ASSE/IAPMO/ANSI Series 8000-2010(R2015)

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ASSE International

Self-Contained Breathing Apparatus (SCBA) Replenishment Systems Professional Qualifications Standard

An American National Standard

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FOREWORD

Self-Contained Breathing Apparatus (SCBA) Replenishment Systems Professional Qualifications Standard

This foreword shall not be considered a part of the standard; however, it is offered to provide background information. This document contains the uniform minimum requirements for qualified installers, inspectors and verifiers of Self-Contained Breathing Apparatus (SCBA) Replenishment Systems.

The commitment of ASSE International to the safety of all Americans, and in particular America's firefighters, is aptly demonstrated in the creation of the Professional Qualification Standard for the Installer, Inspector and Verifier of Self Contained Breathing Apparatus Replenishment Systems. The idea of supporting firefighting operations by installing a breathing air refilling system in high rise structures is an innovative notion. The idea of certifying those journeymen who install these life safety systems is as important as training those who will use it.

Working with America's fire service, ASSE has developed a professional qualification that ensures these life safety systems will be installed and tested to the highest standards known. Our firefighters deserve nothing less.

We would like to thank, in particular, the City of Portland, Oregon, Bureau of Emergency Services, and Tualatin Valley Fire and Rescue. These agencies have been instrumental in the development of this program.

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References

01-1.1 Reference and Industry Standards and Codes

The following documents form a part of this Standard to the extent specified herein. Unless otherwise indicated, the latest edition shall apply.

01-1.1.1 ASME BPVC- 2010, *Boiler Pressure and Vessel Code (BPVC)*

01-1.1.2 ASME IX-2008, *Boiler and Pressure Vessel Code*, Section IX: Welding and Braising Qualifications

01-1.1.2 ASME B31.9-2008, *Building Service Piping 2010 ASME Boiler and Pressure Vessel Code*, Section IX: Welding and Brazing Qualifications

01-1.1.3 ASTM A269 - 2010, *Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service*

01-1.1.4 ASTM A479-2010, *Standard Specification for Stainless Bars and Shapers for use in Boilers and other Pressure Vessels*

01-1.1.5 CGA G-4.1-2009, *Cleaning Equipment for Oxygen Service*

01-1.1.6 CGA S1.1-2007, *Pressure Relief Device Standards-Part 1-Cylinders for Compressed Gases*

01-1.1.7 CGA S1.2-2009, *Pressure Relief Device Standards-Part 2-Portable Containers for Compressed Gases*

01-1.1.8 CGA S1.3-2008, *Pressure Relief Device Standards-Part 3-Stationary Storage Containers for Compressed Gases*

01-1.1.9 CGA V1-2009, *Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections*

01-1.1.10 IAPMO UPC 2009, *Uniform Plumbing Code*, Section 314, Hangers and Supports

01-1.1.11 IAPMO UPC 2009, *Uniform Plumbing Code*, Appendix F, Firefighter Breathing Air Replenishment Systems

01-1.1.12 ISO 9001-2008, *Quality Management Systems – Requirements*

01-1.1.13 MIL-L-25567D-1993, *Leak Detection Compound Oxygen Systems*

01-1.1.14 MSS SP 58-2009, *Pipe Hangers and Supports – Materials, Design, Manufacture, Selection, Application, and Installation*

01-1.1.14 MSS SP 69-2003, *Pipe Hangers and Supports - Selection and Application Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation*

01-1.1.15 NFPA 70-2008, *National Electric Code*

01-1.1.16 NFPA 1852-2008, *Standard on Selection, Care and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA)*

01-1.1.17 NFPA 1901-2009, *Standard for Automotive Fire Apparatus*

01-1.1.17 NFPA 1981-2007, *Standard on Open Circuit Self Contained Breathing Apparatus (SCBA) for Emergency Services*

01-1.1.18 NFPA 1989-2008, *Standard on Breathing Air Quality*

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for Emergency Service Respiratory Protection

01-1.1.19 NFPA 5000-2009, *Building Construction and Safety Code*

01-1.1.20 OSHA 1910.134, *Standard for Respiratory Protection*

01-1.2 Abbreviations and Standards Development Organizations

ASME The American Society of Mechanical Engineering, Three Park Avenue, New York, NY 10016

ASTM American Society of Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959

CGA Compressed Gas Association, 4221 Walney Road, 5th floor, Chantilly, VA 20151-2923

IAPMO International Association of Plumbing and Mechanical Officials, 5001 E. Philadelphia Street, Ontario, CA 91761

ISO International Organization for Standardization, 1 Rue de Varebre, Casa Postale 56, CH-1211 Geneva 20, Switzerland

MIL-L Military Specifications for Lubricants

MSS Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park St. NE, Vienna, VA 22180-4602

NFPA National Fire Protection Association, P.O. Box 9101, 1 Batterymarch Park, Quincy, MA 02269-9191

OSHA Occupational Safety & Health Administration, US Dept of Labor, 200 Constitution Ave NW, Washington DC 20210

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General Information

5-1.1 Scope

This standard provides general knowledge of Self Contained Breathing Apparatus (SCBA) Replenishment Systems for the purpose of providing continuing education. Eligible individuals include any person with an interest in Self Contained Breathing Apparatus (SCBA) Replenishment Systems and equipment.

This standard does not apply to those who work with SCBA Replenishment Systems as an Installer per ASSE Standard 8010, an Inspector per ASSE Standard 8020, or a Verifier per ASSE Standard 8030.

5-1.2 Purpose

The purpose of this standard is to provide minimum criteria, identified by an industry consensus, for Self Contained Breathing Apparatus (SCBA) Replenishment Systems, to assure compliance with the referenced standards in Section 5-1.4.

5-1.3 Limitations

Compliance with this standard shall not constitute compliance with the requirements for a SCBA Replenishment Systems Installer per ASSE Standard 8010, a SCBA Replenishment Systems Inspector per ASSE Standard 8020, or a SCBA Replenishment Systems Verifier per ASSE Standard 8030.

5-1.4 Reference and Industry Standards

The Reference and Industry Standards listed in ASSE Standard 8001 are a part of this standard.

5-2.1 General Knowledge

5-2.1.1 The individual shall be able to identify and show knowledge of the applicable laws, codes, rules, listing agencies and regulations from the federal, state, and local levels pertaining to SCBA Replenishment Systems.

5-2.1.2 The individual shall be able to identify and describe the basic concepts pertaining to:

a. Absolute pressure
b. Alarm settings
c. Approved joining methods
d. Atmospheric pressure
e. Breathing air
f. Cascade refill station
g. Exterior fire department connection panel and enclosure
h. Fire Department Standard Operating Procedures (SOP) for SCBA filling
i. Fire Department Standard Operating Procedures (SOP) for high rise fires
j. Flow schematic
k. Gage pressure
1. Pressure relief valve
m. SCBA components
n. SCBA operation
o. SCBA charging station
p. Valves including source valves, riser valves, service/control valves and cross-over valves

5-2.2 Product Performance Knowledge

5-2.2.1 The individual shall be able to list the parts and identify the major components of SCBA Replenishment Systems and equipment.

5-2.2.2 The individual shall be able to describe the proper application of SCBA Replenishment Systems and their limitations with respect to:

a. SCBA replenishment
b. Fill station placement

5-2.2.3 The individual shall be able to identify and describe the operating principles and performance characteristics of the SCBA Replenishment Systems and identify the following components:

a. Air inlet
b. Alarm systems
c. Containment systems
d. Operation of air supplies
e. Pressure regulating valves
f. Pressure relief valves

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g. SCBA Replenishment Systems air compressors and accessories
h. SCBA Replenishment Systems air control panels
i. SCBA Replenishment Systems manifolds
j. Shut-off valves

5-2.3 Product Installation Knowledge

5-2.3.1 The individual shall be able to describe the proper installation requirements for the SCBA Replenishment Systems relating to:

a. Applicable codes, specifications and standards
b. Local jurisdiction requirements
c. Manufacturer recommendations
d. Physical location and accessibility

5-2.3.2 The individual shall be able to identify and describe the problems resulting from the improper installation of SCBA Replenishment Systems.

5-2.4 System and System Component Testing Knowledge

5-2.4.1 The individual shall be able to describe test requirements associated with the following components:

a. Air supplies
b. Alarm systems
c. Blow-down pipe
d. Exterior fire department connection panel and enclosure
e. Low air pressure alarm
f. Pressure monitoring switch
g. Pressure regulating valves
h. Pressure relief valves
i. Purge procedure
j. Purity testing procedure
k. SCBA Replenishment Systems air compressors and accessories
l. SCBA Replenishment Systems control panels
m. SCBA Replenishment Systems inlets
n. Shut-off valves
o. Trunnion style three way ball valve

5-2.4.2 The individual shall be able to identify and describe procedures for the use of the following:

a. Exterior fire department connection panel and enclosure
b. By-pass operation
c. Fill station
d. Pressure gauge
e. Pressure monitoring switch

5-3.1 Terminology

The individual shall be able to demonstrate a basic working knowledge of all terminology listed in the ASSE Standard 8000 and its appendixes.

5-4.1 Certification

5-4.1.1 Certification shall be through a recognized third party certification agency.

5-4.1.2 Certification shall include the successful completion of a minimum 8-hour training course including a written examination covering all facets of ASSE Standard 8000.

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SCBA Replenishment Systems Installers

10-1.1 Scope

This standard applies to any individual who installs Self Contained Breathing Apparatus (SCBA) Replenishment Systems. Installers include anyone who works on or installs piping or components, including welders. SCBA Replenishment Systems and equipment covered in this standard include structures within the scope of the IAPMO UPC 2009, *Uniform Plumbing Code*, Appendix F, Firefighter Breathing Air Replenishment Systems

10-1.2 Purpose

The purpose of this standard is to provide minimum performance criteria, identified by industry consensus, for SCBA Replenishment Systems Installers to assure compliance with the provisions of this standard and the referenced standards in Section 10-1.4.

10-1.3 Limitations for a SCBA Replenishment Systems Installer

Compliance with this standard in itself shall not constitute compliance with the requirements for a SCBA Replenishment Systems Inspector per ASSE Standard 8020, or a SCBA Replenishment Systems Verifier per ASSE Standard 8030. This standard does not certify installers to the required certification for the welding of these systems.

10-1.4 Reference and Industry Standards

The Reference and Industry Standards listed in ASSE Standard 8001 are a part of this standard.

10-2.1 General Knowledge

10-2.1.1 SCBA Replenishment Systems Installer shall be able to identify and demonstrate knowledge of the applicable laws, codes, rules, listing agencies and regulations from the federal, state and local levels pertaining to SCBA Replenishment Systems.

10-2.1.2 The SCBA Replenishment Systems Installer shall be able to identify and describe the actions that take place prior to and after installing and testing a SCBA Replenishment System, including:

a. Notification to proper authorities (Authority Having Jurisdiction)
b. Notification to fire department
c. Notification to job inspector
d. Notification to premise owners
e. Notification to the architect/engineer of record

10-2.1.3 The SCBA Replenishment Systems Installer shall be able to identify and describe the basic concepts pertaining to:

a. Absolute pressure
b. Alarm settings
c. Approved joining methods
d. Atmospheric pressure
e. Breathing air
f. Cascade refill station
g. Exterior fire department connection panel and enclosure
h. Fire Department Standard Operating Procedures (SOP) for SCBA filling
i. Fire Department Standard Operating Procedures (SOP) for high rise fires
j. Flow schematic
k. Gage pressure
1. Pressure relief valve
m. SCBA components
n. SCBA operation
o. SCBA charging station
p. Valves including source valves, riser valves, service/control valves and cross-over valves

10-2.2 Product Performance Knowledge

10-2.2.1 SCBA Replenishment Systems Installer shall be able to list the parts and to identify the major components of SCBA Replenishment Systems and equipment.

10-2.2.2 The SCBA Replenishment Systems Installer shall be able to identify and describe the proper application of SCBA Replenishment Systems with respect to:

a. SCBA replenishment
b. Fill station placement

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10-2.2.3 The SCBA Replenishment Systems Installer shall be able to identify and describe the operating principles and performance characteristics of the SCBA Replenishment Systems and identify the following components:

a. Air inlet
b. Alarm systems
c. Containment systems
d. Operation of air supplies
e. Pressure regulating valves
f. Pressure relief valves
g. SCBA Replenishment Systems air compressors and accessories
h. SCBA Replenishment Systems air control panels
i. SCBA Replenishment Systems manifolds
j. Shut-off valves

10-2.3 Product Installation Knowledge

10-2.3.1 The SCBA Replenishment Systems Installer shall be able to identify and describe the proper installation requirements for the SCBA Replenishment Systems pertaining to:

a. Applicable codes, specifications and standards
b. Local jurisdiction requirements
c. Manufacturer recommendations
d. Physical location and accessibility

10-2.3.2 The SCBA Replenishment Systems Installer shall be able to identify and describe the problems resulting from the improper installation of SCBA Replenishment Systems.

10-2.4 System and System Component Testing Knowledge

10-2.4.1 The SCBA Replenishment Systems Installer shall be able to describe test procedures associated with the following components:

a. Air supplies
b. Alarm systems
c. Blow-down pipe
d. Exterior fire department connection panel and enclosure
e. Low air pressure alarm
f. Pressure monitoring switch
g. Pressure regulating valves
h. Pressure relief valves
i. Purge procedure
j. Purity testing procedure
k. SCBA Replenishment Systems air compressors and accessories
l. SCBA Replenishment Systems control panels
m. SCBA Replenishment Systems inlets
n. Shut-off valves
o. Trunnion style three way ball valve

10-2.4.2 The SCBA Replenishment Systems Installer shall be able to identify and describe procedures for the use of the following:

a. Exterior fire department connection panel and enclosure
b. By-pass operation
c. Fill station
d. Pressure gauge
e. Pressure monitoring switch

10-2.4.3 The SCBA Replenishment Systems Installer shall be able to describe the precautions and hazards associated with tests as they relate to:

a. Confined spaces
b. Electricity
c. Tool usage
d. Welding

10-2.4.4 The SCBA Replenishment Systems Installer shall be able to demonstrate knowledge of the following:

a. Acceptable pipe materials and joining methods
b. Certification of welders and welding procedures
c. Installer-performed testing
d. Pipe installation requirements
e. Proper labeling requirements
f. Proper material handling
g. Verification tests
h. Welding materials

10-2.5 Documenting and Recording

10-2.5.1 The SCBA Replenishment Systems Installer shall be able to identify and report the physical locations for the following items on the record drawings:

a. Containment devices
b. Crossover valves
c. Isolation valves
d. Pressure regulating valves
e. Pressure relief valves
f. Riser valves
g. SCBA air supply connection
h. SCBA Fill panels
i. Source equipment for SCBA Replenishment Systems air

10-2.5.5 The installer shall document and submit a written report on all performance testing to the owner, verifier, inspector or Authority Having Jurisdiction as necessary. Written reports shall include, as a minimum, the following:

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