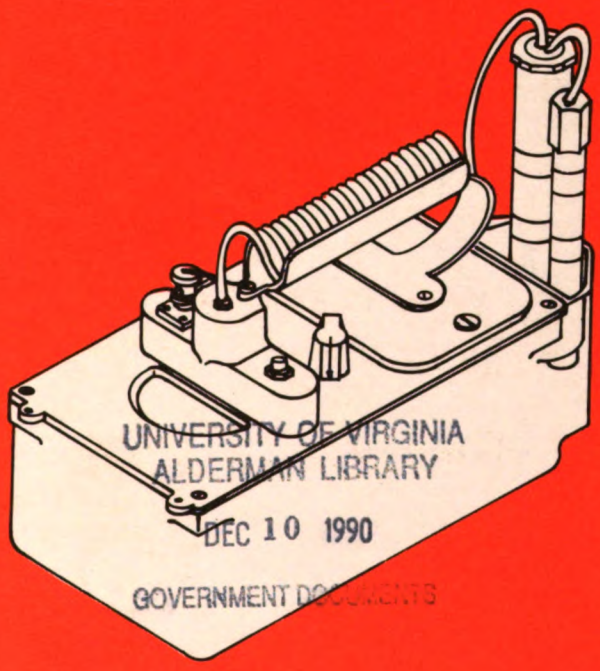
TM 11-6665-209-10

OPERATOR'S MANUAL



RADIAC SETS
AN/PDR-27J (NSN 6665-00-543-1435)
AN/PDR/27L (NSN 6665-00-856-3456)
AND
AN/PDR/27Q (NSN 6665-00-017-8903)

HEADQUARTERS DEPARTMENT OF THE ARMY

MARCH 1981

WARNING

RADIATION HAZARD-KRYPTON 85

Test Sample used in this equipment is RADIOACTIVE and contains 5 millicuries of Krypton 85.

DO NOT:

Handle the test sample by the active (colored) end.
Place the test sample next to your skin.

DO:

Keep the test sample in the case when not in use. Assure that the test sample is securely attached to the radiac set case with the chain provided. Handle only as necessary.

WARNING

Spare tubes are not supplied or issued with the Radiac Set. Should you receive spare tubes by mistake, return to stock immediately. Never attempt to replace a tube in the radiacmeter. Injury may result.

Refer to TM 3-6665-264-10 for specific instructions on the control, safe handling, inspection, storage, and disposition of the test sample.

HOW TO USE THIS MANUAL

This manual tells you about the typical operating procedures of the AN/PDR-27J, AN/PDR-27L and AN/PDR-27Q Radiac Sets. Official nomenclature followed by (#) is used to indicate models of the Radiac Set as referenced in this manual. Thus, Radiac Set AN/PDR-27(#) represents AN/PDR-27J, AN/PDR-27L and AN/PDR-27Q Radiac Sets.

The paragraphs in this manual are numbered for easy reference. If you are looking for specific information, use the Table of Contents at the front of the manual to locate the paragraph and page where the topic is discussed.

Technical Manual
No. 11-6665-209-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D. C. 12 March 1981

OPERATOR'S MANUAL

RADIAC SETS
AN/PDR-27J (NSN 6665-00-543-1435), AN/PDR-27L (NSN 6665-00-856-3456), AND AN/PDR-27Q (NSN 6665-00-017-8903)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of the manual direct to: Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, New Jersey, 07703. A reply will be furnished to you.

This manual supercedes so much of TM 11-6665-209-15, 2 September 1960, including all changes that pertains to the operator's portion for Radiac Sets AN/PDR-27 J, L, Q.

TABLE OF CONTENTS

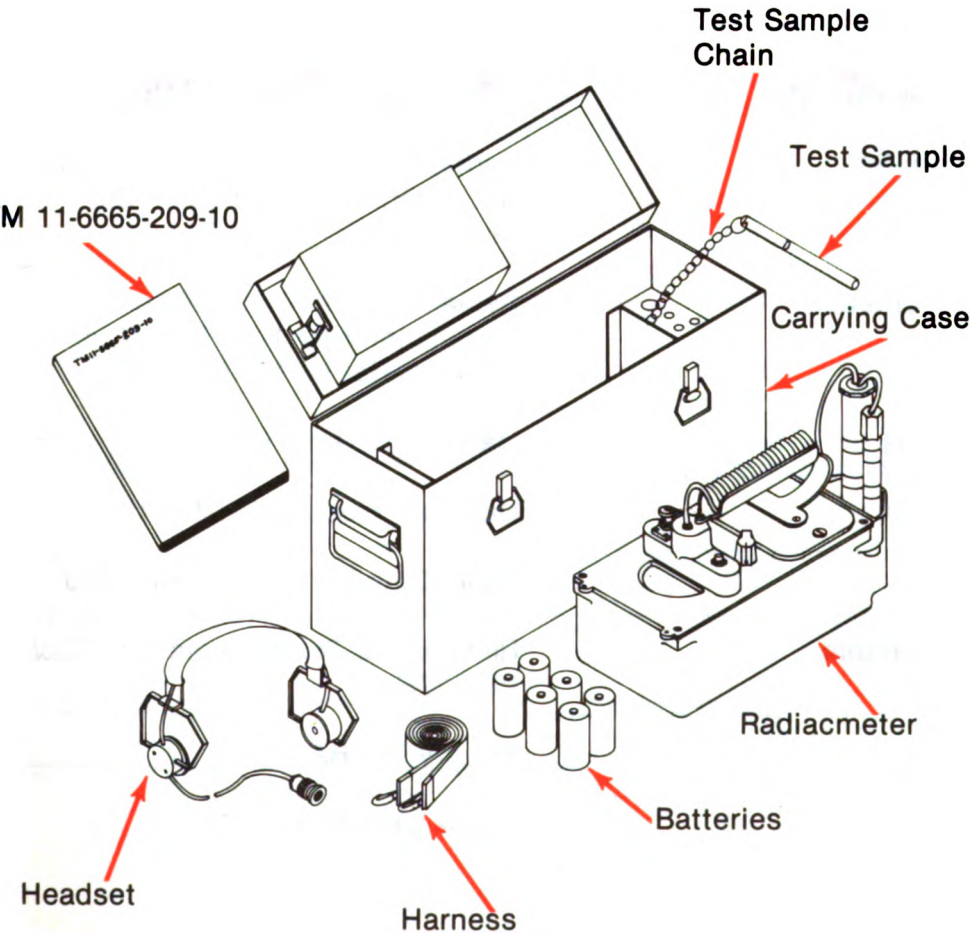
CHAPTER I
INTRODUCTION

SECTION I
GENERAL INFORMATION

1-1. SCOPE

This operator's manual describes Radiac Set AN/PDR-27(#) and its principles of operation. It includes procedures for operating and maintaining the equipment.

RADIAC SET



equipment as issued

1-2. MAINTENANCE FORMS AND RECORDS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S)

If your AN/PDR-27(#) needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). A sample of an SF 368 is on the next page. Mail it to us at: Commander, Communications and Electronics Materiel Readiness Command, ATTN: DRSL-ME-MQ, Fort Monmouth, New Jersey 07703. We'll send you a reply.

1-4. NOMENCLATURE CROSS REFERENCE LIST

COMMON NAME	OFFICIAL NOMENCLATURE
Radiac Set	Radiac Set AN/PDR-27J or Radiac Set AN/PDR-27L or Radiac Set AN/PDR-27Q
Radiacmeter	Radiacmeter IM-141/PDR-27J or Radiacmeter IM-173/PDR-27L or Radiacmeter IM-195/PDR-27Q
Harness	Harness ST-136/PDR-27J
Headset	Headset, Electrical H-43B/U
Case	Case, Carrying CY-2312/PDR-27J
Test Sample	Radioactive Test Sample MX-7338/PDR-27R
Battery	Battery Dry BA-30
Probe	Probe DT-196/PDR-27J

DO NOT DETACH THIS STUB ON COPIES FORWARDED TO SCREENING AND ACTION POINTS
Carbon paper not required to complete this side.

QUALITY DEFICIENCY REPORT
(Category II)

SECTION I

1a. From (Originating point)	2a. To (Screening point)
121 Aviation Company Fort Bliss, Texas	165 Aviation Battalion Fort Bliss, Texas
1b. Typed Name, Duty Phone and Signature Ralph Grier 23472	2b. Typed Name, Duty Phone and Signature Henry R Seay 24699

3. Report Control No.	4. Date Deficiency Discovered	5. National Stock No. (NSN)	6. Nomenclature
M6327-32	10-OCT-78		Radiac Set AN/PDR-27J

7. Manufacturer/Mfg. Code/Shipper	8. Mfg. Part No.	9. Serial/Lot/Batch No.	10. Contract/PO/Document No.
Chatham Electronics	24446		

11. Item	12. Date Manufactured/ Repaired/Overhauled	13. Operating Time at Failure	14. Government Furnished Material
☑ New ☐ Repaired/Overhauled			☑ Yes ☐ No

15. Quantity	a. Received	b. Inspected	c. Deficient	d. In Stock

16. Deficient Item Works On/With					
	a. End Item (Aircraft, tank, ship, howitzer, etc.)	(1) Type/Model/Series			(2) Serial No.
	b. Next Higher Assembly	(1) National Stock No. (NSN)	(2) Nomenclature	(3) Part No.	(4) Serial No. Lot No.

17. Dollar Value	18. Est. Correction Cost	19. Item Under Warranty	20. Work Unit Code/EIC (Navy and Air Force only)
		☐ Yes ☐ No ☐ Unknown	

21. Action/Disposition
☐ Holding Exhibit for ____ days ☐ Released for Investigation ☐ Returned to Stock/Disposed of ☐ Repaired ☐ Other (Explain in Item 22)

22. Details (Describe, to best ability, what is wrong, how and why, circumstances prior to difficulty, description of difficulty, cause, action taken including disposition, recommendations. Identify with related item number. Include and list supporting documents. Continue on separate sheet if necessary.)

Pushbutton switch is difficult to use while operating radiacmeter in unlighted areas.
Suggest switch be replaced with a pushbutton on/off switch that does not require constant hands on.

SECTION II

23a. To (Action Point)	24a. To (Support Point) (Use Items 25 and 26 if more than one)
23b. Typed Name, Duty Phone and Signature	24b. Typed Name, Duty Phone and Signature
25a. To (Support Point)	26a. To (Support Point)
25b. Typed Name, Duty Phone and Signature	26b. Typed Name, Duty Phone and Signature

368-101

STANDARD FORM 368, April 1974
General Services Administration (FPMR 101-26.7)

1-5. HAND RECEIPT

Hand receipts for Contents of Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL) items are published in a Hand Receipt manual, TM 11-6665-209-10 HR. This manual is published to aid in property accountability and is available through: Commander, US Army Adjutant General Publication Center, ATTN: AGDL-OD, 1655 Woodson Road, St. Louis, MO 63114.

SECTION II
EQUIPMENT DESCRIPTION

1-6. EQUIPMENT PURPOSE, CAPABILITIES AND FEATURES

a. PURPOSE:

The AN/PDR-27(#) is designed to detect beta radiation and measure and detect gamma nuclear radiation. The AN/PDR-27(#) is used to monitor low level radiation contamination on personnel, supplies and equipment.

b. CAPABILITIES AND FEATURES:

(1) portable
(2) watertight
(3) light weight
(4) battery operated
(5) rugged
(6) detects beta radiation and measures gamma radiation.

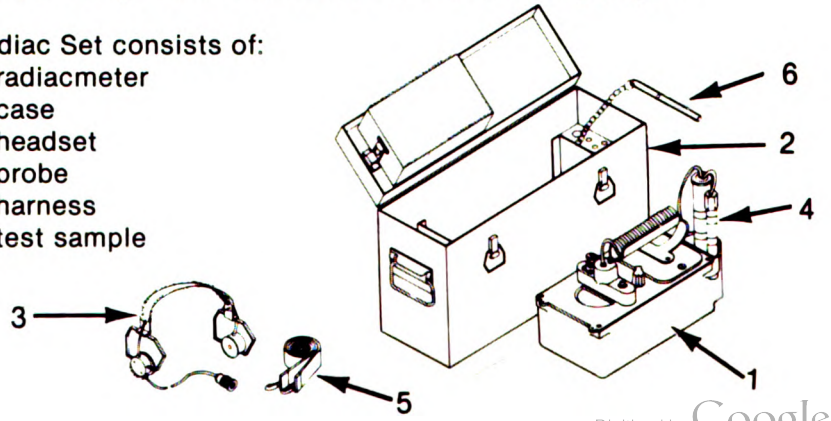
1-7. LOCATION AND DESCRIPTION OF COMPONENTS

WARNING

Spare tubes are not supplied or issued with the Radiac Set. Should you receive spare tubes by mistake, return to stock immediately. Never attempt to replace a tube in the radiacmeter. Injury may result.

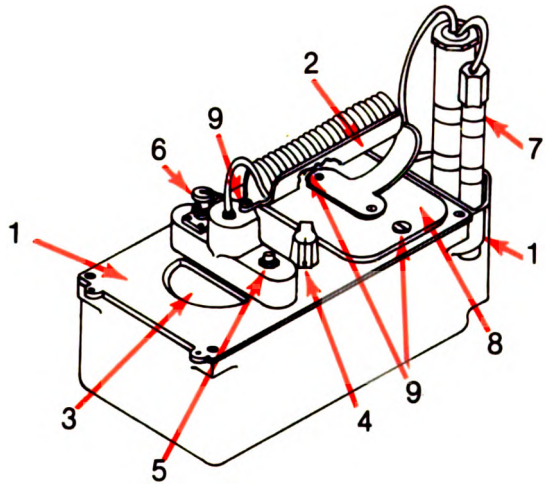
Below is a diagram of the individual components of a Radiac Set. A description of each major component is contained in the following pages.

The Radiac Set consists of:
(1) radiacmeter
(2) case
(3) headset
(4) probe
(5) harness
(6) test sample



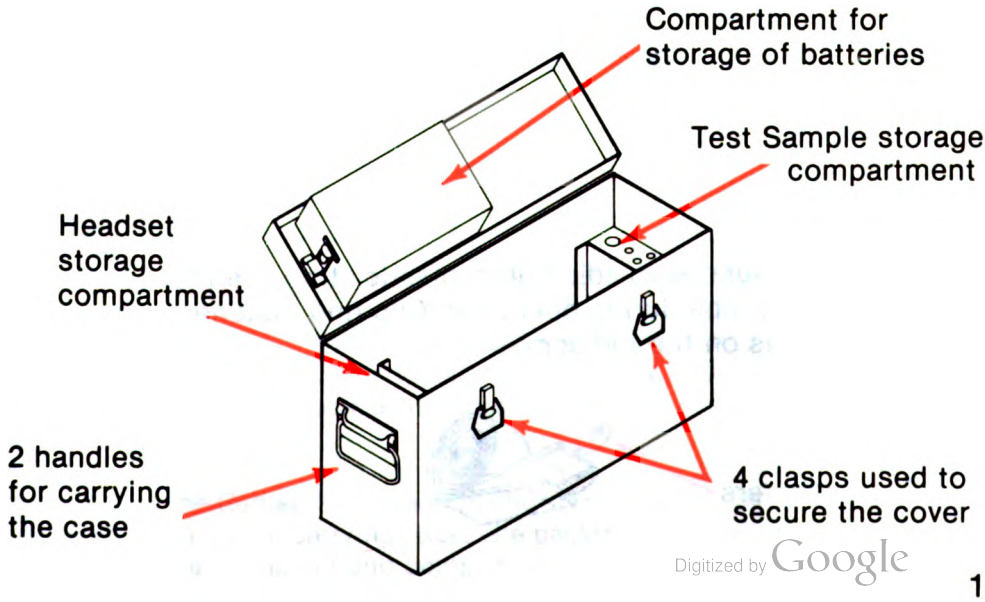
(1) Radiacmeter

The radiacmeter consists of a waterproof enclosure formed by two separate steel castings. The mounting panel (1) contains the handle (2), indicating meter (3), range switch (4), pushbutton lamp switch (5), headset connector (6), and the probe (7). The handle and the battery compartment cover (8) are secured by three captive screws (9). The probe is used with the meter to find indications of beta and gamma radiations. The bottom casting (10) has a mounting well for the probe.



(2) Case

The carrying case contains components of the Radiac Set. It is splashproof and made of welded sheet steel. It can readily be decontaminated. A compartment is provided within the case cover for carrying spare batteries.

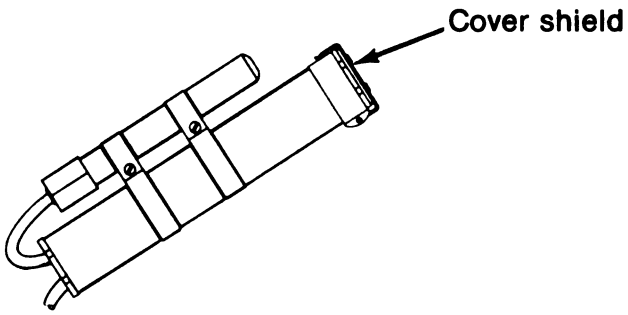


(3) **Headset**

The headset provides the operator with audible indications of radiation intensity when connected to the headset connector on the radiac mounting panel. When radiation is detected, a clicking sound is heard. It is designed to be worn inside a battle helmet.

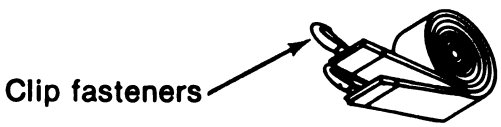
(4) **Probe**

The probe houses two tubes, each enclosed in separate metal cylinders. The cylinders are clamped together forming one unit. The larger cylinder has a cover shield which must be opened for detection of beta radiation.



(5) **Harness**

The shoulder harness is an adjustable, plastic strap used for carrying the radiacmeter and probe during operation. Clip ring fasteners are provided to snap into holes on the radiacmeter.



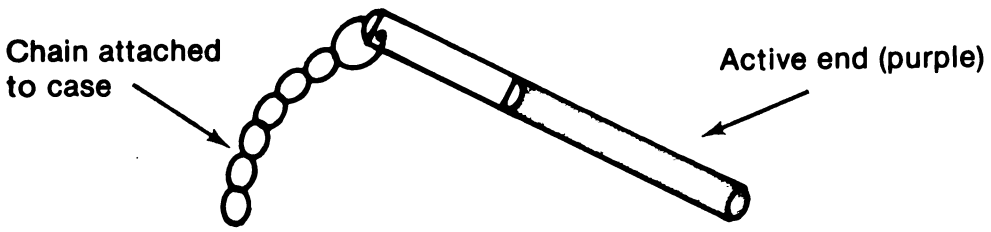
WARNING

KRYPTON 85

EXTERNAL OVEREXPOSURE OF PERSONNEL CAN OCCUR IF THE TEST SAMPLE IS IN DIRECT CONTACT WITH THE SKIN FOR PROLONGED PERIODS. WHEN USING THE TEST SAMPLE, HANDLE IT ONLY LONG ENOUGH TO DETERMINE THE OPERATING CONDITION OF THE RADIAC SET; THEN REPLACE IT IN ITS STORAGE COMPARTMENT IN THE CARRYING CASE. IF THE RADIOACTIVE TEST SAMPLE IS BROKEN, NOTIFY THE RADIOLOGICAL PROTECTION OFFICER AND REFER TO TM 3-6665-264-10 FOR SPECIFIC INSTRUCTIONS ON THE CONTROL, SAFE HANDLING, INSPECTION, STORAGE, AND DISPOSITION OF THE TEST SAMPLE.

(6) Test Sample

The radioactive test sample is a metal tube containing a small quantity of krypton 85 gas. The krypton 85 gas is a source of radiation that permits the operator to check the operating condition of the Radiac Set where no known radiation exists.



1-8. DIFFERENCES BETWEEN MODELS

Radiac Sets AN/PDR-27L and AN/PDR-27Q are similar to Radiac Set AN/PDR-27J in that they have identical, functional and operational characteristics. The actual differences are in the internal electrical components which make up the individual units.

The model of the Radiac Set issued is shown on the identification plate on the radiacmeter and on the carrying case. The packing list inside the case also tells the model of the radiac set and components.

1-9. EQUIPMENT DATA

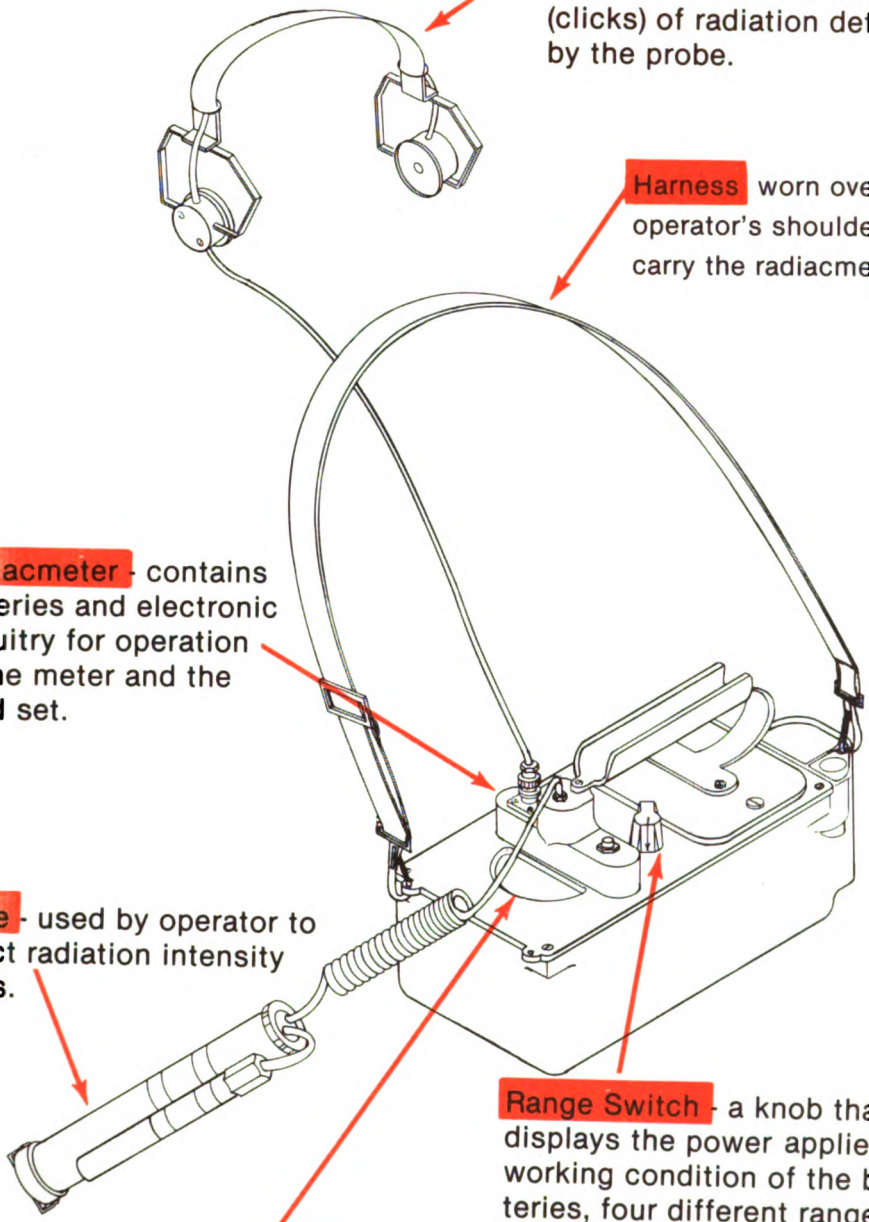
a. Weights and Dimensions

NOMENCLATURE	HEIGHT	WIDTH	LENGTH	WEIGHT (pounds)
Radiac Set AN/PDR-27(#) crated; without batteries	10½" (26.67cm)	8.0" (20.32cm)	19¾" (50.17cm)	33.3 (15.1kg)
uncrated; without batteries	8.5" (21.59cm)	5.5" (13.97cm)	17" (43.18cm)	18.3 (8.3kg)
uncrated; with batteries				20.5 (9.3kg)

b. Performance Data

1. Type of radiation detection: Detects gamma radiation alone or gamma and beta radiation together.
2. Types of indication: Meter readings (visual) and audible.
3. Sensitivity ranges: Four sensitivity ranges: 0.5, 5, 50 and 500 mR/hr.
4. Power requirements: Six BA-30, 1.5-volt dry cell batteries.
5. Characteristic: Portable, battery-operated, individually carried and capable of close range detection of weak radiation.

1-10. TECHNICAL PRINCIPLES OF OPERATION



Headset - used by operator to listen for audible indications (clicks) of radiation detected by the probe.

Harness worn over the operator's shoulder to carry the radiacmeter.

Radiacmeter - contains batteries and electronic circuitry for operation of the meter and the head set.

Probe - used by operator to detect radiation intensity levels.

Range Switch - a knob that displays the power applied, working condition of the batteries, four different range scales, and turns the unit "off" when not in use.

Meter - indicates intensity level of radiation on one of four scales, and indicates battery condition and power applied to the radiacmeter

CHAPTER 2

OPERATING INSTRUCTIONS

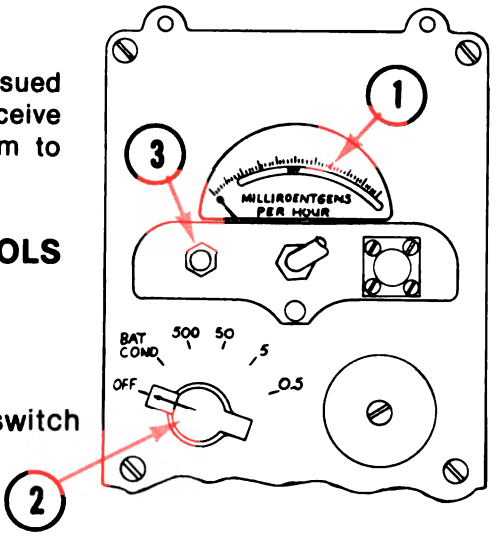
SECTION 1
DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1. SPARE TUBES

Spare tubes are not supplied or issued with the Radiac Set. Should you receive spare tubes by mistake, return them to stock immediately.

2-2. RADIACMETER CONTROLS AND INDICATORS.

1) indicating meter
2) range switch
3) indicating meter lamp switch



a. Indicating Meter

Displays the level of radiation on one of four indication scales; controlled by changing the selection on the range switch.

SCALE	FUNCTION
OFF	No power or the removal of power.
BAT COND	Battery power is supplied to the radiac meter and the condition of the batteries is checked.
0.5	0 to 0.5 - Lowest levels of weak radiation
5	0 to 5.0 - Low level of weak radiation
50	0 to 50.0 - High levels of low intensity radiation
500	0 to 500.0 - Higher levels of low intensity radiation

b) Range Switch

A six position knob that controls the selection of the various operational functions of the radiacmeter. It changes the scale on the radiacmeter to the selected position by displaying; a) power supply and working condition of the batteries when set in the first position marked BAT COND; b) four different range scales for the indication and measurement of radioactivity and its intensity; and c) turns unit "off" when not in use.

POSITION	FUNCTION
OFF →	Removes the supply of battery power from the radiacmeter.
BAT COND →	Applies battery power to the radiacmeter and checks the battery condition.
0.5 →	Lowest and most sensitive scale on the meter; used to measure weak radiation levels up to 0.5 mR/hr.
5 →	Second scale on the meter; used to measure weak radiation levels up to 5 mR/hr.
50 →	Third setting on the meter; used to measure radiation levels up to 50 mR/hr.
500 →	Fourth and least sensitive setting on the meter; used to measure strong radiation levels up to 500 mR/hr.

c) Indicating Meter Lamp Switch

A pushbutton switch used to operate the lamp for the indicating meter. It must be held down to keep the light on.

SECTION II

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-3. PREVENTIVE MAINTENANCE

To be sure that the Radiac Set is always ready for use, you must do PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).

BEFORE OPERATION

Perform your (B) PMCS to be sure that the Radiac Set is ready to use. Always keep in mind the CAUTIONS and WARNINGS that appear in this manual.

DURING OPERATION

Perform your (D) PMCS. This should help you spot small troubles before they become big problems. Always keep in mind the CAUTIONS and WARNINGS that appear in this manual.

AFTER OPERATION

Perform your (A) PMCS. This should help you keep the Radiac Set in top shape.

IF THE RADIAC SET FAILS TO OPERATE

Follow the maintenance instructions in Chapter 3. Report any deficiencies using the proper forms in accordance with TM 38-750.

2-4. ROUTINE CHECKS

Routine services are a collection of checks and observations performed by the operator at all times.

Cleaning the outside of the Radiac Set, checking for missing or damaged knobs, straps or decals, and checking for loose hardware. They are things that you should do anytime you see they must be done.

WHEN YOU ARE DOING ANY PMCS OR ROUTINE CHECKS, KEEP IN MIND THE **WARNINGS** AND **CAUTIONS** SHOWN IN THIS MANUAL.

NOTE

The PROCEDURES column in your PMCS chart instructs you to "CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY." Carefully follow these instructions and if tools are needed or the chart instructions tell you, get organizational maintenance to do the necessary work.

NOTE

Use the ITEM NO. column in your PMCS table to get the numbers for the TM ITEM NO. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when you fill out the form.

TABLE 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICE (PMCS)

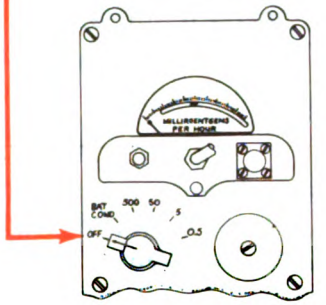
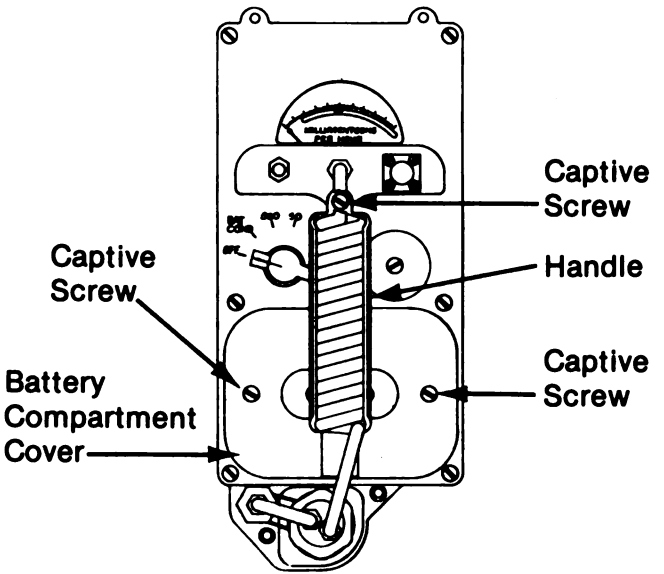
ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	FOR READINESS REPORTING EQUIPMENT IS NOT READY/AVAILABLE IF:
1	●			Batteries	Remove the radiacmeter and the (12) batteries from the case and install six batteries in the radiacmeter as follows: **CAUTION** Before installing the batteries in the battery compartment, turn the range switch to the OFF position. Damage may result if the batteries are improperly installed. 	

TABLE 2-1 PMCS

ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	FOR READINESS REPORTING EQUIPMENT IS NOT READY/AVAILABLE IF:
1	●			Batteries (Cont'd)	1) Completely loosen the three captive screws, and remove the handle together with the battery compartment cover. 	

2) Place the batteries into the battery compartment making sure that the flat end of the battery (negative end (-)) connects to the contacts marked negative (1), and the positive end of the battery (the end with the tip) connects to the contact marked positive (+) (2) in the bottom of the battery compartment.

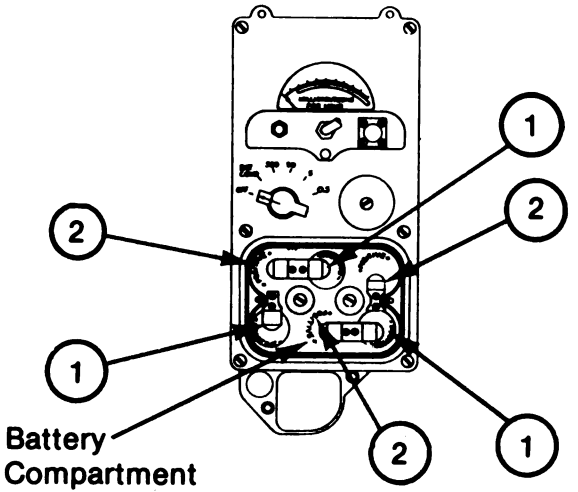
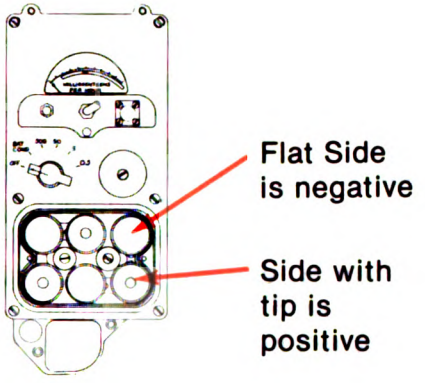


TABLE 2-1 PMCS

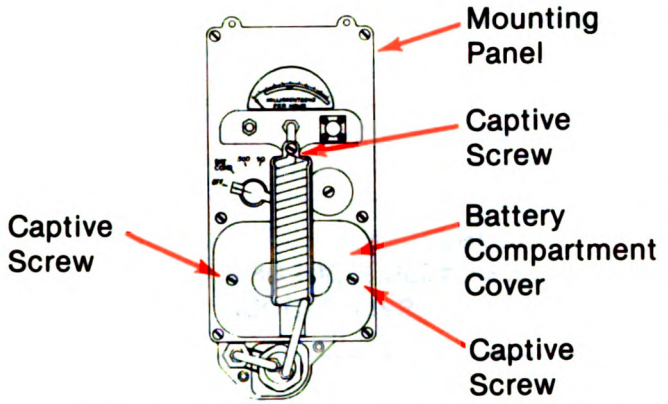
ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	FOR READINESS REPORTING EQUIPMENT IS NOT READY/AVAILABLE IF:
1	●			Batteries (Cont'd)	**NOTE** The illustration below shows the radiacmeter with the batteries installed.  3) Replace the handle together with the battery compartment cover, making sure that the rubber bumpers are lined up with the spaces in the center and are seated properly.	

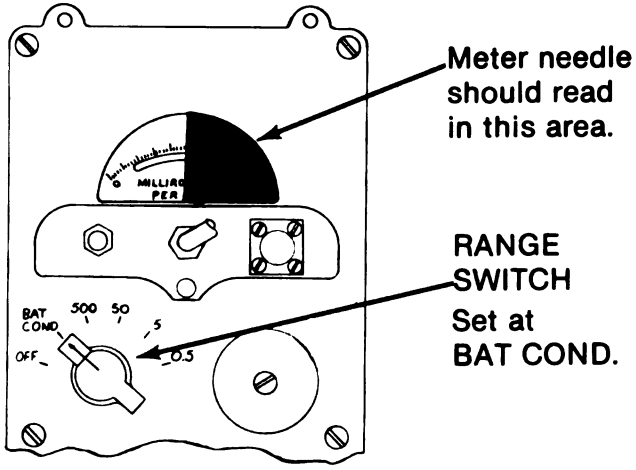
the center and are seated properly.

CAUTION

Tighten screws securely in order to maintain a watertight battery compartment. Do not tighten too tightly or damage may result to the rubber gaskets.

4) Tighten the three captive screws that secure the handle and the battery compartment cover to the mounting panel



ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/AVAILABLE IF:
1	●			Batteries (Cont'd)	5) Place the range switch to BAT COND. The meter needle should move and stop in the area on the meter scale marked BATTERY.  6) Remove the six batteries from the radiacmeter and install the second set of six batteries and perform steps 1 through 5, above.	The meter needle does not move into the BATTERY area after both sets of batteries have been checked.

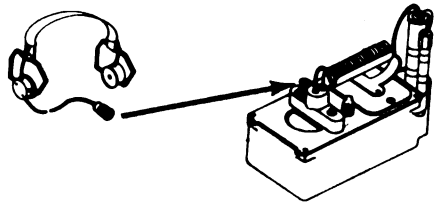
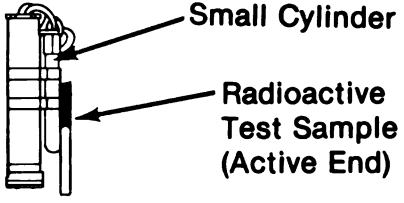
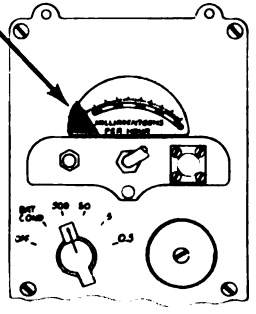
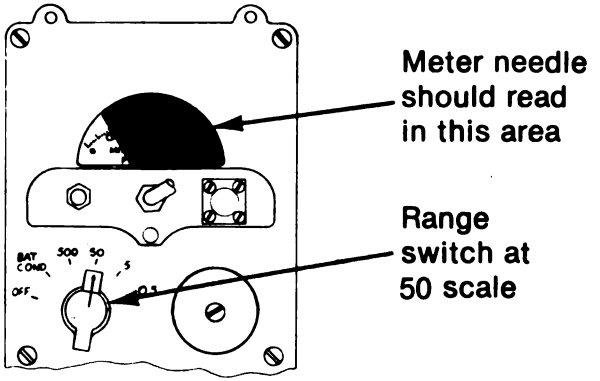
2	•			Radiac Set	Operate the radiacmeter using the test sample and listening for clicks in the headset to determine the operational readiness of the Radiac Set as follows: 1) Attach the headset to the headset connector on the mounting panel and place the range switch to 500. The meter should read zero.  2) Remove the test sample from the case and the probe from the mounting well. 3) Place the active end of the test sample flat against the small cylinder of the probe. The meter needle should indicate between 10 mr/hr and 50 mr/hr on the scale. Clicks should be heard in the headset.	

TABLE 2-1 PMCS

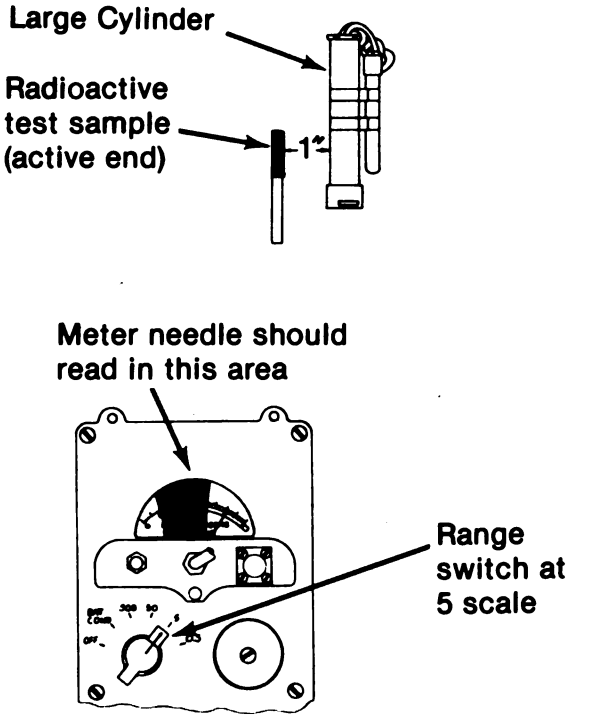
ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	FOR READINESS REPORTING EQUIPMENT IS NOT READY/AVAILABLE IF:
2	●			Radiac Set (Cont'd)	 Meter needle reads in this area at 500 scale. 	

4) Turn the range switch to 50. The meter needle should indicate at least 10 mr/hr but less then the scale limit of 50 mr/hr Clicks should be heard in the headset.

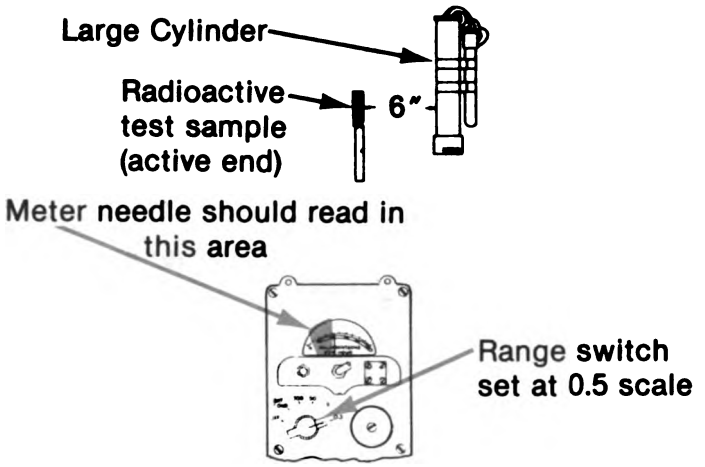


5) Move the active end of the test sample approximately one inch from the large cylinder of the probe, and turn the range switch to 5. The meter needle should indicate between 1 mr/hr and 3 mr/hr on the scale. Clicks should be heard in the headset.

TABLE 2-1 PMCS

ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	FOR READINESS REPORTING EQUIPMENT IS NOT READY/AVAILABLE IF:
2	●			Radiac Set (Cont'd)		

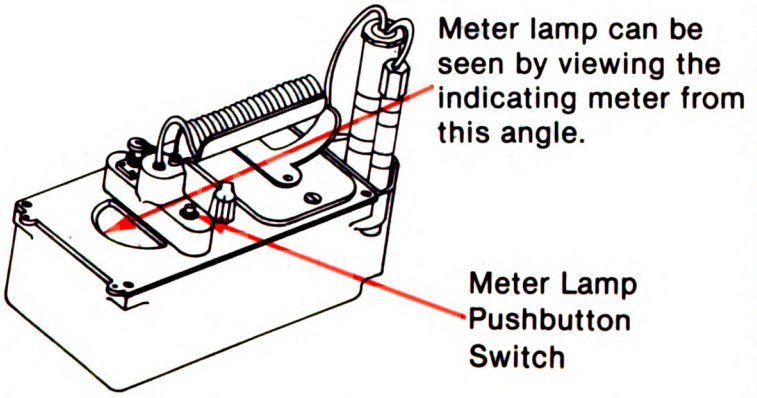
6) Move the active end of the test sample approximately 6 inches from the large cylinder of the probe. Turn the range switch to 0.5. The meter needle should indicate between 0.1 mr/hr and 0.3 mr/hr on the scale. Clicks should be heard in the headset.



7) Turn the range switch to OFF.

No clicks are heard in the headset or if no readings are present on the indication meter at any scale level.

TABLE 2-1 PMCS

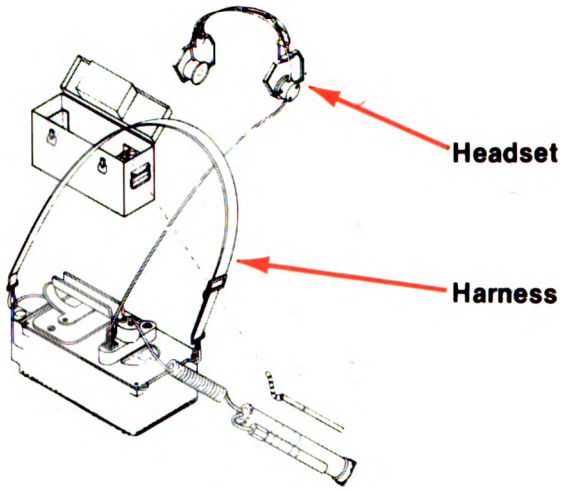
ITEM NO.	INTERVAL B	INTERVAL D	INTERVAL A	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	FOR READINESS REPORTING EQUIPMENT IS NOT READY/AVAILABLE IF:
3	●	●		indicating Meter lamp	Check the meter lamp for operational readiness as follows: **NOTE** The meter lamp is used to illuminate the indicating meter in dimly lit areas. 1) Turn the range switch to BAT COND. 2) Shade the indicating meter from light and press the lamp switch.  3) Light should be seen around the meter scale.	

4			●	Shutdown	To place the Radiac Set in shutdown or stand-by status: 1) Turn the range switch to OFF. 2) Replace the probe in the mounting well. 3) Remove the headset and the harness, and stow both items in the case. 4) Remove the batteries and place them in the storage compartment in the case cover. 5) Place the radiacmeter in the case.	

SECTION III
OPERATION

2-5. PREPARATION FOR USE

a. Remove the radiacmeter from the case.
b. Install and check the batteries (Refer to PMCS. Table 2-1, page 14).
c. Remove the headset from the case and connect it to the headset receptacle.
d. Remove the harness from the case and install it on the radiacmeter by snapping it into the holes on the radiacmeter panel.
e. Place one arm through opening, slip harness over head, and arrange so radiacmeter is on left side of body and strap is over right solder. Adjust should strap for comfort.



NOTE

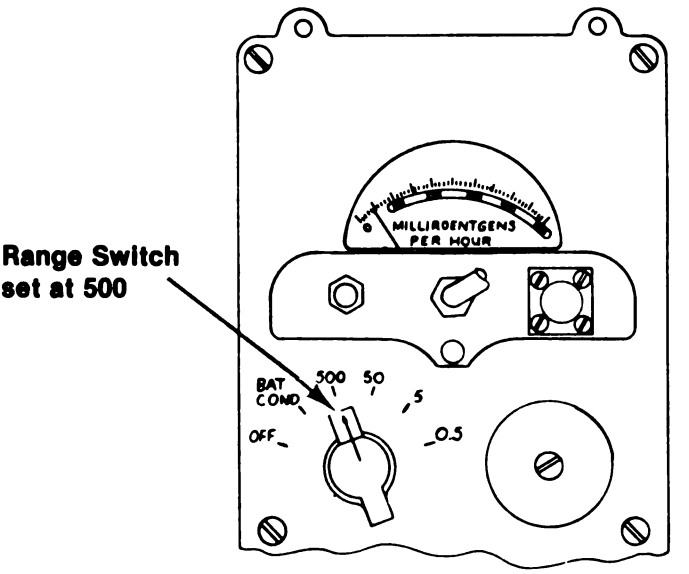
It is preferred that the headset be used during all operations.

NOTE

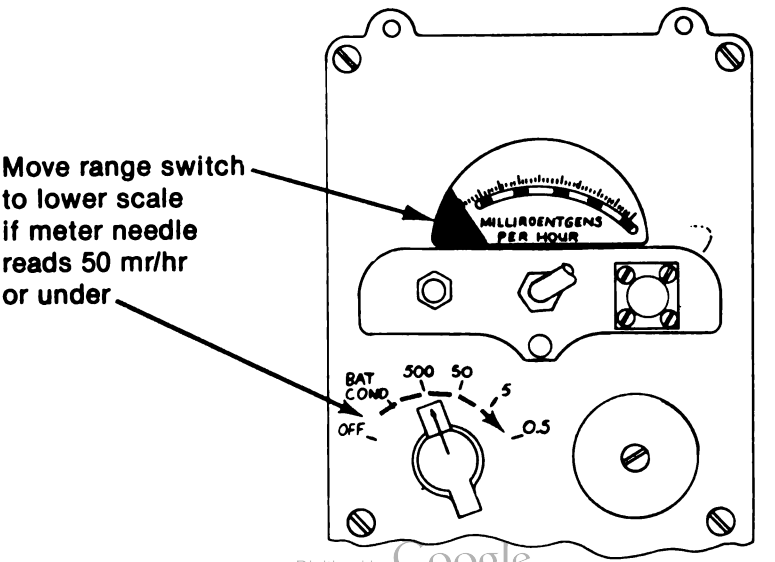
If the Radiac Set is used in a dimly lit area, the indicating meter can be illuminated by the meter lamp.

2-6. OPERATING PROCEDURES

a. For gamma detection:
(1) Turn the range switch to 500.

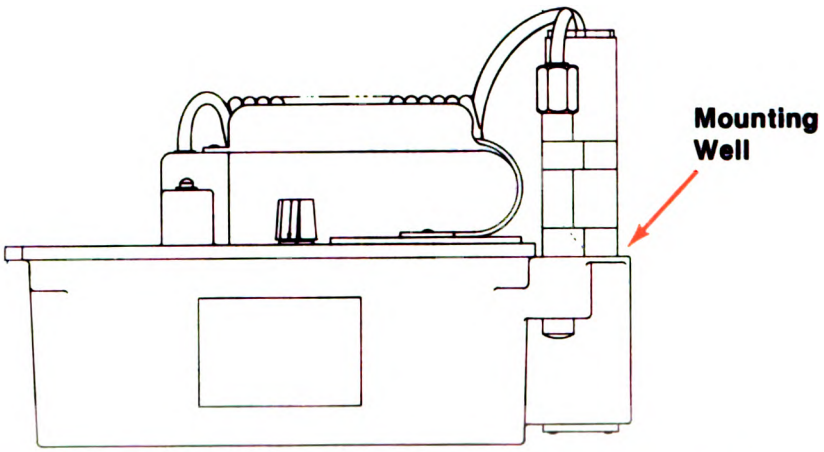


(2) Listen to clicks in the headset and/or observe the meter indications while approaching the suspected radioactive area or object. If the needle on the indicating meter does not move above 50 mr/hr (one division on the scale) then move the range switch to the next lower scale.



(3) Always move the radiacmeter in the direction that produces an in-increase in the meter reading or an increase in the frequency of the clicks heard in the headset. Continue moving in that direction until the maximum radiation level is found.

(4) To aid in the detection and measurement of radiation of an object that is difficult to reach, set the range switch at 0.5 or 5. Remove the probe from its mounting well and point the probe at the suspected object. Slowly move the probe back and forth over the object. The closer to the object the more accurate the meter indication will be.

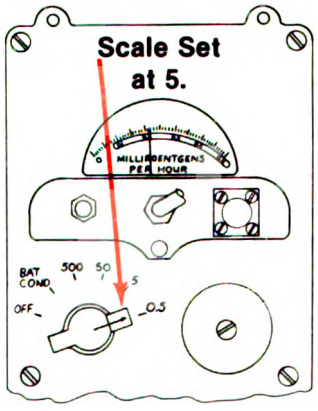


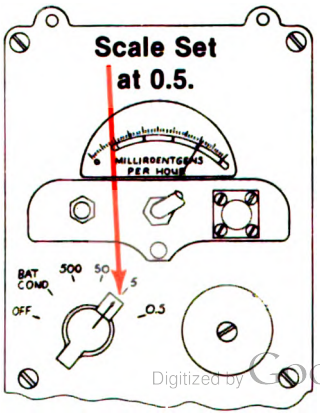
NOTE

Radiation intensity decreases rapidly with distance.

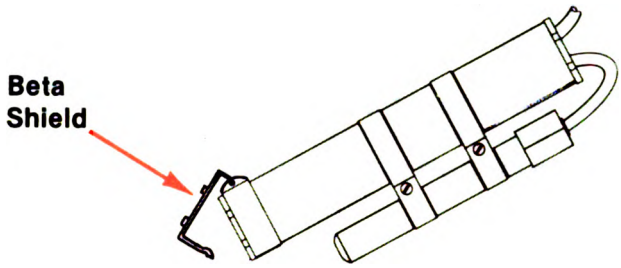
b. For beta and gamma radiation detection:

(1) To check with combined beta and gamma radiation of an object, turn switch to 5 or 0.5.





(2) Remove the probe from the mounting well and open the beta shield on the end of the large cylinder of the probe.



CAUTION

Use extreme care, when monitoring for beta radiation, to avoid contact of beta window with sharp objects. Always close beta shield when not monitoring for beta radiation.

(3) Point the exposed end of the probe toward the suspected area or object and move it slowly until a readable indication is obtained.

CAUTION

If the Radiac Set has been used for more than 20 hours, check the condition of the batteries by turning the range switch to BAT COND. If the needle moves below mid scale, then replace the batteries with the spare batteries.

c. For beta radiation detection only:

Close the beta shield following a beta and gamma detection. If the reading returns to the background level, only beta radiation is present.

2-7. MONITOR PERSONNEL

a. Have personnel stand straight with feet one foot apart, arms extended sideward with palms up and fingers straight.

b. Remove the probe and hold the probe window about one inch from the individual's hand.

c. If no radiation is detected or the meter reading is less than five scale divisions, turn the range switch to the next lower scale. If no radiation is detected on the 0.5 mrad scale continue monitoring using that scale.

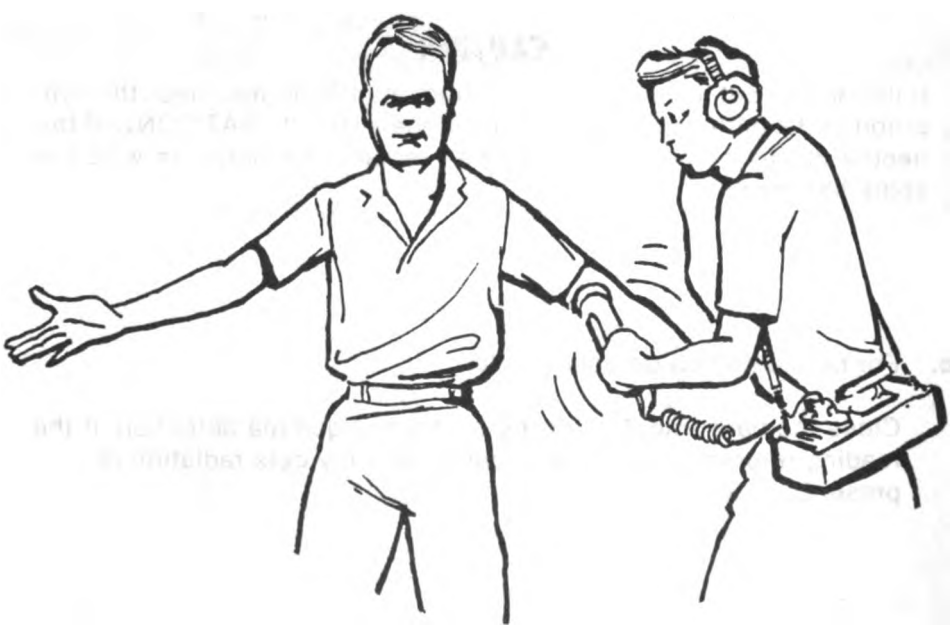
d. Pass the probe over both hands and forearms to the elbows with palms up; then repeat with palms turned down.

e. Pass the probe over the entire front of the body, starting at the top of the head; check hair, forehead, nose, lips, neckline, torso, knees, and ankles.

f. Repeat this process from head to ankles over the back of the individual.

g. Monitor the sole of each foot.

h. If no radiation is detected inform the individual he is not contaminated. If radiation is detected inform your supervisor and have the individual await further instructions.



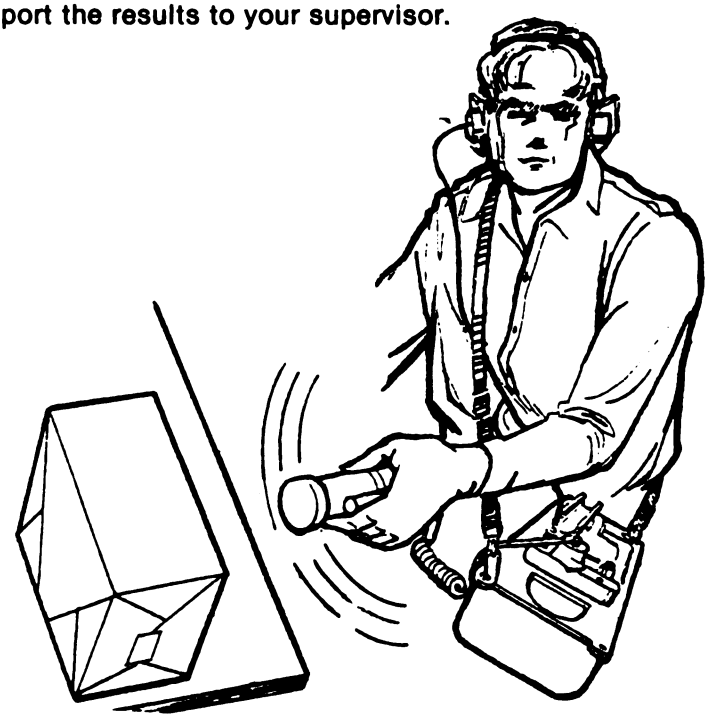
2-8. MONITOR EQUIPMENT, SUPPLIES, AND WATER

a. Remove the probe and hold the probe window about one inch from the item being monitored.

b. Hold the probe perpendicular to the surface and move it along the surface with a slow, steady motion.

c. If no radiation is detected or the meter reading is less than five scale divisions, turn the range switch to the next lower scale. If no radiation is detected on the 0.5 mrad scale continue monitoring using that scale.

d. Report the results to your supervisor.



2-9. STOPPING THE EQUIPMENT

a. When removal of the Radiac Set from operation is desired, turn the range switch to OFF.

b. Replace the probe in mounting well.

c. Remove the headset and the harness, and stow both items in the case.

d. Remove the batteries and replace them in the battery storage compartment.

e. Place the Radiac Set in the case.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

SECTION I

TROUBLESHOOTING PROCEDURES

The Troubleshooting Table 3-1 lists the common malfunctions which you may find during the operation or maintenance of the Radiac Set. You must perform the tests, inspections and corrective actions, step by step, as they are listed.

This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by performing listed corrective actions, notify your supervisor and evacuate to higher maintenance for repair.

TABLE 3-1. TROUBLESHOOTING

Malfunction	Test or Inspection	Corrective Action
1. Needle on the indicating meter is to the left of the center scale when range switch is set at BAT COND.	Open the battery compartment and insure that all the batteries are installed correctly.	Reverse any batteries placed backwards. If all of the batteries are installed correctly, then replace with a new set.
2. Needle on indication meter moves to the LEFT of zero when the range switch is set at BAT COND.	Set the range switch to OFF. Open the battery compartment and check that the batteries are installed properly.	Reverse the batteries installed in the battery compartment.
3. No reading on the indicating meter when the range switch is set at BAT COND.	Examine the battery compartment cover and the captive screws. The cover must fit evenly and the captive screws must be tightened evenly.	Loosen the three captive screws about half-way out, shake the battery cover and press it down to seat the batteries properly. Retighten the captive screws.

APPENDIX A

REFERENCES

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins Supply Manuals (types 7, 8, and 9) Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	US Army Equipment Index of Modification Work Orders.
TM 3-6665-264-10	Operator's Manual: Radioactive Test Sample, Krypton 85, Gamma MX-7338/PDR-27R.
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 11-6665-209-10-HR	Hand Receipt Manual: Covering the Contents of Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL) for Radiac Sets AN/PDR-27J (NSN 6665-00-543-1435), AN/PDR-27L (NSN 6665-00-856-3456), and AN/PDR-27Q (NSN 6665-00-017-8903).

APPENDIX B
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

SECTION I. INTRODUCTION

B-1. Scope

This appendix lists components of end item and basic issue items for the AN/PDR-27(#) to help you inventory items required for safe and efficient operation.

B-2. General

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the AN/PDR-27(#) in operation, to operate it, and to perform emergency repairs. Although shipped separately, packaged BII must be with the AN/PDR-27(#) during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. Column (1) - Illustration Number (Illus. Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) - National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

c. Column (3) - Description. Indicates the National item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number. If item needed differs for different models of this equipment, the model is shown under the "Usable On" heading in this column. These codes are identified as:

Code	Used On
1	AN/PDR-27J
2	AN/PDR-27L
3	AN/PDR-27Q

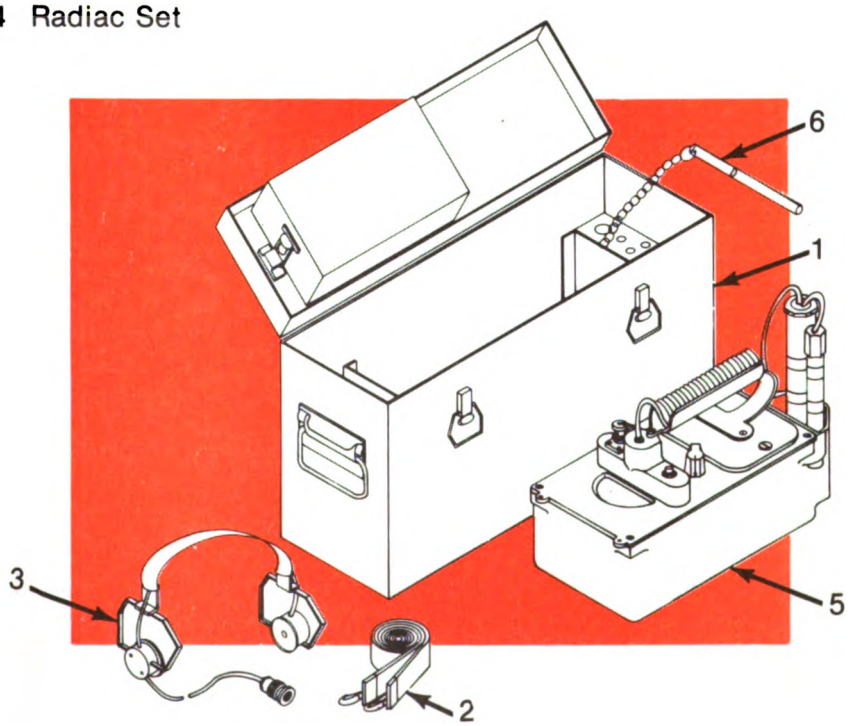
d. Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column (5) - Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

SECTION II. COMPONENTS OF END ITEM

(1)	(2)	(3)	(4)	(5)
Illus. Number	National Stock Number	Description FSCM and Part Number	Usable On Code	U/M	Qty. rqr.
1	6665-00-618-9945	Case, Carrying: CY-2312/PDR-27J	1,2,3		1
2	5999-00-685-9470	Harness: ST-136/PDR-27J	1,2,3		1
3	5965-00-651-7372	Headset, Electrical: H-43B/U	1,2,3		1
4	6665-00-856-3456	Radiac Set AN/PDR-27L	1		1
	6665-00-543-1435	Radiac Set AN/PDR-27J	2		1
	6665-00-017-8903	Radiac Set AN/PDR-27Q	3		1
5	6665-00-078-4178	Radiacmeter IM-173/PDR-27L			1
	6665-00-684-1196	Radiacmeter IM-141/27J			1
	6665-00-051-2043	Radiacmeter IM-195/PDR-27Q			1
6	6665-00-832-6159	Radioactive Test Sample: MX-7338/PDR-27R	1,2,3		1

4 Radiac Set



APPENDIX C
ADDITIONAL AUTHORIZATION LIST

SECTION I. INTRODUCTION

1. Scope

This appendix lists additional items you are authorized for the support of the AN/PDR-27(#).

2. General

This list identifies items that do not have to accompany the AN/PDR-27(#), and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

3. Explanation of Listing

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.

SECTION II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM & PART NUMBER USABLE ON CODE	(3) U/M	(4) QTY AUTH
	MTOE AUTHORIZED ITEMS		
6135-00-120-1020	Battery, Dry BA-30, 80063	ea.	12
5120-00-222-8852	Screwdriver	ea.	1
	CTA AUTHORIZED ITEMS (not applicable)		

APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

1. SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the AN/PDR-27(#). These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

2. EXPLANATION OF COLUMNS

a. Column 1 - Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, Item 5, App. D").

b. Column 2 - National Stock Number. This is the National Stock number assigned to the item; use it to request or requisition the item.

c. Column 3 - Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

d. Column 4 - Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

(1) ITEM NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION	(4) U/M
	6135-00-120-1020	Battery, Dry BA-30: (80063)	ea

GLOSSARY

1. INTENSITY - The energy (of any radiation) incident upon (or flowing through) unit area, perpendicular to the radiation beam, in unit time. As applied to nuclear radiation, the term intensity is sometimes used to express the exposure dose rate at a given location in roentgens or milliroentgens per hour.

2. MILLIRAD - A unit of absorbed ionizing radiation dose equal to one thousandth of a rad.

3. MILLIROENGEN - One-thousandth of a roentgen. (abbreviation mr/hr)

4. RAD - The standard unit of absorbed dose, equal to energy absorption of 100 ergs per gram; supersedes the roentgen as the unit of dosage.

5. RADIOACTIVITY - The spontaneous emission of radiation, generally alpha or beta radiation, often accompanied by gamma radiation from the nuclei of an unstable element.

6. ROENTGEN - The international unit of x-radiation or gamma radiation equal to the amount of radiation that produces in one cubic centimeter of dry air at 0°C and standard atmospheric pressure ionization of either sign equal to one electrostatic unit of charge (also see milliroentgen).

7. SHIELDING - Any material or obstruction which absorbs radiation and thus tends to protect personnel (or materials) from the effects of a nuclear (or atomic) explosion.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL MANUALS

SOMETHING WRONG WITH THIS MANUAL?

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

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Stateside Army Depot
ATTN: AMSTA-US
Stateside, N.J. 07703

DATE 10 July 1975

PUBLICATION NUMBER	DATE	TITLE
TM 11-5840-340-12	23 Jan 74	Radar Set AN/MPQ-76

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARAGRAPH	FIGURE NO.	TABLE NO.	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°. REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of [illegible] knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		FO3		Zone C 3. On J1-2, change "+24 VDC to "+5 VDC." REASON: This is the output line of the 5 VDC power supply. + 24 VDC is the input voltage.

TYPED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
SSG I. M. DeSpiritof 999-1776

SIGN HERE: SSG I. M. DeSpiritof

DA FORM 1 AUG 74 2028-2

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TM 11-6665-209-10	12 Mar 81	Radiac Set AN/PDR-27(#)

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PAGE NO.	PARAGRAPH	FIGURE NO.	TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

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