CARBON DIOXIDE TYPE FIRE EXTINGUISHERS

1. GENERAL

1.01 Carbon dioxide type fire extinguishers are used in central office buildings for fighting incipient fires in wires, cables, racks, switchboards, power machinery and in certain locations involving flammable liquids. Since the gas is harmless to the equipment, these extinguishers should be used wherever it is possible to get the nozzle within about 2 feet of the flames.

1.02 Extinguishers of three capacities should be used in Bell System buildings, the E-6 (10 pound), the E-8 (15 pound) and the E-9 (5 pound). These models replace the old KS wheel type extinguisher which is an obsolete piece of equipment.

1.03 The E-6, E-8 and E-9 extinguishers may be all the trigger operated type. This simplifies the release of the CO_2 as opposed to the old wheel type. The flow of gas may be stopped by releasing the handles. The E-6 may be used in central offices, the E-8 in attended garages and the E-9 in reproduction rooms.

1.04 It is recommended that all carbon dioxide extinguishers be recharged if, during the periodic weight checks, the weight loss is found to exceed 10% of the rated capacity. This conforms with the recommendations of the National Fire Protection Association and of various manufacturers.

2. DESCRIPTION

2.01 Each extinguisher consists of a steel cylinder containing carbon dioxide under pressure which is discharged as a gas through a hose and a cone shaped nozzle when released. A general view of the 10-pound extinguisher having trigger release is shown in Fig. 1.

2.02 The gas is most effective when used within a few feet of the fire, or as close as is safe for the operator. The gas has no appreciable cooling effect in fighting fires, but extinguishes the flames by its smothering action. In the case of burning fat such as in a cafeteria deep fat fryer, care should be observed that the force of the gas as it is discharged does not spatter the hot fat.

2.03 During the discharge of the extinguisher, solidified gas in the form of "snow" appears in the gas cloud and collects on the floor

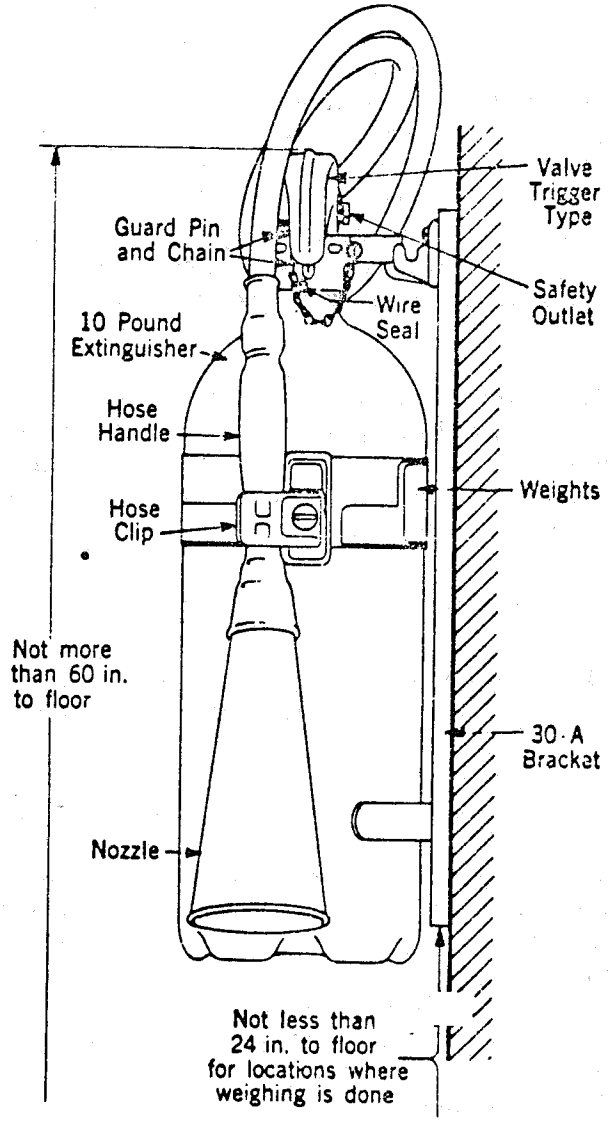

Fig. 1

and other surfaces for a few moments until it evaporates. This "snow" is extremely cold and should not be handled, as frostbite may result.

2.04 ***Valve—10-Pound and 15-Pound—Trigger Release:*** Internally this 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 at will to stop the flow of gas, thereby permitting temporary conservation of the gas for use on any rekindling action which may occur after the fire has apparently been extinguished. To prevent inadvertent operation, the trigger is locked in the inoperative position by a pin having chain attachment to the body of the extinguisher. The pin must be withdrawn to permit operating the trigger. A wire seal is provided which is broken by operating the trigger, thus furnishing a visible means for determining whether the extinguisher has been operated.

2.05 ***Valve—5-Pound:*** The information in Paragraph 2.04 applies except that this extinguisher may be provided with either a trigger or squeeze grip and either a pin and seal or a seal only depending on the source of supply.

3. LOCATION

3.01 Carbon dioxide type fire extinguishers may be used in both heated and unheated spaces.

3.02 The 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 radiators or uncovered heating pipes should be at least 2 feet. This distance may be reduced to 6 inches in the case of covered pipes.

3.03 The general procedure to be followed in distributing fire protective apparatus is outlined in Section 770-320-150 of Bell System Practices.

4. MOUNTING

4.01 ***10-Pound and 15-Pound:*** These extinguishers should be mounted on a No. 30A Bracket. Fig. 1 indicates the proper method of mounting.

4.02 ***5-Pound:*** This extinguisher should be mounted within a KS-14466, List 2 Bracket. This is a clamp type mounting.

4.03 ***Mounting Brackets:*** The 30A Bracket for the 10-pound extinguishers is a universal type which is used also for the 15-pound, the water type, and the foam type extinguishers.

4.04 Where extinguishers are placed on free standing columns, arrangements for mounting may include metal bands encircling the column, or if their locations have been predetermined, consideration should be given to including mounting arrangements when the columns are constructed. A red band approximately 3 inches wide and 7 feet above the floor should be painted around free standing columns in order to identify location from all directions.

4.05 The extinguishers are shipped fully charged and completely assembled for use except that in the case of the 10- and 15-pound units the hose is not attached to the valve. In mounting the extinguishers on the brackets the following directions should be carried out:

(a) Remove the cork or plug from the valve end of the hose of the 10- and 15-pound units which is provided during shipment to protect the inside of the hose from foreign particles.

(b) Inspect the orifice through the nozzle to see that the opening is free.

(c) Attach the hose of the 10- and 15-pound units securely to the valve with the aid of a wrench.

(d) The extinguisher should be weighed before placing it in service, as outlined in Paragraphs 6.02, 6.03, and 6.04.

5. METHOD OF OPERATION

5.01 To operate the extinguisher, proceed as follows:

(1) Remove extinguisher from mounting bracket and carry it to the fire.

(2) Remove the guard pin on the 10- and 15-pound units and also on the 5-pound unit if such a pin is provided.

(3) Remove nozzle from the clip and direct at fire. For extinguishers having trigger or squeeze grip control, open the valve by pressure of the index finger on the trigger or grip.

(4) Direct discharge at base of fire with nozzle about 1 foot from fire, if possible.

(5) Starting at the base of the flames, move nozzle slowly from side to side and work generally upward on the flame area but quickly return below momentarily to wipe out such rekindling as may occur so far as it may be consistent to do so with the fire conditions pervailing above.

(6) While carbon dioxide will continue to be discharged, the extinguisher is ineffective after the discharge of "snow" ceases and, if required, another extinguisher should be brought into play at this time.

(7) If the fire is extinguished before the effective discharge is completed, the discharge may be stopped by releasing the trigger to its normal position.

(8) Any glowing embers remaining after the discharge of the gas should be snuffed out with asbestos gloves.

(9) Do not return discharged or partially discharged extinguishers to their mounting brackets. They should be forwarded for recharge in accordance with local instructions. Where recharging is accomplished by the Western Electric Company, arrangements will be made for the pressure testing of the cylinders of the extinguishers in accordance with the requirement of the Interstate Commerce Commission (Bureau of Explosives). Where recharging is handled locally it is recommended that arrangements be made with the concerns doing the recharging to accomplish the retesting of cylinders as required by the Interstate Commerce Commission. The date of the last test of the cylinder is stamped on it.

6. MAINTENANCE

(A) Inspection

6.01 Carbon dioxide type extinguishers should be inspected at intervals for the following items:

(1) That the wire seal (if provided) is not broken. If broken, extinguisher should be weighed.

(2) Hose is in good condition especially at couplings.

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

(4) Hose couplings are tight.

(5) 10 and 15-pound units is looped back over valve handle and held in place by a clip on side of extinguisher in such a way that lower edge of nozzle pointed downward is slightly above bottom of extinguisher.

(6) Finish of the cylinder is in good condition. Paint if required. Hose should not be painted.

(7) Mounting bracket is securely fastened.

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

(B) Weighing

6.02 Extinguishers should be weighed at least once a year to make sure they are in proper condition for immediate use. An inspection of the items mentioned in Paragraph 6.01 should also be made at this time.

Method

6.03 Weighing of the 10- and 15-pound extinguisher should be done with the aid of a spring scale such as the CS-34 made by Badger Fire Extinguisher Company, or its equivalent. The spring scale should be supported by a weighing bracket arranged to be attached to the hook on the extinguisher mounting bracket.

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

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

STAMPED CYLINDER WEIGHT

plus

STAMPED HOSE ASSEMBLY WEIGHT

plus

4-1/2 pounds for 5-pound extinguisher
9 pounds for 10-pound extinguisher
13-1/2 pounds for 15-pound extinguisher

Recording Weight

6.05 If the extinguisher is within the required weight limit and otherwise satisfactory, it should be returned to its mounting bracket and the weight recorded on the tag provided for this purpose. Use tag No. E-5962.

6.06 Extinguishers which do not meet the requirements should be discharged, and then forwarded for recharge in accordance with local instructions.

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

6.08 When returning discharged extinguishers, the hose assembly should be disconnected from the extinguisher.

(C) Replacement

6.09 In view of the indicated service life of the hose assembly and the difficulties involved in pressure testing them, it is suggested that the hose assemblies of 10-pound and 15-pound carbon dioxide extinguishers be replaced on a 14-year basis. To assist in this replacement the last two digits of the year of manufacture are stamped into the metal couplings of hose assemblies of new extinguishers and on all replacement assemblies. For extinguishers obtained prior to the introduction of this procedure it is suggested that the earliest date appearing on the extinguisher body be considered as the date of manufacture of the hose assembly.