

**LANDSVERK  
FALLOUT RADIATION  
MEASUREMENT SET**

Model L-746 Dosimeter 0-600 R

Model L-730 Dosimeter and Ratemeter

Model V-750 Charger for Dosimeters

Including Emergency Light Source

{ 0-20 R  
{ 0-200 R/HR



**Keep This  
Manual  
With Your Set  
At All Times**

**MANUAL OF  
INSTRUCTIONS  
FOR USE**

**AND MAINTENANCE**

**LANDSVERK ELECTROMETER COMPANY**  
641 SONORA AVENUE/GLENDALE 1, CALIFORNIA

*"Prime Manufacturer of Radiation Measurement Instruments"*



## YOUR LANDSVERK DOSIMETERS AND CHARGERS

You now have a complete set of precision instruments for the measurement of dangerous fallout radiation. Guard it well. Keep the charger where you will be most likely to take your family in case of emergency fallout conditions.

Wear one of the dosimeters yourself beginning today. Have your wife or someone else in your family wear the other.\*

Landsverk Dosimeters are made to the highest quality standards and will last indefinitely. They are easy to read and use.

The instructions on the following pages have been written in the simplest terms to provide you with the greatest possible use and protection in time of emergency. Technical terms and definitions have been held to the minimum.

Read these instructions carefully. Re-read them several times, if necessary. Become familiar with the Dosimeter (L-746) and how to read accumulated dosages. Know what these readings mean in relation to acute radiation effects.

Learn how to use the Ratemeter (L-730) so you can determine courses of action for yourself and family during intensified fallout increases. Be able to determine how soon you may safely emerge from your shelter area as radiation starts diminishing.

NOTE: All quartz fibre dosimeters show a small "up scale" drift. This is due to electrical leakage and does not represent individual radiation exposure. It affects the reading appreciably only over a period of many days or weeks. There is no readable effect within a 24-hour period.

A reassuring fact is that a dosimeter can not possibly give a reading which is less than the actual dose. If the reading is in error it is always larger than the actual dosage due to "up-scale" drift.

If the hairline appears not to move at all, this is positive proof that the meter is working properly. The fiber must move whenever radiation passes through the meter.

It is important to keep the hairline at or near "zero" at all times prior to an emergency. In this way sub-substantially the entire reading will represent exposure to radiation. However, if one notes the initial position of the hairline, it is possible to start a reading at any point on the scale.

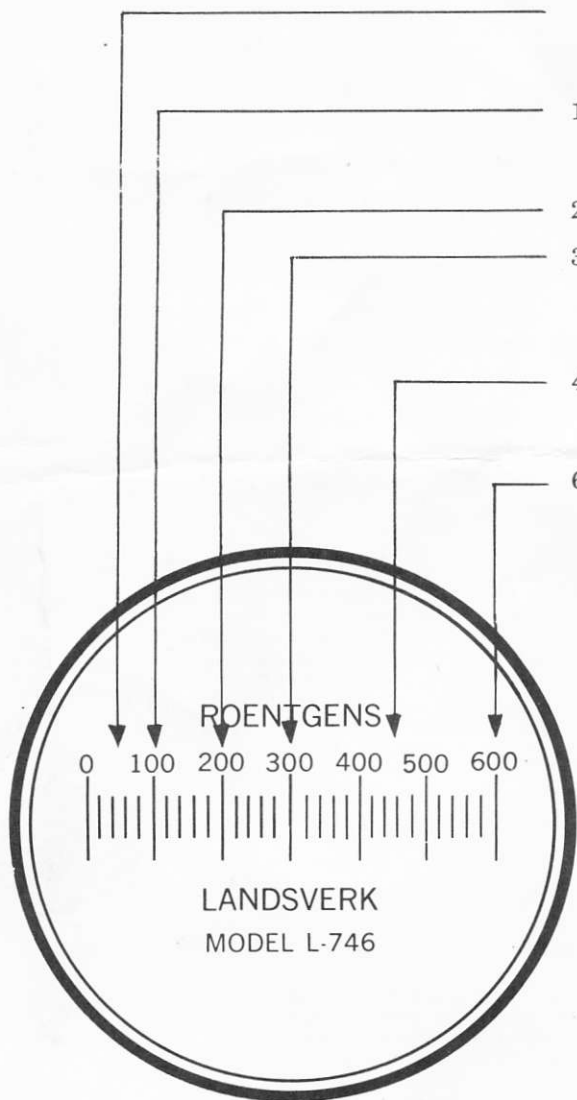
If the dosimeter is accidentally touched to a surface on which fallout has accumulated, "up scale" drift may also result. (The layer of fallout is not necessarily visible). It is therefore important to avoid touching the case of the dosimeter to such surfaces.

\* If you want additional dosimeters for other members of your family, individual dosimeters may be purchased at \$11.95 each (plus tax, if applicable.)

**Fallout Radiation Can Have This Effect—**

While individuals differ in their response to radiation, the following table shows the probable effects from concentrated exposure:

| EXPOSURE      | PROBABLE EFFECTS   |
|---------------|--|
| 50 Roentgens  | Detectable by biological laboratory methods.                     |
| 100 Roentgens | Some nausea, some loss of hair about two weeks from exposure.    |
| 200 Roentgens | Medical care needed.   |
| 300 Roentgens | Some fatalities (approx. 10% within a few weeks after exposure). |
| 450 Roentgens | 50% fatalities within a few weeks after exposure.                |
| 600 Roentgens | Few survivors.   |



Use your Landsverk L-730 Ratemeter to measure smaller dosages. (Full scale reading on your L-730 (0-20r scale) corresponds to one minor division on your L-746). *Even smaller dosages of "whole body" radiation should be avoided unless absolutely necessary.*



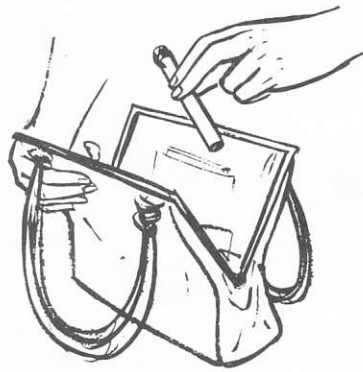
### HOW TO USE YOUR FALLOUT RADIATION SET

1. To charge a dosimeter, press it firmly onto the charging pedestal of your Landsverk V-750 Charger and adjust the control knob until the hair-line is on zero.
  - A. To replace worn battery in your V-750 Charger, loosen the center screw with a coin and lift the cover. Use any standard size "D" flashlight battery.



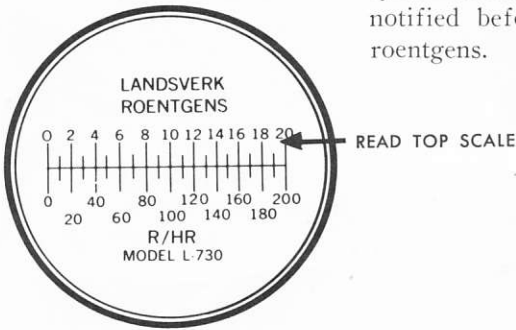
2. To read a dosimeter, point it at a light and look through the eyepiece. Record the date, time, location and reading.
  - A. When light is not available for reading, insert the dosimeter very lightly into the charging socket to read.

3. Wear your Landsverk L-746 Dosimeter (0-600r) on your person at all times. Check its reading periodically and reset it to zero when the necessity demands, since it is desirable to have your L-746 at or near zero at the beginning of the emergency. Your L-746 covers the dosage range of greatest concern which causes acute biological effects.



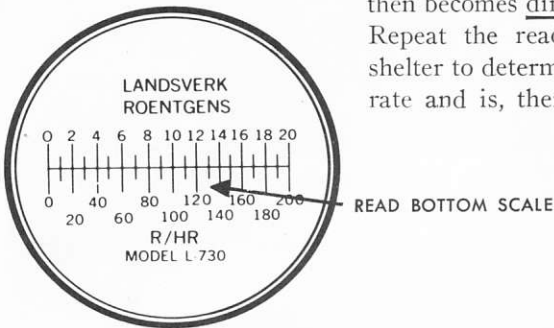
**A. WHEN SHALL I SEEK SHELTER?**

When your L-730 indicates one or two roentgens exposure in an hour, you should seek shelter immediately and take the initial reading on your L-746. Assuming that the Civil Defense warning system is functioning, you will probably have been notified before the exposure level reaches two roentgens.



**B. WHICH AREA WITHIN MY HOME OR SHELTERED AREA IS SAFEST?**

Once in the sheltered area, recharge your L-730 Dosimeter and time the exposure for six minutes (0.1 hr.). Then read the bottom scale, 0-200 roentgens per hour. If the reading is less than 20 on that scale, reset to "zero" and time the exposure for one hour. Read the top 0-20r scale, which then becomes direct reading in roentgens per hour. Repeat the reading in different areas of your shelter to determine which has the lowest radiation rate and is, therefore, the safest.



Meter can be read in all positions from vertically down to vertically up, but observe one rule — hold scale horizontally, not tilted.



**READ SCALE IN THIS POSITION — NOT TILTED**

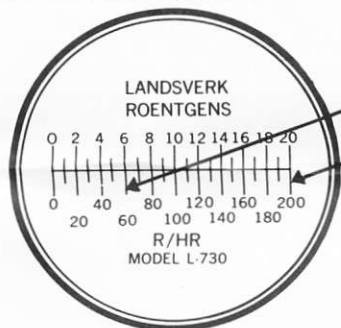


### C. WHEN IS IT SAFE TO LEAVE THE SHELTERED AREA?

You may have strong reasons to leave the sheltered area. If your ratemeter indicates low readings inside the shelter, or if your conelrad radio reports a safe level in your general area, you should still check the rate outside before leaving the shelter. Zero your L-730, open the door and poke the L-730 out, about 3 feet above the ground level for 36 seconds (0.01 hr.).

Read the bottom scale immediately and multiply the reading by 10. The result is roentgens per hour. A full scale reading would be 2000 roentgens per hour. If the reading is over 10% of full scale, do not go out!

WITH EXPOSURE FOR 36 SECONDS  
AT 3 FEET ABOVE GROUND



$60 \times 10 = 600$  ROENTGENS PER HOUR

$200 \times 10 = 2000$  ROENTGENS PER HOUR (FULL SCALE)

If the reading is less than 10% of full scale, re-zero the meter and expose for 6 minutes. Read the bottom scale directly in roentgens per hour. A full scale reading would now be 200 roentgens per hour. If the reading is over 10% of the scale, this is a very hazardous intensity. Your decision to leave, even for a few minutes, should be considered a calculated risk.

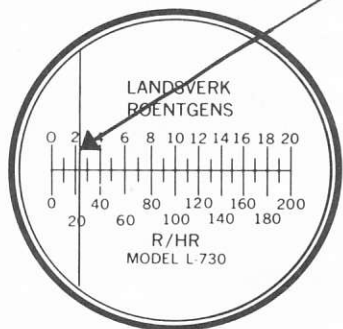


If the reading is still less than 10% of the scale, re-zero and expose for 1 hour. The top scale will now read directly in roentgens. A full scale reading would be 20 roentgens per hour.

Readings up to 20 roentgens per hour would permit leaving the shelter for a few minutes, and up to 5 hours in an extreme emergency.

WITH EXPOSURE FOR ONE HOUR  
TOP SCALE READS DIRECTLY IN ROENTGENS

EXPOSURE FOR 10 HOURS



READ UPPER SCALE AND DIVIDE BY 10.  
THIS GIVES ROENTGENS PER HOUR.

IF READING IS ABOVE 2 (OR 10%)  
THE HAZARD IS STILL CONSIDERABLE

To further extend the procedure, you may wish to expose your L-730 for 10 hours. Read the upper scale and divide the reading by 10. A full scale reading would now be 2 roentgens per hour.

When the reading is within this range it is relatively safe to go out for a few hours. If the reading is less than 10% of full scale it is safe to leave the shelter for an extended period in this vicinity.

To estimate probable exposure, if you wish to leave the shelter, multiply any measured rate by the number of hours of proposed absence from the shelter. This would be your approximate dose.

By repeated readings in the same place, you can measure and record the increase or decrease of radiation intensity to help predict how long it is necessary to stay in the sheltered area.

| RECORD OF DOSAGE and RATE READINGS |      |                |                 |            |            |
|------------------------------------|------|----------------|-----------------|------------|------------|
| DATE                               | TIME | LOCATION       |                 | READINGS   |            |
|                                    |      | INSIDE SHELTER | OUTSIDE SHELTER | L-744 DOSE | L-730 RATE |
|                                    |      |                |                 |            |            |
|                                    |      |                |                 |            |            |
|                                    |      |                |                 |            |            |
|                                    |      |                |                 |            |            |
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|                                    |      |                |                 |            |            |

CHART FOUND IN BACK OF BOOK

Radiation will rise to a maximum rate during the fallout period. The length of this period depends on your distance from the bomb blast and the wind velocity. The rate will drop rapidly the first day after the maximum and progressively more slowly during succeeding days.



**MAINTENANCE INSTRUCTIONS:**

**(Keep your Charger Operative At All Times)**

1. A weak battery will produce a weak light. Keep an extra battery on hand.
2. Keep battery contacts clean and bright. Be sure top of battery (the "positive" end) fits into contact marked "Pos. +."
3. Note extra light bulb inside your charger marked "Spare".
4. If light fails to go on (or is weak) when dosimeter is depressed in charging contact, it may be due to—

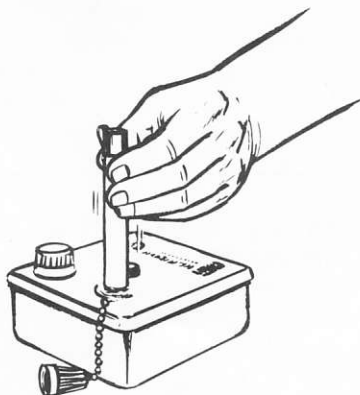
**WHAT TO DO**

- weak battery . . . . . change battery
- dirty battery contacts . . polish metal with abrasive
- loose light bulb . . . . . tighten bulb
- burned out light bulb . . replace with spare (buy new spare as soon as possible)

5. If fibre line across scale appears quivvery or unsteady or fails to appear when adjusting dial is rotated, it may be due to—

**WHAT TO DO**

- poor contact by dosimeter in charging contact . . . . . hold dosimeter straight up and down - move sideways to effect better contact with inside wall of dosimeter's recessed charging sleeve.







6. If shadows appear over the dosimeter scale, it may be due to—

**WHAT TO DO**

dirt or dust on  
 eyepiece window ..... wipe eye piece with  
 clean handkerchief or  
 cloth.

7. If there is insufficient light to read the meter, it may be due to—

**WHAT TO DO**

dirt over the  
 diaphragm at the  
 charging end  
 of the meter ..... wipe the dirt off with  
 a handkerchief or cloth.

normal source of  
 light is too weak .... use charger light source  
 - press gently to avoid  
 discharging meter.

weak battery or poor  
 battery condition ..... see above (#4).

All Landsverk Dosimeters and Chargers carry a 90-day warranty on all parts and workmanship (except battery and light bulbs).

# RADIOLOGICAL DOSIMETER CHARGER

MODEL V-750

## GENERAL DESCRIPTION

The V-750 Radiological Dosimeter Charger supplies the voltage required to charge or "ZERO" quartz fibre dosimeters.

A transistor oscillator converts the direct current from a flashlight battery to alternating current so that the transformer can "step up" the battery voltage (1.5 volts) to the 220 volts required by the dosimeter. A voltage control is used to adjust the output voltage to the exact value required to bring the dosimeter to zero.

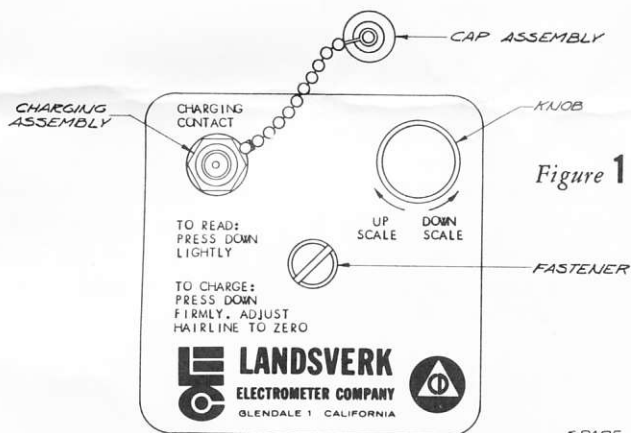
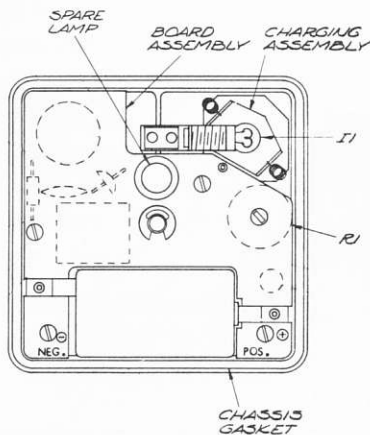


Figure 1 — Top View

Figure 2 — Bottom View





## INSTALLATION

Preparation of the dosimeter charger for operation is quite simple. Remove the case by loosening the case fastener. The knurled head can be turned with the fingers or, if it is too tight, with a coin inserted in the slot.

Install the "D" size battery in the opening provided for it in the printed circuit board. The battery will fit in the holder only one way. DO NOT attempt to force it into position.

Replace the case and tighten fastening screw with fingers or coin.

Unscrew the dust cap from the charging contact and the charger is ready for use.



dust cap



## OPERATION

### DOSIMETER READING

To read a dosimeter, hold it up to the light, or in case there is no light available, place it on the charging contact and press down lightly to switch on the light. Do not press harder than necessary or the reading will be lost.

### DOSIMETER CHARGING

To charge a dosimeter, press it down on the charging contact with a sufficient force to bring the dosimeter body in contact with the threaded portion of the charging assembly.

This will provide sufficient force to actuate the charging switch in the dosimeter. Now read the dosimeter and adjust the control knob until the dosimeter indicates ZERO.

Remove the dosimeter from the charging contact.



## EMERGENCY OPERATION

When the battery is nearly discharged and a new one is not available, the dosimeter charger can still be made to operate.

Two steps can be taken:

- a. Open the case and, with a small screwdriver, adjust the calibration control R1 (see Fig. 2) in the direction marked DOWN SCALE. This will increase the charging voltage to compensate for the lost battery voltage.
- b. If step "a" still does not provide sufficient voltage to bring the dosimeter to zero, unscrew the lamp I1. The lamp requires much more current than the charging circuit. The battery may have enough energy to operate the charging circuit, but not the lamp.

Without the lamp it will be necessary to make adjustments in small steps while reading the dosimeter each time with another source of illumination.



### OPERATOR'S MAINTENANCE

Operator's maintenance should be limited to replacing the battery, cleaning the contacts and inspecting for visible faults. If the lamp appears dim or does not light, replace the battery. If operation is intermittent, clean the battery contacts.

If the lamp is bright, but the dosimeter cannot be brought to ZERO, try the other dosimeter. If neither of the dosimeters can be charged, check for contamination on the charging contact insulator.

The only preventive maintenance required is removal of the battery when the dosimeter charger is to be stored, and cleaning the battery contacts if they appear corroded.

## RECORD OF DOSAGE and RATE READINGS

| DATE | TIME | LOCATION          |                    | READINGS   |            |
|------|------|-------------------|--------------------|------------|------------|
|      |      | INSIDE<br>SHELTER | OUTSIDE<br>SHELTER | L-746 DOSE | L-730 RATE |
|      |      |                   |                    |            |            |
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|      |      |                   |                    |            |            |

KEEP THIS RECORD— Your local CIVIL DEFENSE OFFICE will appreciate having this information.

## PROTECTION FROM FALLOUT CONTAMINATION

In order to be as helpful as possible to purchasers of this equipment, Landsverk Electrometer Company offers the following suggestions on a hazard that is not directly connected with the use of the family dosimeter kit. This is radioactive contamination from the fallout.

After an atomic blast there is a period of up to 48 hours during which radioactive particles (fallout) drop out of the air. This covers a large area in the down-wind direction.

It is very important that this material is not breathed into the lungs, is not brought into the body by way of the mouth, and is kept out of contact with any part of the body.

It is not difficult to protect oneself from fallout if a few commonsense precautions are taken. Of course, one should seek a shelter and remain in it if at all possible. The shelter should protect against the radiation from fallout as well as against contamination by personal contact.

Many persons may not be able to reach such shelters. However any room with tightly closed doors and windows or an automobile with its windows closed will prevent bodily contact with the fallout. The hazard from the radiation is then the remaining problem. This is what the family dosimeter kit is designed to measure. Even if one is caught out in the open, the situation is far from hopeless. A first step is to filter the air that one breathes. This can be done by tying a handkerchief, a piece of a shirt, or similar material over the nose and mouth. A sweater or a shirt, tied together at the neck and pulled over the head and shoulders will do very well to protect upper exposed portions of the body, if provision is made for openings to see through. A coat or blanket draped over the head would likewise do if provision is made to filter the air that one breathes. Even a newspaper or a broad brimmed hat will help a great deal. (There are "fallout suits" for sale. These cover the entire body and have a plastic window to see through. One type is made of washable paper which "breathes" so it will not become uncomfortable.)

Contaminated clothing may deliver considerable radiation to the body since it is so close. Therefore such articles should be discarded as soon as possible. If they must be worn they should be washed. Even brushing or shaking them out vigorously will reduce the contamination a great deal if it consists of dry loose particles on the surface as is normally the case. After the fallout period, all exposed objects within the fallout area will be contaminated. One should be careful not to touch such objects before they are cleaned. Especially should one avoid bringing radioactive material into the body by way of the mouth or to breathe it. Remember that it may be almost invisible in some cases.

Contaminated dust may be raised by the wind or by sweeping or other cleaning operations. From this point of view it is better to clean objects by washing. Large objects such as patios, roofs and lawns may be washed down with a hose.

Naturally, no food or water should be consumed before it is checked or unless it is known to be clean. This is however a field to which frequent reference is made in other publications.