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FIRESAFETY

DESCRIPTION OF PORTABLE FIRE EXTINGUISHERS

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1. GENERAL

1.01 This section provides a basic description of portable fire extinguishers provided for use within the Bell System. The four basic types included in this section are:

- Stored pressure—water
- Carbon dioxide
- Multipurpose dry chemical
- Halon 1211.

The inspection of portable fire extinguishers is covered in Section 770-330-110. The maintenance of portable extinguisher units is covered in Section 770-330-120. The distribution of portable fire extinguishers is outlined in Section 760-640-200 and attached Table A.

1.02 This section is being reissued to add Table A. Revision arrows are used to identify the table.

1.03 The "E" designation for portable extinguishers is a Bell System notation for identifying extinguishers available through Western Electric.

1.04 Manufacture of the E-7, inverting water-cartridge type, is discontinued. This unit is to be replaced by the E-10 or the E-16 extinguishers. Such replacement must conform to the distribution requirements of Section 760-640-200.

1.05 Manufacture of the E-11, stored-pressure water type with spray nozzle, is discontinued. This unit is nonrated and does not meet requirements for class A fire extinguishment capabilities. Replacement of this unit where provided for class A capabilities should be made with either the E-10 or E-16 extinguisher. Replacement with the E-16 Halon 1211 extinguisher should be based on reduced spacing as detailed in Section 760-640-200.

2. DESCRIPTION

2.01 *Stored Pressure—Water:*

(a) Water type extinguishers are for use on class A fires, ie, paper, wood, trash, etc. These are not suitable for use on fires involving flammable liquids, oils, greases, or on fires involving energized electrical equipment.

(b) The E-10 is rated 2A. It is used throughout administrative type areas and may also be utilized within telephone equipment rooms to control class A combustible fires.

(c) The E-10 extinguisher is subject to freezing and should not be used in spaces where freezing temperatures may be encountered.

Caution: Antifreeze solutions are not to be used in this unit.

(d) This extinguisher (Fig. 1) consists of a stainless steel shell with a tank of about 2-1/2 gallon capacity and uses plain water. The remainder of the tank is filled with compressed air through a standard tire valve to approximately 100 pounds per square inch pressure. A siphon tube extends from the head assembly to the bottom of the tank so that the unit is operated in an upright position. This type of extinguisher permits intermittent use. Under continuous service, this extinguisher has a discharge time of about 55 seconds.

(e) The extinguisher is operated by removing the guard pin and holding the tank by the valve handle in one hand and hose in the other. When the valve handle grip is squeezed, a stream of water is released through the hose nozzle. Release of the grip stops the operation of the extinguisher. This extinguisher has a throw of 30 to 40 feet.

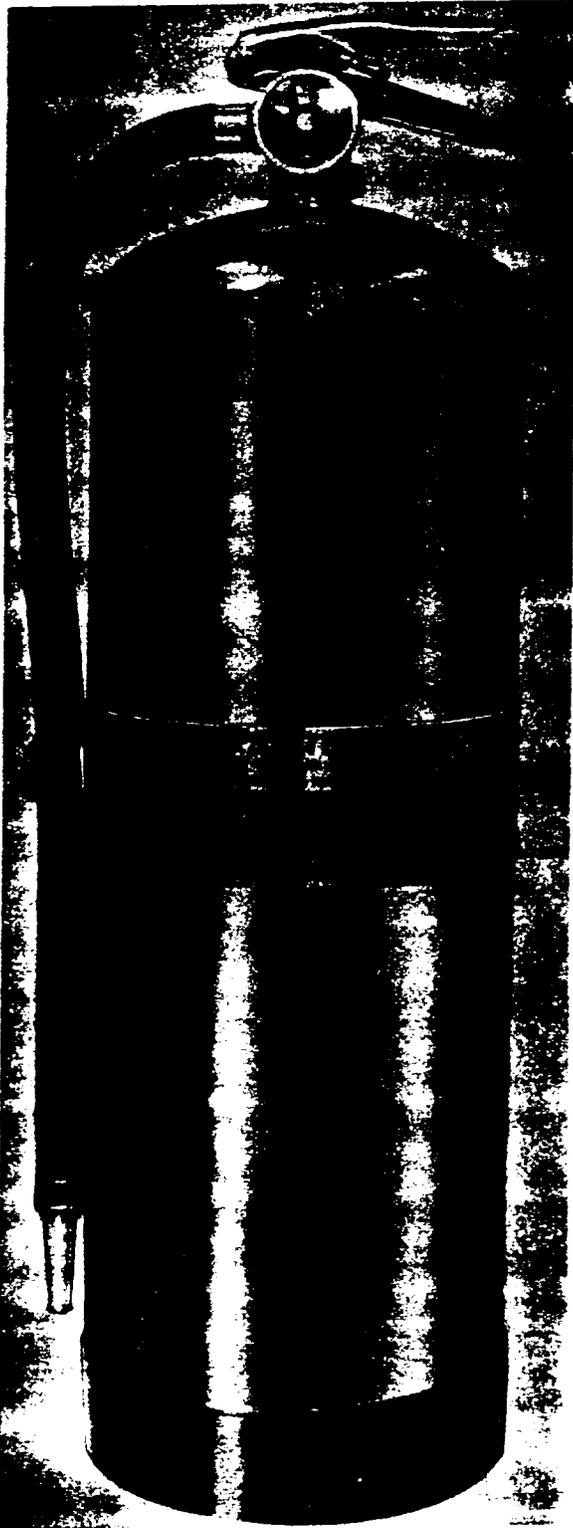


Fig. 1—E-10, Stored Pressure Water Extinguisher



Fig. 2—E-6, Carbon Dioxide Extinguisher

2.02 Carbon Dioxide:

(a) Carbon dioxide extinguishers are for use on class B (ie, flammable liquids) and class C fires (ie, energized electrical equipment).

(b) The E-6 has a 10-pound charge of carbon dioxide gas and is rated at 5B:C. The E-8 (15 pounds) rated at 10B:C and E-9 (5 pounds) rated at 5B:C are no longer available; however, they need not be replaced unless the units fail hydrostatic testing. They may be used for fighting small fires in wires, cables, racks, switchboards, power machinery, and for fires involving flammable liquids.

(c) The principal advantage of CO₂ (carbon dioxide) extinguishers is that the agent does not leave a residue after use. This is significant



Fig. 3—E-12, Multipurpose Dry Chemical Extinguisher

where protection is needed for telephone equipment. CO₂ extinguishers have a relatively short range (3 to 8 feet) and are most effective when used within a few feet of the fire, or as close as is safe for the operator. The gas extinguishes by its smothering action and has no appreciable cooling effect. This type of extinguisher is, therefore, not recommended for outdoor use where windy conditions prevail.

(d) Carbon dioxide fire extinguishers may be used in both heated and unheated spaces. Carbon dioxide gas is subject to a rapid rise in pressure where temperatures above normal are experienced. It is desirable, therefore, to locate these extinguishers away from hot surfaces and out of the direct rays of the sun. In general, the clearance between extinguishers and uncovered heating sources should be at least 2 feet. This distance may be reduced to 6 inches if the source is well insulated.

(e) The E-6 extinguisher consists of a steel or aluminum cylinder containing carbon dioxide under pressure which is discharged as a gas through a hose and a nozzle when released. A general view of the 10-pound extinguisher is shown in Fig. 2. Internally, the trigger release valve has a main and an auxiliary valve seat. Operation of the trigger initially opens the auxiliary valve which admits full gas pressure to both sides of the main valve seat. Further pressure of the trigger opens the main valve with little effort. When not in use, both valves are held closed not only by spring pressure but by full pressure of the gas within the cylinder. The trigger can be latched in the open position or can be released which will stop the flow of gas, thereby permitting temporary conservation of the gas for use on any reignition which may occur after a fire has apparently been extinguished.

(f) The extinguisher is operated by removing the guard pin, removing the nozzle from the clip, directing the nozzle at the base of the fire with one hand, and holding the tank by the handle with the other. When the valve handle grip is squeezed, a cloud of gas is released through the nozzle. Release of the grip stops the operation of the extinguisher.

2.03 *Multipurpose Dry Chemical:*

(a) Multipurpose dry chemical extinguishers are for use on class A, B, or C fires, ie, those involving general trash material such as wood, paper, etc, flammable liquids, such as gasoline, oil, naptha, etc, and electrical equipment.

(b) The E-12 has 5 pounds of agent and is rated 2A:10B:C. It can be used in storerooms, offices, etc, where multiple type hazards are anticipated. The E-13 has 10 pounds of agent



Fig. 4—E-15, Halon 1211 Extinguisher

and the unit is rated 4A:40B:C. It is used in garages and work centers. The fire extinguishing agent for both extinguishers is usually a very finely divided chemical composed of ammonium phosphate and other added chemicals to provide for free-flowing capabilities.

(c) An advantage of dry chemical over carbon dioxide extinguishers is the ability to prevent the reignition of a fire. They have a discharge stream which ranges from 10 to 30 feet dependent upon extinguisher size. Compared to carbon dioxide or halogenated agent extinguishers, they perform better under windy conditions.

(d) MULTIPURPOSE DRY CHEMICAL EXTINGUISHERS SHALL **NOT** BE USED IN TELEPHONE EQUIPMENT OR DATA PROCESSING EQUIPMENT BUILDINGS OR NEAR DATA PROCESSING EQUIPMENT AREAS. It is almost impossible to remove all traces of the chemical after use, without actually washing down the area. The fine chemical could be carried by air currents to every area of an equipment room and possibly disable telephone relays and electrical contacts.

(e) The E-12 and E-13 extinguishers consist of steel cylinders containing the extinguishing agent pressurized with either dry air or dry nitrogen. See Fig. 3 for a general view.

(f) The extinguishers are operated by pulling the guard pin, removing the nozzle from the clip, directing the nozzle at the base of the fire with one hand, and holding the tank by the handle with the other. When the handle is squeezed, the power is released through the hose nozzle. Release of the grip stops the operation of the extinguisher.

2.04 Halon 1211:

(a) The E-15 has 5-1/2 pounds of agent and is rated 10B:C. It is used for fighting small fires in telephone equipment and other spaces requiring a clean agent. The E-13 has 9 pounds of agent and is rated 1A:10B:C. This model has class A capabilities and may be used (based on reduced spacing) to additionally control ordinary combustibles in equipment spaces. The fire extinguishing agent is bromochlorodifluoromethane which extinguishes by chemical reaction. Compared to CO₂ on a weight of agent basis, Halon 1211



Fig. 5—E-16, Halon 1211 Extinguisher

is about twice as effective. When discharged, the agent is in the combined form of a gas/mist with an effective range of 10 to 20 feet. To some extent, windy conditions or strong air currents may make extinguishment difficult by causing the rapid dispersal of the agent.

Note: These units shall not be used in CEFs and areas without mechanical ventilation.

(b) This extinguisher consists of a metal cylinder containing Halon 1211 under 125 pounds per square inch pressure which is discharged through a nozzle or hose when released. A general view of the halon extinguishers is shown in Fig. 4 and 5.

(c) These units have an internally built-in metal valve and valve stem assembly. Operation of the lever opens the valve which admits full gas pressure. This lever can be released which will stop the flow of gas permitting temporary conservation of gas for use on any reignition which may occur after the fire has apparently been extinguished.

(d) The extinguisher is operated by pulling the guard pin and directing the nozzle at the base of the fire. When the handle is squeezed, the agent is released through the nozzle. Release of the grip stops the operation of the extinguisher.

3. INSTALLATION

3.01 Extinguishers should be located where they are easily seen and readily available for use. They should be located along normal paths of travel and should include the areas adjacent to exits. In general, wall locations are preferred to column mountings, particularly in telephone equipment rooms. Locations along exterior walls, at cross aisles, and near maintenance centers should be considered first in spacing layouts.

3.02 Extinguishers must not be obstructed from view and should not be painted to blend with wall decor. A means of marking locations, such as distinctive red bands around columns or white arrows on a red background above extinguishers, should be provided. Care should be exercised to locate these markings high enough to be visible over furniture, equipment, or vehicles.

→ TABLE A ←

SPACE	CLASS OF HAZARD	CLASS OF FIRE	EXTINGUISHER CLASSIFICATION(S) REQUIRED	TRAVEL DISTANCE (FEET)	SQUARE FOOT COVERAGE
Telephone Equipment Rooms	Light	A+C	2A+5B:C	75	6000
			or 1A:10B:C	75	3000
Operating Rooms	Light	A+C	2A+5B:C	75	6000
			or 1A:10B:C	75	3000
Test Rooms	Light	A+C	2A+5B:C	75	6000
			or 1A:10B:C	75	3000
Cable Entrance Facilities	Ordinary	A+C	2A+5B:C	75	3000
AC Power Rooms	Light	A+C	2A+5B:C	75	6000
			or 1A:10B:C	75	3000
Standby Generator Rooms	Ordinary	B+C	10 B:C	30	N/A
			or 20 B:C	50	N/A
Battery Rooms	Light	A+C	1A:10B:C	50	3000
			or 2A+5B:C	75	6000
General Office Space	Light	A	2A	75	6000
			or 1A:10B:C	75	3000
Storage Rooms	Ordinary	A	2A	75	3000
Computer & Data Processing Area (Note 4)	Light	A+C	2A+5B:C	75	6000
			or 1A:10B:C	75	3000
Kitchens (Note 6)	Ordinary	B+C	10B:C	30	N/A
			or 20B:C	50	N/A
Cafeteria, Dining Rooms	Light	A	2A	75	6000

← TABLE A (Contd) ←

SPACE	CLASS OF HAZARD	CLASS OF FIRE	EXTINGUISHER CLASSIFICATION(S) REQUIRED	TRAVEL DISTANCE (FEET)	SQUARE FOOT COVERAGE
Boiler Rooms	Ordinary	B+C	10B:C	30	N/A
			or 20B:C	50	N/A
Garage - Parking Areas	Ordinary	B	10B:C	30	N/A
			or 20B:C	50	N/A
- Storage Areas	Ordinary	A	2A	75	3000
Motor Vehicle Fueling or Maintenance Areas	Extra	B	40B	30	N/A
			or 80B	50	N/A

Note 1: For enclosed spaces such as boiler rooms, storage rooms, etc, extinguisher stations may be located outside the door and can be included in the spacing of extinguishers for the adjoining space, provided the rating of extinguishers is proper for both spaces.

Note 2: The data in Table C is provided for example only and applies to typical situations.

Note 3: Garage hazards may vary considerably depending on the nature and type of work operations and storage present. Each garage must be reviewed carefully to determine the class of hazard and class of fire which may be present and extinguishers spaced accordingly. A:B:C rated multipurpose dry chemical extinguishers are recommended for new installations. Care should be taken to use dry chemical or other nonfreezing agents for extinguishers in exterior covered storage areas, carports, or other areas subject to freezing temperatures.

Note 4: Spacing for Type I computer equipment. Check computer manufacturer for type of equipment to be supplied before spacing extinguishers in new location. NFPA 75 defines computer Types I, II, and III and covers extinguisher type and spacing requirements.

Note 5: Extinguishers are not provided for fires from pressurized flammable gas lines. Such fires should be combatted by shutting off the gas supply. Extinguishers are for use in the event of other combustibles burning in the room or subsidiary fires which remain after the gas has been shut off.

Note 6: If a dry chemical extinguisher is supplied for a kitchen area, it shall be a B:C rated sodium bicarbonate type. *Multipurpose A:B:C rated dry chemical extinguishers shall not be used.*

Note 7: Class C hazard has no travel distance requirement.

3.03 Extinguishers should not be located where they might be subject to mechanical damage from moving objects. Each extinguisher is supplied with a hanging hook. The extinguishers should be mounted in a vertical position directly on the No. 113A bracket or on a No. 30A bracket which has been modified by adapter No. 841065329 to accept the 113A bracket.

3.04 Extinguishers with a gross weight not exceeding 40 pounds shall be installed so that the height from the floor to the top of the extinguisher does not exceed 5 feet. Extinguishers having a gross weight greater than 40 pounds shall be installed so that the top of the extinguisher is not more than 3-1/2 feet above the floor. The clearance between the bottom of the extinguisher and the floor should be not less than 15 inches.

3.05 The carbon dioxide, dry chemical, and halon extinguishers are shipped fully charged and assembled for use. In the case of the CO₂ unit, the hose is not attached to the valve. In mounting the extinguishers on the brackets, the following should be completed:

- (a) The orifice through the nozzle should be checked to see that the opening is free.

- (b) The pressure gauge (dry chemical and halon) should read in the operating range.

- (c) Observe the following for CO₂ units:

- (1) Remove the cork or plug (provided during shipment to protect the inside of the hose from foreign particles) from the valve end of the hose of the unit.

- (2) Attach the hose of the unit securely to the valve with the aid of a wrench.

- (3) Weigh the extinguisher before placing it in service as outlined in Section 770-330-120, Maintenance of Portable Fire Extinguishers.

3.06 Water extinguishers must be filled to the indicated level with plain water and charged with approximately 100 psi of air through the standard tire valve.