

**FIRE DEPARTMENT • CITY OF NEW YORK**



**STUDY MATERIAL FOR THE EXAMINATION FOR  
CERTIFICATE OF FITNESS**

**FOR  
Full Service Shop (W-96) and Sales (S-96) of Portable Fire  
Extinguishers (PFE)**

**W-96 / S-96**

**ALSO INCLUDED IN THIS BOOKLET YOU WILL FIND THE FOLLOWING:**

- 1. NOTICE OF EXAMINATION (NOE)**

## NOTICE OF EXAMINATION

**Title:** Examination for certificate of fitness for full service shop (W-96) and sales (S-96) of portable fire extinguishers (PFE).

**Date of Test:** Written tests are conducted Monday through Friday (except legal holidays) 8:00 AM to 2:30 PM.

## QUALIFICATION REQUIREMENTS

1. Applicants must be at least 18 years of age.
2. Applicants must have a reasonable understanding of the English language.
3. Applicants seeking a C of F (**W-96/S-96**) for employment with a PFE for sales and full service shop company must submit a letter signed by the owner or principal of the company. Additionally, this letter must state that the company has the tools, materials, equipment, facilities and servicing manuals required to properly service PFE consistent with Chapter 7 of NFPA Standard 10 2007 and RCNY§15-02, NYC FC 901.6.3.2. Until their company is recognized by the FDNY, applicants will receive a **Z-96**. It will be updated, at no cost to the applicants when their company is recognized. This Certificate, **W-96/S-96**, allows holders to work citywide under the supervision of the owner or principal of a recognized PFE servicing company.
4. Applicants must present two (2) forms of satisfactory identification i.e. driver's license and passport picture ID.
5. Individuals and principals (owners of the company) currently certified with **W-62, F-62 and Z62** must take the new exam starting **6/02/09**. Currently certified companies need to apply for new **Company Certification** after they take the New test (**W-96 or S-96**). **The application will be available on the FDNY website.**

## APPLICATION INFORMATION

**Application Fees:** \$25.00 for originals and \$15.00 for renewals. The fee may be paid by credit card (no debit), in cash, money order, or personal check payable to New York City Fire Department. The \$25.00 fee must be payable by all applicants prior to taking the Certificate of Fitness test. Application forms are available at the Public Certification Unit, 1<sup>st</sup> floor, 9 Metro Tech Center, Brooklyn, NY 11201 or available on line at [WWW.NYC.GOV/FDNY](http://WWW.NYC.GOV/FDNY).

## TEST INFORMATION

**Test:** The test will be of the written, multiple choice type. A passing score of at least 70% is required in order to secure a certificate of fitness. Call (718)999-1988, or 2504 for additional information and forms.

### **About the Study Material**

This study material contains important information you will need to prepare for the certificate of fitness examination for sales and full service shop for portable fire extinguishers **(W-96/S-96)**. It contains an overview of the classification of fires, fire extinguishers, and restrictions on use of certain fire extinguishers. This material, for the most part, covers sales and full service shop of PFEs. A section containing definitions of uncommon terms is included towards the middle of this document.

This study material does not contain all the information a certificate of fitness holder needs to perform the job. It is the responsibility of the certificate of fitness holder to learn whatever is necessary to do the job correctly. It is strongly recommended that the applicant seeking this certification make reference to the FC 901.6.3.2 and NFPA Standard 10 of 2007.

### **About the Test**

You must pass a multiple choice test to qualify for the certificate of fitness. A score of 70% correct is required in order to pass the multiple-choice test. All questions have four answer options. Only **one** answer is correct for each question. If you do not answer a question, or if you mark more than one answer to a single question, your answer to that question will be scored as incorrect. Read each question carefully before marking your answer. There is no penalty for guessing.

### **Sample Questions**

#### **1. Who was the first president of the United States?**

- (A) George Washington.
- (B) George Bush.
- (C) Abraham Lincoln.
- (D) John F. Kennedy.

The correct answer is "**A**". You would mark "**A**" on your touch-screen terminal.

#### **2. What sports team plays at Citi Field?**

- (A) Raiders.
- (B) Giants.
- (C) Cardinals.
- (D) Mets.

The correct answer is "**D**". You would mark "**D**" on your touch-screen terminal.

## **I. INTRODUCTION**

Each company engaged in the business of selling, leasing, and/or servicing PFE's is required to have a company certificate of issued by the FDNY. The C of F will define the activities the company is legally authorized to conduct.

Each person engaged in the business of selling, leasing, and/or servicing PFE's shall have a C of F issued by the FDNY. A Personal C of F will be issued only to employees of firms with a Company Certificate. The activities of employees with a personal C of F are limited to the activities the employer is authorized to conduct.

There will be one test to cover all types of PFE activities conducted in New York City. The actual work conducted must be in accordance with the limitations of the company's certificate. Principals and employees of sales companies are limited to sales only (S-96). Principals and employees having full service shops may perform full service on PFE which includes sales, servicing and maintenance (W-96).

There are **TWO** company certificates which the FDNY issues to private company. One company certificate is for PFE sales only and the other is full service PFE. Individuals working for these companies must have C of F's to perform legally mandated functions. Individuals working for Sales only companies must have an S-96 C of F. Individuals working for full service companies must have a W-96 C of F. See definitions for company certificates and C of F's.

**EXCEPTION:** PFE's sold for "Home use" not exceeding 5 lbs will not require a company or personal C of F.

## **II. GENERAL REQUIRMENTS**

### **A. Sales or Leasing of PFE's requirements**

All PFEs sold or Leased in NYC shall meet the following requirements:

1. Fire Test Standards: ANSI/UL 711
2. Dry Chemical types: ANSI/UL 299
3. Film-Forming Foam Types: ANSI/UL8
4. Water Type: ANSI/UL 626
5. Halon Types: ANSI/UL 1093
6. Carbon Dioxide Types: ANSI/UL 154
7. Halocarbon Types: ANSI/UL 2129

The manufacturer's labeling, the listing organization, the fire test and performance standard that the PFE meets or exceeds shall be clearly marked on every extinguisher.

A firm labeling and listing PFE's shall use a third party certification program for PFE's that meets or exceeds ANSI/UL 1803.

Equipment sold for use as a PFE that is not UL listed and labeled for such use shall be deemed as a fraudulent sale.

## **B. General Sales Company Requirements**

**1.** The sales of PFEs shall be in accordance with NFPA Standard 10-2007, except as otherwise provided in the NYC Fire Code.

**6.** It shall be unlawful for any person to sell a PFE without a certificate of fitness for PFE sales, except that a person training for such certificate of fitness may sell PFEs in the presence of and under the personal supervision of a valid certificate of fitness holder.

**3.** It shall be unlawful for any person or company engaged in the business of selling PFEs to sell PFEs without a portable fire extinguisher sales company certificate.

**4.** The Department shall issue a PFE sales company certificate to a company that possesses the facility to properly sell and store PFE's, and with the required character and fitness of the principal/ owner.

**5.** Original Application Requirements. Applicants for PFE sales company certificates shall apply for such certificate to the Bureau of Fire Prevention at Fire Department Headquarters in accordance with the provisions of the New City Fire Code. In addition to such other information and documentation as the Department may require. Each applicant shall submit an affidavit executed by an owner or principal of the company:

**a.** Attesting that one or more of the owners or principals of the company possess a minimum of two years experience in PFE sales and holds a certificate of fitness for PFE sales.

**b.** Disclosing the names and addresses of all companies engaged in the business of PFE sales with which each owner or principal of the company is affiliated or has been affiliated in the last five years.

**c.** Listing the names, addresses, and certificate of fitness numbers of all company employees who will be selling PFE's.

**d.** Certifying that the company has the facilities to sell PFE's.

**e.** Proof of liability insurance naming the department as a certificate holder.

**6.** Term and renewal: PFE sales company certificates shall be issued for a term of one year. Certificates may be renewed in accordance with the provisions of FC 901.6.3.2.

**7.** Application fees: The fee for an original application for a PFE sales company certificate shall be one hundred dollars (\$100). The fee for a renewal application shall be fifty dollars (\$50).

**8.** Maintenance of employee list. PFE sales company certificate holders shall maintain on file with the Department a current list of company employees selling PFE's, and shall update such list within 30 days of any change.

**9.** Facility inspections:

**a.** All facilities maintained by PFE sales company certificate applicants and holders for the sales of PFE's are subject to department inspection. Such inspections may be conducted for any purpose related to the enforcement of the requirements of the NYC Fire Code, including but not limited to:

- verifying that the company is selling PFEs in accordance with the requirements of the NYC Fire Code.
- a verification of record keeping relating to the sales of each PFE.

**b.** Facility inspections conducted in connection with original or renewal applications for a PFE sales company certificate shall be conducted at the expense of the applicant, at the rate of \$210.00 per hour, plus travel expense if the facility is outside of NYC.

### **C. General Full Service Company Requirements**

- 1.** The specification, selection, distribution, inspection, maintenance and recharging of PFEs shall be in accordance with NFPA Standard 10-2007, except as otherwise provided in the NYC Fire Code.
- 2.** It shall be unlawful for any person to service a PFE without a certificate of fitness for PFE servicing, except that a person training for such certificate of fitness may service PFEs in the presence of and under the personal supervision of a certificate of fitness holder.
- 3.** It shall be unlawful for any person or company engaged in the business of servicing PFEs to service PFEs without a portable fire extinguisher servicing company certificate. Nothing in this section shall preclude PFEs that are maintained on a premises for use at such premises from being serviced by the owner or occupant of the premises, or an employee of such owner or occupant, who possesses:
  - a.** certificate of fitness for PFE servicing; and
  - b.** the tools, materials, equipment and facility necessary to service such portable fire extinguishers in accordance with the requirements of this section.
  - c.** PFE Service Company Certificate.

4. Servicing of PFE's shall be done in compliance with the manufacturers instructions using "OEM" listed parts.
5. The Department shall issue a PFE full service company certificate to a company that possesses the tools, materials, equipment and facility to properly service PFEs and with the required character and fitness of the principal/owner.
6. Original Application Requirements. Applicants for PFE servicing company certificates shall apply for such certificate to the Bureau of Fire Prevention at Fire Department Headquarters in accordance with the provisions of the NYC Fire Code. In addition to such other information and documentation as the Department may require, each applicant shall submit an affidavit executed by an owner or principal of the company:
  - a. attesting that one or more of the owners or principals of the company possess a minimum of two years experience in PFE servicing and a certificate of fitness for PFE sales and service.
  - b. disclosing the names and addresses of all companies engaged in the business of PFE sales or service with which each owner or principal of the company is affiliated or has been affiliated in the last five years;
  - c. listing the names, addresses, and certificate of fitness numbers of all company employees who will be selling or servicing PFEs
  - d. certifying that the company has the tools, materials, equipment, facilities and servicing manuals required to service PFEs, as specified in Chapter 7 of NFPA Standard 10 2007.  
**See Addendum B "Minimum Equipment and Facility Requirements"**
  - e. applicant shall provide copies of each manufacturer recognized training and certification.
  - f. proof of liability insurance naming the department as a certificate holder.

**7. Term and renewal:** PFE servicing company certificates shall be issued for a term of one year. Certificates may be renewed in accordance with the provisions of FC 901.6.3.2.

**8. Application fees:** The fee for an original application for a PFE servicing company certificate shall be one hundred dollars (\$100). The fee for a renewal application shall be fifty dollars (\$50).

**9. Maintenance of employee list:** PFE servicing company certificate holders shall maintain on file with the Department a current list of company employees servicing PFEs, and shall update such list within 30 days of any change.

## **10. Facility inspections:**

- a.** All facilities maintained by PFE servicing company certificate applicants and holders for the servicing of PFEs are subject to Department inspection. Such inspections may be conducted for any purpose related to the enforcement of the requirements of this section, including but not limited to:
- verifying that the company possesses the tools, materials, equipment and servicing manuals required to service PFEs; and
  - is servicing PFEs in accordance with the requirements of this section and may require a demonstration of recharge procedures.
  - a verification of record keeping relating for the servicing of each PFE performed at the facilities which may include serial number, date serviced, the NYC Fire Department C of F number, extinguisher type and size, and the name of the FDNY license company.
- b.** Facility inspections conducted in connection with original or renewal applications for a PFE servicing company certificate shall be conducted at the expense of the applicant, at the rate of \$210.00 per hour, plus travel expense if the facility is outside of NYC.

### **D. The Responsibilities of PFE Companies (Sales and Full Service) and their Employees engaged in PFE Sales.**

#### **1. Unfair Trade Practices are prohibited**

No person shall engage in any deceptive trade practice in the sale, lease, rental or loan or in the offering for sale, lease rental or loan of any consumer goods or services or in the collection of consumer debts.

When a “NEW” extinguisher is SOLD by a licensed PFE company that is recognized by the FDNY, the SELLER will perform a series of actions to give reasonable assurance the fire extinguisher is fully charged and operable. The installer shall affix a PFE sales company or a PFE full service company tag. At this point the extinguisher is considered in service ready for use.

#### **2. PFE Sales Company Tag**

The installer shall affix a tag indicating the month, year and type of extinguisher sold. This tag shall have on it the name of the company, the Sales Company Certificate number, and all contact information. The company employees (SELLER) name and C of F number. It is prohibited to have service information of any type on this Tag. Additionally, a direct wired dedicated phone line registered to the company shall be provided for the purposes of immediate contact, cell phone numbers shall not be acceptable. Sales only companies shall print this statement prominently on the tag:

**“THIS COMPANY SHALL NOT SERVICE THIS EXTINGUISHER.”**

**3. PFE Sales and full Service Company Tag**

The installer shall affix a tag indicating the month, year and type of extinguisher sold. This tag shall have on it the name of the company, the sales company certificates number, and all contact information. The company employees (SELLER) name and C of F number. Additionally, a direct wired dedicated phone line registered to the company shall be provided for the purposes of immediate contact, cell phone numbers shall not be acceptable. Fire Suppression System Service information is prohibited unless the sales company certificate holder is a licensed Master Fire Suppression Contractor.

- Violations of any of these Sales Standards shall be grounds for revocation or suspension of the company’s Certificate or C of F holder or both.
- Your company is required to have a minimum of \$500,000 Insurance policy with an A- rating or higher with the FDNY co-named on the policy. Any lapse in this policy is grounds for revoking your and removal from the approved citywide list.
- Speaking to customers in clear and plain understandable terms.
- Limit the use of industry terminology “tech talk” when dealing with the costumers.
- Brochures, pamphlets, any estimates and receipts should be written clearly and understandable to the customers.
- Any person engage in sales should have a good understanding of the written materials they are distributing to the consumer and be able to explain any unclear wording, statements and confusing product descriptions.
- Sales people should have a complete understanding of the product they are selling.
- Sales people should inform the customer of the current rules and requirements for correct placement of PFE for businesses or homes.
- There should be no misleading or deceptive statements and/or hidden clauses when using the word “Free”. Nor should the word “Free” be used to lock customers into service or products they don’t want or need.
- All publications, advertisements, websites, receipts, estimates or any other written materials handed out to the public must state that your company is not affiliated to the FDNY.
- All sales persons when soliciting sales when entering a premise should state that they are not in any way affiliated with the NYC Fire Department.
- The wearing of any **FDNY hats, shirts, jackets** or anything with the official FDNY logos is strictly forbidden by anyone representing your company.

- At no time should any person in your company imply to the public that your company is associated with the FDNY and must present your C of F card to the customer and state the name of your company.
- At no time should the public be threatened by verbal or written means for failure to purchase products or service being sold.

#### **4. Estimates/Contracts and Receipts**

If requested by the consumer, a written estimate detailing costs, equipment installed and amount of time to complete the job must be provided by the vendor before commencing any work or sale:

- Estimates should be written in plain language and comply with the Fire Code and NFPA 10, 2007 and all estimates should be free of hidden meanings.
- The estimate should state whether new or used equipment and products are being offered. The pros and cons should be discussed by the seller and the consumer.
- Used equipment and products should be 100 percent reliable in function and free of defects.
- Used equipment must be plainly labeled “Used” on all estimates contracts and receipts.
- If changes to the estimate are necessary, notification to the consumer is required.
- Any changes in PFE equipment models due to unforeseen events such as upgrades to equipment, discontinuance of models and the vendor should make every effort to notify the consumer.
- At no time should the vendor substitute equipment or change any condition of the sale without notifying the consumer.

**The FDNY requires receipts be issued to all consumers for any Sale or Service that is provided by any company. The receipts must follow the guide lines listed below:**

- Total amount of money paid with a separate invoice listing any taxes, the date of sale and the actual business name and address.
- The receipts must provide a phone number, which is hard-wired to your company’s place of business, along with a cell phone number if desired.
- Receipts must include the name(s), number(s) and expiration date(s) of all persons who were involved in the installation of the PFE’s.
- The receipt shall also list, the number of the company’s certificate letter issued by the FDNY along with its expiration date.
- Receipts must be itemized showing the make and model number of any purchased equipment.

- Also upon request the vendor must provide a copy of any documents that were signed by the consumer relating to the actual sale.

The following information constitutes the rights of the consumer:

- The consumer has a right to “shop around” for other companies as they see fit.
- The consumer reserves the right to renew or not to renew his or her service contract with their PFE company.
- Under no circumstances should the licensed company, a sales person or any PFE technician imply that termination of a service contract would be grounds for The New York City Fire Dept to issue violations, impose fines or penalties.
- The use of threats, implying endorsement or association with The New York City Fire Department, or any other New York City Government agencies is unlawful and could result in suspension or revocation of any service technician and/or Company Certificates.

**E. The Responsibilities of Full Service PFE Companies and their Employees Engaged in PFE Service, Recharge and Maintenance**

- Any company or individual that recharges/services PFE’s required to hold a W-96/S02 Citywide certificate of fitness for Servicing PFEs.
- This holder shall present his C of F immediately upon requested by the consumer or any member of The New York City Fire Department.
- You are required to follow all renewal procedures necessary for you and your company business certificate in order to remain as a licensed company listed on The New York City Fire Department PFE data base listing.
- Keep in mind that it is your sole responsibility for renewing s and Company Certificates on time.
- Servicing of any PFE’s without a valid C of F constitutes a crime punishable by law.
- PFE Sales, Servicing, Recharging and Maintenance performed by any company without a PFE Servicing Company Certificate issued by the FDNY is against the law.
- A holder of a PFE Servicing Company Certificate means that your company is registered with the New York City Fire Department. This listing is available on line for viewing by the public.

As the owner/representative of a private PFE company engaging in any of the following is a crime and could result in revoking of any and possible criminal charges:

- The wearing of any **FDNY hats, shirts, jackets** or anything with the official FDNY logos by any person representing your company is strictly prohibited.

- At no time should any person in your company imply to the public that your company is associated with the New York City Fire Department.
- At no time should it be implied that your company in the course of doing business, is endorsed by the FDNY.
- At no time should any threat, verbal or written be given to any consumer you are doing business with, that might imply that a violation or a fine will be given out by a FDNY inspector or uniformed Fire Fighter.

The FDNY does not send private PFE companies to conduct official FDNY inspections, any company or any one of their employees making this assertion shall constitute a false claim, and could be grounds for revocation/forfeiture of their License. Also note that the public is being informed of this fact via our website and public media so any company employee using this statement to enter in to public facilities could face criminal charges.

Also, illegal companies (not recognized or licensed by the FDNY) servicing PFEs in New York City should be promptly reported to the FDNY. To check the status or report any company engaged in this activity use the following contacts:

The New York City Fire Department **COMPLAINT NUMBER FOR PFE 718 999 2533 and NY CITY INFORMATION NUMBER 311.**

### **III. DEFINITIONS**

**AFFF:** An abbreviation for aqueous film-forming foam.

**Carbon dioxide:** a colorless, odorless, electrically nonconductive inert gas that is suitable for the extinguishment of Class B and Class C fires.

**Cartridge/Cylinder-operated PFE:** a PFE in which the expellant gas is in a separate container from the agent storage container.

**Certificates:**

- a. Certificate of fitness for PFE sales only:** a certificate issued by the Department pursuant to this section and FC 901.6.3.2. authorizing a person to Sell and install PFEs holding a “S-96” C of F.
- b. Certificate of fitness for sales and full service PFE:** a certificate issued by the Department pursuant to this section and FC 901.6.3.2. authorizing a person to perform sales, installations and full service of PFEs holding a “W-96” C of F.
- c. Company certificate for PFE sales** authorizes a company to sell and install PFE, only.
- d. Company certificate for full service PFE** authorizes a company to perform full service as well as sales and installations.

**Dry chemical:** various mixtures of finely divided solid particles which are specially treated to provide resistance to packing and moisture absorption (caking) and to promote proper flow characteristics. These agents are designed for the extinguishment of Class A and Class B fires. They are nonconductors and are approved for use on energized electrical Class C fires.

**DOT:** US Department of Transportation.

**Dry chemical closed recovery system:** a system that provides for the transfer of dry chemical agent between PFEs and recovery containers that is closed to prevent the loss of agent to the atmosphere.

**Dry powder:** solid materials in powder or granular form designed to extinguish Class D combustible metal fires by crusting, smothering, or heat-transferring means.

**Extinguisher Bracket:** extinguisher retention device designed to mount and secure a specific extinguisher model onto various surfaces by incorporating releasable straps or bands to secure the fire extinguisher.

**Extinguisher cabinet:** an identifiable and readily accessible fire extinguisher housing device designed to store and protects fire equipment.

**Extinguisher hanger:** extinguisher mounting device designed for mounting a specific fire extinguisher model onto a stationary vertical surface.

**Extinguisher inspection (Monthly):** a quick check that a fire extinguisher is in its designated place, that it has not been actuated or tampered with, and that there is no obvious physical damage or condition to prevent its operation.

**Extinguisher maintenance (Yearly):** a thorough examination of the fire extinguisher. It is intended to give maximum assurance that a fire extinguisher will operate effectively and safely. It includes thorough examination for physical damage or condition to prevent its operation and any necessary repair or replacement. It will normally reveal if the hydrostatic testing or internal maintenance is required.

**Extinguisher service:** a PFE that is under going yearly maintenance or recharging.

**Factory test pressure:** the pressure shown on the nameplate at which an extinguisher shell was tested at the time of manufactory. It is also the pressure at which the extinguisher shell shall be re-tested at.

**FFFP:** An abbreviation for film-forming fluoroprotein foam.

**Film-forming foam agents:** the film-forming foam agents are aqueous film-forming foam (AFFF) and film-forming fluoroprotein foam (FFFP).

**Full Service Shop:** Is a shop that has equipment and materials at hand necessary to be able to fully service PFE's. The shop shall consist of low pressure testing equipment as well as storage bins or other types of storage devices used to recharge and refill PFE's. Recovery systems are necessary. Refer to ADDENDUM B.

**Halogenated agents:** Halogenated (clean) agents are of the following types:

- a. Halons, which include bromochlorodifluoromethane (Halon 1211), Bromotrifluoromethane (Halon1301), and mixtures of Halon 1211 and Halon 1301 (Halon 1211/1301).
- b. Halocarbons which include hydro chlorofluorocarbon (HCFC), hydrofluorocarbon (HFC), perfluorocarbon (PFC), and fluoriodocarbon (FIC) types of agents.

**Halogenated agent closed recovery system:** a system that provides for the transfer of halogenated agents between PFEs, supply containers, and recharge and recovery containers so that none of the halogenated agent escapes to the atmosphere. Closed recovery systems for halogenated agents with an ozone depleting potential (ODP) of 0.2 or greater must be listed for use with that agent.

**High pressure cylinder:** cylinders containing a pressure higher than 500 PSI at 70F.

**HMIS.** An abbreviation for hazardous materials identification systems.

**Hydrostatic testing:** pressure testing of the fire extinguisher to verify its strength against rupture.

**Loaded stream charge:** a water-based extinguishing medium that uses an alkali metal salt as a freezing point depressant.

**Low pressure cylinder:** cylinders containing a pressure of 500 PSI or less at 70F.

**NFPA Standard 10, 2007:** National Fire Protection Association Standard No. 10, "Standard for PFEs" 2007 edition).

**Non rechargeable PFE:** a PFE that is not capable of (nor intended to be capable of) undergoing complete maintenance, hydrostatic testing, and being restored to its full operating capability by the standard practices used by fire equipment dealers and distributors. Non rechargeable (non refillable) PFEs are marked "Discharge and Dispose of After Any Use" or "Discharge and Return to the Manufacturer After Any Use or with a similar equivalent marking. Some PFEs that are physically rechargeable are marked "non rechargeable" and are therefore considered to be non rechargeable (non refillable) PFEs- A fire, typically associated with Class B flammable liquids and gases, where another item is blocking the stream of fire extinguishing agent from reaching all of the fire.

**Obstacle Fire:** a fire typically associated with Class B flammable liquids and gases, where another item is blocking the stream of fire extinguishing agent from reaching all of the fire.

**PFE servicing company certificate:** a certificate issued by the Department to a company engaged in the business of servicing PFEs, which authorizes an owner or principal of such company to supervise PFE servicing by company employees holding a certificate of fitness for PFE servicing.

**PPM (or ppm):** an abbreviation for parts per million.

**Portable fire extinguisher:** a portable device, carried or on wheels and operated by hand, containing an extinguishing agent that can be expelled under pressure for the purpose of suppressing or extinguishing fires.

**Rechargeable PFE:** a PFE is one that is capable of undergoing complete maintenance, including internal inspection of the pressure vessel, replacement of all substandard parts and seals, and hydrostatic testing. The PFE is capable of being recharged with agent and restored to its full operating capability by the standard practices used by fire equipment dealers and distributors. Rechargeable (refillable) PFEs are marked "Recharge Immediately after Any Use" or with a similar equivalent marking.

**Self-expelling PFE:** a PFE in which the agents have sufficient vapor pressure at normal operating temperature to expel themselves.

**Service pressure:** the normal operating pressure as indicated on the gauge and nameplate of a PFE.

**Servicing:** the maintenance and recharging of PFEs as defined in NFPA Standard 10- 2007 including any thorough examination, repair or replacement of portable fire extinguishers or the replacement of the extinguishing agent.

**Shall:** indicates mandatory requirement.

**Stored-pressure PFE:** A PFE in which both the extinguishing agent and expellant gas are kept in a single container, and that includes a pressure indicator or gauge.

**Three dimensional fire:** a class B fire involving flammable liquids in motion such as dripping, running, and pouring. These fires generally involve vertical as well as one or more horizontal surfaces. The system used to rate extinguishers for Class B is not directly applicable to this hazard.

**Travel distance:** the actual walking distance from any point to the nearest fire extinguisher fulfilling the hazard requirements.

**Water-type PFE:** a PFE that contains water-based agents, such as water, AFFF, FFFP, antifreeze, and loaded stream.

**Wet chemical:** Wet chemicals include, but are not limited to, aqueous solutions of potassium acetate, potassium carbonate, potassium citrate, or combinations of these materials.

**Wheeled-type PFE:** a PFE equipped with a carriage and wheels intended to be transported to the fire by one person.

Inspection is a "**quick check**". It is intended to give **reasonable assurance** that the fire extinguisher is fully charged and operable. This quick check is done by verifying that the PFE is in its designated place, that it has not been actuated or tampered with, and that there is no visible physical damage or condition to prevent its operation.

Maintenance is a **thorough** examination of the fire extinguisher. It is intended to give **maximum assurance** that a PFE will operate effectively and safely. It includes a **detailed examination**, including any necessary repair or replacement. Maintenance will normally reveal if hydrostatic testing or internal maintenance is required. Maintenance and recharging are considered "**servicing**".

Recharging is the **replacement** of the extinguishing agent. It also includes the replacement of the pressurizing gas (expellant gas) for certain types of fire extinguishers. The following items are critical in the effective and safe operation of PFEs:

- a. Type and amount of recharge material
- b. Type and pressure of pressurizing gas (for PFEs requiring a gas to expel the extinguishing agent)

Maintenance and recharging must be performed by trained persons having available the appropriate servicing manual(s), the proper types of tools, recharge materials, lubricants, and manufacturer's replacement parts or parts listed for use in a specific fire extinguisher. Service manuals can be obtained from the fire extinguisher manufacturer.

#### **IV. CLASSIFICATION OF FIRES**

Fires are classified into five (5) classes. They are described below:

**Class A** fires are fires in ordinary combustible materials, such as woods, cloth, paper, rubber, and many plastics.

**Class B** fires are fires in flammable liquids, combustible liquids, petroleum greases, tars, oils, oil-based paints, solvents, lacquers, alcohols, and flammable gases.

Fire extinguishers for the protection against pressurized flammable liquids and pressurized flammable gases shall be based on the recommendations of the

manufacturer. Large capacity dry chemical fire extinguishers of 10 pounds or greater and with a discharge flow rate of 1 pound per second or greater shall be used to protect these hazards.

**CAUTION:** Attempting to extinguish this type of fire is undesirable unless there is reasonable assurance that the source of fuel can be promptly shut off.

Fire extinguishers for the protection against three dimensional fires shall be large capacity dry chemical fire extinguishers of 10 pounds or greater and with a discharge flow rate of 1 pound per second or greater.

Fire extinguishers for the protection against obstacle fires shall be based on one of the following criteria:

- a. Extinguishers containing vapor suppressing foam agent.
- b. Multiple extinguishers containing non vapor suppressing class B agents intended for simultaneous application.
- c. Large capacity dry chemical fire extinguishers of 10 pounds or greater and with a discharge flow rate of 1 pound per second or greater.

**Class C** fires are fires that involve energized electrical equipment where the electrical non-conductivity of the extinguishing media is of importance.

**Class D** fires are fires in combustible metals, such as magnesium, titanium, zirconium, sodium, lithium and potassium.

**Class K** fires are fires in cooking appliances that involve combustible cooking media (vegetable or animal oils and fats).

## **V. CLASSIFICATION OF PFE**

The classification of PFEs consists of a letter that indicates the **Class of Fire** on which a fire extinguisher has been found effective. In addition, fire extinguishers classified for Class A or Class B fires are required to have a rating number indicating the relative extinguishing effectiveness preceding the classification letter. Some fire extinguishers may have more than one letter classification such as 2-A: 20-B: C. This classification means that this PFE has an effectiveness of 2 when used to extinguish Class A fires, and an effectiveness of 20 when used to extinguish Class B and/or Class C fires. Fire extinguishers classified for Class C, Class D or Class K fires are not required to have a rating number preceding the classification letter.

Fire extinguishers for the protection against pressurized flammable liquids and pressurized flammable gases shall be based on the recommendations of the manufacturer. Large capacity dry chemical fire extinguishers of 10 pounds or greater and with a discharge flow rate of 1 pound per second or greater shall be used to protect these hazards.

**CAUTION:** Attempting to extinguish this type of fire is undesirable unless there is reasonable assurance that the source of fuel can be promptly shut off.

Fire extinguishers for the protection against three dimensional fires shall be large capacity dry chemical fire extinguishers of 10 pounds or greater and with a discharge flow rate of 1 pound per second or greater.

Fire extinguishers for the protection against obstacle fires shall be based on one of the following criteria:

- Extinguishers containing vapor suppressing foam agent
- Multiple extinguishers containing non vapor suppressing class B agents intended for simultaneous application.
- Large capacity dry chemical fire extinguishers of 10 pounds or greater and with a discharge flow rate of 1 pound per second or greater.

## **VII. SPECIFICATION, SELECTION AND DISTRIBUTION OF PFE**

**1.** The owner or occupant of any occupancy or space shall ensure that such occupancy or space is equipped with the PFEs as set forth in NFPA Standard 10-, 2007 except as otherwise required by this subdivision. The Department may prescribe such other or additional PFE requirements as it determines to be necessary for fire protection purposes, based on the use or configuration of the occupancy or space.

**2.** Fire extinguishers shall be provided for both the protection of the building structure and its' contents regardless of the presence of a fixed fire suppression system. Fire extinguishers for the protection of the building structure shall be of the Class A type.

PFEs shall be provided in the following occupancies or spaces:

- a.** Occupancies or spaces used or classified as offices or places of worship, hotels and motels shall be provided with one fire extinguisher of minimum 2-A rating for every six thousand (6,000) square feet of floor area or fraction thereof on each floor, except that such a fire extinguisher shall be provided for every twelve thousand (12,000) square feet of floor area or fraction thereof on each floor for occupancies or spaces used as or classified as offices or places of worship in fully sprinkled buildings.
- b.** Rooming houses and single room occupancies, as defined in the New York State Multiple Dwelling Law, with over 15 sleeping rooms shall be provided with one fire extinguisher of minimum 2-A rating in the apartment of the manager or the building superintendent.
- c.** Hospitals, nursing homes, homes for the aged, day nurseries accommodating more than 15 children and asylums shall be provided

with one fire extinguisher of minimum 2-A rating for every 2,500 square feet of floor area or fraction thereof on each floor.

- d.** Places of public assembly or other occupancies or spaces where 75 or more people congregate, including places for entertainment or amusement, shall be provided with one fire extinguisher of minimum 2-A rating for every 2,500 square feet of floor area or fraction thereof on each floor.
- e.** Occupancies used or classified as retail stores or shops shall be provided with one fire extinguisher of minimum 2-A rating for every 2,500 square feet of floor area or fraction thereof on each floor.
- f.** Piers, stables, warehouses, manufacturing occupancies and all commercial occupancies except stores and office buildings shall be provided with one fire extinguisher of minimum 2-A rating for every 2,500 square feet of floor area or fraction thereof on each floor.
- g.** Occupancies or spaces used or classified as lumber yards shall be provided with one fire extinguisher of minimum 2-A rating for every 2,000 square feet of floor area or fraction thereof.
- h.** Occupancies or spaces used or classified as telephone exchanges shall be provided with PFEs suitable for Class A and Class C fires. A fire extinguisher of a minimum 2-A rating shall be provided for every 3,000 square feet of floor area or fraction thereof.
- i.** Storage garages, electric power plants and occupancies or spaces that manufacture, use or store flammable liquids or mixtures, combustible liquids or mixtures, fats, paints, waxes or similar substances shall be provided with an extinguisher suitable for a Class B fire that shall meet the rating and travel distance requirements for Extra (High) Hazard occupancies as specified in Table 6.3.1.1 of NFPA Standard 10-2007 Kitchens (except those used domestically in residential occupancies, but including those kitchens used communally by the occupants of more than one dwelling unit), shall be provided with an extinguisher suitable for a Class K fire, and shall meet the travel distance requirement of 6.6.2 of NFPA Standard 10, 2007.

The requirements of sub-paragraph (i) shall be in addition to sub-paragraphs a, b, c, d, e, f, g, and h of this paragraph.

- j.** The fire extinguisher shall be of minimum 10-B: C rating, and shall be kept in the cab or in the immediate vicinity of the crane or derrick.

All other occupancies shall be protected based on the following criteria:

- A.** Low
- B.** Moderate
- C.** High

**Low Hazards** are locations where normal quantities of Class A combustible furnishings and not more than 1 gallon of flammable liquids can be expected.

**Moderate Hazards** are locations where only occasionally larger than expected quantities of Class A combustible furnishings are present and/or 1 to 5 gallons of flammable liquids can be expected.

**High Hazards** are locations where the amount of Class A combustibles is consistently larger than normal such as storage and or manufacturing facilities. The amount of flammable liquids can be expected to be more than 5 gallons.

**CLASS “A” SELECTION CHART**

	<b><u>LOW HAZARD</u></b>	<b><u>MODERATE HAZARD</u></b>	<b><u>HIGH HAZARD</u></b>
<b>Minimum extinguisher rating</b>	<b>2A</b>	<b>2A</b>	<b>4A</b>
<b>Maximum floor area per unit of “A”</b>	<b>3,000 sq. ft.</b>	<b>1,500 sq. ft.</b>	<b>1,000 sq. ft.</b>
<b>Maximum floor area per extinguisher</b>	<b>11,250 sq. ft.</b>	<b>11, 250 sq. ft.</b>	<b>11,250 sq. ft.</b>
<b>Maximum travel distance</b>	<b>75 feet</b>	<b>75 feet</b>	<b>75 feet</b>

The travel distance for the protection of class A hazards shall not exceed 75 feet. If obstacles such as storage, partitions, or furniture are within the path to an extinguisher, the actual distance a person needs to walk must be taken into consideration.

A quantity of two 2 ½ gallon water fire extinguishers, each rated 2A, can be combined to fulfill a requirement of 4A.

**CLASS “B” SELECTION CHART**

	<b>Minimum Extinguisher Rating</b>	<b>Maximum Travel Distance</b>
<b>LOW HAZARD</b>	<b>5B 10B</b>	<b>30 ft 50 ft</b>
<b>MODERATE HAZARD</b>	<b>10B 20B</b>	<b>30 ft 50 ft</b>
<b>HIGH HAZARD</b>	<b>40B 80B</b>	<b>30 ft 50 ft</b>

The travel distance for the protection of class B hazards shall not exceed 50 feet. If obstacles such as storage, partitions, or furniture are within the path to an extinguisher, the actual distance a person needs to walk must be taken into consideration.

A quantity of three 2 ½ gallon foam extinguishers can be combined to fulfill the “high” hazard requirement.

A quantity of two 6 liter foam extinguishers can be combined to fulfill the “moderate” hazard requirement.

Class B fire extinguishers are rated on the basis that each 2 units of B will cover 1 square foot of flammable liquid. Example: A fire extinguisher with a rating of 40B will cover 20 square feet of flammable liquid.

Foam fire extinguishers are rated on the basis that 1 unit of B will cover 1 square foot of flammable liquid.

In any case, fire extinguishers shall not be the sole means of fire protection where the surface area of flammable liquids of appreciable depth (defined as a depth exceeding ¼ Inch) exceeds 10 square feet. For surface areas up to 20 square feet, properly trained personnel shall be located on the premises.

The system used to rate Class B fire extinguishers does not apply to special hazards such as pressurized flammable liquids and gases or three dimensional fires. **Please refer to the section on classification of fires and fire extinguishers of this study guide.**

#### **A. Restrictions on Use of Certain PFEs**

Multi-purpose dry chemical extinguishers shall not be installed in areas containing oxidizers such as pool chemicals. Only water type fire extinguishers shall protect these areas.

Fire extinguishers provided for the protection of Class D flammable metals shall be specifically listed by the manufacturer for the type of metal being protected. The use of any other type of extinguishing agents will cause a dangerous chemical reaction.

Class K type fire extinguishers manufactured after January 1, 2002 shall not have a “wand” attached to the discharge hose. Extinguishers installed prior to January 1, 2002 shall remain in service and maintained in accordance with the manufacturers UL listed service manual.

#### **B. Obsolete Fire Extinguishers**

A certificate of fitness holder should be aware that the following types of PFEs are obsolete and must remove from service immediately.

- a. Soda acid.
- b. Chemical foam (excluding film-forming agents).

- c. Vaporizing liquid (e.g., carbon tetrachloride).
- d. Cartridge-operated water.
- e. Cartridge-operated loaded stream.
- f. Copper or brass shell (excluding pump tanks) joined by soft solder or rivets.
- g. Carbon Dioxide Extinguishers with metal horns.
- h. Solid charged type AFFF extinguishers (paper cartridge).
- i. Pressurized water fire extinguishers manufactured prior to 1971.
- j. Any extinguisher that needs to be inverted to operate.
- k. Any stored pressure extinguisher manufactured prior to 1955.
- l. Any extinguishers with 4B, 6B, 8B, 12B, 16B fire ratings.
- m. Stored pressure water extinguishers with fiberglass shells (pre 1976).
- n. Dry chemical stored pressured extinguishers manufactured prior October 1984.
- o. Any fire extinguisher that can no longer be serviced in accordance with the manufacturer's maintenance manual.

### **C. Temperature Range for Fire Extinguishers**

Fire extinguishers must not be exposed to temperatures outside the range shown on the fire extinguisher label.

Water-type fire extinguishers must not be installed in areas where the temperatures are outside the range of 40°F to 120°F because they would freeze at temperatures below 40°F, or a build-up of vapor may cause the rupture of the cylinder at temperatures beyond 120°F. PFEs containing plain water only can be protected to temperatures as low as -40°F by the adding of manufacturers' specified antifreeze. Calcium chloride solutions must not be used in stainless steel fire extinguisher. PFEs containing aqueous film-forming foam (AFFF), portable extinguishers containing film-forming fluoroprotein foam (FFFP) and portable extinguishers containing Class K mixtures, cannot be protected against temperatures below 40°F because it will tend to impair the effectiveness of the extinguishing agent.

All other types of PFEs must be installed in areas where the temperatures are between the range of -40°F and 120°F. When fire extinguishers are installed in locations where temperatures are outside these ranges, they must be of a type approved and listed for the temperature to which they are exposed, or they must be placed in an enclosure capable of maintaining the stipulated temperature range.

## **VIII. INSPECTION OF PORTABLE FIRE EXTINGUISHERS**

### **A. General Inspection**

Inspection is a "quick check" that a PFE is available and will operate. It is intended to give reasonable assurance that the PFE is fully charged and operable.

This is done by verifying that it is in its designated place, that it has not been actuated or tampered with, and that there is no obvious or physical damage or condition to prevent its operation. Basically, inspection means a visual examination of the PFE. According to new FC 901.6.3.2 and NFPA 10, 2007 inspecting a PFE is not considered servicing of a PFE. A certificate of fitness is not required to perform this inspection.

PFEs must be inspected when initially placed in service and at least monthly thereafter. PFEs must be inspected more frequently when circumstances require.

## **B. Inspection Procedures**

Inspection of PFEs must include a check of at least the following items:

- a. Properly mounted on wall and in an appropriate location and readily accessible.
- b. No obstruction to access or visibility.
- c. Operating instructions on nameplate legible and facing outward.
- d. Safety seals and tamper indicators not broken or missing.
- e. Fullness determined by weighing.
- f. Examination for obvious physical damage, corrosion, leakage, or clogged nozzle.
- g. Pressure gauge reading or indicator in the operable range or position.
- h. Condition of tires, wheels, carriage, hose, and nozzle checked (for wheeled units).
- i. HMIS label in place.

When an inspection of **any PFE** reveals a deficiency in any of the conditions listed in (a), (b), (h), and (i), immediate corrective action must be taken.

When an inspection of **rechargeable PFEs** reveals a deficiency in any of the conditions listed in (c), (d), (e), (f), (g) and (h), they must be subjected to applicable maintenance procedures as required within the manufacture's specification.

When an inspection of **non-rechargeable dry chemical PFEs** reveals a deficiency in any of the conditions listed in (c), (e), (f), and (g), they must be removed from service, discharged, and destroyed at the direction of the owner or returned to the manufacturer.

When an inspection of **non-rechargeable Halon agent PFEs** reveals a deficiency in any of the conditions listed in (c), (e), (f), and (g), it must be removed from service, NOT discharged, and returned to the manufacturer, or a fire equipment dealer or distributor, for recovery of halon.

## **C. Inspection Recordkeeping**

Records must be kept on a tag or label attached to the PFE, on an inspection checklist maintained on file, or in an electronic system (e.g., bar coding) that

provides a permanent record. The date the inspection was performed and the initials of the person performing the inspection must be recorded.

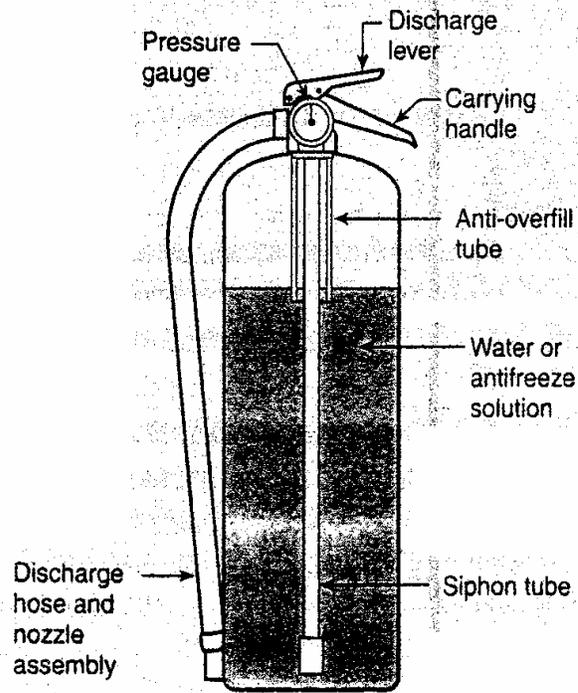
## **IX. MAINTENANCE**

Maintenance is a thorough examination of the PFE. It is intended to give maximum assurance that a PFE will operate effectively and safely. It also includes any necessary repair or replacement. Maintenance will reveal if hydrostatic testing or internal maintenance is needed. **A certificate of fitness is required to service, maintain and/or recharge a PFE.** A Servicing Company certificate is also required for a company providing such service.

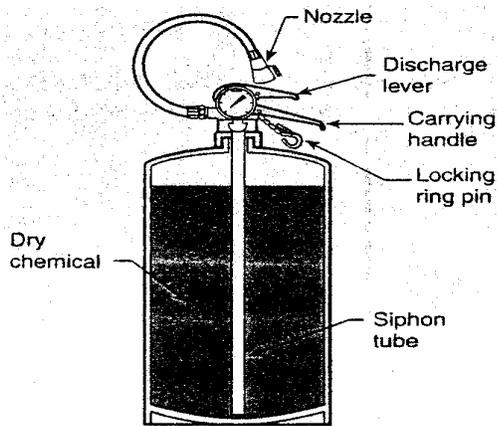
PFEs must be maintained **at least annually or** at the time of hydrostatic testing, or when physical damage to the cylinder is visible during a monthly inspection. PFEs removed from service for maintenance or recharging must be replaced by a similar PFE and must be of at least equal rating.

Persons performing maintenance on PFEs shall be trained and authorized on PFE **(by January 1, 2010 by NFPA)** by the manufacturer of the PFE being serviced. Knowledge in proper servicing techniques, special tools unique to certain models, and the proper replacement parts and recharge agent are essential to the performance of PFEs. Figures 1 through 3 are diagrams showing various parts or components of some typical PFEs. Fig. 4 through 6 shown in details the internal parts or components of such extinguishers.

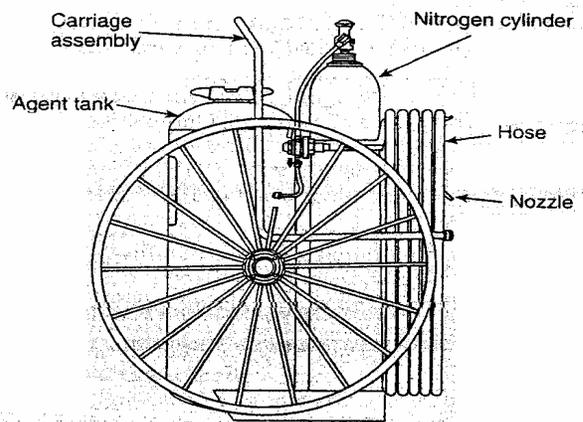
PFE's shall be hydrostatically tested on a periodic basis in accordance with the requirements of Chapter 8 of NFPA Standard 10 2007 and §1910.157 of Title 29 and §173.34 of Title 49 of the United States Code of Federal Regulations, as applicable.



**Fig. 1 Stored-pressure water extinguisher**

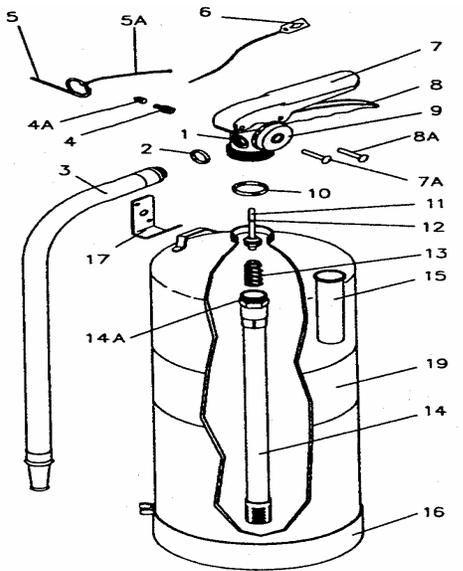


**Fig.2. Stored-pressure dry chemical PFE**



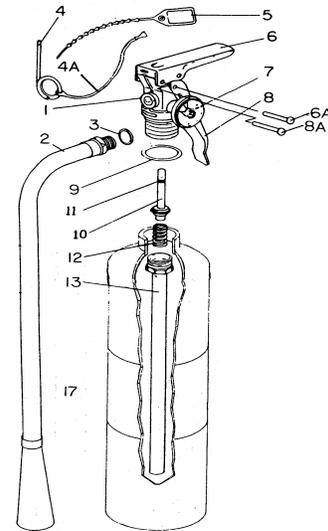
**Fig.3. Wheeled-type cylinder-operated dry chemical PFE**

**Fig. 4. Stored-pressure water extinguisher detailing internal parts or components**

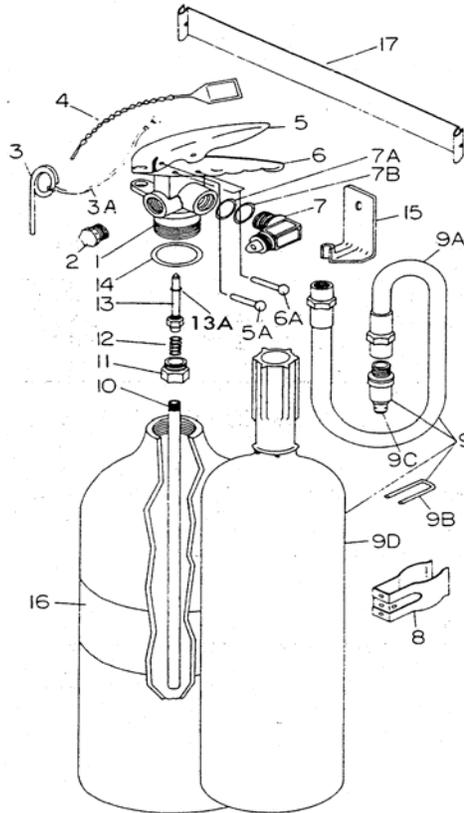


1. Valve assembly
2. Hose gasket (O ring)
3. Hose and nozzle assembly
4. Pressure valve and cap assembly
- 4A. Cap for pressure valve
5. Ring pin (Pull pin)
- 5A. Chain (nylon) for ring pin
6. Lock wire seal
7. Lever and rivet
- 7A. Rivet only for lever
8. Handle and rivet
- 8A. Rivet only for handle
9. Pressure gauge
10. Collar O ring
11. Valve stem assembly
12. Valve stem O ring
13. Spring
14. Down tube (Siphon tube)/retainer assembly
- 14A. down tube O ring
15. Fill tube
16. Foot stands
17. Wall hanger bracket
19. Nameplate

**Fig. 5. Stored-pressure dry chemical extinguisher detailing internal parts or components**



1. Valve assembly
2. Hose and horn assembly
3. Hose gasket (o ring)
4. Ring pin (Pull pin)
- 4A. Chain (nylon) for ring pin
5. Lock wire seal
6. Lever and rivet
- 6A. Rivet only for lever
7. Pressure gauge
8. Handle and rivet
- 8A. Rivet only for handle
9. Collar O ring
10. Valve stem assembly
11. Valve stem O ring
12. Spring
13. Down tube (Siphon tube)/retainer assembly
17. Nameplate



**Fig. 6. Carbon dioxide extinguisher detailing internal parts or components**

- |   |                             |
|---|-----------------------------|
| 1. Valve assembly                       | 9A. Hose assembly           |
| 2. Safety disc, gasket and nut assembly | 9B. U pin                   |
| 3. Ring pin (Pull pin)                  | 9C. Nozzle                  |
| 3A. Chain (nylon) for ring pin          | 9D. Horn with handle        |
| 4. Lock wire seal                       | 10. Down tube (Siphon tube) |
| 5. Lever and rivet                      | 11. Retainer                |
| 5A. Rivet only for lever                | 12. Spring                  |
| 6. Handle and rivet                     | 13. Valve stem assembly     |
| 6A. Rivet only for handle               | 13A. Valve stem O ring      |
| 7. Elbow with O ring and spacer         | 14. Collar O ring           |
| 7A. O ring for elbow                    | 15. Wall hanger bracket     |
| 7B. Nylon spacer for elbow              | 16. Nameplate               |
| 8. Horn clip                            | 17. Strap for horn clip     |
| 9. Hose and nozzle assembly             |                             |

### **A. Maintenance Procedures**

Maintenance procedures must include a thorough examination of PFEs including: all mechanical parts, extinguishing agent of cartridge or cylinder operated dry chemical, stored-pressure loaded stream, and pump tank fire extinguishers, expelling means of all fire extinguishers and physical appearances. The following are some common checklists for these three elements.

**Items**

**Corrective Action**

Mechanical damage on the shell.....	Hydrostatic test and refinish, or discard
Nozzle or horn deformed, damaged, or cracked.....	Replace
Hose assembly damaged (cut, cracked, or worn).....	Replace
Hose obstruction.....	Remove obstruction or replace
Valve locking device damaged (bent, corroded, or binding).....	Repair and lubricate or replace
Immovable, jammed, or missing pointer on gauge, or pressure-indicating device.....	Depressurize and replace
Corroded, damaged or jammed lever, handle, spring, stem, or fastener joint on shell or cylinder valve.....	Depressurize, check freedom of movement, and repair, or replace
Corroded, damaged or jammed lever, handle, spring, stem, or fastener joint on nozzle shutoff valve.....	Repair and lubricate, or replace
Leaking seals on pressurizing valve.....	Depressurize and replace valve or core
Gasket O ring and seals damaged (cut, cracked or worn) .....	Replace and lubricate
Improper fill level or weight.....	Refill to the correct level or weight
Improper gauge pressure.....	Re-pressurize and leak test
Broken or missing tamper indicator.....	Check pressure, leak test, replace Indicator if correct pressure and no leak

At the time of maintenance, the tamper seal of rechargeable PFEs must be removed. This is done by operating the pull pin (ring pin) or locking device. After the maintenance procedures are completed, a new tamper seal must be installed.

Pressure regulators provided with wheeled-type PFEs must be tested for outlet static pressure and flow rate in accordance with manufacturer's instructions. Stored-pressure type of PFE containing a loaded stream agent must be

disassembled on an annual basis and subjected to complete maintenance. Prior to disassembly, the PFE must be fully discharged to check the operation of the discharge valve and pressure gauge.

A conductivity test must be conducted annually on all carbon dioxide hose assemblies. Hose assemblies found to be nonconductive must be replaced.

Every 6 years, stored-pressure PFEs that require a 12-year hydrostatic test must be emptied and subjected to maintenance procedures. The removal of Halon agent from PFEs must only be done using a listed Halon closed recovery system. The purpose of 6 year maintenance is to examine the inside of the extinguisher for corrosion. If the internal examination is performed during recharging and or hydrostatic testing, the 6 year maintenance shall be permitted to begin from that date. Non rechargeable PFEs must not be hydrostatically tested but must be removed from service at a maximum interval of 12 years from the date of manufacture. Non rechargeable Halon agent PFEs must be returned to the manufacturer or a fire equipment dealer or distributor for recovery of Halon.

**\*See at the end of this booklet a frequency testing of internal examination and hydrostatic of PFE.**

## **B. Maintenance Recordkeeping**

Carbon dioxide hose assemblies that pass a conductivity test must have the test information recorded on a suitable metallic label or equally durable material that has a minimum size of ½ in. x 3 in. The label must be affixed to the hose by a heatless process. It must include the following information:

- a. Month and year the test was performed indicated by perforation such as done by a hand punch.
- b. Name and certificate of fitness number of the person who performed the test.
- c. Name, street address and telephone number of the PFE servicing company.

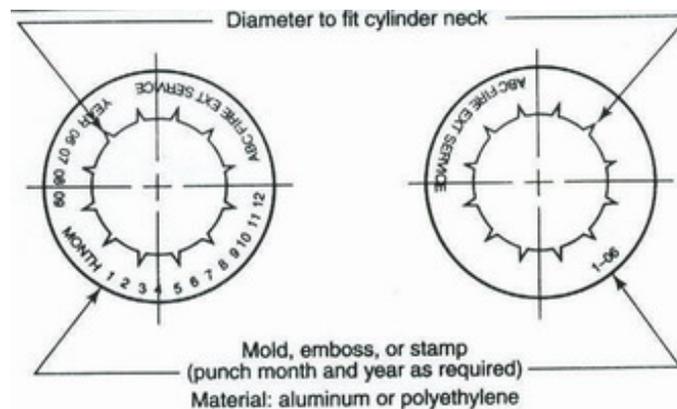
Each PFE must have a tag or label securely attached that indicates the month and year the maintenance was performed, the name and certificate of fitness number of the person who performed the maintenance, and the name, street address and telephone number of the PFE servicing company.

Each PFE that passes the applicable 6-year maintenance requirement must have such maintenance information recorded on a suitable metallic label or equally durable material that has a minimum size of 2 in. x 3½ in. The new label must be affixed to the shell by a heatless process, and any old maintenance labels must be removed. The label must be of the self-destructive type. It must include the following information:

- a. Month and year the maintenance was performed, indicated by perforation such as done by a hand punch.

- b. Name and certificate of fitness number of the person who performed the maintenance.
- c. Name, street address and telephone number of the PFE servicing company.

The PFE that has undergone maintenance that includes internal examination must have a "Verification of Service" collar located around the neck of the container. The collar must contain a single circular piece of uninterrupted material forming a hole over the neck of the container that cannot be removed unless the valve is completely removed. The collar must not interfere with the operation of the PFE. The "Verification of Service" collar must include the month and year that the recharging was performed, indicated by a perforation such as is done by a hand punch. The collar shall contain the name and certificate of fitness number of the person performing the servicing and the company name and certificate number.



### **Verification of Service Collar**

## **X. RECHARGING**

Recharging is the replacement of the extinguishing agent. It also includes the replacement of the expellant for certain types of PFEs. All rechargeable-type PFEs must be recharged after any use or as indicated by an inspection or maintenance. A PFE must not be recharged if it is beyond its hydrostatic test due date. Moisture must be removed from all non-water types of PFEs before recharging because it will cause the agent to cake and lump, and will cause corrosion to the fire extinguisher shell and valve. After recharging, a leak test must be performed on stored-pressure and self-expelling types of PFEs.

PFEs must not be converted from one type to another, nor must any PFE be converted to use a different type of extinguishing agent. PFEs must not be used for any other purpose than that of a PFE.

## **A. Recharge Agents**

Only those agents specified on the nameplate or agents proven to have equal chemical composition, physical characteristics, and fire extinguishing capabilities must be used. Agents specifically listed for use with that PFE must be considered to meet these requirements. This is to maintain the efficiency of each PFE as produced by the manufacturer and as labeled by one or more of the fire testing laboratories. For instance, the extinguisher agent and the additives used in the various types of dry chemical PFEs vary in chemical composition and in particle size and, thus, in flow characteristics. **Each PFE is designed to achieve maximum efficiency with the particular formulation used.** Changing the agent from that specified on the PFE nameplate could affect flow rates, nozzle discharge characteristics and the quantity of available agent, and would void the label of the testing laboratory.

Carbon dioxide must have the quality as follows:

- a. Carbon dioxide in the vapor phase must not be less than 99.5%.
- b. The water content in the liquid phase must not be more 0.01% by weight (-30°F dew point).
- c. Oil content of the carbon dioxide must not exceed 10 ppm by weight.

The amount of recharge agent must be verified by weighing. The recharged gross weight must be the same as the gross weight marked on the label. For those PFEs that do not have the gross weight marked on the label, a permanent label that indicates the gross weight must be affixed to the container. The label containing the gross weight must be a durable material of pressure-sensitive, self-destruct type.

When stored-pressure water-type PFEs are recharged, the proper amount of liquid agent must be determined by using one of the following:

- a. Exact measurement by weight
- b. Exact measurement in volume
- c. An anti-overfill tube, if provided
- d. A fill mark on PFE shell, if provided

Multipurpose dry chemicals must not be mixed with alkaline-based dry chemicals. Mixing multipurpose dry chemicals with alkaline-based dry chemicals could result in a chemical reaction capable of developing sufficient pressure to rupture a PFE. Substituting a different formulation for the one originally employed could cause malfunctioning of the PFE or result in substandard performance.

Pails or drums containing dry powder agents for scoop or shovel application for use on metal fires must be kept full and covered at all times. The dry powder must be replaced if found damp. Dry powder when damped will not be free

flowing. In addition, when dry powder contains sufficient moisture, a hazardous reaction could result when applied to a metal fire.

## **B. Periodic Replacement of Extinguishing Agent**

**Pump tank:** every 12 months, pump tank water and pump tank calcium chloride-based antifreeze types of PFEs must be replaced with new chemicals or water, as applicable.

**Wetting agent:** the agent in stored-pressure wetting agent PFEs must be replaced annually. Only the agent specified on the nameplate must be used for recharging. The use of water or other agents is prohibited. The premixed agent in liquid-type AFFF and FFFP PFEs must be replaced at least once every 3 years. The agent in solid-type AFFF PFEs must be replaced once every 5 years. **These requirements do not apply to the agent in non-pressurized AFFF and FFFP PFEs that is subjected to agent analysis in accordance with manufacturer's instructions.**

## **C. Re-Use of Extinguishing Agents**

**Dry chemical agent:** PFEs' removed for 6-year maintenance or hydrostatic testing must be emptied. The dry chemical agent may be re-used provided a closed recovery system is used and the agent is stored in a sealed container to prevent contamination. Prior to re-use, the dry chemical must be thoroughly checked for the proper type, contamination, and condition. In a partially discharged PFE, the remaining dry chemical may be re-used provided it is thoroughly checked for the proper type, contamination, and condition. Where doubt exists with respect to the type, contamination, or condition of the dry chemical, the dry chemical must be discarded.

**Halogenated agent:** the removal of Halon 1211 from PFEs must be done only using a listed halon closed recovery system. The removal of agent from other halogenated agent PFEs must be done only using a closed recovery system. The PFE must be examined internally for contamination or corrosion, or both. The halogenated agent retained in the recovery system may be re-used only if no evidence of internal contamination is observed in the PFE container. Halogenated agent removed from the PFE that exhibits evidence of internal contamination must be processed in accordance with the PFE manufacturer's instructions.

**Loaded stream agent:** loaded stream agent may be recovered and re-used provided it is subjected to agent analysis in accordance with manufacturer's instructions.

**Wet chemical agent:** wet chemical agents are not to be re-used. If a wet chemical PFE is partially discharged, all remaining wet chemical must be discarded. A new charge of agent must be used after the applicable 5 year hydrostatic test.

#### **D. Pressurization of Stored-Pressure PFEs' and Precautionary Measures**

Only standard industrial-grade nitrogen with dew point of -60°F or lower (CGA Nitrogen specification G10.1 grades D through P) must be used to pressurize stored-pressure dry chemical type and halon type PFEs. **Compressed air through moisture traps must not be used for pressurizing even though so stated in the instructions on older PFEs.** Compressed air may be used from special compressor systems capable of delivering air with a dew point of -60°F or lower and equipped with an automatic monitoring and alarm system to ensure that the dew point remains at or below -60°F at all times.

Some halogenated and Class D fire extinguishers must be pressurized with Argon with a dew point of -65 F or lower. Refer to the nameplate on the fire extinguisher or the manufacturer's service manual for the correct pressurization procedure.

Pressure gauges must have the proper indicated charging pressure, must be marked for use with the agent in the PFE, and must be compatible with the PFE valve body material. A stored-pressure type PFE must be pressurized only to the charging pressure specified on the PFE nameplate. The manufacturer's pressurizing adapter must be connected to the valve assembly before the PFE is pressurized. A regulated source of pressure, set no higher than 25 psi above the operating (service) pressure, must be used to pressurize PFEs. The gauge used to set the regulated source of pressure shall be calibrated at least annually. Since all are train by the manufacturer you should refer to the manual. There may be questions regarding the process.

#### **E. Recharge Recordkeeping**

Each PFE must have a tag or label securely attached that indicates the month and year the recharging was performed, the name and certificate of fitness number of the person who performed the recharging, and the name, street address and telephone number of the PFE servicing company. Note: P O Boxes and cell phone numbers used on the tag are not acceptable.

The PFE that has been recharged must have a "Verification of Service" collar located around the neck of the container. The collar must contain a single circular piece of uninterrupted material forming a hole over the neck of the container that cannot be removed unless the valve is completely removed. The collar must not interfere with the operation of the PFE. The "Verification of Service" collar must include the month and year that the recharging was performed, indicated by a perforation such as is done by a hand punch. The collar shall contain the name and certificate of fitness number of the person performing the servicing and the company name and certificate number.

Liquefied gas, halogenated agent, and carbon dioxide PFEs that have been recharged without valve removal do not require a "Verification of Service" collar. Cartridge/cylinder-operated PFEs do not require a "Verification of Service" collar.

**XI. MODIFICATION**

Whenever circumstances, conditions, limitations, or surroundings to a hazard are unusual as to prevent compliance to all foregoing provisions, the Commissioner may waive or modify such provisions to such extent as s/he may deem necessary, consistent with public safety.

**XII.**

**ADDENDUM A**

**Portable Fire Extinguishers Internal and Hydrostatic Testing  
Frequency Chart**

<b><u>PFE TYPE</u></b>	<b><u>Frequency of Internal Examination</u></b>	<b><u>Frequency of Hydrostatic Testing</u></b>
<b><u>Stored pressure / loaded stream and anti- freeze</u></b>	<b>every year</b>	<b>every 5 years</b>
<b><u>Pump tank water / calcium chloride water</u></b>	<b>every year</b>	<b>N/A</b>
<b><u>Dry Chemical cartridge/cylinder operated, mild steel shell</u></b>	<b>every year</b>	<b>every 12 years</b>
<b><u>Dry Powder cartridge/cylinder operated, mild steel shell</u></b>	<b>every year</b>	<b>every 12 years</b>
<b><u>Wetting Agent</u></b>	<b>every year</b>	<b>every 5 years</b>
<b><u>Stored pressure water</u></b>	<b>every 5 year</b>	<b>every 5 years</b>
<b><u>AFFF Liquid Charge</u></b>	<b>every 3 Years</b>	<b>every 5 years</b>
<b><u>AFFF Solid Charge</u></b>	<b>every 5 years</b>	<b>every 5 years</b>
<b><u>EFFP Liquid Charge</u></b>	<b>every 3 years</b>	<b>every 5 years</b>
<b><u>Stored Pressure</u> dry chemical, with stainless steel shell</b>	<b>every 5 years</b>	<b>every 5 years</b>
<b><u>Carbon Dioxide</u></b>	<b>every 5 years</b>	<b>every 5 years</b>
<b><u>Wet Chemical</u></b>	<b>every 5 years</b>	<b>every 5 years</b>
<b><u>Dry Chemical</u> stored pressure - mild steel shell, brazed brass shells, &amp; aluminum shells</b>	<b>every 6 years</b>	<b>every 12 years</b>
<b><u>Halogenated Agents</u></b>	<b>every 6 years</b>	<b>every 12 years</b>
<b><u>Dry Powder</u> stored - pressure mild steel shell</b>	<b>every 6 years</b>	<b>every 12 years</b>

## **ADDENDUM B**

### **Minimum Equipment and Facility Requirements to Qualify**

1. Appropriate **Commercial Zoning**.
2. Adequate hydrostatic test equipment for low-pressure cylinders. **With calibrated gauge[s]**.
3. Approved drying method for low-pressure cylinders after hydro test.
4. Adequate safety cage (in shop) for hydrostatic testing of low-pressure cylinders.
5. Low-pressure hydrostatic test labels containing the information listed in figure A.8.7.2, which is the design of a hydrostatic test label described in NFPA 10, 2007 edition.
6. Verification of maintenance/service collars as required in **NFPA-10, 2007 7.3.3.2**.
7. Facilities for proper storage of extinguishing agents.
8. Facilities must maintain an adequate supply of all manufacturers extinguishing agents.
9. Adequate closed recovery system and storage to remove and store chemicals from extinguisher cylinders during maintenance and recharging.
10. Air filtration system for work area.
11. Adequate filling equipment and a closed recovery system for clean agents.
12. Commercial dry nitrogen supply [-60 degrees F (-51.1 degrees C) dew point or less] and pressure regulator with supply and regulated pressure gauges suitable for pressurizing PFEs.
13. Equipment for leak testing of pressurized extinguishers.
14. Adequate vise, for shop use.
15. Suitable work area and work bench.
16. Accurate weighing scales for cartridge inspection and filling.
17. Accurate weighing scales for extinguisher inspection and filling.
18. Adapters, fittings, and sufficient tools and equipment to properly perform service, maintenance and recharging of PFEs.
19. Adequate inventory of **MANUFACTURERS, [OEM]** spare parts for proper service, maintenance and recharging of all PFEs.
20. Adequate inspection light for internal inspection.
21. Air Compressor for shop use.
22. Manufacturers' service and maintenance manuals for all PFEs being serviced and recharged.
23. Manufacturer's training and recertification for all individuals engaged in the service, maintenance and recharging of all PFEs.
24. Material Safety Data Sheets for all extinguishing agents.
25. Hazmat training and documentation for all individuals engaged in the service, maintenance and recharging of PFEs.
26. DOT certification for low pressure testing of DOT spec cylinders.
27. Nitrogen regulator with calibrated gauge.