

FIGURE 4

## 6.5 LIMITATIONS

Only one FIREBOY System shall be used per enclosure. For example, never use two Model 100CG units when the Specification Table calls for a Model 200CG (which contains double the quantity of Halon 1301 as does the Model 100CG). If multiple units were used to achieve the necessary concentration, there is no guarantee that both units would discharge simultaneously since each unit is independent of the other. Multiple units may be used only if each unit is sufficient for the compartment being protected. This may be desirable if the nature of the hazard requires backup or redundant protection.

## 6.6 OPTIONAL EQUIPMENT

**SPECIAL NOTE:** Where required in commercial or industrial application, Relay Terminal Box for controlling external loads with different operation voltages (for use with CG models only) are available under special order. Contact our Applications Engineering Department.

## 3 YEAR AUTOMATIC FIREBOY LIMITED WARRANTY

We warrant, to the original retail purchaser, all FIREBOY units for a period of three (3) years after retail purchase against defective materials and/or faulty workmanship. Any unit found to be defective within the warranty period will be replaced free of charge upon the prepaid return of the defective unit. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

## CUSTOMER EXCHANGE PROGRAM\* For Discharged Units

For the original purchaser only, we will replace any discharged FIREBOY unit with a comparable unit upon the prepaid return of the discharged unit to Convenience Marine Products, Inc., Grand Rapids, Michigan, for one-half (1/2) of the suggested list price of a comparable unit at the time of return, plus shipping costs, provided: (1) Upon request of Convenience Marine Products, Inc., advance payment is received. (2) Convenience Marine Products, Inc. reserves the right to discontinue this exchange program without notice in the event it shall for any reason discontinue the marketing of comparable units.

\*APPLIES IN U.S.A. ONLY

**FIREBOY**  
THE AUTOMATIC  
HALON 1301 SYSTEM

Mfg. by Convenience Marine Products, Inc.

P.O. Box 152 • Grand Rapids, MI 49501-0152

Shipping Address

100 Commerce Ave., S.W., Grand Rapids, MI 49503

616/454-8337

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**FIREBOY**  
THE AUTOMATIC HALON 1301 SYSTEM

# OWNERS MANUAL

FORM FBVH AND FBCG

## INSTALLATION INSTRUCTIONS FOR ALL MODELS



TESTED & CERTIFIED

## U. S. COAST GUARD APPROVED

MODEL	MODEL
15CG - 162.029/20/1	100CG - 162.029/23/1
35CG - 162.029/21/1	150CG - 162.029/24/1
70CG - 162.029/22/1	200CG - 162.029/25/1

**READ AND COMPLY WITH THESE INSTRUCTIONS, WARNINGS AND LIMITATIONS BEFORE INSTALLING**

## WARNING

The concentrated agent or by-products, when applied to fire are toxic. Before attempting to install this device read and comply with instructions, warnings and limitations contained in this manual. Additional copies of this Manual are available from the manufacturer.

Accidental discharge during handling or installation may cause serious injury. Do not lift, carry or handle by actuator. The actuator is visually described in figure 3 of this manual. Do not drop. Keep FIREBOY away from extreme heat. Keep away from children. Do not use in aircraft.

## RETAIN THIS MANUAL FOR REFERENCE

Marine Installation Instructions ..... Page 2  
Commercial & Industrial Installation Instructions ..... Page 6



## GENERAL INFORMATION

FIREBOY Automatic Halon 1301 Systems are manufactured for a broad range of applications, including marine, industrial, commercial or domestic use. This booklet is intended to outline the proper installation of the systems for most applications. If, however, further advice or technical data is required, this information is available by calling or writing Fireboy Systems. Referenced materials which may apply in your application include: NFPA booklet 12A available from the National Fire Protection Association, Inc., 470 Atlantic Ave., Boston, MA 02210; ABYC Standard E 9-9, available from American Boat & Yacht Council, Box 806, Amityville, NY 11701.

All FIREBOY Systems carry FM approval resulting from tests conducted by Factory Mutual Systems, Inc., 1151 Boston-Providence Turnpike, Norwood, MA 02062, and for marine application, VH and CG FIREBOY Systems are MTI certified resulting from stringent tests conducted by Marine Testing Institute Division American Marine Laboratories, Inc., Stamford, CT. In addition, FIREBOY "CG" models are U.S. Coast Guard approved.

**NOTE:** FIREBOY Systems are *not*, nor are they intended to be, explosion suppression devices. They do not lessen the need to take all usual precautions before starting engines. Example: inspect, sniff, run blowers **before** starting engines, or operating generators or other equipment in protected spaces.

Before installing, be sure to follow the table listed below for determining the proper size system.

**SPECIFICATION TABLE \***

MODEL NUMBERS	MAXIMUM PROTECTED AREA	QUANTITY OF HALON 1301	ACTUATION TEMPERATURE	OVERALL DIMENSIONS
15 VH 15 CG	75 cu. feet 2.1 cu. meters	1.5 pounds .68 kg.	212° F. 100° C.	11¼" High 3" dia.
35 VH 35 CG	200 cu. feet 5.7 cu. meters	4 pounds 1.6 kg.	165° F. 74° C.	14¾" high 3½" dia.
70 VH 70 CG	350 cu. feet 9.9 cu. meters	7 pounds 3.2 kg.	165° F. 74° C.	15¾" high 5" dia.
100 VH 100 CG	500 cu. feet 14 cu. meters	10 pounds 4.5 kg.	165° F. 74° C.	21" high 5" dia.
150 CG	750 cu. feet 21 cu. meters	15 pounds 6.75 kg.	165° F. 74° C.	23¾" high 5-13/16" dia.
200 CG	1000 cu. feet 28 cu. meters	20 pounds 9 kg.	165° F. 74° C.	23¾" high 6" dia.

\* When specifications differ from above, they are clearly defined on the Nameplate (label) which is applied to each unit.

## MARINE INSTALLATION INSTRUCTIONS (VH AND CG MODELS)

**1.0** Always check the system for damage in shipment and always weigh the unit on an accurate scale prior to installation. The correct weight is shown on the right side of the nameplate. Do not use a "tackle box" type of scale. Instead, use an accurate scale, frequently certified by an independent agency. FIREBOY Systems are designed and intended only for installation in interior compartments where they are not subject to direct weather or sea water.

We highly recommend the use of the optional engine shutdown system for Fireboy Systems installed in compartments containing diesel engines and/or generators. A 5% concentration of Halon 1301 will not stall a diesel engine, and it will continue to run after the extinguishing system has discharged, thereby evacuating the Halon 1301 from the compartment and possibly allowing a re-flash or a re-kindling of a fire.

Before installation, reconfirm the volume of the compartment to be protected in cubic feet. Multiply the width times the length, times the depth at the keel. It is all right to discharge more Halon 1301 than required, but *never* install a FIREBOY System that is rated for less volume than the compartment that is to be protected. (See specification table for ratings).

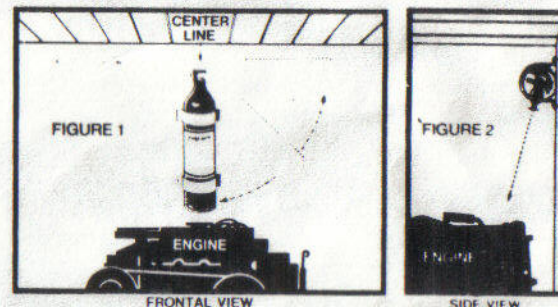
**WARNING: NEVER INSTALL A FIREBOY SYSTEM ON THE UNDERSIDE OF A HATCH OR COVER THAT COULD BE THROWN CLEAR BY AN EXPLOSION. NEVER INSTALL IN A MANNER THAT RESULTS IN THE ACTUATOR BEING IN CLOSE PROXIMITY TO ENGINE EXHAUST MANIFOLDS OR TURBO CHARGERS WHERE RADIATED HEAT COULD CAUSE PREMATURE ACTUATION. NEVER INSTALL UPSIDE DOWN. NEVER INSTALL IN NORMALLY OCCUPIED COMPARTMENTS. NEVER INSTALL CYLINDER IN A LOCATION THAT CAN TRAP WATER IN CONTACT WITH CYLINDER SURFACE.**

### 1.1 STEP 1. SELECTING THE LOCATION

**NOTE:** If mounting the system in a compartment that has an overhead hatch or deck that could open or be lost in the event of an explosion, the actuator shall be aimed so that the cylinder contents would be discharged into the compartment to suppress the fire resulting from an explosion.

#### A. VERTICAL BULKHEAD

All FIREBOY models may be installed in a vertical or horizontal position. However, certain guidelines must be strictly followed. Vertical installation should be on a forward or aft vertical bulkhead of the engine compartment, as near the centerline of the vessel (keel) and as high as possible. Direct the actuator toward the opposite bulkhead. For convenience of installation, if space is limited, the FIREBOY unit may be installed on a vertical bulkhead in any position between vertical and horizontal. (Fig. 1 & 2) In all installations, the actuator must be as high as possible and directed toward the opposite bulkhead. **WARNING: WHEN INSTALLING HORIZONTALLY THE ACTUATOR PORTION (TOP OF CYLINDER) MUST NEVER BE LOWER THAN THE CYLINDER BOTTOM OR PROPER OPERATION WILL NOT OCCUR.**



#### B. OVERHEAD LOCATION

When installing on an overhead (compartment ceiling), locate the FIREBOY as near the center of the compartment as possible. Install with cylinder wall parallel to the keel with the top of the cylinder toward the bow of the boat. The actuator itself must be pointed directly downward. If the FIREBOY must be installed near the forward or aft portion of the overhead, secure it athwartship (crosswise to the keel), and direct the actuator toward the underside of engine(s). In sailboats, avoid installing athwartship. **WARNING: NEVER INSTALL A FIREBOY ON THE UNDERSIDE OF A HATCH OR COVER THAT COULD BE THROWN CLEAR BY AN EXPLOSION. NEVER INSTALL IN A MANNER THAT RESULTS IN THE ACTUATOR BEING IN CLOSE PROXIMITY TO ENGINE EXHAUST MANIFOLDS OR TURBO CHARGERS WHERE RADIATED HEAT COULD CAUSE PREMATURE ACTUATION.**

### 1.2 STEP 2. INSTALLING CYLINDER (VH OR CG MODELS)

Following selection of a location, use template (Fig. 4, inside back page) to drill holes for bracket(s). For Models 35, 70, 100, 150 and 200 locate the lower bracket one and one-half inches above the bottom of the cylinder and the upper bracket one-half inch above FIREBOY's nameplate. When installing Model 15, which uses only one bracket, locate bracket immediately above nameplate. After holes are drilled, use appropriate length 10/24 size stainless steel bolts and lock washers, for all Models 15 through 100 and "through" bolt to bulkhead. For Models 150 and 200 use 1/4 inch size stainless steel bolts and lock washers. Slide FIREBOY into bracket(s). Rotate actuator according to Step 1, A and B, and secure nuts. Your FIREBOY cylinder installation is now complete.



**INSTRUCTION LABEL:** Apply the enclosed "Protected by FIREBOY Halon 1301 System" label on or near the instrument panel at the helm in full view of the operator. Remove paper backing and press firmly to a clean, dry surface. Temperatures must be above +50°F. for proper adhesion. Additional labels available at no cost. Always maintain this Owners Manual nearby for operator reference.

### 1.3 STEP 3. INSTALLING INDICATOR LAMP AND ESCUTCHEON PLATE (CG MODELS ONLY)

Select an appropriate location for indicator lamp escutcheon plate on or near the instrument panel at the helm in full view of the operator. Remove backing paper and press the escutcheon panel firmly to a clean, dry surface. Temperatures must be above +50°F. for proper adhesion. With a 5/16th inch drill, carefully drill through the diecut center hole in the escutcheon plate. Use care to avoid tearing up the edges of the escutcheon plate. Insert lamp wires first and snap into position. Your indicator lamp may now be wired according to the following instructions. (A second escutcheon plate, without lamp hole, is also included for use at a second helm station). If a second indicator lamp is desired for a second helm station see Optional Equipment (Sec. 5.0).

#### 1.4 WIRING INDICATOR LAMP

**WARNING: BEFORE ATTEMPTING TO WIRE THE INDICATOR LAMP, YOU MUST TURN OFF ALL ELECTRICAL CURRENT TO THE IGNITION SWITCH BY EITHER TURNING OFF THE IGNITION CIRCUIT BREAKER, REMOVING THE IGNITION FUSE, OR DISCONNECTING THE POSITIVE BATTERY TERMINAL. AN ELECTRICAL SHORT WHILE CONNECTING THE INDICATOR LAMP COULD RESULT IN ELECTRICAL BURN, INJURY, OR FIRE.**

Indicator lamp supplied is for 12 Volt use only. All FIREBOY wiring must comply with the American Boat & Yacht Council Standard E 9-9, titled, Direct Current Electrical Systems for Boats, available from ABYC, Box 806, Amityville, NY 11701.

**NOTE:** In order to fully comply with U.S. Coast Guard Rule 162.029 when this system is installed in boats having powered ventilation, (i.e., a blower that is on anytime the engines are running) the ground connection of the ventilation blower must be connected to the pressure switch at the same point as the indicator lamp (See Fig. 5) or to terminal Number 1 of Fireboy System's Engine Shutdown/Override Model Series I & II. This connection method will interrupt the blower in the event of a discharge. (See Sec. 6.2 for current limits)

If, after reviewing the wiring instructions below, you have any doubts about your ability to safely install this device, don't take chances. . . consult a qualified marine electrician. In addition, ignition systems and electrical systems vary from boat to boat, and the directions which follow may not apply to your boat. Simply put, the FIREBOY indicator lamp is wired in "series" with the ignition switch, fuse, FIREBOY electrical pressure switch and common ground. See Fig. 5. Assemble the supplies you will need that are not included with your FIREBOY System. 1. The necessary length of insulated 16 gauge (min.) stranded wire; 2. A five (5) ampere "in-line" fuse and fuse holder; 3. Properly sized insulated crimp-on wire connectors. Connect one lead of the fuse to the "ignition" screw of the ignition switch. Connect the other wire of the in-line fuse to one lead of the indicator lamp. Connect the other indicator lamp wire lead to one of the wires on the connector pigtail. Connect the remaining pigtail wire of the connector to a common ground such as the negative terminal block at the instrument panel or secure it directly to the engine block. Press the electrical connector onto the pressure switch. Your lamp installation is now complete.

#### 1.5 TESTING INDICATOR LAMP

Re-connect power to the ignition switch with the key off, lamp should be OFF. Turn key on and the indicator lamp should be ON.

#### 1.6 USING INDICATOR LAMP

The FIREBOY System indicator lamp is designed to announce to the helmsman when the unit has discharged. Under normal circumstances, whenever the ignition key is turned ON, the indicator lamp will glow. Should the FIREBOY unit discharge during operation of the vessel, the lamp will go OFF. Should you wish to check the system while dockside, simply turn ON the ignition key. This design provides a constant "continuity" check of the system's electrical circuit without the need for a test mechanism. It also permits using the FIREBOY electrical switch to directly interrupt other electrical systems. (See Sec 5.0)

## 2.0 OPERATION OF YOUR FIREBOY SYSTEM (VH AND CG MODELS)

Your FIREBOY System is automatically actuated when temperatures reach or exceed those given on the nameplate or the Specification Table in this manual. When actuation occurs, a loud sound may be heard similar to that of small arms fire, followed by a "rushing" air sound. Your CG FIREBOY models will also indicate actuation whenever the ignition key is ON and the indicator lamp goes OFF. Actual actuation time, when fire occurs, is entirely dependent upon the severity or intensity of the fire.

When actuation occurs, IMMEDIATELY SHUT DOWN ALL ENGINES, POWERED VENTILATION, ELECTRICAL SYSTEMS AND EXTINGUISH ALL SMOKING MATERIALS. **DO NOT OPEN THE ENGINE COMPARTMENT IMMEDIATELY!!! THIS FEEDS OXYGEN TO THE FIRE AND FLASHBACK COULD OCCUR.** Allow the Halon 1301 to "soak" the compartment for at least fifteen (15) minutes and wait for hot metals or fuels to cool before cautiously inspecting for cause or damage. Have approved portable extinguishers at hand and ready for use. **DO NOT BREATHE FUMES OR VAPORS CAUSED BY THE FIRE.**

## 3.0 MAINTENANCE OF FIREBOY SYSTEMS (VH AND CG MODELS)

**WARNING: NEVER ATTEMPT TO DISASSEMBLE ANY PART OR PORTION OF YOUR FIREBOY SYSTEM. FIREBOY SYSTEMS CONTAIN LIQUIFIED GAS AT HIGH PRESSURE AND SERIOUS INJURY COULD RESULT.**

Inspect daily. Figure 3 illustrates the "ready" and "discharged" condition of the actuator. Remove and weigh complete unit (less brackets) every 6 months on an accurate scale and record on tag provided. (Do not use any type of hand-held scale. Instead use an accurate scale which is frequently certified by an independent agency.) If weight is below that shown on each unit's nameplate, it must be removed from service immediately. If leakage is suspected, brush liquid soap at all points of possible leaks, or submerge entire unit in clean water and watch carefully for five to ten minutes. Leaks will appear as tiny bubbles. If leakage is found return unit to dealer or manufacturer immediately for replacement. See Limited Warranty and Customer Exchange Program elsewhere in this manual. Remember the two most important requirements to assure full charge and reliability of your FIREBOY System are: 1. Visual inspection of the actuator to determine if it has been actuated. 2. Weighing, the *only* sure method of determining the contents of all Halon 1301 fire systems. **NOTE:** FIREBOY systems are not required to be emptied and hydrotested at regular intervals as with some other types of systems. With frequent and proper visual and weighing inspections, your FIREBOY System will provide many years of reliable protection.

**NOTE:** All extinguishing systems are required to be periodically weighed to insure a fully charged unit. A gauge is *not* a means of measuring the quantity of agent in the cylinder. Because of the large change in vapor pressure versus temperature for liquified gases, a pressure gauge will be accurate *only* at a single specified temperature. At any other temperature a gauge will be inaccurate and misleading. Weighing is the only safe method of determining that the system cylinder is fully charged with agent.

### 3.1 MAINTAINING THE INDICATOR LAMP CIRCUIT (CG MODELS ONLY)

Should the indicator lamp fail to come ON when the ignition key is ON, first check to see if the system has discharged (Figure 3). Check fuse. Weigh unit as indicated above. With continuity tester, check indicator lamp. Check FIREBOY's electrical pressure switch circuit (circuit should be closed) Check continuity of entire wiring circuit. Should the indicator lamp be faulty, replacement lamps are available direct from FIREBOY Systems Division.

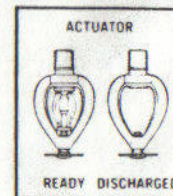


FIGURE 3

## 4.0 LIMITATIONS

Only one FIREBOY System shall be used per compartment. For example, never use two Model 100CG units when the Specification Table calls for a Model 200CG (which contains double the quantity of Halon 1301 as does the Model 100CG). If multiple units were used to achieve the necessary concentration, there is no guarantee that *both* units would discharge simultaneously since each unit is independent of the other. Multiple units may be used only if each unit is sufficient for the compartment being protected. This is called "overkill" and is often desired by skippers who believe in dual systems.



## 5.0 OPTIONAL EQUIPMENT (FOR CG MODELS ONLY)

For additional indicator lamps for other helm stations, kits including escutcheon plates and indicator lamps are available factory direct. Send \$5.95 for each kit desired to cover postage and handling to the address shown on this manual. Outside the U.S.A. and Canada, see your dealer.

Deluxe Halon Discharge Alarm - See enclosed brochure

Engine Shutdown/Override System - See enclosed brochure

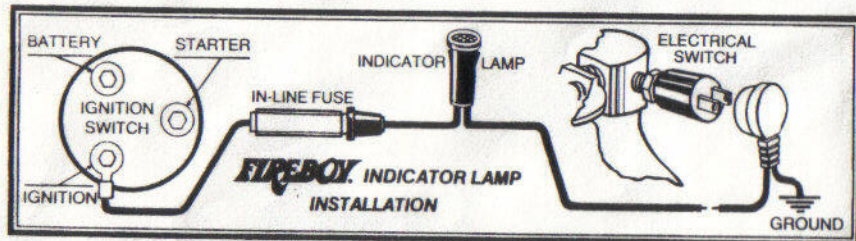


FIGURE 5

# COMMERCIAL & INDUSTRIAL

## 6.0 APPLICATIONS FOR FIREBOY SYSTEMS:

Computer rooms, and data processing equipment, electrical and electronic equipment and enclosures, film, micro-film, and magnetic tape storage. Archives, museums, libraries, and book deposits, bank vaults, night depositories, automatic tellers, and armored cars. Flammable liquid and gas storage, hoods and gloveboxes in chemical and physical laboratories, furnace rooms, workshops, and laundry equipment, standby generator enclosures.

This is only a partial listing. FIREBOY Systems may be used in any normally unoccupied enclosed area requiring automatic fire protection that falls within the capacities listed in the specification table. For applications requiring capacities beyond those listed, contact FIREBOY Systems Division. Automatic FIREBOY Halon 1301 Systems have been tested and certified by Factory Mutual Systems. (FM). (NFPA 12A may apply, see general information).

## 6.1 INSTALLATION (VH AND CG MODELS)

To determine the volume (in cubic feet) of the enclosure to be protected, multiply the width times the length, times the height. The FIREBOY System of appropriate size (from specification table) shall be mounted securely to the ceiling or wall of the enclosure in such a way that the actuator is protected from mechanical damage. If mounted to the wall, the actuator (Figure 3) shall be within 12 inches of the ceiling of the enclosure. The cylinder may be mounted in any position between vertical (actuator up) and horizontal (see Figure 1). WARNING: The system must never be mounted with the actuator lower than the bottom of the cylinder. After installing the cylinder in the brackets, rotate until the actuator points toward the center of the enclosure, and tighten down.

NOTE: In enclosures having air exchange devices, (i.e. blowers, air conditioning, forced air furnaces, etc.) a FIREBOY CG System having the electrical interrupt switch should be used to shutdown these devices in the event of a fire and subsequent discharge (See Section 6.2)

## 6.2 ELECTRICAL HOOK-UP (CG MODELS ONLY)

The pressure switch supplied as part of FIREBOY CG Models may be used to control or interrupt electrical circuits up to its rated capacity in accordance with the following limits:

4.0 amps at 12 volts DC	5.8 amps at 120 volts AC
2.0 amps at 28 volts DC	2.9 amps at 240 volts AC

With the FIREBOY System in the *charged* condition, the switch is in the "normally closed" mode, and current will flow. With the FIREBOY System in the *actuated* or *discharged* condition, the switch is "open" and current will not flow. NOTE: FIREBOY Systems are available having switches that are "normally open" when the cylinder is charged.

## 6.3 OPERATION (VH AND CG MODELS)

Your FIREBOY System is automatically actuated when temperatures reach or exceed those given on the name plate or the Specification Table in this manual. When actuation occurs, a loud sound may be heard similar to that of small arms fire followed by a "rushing" air sound. The electrical switch of a CG model system will "open" at this time. Actual actuation time, when fire occurs, is entirely dependent upon the severity or intensity of the fire. Occupied enclosures should be exited immediately upon discharge of the FIREBOY System. When a discharge occurs, immediately shut down all electrical and mechanical systems, and powered ventilation if not already done automatically by means of the pressure switch (CG models). Do not open the enclosure at this time! This feeds oxygen to the fire and flashback can occur. Allow the Halon 1301 to "soak" the compartment for at least fifteen (15) minutes, and wait for hot metals and fuels to cool before inspecting for cause or damage. Have approved portable extinguishers at hand and ready for use. Do not breathe fumes or vapors caused by the fire.

NOTE: FIRE ALARM SYSTEMS MAY USE "NORMALLY OPEN" SENSING INPUTS AND IT WILL BE NECESSARY TO USE A RELAY TO INTERFACE A FIREBOY CG MODEL TO THESE SYSTEMS.

## 6.4 MAINTENANCE OF FIREBOY SYSTEMS: (VH AND CG MODELS)

WARNING: NEVER ATTEMPT TO DIS-ASSEMBLE ANY PART OR PORTION OF YOUR FIREBOY SYSTEM. FIREBOY SYSTEMS CONTAIN LIQUIFIED GAS AT HIGH PRESSURE AND SERIOUS INJURY COULD RESULT.

Inspect before operating boat. Figure 3 illustrates the "ready" and "discharged" condition of the actuator. Remove and weigh complete unit (less brackets) every 6 months on an accurate scale and record on tag provided. (Do not use any type of hand-held scale. Instead use an accurate scale which is frequently certified by an independent agency). If weight is below that shown on each unit's nameplate, it must be removed from service immediately. If leakage is suspected, brush liquid soap at all points of possible leaks, or submerge entire unit in clean water and watch carefully for five to ten minutes. Leaks will appear as tiny bubbles. If leakage is found, return unit to dealer or manufacturer immediately for replacement. See Limited Warranty and Customer Exchange Program elsewhere in this manual. Remember the two most important requirements to assure full charge and reliability of your FIREBOY System are: 1. Visual inspection of the actuator to determine if it has been actuated. 2. Weighing, the only sure method of determining the contents of all Halon 1301 fire systems. NOTE: FIREBOY systems are not required to be emptied and hydrotested at regular intervals as with some other types of systems. With frequent and proper visual and weighing inspections, your FIREBOY System will provide many years of reliable protection.

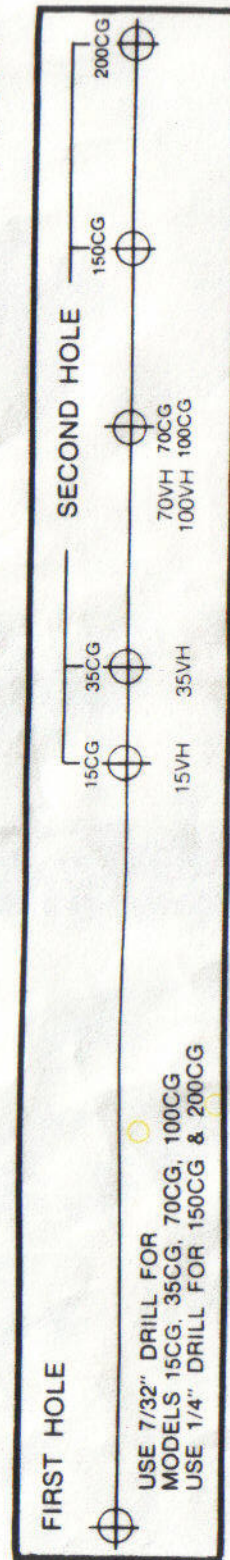


FIGURE 4