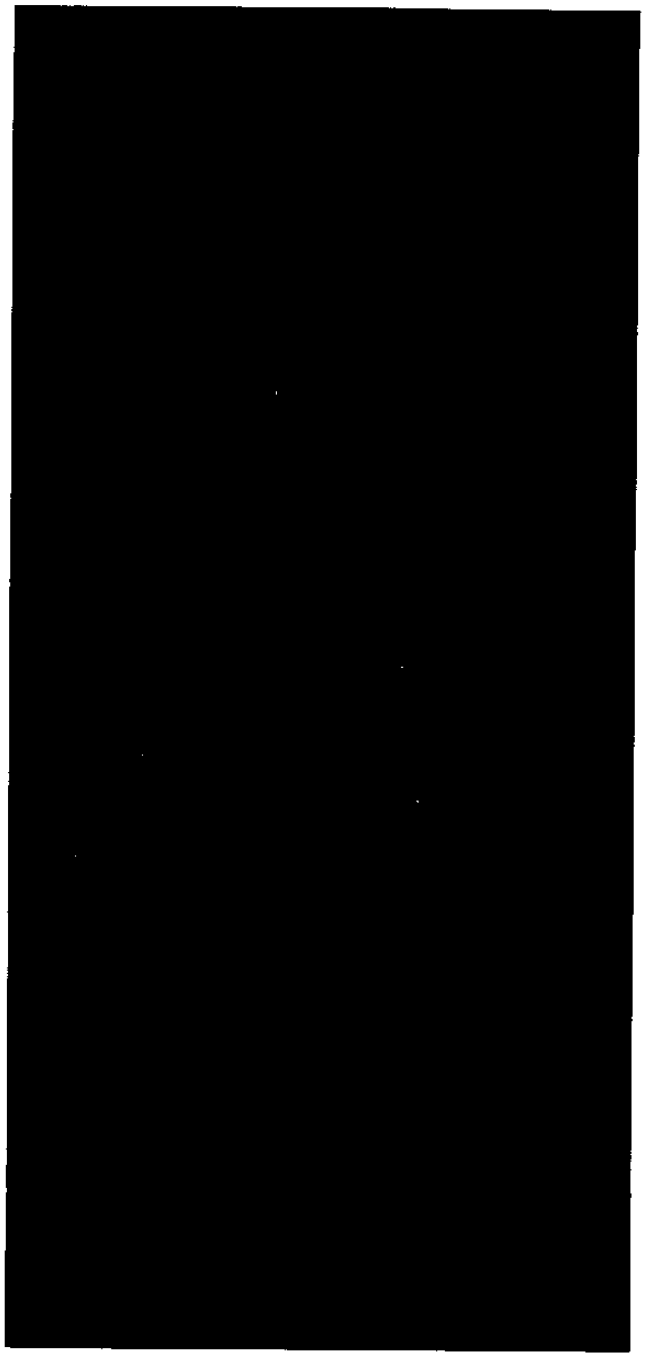
DET TRONICS



INSTRUCTIONS

Ultraviolet Test Lamp

W866

2/79

Form 95-8169-04

DET TRONICS

INSTRUCTIONS
Ultraviolet Test Lamp
W866

APPLICATION

The W866 Ultraviolet (UV) Test Lamp is a portable, battery operated, explosion-proof source of ultraviolet radiation which is used for periodic inspection of UV fire detection systems. It produces a beam of ultraviolet radiation to verify the response of UV detection systems without the need for an open flame.

FEATURES

- Explosion-Proof—Rugged aluminum housing meets the explosion-proof requirements of the National Electrical Code for Class I, Group D, and Class II, Groups E, F, and G. Models available with Factory Mutual or CSA certification.

- Rechargeable Batteries—Nickel-cadmium batteries can be recharged more than a hundred times, eliminating the need for frequent replacement. A charging light shows when the battery charger is on.

- Remote Application—The strong beam of ultraviolet radiation is capable of actuating Detector/Controller systems at distances of 10 to 45 feet from the detector depending upon the selected sensitivity of the system.

SPECIFICATIONS

ENCLOSURE RATINGS—
Class I, Group D, Class II, Groups E, F and G of the National Electrical Code. Model available with CSA certification, CSA File No. LR—3221 (120 volt A.C. model only).

ELECTRICAL RATINGS—
Input Voltage (charging):
120 volts +10%, −15%, 50/60 Hz, or
220/240 volts +10%, −15%, 50/60 Hz.
Power Requirement (charging):
5-1/2 watts maximum.

TEMPERATURE RATINGS—
Operating Ambient:
0 to +115°F (−18 to +46°C).
The W866 can be used at a lower temperature for short periods of time as long as the temperature of the device does not drop below 0°F (−18°C).
Storage:
−30 to +140°F (−34 to +60°C).

WEIGHT—
3-3/4 pounds, 1-3/4 kilograms.

DIMENSIONS—
See Figure 1.

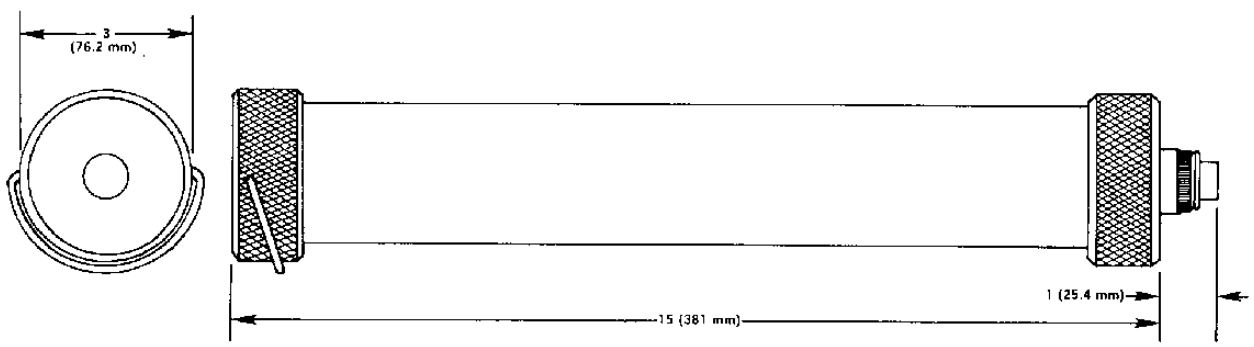


Figure 1—W866 Dimensions in Inches (mm).

OPERATING TIME—
30 minutes, minimum, at 72°F (22°C) ambient from full charge condition. Operating time decreases to approximately 20 minutes at 30°F (-1°C) ambient and 115°F (46°C) ambient.

UV OUTPUT—
The lamp emits ultraviolet energy in several wavelengths, between 1850 and 2450 Angstroms, which is the response range of all Det-Tronics detectors. It also emits a small amount of visible light, and a strong ultraviolet line at 2537 Angstroms. A special quartz window is used in the housing to transmit the short wavelength ultraviolet energy.

UV BEAM SIZE—
Approximately 4 feet diameter at 10 feet from the test lamp. See Figure 2.

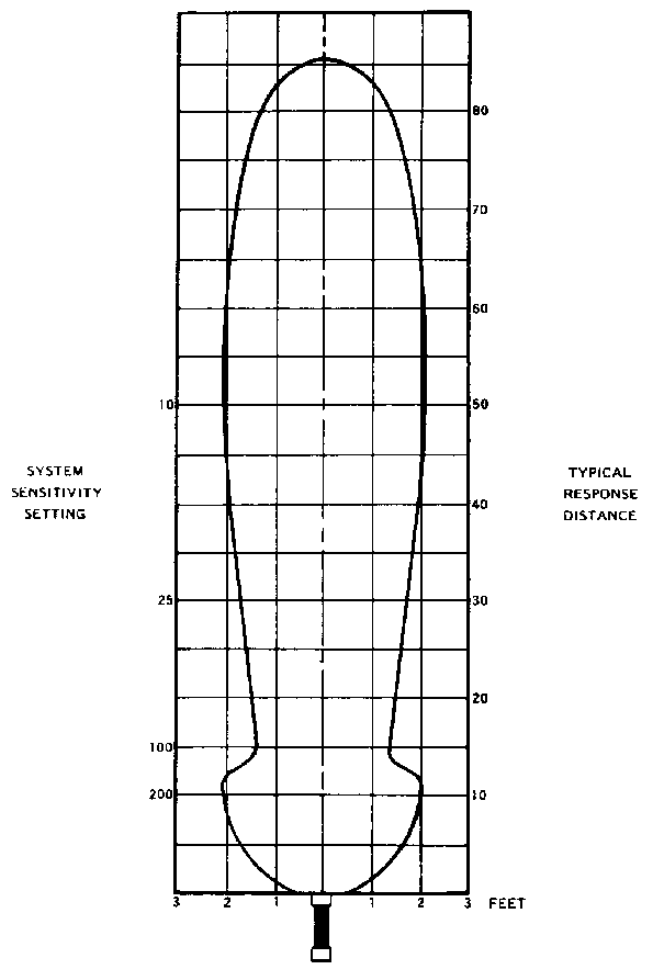


Figure 2—Typical Ultraviolet Radiation Pattern.

OPERATING

The electronic circuit of the W866 includes a battery charger, a D.C. to D.C. inverter, and a current regulator. The D.C. to D.C. inverter steps up the 6 volt battery supply to 24 volts to operate the lamp. As the battery voltage decreases, the current regulator maintains a constant lamp current and therefore a constant ultraviolet output.

NOTE

The batteries in the test lamp received a full 16 hour charge when the test lamp was assembled. **Before** ***it is placed in service, charge the batteries for 16 hours to replace any charge lost in storage and shipping.***

To operate the W866, push the red button on the rear end cap, and aim the test lamp at the detector. Response of the detection system will depend on the distance between the W866 and the detector, and upon the sensitivity programmed into the controller. (See Figure 2 for a typical radiation and response pattern.) Do not operate the test lamp longer than necessary to actuate the detector. Each detector can be checked with less than 30 seconds of operating time. A typical installation of six fire detection systems using four detectors in each system would require less than 12 minutes of operating time, leaving plenty of reserve capacity. **It is important to avoid discharging the batteries to the point where they will not start the lamp.** Additional information on charging the batteries is contained in the SERVICE PROCEDURES section.

SAFETY PRECAUTIONS

Prolonged exposure to the ultraviolet energy from the W866 UV Test Lamp can be damaging to the eyes. Except for a momentary glance to determine that the lamp is on, users should not look directly into the window of the test lamp without protecting their eyes. Ordinary eyeglasses will provide adequate protection.

SYSTEM CHECKOUT

The W866 UV Test Lamp is used to check out fire detection systems employing any of the Det-Tronics detector/controller combinations. A system checkout should be performed immediately after the installation has been completed. A periodic maintenance checkout (with a minimum frequency of once a month) should be scheduled to insure that the system is always in proper operating condition. Depending on the degree of hazard and the amount of contaminants in the atmosphere, the checkout may be scheduled more often. Note that oil films will significantly reduce the transmission of ultraviolet radiation through detector windows.

See the CHECKOUT PROCEDURE section of the instruction manual for the individual controller or the U7600 Detector/Controller.

SERVICE PROCEDURES

Battery Maintenance

Recharging—

Recharging the batteries in the W866 UV Test Lamp is a vital part of keeping it in good operating condition. The nickel-cadmium rechargeable batteries will provide years of service if they are properly maintained.

NOTE

Before attempting to recharge the batteries, the UV Test Lamp must be removed from the hazardous area in which it was operated.

In a non-hazardous area, unscrew the rear end cap from the test lamp. Connect the socket end of the charging cord (small appliance cord) to the recessed plug of the test lamp, and connect the plug end of the cord to a 120 volt, 50/60 Hz outlet (or 220/240 volts A.C., depending on model). The charging light will turn on to indicate that the batteries are being charged. **If the charging light does not come on, check to be sure the "ON-OFF" switch is in the "OFF" position. The charging process occurs only when this operating switch is "OFF."**

Estimate the total length of time that the test lamp was operated since the last charge. **The batteries should be charged at least 30 minutes for each minute of operation.** Refer to Figure 3 to determine the correct charging time.

A discharged battery will be restored to full capacity after 16 hours of charging. If the operating time is not known but is estimated to be 10 minutes or more, the batteries may be recharged for the full 16 hours without harm. The batteries are not affected by a reasonable amount of overcharging. **However, leaving the charger on continuously for more than two days may reduce the battery life. Over-the-weekend charging is not recommended.** When the charging is completed, disconnect the cord and **replace the rear end cap.** Be certain that the end cap is screwed on tightly. This restores the integrity of the enclosure to meet the Class I rating.

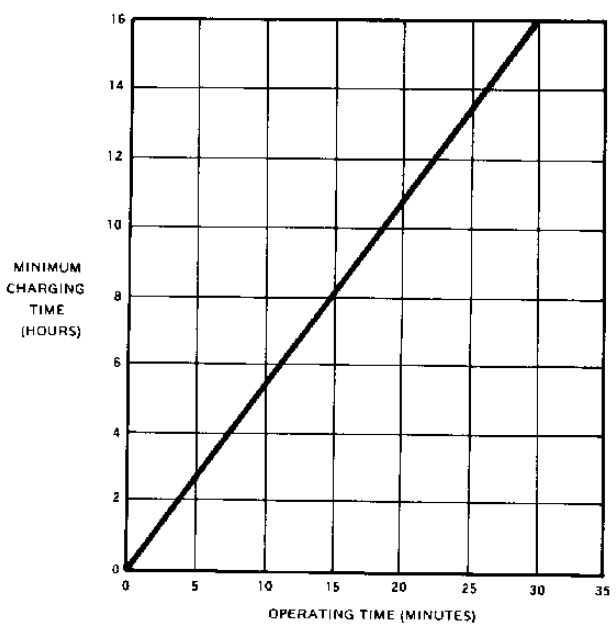


Figure 3—Minimum Charging Time.

Storage—

During storage the batteries will lose some of their charge. At 70°F (21°C) they will lose 25% of the charge in one month, and 50% of the charge in three months. At higher temperatures, the amount of charge lost will increase in proportion to the temperature. When they are stored at high temperatures for a long time, several charge-discharge cycles may be required to restore the batteries to full capacity. Therefore, it is important to avoid storing the UV Test Lamp at high temperatures.

If the test lamp is not used regularly, the batteries should be charged once each month to keep them fully charged and ready for use.

PRECAUTIONS—

In normal service, the batteries will last for hundreds of charge-discharge cycles. **Battery life can be reduced by excessive overcharging and excessive discharging.** When batteries connected in series are discharged, small differences in the capacity of the batteries will cause one to reach complete discharge sooner than others. If the discharge is allowed to continue, the weakest battery will overdischarge, and a reversal of the polarity will occur. When this happens, the battery will lose some of its capacity to store charge, and will become more susceptible to polarity reversal during the next discharge. Therefore, it is important not to operate the UV Test Lamp for more than its rated operating time. Polarity reversal will not occur if the batteries are not discharged beyond the point where the UV Test Lamp does not start. If the bulb is pink but the batteries are fully charged, replace the UV bulb.

Replacement—

During the life of the battery, the capacity to store charge will be gradually reduced. If the UV Test Lamp has been in service for several years and the capacity of the batteries is reduced, replacement of the five batteries as a group is recommended.

We recommend returning the flashlight to Det-Tronics for replacement of the batteries, although they may be replaced in the field. To replace the batteries, slide chassis out of aluminum housing. Cut away the black heat-shrink tubing which holds them in place. Connect the new batteries,

observing polarity, and solder the connections. Securely fasten the batteries to the frame with several wraps of electrical tape.

The open circuit voltage of a fully charged battery pack is 6.4 volts D.C. or better. If the voltage is less than 6.28 volts, the battery pack should be replaced.

Window Cleaning

Periodic cleaning of the window is necessary to remove oil films and dirt which reduce ultraviolet transmission. Wipe the outside of the window with a clean, soft cloth or lens tissue and Det-Tronics window cleaner.

REPLACEMENT PARTS

Refer to Figure 4.

Part Name	Part Number
2 "	101074-001
Power Cord 3 PRONG	101236-01
Push-Button Operator	101094-01
End Cap (rear)	001120-01
End Cap Assembly (front) Includes End Cap, Window and Ring Retaining Screws (3)	001376-01
Battery Pack † 6 VOLT	101289-01
Lamp - Ultraviolet ††	101090-01 — NO LONGER AVAILABLE !
Lamp - Charge Indicator	101078-02
Det-Tronics Window Cleaner - 6 per pack	001680-01

† Can also be obtained from:
Gould National Battery Alkaline Battery Division Type No. 1.2SCL
or General Electric Battery Business Section Catalog No. 41B001AA72

ORDERING INFORMATION

When ordering specify model number W866 and:

1. Standard "off" switch.
2. Special "momentary on" switch.
3. CSA certified.
4. 120 volt A.C. or 240 volt A.C. input voltage.

ORDER FROM—

1. Your usual source, or

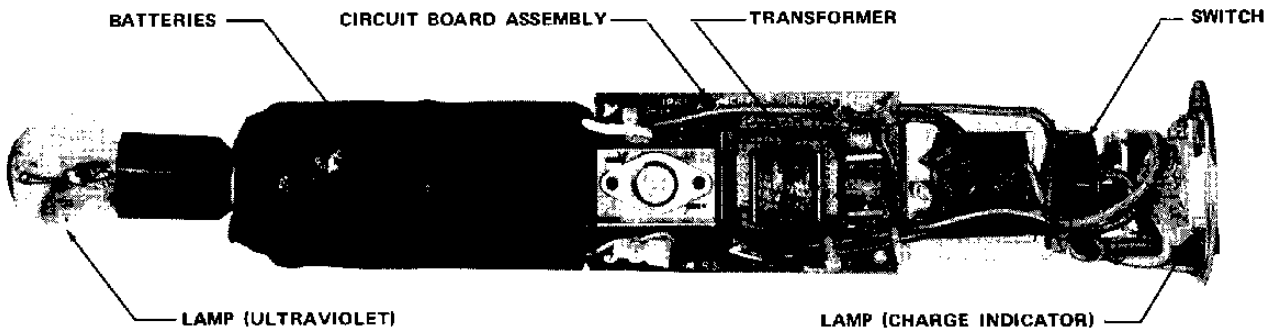
2. Detector Electronics Corporation
   7351 Washington Avenue South
   Minneapolis, Minnesota 55435
   Phone: (612) 941-5665
   Telex: 29—0562
   Cable: DETRONICS

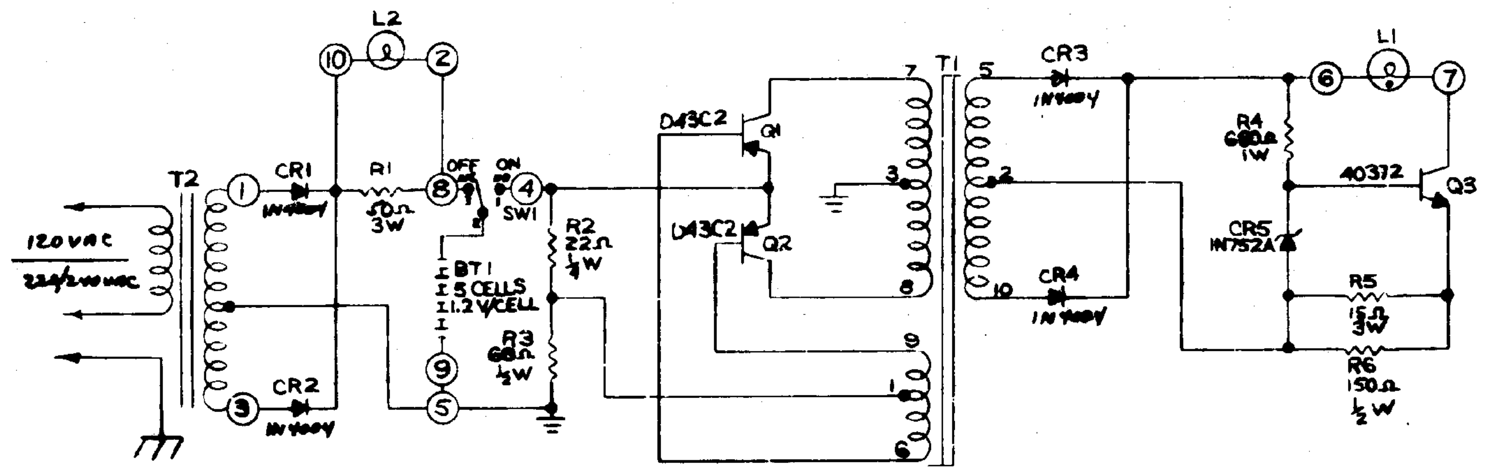
3. If outside the U.S., write for the name of our distributor in your area.

DEVICE REPAIR

For devices in need of repair, contact your local source or return to—

DETECTOR ELECTRONICS CORPORATION
Returned Goods Department
7351 Washington Avenue South
Minneapolis, Minnesota 55435





1. ○ CIRCUIT BOARD WIRING CONNECTIONS

REV.	FCO NO.	DESCRIPTION	DATE	APPR.
E	2431	ADD GROUNDING	[illegible]	[illegible]
D	1434	REVISED	[illegible]	[illegible]
C	1221	REVISED	10/17/79	[illegible]
B	1207	RELEASED— PRODUCTION	9-14-79	[illegible]
A				

TITLE CIRCUIT

	BY	DATE
DRAWN	J.S.	7-6-79

DETECTOR ELECTRONICS CORP.
MINNEAPOLIS, MINNESOTA

DO NOT SCALE DRAWING