

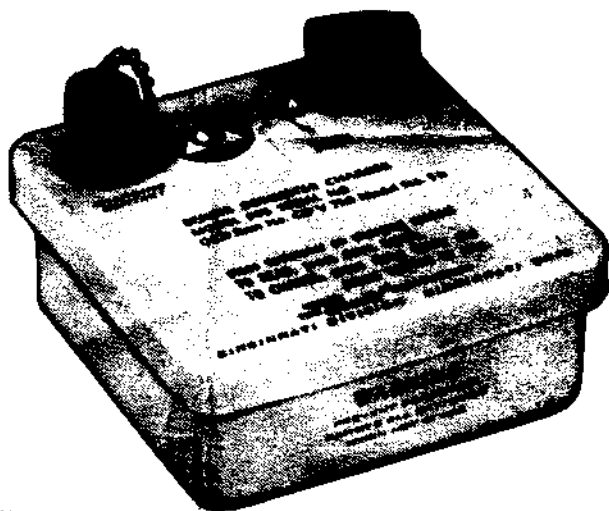
# INSTRUCTION

and

## MAINTENANCE MANUAL

Radiological Dosimeter Charger

OCD Item No. CD V-750 Model No. 5b



CINCINNATI DIVISION

CINCINNATI, OHIO

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## GENERAL DESCRIPTION

The DOSIMETER CHARGER CD V-750 is a self contained battery-operated instrument. This instrument will charge to zero any self-reading dosimeter which has a standard military or O.C.D. charging end. The CD V-750 charging unit is specifically designed for use with MILITARY, O.C.D. and COMMERCIAL DOSIMETERS.

The charger is contained in a two-part metal case, 4 by 4 by 2 inches, held together with a single captive screw. The charging contact is located in the upper left-hand corner and the voltage control knob in the upper right-hand corner. The charging contact has a screw-on cover which is permanently attached to the case.

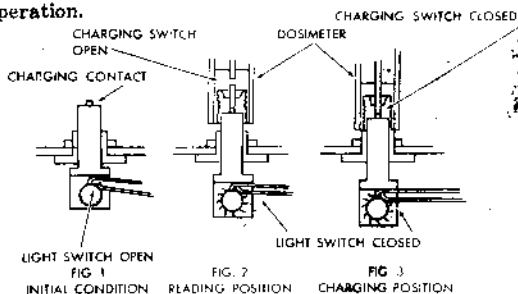
## THEORY OF OPERATION

(See Figure 5)

The circuit is powered by a 1.5-volt battery (2). Pressure applied to the charging contact closes the switch and the bulb lights (1). Also the transistor (Q-1) sets up an oscillating signal which is amplified by the transformer (T-1) and rectified by the diode (D-1). Thus a potential of 220 volts maximum is available at the charging pin. The dosimeter to be charged must be pressed down so that it closes the circuit between the charging pin and ground. Resistor (R-2) varies the potential of the charging pin.

## OPERATION

Remove charger and battery from package. Loosen the captive screw on the bottom of the charger and remove the cover. Insert the battery, carefully observing the polarity markings. Tighten the bulb in its socket. Replace the cover oriented so that the rubber pad is over the battery and tighten the captive screw. Remove the cap from the charging contact, and the charger is ready for operation.



## OPERATION

**TO CHARGE (ZERO) DOSIMETER** (see Figure 3)

1. Place dosimeter on charging contact and **PRESS DOWN FIRMLY**.
2. Rotate voltage control until hairline image on the dosimeter scale is at zero.
3. Remove dosimeter and check reading using charger light (rezero if necessary).

**TO READ DOSIMETER (EXCEPT CD V-138 & CD V-736 BY USING CHARGER LIGHT** (see Figure 2)

1. Place dosimeter on charging contact and **PRESS DOWN GENTLY** until charger light illuminates the scale.

**CAUTION:** If the dosimeter is pressed down too hard (too far), the reading will be altered.

2. To read CD V-138 & CD V-736 or any dosimeter of less than 0-5R range (see Figure 2), turn voltage control all the way "up scale" then read dosimeter as above.

## OPERATOR'S MAINTENANCE

### GENERAL

#### A. TO OPEN CASE

Loosen captive screw in bottom of charger and remove cover and lock assembly.

#### B. TO REPLACE BULB

1. Open case
2. Remove bulb
3. Replace with spare bulb (No. 131 bulb or equivalent).

#### C. TO REPLACE BATTERY

1. Open case
2. Lift out battery
3. Replace with 1½-volt D-cell NEDA type-13 or equivalent.

**CAUTION:** Orient battery as shown on battery orientation label at bottom of battery compartment and replace cover so that the rubber pad is over the battery.

#### D. CARE OF CHARGING CONTACT

Always keep the protective cap on the charging contact when the charger is not in use.

The clear plastic surfaces of the charging contact should be dry, clean and free of finger prints. A soft cloth free of grit, dirt, lint or moisture may be used to clean the plastic surfaces.

**CAUTION:** Do not use solvent or cleaning fluid to clean plastic (solvents can craze plastic).

## STORAGE

- A. Remove the battery from chargers to be stored for more than 2 months.
- B. Store with case closed and protective cap on charging contact.

## PREVENTIVE MAINTENANCE

- A. Clean battery contacts to bright metal with steel wool or equivalent.
- B. Check battery and bulb (replace as required).
- C. Check electrical operation.

## TROUBLE SHOOTING

If instrument does not appear to operate normally, it may be for one of the following reasons:

ABNORMAL CONDITION	PROBABLE CAUSE	CORRECTIVE ACTION
Light weak or fails to go on when charging contact is depressed	Weak Battery	Replace Battery
	Dirty (Corroded) battery or light switch springs contacts	Clean battery and light switch contacts to bright metal with steel wool or equivalent
	Loose light bulb	Tighten bulb in socket
	Burned out bulb	Replace bulb
Shadows appear on dosimeter scale	Dirt on charging contact	Clean charging contact
	Dirt on either end of dosimeter	Clean dosimeter and eye-piece with clean dry lint-free cloth
Fiber image unsteady (jittery movement of fiber image when rotation of voltage control)	Poor contact of dosimeter with outer aluminum sleeve of charging contact	Keeping the dosimeter vertical, move dosimeter sideways to make the charging contact sleeve touch the inside wall of the dosimeter charging recess
Light illuminated scale, but fiber image does not appear on scale with rotation of voltage control	Poor contact of dosimeter with outer aluminum sleeve of charging contact	Same as above
	Dirt or moisture on charging end of dosimeter or charging contact	Clean or dry faulty part
	Dirty light switch spring contacts	Clean switch contacts
	Faulty circuit component or connections	See schematic, parts list and test voltages

## CORRECTIVE MAINTENANCE

If the charger does not operate normally after the preceding corrective action, the following tests must be made to isolate the trouble.

### EQUIPMENT

Volt-Ohmmeter—20,000 ohms/volt type

Electrostatic Voltmeter

All measurements are to be made with the voltage control turned fully "Down Scale" and the cap removed from the charging pedestal. Refer to Figure 6 for Check Points.

### COMPONENT CHECK

CHECK POINTS	READING	CHECK POINTS	READING
1-5	220 Volts Min.*	6-7	100 Ohms Max.**
1-5	11-16 Megohms	7-6	10 Megohms Min.**
1-2	1.5 Volts*	7-6	10 Megohms Min.**
1-3	1 Volt*	3-4	6 Ohms**
1-4	1.2 Volts*	4-6	150 Ohms**
2-4	10 Ohms**	1-8	5 Megohms Max.**
2-3	4 Ohms**		

\* S-1 Closed; used electrostatic voltmeter to measure output voltage 1-5.

\*\* S-1 Open.

The above tests will check the switch, transformer, diode, and resistor R1. To check the transistor, remove the light bulb and disconnect the emitter lead E. Make the following tests:

TEST POINT	READING
Base to Emitter	50 Ohms Max.
Emitter to Base	100K Ohms Min.
Base to Collector	50 Ohms Max.
Collector to Base	100K Ohms Min.

To check the potentiometer, R-2, measure the resistance across 5-9 with the voltage knob turned fully clockwise. This resistance should be 8 Megohm minimum with the meter leads connected to give the highest reading.

Capacitor C-1 may be checked by disconnecting the lead to the capacitor at test point 10. A good capacitor will show infinite resistance to ground. Capacitor C-2 is checked in similar manner after disconnecting at test point 5.

Replace any component which does not give readings within above limits.

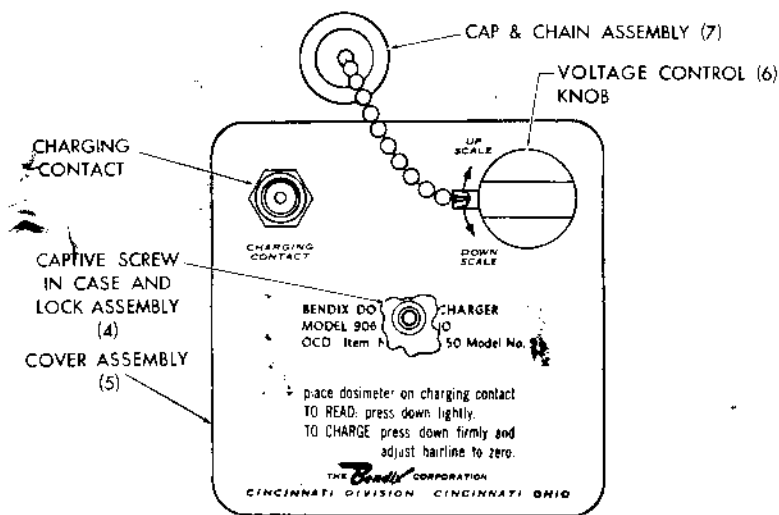


FIGURE 4

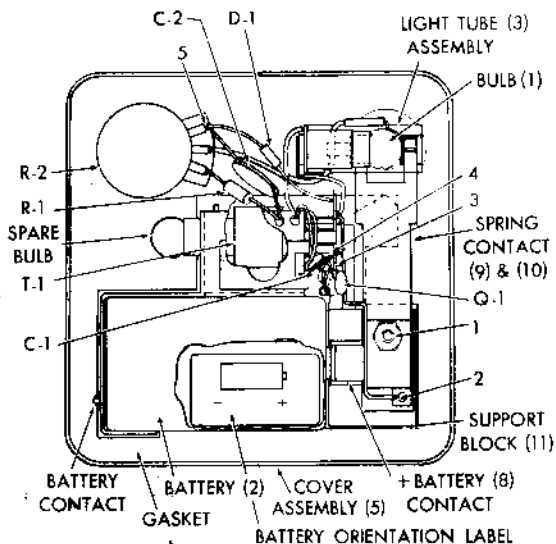


FIGURE 5

## PARTS LIST

CIRCUIT SYMBOL OR ITEM NO.	DESCRIPTION	BENDIX PART NO.	MFR. SEE BELOW	SPARES <sup>9</sup> SEE BELOW
Q-1	Transistor	B001466	1	2
R-1	Resistor—4.7 Meg. Ohms ½ watt, ± 10%	B000705-475	2	3
R-2	Resistor—Variable 10 Meg. Ohms	B001279-3	3	3
C-1 & C-2	Capacitor—.005 Mfd., 500 Volts	C000865-32	4	4
T-1	Transformer	B633096-1	5	5
D-1	Diode—400V Peak Inverse Voltage	B001465-1	6	2
1	Bulb—Type 131	A000971-1	7	5
2	Battery—NEDA Type 13	A000865-1	8	5
3	Light Tube Assembly	C633306-1	5	2
4	Case Assembly	C633325-1	5	1
5	Cover Assembly**	C633295-1	5	1
6	Knob	A633090-1	5	1
7	Cap and Chain	B633303-1	5	2
8	Battery Contact Positive	A633294-1	5	2
9	Spring—Lower	A633298-1	5	2
10	Spring—Upper	B632726-2	5	2
11	Support Block	D633091-1	5	1

\*\* Consisting of—Silk Screened Cover, Battery Orientation Label, Gasket and Negative Battery Contact.

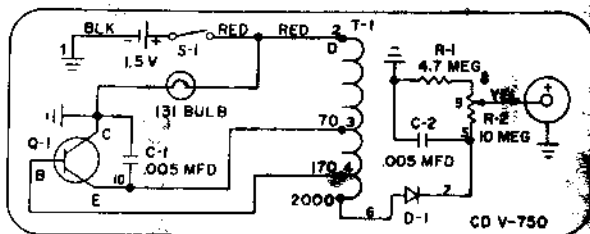


FIGURE 4

- 1 Tung-Sol Electric, Inc., Newark 4, N. J., No. TS600RF.
- 2 International Resistance Co., Philadelphia, Pa.
- 3 Clarostat Mfg. Co., Inc., Dover, N. H., Series 47.
- 4 Sprague Electric Co., North Adams, Mass., Type RMC-B.
- 5 Manufactured by The Bendix Corporation, Cincinnati, Ohio.
- 6 Hughes Aircraft Co., Los Angeles 45, Calif., Type XYTAN No. 40.
- 7 G. E. Co., Cleveland, Ohio.
- 8 National Carbon Co., 1½ volt (Eveready) "D" cell.
- 9 Recommended quantity for groups of 5 instruments for plant and field maintenance for yearly periods.