.2.3 External leakage test
    - 10.2.4 Internal leakage test
    - 10.2.5 Worst case fault pressure test
    - 10.2.6 Proof pressure test
    - 10.2.7 Hydrostatic strength test
    - 10.2.8 Excess torque resistance test
    - 10.2.9 Bending moment test
    - 10.2.10 Non-metallic material test
    - 10.2.11 Maximum flow shut-off test
      - 10.2.11.1 General
      - 10.2.11.2 Test method
    - 10.2.12 Operation test
    - 10.2.13 Excess torque operation test
- 11 Pressure safety valves (PSV)
  - 11.1 Applicability
  - 11.2 Hydrogen gas pressure cycle test
  - 11.3 PSV leakage tests
    - 11.3.1 External leakage test
    - 11.3.2 Seat leakage test
  - 11.4 Worst case fault pressure test
  - 11.5 Proof pressure test
  - 11.6 Hydrostatic strength test
  - 11.7 Excess torque resistance test
  - 11.8 Bending moment test
  - 11.9 Non-metallic material test
  - 11.10 Operation test
- 12 Shut-off valves
  - 12.1 Classification
  - 12.2 Construction and assembly
  - 12.3 Tests
    - 12.3.1 Applicability
    - 12.3.2 Hydrogen gas pressure cycle test
      - 12.3.2.1 General
      - 12.3.2.2 Test method
    - 12.3.3 External leakage test
    - 12.3.4 Internal leakage test
    - 12.3.5 Worst case fault pressure test
    - 12.3.6 Proof pressure test
    - 12.3.7 Hydrostatic strength test
    - 12.3.8 Excess torque resistance test
    - 12.3.9 Bending moment test
    - 12.3.10 Non-metallic material test
    - 12.3.11 Operation test under full pressure load
    - 12.3.12 Maximum flow shut-off test
      - 12.3.12.1 General
      - 12.3.12.2 Test method
    - 12.3.13 Cold gas in warm valve test
- 13 Marking
  - 13.1 Marking information
  - 13.2 Marking method
- 14 Component literature