

## FIRE EXTINGUISHER INSPECTION, MAINTENANCE, AND TESTING PROCEDURES

FLS has organized the following information to act as a guideline/checklist for any inspection, maintenance, recharging and testing that is performed. All of the following information can be found in the 2002 edition of the National Fire Protection Association, Standard for Portable Fire Extinguishers, NFPA-10.

<b>6.2</b>	<b>Inspection.</b>
<b>6.2.1</b>	<b>Frequency.</b> Fire extinguishers shall be inspected when initially placed in service and thereafter at approximately 30-day intervals. Fire Extinguishers shall be inspected, manually or by electronic means, at more frequent intervals when circumstances require.
<b>6.2.2</b>	<b>Procedures.</b> Periodic inspection of fire extinguishers shall include a check of at least the following items:
	<ul style="list-style-type: none"> <li>a. Location in designated place</li> <li>b. No obstruction to access or visibility</li> <li>c. Operating instructions on nameplate legible and facing outward</li> <li>d. Safety seals and tamper indicators not broken or missing</li> <li>e. Fullness determined by weighing or “hefting”</li> <li>f. Examination for obvious physical damage, corrosion, leakage, or clogged nozzle</li> <li>g. Pressure gauge reading or indicator in the operable range or position</li> <li>h. Condition of tires, wheels, carriage, hose, and nozzle checked (for wheeled units)</li> <li>i. HMIS label in place</li> </ul>
<b>6.2.4</b>	<b>Inspection Record keeping.</b>
6.2.4.1	Personnel making inspections shall keep records of all fire extinguishers inspected, including those found to require corrective action.
6.2.4.2	At least monthly, the date the inspection was performed and the initials of the person performing the inspection shall be recorded.
6.2.4.3	Records shall be kept on a tag or label attached to the fire extinguisher, on an inspection checklist maintained on file, or in an electronic method that provides a permanent record.
<b>6.3</b>	<b>Maintenance.</b>
<b>6.3.1</b>	<b>Frequency.</b> Fire extinguishers shall be subjected to maintenance at intervals of not more than 1 year, at the time of hydrostatic test, or when specifically indicated by an inspection or electronic notification.
6.3.1.1	Stored-pressure types containing a loaded system agent shall be disassembled on an annual basis and subjected to complete maintenance.
6.3.1.2	A conductivity test shall be conducted annually on all carbon dioxide hose assemblies. Hose assemblies found to be nonconductive shall be replaced.
6.3.1.3	Pressure regulators provided with wheeled-type fire extinguishers shall be tested for outlet static pressure and flow rate in accordance with manufacturer’s instructions.

6.3.2	<b>Procedures.</b> Maintenance procedures shall include a thorough examination of the three basic elements of a fire extinguisher:
	a. Mechanical parts b. Extinguisher agent c. Expelling means
6.3.2.1	Internal examination during annual maintenance shall not be required for nonrechargeable fire extinguishers, carbon dioxide fire extinguishers, or stored pressure fire extinguishers, except for those types specified in 6.3.1.1.
6.3.2.2	<b>Seals or Tamper Indicators.</b> At the time of the maintenance, the tamper seal of rechargeable fire extinguishers shall be removed by operating the pull pin or locking device. After the applicable maintenance procedures are completed, a new tamper seal shall be installed.
6.3.3	<b>Six-Year Maintenance.</b> Every 6 years, stored-pressure fire extinguishers that require a 12-year hydrostatic test shall be emptied and subjected to the applicable maintenance procedures. The removal of the agent shall only be done using a listed halon closed recovery system. When the applicable maintenance procedures are performed during a periodic recharging or hydrostatic testing, the 6-year requirement shall begin from that date
6.3.3.1	Nonrechargeable fire extinguishers shall not be hydrostatic tested but shall be removed from service at a maximum interval of 12 years from the date of manufacture.
6.3.4	<b>Maintenance Recordkeeping.</b> Each fire extinguisher shall have a tag or label securely attached that indicates the month and year the maintenance was performed and that identifies the person performing the search.
<b>6.4</b>	<b>Recharging.</b>
<b>6.4.1</b>	<b>General.</b>
6.4.1.1	All rechargeable-type fire extinguishers shall be recharged after any use or as indicated by inspection or when performing maintenance.
6.4.1.5	<b>Leak Test.</b> After recharging, a leak test shall be performed on stored-pressure and self-expelling types of fire extinguishers.
<b>6.4.2</b>	<b>Frequency.</b>
6.4.2.1	<b>Pump Tank.</b> Every 12 months, pump tank water and pump tank calcium chloride-based antifreeze types of fire extinguishers shall be recharged with new chemicals or water, as applicable.
6.4.2.2	<b>Wetting Agent.</b> The agent stored-pressure wetting agent fire extinguishers shall be replaced annually. Only the agent specified on the nameplate shall be used for recharging.
6.4.2.3	<b>AFFF and FFFP.</b> The premixed agent in liquid charge-type AFFF (aqueous film-forming foam) and FFFP (film-forming fluoroprotein foam) fire extinguishers shall be replaced at least once every three years. The agent in solid charge-type AFFF fire extinguishers shall be replaced once every 5 years.
<b>6.4.3</b>	<b>Procedures.</b>
6.4.3.1	<b>Recharge Agents.</b> Only those agents specified on the nameplate or agents proven to have equal chemical composition, physical characteristics, and fire extinguishing capabilities shall be used. Agents listed specifically for use with that fire extinguisher shall be considered to meet these requirements.
<b>6.4.5</b>	<b>Recharge Recordkeeping.</b> Each fire extinguisher shall have a tag or label securely attached that indicates the month and year recharging was performed and that identifies the person performing the service. A “Verification of Service” (maintenance or recharging) collar in accordance with 4-4.4.2 shall also be attached to the extinguisher.

6.4.5.1	Liquefied gas, halogenated agent, and carbon dioxide extinguishers that have been recharged without valve removal shall not be required to have a “Verification of Service” collar installed following recharge.
6.4.5.2	Cartridge and cylinder-operated extinguishers shall not be required to have a “Verification of Service” collar installed.
<b>7</b>	<b>Hydrostatic Testing</b>
<b>7.1</b>	<b>General.</b>
<b>7.1.2</b>	Hydrostatic testing shall be performed by persons trained in pressure testing procedures and safeguards who have suitable testing equipment, facilities, and appropriate servicing manual(s) available.
7.1.2.1	A hydrostatic test shall always include both an internal and external visual examination of the cylinder.
7.1.2.2	Hydrostatic testing shall be conducted using water or some other noncompressible fluid as the test medium. Air or other gases shall not be used as the sole medium for pressure testing. All air shall be vented prior to hydrostatic testing to prevent violent and dangerous failure of the cylinder.
<b>7.1.4</b>	<b>Examination of Cylinder Condition.</b> Where a fire extinguisher cylinder or shell has one or more of the following conditions, it shall not be hydrostatically tested, but shall be condemned or destroyed by the owner or at the owner’s direction:
	<ul style="list-style-type: none"> <li>a. Where repairs by soldering, welding, brazing, or use of patching compounds exist</li> <li>b. Where the cylinder threads are worn, corroded, broken, cracked, or nicked</li> <li>c. Where there is corrosion that has caused pitting, including pitting under a removable nameplate or nameband assembly</li> <li>d. Where the fire extinguisher has been burned in a fire</li> <li>e. Where a calcium chloride type of extinguisher agent was used in a stainless steel fire extinguisher</li> <li>f. Where the shell is of copper or brass construction joined by soft solder or rivets</li> <li>g. Where the depth of a dent exceeds 1/10 of the greatest dimension of the dent if not in a weld, or exceeds ¼ in. (0.6 cm) if the dent includes a weld</li> <li>h. Where any local or general corrosion, cuts, gouges, or dings have removed more than 10 percent of the minimum cylinder wall thickness</li> <li>i. Where a fire extinguisher has been used for any purpose other than that of a fire extinguisher</li> </ul>
<b>7.1.5</b>	When a fire extinguisher cylinder, shell, or cartridge fails a hydrostatic pressure test, or fails to pass a visual examination as specified in 5-1.4, it shall be condemned or destroyed by the owner’s agent.
7.1.5.1	A condemned cylinder shall not be repaired. No person shall remove or obliterate the “CONDEMNED” marking.
<b>7.2</b>	<b>Frequency.</b> At intervals not exceeding those specified in Table 5-2, fire extinguishers shall be hydrostatically retested. The hydrostatic retest shall be conducted within the calendar year of the specified test interval. In no case shall an extinguisher be recharged if it is beyond its specified retest date.

**TABLE 7.2 Hydrostatic Test Interval for Extinguishers**

Extinguisher Type	Test Interval (Years)
Stored-pressure water, loaded system, and/or antifreeze	5
Wetting Agent	5
AFFF (aqueous film-forming foam)	5
FFFP (film-forming fluoroprotein foam)	5
Dry chemical with stainless steel shells	5
Carbon dioxide	5
Wet Chemical	5
Dry chemical, stored-pressure, with mild steel shells brazed brass shells, or aluminum shells	12
Dry chemical, cartridge-or cylinder- operated, with mild steel shells	12
Halogenated agents	12
Dry powder, stored-pressure, cartridge- or -cylinder- operated, with mild steel shells	12

<b>7.2.1</b>	Nitrogen cylinders, argon cylinders, carbon dioxide cylinders, or cartridges used for inert gas storage that are used as an expellant for wheeled fire extinguishers and carbon dioxide extinguishers shall be hydrostatically tested every 5 years.
<b>7.2.3</b>	A hydrostatic test shall be performed on fire extinguisher hose assemblies equipped with a shutoff nozzle at the end of the hose. The test interval shall be the same as specified for the fire extinguisher on which the hose is installed.
<b>7.5</b>	<b>Testing Procedures.</b>
<b>7.5.1</b>	<b>General.</b>
7.5.1.1	The pressure in a hydrostatic test of a cylinder shall be maintained for a minimum of 30 seconds, but for no less time than is required for complete expansion of the cylinder and to complete the visual examination of the cylinder.
7.5.1.2	All valves, internal parts, and hose assemblies shall be removed and the fire extinguisher emptied before testing.
<b>7.6</b>	<b>Recording of Hydrostatic Tests.</b>
<b>7.6.1</b>	A permanent record shall be maintained for each cylinder tested.
<b>7.6.2</b>	<b>High Pressure Cylinders and Cartridges.</b> Cylinders or cartridges that pass the hydrostatic test shall be stamped with the retester's identification number and month and year of the retest per TC/DOT requirements. Note: It is important that the stamping be placed only on the shoulder, top head, neck, or footing (where provided) of cylinder.
<b>7.6.3</b>	<b>Hose Assemblies.</b> Hose assemblies that pass a hydrostatic test do not require recording, labeling, or making.
<b>7.6.4</b>	<b>Low-Pressure Cylinders.</b> Fire extinguisher cylinders of the low-pressure type that pass a pressure hydrostatic test shall have the information recorded on a suitable metallic label or equally durable material with a minimum size of 2 in. x 3 ½ in. The label shall be affixed by means of a heatless process. These labels shall be of the type that self-destructs when removal from a fire extinguisher shell is attempted.

7.6.5	The following information shall be included on the label:
	<ul style="list-style-type: none"><li>a. Month and year the test was performed, indicated by a perforation, such as is done by a hand punch</li><li>b. Test pressure used</li><li>c. Name or initials of person performing the test, and name of agency performing the test</li></ul>

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