



**Preliminary Operating Instructions for**  
**WF-10A, WF-11A, WF-12A, and WF-14A**  
**Geiger Counters**

These Geiger counters are designed to detect and count radiation particles. The number of particles counted depends upon several factors including, in addition to background level, distance, direction (bearing), and activity of the radiation source. The instruments can indicate the presence of radioactivity in three ways; by meter, headphone, and flashing light.

The WF-10A, WF-11A, WF-12A, and WF-14A models are basically similar in operation except for the following differences:

WF-10A Approx. Sensitivity* in milli-Roentgens per hour per 100 counts per minute = 0.05. (1 mR/HR = 2000 CPM)	WF-11A Approx. Sensitivity* in milli-Roentgens per hour per 100 counts per minute = 0.015 (1 mR/HR = 6600 CPM)	WF-12A Approx. Sensitivity* in milli-Roentgens per hour per 100 counts per minute = 0.05. (1 mR/HR = 2000 CPM)	WF-14A Approx. Sensitivity* in milli-Roentgens per hour per 100 counts per minute = 0.015. (1 mR/HR = 6600 CPM)
Maximum counts per minute = 10,000	Maximum counts per minute = 20,000	Maximum counts per minute = 10,000	Maximum counts per minute = 20,000
Meter scale calibrated from 0 to 100 CPM.	Meter scale calibrated from 0 to 200 CPM.	Meter scale calibrated from 0 to 100 CPM.	Meter scale calibrated from 0 to 200 CPM.
Uses type 1B85 Geiger-counter tube inside case.	Uses bismuth-type 6306 Geiger-counter tube inside case.	Uses type 1B85 Geiger-counter tube in external probe.	Uses bismuth-type 6306 Geiger-counter tube in external probe.

\*Figures shown indicative of the instrument's sensitivity to a source of gamma-ray radiation.

For additional information on using a Geiger counter in prospecting and surveying, see the booklet "Prospecting with a Counter" published by the U.S. Atomic Energy Commission. One copy of this booklet is included RCA Geiger counter.

The following items are included with each RCA WF-10A, WF-11A, WF-12A, and WF-14A Geiger counter: radioactive sample, 1 carrying strap, 1 radioactive sample, 1 headphone with cord and plug, 1 booklet "Prospecting for Uranium", and 1 booklet "Operating Instructions".

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### Description of Indicators and Controls

METER — The reading of the meter in conjunction with the appropriate multiplying factor shown on the CPM switch indicates the radiation activity in counts per minute (CPM). The total counts per minute is the product of the meter reading and the CPM-switch factor.

COUNTS PER MINUTE switch—Applies power to the counter when turned clockwise from "OFF" position. It should be set for the appropriate multiplying factor as follows:

"XI00"—Least sensitive position. Multiply meter-scale reading by 100.

"X10"—Next most sensitive position. Multiply meter-scale reading by 10.

"XI"—Most sensitive position. Since multiplying factor is one, read meter scale directly.

All meter readings must be multiplied by the multiplying factor of the CPM-switch setting.

PHONE jack—The headphone may be plugged in this jack to obtain an audio indication of radiation pickup.

ZERO RESET button—When this button is depressed, the meter pointer returns to zero quickly and the counter is then ready for a new reading.

VISUAL COUNTER—Flashing lamp gives indication of relative radiation count. At high counting rates, this light will appear to glow continuously.

### Operation of Counter

1. Remove all radioactive materials, including the sample, from vicinity of counter.
2. Set the CPM switch to XI. The meter pointer should deflect upscale. This deflection is caused by radiation in the atmosphere and is called the "BACKGROUND LEVEL". The background level will vary in intensity with location, time of day, atmospheric conditions, and proximity to areas of nuclear reaction.
3. Make note of the background level. Any appreciable increase in the meter reading above the background level indicates a local source of radiation. Allowance for the background reading should be made by subtracting this reading from the total reading whenever local radiation causes an increase in the meter reading.
4. If the meter pointer swings past the right-hand end of the scale, reset the CPM switch to a less sensitive range. The total counts per minute is obtained by multiplying the meter-scale reading by the multiplying factor on the CPM switch.

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For example, if the meter pointer stops at 80 on the scale and the CPM switch is set to X10, the total counts per minute is  $10 \times 80$  or 800. The ZERO RESET button may be used to zero the meter pointer for a new reading. Greatest pickup is obtained when the bottom of the case or the probe is pointed at the radiation source. The outside surface of the case should be decontaminated regularly by wiping it with a damp cloth.

The small radioactive sample provided with each RCA Geiger counter may be used to check operation of the unit. With the CPM switch set to "XI", place the sample close to the bottom of the case. If the counter is operating properly the meter pointer should swing upscale.

### Precautions

1. To avoid wasting the batteries, always turn the CPM switch to "OFF" when counter is not in use.
2. Always remove exhausted batteries because the contents may leak out and damage wiring and parts.
3. Always remove batteries if instrument is to be stored for several months.
4. To avoid shock when replacing batteries, make sure that CPM switch is turned to "OFF".

RCA replacement batteries can be obtained from local RCA dealers.

### Repair Service

The RCA Service Company branches can repair all RCA Geiger counters. Defective instruments may be shipped to any of the branches listed below. The addresses of additional service branches may be found in the classified section of your local telephone directory. If your instrument is out of warranty, specify whether an estimated repair cost should be quoted or whether repairs should be made without quoting an estimate. Instruments should be packed carefully and shipped prepaid by railway or air express. Do not ship by parcel post.

RCA Service Co., Inc.  
911 North Orange Drive  
Hollywood 38, Calif.  
Hollywood 2-7141

RCA Service Co. 3019  
South State Street Salt  
Lake City 15, Utah Salt  
Lake City 84-4487

RCA Service Co., Inc.  
2640 Bayshore Blvd.  
San Francisco 24, Calif.  
Juniper 6-6600

RCA Service Co., Inc.  
3300 E. 43rd Avenue  
Denver 16, Colorado  
Keystone 4-6391

RCA Service Co., Inc.  
3511 Independence Ave.  
Kansas City 24, Missouri  
Humboldt 7865

RCA Service Co., Inc.  
1401 Turtle Creek Blvd.  
Dallas, Texas Sterling  
5505

## **RCA Geiger Counters**

### **WARRANTY**

This instrument is warranted by RCA against defects in workmanship, materials and construction, and under normal operating conditions should give satisfactory service. No other warranties are to be implied with respect to this instrument.

The responsibility of RCA under its warranty is limited to the repair or replacement of parts, excluding batteries, found to be defective within ninety days from date of sale to the original user. In no event will RCA be liable for consequential damages.

RCA will not be responsible for any instrument which has been subjected to abuse, alteration, accident or negligence in use, storage, transportation or handling; nor for instruments on which original identification markings have been removed, defaced or altered.

Tube Division  
**RADIO CORPORATION OF AMERICA**  
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