NFPA 1962 Care, Use, and Maintenance of Fire Hose Including Connections and Nozzles 1979

National Fire Protection Association Batterymarch Park, Quincy, MA 02269

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There is a concern that the growing use of synthetic materials may produce more or additional toxic products of combustion in a fire environment. The Board has, therefore, asked all NFPA technical committees to review the documents for which they are responsible to be sure that the documents respond to this current concern. To assist the committees in meeting this request, the Board has appointed an advisory committee to provide specific guidance to the technical committees on questions relating to assessing the hazards of the products of combustion.

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Standard for the

Care, Use, and Maintenance of Fire Hose Including Connections and Nozzles

NFPA 1962-1979

1979 Edition of NFPA 1962

This 1979 edition of NFPA 1962, *Standard for the Care, Use, and Maintenance of Fire Hose Including Connections and Nozzles* was prepared by the Committee on Fire Hose and was adopted by the National Fire Protection Association, Inc. on May 17, 1979, at its Annual Meeting in St. Louis, Missouri, with amendment to paragraph 4-2.1. Pursuant to the Regulations Governing Committee Projects, the Technical Committee was balloted on the amendment and voted to approve the amendment. The Standards Council released for publication the Committee Report with the amendment on June 21, 1979.

Origin and Development of NFPA 1962

Although the NFPA had recommended practices for the *Care, Maintenance, and Use of Fire Hose*, known as NFPA 198, it was withdrawn at the 1979 Annual Meeting. This original NFPA 198 was prepared by the NFPA Committee on Field Practices in 1936, and has been extensively revised through the intervening years. Since 1954, NFPA 198 was a project of the Fire Hose Committee. The Fire Hose Committee agreed that NFPA 198 had inaccuracies, that it was not technically up-to-date, and that it needed to be rewritten to conform to the present Manual of Style.

The new document, NFPA 1962, although containing part of the original NFPA 198, has been completely rewritten and issued as a new Standard. The Fire Hose Committee has spent four years in the development of this Standard. The mandatory requirements of NFPA 1962 were carefully developed and chosen to help assure a reasonable level of safety and reliability for the public and industrial, private, and governmental fire suppression agencies.

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Scandia Industries

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Chief, Chelsea Fire Department

Bruce W. Teele,† *Secretary*
National Fire Protection Association

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Robert Ely, San Diego, California

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Rod Porter, Winnetka, IL

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Leon M. Walker, Underwriters Laboratories Inc.

Alternates

H. R. Bratvold, Underwriters Laboratories Inc.
(Alternate to Leon M. Walker)

Joseph H. Hayes, Insurance Services Office
(Alternate to Donald G. Mees)

Raymond Parker, Goodall Rubber Company,
(Alternate to Richard Green)

J. P. Spollen, Western Electric Company
(Alternate to Duane Barker)

†*Nonvoting*

This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred.

Contents

Standard for the

Care, Use, and Maintenance of Fire Hose Including Connections and Nozzles

NFPA 1962-1979

NOTICE: An asterisk (*) following the number designating a subdivision indicates explanatory material on that subdivision in Appendix A.

Chapter 1 Administration

1-1 Scope. These requirements shall apply to all classes of fire hose used for various fire protection purposes.

1-2 Purpose. The purpose of this Standard is to specify minimum standards which will provide the user reasonable requirements for the care, use, maintenance, and purchasing of fire hose and, in part, of nozzles, couplings, connections, and gaskets.

1-3 Definitions.

1-3.1 Acceptance Hydrostatic Tests. Hydrostatic tests performed on new hose under specified control conditions.

1-3.2* Approved. Acceptable to the authority having jurisdiction.

1-3.3 Attack Hose. That hose, normally double jacket hose, used by trained fire fighters at pump pressures from 100 to 250 psi (670 to 1720 kPa).

1-3.4* Authority Having Jurisdiction. The organization, office, or individual responsible for "approving" equipment, an installation, or a procedure.

1-3.5 Braided. A nonwoven rubber hose manufactured by braiding one or more layers of yarn, each separated by a rubber layer over a rubber tube and encased in a rubber cover. Usually manufactured in sizes up to 1½ in. (38 mm). Its uses are:

(a) Chemical hose.
(b) Booster hose.
(c) High pressure hose.
(d) Line reel hose.

1-3.6 Coating. Jacket in which the yarn is impregnated or saturated with the protective materials or coated with the protective material so the outside of the jacket is relatively smooth.

1-3.7 Covered (Other than Rubber Covered). Jacket covered and lined with a continuous synthetic rubber or plastic, the cover usually being thicker than that of a coating.

1-3.8 Fire Hose. A flexible conduit consisting of lined woven jackets for conveying water for fire fighting purposes.

1-3.9 Forestry Fire Hose. A very lightweight, small-diameter, single jacket fire hose that may be either lined or unlined.

1-3.10 In-Service. Hose ready for use in hose houses, on racks or reels, on apparatus, etc., but not including hose in storage where it is not available to be put into service.

1-3.11 In Use. Hose which is being used during fire suppression.

1-3.12 Labeled. Equipment or materials to which has been attached a label, symbol or other identifying mark of an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

1-3.13* Listed. Equipment or materials included in a list published by an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

1-3.14 May. This term is used to state permissive use or an alternative method to a specified requirement.

1-3.15 Multiple Jacket. A construction consisting of a combination of two separately woven jackets (double jacket), or two or more jackets interwoven.

1-3.16 Nonwoven Rubber Hose. (*See* **Braided** *and* **Wrapped.**)

1-3.17 Relay Supply Hose. A large-diameter, lightweight, single jacket fire hose designed to move large volumes of water at low pressure.

1-3.18 Service Test. Hydrostatic test conducted as specified in Chapter 8 of this Standard on all in-service hose to determine that it shall remain in service.

1-3.19 Shall. This term indicates a mandatory requirement.

1-3.20 Single Jacket. A construction consisting of one woven jacket.

1-3.21 Suction (Hard). A rubber lined, rubber-covered hose whose reinforcement contains a semi-rigid or rigid helix to resist collapse under vacuum.

1-3.22* Suction (Soft). A rubber lined, large-diameter hose of woven jacket construction that will collapse at zero psi.

1-3.23 Tail Gasket. The gasket placed in the coupling at the end of the hose to prevent leakage and to keep the fabric of the hose jacket dry. *(See Figure 1-3.23.)*

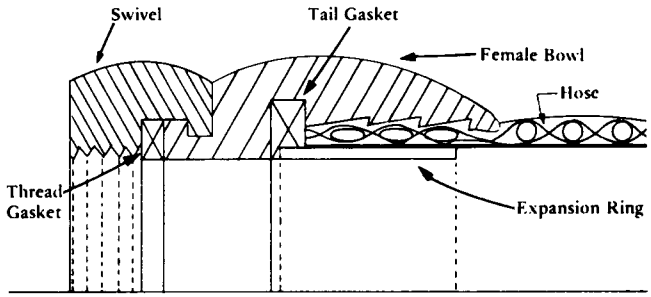


Figure 1-3.23 Female coupling assembly.

1-3.24 Thread Gasket. The gasket placed in the required recess at the bottom of the internal connection. Sometimes called swivel or face gasket. *(See Figure 1-3.23.)*

1-3.25 Unlined Hose. A hose, usually made of linen yarns, consisting of only the woven jacket and having such qualities that the yarn of the jacket swells when wetted, tending to seal the hose.

1-3.26* Water Hammer. The surge of pressure caused when a high velocity flow of water is abruptly shut off. The pressure exerted by the flowing water against the closed system, called water hammer, can be as much as seven times the static pressure.

1-3.27* Wrapped. A nonwoven rubber hose manufactured by wrapping rubber-impregnated woven fabric around a rubber tube and encasing in a rubber cover. In the fire service this hose is primarily used for hard suction and has an added spiral wire reinforcement to prevent the hose from collapsing under a vacuum. It is usually manufactured in sizes 1½ in. through 6 in. (38 mm through 152 mm) and called hard suction hose.

1-4 Units.

1-4.1* Metric units of measurement in this Standard are in accordance with the modernized metric system known as International System of Units (SI). The unit litre, outside of but recognized by SI, is commonly used in international fire protection. The SI units used in this Standard are listed in Table 1-4.1 with conversion factors.

Table 1-4.1

Quantity	US Unit/Symbol	SI Unit/Symbol	Conversion Factor
Length	inch/in.	millimeter/mm	1 in. = 25.4 mm
	foot/ft	meter/m	1 ft = 0.305 m
Volume	gallon/gal	liter/L	1 gal = 3.785 L
Flow Rate	gallon per minute/ gpm	liter per minute/ L/m	1 gpm = 3.785 L/m
Pressure	pounds per square inch/psi	kilopascal/kPa	1 psi = 6.894757 kPa

1-4.2 In this Standard, values for measurements are followed by an equivalent in SI units. The first stated value shall be regarded as the requirement because the given equivalent value may be approximate. As all 2½-in. hose shall have an internal waterway of 2 $^{9}/_{16}$ in., as specified in NFPA 1961, *Standard for Fire Hose*, Section 3-1, the SI unit for 2 $^{9}/_{16}$ in. (65 mm) is used.

Chapter 2 Basic Types and Care of Lined Fire Hose

2-1 General. This chapter covers the care that shall be given to industrial, standpipe, fire department, and forestry woven jacket, lined fire hose while in service, in use, and after use.

2-2 Types of Construction.

2-2.1 The term "woven jacket, lined fire hose" shall be applied to the following types of hose in sizes from 1 in. (25.4 mm) through 6 in. (152 mm) internal diameters.

2-2.1.1* All-cotton yarn in the warp and filling of one or more jackets. Treated or untreated against mildew and with or without water repellents.

2-2.1.2* Cotton yarn in the warp and approved synthetic fiber yarn in the filling of one or more jackets.

2-2.1.3 Approved synthetic fiber yarn in the warp and filling of one or more jackets.

2-2.1.4 Rubber covered with a woven jacket of one of the above types.

2-2.1.5 Jacket covered and lined with a continuous synthetic rubber or plastic compound.

2-2.1.6 Jacket coated with a noncontinuous coating.

2-3 Care of In-Service Hose.

2-3.1* Industrial Fire Hose.

2-3.1.1 Where hose is installed for fire protection at or near yard hydrants, i.e., at industrial plants, it shall be kept in well-ventilated enclosures. Enclosures shall be constructed and the hose stored in accordance with NFPA 24, *Standard for Outside Protection*. The hose shall be service tested at least annually as specified in Chapter 8 of this Standard.

2-3.1.2 In areas where rodents may be a problem, hose of types described in 2-2.1.4 and 2-2.1.5 shall be considered for their rodent resistance.

2-3.1.3 Wet hose of all types shall be thoroughly dried before being placed into service.

2-3.2* Rack and Reel Hose.

2-3.2.1 Hose stored on racks and reels shall be removed and service tested as specified in Chapter 8 of this Standard at intervals not exceeding 5 years after purchase

date, at 8 years after purchase date, and every 2 years thereafter. It shall also be service tested after use and physically inspected at least annually. The physical inspection shall consist of the following:

(a) Visual examination to see that hose has not been vandalized, that the couplings and nozzle are attached, that there is no evidence of mildew, rot, damage by chemicals, vermin, and abrasion. If hose is in doubtful condition it shall be service tested.

(b) The nozzle and hose are free of debris.

2-3.2.2 When hose is re-racked or re-reeled it shall be done so that any folds shall not occur at the same places.

2-3.2.3 Wet hose of all types shall be thoroughly dried before being placed into service.

2-3.2.4 Hose stored on racks or reels shall be protected from the weather and any local condition that may be harmful to the hose.

2-3.3 Fire Department and Forestry Hose.

2-3.3.1 Hose shall be inspected and service tested at least annually as specified in Chapter 8 of this Standard. Pump pressure shall not exceed the service test pressures as specified in Chapter 8 of this Standard. For hose which may need to be used at pressures greater than the service test pressure, see 8-3.1, Exception.

2-3.3.2* Hose carried on fire apparatus shall be loaded in such a way that air can circulate under the hose load to eliminate or reduce the growth of mildew in the hose jackets and rust and corrosion in the hose compartment. Only clean, dry hose shall be placed into service. Wet hose of any type shall be thoroughly dried before being placed into service on apparatus as wet hose accelerates mildew and rusting.

2-3.3.3* To prevent damage and permanent set to the rubber lining, hose shall be removed from apparatus at least once quarterly and, when reloaded, loaded so the folds occur at different positions. When the hose is removed from the apparatus, it shall be replaced by spare hose, so that the required amount will always be available for fire fighting purposes.

2-3.4* Pumper Supply Hose. Hose shall be carried in a location where it can be replaced in a different position after use to avoid folds and strains occurring at the same place; the hose shall be tested at least annually as specified in Chapter 8 of this Standard.

2-4 Care of Hose While in Use.

2-4.1* Attack Hose. Fire hose shall be laid so that damage to the hose will not result from contact with sharp or rough objects. The hose shall be positioned to prevent the jacket from contacting hot and burning objects. Vehicles shall not be driven over hose as this will cause damage. Nozzles and valves shall be opened and closed slowly to prevent pressure surges and water hammer that may burst the hose and, in turn, cause injury to people or damage to the pump. Care shall be taken to prevent the hose from chafing.

2-4.2* Lightweight Large-Diameter Relay Supply Hose.

2-4.2.1 Pump pressures shall not exceed the service test pressures as specified in Chapter 8 of this Standard.

2-4.2.2 Single jacket relay-supply hose shall not be used to directly supply attack lines or to supply a manifold to which attack lines are attached.

2-4.2.3 Care shall be taken to avoid dragging the hose, particularly while it is kinked, because of its single jacket construction. If it must be dragged it shall be dragged flat.

2-4.2.4* Vehicles shall not be driven over relay supply lines unless the hose is bridged.

2-4.2.5* Special precautions shall be used when relaying water from a pump at a water source to a pump near the fire ground or to other pumps in a relay in order to control pressure surges and water hammer. The pump receiving the relay shall be provided with a relay relief valve on the inlet (suction) to which the relay supply hose is attached. A pressure setting of 20 psi (139 kPa) shall be used on the relay relief valve.

2-4.2.6* Fire departments shall establish safe operational procedures for relay-supply operations as improper operations may result in personal injury, burst lines, or damage to pumps.

2-4.3* Pumper Supply Hose (Soft Suction). Hose shall be protected from chafing with chafing blocks or similar protection where it comes in contact with the pavement or curbing. When connecting a pumper to a hydrant there shall be a slight bend in the hose before the water is turned on; this will tend to avoid kinks.

2-5 Care of Hose After Use.

2-5.1* General. Hose shall be drained, cleaned, dried, and inspected after use as described in Chapter 5 of this Standard, before it is placed in storage or back in service. When the condition of the hose or couplings is questionable or the hose has had severe use at a fire it shall be service tested as specified in Chapter 8 of this Standard.

2-5.2* When subjected to sub-freezing weather, care shall be taken to prevent water from freezing inside the hose. To help prevent freezing once the water is turned on, some water shall be left running through the hose until the line is no longer needed. When the line is no longer needed, it shall be uncoupled and drained. After frozen hose has been dried, it shall be service tested as specified in Chapter 8 of this Standard.

Chapter 3 Nonwoven Rubber Hose

3-1 Care of Braided Hose.

3-1.1* Hose shall be stored out of direct sunlight as

recommended by the manufacturer. The hose shall not be stored kinked, and care shall be taken to avoid twisting when rolling the hose onto a reel.

3-1.2 Hose shall be service tested annually. Hose which has the braid exposed shall be removed from service and repaired. The defective section may be cut out and the length recoupled.

3-2 Care of Wrapped Hose (Hard Suction).

3-2.1 Hose shall be supported when connected to a hydrant so as not to be suspended between the hydrant and pumper.

3-2.2 Foreign objects of any type including items of equipment shall not be carried inserted in the end of the hose.

3-2.3 Hose shall be service tested annually. Hose which has the fabric exposed shall be removed from service.

Chapter 4 Unlined Fire Hose

4-1 General. This chapter specifies the care that shall be given to standpipe and forestry unlined hose made of linen warp and filler without a lining.

4-2* Unlined Standpipe Hose.

4-2.1 Where unlined hose is allowed by NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, the unlined hose stored on racks and reels shall be given a very careful examination at least annually.

4-2.2 The annual physical inspection shall consist of the following:

(a) Visual examination to see that hose has not been vandalized, that the couplings and nozzle are attached, that there is no evidence of mildew, rot, damage by chemicals, vermin, and abrasion. If hose is in doubtful condition it shall be service tested.

(b) The nozzle and hose are free of debris.

4-2.3 It shall be re-racked or re-reeled so that any folds shall not occur at the same places. Hose stored on racks or reels shall be protected from the weather and any local condition that may be harmful to the hose.

4-2.4 Wet hose of all types shall be thoroughly dried before being placed into service.

4-3* Unlined Forestry Hose.

4-3.1 Hose meeting the requirements of USDA Forest Service Specification 5100-183f, "1- and 1½-inch Linen Hose," shall be service tested annually and cared for as specified in 2-3.3 and Section 2-5 of this Standard.

Chapter 5 Inspecting, Washing, Drying, and Storage

5-1 General. The requirements of this chapter are for the types of hose specified in Chapter 2 and 4 of this Standard. Hose shall be inspected, washed, dried, and stored as specified within this chapter to increase its service life.

5-2 Inspecting.

5-2.1 After use, all hose shall be inspected.

5-2.2 The jackets shall be inspected for cuts, abrasion, burns, or other damage that shall require the hose to be removed from service and service tested or condemned if necessary.

5-2.3 The couplings shall be inspected as specified in 7-3.1 of this Standard.

5-3* Washing. After use, all hose shall be cleaned. If the dirt and dust cannot be thoroughly brushed from it, or if it has come in contact with harmful materials, the hose shall be washed.

5-4* Drying. After becoming wet, all hose shall be drained and thoroughly dried before being placed in service or in storage. Covered hose of the type described in 2-2.1.6 of this Standard may be wiped dry. Hose shall not be dried on hot pavements or under intense sunlight. Hose may be washed and drained outside where necessary.

5-5* Storage. Hose in storage shall be kept ready for service. Hose shall be kept in a well-ventilated location. Hose shall be stored only after it has been properly inspected, service tested if required, brushed or washed, dried and rolled. Hose out of service for repair shall be properly tagged, as specified in 6-1.6 of this Standard, and if temporarily stored, kept apart from any in-service hose in storage.

Chapter 6 Record Keeping

6-1* Method and Location of Records.

6-1.1 Accurate hose records shall be established and maintained.

6-1.2 Upon delivery and acceptance, each length of hose shall be assigned an identification number for use in recording its history throughout its service life.

6-1.3* Records of fire department hose shall be recorded in books, on printed cards, or computerized as specified by the authority having jurisdiction. In fire departments, hose records may be kept as part of the department's or individual company's complete equipment inventory, thereby simplifying records and reports.

6-1.4 Records for hose on racks, on reels, or in enclosures may be kept at the hose location or at a control location such as the building engineer's office on the premises where the hose is located.

6-1.5* Forestry Hose. The authority having jurisdiction shall determine the records necessary to determine hose performance and assure safe use in fire fighting in order to achieve an effective hose management program.

6-1.6* Out-of-service hose shall be properly tagged with the reason it has been removed from service noted on the tag. This tag may also include information required in 6-3.2 of this Standard.

6-2 Information Required.

6-2.1* The acceptance information shall include:

(a) Assigned identification number.

(b) Manufacturer and part number.

(c) Vendor.

(d) Size (internal diameter of waterway).

(e) Length.

(f) Type of hose, *i.e.*, single jacket, double jacket.

(g) Construction, *i.e.*, all synthetic, cotton synthetic.

(h) Date received and date put in service.

6-2.2 In-use information shall include the following:

(a) The date of each service test and the service test pressure.

(b) Repairs and hose's new length if shortened.

(c) Actual damage.

(d) If exposed to possible damage, *i.e.*, acid, fire, abrasion.

(e) Reason removed from service.

(f) Reason if condemned.

6-2.3 If the hose is removed from service or condemned within the warranty period because of an in-warranty failure, it shall be so indicated.

6-3 Responsibility.

6-3.1 Responsibility for establishing and maintaining the records required by this chapter shall be vested with the authority having jurisdiction.

6-3.2 Personnel responsible for the repair and maintenance of fire hose shall see that a hose work report for each repaired length is prepared and forwarded through established channels for recording on the permanent hose record.

6-4* Identification Number. Each length of hose shall be identified by the assigned identification number stenciled on the jacket. Care shall be taken to use an ink or paint which is not harmful to the hose. As an alternative, the identification number may be stamped on the bowl or swivel of the female coupling utilizing a procedure to prevent damage to the coupling.

Chapter 7 Nozzles, Couplings, Connections, and Gaskets

7-1 Nozzles.

7-1.1 Nozzle valves attached to in-service hose shall be in the closed position.

7-1.2* All nozzles shall be checked immediately after use for obstructions in the waterway, damage to the tip, and full operation if adjustable stream type; then they shall be thoroughly washed before being placed back in service. The internal connection gasket shall be inspected as described in Section 7-4 of this Standard.

7-1.3* The above checks shall also be made to nozzles attached to hose, *i.e.*, hose racks, when the hose is service tested. Nozzle valves shall work freely. If for any reason a valve sticks, the nozzle shall be immediately taken out of service, and the valve repaired or replaced.

7-1.4 If, during use, there is an obstruction that cannot be removed by fully opening the nozzle, the nozzle shall be taken from the hose line and the obstruction removed through the connection end, as soon as is practicable, since any further attempt to force it out through the tip may damage the nozzle.

7-1.5 Care shall be taken to avoid dents or nicks in nozzle tips, as this can seriously affect the reach of the stream. To prevent mechanical damage, nozzles shall be handled with care. They shall not be dropped or thrown.

7-1.6 Nozzle control valves shall be opened and closed slowly to eliminate unnecessary strain on the hose and couplings and reduce pressure surges.

7-2 Couplings.

7-2.1* Couplings shall be kept in serviceable condition. After each use, and at each service test of the hose, they shall be visually inspected and, if found defective, removed from service. The internal connection gasket shall be inspected as specified in Section 7-4 of this Standard. A lubricant recommended by the coupling manufacturer may be used on coupling swivels and threads.

7-2.2* When disconnecting the line after use, care shall be taken not to drop the couplings on pavement or other hard surfaces which may cause damage to the swivel section or exposed threads.

7-2.3 Care shall be taken to avoid driving over couplings.

7-2.4 Special care shall be taken when an aluminum coupling and dissimilar metal are connected, as corrosion may occur due to the difference in the metals and moisture will tend to accelerate this corrosion. When they are left connected they shall be disconnected and inspected at least quarterly. If corrosion exists, they shall be cleaned and a protective coating, recommended by the aluminum coupling manufacturer, shall be applied to the threads. This coating shall be applied after each use and during each inspection.

7-2.5* When couplings are re-attached, the hose shall be service tested in accordance with Chapter 8 of this Standard.

7-2.6* In attaching new or used couplings, care shall be taken to have the hose fit properly in the bowl of the coupling. The outside diameter of the hose shall snugly fit the internal diameter of the bowl of the coupling. The expansion ring shall be of the proper size and length for the couplings used.

7-3 Connections.

7-3.1 All fire department connections on standpipe and automatic sprinkler systems shall be inspected annually.

7-3.2 The inspection shall include but not be limited to:

(a) Swivels rotating freely.

(b) Caps or plugs in place.

(c) Threads in good condition to receive mating thread.

(d) Thread gaskets meeting Section 7-4 of this Standard.

7-4 Gaskets.

7-4.1 The thread gasket in couplings, nozzles, and connections shall be inspected as required by this chapter.

7-4.1.1* The thread gasket shall be examined for presence, fit, and deterioration. If defective, replace with a new gasket.

7-4.1.2* The thread gasket shall fit the recess tightly.

7-4.2 The tail gasket at the end of the hose shall be replaced when installing a used coupling.

7-4.3* No gasket shall protrude into the waterway.

Chapter 8 Service Tests

8-1 General.

8-1.1* Acceptance Test. New hose only shall be subjected to the acceptance hydrostatic tests. These tests shall be conducted only at the point of manufacture or at a facility properly equipped and staffed for these tests. Hose shall be equipped with couplings to be delivered, unless otherwise specified by the purchaser.

8-1.2 Service Tests. All fire hose of the types described in Chapters 2, 3, and 4 of this Standard shall be service tested at intervals specified in the respective chapters. To remain in service the hose shall pass the service test for that type of hose.

8-1.3 The procedure in this chapter shall be followed carefully using the applicable service test pressure listed in Section 8-3. Testing hose is dangerous and shall be conducted by trained personnel, and following the procedure specified in 8-4.2 of this Standard.

8-2 Service Tests for Fire Hose.

8-2.1 All fire hose shall be service tested as specified throughout this Standard, *i.e.*, annual test, after being used, frozen, and after attachment of new or used couplings.

8-2.2 Before subjecting hose to the service test, it shall be physically inspected for jacket defects, coupling damage, and worn or defective gaskets. All lengths with any of these defects shall be removed from the test area and repaired, if serviceable, and then retested before being put back in service. Couplings and gaskets shall be inspected as specified in Chapter 7 of this Standard.

8-3 Service Test Pressures.

8-3.1* The service test pressures shall be as specified in Table 8-3.

Exception: In fire departments where hose may need to be used at pressures greater than the service test pressure, a service test pressure at least 10 percent above that greater pressure shall be used in lieu of the service test pressure in Section 8-3, but this test pressure is not to exceed 70 percent of the new hose rated acceptance pressure.

8-3.2* All 3½-in. (89-mm) and larger hose shall be service tested while lying flat. A short length of smaller-diameter hose shall be used to connect the test valve to the hose being tested.

Table 8-3

Trade Size in. (mm)	Jackets	New Hose Rated Acceptance Test Pressure psi	(kPa)	Service Test Pressure psi	(kPa)
Lined Industrial, Standpipe, and Fire Department					
1½ (38) thru 2½ (65) *	Single	300	(2070)	150	(1030)
1½ (38) thru 4½ (114)	Single	400	(2760)	250	(1720)
1½ (38) thru 2½ (65)	Single	500	(3450)	250	(1720)
1½ (38) thru 4 (102)	Multiple	400	(2760)	250	(1720)
1½ (38) thru 4 (102)	Multiple	600	(4140)	250	(1720)
Unlined Standpipe					
1½ (38) and 2½ (65)	Single			150	(1030)
Lined Forestry					
1 (25) and 1½ (38)	Single	450	(3100)	250	(1720)
Unlined Forestry					
1 (25) and 1½ (38)	Single	450	(3100)	250	(1720)
Relay Supply					
3½ (89) thru 4½ (114)	Single	400	(2760)	200	(1380)
5 (127) and 6 (152)	Single	300	(2070)	150	(1030)
Pumper Supply (Soft Suction)					
4 (102) thru 6 (152)	Multiple	400	(2760)	200	(1380)

* 1½ (38) thru 2½ (65) single jacket hose with a new hose rated acceptance test pressure of 300 psi (2070 kPa) shall not be maintained on fire apparatus for fire fighting purposes.

8-4 Service Test Methods.

8-4.1* In making the service pressure test, care shall be taken to remove all air from the hose before the nozzle or

test cap valve is closed and the pressure allowed to rise. It shall be recognized that development of test pressures introduces a serious accident potential even when the specified procedures are followed.

8-4.2 Test Procedures. The following test procedures shall be followed:

8-4.2.1 Hydrostatic Test Equipment. A hose testing machine, a stationary pump, or a fire department pumper equipped with a hose test gate valve shall be used. The gages used to read the test pressure shall be certified at least annually.

8-4.2.1.1* The hose test gate valve shall be a fire department gate valve with a ¼-in. (6.4-mm) opening drilled through the gate that permits the pressure to be raised to the test pressure after the hose has been filled, the air completely removed, and the hose test gage valve closed, but shall not permit a pressure surge if the hose bursts during testing.

8-4.2.2 Location. A location shall be selected that will allow connection of the hydrostatic equipment to an adequate water source.

8-4.2.3* Hose Lines. The total length of each hose line to be tested shall not exceed 300 ft (92 m). The hose lines shall be straight and without kinks or twists. Identifying numbers of lengths being tested shall be recorded except for forestry hose.

8-4.2.4* Hook Up. The hose lines to be tested shall be connected to the hose test gate valve of the pump. The hose test gate valve shall be used to prevent an excessive pressure surge to the equipment should a hose burst during the test. The hose test gate valve end of the hose line shall be secured with a belt tie-in or rope hose tool at a point 10-15 in. (250-400 mm) from the coupling. Shutoff nozzles or test caps shall be attached to the far end of the line. The shutoff device or the hose directly in back of the device shall be secured to avoid possible whipping or other uncontrolled reaction.

8-4.2.5 Removing the Air. With the hose test gage valve open and the nozzle or test cap valve open, the pressure shall be gradually raised to approximately 50 psi (345 kPa). After the line is charged and all air has been exhausted from the hose, the nozzle or test cap valve shall be slowly closed and the hose test gate valve shall be closed which will allow just enough water to pass to keep pressure on the hose line.

8-4.2.6* Marking for Coupling Slippage. After filling hose, each coupling shall be marked at each end at back of the coupling to determine whether the coupling slips during the test. All couplings shall be checked for leakage and tightened with spanner wrench where necessary.

8-4.2.7* Pressure Test. The pressure shall be raised slowly at a rate not greater than 1000 psi (6900 kPa) per minute to the specified service test pressure in Section 8-3 of this Standard and held for 5 minutes. During the test, walk down the line and inspect for leaks. Never stand in front of the free end nor straddle a hose line under pressure. Inspection personnel shall always keep at least 15 ft (4.6 m) to the left side of the hose line under test. The left side of the hose line shall be defined as that side which is to the left when facing the free end from the pressure source.

8-4.2.8 Draining. After 5 minutes the pressure shall be reduced slowly, the pump discharge gates closed, and each nozzle or test cap valve opened to drain the hose.

8-4.2.9 Recording Data. Hose records, specified in Chapter 6 of this Standard, shall be updated to indicate the results of each length tested. If the length is defective, a tag explaining what the defect is and, if applicable, a distinguishing mark noting the location of the defect shall be placed on the hose.

8-4.2.10 Inspection. Observe marks placed on hose at back of the couplings. If the coupling has moved during the test, the coupling shall be cut from the hose, the length tagged, and sent for recoupling. All couplings shall be examined when the hoses are uncoupled and any leaking gaskets or defective couplings shall be replaced. Any burst or leaking lengths shall be tagged, taken out of service, and sent for repair.

8-4.2.11 Completion. After testing or retesting, all hose shall be thoroughly cleaned, drained, and dried before being placed back in service or stored as described in Chapter 5 of this Standard.

8-5 Unlined Hose.

8-5.1 All service testing of unlined hose shall be performed in accordance with procedures specified in Sections 8-2, 8-3, and 8-4 for lined hose except that unlined linen hose shall have a 10-minute wet-soak at 50 psi (345 kPa) prior to applying full pressure to condition the linen yarn prior to running the service pressure test. If, after the wet-soak, the service test pressure cannot be obtained at a maximum flow rate of 20 gpm (75 L/m), the hose shall be removed from service. Linen hose shall be thoroughly dried immediately after testing to avoid mildew.

8-6 Nonwoven Rubber Hose.

8-6.1 Braided hose shall be service tested annually to 150 percent of its rated working pressure when tested in accordance with ASTM D380, *Standard Method of Testing Rubber Hose.*

8-6.2* Hard suction hose shall be service tested annually to 150 percent of the rated working pressure when tested in accordance with ASTM D380, *Standard Method of Testing Rubber Hose*. Hard suction hose shall also be dry vacuum tested annually as follows:

8-6.2.1 The hose shall be attached to a suction source, *i.e.*, pumper suction inlet.

8-6.2.2* The free end shall be sealed with a transparent disk and connected to an accurate vacuum measuring instrument.

8-6.2.3 A 22-in. (50-mm) mercury vacuum shall be

developed. While holding the vacuum, the lining of the hose shall be inspected through the transparent disk. *(See A-8-6.2.2.)* There shall be no collapsing of the lining into the waterway.

Chapter 9 Purchasing

9-1* General. The following requirements shall apply to the purchasing of new fire hose.

9-2 Hose. The hose shall meet the requirements of NFPA 1961, *Standard for Fire Hose.*

9-3 Couplings. The coupling threads and gaskets shall meet the requirements of NFPA 194, *Standard for Screw Threads and Gaskets for Fire Hose Connections.*

Appendix A

This Appendix is not a part of this NFPA Standard, but is included for information purposes only.

A-1-3.2 The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment or materials nor does it approve or evaluate testing laboratories. In determining the acceptability of installations or procedures, equipment or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization concerned with product evaluations which is in a position to determine compliance with appropriate standards for the current production of listed items.

A-1-3.4 The phrase "authority having jurisdiction" is used in NFPA standards in a broad manner since jurisdictions and "approval" agencies vary as do their responsibilities. Where public safety is primary, the "authority having jurisdiction" may be a federal, state, local, or other regional department or individual such as a fire chief, fire marshal, chief of a fire prevention bureau, labor department, health department, building official, electrical inspector, or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the "authority having jurisdiction." In many circumstances the property owner or his delegated agent assumes the role of the "authority having jurisdiction"; at government installations, the commanding officer or departmental official may be the "authority having jurisdiction."

A-1-3.13 The means for identifying listed equipment may vary for each testing laboratory, inspection agency or other organization concerned with product evaluation, some of which do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A-1-3.22 Soft suction hose is to be used when connecting pumpers to positive pressure sources (e.g., hydrants).

A-1-3.26 The formula for water hammer is:

$$\text{delta } p = c \times d \times \text{delta } v$$

where:

delta p = change in pressure, [lbs/ft² (Kg/m²)]
c = velocity of pressure wave traveling back toward the water sources, [ft/sec (m/sec)]
d = mass density of water, [1.9 slugs/cu ft (Kg/m³)]
delta v = change in water velocity, [ft/sec (m/sec)]

NOTE: c for 2½ in. (65 mm) double jacket rubber lined hose is approximately 800 to 1,000 ft/sec.

(See Purington, R. G., *Fire Fighting Hydraulics*, New York, N.Y., McGraw-Hill Book Company, 1974, 1st ed., pages 371-373.)

A-1-3.27 See NFPA 1901, *Standard for Automotive Fire Apparatus.*

A-1-4.1 See ASTM E380, *Standard for Metric Practice*, for additional information.

A-2-2.1.1 When the humidity is 70 percent or greater or when hose is for municipal use, jackets with cotton yarns should be treated with water repellents and against mildew.

A-2-2.1.2 When the humidity is 70 percent or greater or when hose is for municipal use, jackets with cotton yarns should be treated with water repellents and against mildew.

A-2-3.1 Typical Hose Houses.

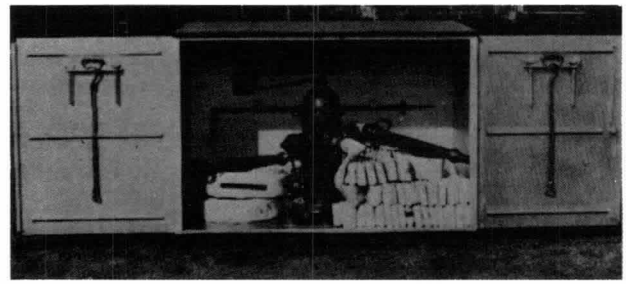


Figure A-2-3.1(a) Hose house of compact dimensions for installation over a yard hydrant. Construction may be steel or aluminum.

Figure A-2-3.1(b) Steel house of compact dimensions for installation over a yard hydrant. House is shown closed. Top lifts up and doors on front side open for complete accessibility.

A-2-3.2 Class II Standpipe System. Note size of standpipe and 1½-in. (38-mm) hose for building occupant use.

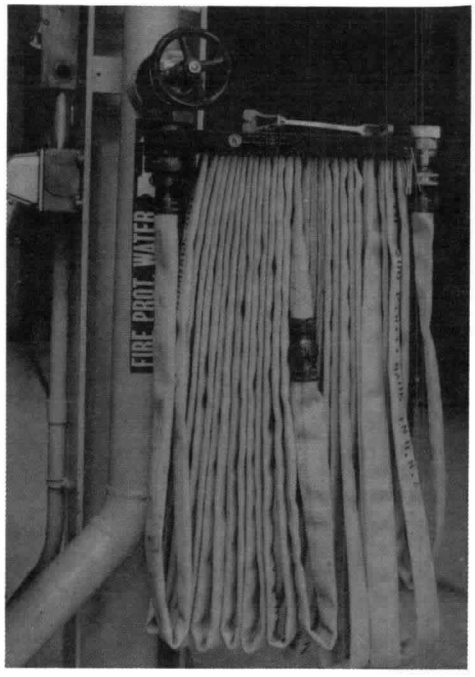


Figure A-2-3.2 *(Courtesy of National Aeronautics and Space Administration)*

A-2-3.3.2 If at all possible, the apparatus should be loaded with previously tested and dried hose and returned to service.

The use of 100 percent polyester hose has increased very rapidly. However, this hose should be thoroughly drained and dried before reloading on the apparatus. Damp or wet hose loaded on the apparatus hose bed will still cause mildew to form. Although this will not affect the hose itself, it does cause undue rusting of the apparatus body and increases the potential of dry-rot in the wood flooring under the hose.

The use of a protective hose bed cover is recommended to protect the hose load from weather damage and other physical damage. Where covers are provided, care must be taken to permit free circulation of air under the cover to reduce the danger of mildew. Covers should be made from flame resistant materials and secured to the apparatus in a manner to prevent them from blowing off while the apparatus is in motion.

See NFPA publication *Handling Hose and Ladders* for various hose loads.

A-2-3.3.3 It has been discovered that when 100 percent polyester hose is loaded on the apparatus in the conventional manner (horse-shoe-U load, accordion, or skid loads) excessive edge wear is noted on this 100 percent polyester hose. As a result of this edge wear, hose manufacturers recommend that where 100 percent polyester hose is used it be loaded on the apparatus in the FLAT LOAD manner. (See the NFPA publication *Handling Hose and Ladders* for specific loading instructions.) *(See also Figure A-2-3.3.3.)*

Best fire department and forestry practice is to remove the hose from the apparatus at least once a month. Water should be run through the hose once quarterly and the hose thoroughly dried before being replaced on the apparatus.

A-2-3.4 Failures in short lengths of large diameter pumper supply hose generally are caused when this hose is carried on the apparatus folded and either tied down or placed in a small compartment. Where folds are always placed at the same points, they place considerable stress on the warp threads. If limitations of space prevent folding the hose so that the folds occur in different places, it should be carried in a roll on a step or running board.

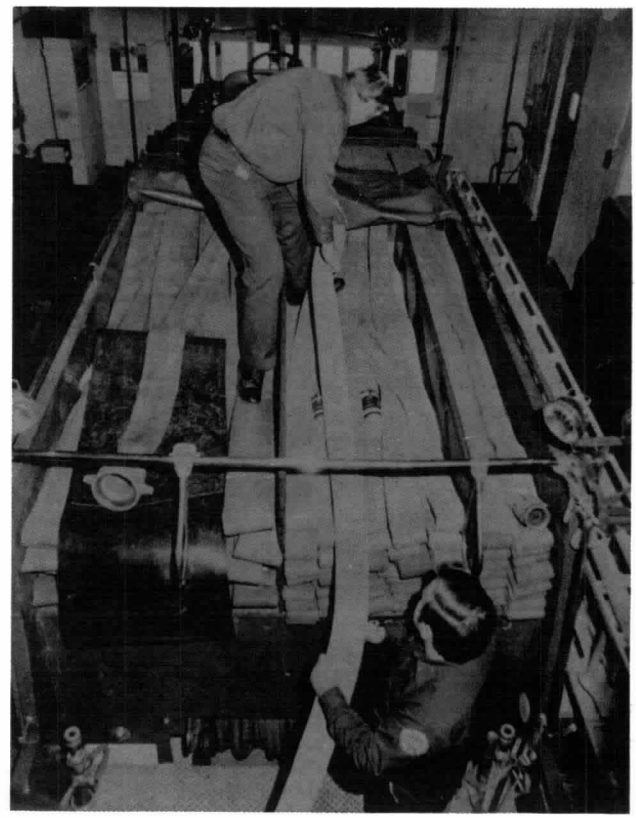


Figure A-2-3.3.3 Typical flat load. *(Courtesy of Chelsea, Mass. Fire Department)*

Many fire departments keep one end of this hose preconnected to the suction side of the pump which decreases the time for hydrant hook-up.

A-2-4.1 When hoisting attack hose, damage can be avoided and the task made easier by use of hose rollers. Synthetic hose is more susceptible than cotton hose to damage from hot embers and radiant heat. Where it is necessary for vehicles to cross attack hose lines, hose bridges should be used. More damage to the hose is likely to occur on uncharged hose than on charged hose.

A-2.4.2 General recommendations for care and use of lightweight large-diameter relay-supply hose.

(a) Hose should be loaded flat in the hose bed and layered across the bed. All couplings should be loaded so as to pull off the load without flipping over.

(b) Before reloading into apparatus bed, remove all grit and foreign materials from hose. For hose of the type described in 2-2.1.5, drying after washing is not a requirement, however, hose should be rinsed off and dried with a clean rag or towel and then reloaded. Wet and dirty hose should not be reloaded for in-service use until thoroughly cleaned and dried.

(c) Couplings should be lubricated occasionally with a liquid silicone or light silicone base lubricant.

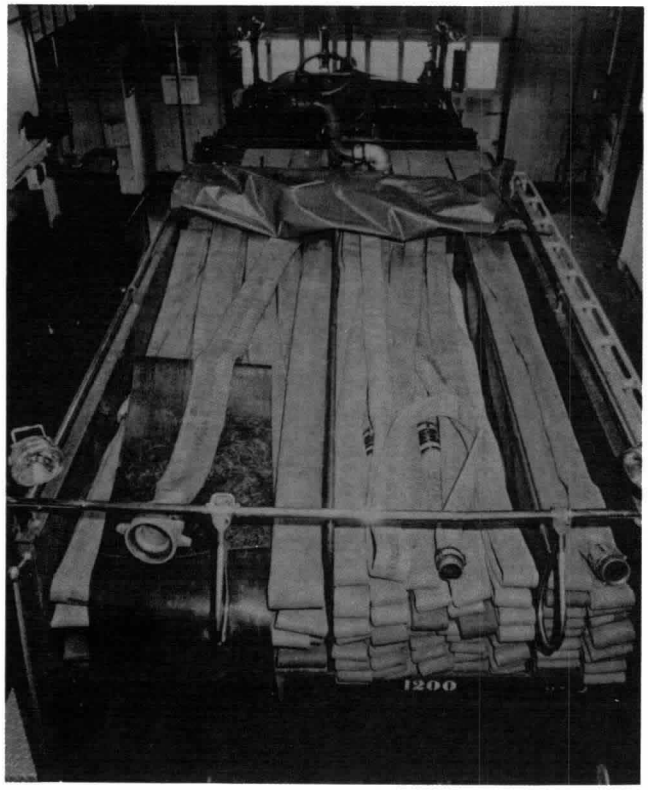


Figure A-2-4.2 Flat load of large-diameter relay-supply hose. *(Courtesy of Chelsea, Mass. Fire Department)*

A-2.4.2.4 Large-diameter relay-supply hose should not be run over. If hose must be crossed, hose bridges must be used and vehicles should have sufficient clearance to cross without contact with hose.

A-2.4.2.5 The automatic pressure governor or the discharge relief valve on the pumper does not provide protection to the suction side of the pump. The lower the setting of the relay relief valve, the greater the protection to the hose. The relay relief valve should be designed to control the buildup of air pressure.

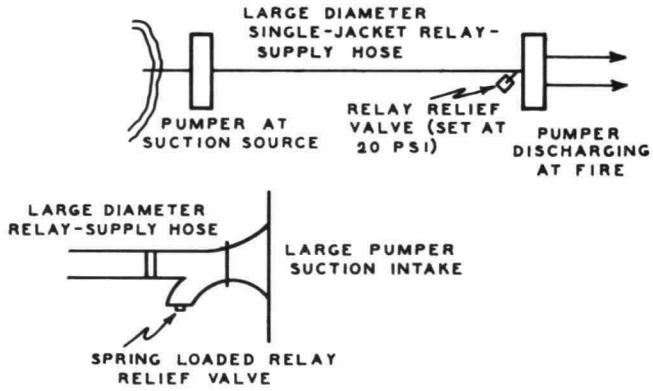
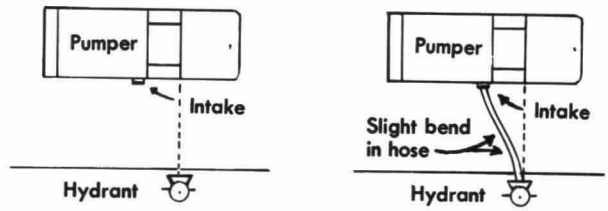


Figure A-2-4.2.5 Schematic showing relay relief valve.

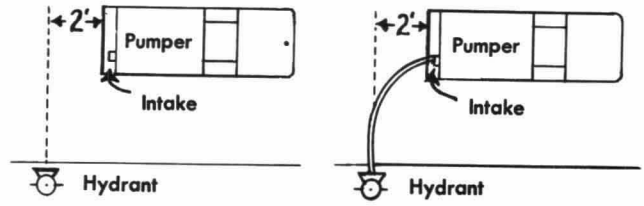
A-2-4.2.6 When shutting down the relay operation always disengage the pump nearest the fire first and allow the water to run free, then shut down the relay from the water source. This will avoid the pumper nearest the fire from pumping dry.

A-2-4.3 Hydrant Pumper Hook Up. When connecting a pumper to a hydrant using a large supply hose, it is good practice to make sure that there is a slight bend in the hose before the water is turned on. This will tend to avoid kinks *(see Figure A-2-4.3)*.

Using Soft Suction



Method 1. Using side intake, slight bend in hose cuts down tendency of soft suction to kink.



Method 2. Using rear intake. Notice bend is not sharp. Be sure hose is not twisted before water is turned on. The same precaution can also be used on front end pumps

Figure A-2-4.3

A-2-5.1 At structural fires, fire hose is exposed not only to heat from fires but burning embers, broken glass, nails and other sharp objects.

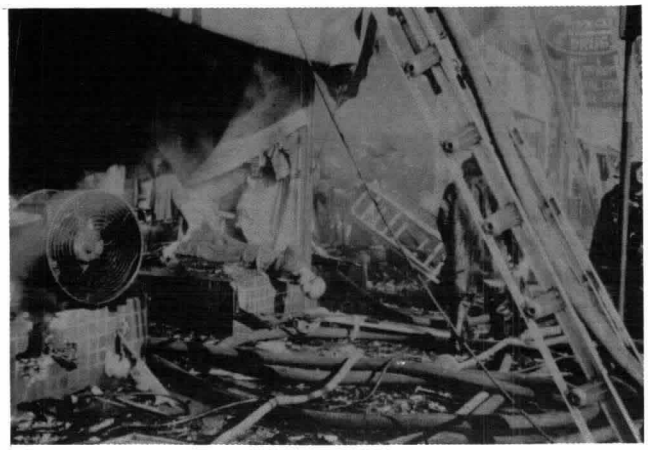


Figure A-2-5.1

A-2-5.2 During freezing weather, it is common practice to place the nozzle out of a window and by "cracking" the valve, keep water moving through the hose while overhaul is in process. Avoid sharply bending hose in or on which ice has formed as frozen hose can easily be damaged by a sharp bend. Use care in removing hose from ice after a fire. Steam is useful in removing ice from hose.

A-3-1.1 For best life, hose should be stored in a ventilated area at temperatures between 32°F (0°C) and 100°F (38°C).

A-4-2 Hose of this type is designed for use by building occupants for fire first aid protection purposes. It will not stand frequent use. The valve must be kept in good condition so there will be no leakage. Condensation on the standpipe and/or valve can run into the hose and cause mildew. If the couplings are polished, keep the polish from coming in contact with the hose.

A-4-3 Forest fire fighting services are large users of unlined fire hose. While dry, this hose is light and flexible. When wet, this type has high strength characteristics and is abrasion and fire resistant but is stiff while wet. An advantage of the unlined hose is that water seepage through the hose tends to protect it against hot objects which it may contact in forest fire fighting service. With long lines of hose and low capacity pumps, excessive seepage can cause delay in getting water to the nozzle. Friction loss is greater in unlined hose than in lined hose.

A-5-3 For washing, use a scrub brush and mild soap or detergent and water. A mechanical washer can be used where hose is used frequently or the quantity to wash is great. Avoid constant washing of cotton jacket hose treated to mildew resistance as the washing will wash out the treatment. There are several commercial hose washers available, although many fire departments have constructed their own.

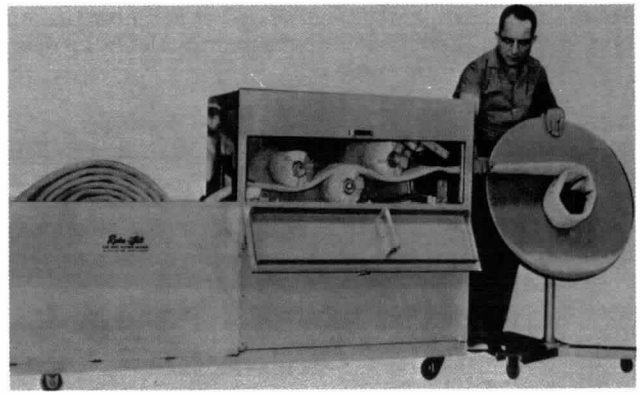


Figure A-5-3 Typical commercial hose washer.
(Courtesy of Circul-Air Corp.)

A-5-4 Tower drying has proved successful [*see Figures A-5-4(a)-(e)*]. However, care must be taken to properly ventilate and control the temperature of the tower so the hose will not be damaged by excessive heat. It is poor practice to suspend hose from couplings. To dry linen hose, the following suggestions should be considered:

(1) At least 24 hours in a hose drier — loosely coiled.

(2) Regardless of drying method the hose must be limp and flexible and retain no degree of stiffness beyond what it was originally.

(3) Do not be misled by the fact that hose is dry on the outside.

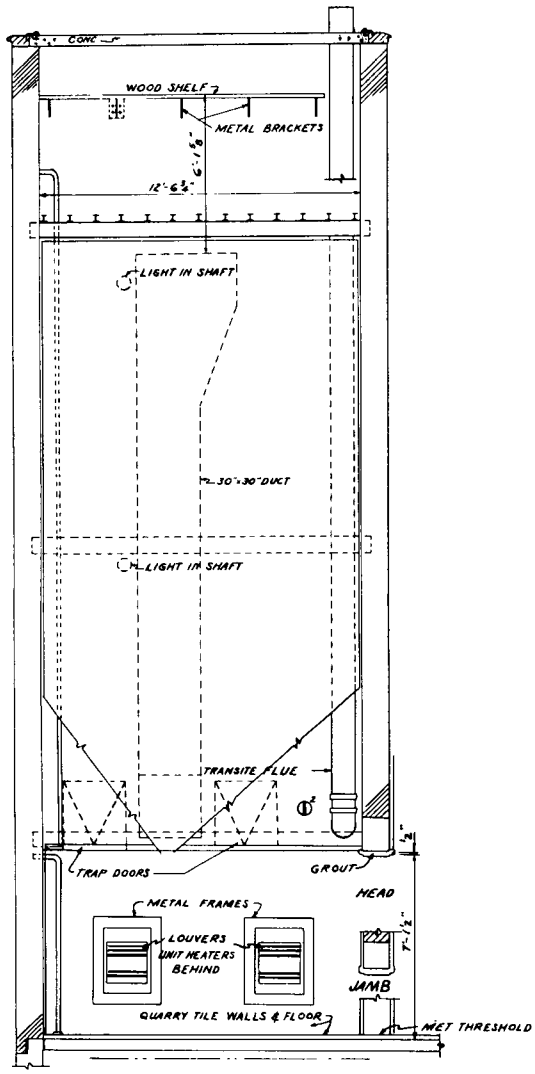


Figure A-5-4(a) Section through hose drying tower.

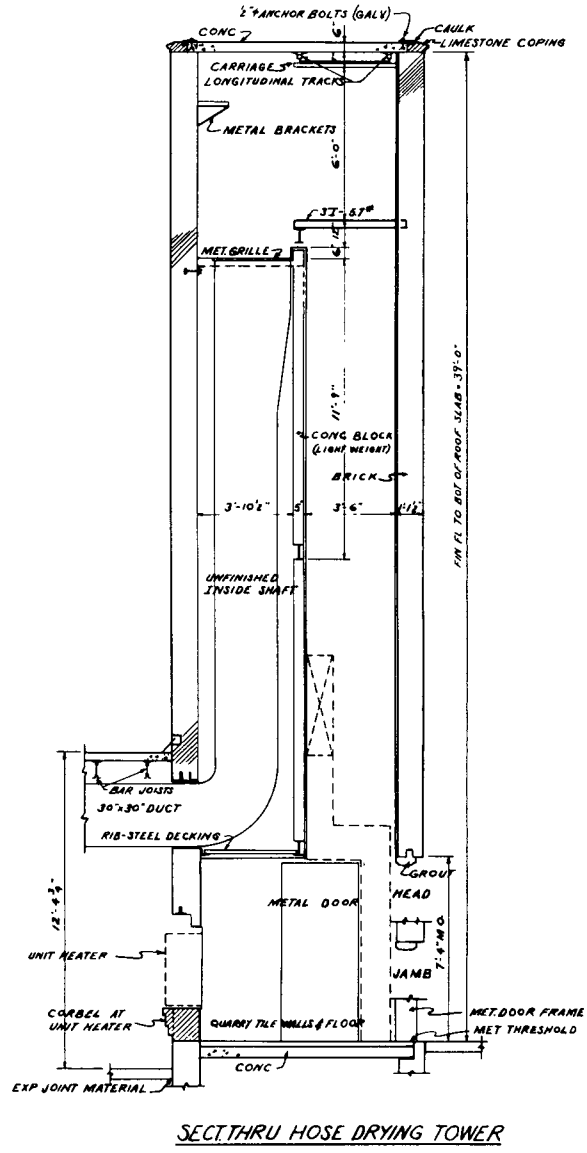


Figure A-5-4(b) Section through hose drying tower.

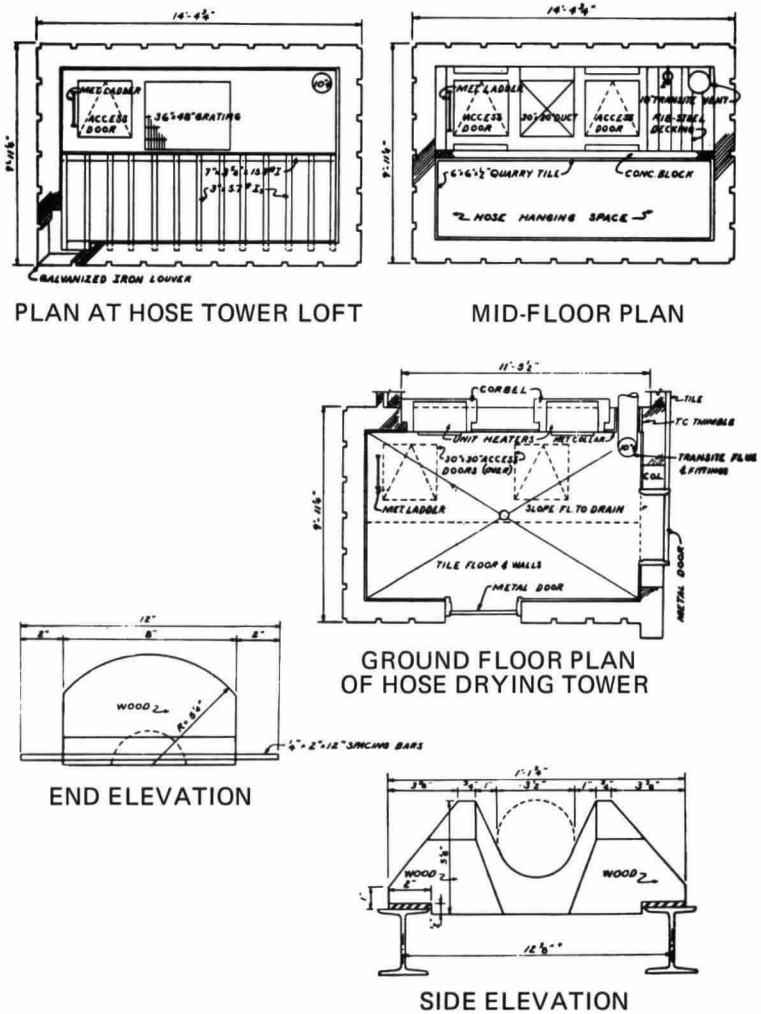


Figure A-5-4(c) Features of hose drying tower.

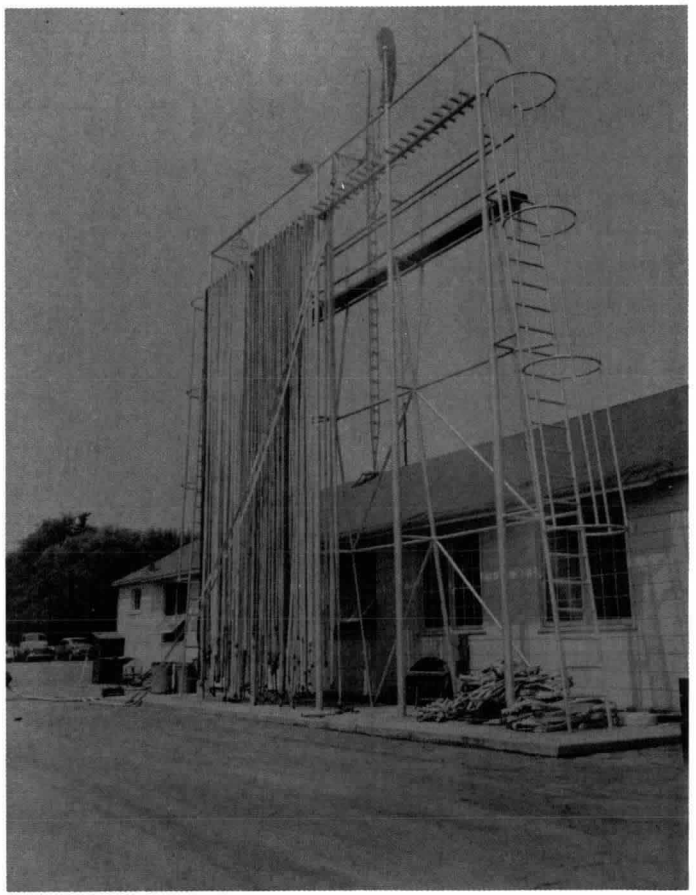


Figure A-5-4(d) Hose drying tower for forestry hose.

(Courtesy of United States Forest Service)

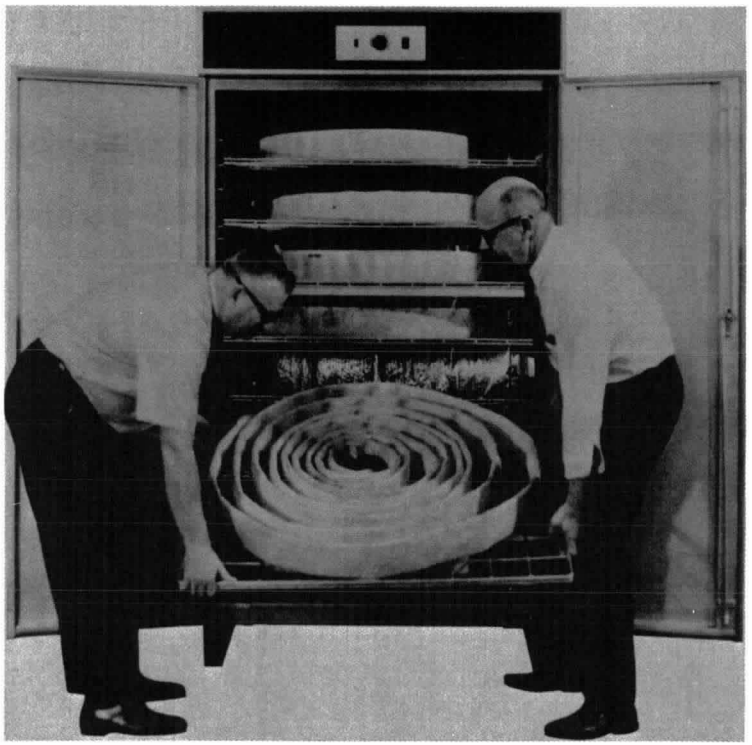


Figure A-5-4(e) Typical commercial hose dryer.
(Courtesy of Circul-Air Corp.)

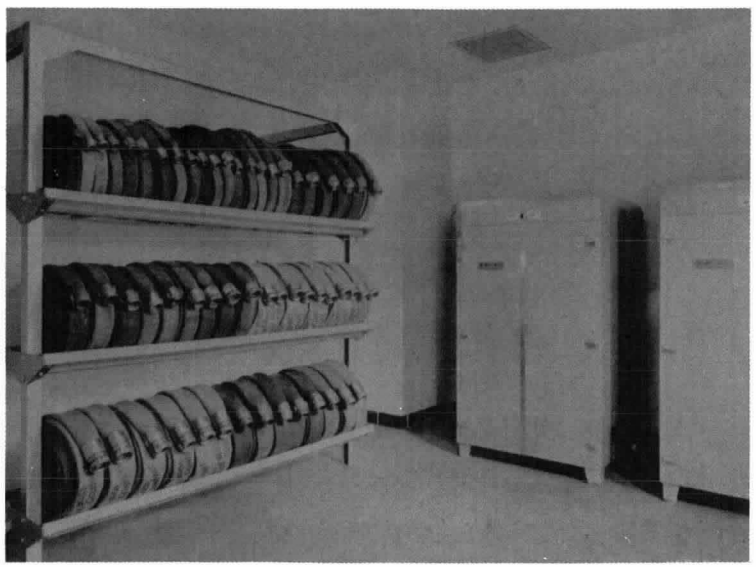


Figure A-5-5 Typical commercial hose dryer and storage racks.
(Courtesy of Circul-Air Corp.)

A-5-5 Commercial storage racks are available but many users have built their own to fit their particular need.

A-6-1 Chapter 6 describes the methods and the information necessary for minimum record keeping. Records are essential and necessary data to determine hose performance and assure safe use in fire fighting. Cost effectiveness can also be determined. This recorded information is required for effective hose management.

A-6-1.3 As the safe use of hose requires continued accurate up-to-date records, the records should be maintained and kept at the company level in addition to a central file. Conditions, repairs, changes, problems, etc., should be recorded immediately for each length of hose.

HOSE RECORD CARD

ID NO. _____ CITY _____ ENGINE CO. _____

SIZE (DIA.) _____ LENGTH _____ TYPE HOSE _____ CONST. _____ COST _____

MFG. _____ PART NO. _____ DATE RCD. _____ DATE IN SERVICE _____

VENDOR _____ CPLG. MFG. _____ TYPE CPLGS. _____

REPAIRS

DATE	KIND	COST	NEW LENGTH	NEW ID NO.

REMARKS: _____

SERVICE TEST TO _____ PSI **TEST RECORD**

DATE	SERVICE TEST PRES. PSI	TEST OK	REASON FAILED	DATE	SERVICE TEST PRES. PSI	TEST OK	REASON FAILED

DATE	EXPOSED TO POSSIBLE DAMAGE		DATE	REASON
		REMOVED FROM SERVICE		
		CONDEMNED		
		SOLD		
		WRNTY. FAILURE		

Figure A-6-1.3 Example showing front and back of a hose record card. *(Courtesy of Scandia Industries, Inc.)*

A-6-1.5 Forestry hose is often moved from one location to another in large quantities. Forestry fire apparatus many times leaves the scene of a fire with a different complement of hose than that at arrival. Because of the relocation of hose following fire activity, maintaining individual records of each length of hose may be impracticable *(see Section 6-2)*. As a minimum, records should be kept on stored hose at stations and fire warehouses to ensure proper inventory rotation.

A-6-1.6

HOSE REPAIR TAG

HOSE TO BE REPAIRED MUST BE TAGGED

ID NUMBER ◇	COMPANY NUMBER
PICKED UP BY: ◇	DATE PICKED UP
DELIVERED BY: ◇	DATE DELIVERED

REPAIRS NEEDED:

_____

_____

_____

REPAIRS MADE:

_____

_____

_____

REPAIRED BY: ◇	DATE REPAIRED
SERVICE TESTED PSI	DATE TESTED

☐ HOSE IS NOT REPAIRABLE.
ID NO. OF REPLACEMENT HOSE
➡ _____

NOTE: THIS TAG MUST BE FILLED OUT AND RETURNED WITH HOSE. ENTER REPAIRS ON HOSE RECORD CARD.

(Courtesy of Memphis Fire Dept.)

A-6-2.1 Other information recorded may include:

(i) Type of coupling, *i.e.*, forged aluminum rocker lug, cast brass in pin lug, etc.

(j) Coupling threads.

(k) Manufacturers of coupling and part number.

(l) Length of guarantee.

(m) Label number.

(n) Cost.

A-6-4 Where hose repairs are frequent, however, couplings and hose lengths may become intermingled so that either stenciling the hose or changing the couplings should be employed. In stamping couplings, the proper procedure is to insert a special steel plug with round edges into the end of the expansion ring. One sharp blow from a steel numbering die will then clearly stamp the coupling. Coupling bowls may be damaged by improper number or letter stamping. Aluminum couplings should be stamped before they are hardcoated. Some fire departments color code couplings as well as various tools to identify the company to which the equipment is as-

signed. This enables each company to readily identify and pick up its own hose and equipment used at a fire. Where mutual aid operations are frequent, each length of hose should be appropriately stenciled or marked with identification of the fire department owning same. A water base latex paint is not harmful to the hose. Paints with petroleum solvent basis may cause the bond between the liner and gasket to fail.

A-7-1.2 Nozzles should be washed in a solution of soap and hot water. Submerge the nozzle and work the sleeve or roller until a free movement is obtained and rinse in water. Lubricate the shutoff valve with silicone grease. Cracked rubber-covered handles on nozzles can be the source of accidents and should be replaced.

A-7-1.3 It should never be necessary to hammer a shutoff valve to make it operate.

A-7-2.1 The defects are: (a) damaged threads, (b) corrosion, (c) slippage on the hose, (d) out-of-round swivel, (e) swivel not rotating freely, and (f) missing lugs or other defects that impair their operation. In most cases a machine shop with the proper facilities can repair damaged threads. One way to detect any slippage of the coupling on the hose is to inspect the area where the expansion ring is located for any appreciable gap between the expansion ring and the coupling waterway. Ordinarily the swivels can be freed satisfactorily by immersion in warm soapy water.

A-7-2.2 On some couplings such abuse can cause the swivel to go "out-of-round" at the end of the section which attaches to the bowl assembly, and, as a result, the swivel will not turn.

A-7-2.5 A degree of skill and experience is required to properly attach couplings to hose. You should have good equipment and a mechanic skilled and experienced in attaching couplings. If not, this work should be done by the manufacturer of the hose.

A-7-2.6 Usually a misfit over ± 1/32 of an in. (0.79 mm) will require special techniques and should be avoided.

A-7-4.1.1 A high quality synthetic gasket, *i.e.*, Buna N., with antioxidents or neoprene should be used as natural rubber gaskets may deteriorate with age and will harden and break away from the gasket seat.

A-7-4.1.2 A thread gasket with a smaller diameter than that of the recess can cause a leaky connection when pressure is applied. See NFPA 194, *Standard for Screw Threads and Gaskets for Fire Hose Connections*, Chapter 6.

A-7-4.3 If the gasket protrudes at the nozzle connection it can cause a ragged stream, thus reducing the effective reach of the nozzle and at a coupling it can cause increased friction loss.

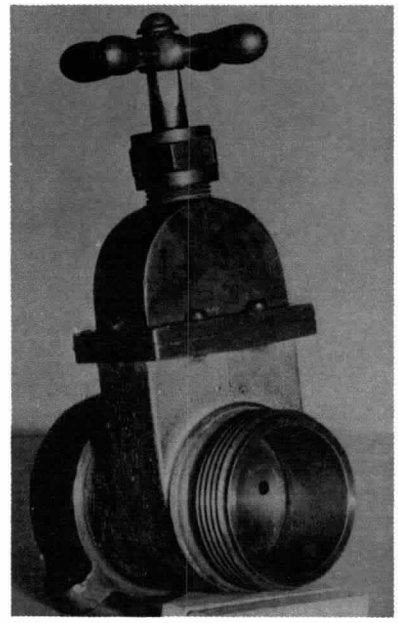
A-8-1.1 See NFPA 1961, *Standard for Fire Hose*, Chapters 4 and 5 for acceptance hydrostatic tests.

A-8-3.1 Service test pressures higher than those given in Table 8-3, and referred to in the Exception of 8-3.1 are not meant to recommend usage above the service test pressure but only to give guidance when the in-use hose might require some usage at this higher pressure, *i.e.*, servicing standpipes in high-rise buildings where the static pressure may exceed the service test pressure.

A-8-3.2 Testing of large-diameter, lightweight relay-supply hose should be done with the hose lying flat. A test cap fitted with an air bleed-off attached at one end and the use of a short length (pigtail) of 2½-in. (65-mm) or 3-in. (76-mm) hose attached to the other. A test valve should be used at the pump end as in all service tests for fire hose.

A-8-4.1 Air under pressure becomes greatly compressed, and the hose can whip violently if the pressure is suddenly released by a hose burst; also a blown-off coupling propelled by the compressed air will act like a high velocity missile *(see 8-4-2.5)*.

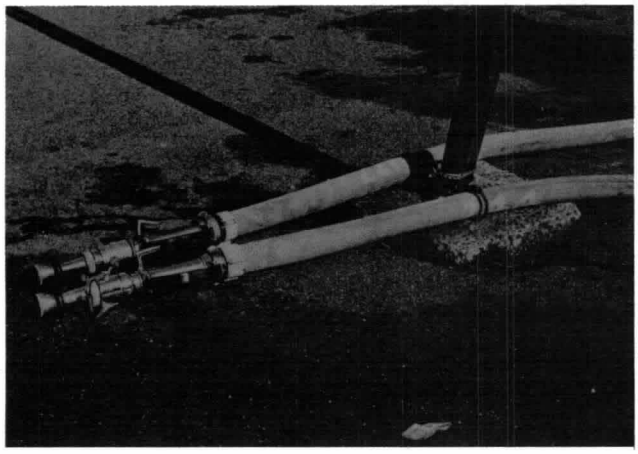
A-8-4.2.1.1



A hose test gate valve.
(Courtesy of Milwaukee Fire Department)

A-8-4.2.3 The surface on which the hose is laid out should be as smooth as possible. Rough surfaces will accelerate abrasion and hinder proper movement of the hose line. *(See Chapter 6, "Record Keeping.")*

A-8-4.2.4



Secured test hoses. *(Courtesy of Chelsea, Mass. Fire Department)*

A-8-4.2.6

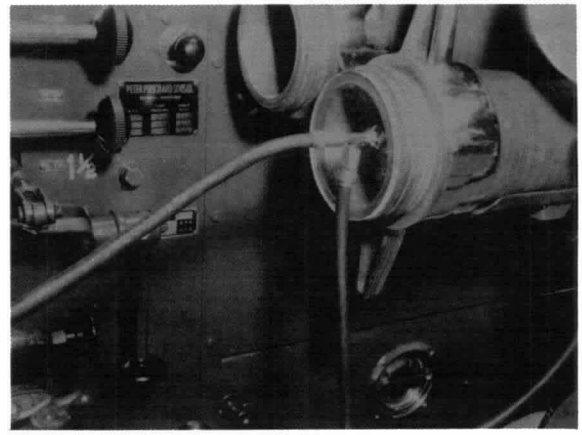
Marking for coupling slippage.

A-8-4.2.7 Rate of increase specified in 8-4.2.7 should not exceed 250 psi (1720 kPa) in 15 sec, or 500 psi (3450 kPa) in 30 sec.

Figure A-8-4.2.7 Pressure test layout with inspection personnel checking couplings. *(Courtesy of Rockford, Illinois Fire Department)*

A-8-6.2 The suction hose vacuum test may be run in conjunction with the annual pumper suction test.

A-8-6.2.2



Plastic test disk for pumper suction hose. One line goes to the pumper vacuum and the other to a test gage. A clear plastic disk at the other end used with a light makes it possible to observe if the internal lining is drawn into the waterway. *(Courtesy of San Diego Fire Department)*

A-9-1 Guide to Purchasing. This guide to purchasing has been developed to aid the purchasing agent, specification writer and all who must order or specify fire hose.

Hose Specifications.

(a) Specify hose that will meet the requirements of NFPA 1961, *Standard for Fire Hose.*

(b) Specify the quantity: Number of lengths.

(c) Specify the internal diameter. *(See Section 3-1, NFPA 1961, Standard for Fire Hose.)*

(d) Specify the length. *(See Section 3-2, NFPA 1961, Standard for Fire Hose.)* Common length is 50 ft with many constructions available in 75- and 100-ft lengths. *(See NFPA 14, Standard for Standpipe and Hose Systems, for hose rack requirements, and NFPA 24, Standard for Outside Protection, for hose house requirements.)*

(e) Specify the construction *(see Chapter 2, NFPA 1961, Standard for Fire Hose)*: single jacket or double jacket. If required, neoprene lining and/or rubber covered.

(f) Specify the acceptance pressure:*

(g) Specify if the hose is to be labeled and listed by a nationally recognized testing laboratory.

*Safety procedures and NFPA 194, *Standard for Screw Threads and Gaskets for Fire Hose Connections*, require the acceptance pressure test to be performed by the manufacturer or other facility having testing facilities and trained personnel capable of performing hydraulic tests involving pressure exceeding fire department service tests. Few fire departments have such facilities.