FIRE PROTECTION APPARATUS ROUTINE INSPECTION AND MAINTENANCE

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1. GENERAL

1.01 The purpose of this section is to provide the necessary information for the building service or other forces charged with the responsibility for routine inspection and maintenance of fire protection apparatus.

1.02 This section covers the carbon dioxide cylinder-type, the water-filled cartridge-type, the stored pressure water-type and the foam-type fire extinguishers.

1.03 Complete descriptions of the fire protective apparatus covered in this section are given in the following sections:

770-330-150 Water-Type Fire Extinguishers

770-330-151 Foam-Type Fire Extinguishers

770-330-152 Carbon Dioxide-Type Fire Extinguishers

770-330-160 Asbestos Gloves for Extinguishing Small Fires in Telephone Equipment

770-330-161 Tarpaulins for Protection of Telephone Equipment From Water Damage

760-620-151 Standpipe and Hose Systems

2. HYDROSTATIC TESTING

2.01 The National Fire Protection Association Pamphlet No. 10A recommends that the water-filled extinguishers (carbon dioxide cartridge-propelled types, stored pressure types, and foam type) and the carbon dioxide cylinder-type extinguisher must be given a hydrostatic pressure test at least once every 5 years.

2.02 With respect to the various water-filled fire extinguishers (carbon dioxide cartridge-propelled types, stored-pressure types, and also foam type), the hydrostatic tests may be made by a qualified contractor, either on the premises, in a suitably equipped truck at the building site, or at the contractor's service station. All tests shall be carried on in accordance with the procedures given in the above-mentioned Pamphlet No. 10A.

Hydrostatic tests for carbon dioxide-type extinguisher cylinders shall be made in accordance with test procedures and apparatus set forth in the regulations of the I.C.C. Because of the high pressures used during the procedures of carbon dioxide-type cylinders and attendant dangers therefrom, plus the need of expensive and complex testing equipment, it is strongly urged that this testing should be

done by a qualified outside service agency, laboratory, or manufacturer of this equipment.

2.03 If any such extinguisher upon subsequent annual inspection shows evidence of mechanical damage, corrosion, or distortion of the shell as from freezing temperatures or from any other causes, it may be unsafe for use. Therefore, regardless of the date of the last hydrostatic test, the extinguisher is again given a hydrostatic pressure test before being returned to service.

2.04 Each extinguisher which favorably passes the hydrostatic test shall have a record tag Form E-5962, attached to it on which the following will be noted, in the appropriate spaces:

(a) Date of test

(b) Test pressure

(c) Name of person and concern making the test

All carbon dioxide-type fire extinguishers which favorably pass the hydrostatic test shall have the date of that test (month and year) permanently stamped on the dome of the cylinder. This is always done by the testing agency.

2.05 Each water-filled and each foam-type extinguisher less than 5 years old that is subject to periodic hydrostatic testing should have a record tag Form 5962 attached to it. The year of installation should be posted on the tag.

All carbon dioxide-type fire extinguishers less than 12 years old shall have a date (month and year) stamped on the dome of the extinguisher indicating the date of the initial hydrostatic test. Cylinders more than 12 years old since the previous test will be stamped (month and year) again if they successfully pass the hydrostatic test. The service agency keeps detailed records of the hydrostatic test made on each properly identified carbon dioxide-type fire extinguisher. Your only record on hydrostatic test date will be the date permanently stamped on the dome of the cylinder which will alert you as to when the test should be performed again.

3. MAINTENANCE OF CARBON DIOXIDE FIRE EXTINGUISHERS

A. Inspection

3.01 Carbon dioxide-type extinguishers should be inspected for the following items when placed in service and at least once each year thereafter:

(a) 10 and 15 POUND: That the wire seal is not broken. If broken, extinguisher should be weighed.

(b) Hose is in good conditon especially at couplings, and that couplings are dated for determination of 14-year safe hose life.

(c) Nozzle is not broken and orifice is unobstructed.

(d) Hose coupling is wrench tight at cylinder outlet and at nozzle.

(e) Hose is looped back over valve handle and held in place by clip on side of extinguisher in such a way that lower edge of nozzle pointing downward is slightly above bottom of extinguisher.

(f) Finish is in good condition.

(g) Mounting bracket is securely fastened to wall.

(h) Record tag is attached and extinguisher has been weighed within the required time.

B. Weighing

3.02 Extinguishers should be weighed at least once a year to make sure they are in proper condition for immediate use. An inspection of the items mentioned in 3.01 should also be made at this time.

C. Method

3.03 Weighing of an extinguisher should be done with a suitable scale such as one marketed by Badger, Catalogue #CS 34. The

spring scale should be supported by a weighing bracket arranged to be attached to the extinguisher mounting bracket.

3.04 All extinguishers are marked with the cylinder weight and the horn and hose-assembly weight so that the weight of gas can be checked without dismantling the parts. To determine that the extinguisher is in proper condition for immediate use, the following conditions should be met:

The total weight (by spring scale) should be not less than:

STAMPED CYLINDER WEIGHT
PLUS
STAMPED HOSE ASSEMBLY WEIGHT
PLUS
4-1/2 POUNDS FOR 5-POUND EXTINGUISHER
9 POUNDS FOR 10-POUND EXTINGUISHER
13-1/2 POUNDS FOR 15-POUND EXTINGUISHER

The above method of determining if extinguishers meet the weight requirements shall be used irrespective of any conflicting instructions that may be on the extinguisher nameplate.

Recording Weight

3.05 If the extinguisher is within the required weight limit and otherwise satisfactory, it should be returned to its mounting bracket and the weight recorded on the tag Form E-5962 provided for this purpose.

3.06 Extinguishers which do not meet weight requirements should be carried to a suitable location in building service quarters, where the noise of discharge would not be distracting, or outside the building, and discharged. Where feasible, the discharging may be done for training. The extinguishers should then be forwarded for recharge in accordance with local instructions.

3.07 Extinguishers which develop a leak such as may be evidenced by a hissing sound or the presence of frost about the valve assembly should be immediately replaced. The leaking extinguisher should be discharged, repaired, recharged, and inspected as outlined in 3.01.

3.08 Although the extinguishers are designed with an ample factor of safety and will withstand a reasonable amount of rough usage, care should be exercised while weighing or otherwise handling them to avoid dropping or subjecting the cylinder or valve to an excessive strain.

3.09 The hose assemblies for the 10-pound trigger control and the 15-pound extinguishers are not interchangeable with any other extinguishers. When ordering hose, specify model number and manufacturer.

MAINTENANCE OF WATER-FILLED CARTRIDGE-TYPE FIRE EXTINGUISHERS

A. Inspection

4.01 Water-filled cartridge-type extinguishers should be inspected for the following items when placed in service and at least once each year thereafter:

(a) Safety guard is upright and plunger is not depressed.

(b) Plunger catch operates freely.

(c) Hose is in good condition.

(d) Nozzle opening is unobstructed.

(e) Hose coupling is wrench tight at tank outlet.

(f) Dents are not evident on the extinguisher body at or near the horizontal seams. Such dents tend to weaken these seams, and extinguishers so damaged should be emptied, removed from service, and immediately replaced. Discarded extinguishers should be classified as "junk" and arrangements made for disposition returned through the usual lines of organization.

(g) Finish is in good condition.

(h) Mounting bracket is securely fastened to wall.

(i) Record tag is attached and cartridge has been weighed within the required time.

(j) Bears hydrostatic test record tag Form E-5962 to show that extinguisher has been given the prescribed hydrostatic test within 5 years. If Form E-5962 shows only the date of installation, check whether hydrostatic test will be due during the current year and, if so, report to supervisor.

B. Weighing Cartridge

4.02 Extinguisher cartridges should be weighed at least once a year and the tanks cleaned out and refilled to make sure the extinguishers are in proper condition for immediate use. An inspection of the items mentioned in 4.01 should also be made at this time.

4.03 Remove the extinguisher from its mounting and carry it to a location where the cartridge can be weighed and the tank emptied, cleaned, and refilled. Only one extinguisher per floor should be taken out of service at one time, unless replacements are installed.

4.04 Care should be exercised in handling the cartridges to prevent possible damage to the disc since the rapid release of the gas will propel the cartridges with considerable force. Spare cartridges should be kept in the original container with the safety caps on them until required for use and should be stored in places where temperatures are relatively normal.

4.05 The appropriate scales (3.03) should be used for determining the most accurate weights of the cartridges. For cartridges having a stamped weight of about 22 ounces, 1 pound and 1/4 pound weights should be placed on the scale platform and the beam gradations should be used to obtain the actual weight down to 1/16 of an ounce. For cartridges having a stamped weight of about 30 ounces, 1 pound, 1/2 pound, and 1/4 pound weights should be used in a similar manner.

4.06 Weighing: The weight of the completely charged cartridge is recorded on the weight band and if the actual weight is not within 1/2 ounce of this value, the cartridge is unsatisfactory for use.

4.07 Recording Weight: If the cartridge is within the required weight limit and otherwise satisfactory, it should be reused and the weight recorded on tag Form E-5962 provided for this purpose.

4.08 Discharged cartridges should be discarded rather than returned for credit. Use only cartridges marked WF-76.

4.09 Refilling Tank: The tank should be emptied and refilled each time the cartridge is weighed. After emptying the tank, it should be examined on the inside for corrosion and any foreign matter scraped from the tank walls with a suitable piece of wood such as the wood handle of a blade-type radiator brush. The tank interior should then be scrubbed with a stiff brush such as the Bell System toilet bowl brush, using only clean water. Rinse thoroughly. The strainer should be cleaned and the nozzle and hose should be examined and flushed out to insure that the discharge passage is open. The tank should be filled to the filling indicator with clean cold water. Preservatives to prevent water stagnation or solutions to lower the freezing point should not be used.

4.10 Assembling: Clean the extinguisher cap with a dry cloth. See that the metering groove in the puncturing pin is clean and note that the puncturing pin and the plunger catch operate freely. Make sure that the plunger is in the fully unoperating position before the replacement cartridge is screwed into position. The threads of the top cap and tank should be lightly coated with vaseline. The top cap is screwed on the tank as tightly as possible by hand only, exercising care to insure that all threads are properly engaged, and that four full turns of the can are given, engaging at least four full screw threads. The cap should be replaced on the same tank from which it was removed.

4.11 Keeping the cartridge dry, screw it into the cap as tightly as possible by hand, as it is important that the cartridge top be assembled firmly in the holder. Proper assembly can be determined by observation through the ports opposite the puncturing pin. The top of the cartridge should be visible and there should be approximately a 1/8 inch gap between the cartridge top and the puncturing pin.

4.12 The finish of the extinguisher should be examined and cleaned (not painted) to restore good appearance, as required.

4.13 Extinguishers should be emptied and cartridge removed and packed separately before shipping to other locations.

5. MAINTENANCE OF WATER-FILLED STORED PRESSURE FIRE EXTINGUISHERS

A. Inspection

5.01 Stored pressure fire extinguishers should be inspected for the following items when placed in service and twice a year thereafter:

(a) Stored air pressure registers in the operating area on the gauge or around 100 pounds.

(b) Safety pin is not fouled.

(c) Hose is in good condition.

(d) Nozzle opening is not obstructed.

(e) Hose coupling is tight at tank outlet.

(f) Dents are not evident on the extinguisher body. Dents at the seams are particularly important as they tend to weaken the seams: extinguishers so damaged should be emptied, removed from service, and immediately replaced. Discarded extinguishers should be classified as "junk" and arrangements made for disposition through the usual lines of organization.

(g) Finish is in good condition and no exterior corrosion has taken place.

(h) Mounting bracket is securely fastened to wall.

(i) Record label Form E-5962 is up to date and check whether a hydrostatic test, which is given every 5 years, will be due during the current 6-months period. If so, report it to supervisor.

(j) If all items are satisfactory, enter date and signature on Form E-5962.

B. Maintenance Procedure

5.02 If air pressure is low or refilling is required, remove the extinguisher from its mounting and carry it to a location where the tank can be emptied, cleaned, and refilled. Only one extinguisher per floor should be taken out of service at one time, unless replacements are installed.

5.03 Release the remaining air pressure in the extinguisher at the tire-type air valve. ALL AIR PRESSURE MUST BE RELEASED FROM THE EXTINGUISHER BEFORE THE HEAD ASSEMBLY IS REMOVED. Remove the head assembly, completely flush out, and clean the tank and examine the interior for any corrosion. Examine the head assembly and siphon to insure that it is clean and free from damage.

5.04 The tank should be filled to the fill mark with clean cold water. Calcium chloride must never be used in this unit to prevent freezing. The O ring or head gasket should be replaced with a new gasket and the threads of the head assembly lightly coated with vaseline before the unit is assembled. Care should be used in replacing the head assembly to insure that the threads engage properly. The head assembly of one extinguisher must not be interchanged with another extinguisher.

5.05 The finish of the extinguisher should be examined and cleaned (not painted) to restore good appearance, as required.

5.06 Air pressure should be released and extinguishers emptied before shipping to other locations.

6. MAINTENANCE OF FOAM-TYPE FIRE EXTINGUISHERS

A. Inspection

6.01 Foam-type extinguishers should be inspected for the following items when placed in service and at least once each year thereafter:

(a) Hose is in good condition.

(b) Nozzle opening is unobstructed.

(c) Hose coupling is wrench tight at tank outlet.

(d) Dents are evident on the extinguisher body at or near the upper or lower horizontal seams. Such dents tend to weaken these seams, and extinguishers so damaged should be discharged at once. Discarded extinguishers should be classified as "junk" and arrangements made for disposition through the usual lines of organization.

(e) Finish is in good condition.

(f) Mounting bracket is securely fastened to wall.

(g) Record tag Form E-5962 is attached and extinguisher has been recharged within the required time.

(h) Bears hydrostatic test record tag Form E-5962 to show that extinguisher has been given the prescribed hydrostatic test within 5 years. If Form E-5962 shows only the date of installation, check whether hydrostatic test will be due during the current year and, if so, report to supervisor.

B. Recharging

6.02 Extinguishers should be discharged (or emptied) and refilled at least once a year to make sure they are in proper condition for immediate use. An inspection of the items mentioned in 6.01 should also be made at this time.

Method

6.03 Remove the extinguisher from its mounting bracket and carry it upright to suitable location, preferably outside the building, for this purpose. Leaking gaskets, defective hose connections, or other irregularities should be noted as the extinguisher is discharged. Only one extinguisher per floor should be taken out of service at one time unless replacements are installed.

6.04 Take extinguisher to a location where a new charge can be provided and where the tank can be refilled. Unscrew the cap and remove the inner container from the tank.

6.05 Where it is not desirable to discharge the extinguisher, it may be emptied instead. When this is done, the tank and the inner container should be completely drained, care being exercised in doing this not to mix the aluminum sulphate and soda solution. If emptied into a service sink, the soda should be poured into the sink first and thoroughly flushed down with water. The aluminum sulphate should then be emptied into the sink and flushed down with water.

6.06 The tank should be examined on the inside for corrosion and for deposits of soda or other foreign material which should be scraped off with a suitable piece of wood such as the wood handle of a blade-type radiator brush. The tank interior should then be scrubbed with a stiff brush such as a wood-handle toilet bowl brush using only clean water and rinsed thoroughly. The strainer should be cleaned and the nozzle and hose should be examined and flushed out to insure that the discharge passage is open. The cap, inner container, and stopple should be scrubbed with a brush and carefully rinsed.

6.07 The extinguisher should then be recharged by carefully following the directions on the recharge packages furnished for this purpose. This generally involves thoroughly mixing the "B" solution containing bicarbonate of soda and a foam producing agent with lukewarm water. The temperature

of the water should not exceed 100°F. The mixing should be done outside the tank in order to insure that the mixture is thoroughly dissolved. Undissolved soda may clog the hose or nozzle. The tank should be filled to the filling lug taking care not to pour any sediment into it. Filling the tank to levels above the filling lug reduces the air chamber volume and may result in excessive working pressures. Preservatives to prevent stagnation or solutions to lower freezing point should not be used.

6.08 The recharge is completed by thoroughly mixing the "A" solution (aluminum sulphate) with water as directed and pouring it into the inner container which is then returned to the tank.

6.09 Replace the rubber cap gasket with a new one. Coat the threads of cap and tank lightly with vaseline and screw the cap on the tank as tightly as possible by hand only, exercising care to insure that all threads are properly engaged and that four full turns of the cap are given, engaging at least four full screw threads. The same cap, inner container, and stopple must always be associated with the tank from which they were removed; in this connection it is suggested that all recharging operations be completed on one extinguisher before starting operations on the next.

6.10 The date of recharging, etc, should be recorded on the tag Form E-5962 provided for this purpose.

6.11 The finish of the extinguisher should be examined and cleaned (not painted) to restore good appearance, if required.

6.12 Extinguishers should be emptied before being shipped to other locations.

7. MAINTENANCE OF ASBESTOS GLOVES

A. Inspection

7.01 Gloves and container should be inspected for the following items when placed in service and at least once each year thereafter:

(a) Container cover opens freely.

(b) Gloves should be removed from container, inspected, and returned folded together, with fingers up. They should be loose enough to be easily removed.

(c) Container finish is in good condition. Container should be painted, if required.

(d) Mounting bracket is securely fastened.

8. MAINTENANCE OF TARPAULINS

A. Inspection

8.01 Portable tarpaulins and container should be inspected annually for the following items. (See Fig. 1).

(1) Bottom door of container opens freely.

(2) Tarpaulins should be removed from container and inspected for possible defects. They should then be properly folded and rolled and replaced in the container. A check should be made to insure that they are loose enough to be easily removed.

(3) Container finish is in good condition. Container should be painted, if required. It should not be painted same color as background.

(4) Container is securely mounted.

B. Folding and Rolling Portable Tarpaulins

8.02 When tarpaulins are placed in the storage container, they must be folded and rolled in the proper manner to permit them to be placed and removed easily. The proper method for folding and rolling is shown in Fig. 3.

9. MAINTENANCE OF FIRE HOSE AND STANDPIPE SYSTEMS

9.01 Tests and Inspection:

(a) While the data given herein represents current views as to procedures and recommendations it is understood that they may be altered to meet differing local fire code regulations and conditions but only when the latter one is more stringent.

(b) Each standpipe station and associated equipment, whether capped or equipped with hose valves, etc, is inspected annually. Should any defects be found in the course of the inspection or during the performance of regular duties they should be remedied. If the defects or faults can be taken care of at the time they are found, this should be done. Otherwise, the defects are reported for prompt attention.

(c) A fire hose is not to be used, under any circumstances, for other than fire fighting purposes. Violation of this rule may result in hose being missing, defective, or useless in case of fire.

(d) Fire hose stations should be free of any obstacle and nothing is permitted to obscure hose racks or to block the door of a hose cabinet or closet. Inspection is made to see that doors open readily.

9.02 Fire Hose Inspection:

(a) Inspection of fire hose is made annually, checking points noted in the following subparagraphs (d) through (i).

(b) When unlined linen hose becomes wet for any reason it deteriorates rapidly. For this reason, hydrostatic testing of the hose is not recommended.

(c) Should a hose become wet, it should be replaced with Underwriters Laboratories approved unlined linen hose unless the procedure for drying is followed as outlined in the directions given in the latest issue of pamphlet No. 198, "Care of Fire Hose," issued by the National Fire Protective Association.

(d) The exterior of the hose is cleaned by vacuuming. The hose rack, pipe fittings, and hose cabinets are wiped clean with a damp or treated dustcloth.

(e) Indications of moisture are looked for, giving special attention to the loop close to the point where the hose is connected to the valve. If there is discoloration of the hose at the valve, such as would occur from water leakage, twisting of the hose by hand at the point of connection may cause it to tear indicating need for removal of the defective section and resetting of the coupling.

(f) The threads of the couplings are inspected and any injured or defective couplings are replaced. They are so adjusted that they can be easily tightened by hand. Oil or grease is not used, as they are likely to cause deterioration of hose and rubber washers. Threaded fittings are cleaned of any corrosion or foreign matter. Where couplings are polished, care is taken to keep the polish from coming in contact with the hose as the chemicals in metal polishes can damage it.

(g) The rubber washers, both at the hose valves and at the nozzles, are examined and any that are lacking in strength or elasticity are replaced.

(h) The date of the inspection and inspector's name or initials should be entered in the green linen tag Fig. 2 (Form E-4660, "Fire Hose Inspection") attached to the rack. Inspection should include assurance of the Underwriters Laboratories approval label which should be affixed to the hose, the date of the manufacture of the hose, and manufacturer's identification.

(i) Unlined linen hose on exposed racks should be considered for replacement after 12 years and on enclosed racks after 15 years. Replacement may be required at shorter intervals depending on hose location, its exposure to sunlight, or other conditions which would cause more rapid deterioration.

9.03 Standpipe Systems Inspection:

(a) Standpipe systems should be visually inspected annually. This is to include any tanks, where employed, and all valves and hose stations. Piping should be inspected where it is accessible.

(b) The National Fire Protection Association Pamphlet No. 14 entitled "Standpipe and Hose Systems" specifies that hydrostatic testing of dry standpipe systems be done at

intervals of not less than 5 years. This also applies to the dry portion of piping in a wet standpipe system between the check valve in the fire department inlet pipe and the outside multiple connection.

(c) Dry standpipes over 10 years old should be tested with air at a pressure not exceeding 25 pounds per square inch to determine their tightness before water is turned into them for hydrostatic test.

(d) Hydrostatic testing of wet standpipes, except for dry sections, is not considered essential.

(e) Fire pumps are usually turned over at weekly intervals with capacity tests made yearly in accordance with N.F.P.A. pamphlet No. 20. It is desirable that fire pump capacity test be tied in with hydrostatic standpipe tests when required by local authorities. After the yearly capacity test, the roof hose outlet should be opened to permit a limited flow through this highest outlet to insure an unobstructed standpipe before the system is returned to service.

(f) The main gate valve in the water supply (sealed open) is checked to ascertain that it is in the proper open position.

(g) At the Fire Department connections, the check valves are inspected to determine that they are in working condition.

(h) The valves at hose connections are checked to insure that they are closed tightly to prevent leakage of water. The drip connections (where installed) at hose valves are checked to determine that they are open. This is done to avoid the possibility of any water that may leak past the valve from getting into the hose.

(i) All check valves throughout the standpipe system should be examined to make sure they are in proper working order.

Note: Check valves should be located on all supply lines from each separate water supply serving the standpipe system including the Fire Department (multiple) connections.

(j) The end valve of each standpipe system, located, for example, on the roof in the case of buildings over three stories in height, is opened to establish that there is a free flow of water. Adequate provision is made for carrying off the water to avoid water damage.

(k) Test procedures may differ with each installation and it is recommended that local fire departments be asked to cooperate with Telephone Company personnel in carrying on inspections of standpipe systems.

(*l*) Where frequency of routine is suggested, appropriate records should be maintained to make sure that such routines are being performed.

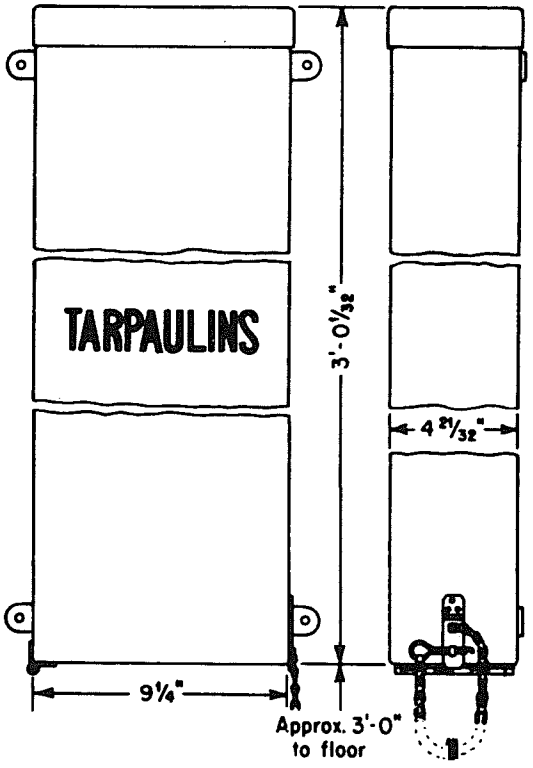

Fig. 1

OBVERSE

Bell System
Fire Hose Inspection
Building _____

REVERSE

Date Installed _____

Inspector	Date Inspected	Date Refolded

Form E-4660 Printed in U.S.A.

Fig. 2

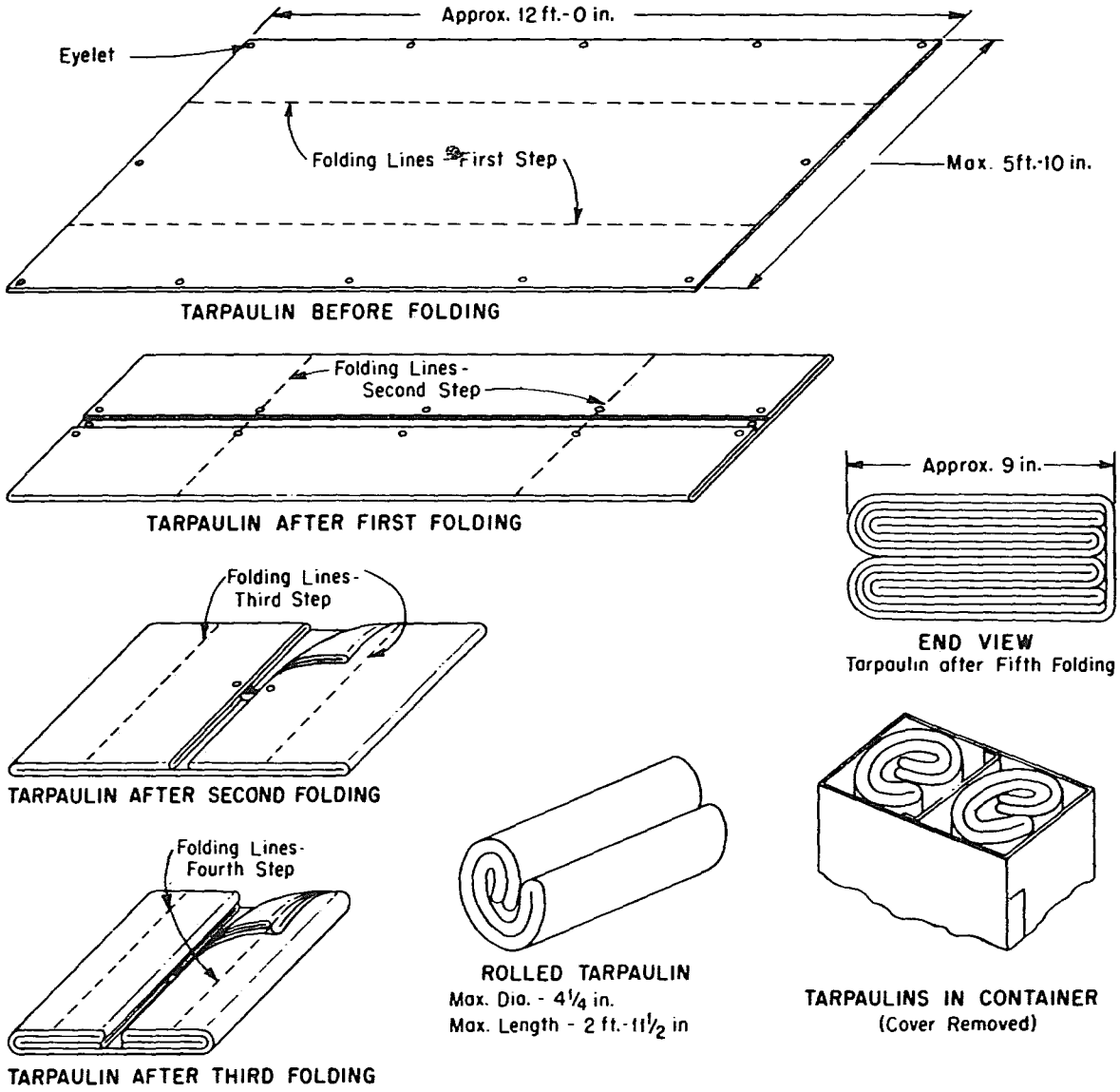
Approx. 12 ft.-0 in.
Eyelet
Folding Lines - First Step
Max. 5ft.-10 in.
TARPAULIN BEFORE FOLDING
Folding Lines - Second Step
TARPAULIN AFTER FIRST FOLDING
Approx. 9 in.
END VIEW
Tarpaulin after Fifth Folding
Folding Lines - Third Step
TARPAULIN AFTER SECOND FOLDING
Folding Lines - Fourth Step
TARPAULIN AFTER THIRD FOLDING
ROLLED TARPAULIN
Max. Dia. - 4 1/4 in.
Max. Length - 2 ft.-11 1/2 in
TARPAULINS IN CONTAINER
(Cover Removed)

Fig. 3