UL 47

STANDARD FOR SAFETY

Semiautomatic Fire Hose Storage Devices

UL Standard for Safety for Semiautomatic Fire Hose Storage Devices, UL 47

Seventh Edition, Dated March 3, 2023

Summary of Topics

This new edition of ANSI/UL 47 dated March 3, 2023 incorporates revisions that provide clarification of products covered by the scope, additional cabinet types, alignment with requirements in NFPA 14, and renumbering and reformatting to align with current style. Some of the revisions include:

- ***Clarifications to Scope (1.1, 1.3), cabinet construction (Section 6), hose types and sizes (Section 15);***

- ***Added definitions in 5.2, 5.4, and 5.6; and***

- ***New sections for Rated Pressure (7), Metallic Materials (12), Optional Components (16), and Installation Instructions (24), among other clarifications and updates.***

The new and revised requirements are substantially in accordance with Proposal(s) on this subject dated May 20, 2022, November 4, 2022 and January 20, 2023.

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Standard for Semiautomatic Fire Hose Storage Devices

First Edition – January, 1972
Second Edition – April, 1979
Third Edition – July, 1980
Fourth Edition – May, 1987
Fifth Edition – September, 1993
Sixth Edition – April, 2004

Seventh Edition

March 3, 2023

This ANSI/UL Standard for Safety consists of the Seventh Edition.

The most recent designation of ANSI/UL 47 as an American National Standard (ANSI) occurred on March 3, 2023. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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ANNEX A

INTRODUCTION

1 Scope

1.1 These requirements cover rack or reel type semiautomatic fire hose storage devices (SHSD) optionally installed in a cabinet intended for use in controlling incipient fires by trained personnel. An SHSD is intended for use with specifically-identified fire hose.

1.2 Requirements for the installation, use, and care of hose storage devices and fire hose are included in the following standards of the National Fire Protection Association:

a) Installation of Standpipe and Hose Systems, NFPA 14; and

b) Care, Use, and Service Testing of Fire Hose, Including Connections and Nozzles, NFPA 1962.

1.3 Semiautomatic fire hose storage devices as covered by these requirements use hose having an inside diameter of 1-1/2 inches (38.1 mm) or 1 inch (25.4 mm) and are capable of storing not more than 100 feet (30 m) of fire hose, in accordance with the Standard for Installation of Standpipe and Hose Systems, NFPA 14.

2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the requirements for that component. See Annex A for a list of standards covering components generally used in the products covered by this Standard.

2.2 A component is not required to comply with a specific requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this Standard, or

b) Is superseded by a requirement in this Standard.

2.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

3 Units of Measurement

3.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

4 Referenced Publications

4.1 Any undated reference to a code or standard appearing in the requirements of this Standard shall be interpreted as referring to the latest edition of that code or standard.

4.2 The following publications are referenced in this Standard:

ANSI Z97.1, *For Safety Glazing Materials Used In Buildings – Safety Performance Specifications and Methods of Test*

ANSI/ASME B1.20.1, *Pipe Threads, General Purpose (Inch)*

NFPA 14, *Installation of Standpipe and Hose Systems*

NFPA 1962, *Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances*

UL 19, *Lined Fire Hose and Hose Assemblies*

UL 92, *Fire Extinguisher, Booster, and Noncollapsible Standpipe Hose and Hose Assemblies*

UL 157, *Gaskets and Seals*

UL 219, *Lined Fire Hose for Interior Standpipes*

UL 401, *Portable Spray Hose Nozzles for Fire-Protection Service*

UL 668, *Hose Valves for Fire-Protection Service*

UL 1468, *Direct Acting Pressure Reducing and Pressure Restricting Valves*

5 Glossary

5.1 For the purpose of this Standard the following definitions apply.

5.2 CABINET – An enclosure that fully contains an SHSD on all sides, which may also contain an extinguisher or other fire service appurtenances.

5.3 FULL FLOW CONDITIONS – The flow rate at the rated pressure with the nozzle in a fully-open position and the fire hose fully extended.

5.4 PRIMARY COMPARTMENT – The main space of a cabinet containing the SHSD and associated components.

5.5 RATED PRESSURE – The static outlet pressure in pounds per square inch available at the standpipe to which the fire hose storage device is to be connected.

5.6 SECONDARY COMPARTMENT – A space in a cabinet separated from the primary compartment to provide an area to store an extinguisher or other fire service appurtenances not related to the operation of the SHSD.

5.7 SHSD – Semiautomatic fire hose storage device.

5.8 WORKING PRESSURE – The flowing pressure in pounds per square inch available at the nozzle end of the fire hose.

CONSTRUCTION

6 General

6.1 An SHSD shall:

a) Incorporate mounting means to mount the SHSD securely to a building structure or standpipe; and

b) Provide access to the operator of the hose valve and to the SHSD.

6.2 Where a cabinet is provided with the SHSD, the cabinet shall:

a) Allow for secure surface mounting to a wall either semi-recessed or fully recessed;

b) Provide a means for mounting and support of the cabinet independent of the piping connection to the standpipe; and

c) Provide access to the operator of the hose valve and to the SHSD.

6.3 An SHSD shall withstand rough usage without its strength being reduced or its operation being affected. See Operational Tests, Section 19.

7 Rated Pressure

7.1 An SHSD shall be constructed for a rated pressure of 175 psi (1206 kPa).

8 Assembly

8.1 An SHSD shall consist of a hose rack or hose reel and the necessary interconnecting piping for the fire hose with which the SHSD is intended to be used. The SHSD may or may not be installed in a cabinet. The fire hose with which the SHSD is intended to be used may or may not be provided with the SHSD. If the SHSD is not provided with the fire hose, the SHSD shall be marked as specified in 23.1(e).

8.2 The finish, assembly, and placement of the components of an SHSD shall be such that the fire hose is not subjected to chafing on rough or sharp edges during storage or usage of the assembly.

8.3 An SHSD shall be provided with means to hold the hose nozzle when not in use. The nozzle shall be held securely, but still be able to be readily disengaged for use. See 19.6.1.

8.4 An SHSD that utilizes a collapsible hose shall be provided with a device to retain the water within the first three loops of the fire hose at the standpipe end when the inlet to the hose is subjected to water at the rated pressure. See 13.1(d) and 19.4.

8.5 Unless the operation of the water retaining device is automatic, an SHSD shall be provided with means to indicate that the water retaining device is engaged after the fire hose is installed.

9 Materials

9.1 The materials used in the construction of those parts of an SHSD that remain in stress after assembly shall not be subject to stress corrosion.

10 Threads

10.1 The inlet provided for field installation of an SHSD shall be threaded in accordance with one of the following:

a) The Standard for Pipe Threads, General Purpose (Inch), ANSI/ASME B1.20.1; or

b) Other nationally or internationally recognized pipe thread standard where the product is intended for use.

11 Pipe

11.1 The external surfaces of pipe ends, if provided for the attachment of an SHSD to a standpipe system, shall include a surface to which a wrench may be fitted without damaging the threads of the pipe ends.

12 Metallic Materials

12.1 Metallic materials used in fitting samples submitted for investigation and test shall conform to the minimum physical property requirements of the latest edition of the applicable ASTM or equivalent material standard as specified by the manufacturer.

13 Rack or Reel-Type Storage Device

13.1 A rack or reel for storage of a fire hose shall be constructed so that:

a) The fire hose is unlikely to be placed on the rack or reel in such manner as to make its removal difficult;

b) The fire hose can be quickly and uniformly pulled off at the nozzle end;

c) The entire specified length of fire hose can be stored on the rack or reel;

d) After opening the hose valve, the fire hose will remain in position on the rack or reel until the fire hose has been manually pulled off to its full length;

e) The rack or reel, with the specified length of fire hose installed, will permit removal of the fire hose through any point of an arc of:

1) 90° if installed in a cabinet; or

2) 180° for all other SHSDs.

f) There are no projections to catch the fire hose or otherwise interfere with the rapid removal of the hose; and

g) Repairs to the rack or reel, or its components, can be made readily and without using special tools.

13.2 The material of all parts in which freedom of movement is essential shall be of brass, bronze, stainless steel, or coated ferrous metal, or an equally corrosion-resistant material.

13.3 Any metallic finish, when subjected to comparative tests, shall provide corrosion protection equivalent to brass, bronze, or stainless steel.

13.4 The rack or reel mechanism shall not include components necessary for its intended use that are loose or that may be lost or misplaced.

13.5 A collapsible fire hose, when installed in the rack or reel, shall lie or hang in natural folds or be coiled on a spool.

13.6 A non-collapsible fire hose, when installed on a reel, shall lie coiled on a spool without any kinking or un-natural bending of the hose.

14 Cabinet Type Storage Device

14.1 A cabinet used to contain an SHSD shall be sized to permit full and ready access to all operating components of the device, shall not interfere with the prompt and efficient handling of the hose, and shall allow the fire hose to be pulled off its rack through an arc of 90°.

14.2 A cabinet may be for surface, semi-recessed, or fully recessed installation to building walls. The mounting and support of the cabinet shall be independent of the fire hose rack or piping connection to the standpipe.

14.3 An SHSD that is installed in a cabinet shall be provided with a device to retain the water within the first three loops of the fire hose at the standpipe end when the inlet to the hose is subjected to water at the rated pressure.

14.4 All surfaces and components of a cabinet and cabinet door shall be free of rough and sharp edges.

14.5 If provided, a cabinet door shall be hinged vertically and shall open to a 180° position relative to the cabinet front.

14.6 A cabinet door shall be provided with means to retain it in a closed position, but the means shall allow the door to be opened readily without the use of special tools.

14.7 A cabinet door shall not be secured with any type of locking device.

14.8 If a "break glass" type protective cover for a latching device is provided, the maximum area of the glass panel shall not exceed 25 square inches (161 cm^2). The device provided to break the glass panel shall be attached in the immediate area of the "break glass" panel and shall be arranged so that the device cannot be used to break other glass panels in the cabinet door.

14.9 A glass panel used in a cabinet door shall be made of glazing material complying with ANSI Z97.1, For Safety Glazing Materials Used In Buildings – Safety Performance Specifications and Methods of Test.

14.10 The means provided to open a cabinet door shall be large enough to avoid entrapment or jamming of fingers.

14.11 The hose connection in a cabinet shall be located so that there are at least 2 inches (50.8 mm) between the handle of the valve and any part of the cabinet other than the portion of the door that opens. This distance shall be maintained through the full range of motion of the valve handle.

14.12 When an SHSD is installed in a cabinet that contains extinguishers or other fire service appurtenances not directly related to the operation of the SHSD in the primary compartment:

a) These items shall be retained by a bracket or other means;

b) There shall be at least 2 inches (50.8 mm) of space between the handle of the valve and any of these items. This distance shall be maintained through the full range of motion of the vale handle, and with the extinguisher or other appurtenances installed in the worst case orientation allowed by the means of retention; and

c) The full assembly shall comply with the Secondary Storage Tests, Section 24.

15 Fire Hose

15.1 A collapsible fire hose intended for use with an SHSD shall comply with the requirements of the Standard for Lined Fire Hose for Interior Standpipes, UL 219, or the Standard for Lined Fire Hose and Hose Assemblies, UL 19.

15.2 Collapsible fire hose shall be 1-1/2 inch (38.1 mm) in size.

15.3 A non-collapsible fire hose intended for use with an SHSD shall comply with the requirements of the Standard for Fire Extinguisher and Booster Hose, UL 92.

15.4 Non-collapsible fire hose shall be any size from 1 inch (25.4 mm) to 1-1/2 inch (38.1 mm).

16 Optional Components

16.1 Nozzle

16.1.1 A nozzle intended for use with a SHSD shall comply with the requirements of the Standard for Portable Spray Hose Nozzles for Fire-Protection Service, UL 401.

16.2 Valve

16.2.1 A hose valve intended for use with a SHSD shall comply with the requirements of the Standard for Hose Valves for Fire-Protection Service, UL 668.

16.2.2 A pressure reducing or pressure restricting valve intended for use with an SHSD shall comply with the requirements of the Standard for Direct Acting Pressure Reducing and Pressure Restricting Valves, UL 1468.

PERFORMANCE

17 General

17.1 When an SHSD is tested in accordance with these requirements, no parts shall be thrown, and resistance to damage of the fire hose or component parts of the SHSD by handling shall be demonstrated.

17.2 When an SHSD is intended for installation in a cabinet, the entire SHSD cabinet assembly shall undergo the Installation Test, Section 18, and the Operational Test, Section 19. Extinguishers or other fire service appurtenances are stored in the Primary Compartment, these tests shall be conducted with these items installed.

18 Installation Test

18.1 One operator shall be able to replace the specified length of fire hose onto an SHSD when the SHSD is mounted or supported in its intended position.

19 Operational Tests

19.1 Samples

19.1.1 A total of four sample SHSD's are to be tested as specified in 19.2 and 19.3.

19.2 The tests specified in 19.4.1 – 19.5.2 are to be conducted four times on two "as received" sample SHSD's using the specified length of fire hose; using two sets of SHSD's with new fire hose as received from the manufacturer, and repeated with the fire hose that was used to conduct the Water retention test and the Run-off and release test which has been drained and reinstalled into the SHSD in accordance with the instructions marked on the device.

19.3 The tests specified in 19.4.1 – 19.5.2 are to be conducted four times after the exposure on two aged sample SHSD's using the specified length of fire hose; using two sets of SHSD's with fire hose aged as specified in the Accelerated Air-Oven Aging Test, Section 20, and repeated with the aged fire hose that was used to conduct the Water retention test and the Run-off and release test, which has been drained and reinstalled into the SHSD in accordance with the instructions marked on the device.

19.4 Water retention test

19.4.1 An SHSD shall prevent the stored fire hose from filling with water beyond the third loop from the standpipe end within 2 minutes after the hose valve is fully opened. Also, operation of the SHSD and removal of the fire hose through any point of an arc of 180° (90° when in a cabinet) shall not be impaired.

19.4.2 An SHSD with the fire hose in a stored position is to be attached to a water source capable of maintaining maximum rated pressure. The hose valve controlling the SHSD is to be fully opened and the specified rated pressure maintained for 2 minutes in order to verify compliance with the requirements in 19.4.1.

19.5 Run-off and release test

19.5.1 At the completion of the water retention test and with the maximum rated pressure maintained, the fire hose is to be run off free of the SHSD by one operator to its full length in the direction considered most severe. For a collapsible hose, the run-off shall include all hose except for the last fold so no water is released. The hose shall run off without kinking, binding, or tangling.

19.5.2 For collapsible hose, with all of the fire hose except for the last fold run off the SHSD and with the maximum rated pressure maintained, the force necessary to release the last fold is to be determined by attaching a spring scale or force gauge to the end of the fire hose and applying a straight horizontal pull. The SHSD, fire hose, nozzle, and spring scale are to extend in the same direction. The water retaining device shall be released from the standpipe end of the hose with a force not exceeding 25 pounds (111.2 N), applied at the nozzle for not more than three pulls. The retaining device shall not show evidence of wear.

19.6 Secureness test

19.6.1 The means provided to secure the nozzle when the nozzle is not in use shall not allow the nozzle to fall free when the nozzle is subjected to a vertical static load equal to twice the weight of the nozzle.

19.7 Rough usage test

19.7.1 An SHSD shall withstand a static test load of 150 pounds-mass (68 kg) without separation or permanent distortion of its supporting means, the device, or the interconnecting piping.

19.7.2 An SHSD mounted in its intended manner and with the device swung out to the position considered most severe with respect to maintaining support is to be subjected to a static load of 150 pounds-mass (68 kg) applied for 5 minutes vertically downward at the furthest extremity of the device. Following application of the load, the SHSD is to be examined for compliance with the requirements in 19.7.1.