

TM 11-296

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

RADIO SET AN/PRC-6

OPERATION AND ORGANIZATIONAL MAINTENANCE

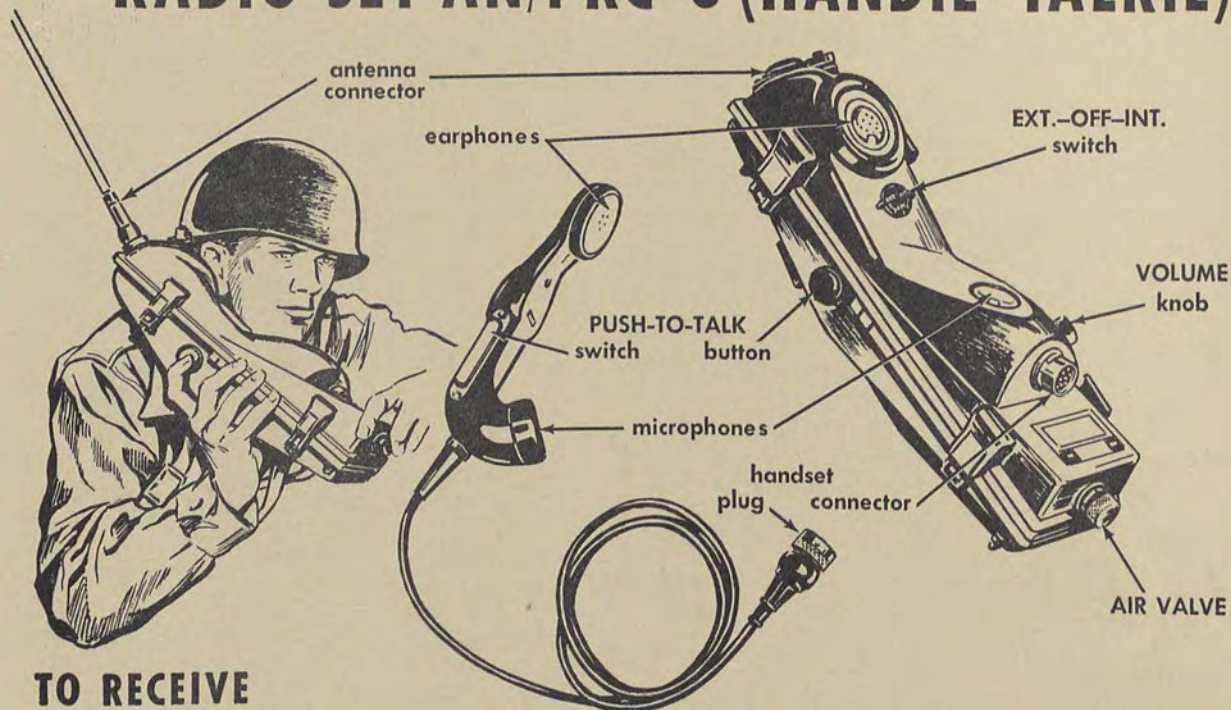
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CONDENSED OPERATING INSTRUCTIONS OR RADIO SET AN/PRC-6 (HANDIE-TALKIE)



TO RECEIVE

1. Screw antenna into connector on top of case.
2. Open AIR VALVE (turn to left).
3. Turn switch marked EXT.-OFF-INT. to INT. and wait a minute for tubes to warm up.
4. Hold handie-talkie with earphone to your ear (see illustration above). Adjust knob marked VOLUME to get hissing noise in earphone. Handie-talkie is now in "receive" condition; noise decreases when voice signals are received.

TO SEND

5. Before sending, listen to make sure no one else is "on the air."
6. Press PUSH-TO-TALK button on handie-talkie and hold it in. Hissing noise will stop. Handie-talkie is now in "send" condition.
7. Keep your lips close to microphone; talk in normal tone. While talking, you will hear your own voice (sidetone) in earphone.
8. When you are through talking, release PUSH-TO-TALK button and listen for answering signals.

TO USE HANDSET

9. Plug handset cord into connector on handie-talkie.
10. Follow operating instructions 1 through 8, except:
 - a. In step 3 turn switch marked EXT.-OFF-INT. to EXT.
 - b. Use handset push-to-talk switch, handset earphone, and handset microphone.

TO TURN SET OFF

11. Turn handie-talkie switch marked EXT.-OFF-INT. to OFF.
12. Close AIR VALVE (turn to right).

Condensed Operating Instructions

TM 296-201

RADIO SET AN/PRC-6, OPERATION AND ORGANIZATIONAL MAINTENANCE

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* This manual supersedes TM 11-296, 16 October 1951, including C 1, 21 November 1951, C 2, 30 January 1953, C 4, 16 September 1954.



Figure 1. Radio Set AN/PRC-6.

CHAPTER 1

DESCRIPTION AND DATA

1. Scope

This technical manual on Radio Set AN/PRC-6 (fig. 1) contains instructions for operators and organizational repairmen.

a. Operator's Instructions. Complete instructions for the operator are given in the following chapters:

- (1) Operation—chapter 3.
- (2) Operator's (first echelon) preventive maintenance—paragraphs 21 through 25.

b. Organizational Maintenance. Instructions in the following chapters are for authorized repairmen only:

- (1) Description and data—chapter 1.
- (2) Preparation for use—chapter 2.
- (3) Preventive maintenance (second echelon)—paragraphs 26 and 27.
- (4) Troubleshooting at organizational level—chapter 5.

Note. Field Maintenance instructions and theory of Radio Set AN/PRC-6 are covered in TM 11-4069, Radio Set AN/PRC-6 Field Maintenance.

c. Comments on this publication should be forwarded directly to: Commanding Officer, The Signal Corps Publications Agency, Fort Monmouth, N. J., ATTN: Standards Branch.

2. Description of Radio Set AN/PRC-6 (fig. 2)

Radio Set AN/PRC-6 is a 13-tube, low-power, portable radio set used for voice communication over short distances. The major components of the radio set are Radio Receiver-Transmitter RT-196(*)/PRC-6 and Handset H-33(*)/PT (fig. 2). The radio receiver-transmitter may be operated without the handset. Battery BA-270/U is required for operation but is not a component of Radio Set AN/PRC-6; it is issued separately.

Note. Throughout this manual, Handset H-33(*)/PT refers to Handset H-33C/PT or H-33D/PT; and Radio

Receiver-Transmitter RT-196(*)/PRC-6 refers to Radio Receiver-Transmitter RT-196/PRC-6 or RT-196A/PRC-6. The differences in models are minor internal differences. The different models of the equipments are similar in appearance, and the operation and organizational maintenance of the equipments are the same.

a. Radio Receiver-Transmitter RT-196()/PRC-6 (fig. 3).* Radio Receiver-Transmitter RT-196(*)/PRC-6 is commonly referred to as a *handie-talkie*. It resembles a hand telephone (fig. 2) and may be held in either hand when operating. The handie-talkie consists of a receiver-transmitter chassis with vacuum tubes; a cover or shield for the receiver-transmitter chassis; a microphone and earphone (fig. 2); a flexible steel whip (vertical) antenna; and a two-piece cast-magnesium case held together by four lever-type latches (two on each side of the case). The receiver-transmitter chassis, the microphone and earphone, and the space for the battery are contained within the magnesium case. All operating controls of the handie-talkie are mounted on the outside of the case. When the antenna is being used, it is mounted to a connector on the outside of the case. When the antenna is not in use, it is wrapped around the case (A, fig. 14). An adjustable strap is attached to the outside of the case. The operator can use the adjustable strap as a shoulder strap or sling for carrying the handie-talkie on his back (fig. 1) or for additional hand support when operating the handie-talkie (fig. 22).

b. Handset H-33()/PT (fig. 2).* The handie-talkie may be operated without the handset; the handset permits the operator to use the radio set when the handie-talkie is carried on his back (fig. 1). The handset consists of a microphone and an earphone contained within a molded plastic case; and a 5-foot cable with a plug on the end. When the handset is used, the plug is connected to a connector on the case of the handie-talkie.

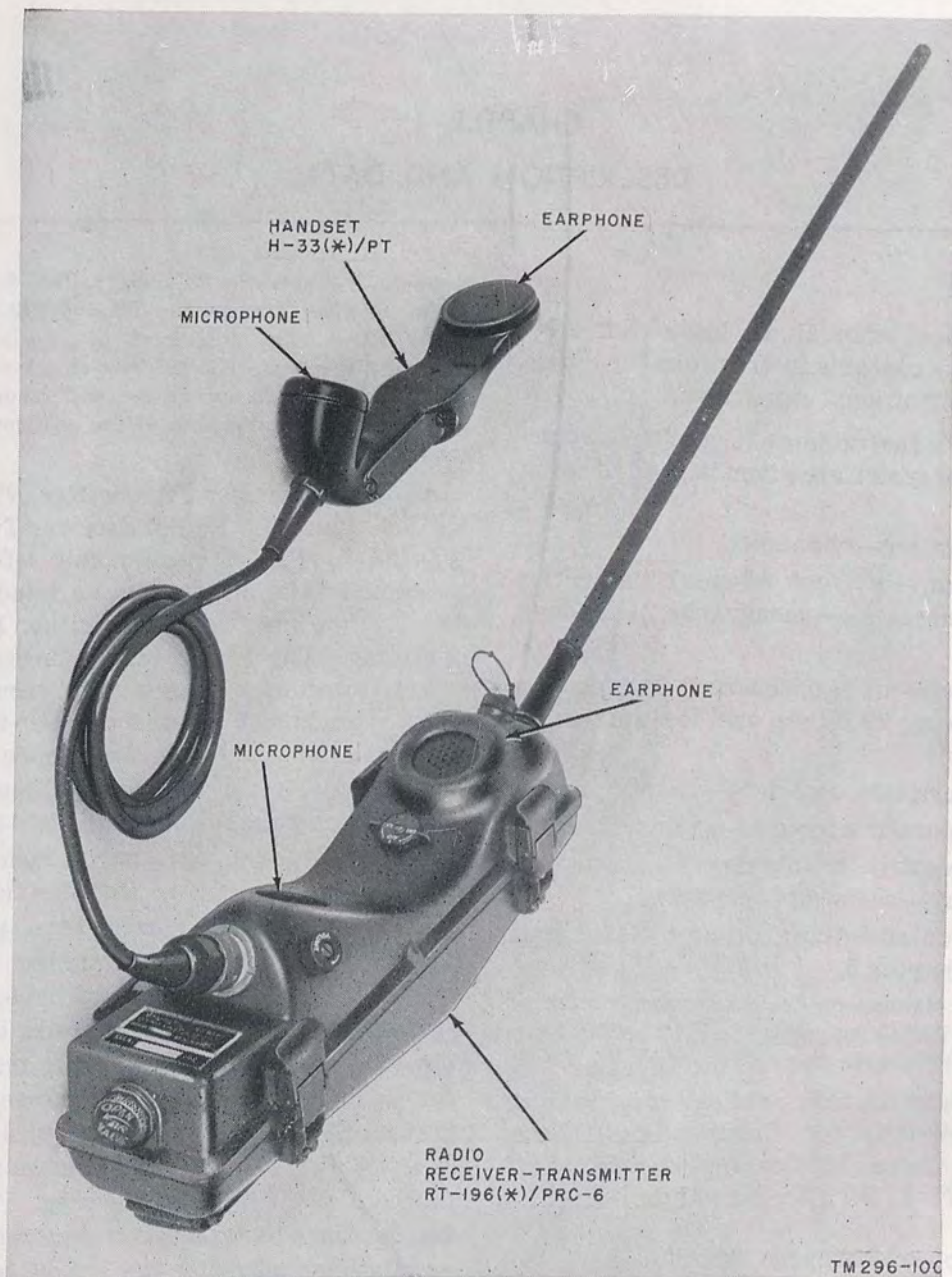


Figure 2. Radio Set AN/PRC-6, major components.

3. Use of Radio Set (fig. 4)

Radio Set AN/PRC-6 is used for voice communication over short distances. The radio set is designed to send (transmit) or receive frequency-modulated (fm) radio signals on any one of 43 operating frequencies (channels) within the frequency range of 47 to 55.4 megacycles (mc). The same operating frequency is used for transmitting and receiving. Figure 4

lists radio equipments and the operating frequencies that can be used in a communication system with Radio Set AN/PRC-6.

4. Operating Characteristics

Distance range... Approximately 1 mile.
 Type of radio set... Fm.
 Type of communi- Voice.
 cation.
 Antenna... 2-foot flexible steel whip antenna.

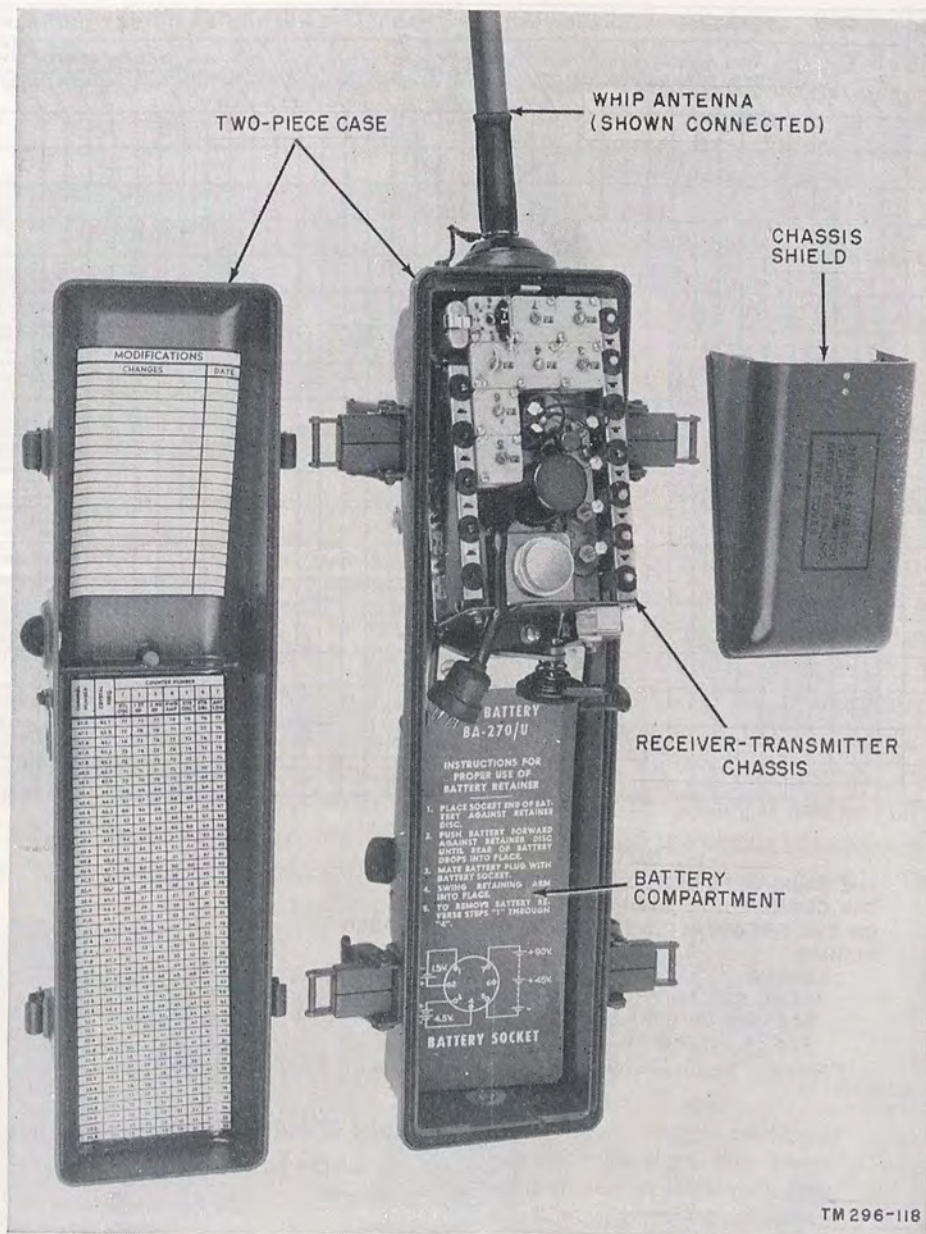


Figure 3. Radio Receiver-Transmitter RT-196(*)/PRC-6.

Frequency range... 47 to 55.4 mc.

Operating frequency. Any one of 43 operating frequencies or channels (figs. 4 and 12) can be used for transmitting and receiving. Only one operating frequency can be used at a time.

Crystals required... A crystal located on receiver-transmitter chassis (operating crystal fig. 10), is used to control

operating frequency of radio set. For operation on 43 channels, 43 crystals (one for each channel of radio set) are required (par. 7b). Only one crystal can be used at a time.

Note. When shipped from factory, Radio Set AN/PRC-6 is tuned for an operating frequency of 51 mc. When the operating frequency is changed,

6. Table of Components for Radio Set AN/PRC-6 (fig. 5)

Component	Required No.	Dimensions (in.)	Volume (cu in.)	Weight (lb)
Radio Receiver-Transmitter RT-196(*)/PRC-6	1	14 3/4 x 4 3/4 x 4 1/4	298	3 1/2
Handset H-33(*)/PT	1	1 1/2 x 8 3/8 x 3 1/4	42	1
Complete set of spare tubes ^a	1 set			1/4
Technical manual	2	10 1/4 x 1 1/8 x 7 7/8		1/4
Total weight (lb)				5

^a The set of spare tubes consists of six 5678 tubes, three 5672 tubes, two 5676 tubes, one 2G21 tube, and one 3B4 tube. One spare tube is provided for each of the tubes (13) of the radio set.

7. Additional Equipment Required

Battery BA-270/U is required for operation of Radio Set AN/PRC-6. Crystal Kit CK-6/U is required only when an operating frequency other than 51 mc is used. Channel Alignment Indicator ID-292/PRC-6 is required when the radio set is tuned (alined) to any of its 43

operating frequencies; it may be used to check the condition of the battery (par. 12c).

Note. When the operating frequency of the radio set is changed, the radio set must be tuned to its new operating frequency (par. 12). *The radio set must be tuned only by an authorized repairman.*

a. *Battery BA-270/U.* Battery BA-270/U provides the necessary voltages required for operation of Radio Set AN/PRC-6; these voltages, +1.5, -4.5, +45, and +90, are available at the battery socket (fig. 17). When the battery is used, the battery plug (on battery cable) located on the receiver-transmitter chassis (fig. 17) is plugged into the battery socket.

b. *Crystal Kit CK-6/U* (fig. 6). Crystal Kit CK-6/U consists of 42 crystals (Crystal Unit CR-23/U) in a metal box: one for each operating frequency of the radio set except 51 mc. The crystal required for an operating frequency of 51 mc is shipped with, and is part of, Radio Set AN/PRC-6. The crystals are marked with two frequencies: the operating frequency of the radio set and the crystal frequency. The operating frequency is marked on the side of the crystal, and the crystal frequency is marked on the top of the crystal (fig. 6). The crystal fre-

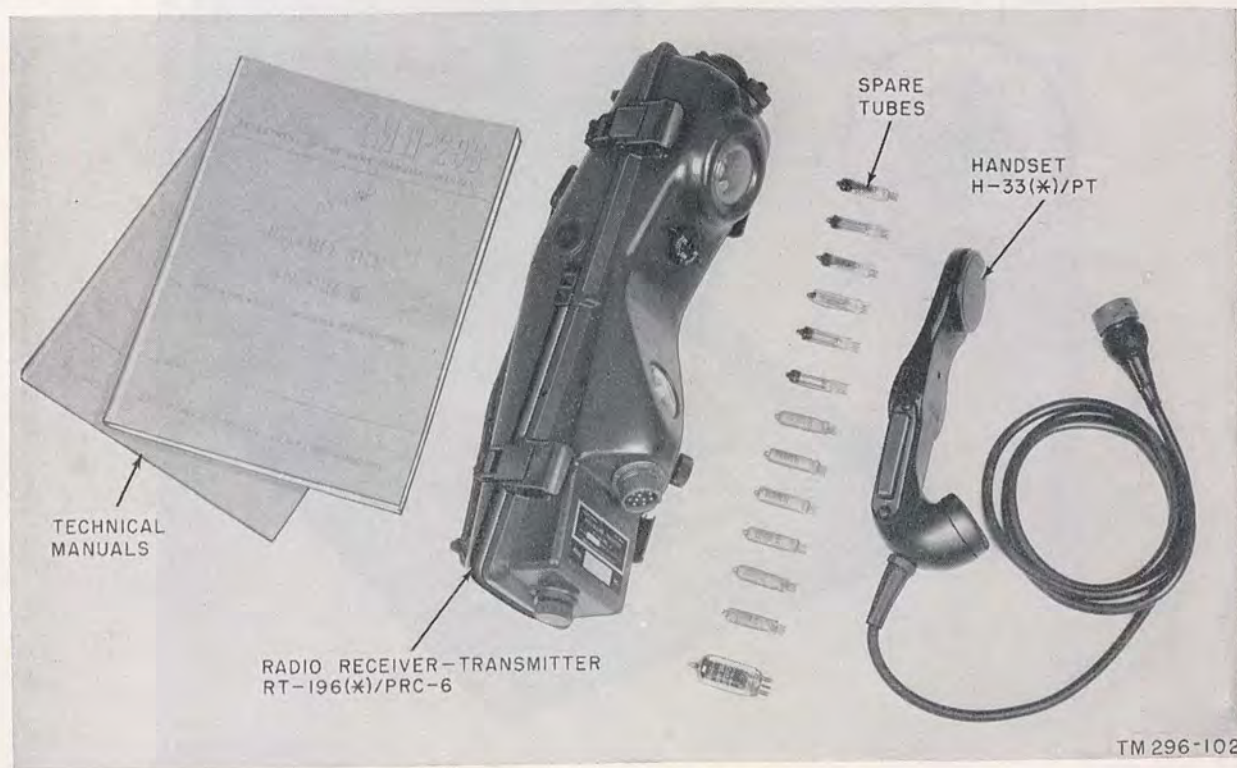


Figure 5. Radio Set AN/PRC-6, components.

quency and the operating frequency differ by 4.3 mc.

c. *Channel Alignment Indicator ID-292/PRC-6* (fig. 7). Channel Alignment Indicator ID-292/PRC-6 consists of a meter with a connecting cable and plug and a screw driver. When the radio set is being tuned, the plug is inserted into the test socket on the receiver-transmitter chassis (fig. 11). The theory and maintenance instructions of the alignment indicator are given in TM 11-5059, Channel Alignment Indicator ID-292/PRC-6.

8. Auxiliary Equipment (fig. 8)

Antenna AT-249/GRD is an auxiliary antenna used with Radio Set AN/PRC-6. It is

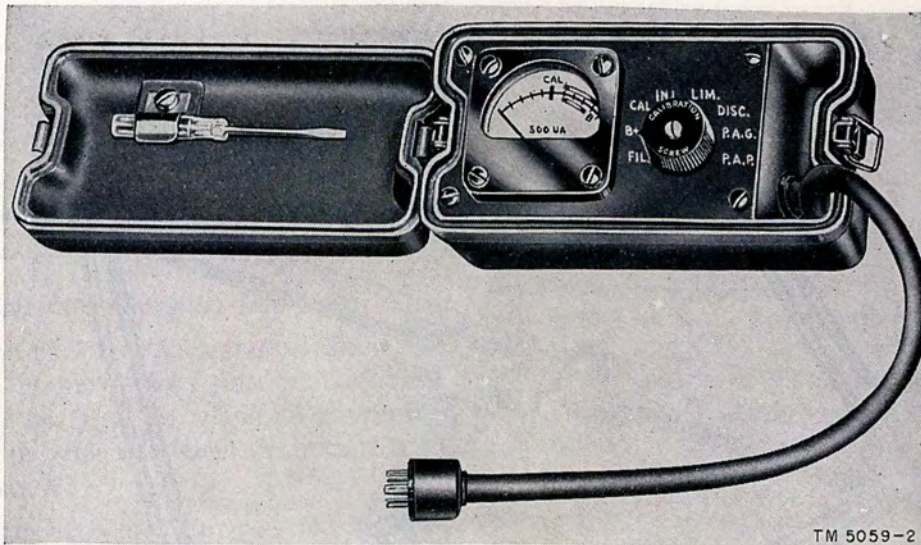
commonly referred to as a loop antenna. This antenna enables the operator to determine the direction of a radio transmitter that is operating at the same frequency as his radio set. The instructions for the use of the antenna are packed with the antenna. When the antenna is used, the loop antenna plug (fig. 8) is connected to the loop antenna connector on the handie-talkie, and the shorting cap (fig. 8) is screwed into the whip antenna connector (fig. 15).

9. Nomenclature of Common Names

To avoid the repetition of lengthy nomenclature, common names are sometimes used for the nomenclature of the equipments in this



Figure 6. Crystal Kit CK-6/U.



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Figure 7. Channel Alignment Indicator ID-292/PRC-6.

manual. The nomenclature and the common names used are as follows:

Nomenclature	Common name
Handset H-33(*)/PT	Handset
Battery BA-270/U	Battery
Radio Set AN/PRC-6 with Battery BA-270/U	Radio set

Nomenclature	Common name
Radio Receiver-Transmitter RT-196(*)/PRC-6	Radio receiver-transmitter or handie-talkie
Channel Alignment Indicator ID-292/PRC-6	Alinement indicator
Crystal Unit CR-23/U	Crystal

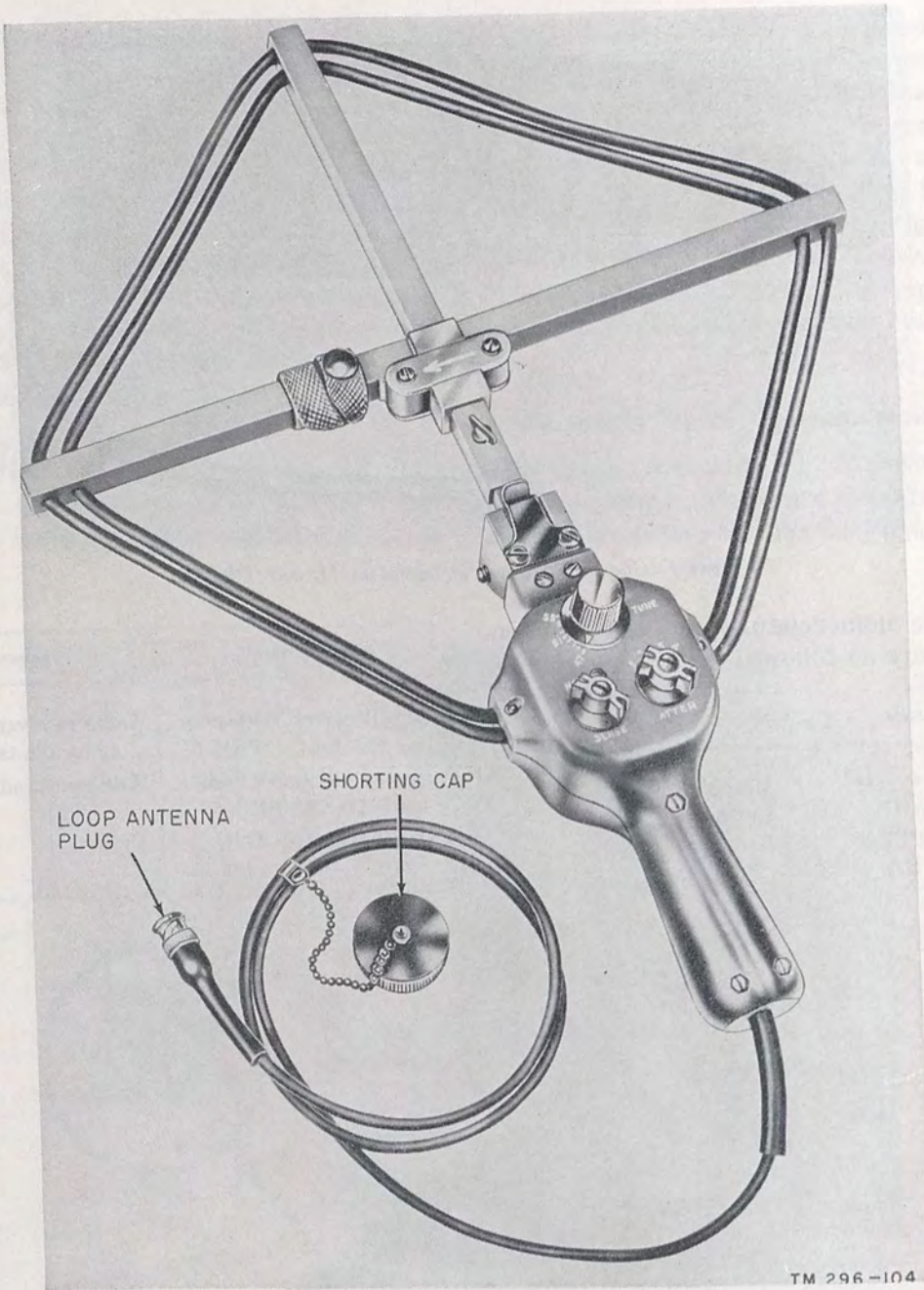


Figure 8. Antenna AT-249/GRD.

CHAPTER 2 PREPARATION FOR USE

Note. Instructions in this chapter are for authorized repairmen only.

10. Unpacking and Checking Equipment

a. Open the package that contains Radio Set AN/PRC-6. Remove the radio set, technical manuals, and spare tubes. Save all packaging material for possible use when equipment is to be stored (par. 35).

b. Inspect the equipment for possible damage. If the equipment is not received in proper condition, fill out and forward DD Form 6, Report of Damaged or Improper Shipment, according to the instructions on the form

11. Controls and Their Uses

a. *Operating Controls.* (fig. 9).

Control	Function or use
EXT.-OFF-INT. switch: EXT. (external)	The switch is set to EXT. when the <i>handset</i> is used with the handie-talkie. In the EXT. position, the earphone and microphone of the handie-talkie cannot be used. When the switch is set to EXT., the handie-talkie is turned on and can be used as a receiver; received signals can be heard in the earphone of the <i>handset</i> . To use the handie-talkie as a transmitter, in the EXT. position, the push-to-talk switch of the <i>handset</i> must be pushed in.
OFF	When the switch is set to OFF, the radio set is turned off.
INT. (internal)	The switch is set to INT. when the <i>handie-talkie</i> is used without the <i>handset</i> . In the INT. position, the <i>handset</i> cannot be used. When the switch is set to INT., the handie-talkie is turned on and can be used as a receiver; received signals can be heard in the earphone of the <i>handie-talkie</i> . To

Control	Function or use
VOLUME control	use the handie-talkie as a transmitter, in the INT. position, the PUSH-TO-TALK button of the <i>handie-talkie</i> must be pushed in. The VOLUME control adjusts the loudness of the sound or voice heard in the earphone (either the earphone of the handie-talkie or the <i>handset</i> , whichever is used).
PUSH-TO-TALK button (handie-talkie)	The PUSH-TO-TALK button of the handie-talkie is used only when the EXT.-OFF-INT. switch is in the INT. position. In the INT. position, to put the handie-talkie <i>on the air</i> as a transmitter, the PUSH-TO-TALK button of the handie-talkie must be pressed.
Push-to-talk switch (handset)	The push-to-talk switch of the <i>handset</i> is used only when the EXT.-OFF-INT. switch of the handie-talkie is in the EXT. position. In the EXT. position, to put the radio set <i>on the air</i> as a transmitter, the push-to-talk switch of the <i>handset</i> must be pressed.
AIR VALVE	The AIR VALVE provides an air opening in the case of the handie-talkie to prevent high internal air pressures from building up inside the case during operation. High internal air pressures prevent the handie-talkie from operating properly.
Frequency designation strip	The operating frequency to which the radio set is tuned is shown on the frequency designation strip.
Loop antenna connector (fig. 15)	When the loop antenna is used (par. 8), the loop antenna plug (fig. 8) is connected to the loop antenna connector on the handie-talkie.
Handset connector	When the <i>handset</i> is used, the <i>handset</i> plug (fig. 16) is connected to the <i>handset</i> connector on the handie-talkie.

RADIO RECEIVER-TRANSMITTER (HANDIE - TALKIE)

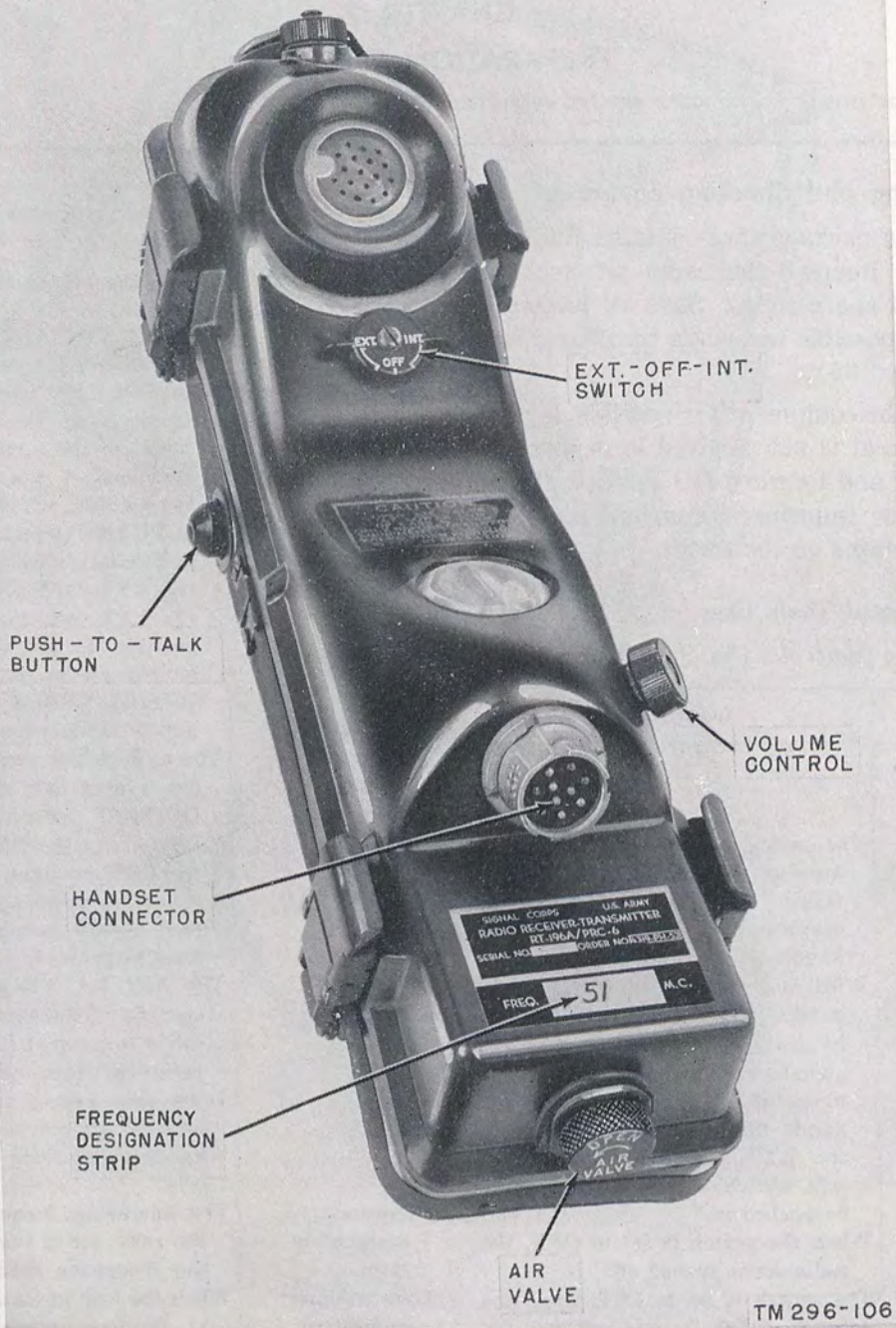


Figure 9. Radio Set AN/PRC-6, operating controls.

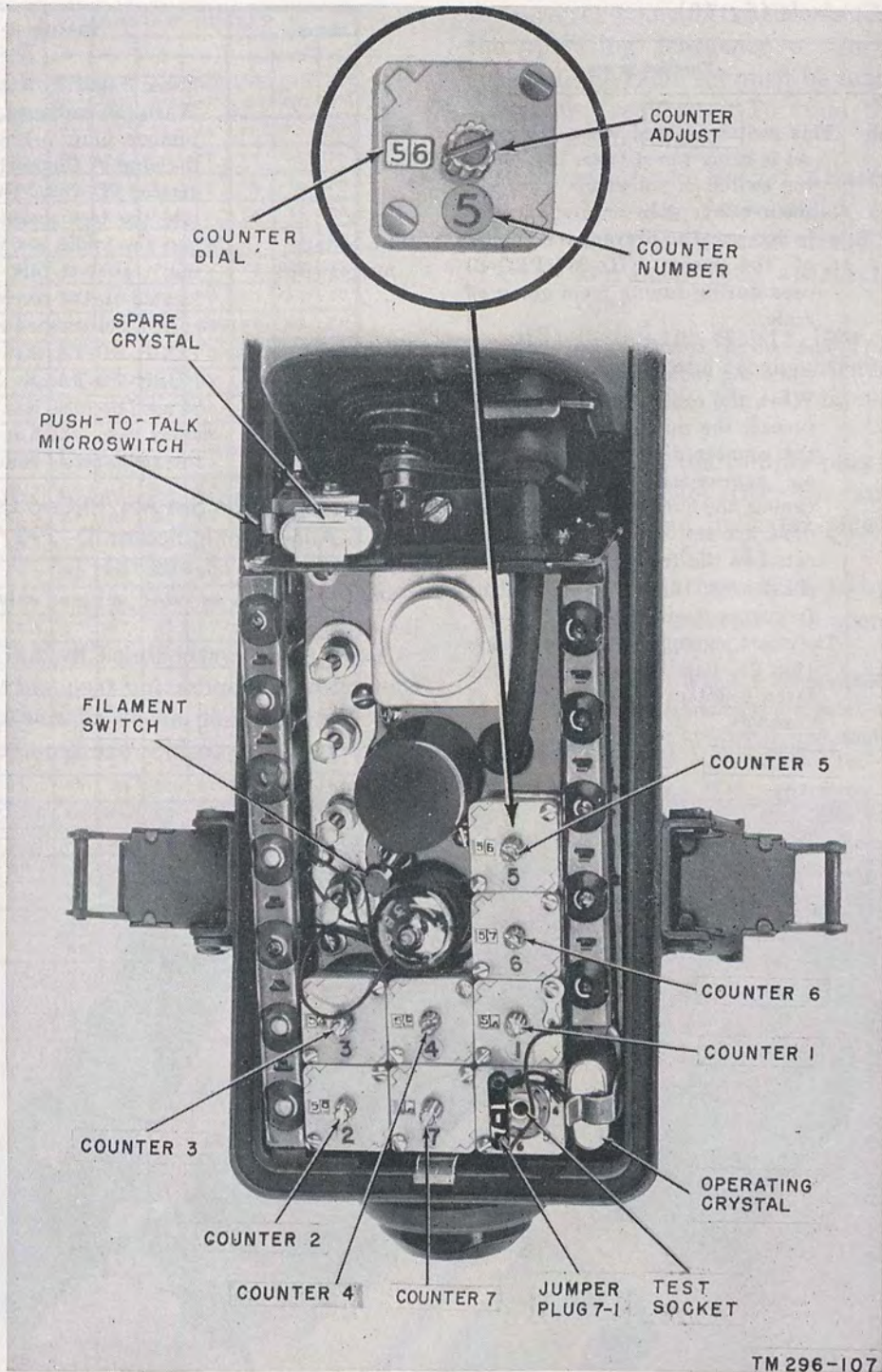


Figure 10. Radio Set AN/PRC-6, tuning controls.

b. Tuning Controls (fig. 10).

Control	Function or use
Filament switch	This switch is used when the radio set is being tuned (par. 12). When the switch is pulled up (opened), the receiver gain or amplification is decreased to prevent the pointer of the meter (ID-292/PRC-6) used during tuning from going off scale.
Seven counters with dials	The seven counters are adjusted when the radio set is being tuned. When the counter adjust shaft is turned, the number or reading on the counter dial is changed. For an approximate adjustment or tuning, the numbers on the counter dials are set to the numbers indicated on the frequency calibration chart (fig. 12) for the operating frequency desired.
Frequency calibration chart (fig. 12)	The chart, mounted on inside of case (fig. 3), lists the settings of the seven counters for each of the 43 channels.
Jumper plug 7-1	Jumper plug 7-1 is plugged between

Control	Function or use
Push-to-talk microswitch	When the radio set is being tuned, the push-to-talk microswitch, located on the receiver-transmitter chassis, is pressed rather than the PUSH-TO-TALK button. The PUSH-TO-TALK button cannot be used because it is mounted on the outer case which is removed when the radio set is being tuned.

12. Tuning Radio Set AN/PRC-6 Using Channel Alinement Indicator ID-292/PRC-6 (figs. 11, 12, and 13)

Note. The radio set must be tuned only by an authorized repairman.

A crystal (Crystal Unit CR-23/U) is used for controlling the operating frequency of the radio set. For operation on 43 channels, 43 crystals of different frequencies are required. Only one

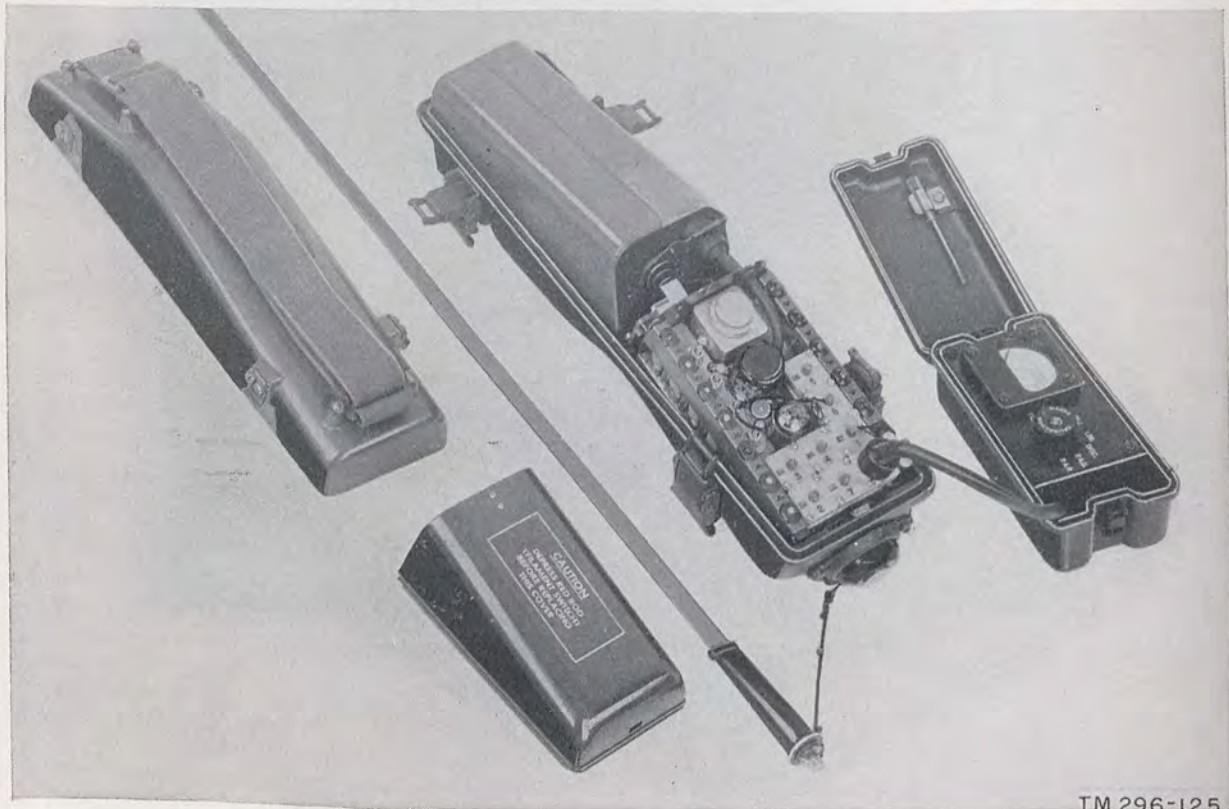


Figure 11. Channel Alinement Indicator ID-292/PRC-6 connected to Radio Receiver-Transmitter RT-196(*)/PRC-6.

CHANNEL NUMBER	CRYSTAL FREQ.	COUNTER NUMBER						
		1	2	3	4	5	6	7
		XTL OSC	1ST RF	2ND RF	PWR AMP	XTR OSC	XTR DBL	ANT LDG
47.0	42.7	77	77	77	78	78	76	77
47.2	42.9	75	76	76	77	77	75	76
47.4	43.1	74	75	74	75	75	74	75
47.6	43.3	73	74	73	74	74	73	74
47.8	43.5	72	72	72	73	73	71	73
48.0	43.7	71	71	71	72	72	70	72
48.2	43.9	70	70	70	70	70	69	70
48.4	44.1	68	69	69	69	69	68	69
48.6	44.3	67	67	67	68	68	67	68
48.8	44.5	66	66	66	67	67	66	67
49.0	44.7	65	65	65	66	66	65	66
49.2	44.9	64	64	64	64	65	64	64
49.4	45.1	63	63	63	63	64	63	63
49.6	45.3	62	62	62	62	63	62	62
49.8	45.5	61	61	61	61	61	61	61
50.0	45.7	59	60	60	60	60	60	60
50.2	45.9	59	59	59	59	59	59	59
50.4	46.1	58	58	58	58	58	58	58
50.6	46.3	57	57	57	57	57	57	57
50.8	46.5	56	56	56	56	56	56	56
51.0	46.7	55	55	55	55	55	55	55
51.2	46.9	54	54	54	54	54	54	54
51.4	47.1	53	53	52	53	53	53	52
51.6	47.3	52	52	51	52	52	52.5	51
51.8	47.5	51	51	50	50	50	51.5	50
52.0	47.7	49	50	49	49	49	50.5	49
52.2	47.9	48	49	48	48	48	49.5	48
52.4	48.1	47	48	46	47	47	48.5	47
52.6	48.3	46	46	45	46	46	47.5	46
52.8	48.5	45	45	44	45	45	46.5	45
53.0	48.7	43	44	43	44	44	45.5	44
53.2	48.9	42	43	42	43	43	44.5	43
53.4	49.1	41	42	41	42	42	44	42
53.6	49.3	40	41	39	41	41	43	41
53.8	49.5	38	40	38	40	40	42	40
54.0	49.7	37	39	37	38	39	41	39
54.2	49.9	36	38	36	37	38	40	38
54.4	50.1	34	36	34	36	37	39	37
54.6	50.3	33	35	33	35	35	38	36
54.8	50.5	32	33	31	33	34	37	35
55.0	50.7	30	32	30	32	33	36	34
55.2	50.9	29	30	29	30	32	35	33
55.4	51.1	28	29	28	29	31	34	32

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Figure 12. Frequency calibration chart.

crystal can be used in the radio set at a time. When shipped from the factory, Radio Set AN/PRC-6 is tuned (alined) for an operating frequency of 51 mc. If an operating frequency other than 51 mc is used, the 51-mc crystal must be replaced with a crystal from Crystal Kit CK-6/U (par. 7b). The 51-mc crystal should be placed in the spare crystal holder located on

the receiver-transmitter chassis (fig. 10). When the operating frequency of the radio set is changed, the radio set must be tuned to the new operating frequency. To tune the radio set, proceed as follows:

a. Prepare Radio Set for Alinement.

- (1) Open the four latches (two on each side) of the case of the handie-talkie and open (pull apart) the two-piece case.
- (2) Install the battery (par. 16).
- (3) Remove the receiver-transmitter chassis shield (fig. 3) by pulling it upward.
- (4) Remove the jumper plug 7-1 from the test socket (fig. 10) and insert the alignment indicator plug into the test socket (fig. 11).
- (5) Plug the crystal to be used into the crystal socket. (See operating crystal in figure 10.)

Note. When the operating frequency is changed, remove the crystal used for the old operating frequency and replace it with the crystal to be used for the new operating frequency. The operating frequency is marked on the side of the crystal, and the crystal frequency is marked on the top of the crystal (fig. 6).

- (6) Set each counter dial to the number indicated in the frequency calibration chart (fig. 12). The number on the counter dial (fig. 10) is changed when the counter adjust shaft is turned; use a screw driver.

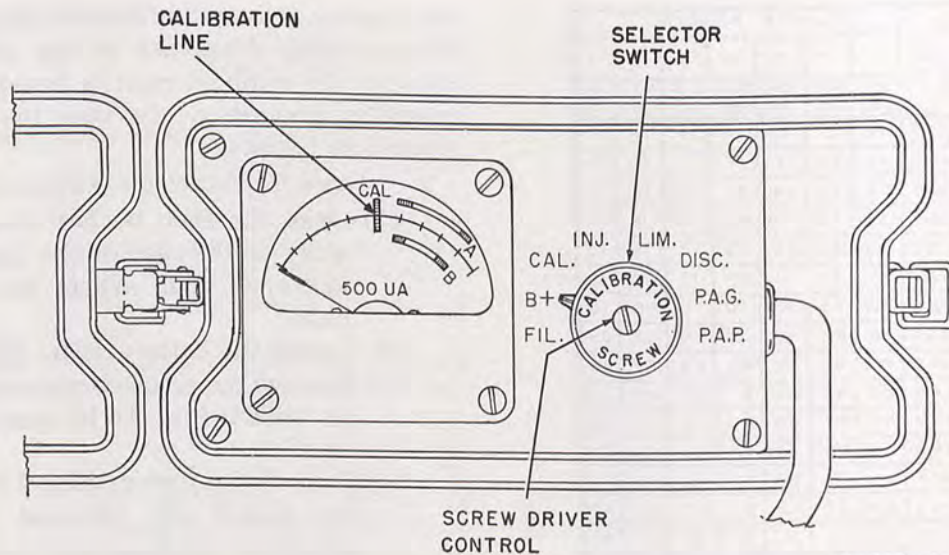
Example: If the operating frequency of the radio set is 53.6, set the counter dials as follows:

Counter	Dial number
1	40
2	41
3	39
4	41
5	41
6	43
7	41

b. Turn on Radio Set. Turn the EXT.-OFF-INT. switch to INT.

c. Check Condition of Battery.

- (1) Set the selector switch (fig. 13) of the alinement indicator to FIL. Press the



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Figure 13. Channel Alinement Indicator ID-292/PRC-6, front panel.

push-to-talk microswitch (fig. 10) on the receiver-transmitter chassis and observe the meter of the alinement indicator. If the meter pointer is on, or to the left, of the red part of the A scale, replace the battery (par. 16).

- (2) Set the selector switch of the alinement indicator to B+. Press the push-to-talk microswitch and observe the meter of the alinement indicator. If the meter pointer is on, or to the left, of the red part of the B scale, replace the battery.

Note. When the radio set is being tuned, the battery must be checked with the alinement indicator. The hissing noise test (par. 14, step 6) is a good operational test, but it cannot be used to determine the condition of the battery unless the radio set is tuned (accurately) to its operating frequency. The alinement indicator can always be used to test the condition of the battery.

d. Calibrate Alinement Indicator. After the battery has been checked, open the filament switch (fig. 10) of the radio set by pulling it up. Set the selector switch of the alinement indicator to CAL. Turn (with a screw driver) the screw driver control of the alinement indicator (fig. 13), located at the center of the selector switch, until the meter pointer is at the red calibration (CAL.) line. Close the filament switch of the radio set by pushing it down. (It is not

necessary to calibrate the meter before checking the battery.)

e. Adjust Seven Counters. The procedure for adjusting the seven counters are given in *f* through *k* below. When the counter dials are set to the numbers indicated on the frequency calibration chart, the radio set is approximately tuned to its operating frequency. It is only necessary to adjust each counter individually, using the alignment indicator, to obtain optimum (best) results. When adjusting the counters, do not turn the counter adjust (fig. 10) more than a small distance to the right (clockwise) or to the left (counterclockwise). It should not be necessary to turn the counter adjust more than one-half turn in either direction. If, after the radio set has been tuned, the number on a counter dial is not within 8 of the number indicated (for that counter) on the frequency calibration chart, turn in the radio set for calibration by a field maintenance repairman.

Example: The operating frequency of the radio set is 53.6 mc. After tuning the radio set, the number on the counter dial for counter 1 should not be more than 48 or less than 32. The number indicated on the frequency calibration chart is 40 for counter 1 at an operating frequency of 53.6 mc.

f. Counter 1 Adjustment. Set the selector switch of the alinement indicator to INJ. Turn

counter 1 adjust slowly to the right or left until a peak (maximum) reading is obtained. With the meter pointer at a maximum reading, turn counter 1 adjust to the left approximately one-quarter turn (the meter reading should be approximately 80 percent of maximum).

g. Counter 3, 2, and 4 Adjustments. Set the selector switch of the alinement indicator to LIM. Turn to the right or left, the counter adjust for counters 3, 2, and 4, in that order, until a maximum meter reading is obtained.

h. Counter 5 Adjustment. Pull up the filament switch of the radio set.

- (1) Set the selector switch of the alinement indicator to LIM. Press the push-to-talk microswitch on the receiver-transmitter chassis and slowly turn counter 5 adjust until a maximum meter reading is obtained.

Caution: In some equipments the meter pointer will go off the scale to the right. Do not turn the counter 5 adjust beyond the point where the meter first goes off the scale. After this adjustment, the meter pointer should be at a maximum (peak) reading or off the scale to the right.

- (2) Set the selector switch of the alinement indicator to DISC. The meter pointer will be at or near the red calibration line. If the meter pointer is not at the red calibration line, slowly turn the counter 5 adjust to the right or left, until the meter pointer is at the red calibration line. Counter 5 is now adjusted. Check the adjustment as follows:

- (a) Turn counter 5 adjust slightly to the right; the meter pointer should

move to the right of the red calibration line.

- (b) Turn counter 5 adjust slightly to the left; the meter pointer should move to the left. Return the meter pointer to the calibration line after this adjustment.

i. Counter 6 Adjustment. Set the selector switch to the P.A.G. position. Press the push-to-talk microswitch and turn counter 6 adjust until a maximum meter reading is reached.

j. Final Counter 4 Adjustment. Set the selector switch to P.A.P. Press the push-to-talk microswitch and turn counter 4 adjust until a minimum reading is obtained.

k. Counter 7 Adjustment. Set the selector switch to P.A.P. Connect the whip antenna to the antenna connector (fig. 15). Press the push-to-talk microswitch and turn counter 7 adjust until a maximum meter reading is obtained. (Do this step in a clear area and keep body away from the antenna.)

Note. Repeat the steps in *j* and *k* above.

l. Return Radio Set to Its Operating Condition.

- (1) Remove the alinement indicator plug from the test socket, and insert jumper plug 7-1, into the test socket.
- (2) Push down the filament switch.
- (3) Replace the chassis shield and close the case.
- (4) Check the tuning by communicating with another set tuned to the same frequency. Sidetone should be clear and undistorted if the radio set has been properly alined.
- (5) Turn the EXT.-OFF-INT. switch to OFF.

CHAPTER 3 OPERATION

Section I. PROCEDURE OF OPERATION

13. Installation of Whip Antenna from (and Returned to) Stored Position (fig. 14)

Before the radio set can be operated, the flexible steel whip antenna must be connected to the whip antenna connector on the case of the handie-talkie. To prevent its loss, the antenna is held to the case by a nylon cord. Do not remove the nylon cord. When the antenna is not being used, it is wrapped around the case of the handie-talkie. Do not kink or twist the antenna when it is removed from or returned to its stored position.

a. Installing Whip Antenna from Stored Position.

- (1) Remove the tip of the antenna from the antenna holding clip (A, fig. 14).
- (2) Place the finger under the whip antenna (B, fig. 14) and pull the tip of the antenna through latch 2.
- (3) Hold the antenna near the base of the antenna (C, fig. 14) and pull the tip of the antenna through latches 3 and 4 so that the antenna is free of the case.
- (4) Screw the base of the whip antenna into the whip antenna connector (D, fig. 14).

b. Returning Antenna to Stored Position.

- (1) Unscrew the base of the whip antenna from the whip antenna connector.
- (2) Push the tip of the antenna through latches 4, 3, and 2.
- (3) Place the tip of the antenna under the antenna holding clip.

14. To Receive and To Send (Handie-Talkie) (fig. 15)

Operation	Procedure
To receive	1. Screw the antenna into the whip antenna connector.

Operation	Procedure
To send	<ol style="list-style-type: none"> 2. Turn the AIR VALVE one-half turn to the left. 3. Turn on the handie-talkie by turning the EXT.-OFF-INT. switch to INT. 4. Wait a few seconds to let the tubes get warm. 5. Place the earphone against the ear. 6. Adjust or turn the VOLUME control to the right (clockwise) until a hissing noise (called tube or background noise) is heard in the earphone. The radio set is now in the <i>receive</i> condition. <p><i>Note.</i> The hissing noise indicates that the battery is in good condition. When a signal (voice) is received, the hissing noise will get weaker or disappear entirely. Do not press the PUSH-TO-TALK button or the hissing noise or voice will not be heard.</p> <ol style="list-style-type: none"> a. If the hissing noise or voice cannot be heard in the earphone, check to see that the battery plug fits snugly in the battery socket (fig. 18). b. If the hissing noise or voice cannot be heard after checking the battery plug, remove the battery from the radio set (par. 16a) and install a new battery (par. 16b). c. If the hissing noise or voice cannot be heard after installing a new battery, turn in the radio set for repair. 7. Listen to make sure that no one else is on the air. 8. Press the PUSH-TO-TALK button and wait a few seconds. <i>The hissing noise must disappear.</i> If the hissing noise does not disappear when the PUSH-TO-TALK button is pressed, turn in the handie-talkie for repair. <p><i>Note.</i> There is a tendency to forget to press the PUSH-TO-TALK button before starting to speak. The transmitter will not be on the air until the PUSH-TO-TALK button is pressed and the hissing noise disappears.</p>

Operation	Procedure
	<p>9. When the hissing noise disappears, talk into the microphone. Speak clearly and in a normal tone with the lips close to the microphone. When talking, the operator will hear his own voice (called sidetone) in the earphone. Sidetone will not be heard when the transmitter is not on the air. If sidetone is not heard, turn in (handie-talkie) for repair.</p> <p>10. After calling the distant station, release the PUSH-TO-TALK button and wait for a voice signal from the other station. No received signal will be heard when the PUSH-TO-TALK button is pressed.</p> <p><i>Note.</i> Do not transmit any longer than necessary. More battery power is used when transmitting than when receiving. By keeping the transmission time to a minimum, the operator will greatly prolong the life of the battery.</p>
To turn off radio set	<p>11. Turn the EXT.-OFF-INT. switch to OFF.</p> <p>12. Turn the AIR VALVE to the right until it is fingertight.</p> <p><i>Note.</i> Do not leave the EXT.-OFF-INT. switch in the INT. or EXT. position unless the equipment is actually in use. Battery power is used up when the switch is in the EXT. or INT. position.</p>

15. To Receive and To Send (Handset) (fig. 16)

Note. The handset permits the operator to carry the handie-talkie on his back. The handie-talkie can be operated without the handset. When the handset is used, the earphone and microphone of the handie-talkie cannot be used. To use the handset, the EXT.-OFF-INT. switch of the handie-talkie must be set to EXT. Before the handset is used, make sure that the handie-talkie is in good working order.

Operation	Procedure
To receive	<p>1. Plug the handset plug into the handset connector (fig. 9) on the handie-talkie. Do not force the plug. The plug will fit correctly into the connector in only one way. Lock the plug in the connector by pressing down on the plug and turning slightly to the right.</p> <p>2. Screw the antenna into the whip antenna connector.</p> <p>3. Turn the AIR VALVE $\frac{1}{2}$ turn to the left.</p>

Operation	Procedure
	<p>4. Turn on the radio set by turning the EXT.-OFF-INT. switch to EXT.</p> <p>5. Wait a few seconds to let the tubes get warm.</p> <p>6. Adjust or turn the VOLUME control to the right until a hissing noise is heard in the earphone of the headset. The radio set is now in the <i>receive</i> condition.</p>
To send	<p>7. Listen in earphone of handset to make sure that no one else is on the air.</p> <p>8. Press the push-to-talk switch of the handset. Wait a few seconds; the hissing noise will disappear.</p> <p>9. When the hissing noise disappears, talk into the microphone of the handset. Speak clearly and in a normal tone with the lips close to the microphone.</p> <p>10. After calling the distant station, release the push-to-talk switch of the handset and wait for the voice signal from the other station or radio set. No received signal will be heard when the push-to-talk switch of the handset is pressed.</p> <p><i>Note.</i> If the earphone or microphone of the handie-talkie is defective, it may be possible to operate the handie-talkie with the handset. If this condition exists, notify the repairman.</p>
To turn off radio set	<p>11. Turn EXT.-OFF-INT. switch to OFF.</p> <p>12. Turn AIR VALVE to the right until it is fingertight.</p>

16. Removal and Installation of Battery BA-270/U (figs. 17 and 18)

a. Removal.

- (1) Remove the antenna from the stored position.
- (2) Open the four latches (two on each side) of the case of the handie-talkie; and open (pull apart) the two-piece case.
- (3) Open the retaining arm (A, fig. 17). In the closed position, the retaining arm locks the battery plug in place.
- (4) Pull out the battery plug from the battery socket (B, fig. 18).

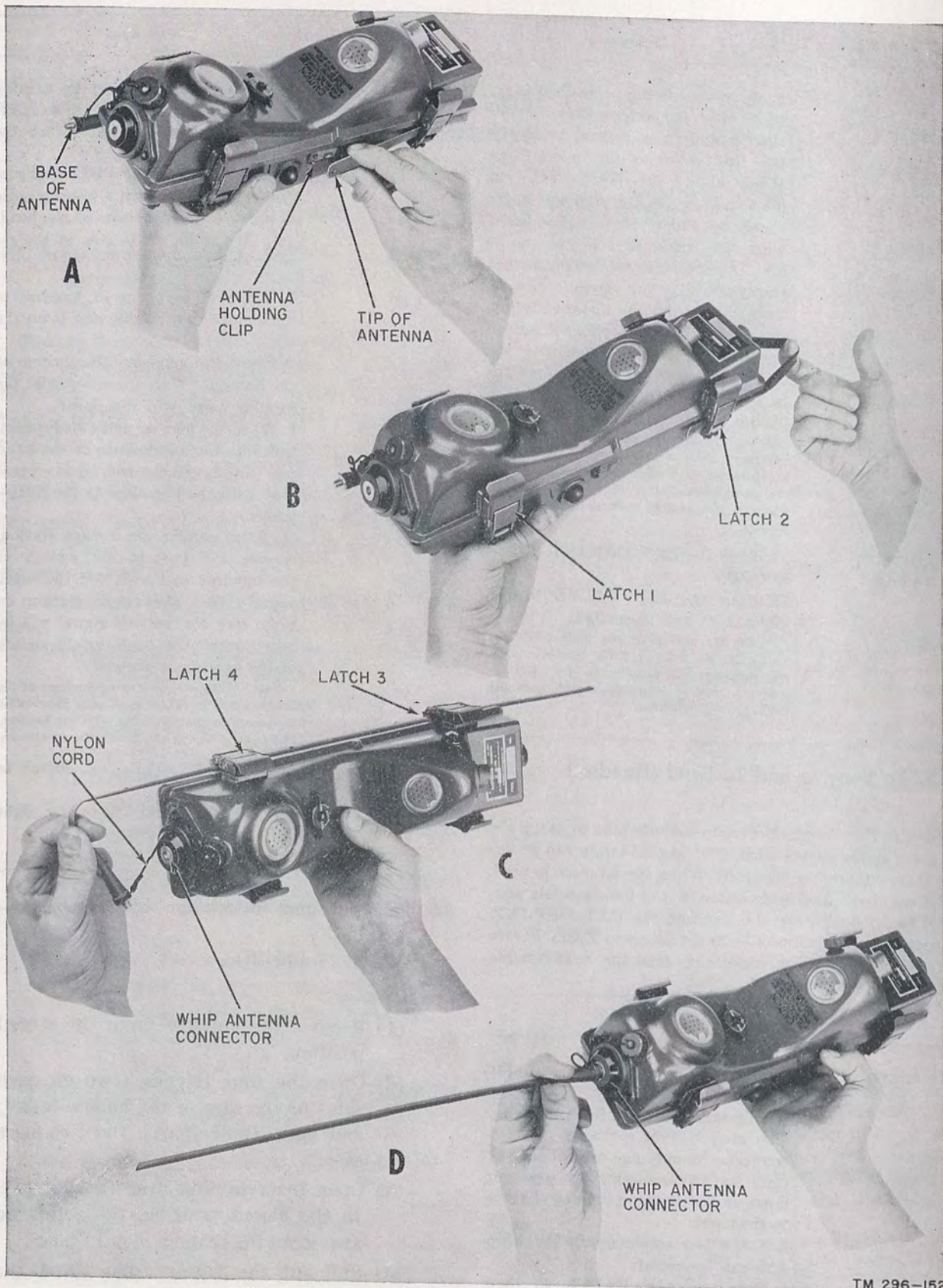


Figure 14. Radio Set AN/PRC-6, installation of antenna.

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RADIO RECEIVER-TRANSMITTER
(HANDIE-TALKIE)

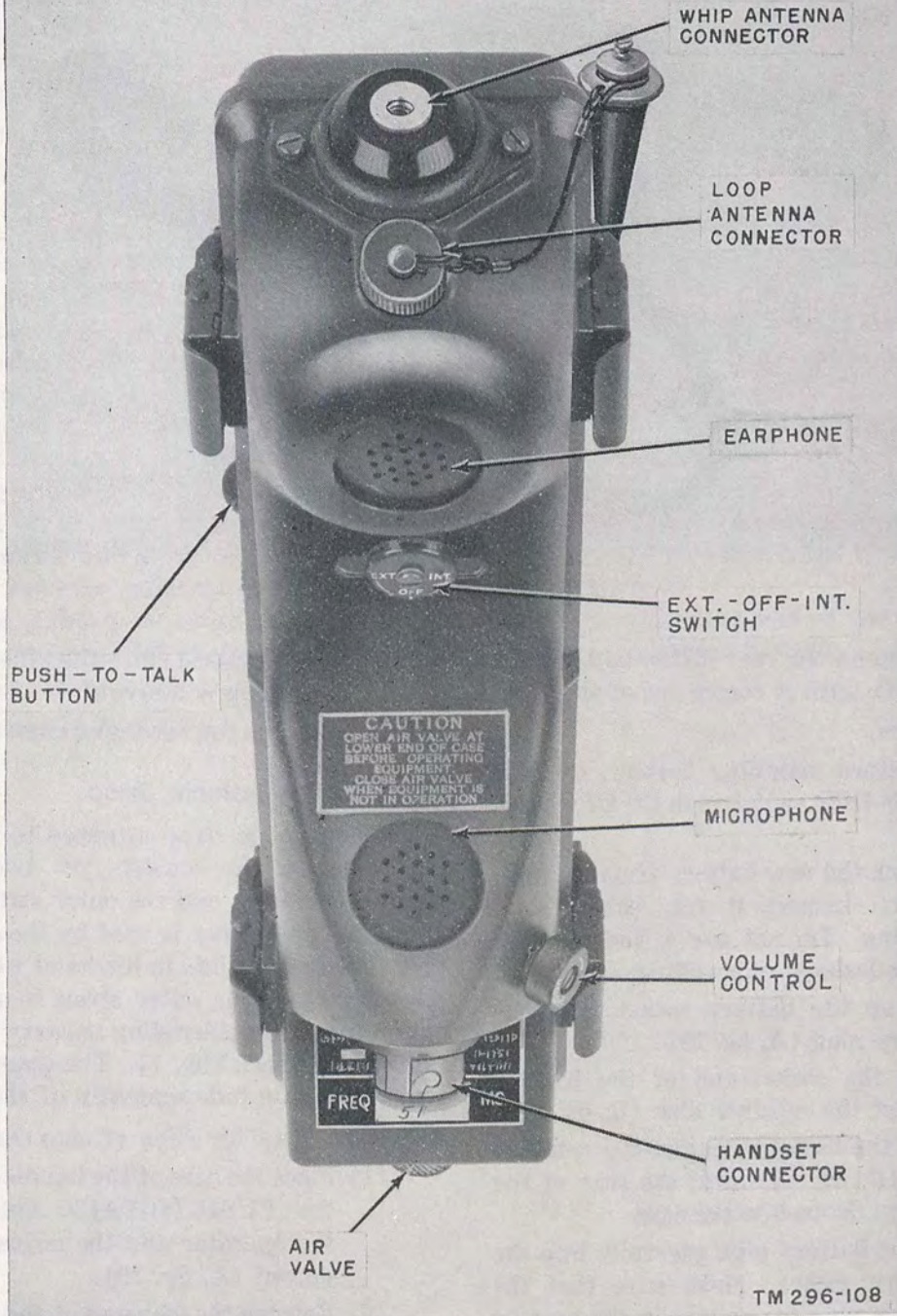


Figure 15. Radio Set AN/PRC-6, controls and connectors.

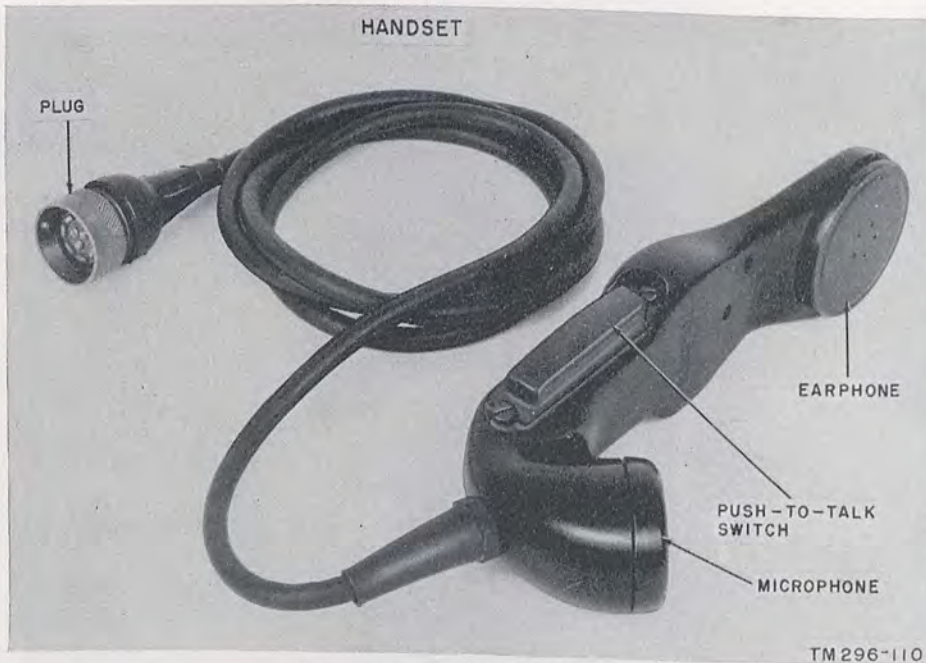


Figure 16. Handset H-33(*)/PT.

- (5) Pull up on the rear of the battery (C, fig. 18) until it comes out of the case.

b. Installation.

Caution: Before installing battery, be sure that EXT.-OFF-INT. switch is in the OFF position.

- (1) Unpack the new battery from the container. Inspect it for leakage and swelling. Do not use a battery that shows leakage or swelling.
- (2) Line up the battery socket with the battery plug (A, fig. 18).
- (3) Place the socket end of the battery against the retainer disc (B, fig. 18).
- (4) Push the battery against the retainer disc (B, fig. 18) until the rear of the battery drops into the case.
- (5) Fit the battery plug carefully into the battery socket. Make sure that the battery plug fits snugly in the battery socket.
- (6) Hold the battery plug with the left hand, and slowly close, with the right hand (C, fig. 18), the retaining arm so that it locks the battery plug in place.

Caution: Make sure that the battery plug does not turn when the retaining

arm is closed since the pins of the battery plug will break.

- (7) Replace the cover and close the latches.

17. Use of Adjustable Strap

The adjustable strap attached to the case of the handie-talkie consists of two separate straps: the inner and the outer straps (A, fig. 19). The inner strap is used by the operator to hold the handie-talkie in his hand while operating (fig. 22). The outer strap is used by the operator as a shoulder sling to carry the handie-talkie on his back (fig. 1). The inner and outer straps function independently of each other.

a. Making Shoulder Sling (Using Outer Strap).

- (1) Place the case of the handie-talkie with the PUSH-TO-TALK button facing the operator and the adjustable strap on top (A, fig. 19).
- (2) Remove the loop end of the outer strap from the outer movable buckle (B, fig. 19).
- (3) Place the loop end of the outer strap to the left of strap guide 1, and pull up the outer strap as far as it will go (C and D, fig. 19). The outer strap can now be used as a shoulder sling.

- (4) If a larger shoulder sling or loop is desired, move the outer movable buckle to the left on the outer strap by adjusting the buckle and the strap together (E, fig. 19). Pull up on the outer strap (F, fig. 19).

b. Returning Outer Strap to Stored Position.

- (1) Place the case of the handie-talkie with the PUSH-TO-TALK button facing the operator and the adjustable strap on top (A, fig. 20).
- (2) Pull the loop end of the outer strap through strap guide 1 and place the loop end of the outer strap to the left of strap guide 1. (The loop end of the outer strap is shown to the left of strap guide 1 in B, figure 20.)
- (3) Move the outer movable buckle to the right on the outer strap by adjusting the buckle and strap together (B, fig. 20), until the outer movable buckle is to the right of the strap holder.
- (4) Pull the loop end of the outer strap through strap guide 1 (C, fig. 20).

- (5) Place the loop end of the outer strap in the outer movable buckle (D, fig. 19).

Note. Remove the slack, if necessary, by adjusting the outer movable buckle.

- (6) The adjustable strap is now in the stored position.

c. Adjustment of Inner Strap.

- (1) Place the case of the handie-talkie with the PUSH-TO-TALK button facing the operator and the adjustable strap on top.
- (2) Remove the loop end of the outer strap from the outer movable buckle (A, fig. 21).
- (3) Pull away the outer strap from case (B, fig. 21).
- (4) Move the inner movable buckle to the left to tighten the inner strap, and to the right to loosen the inner strap (C, fig. 21).
- (5) Place the loop end of the outer strap in the outer movable buckle (D, fig. 21).

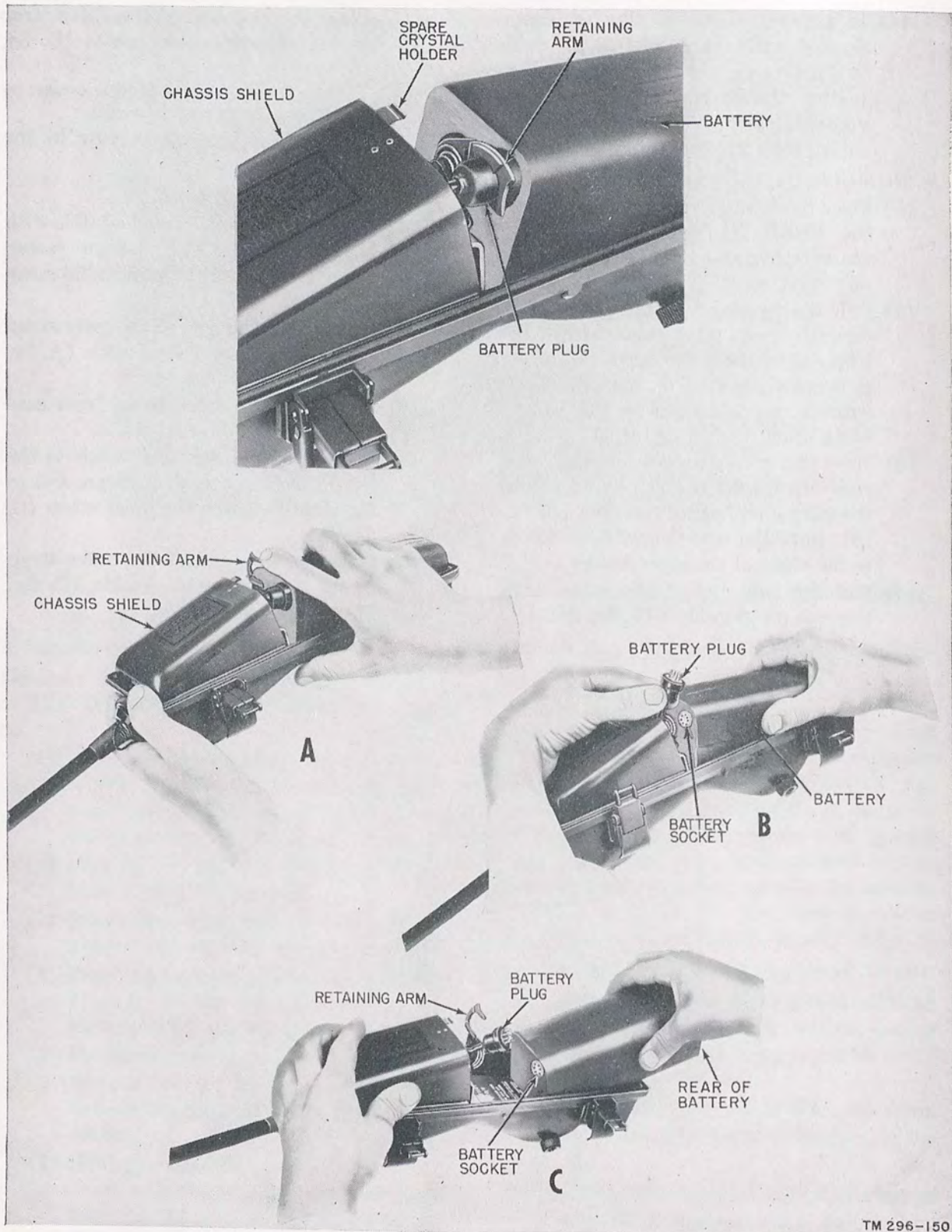


Figure 17. Removal of Battery BA-270/U.

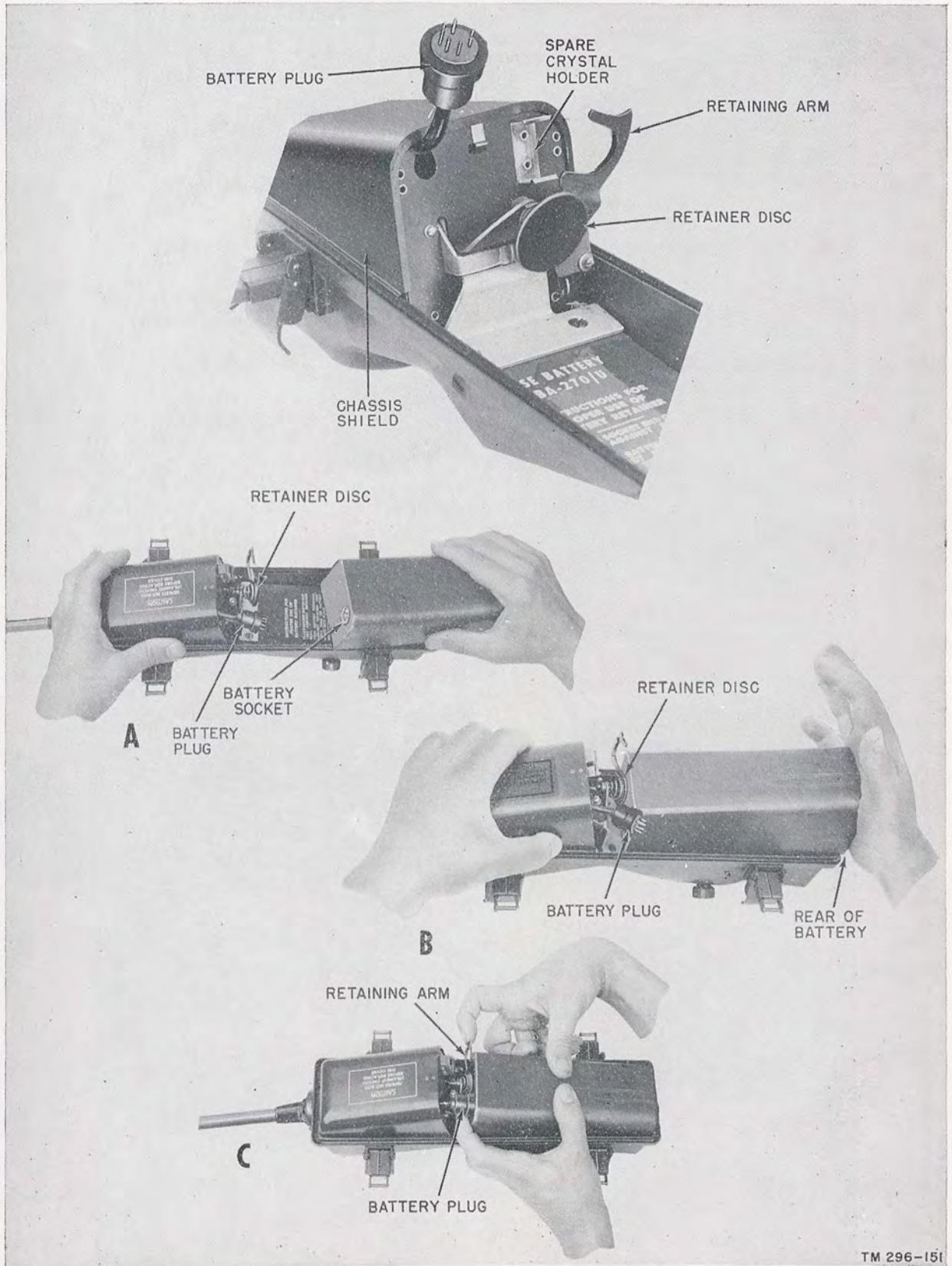
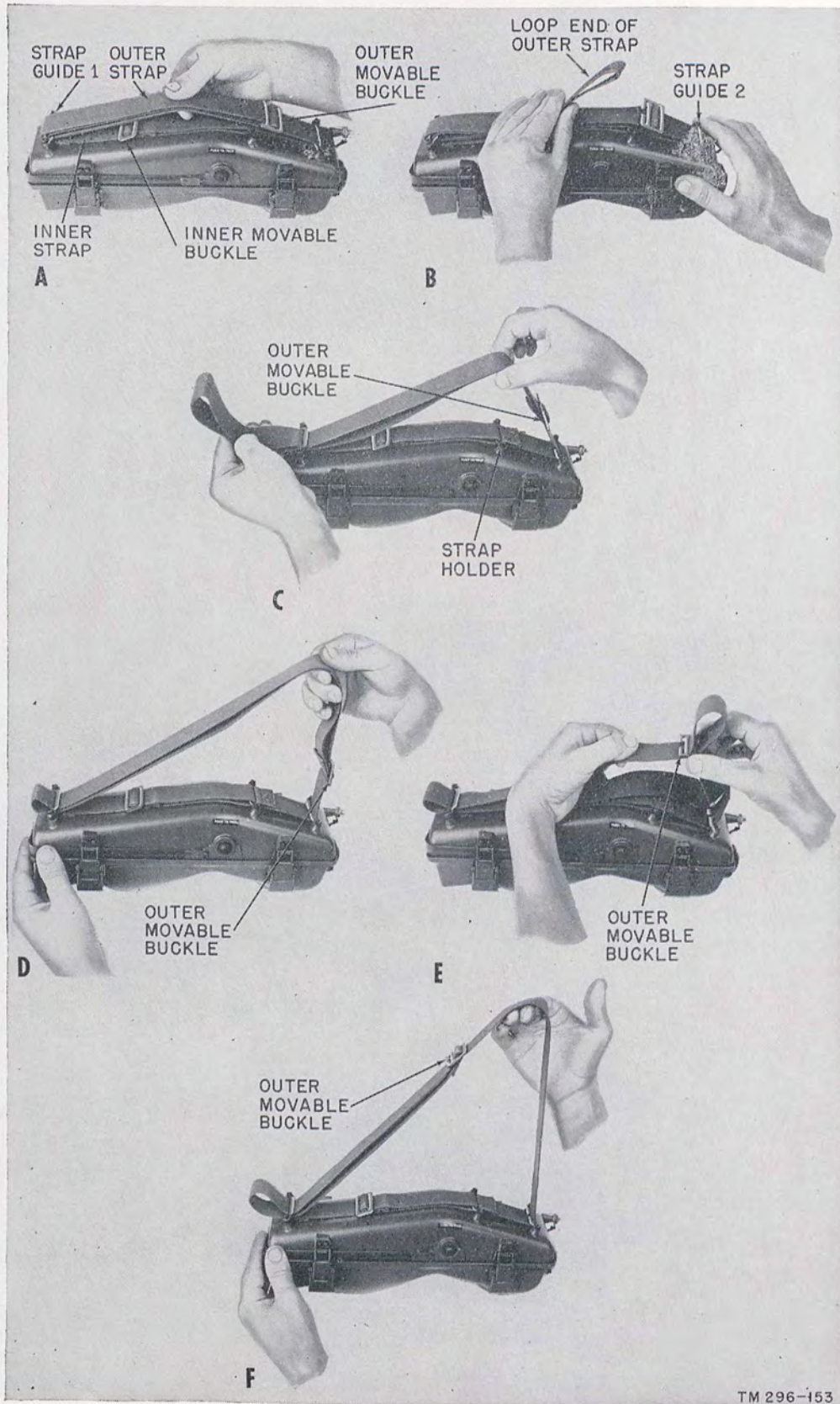
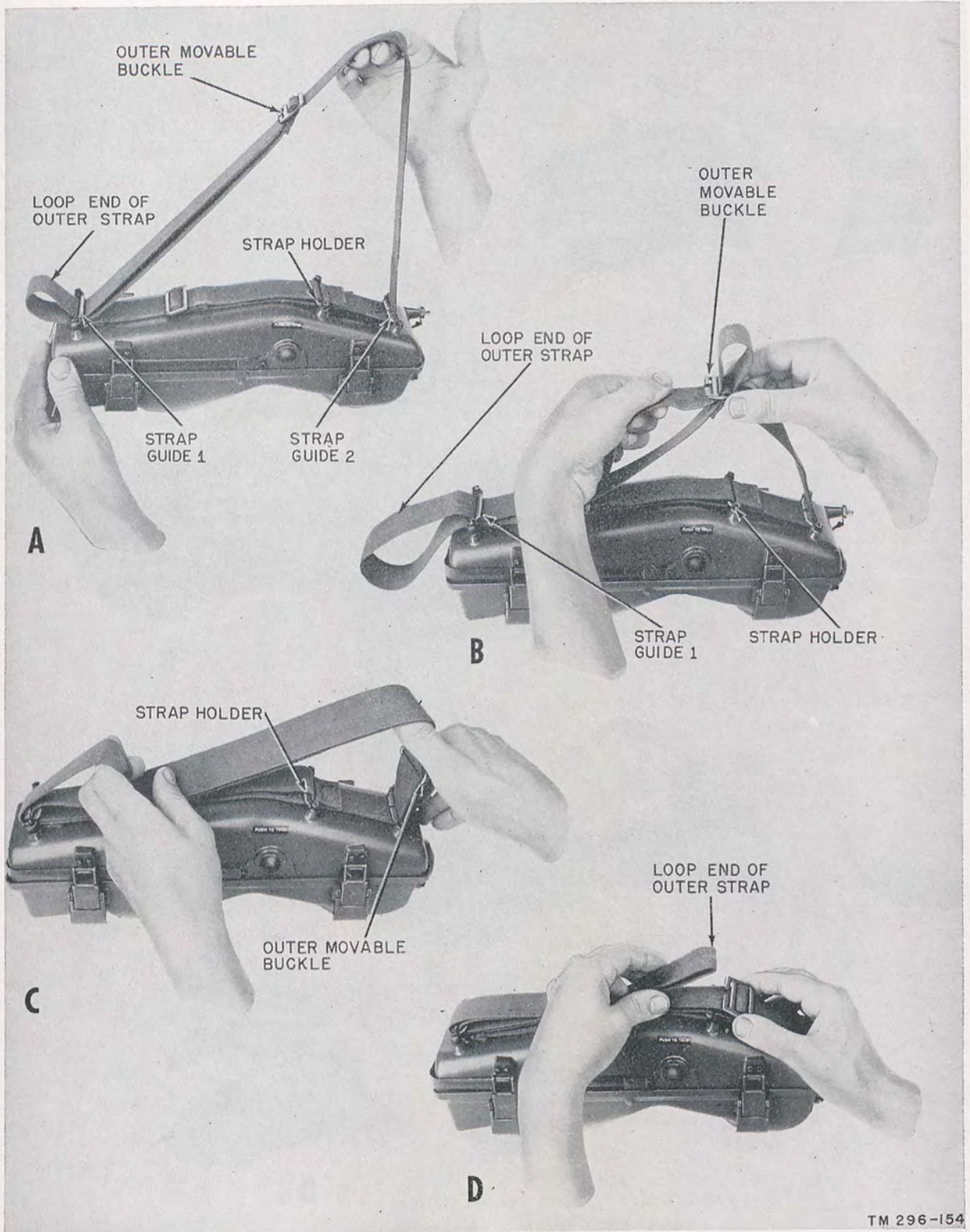


Figure 18. Installation of Battery BA-270/U.



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Figure 19. Making a shoulder strap.



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Figure 20. Returning outer strap to stored position.

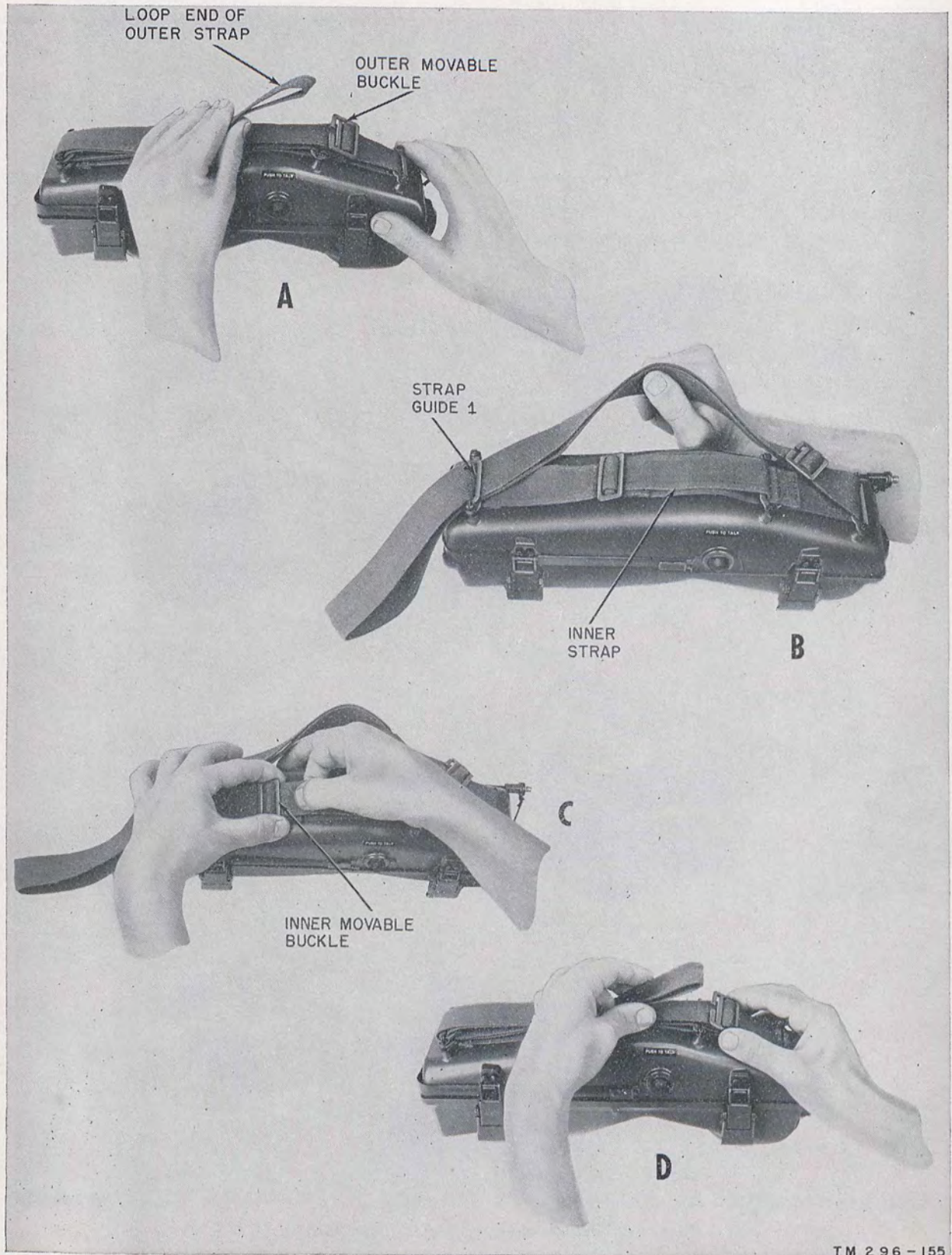
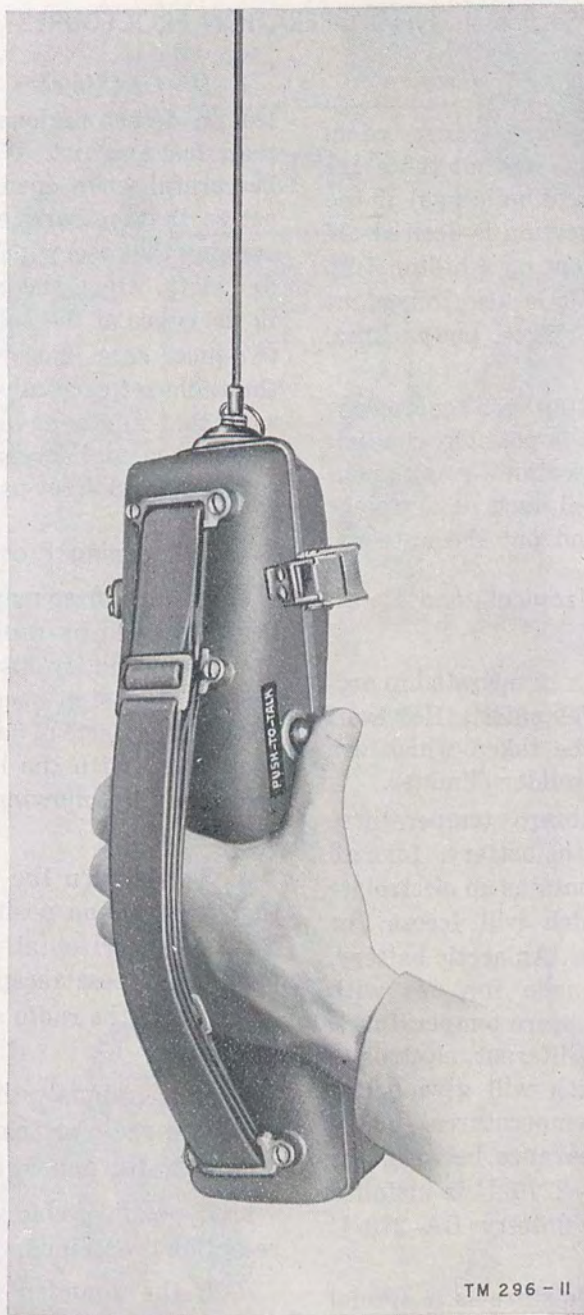


Figure 21. Adjustment of inner strap.



TM 296 - II

Figure 22. Use of inner strap to support radio set by hand.

Section II. FIELD OPERATION PROCEDURES

18. Siting and Camouflage

a. For the best reception and transmission, place or locate the radio sets so that there are no obstacles (such as hills and buildings) in the paths over which communication is desired. If possible, locate the equipment on a hilltop (fig. 23) or other high place. It is also important to stay away from steel bridges, power lines, hospitals, or power units.

b. In addition to locating the equipment where good communication is possible, concealment from the enemy is important. Any camouflage materials that are used must be dry since moist materials will ground out the antenna.

19. Operation in Arctic, Tropical, and Desert Climates

Radio Set AN/PRC-6 can be operated in arctic, tropical, and desert climates. However, certain precautions must be taken which are not normally necessary in milder climates.

a. Arctic Climates. Subzero temperatures will affect the efficiency of the battery. Like all dry batteries, BA-270/U contains an electrolyte in the form of paste which will freeze (or solidify) in subzero weather. An arctic battery, Battery BA-2270/U, is made for use with Radio Set AN/PRC-6 in subzero temperatures. This battery contains a different electrolyte (also in paste form) which will give better performance in subzero temperatures. There are no differences in appearance between the two batteries. Battery BA-2270/U is installed and removed exactly like Battery BA-270/U (par. 16).

b. Tropical Climates. Moisture is a special problem in tropical climates. Keep the equipment dry. Do not leave it on the ground. When not using the radio set, wrap it in dry cloth or paper.

c. Desert Climates. Sand is the special problem in desert regions, causing more difficulty than dust and dirt. When changing the battery, be careful when opening the case of the radio set so that no sand enters the inside. Before opening the case, wipe the radio set with a clean dry cloth. Open the case, and remove all sand in the edges of the rubber gasket that seals the two-piece case. Before closing the case, shake the radio set carefully to remove any grains of sand that might have fallen inside. When the radio set is not being used, it should be wrapped in clean dry cloth or paper.

20. Antijamming Procedure

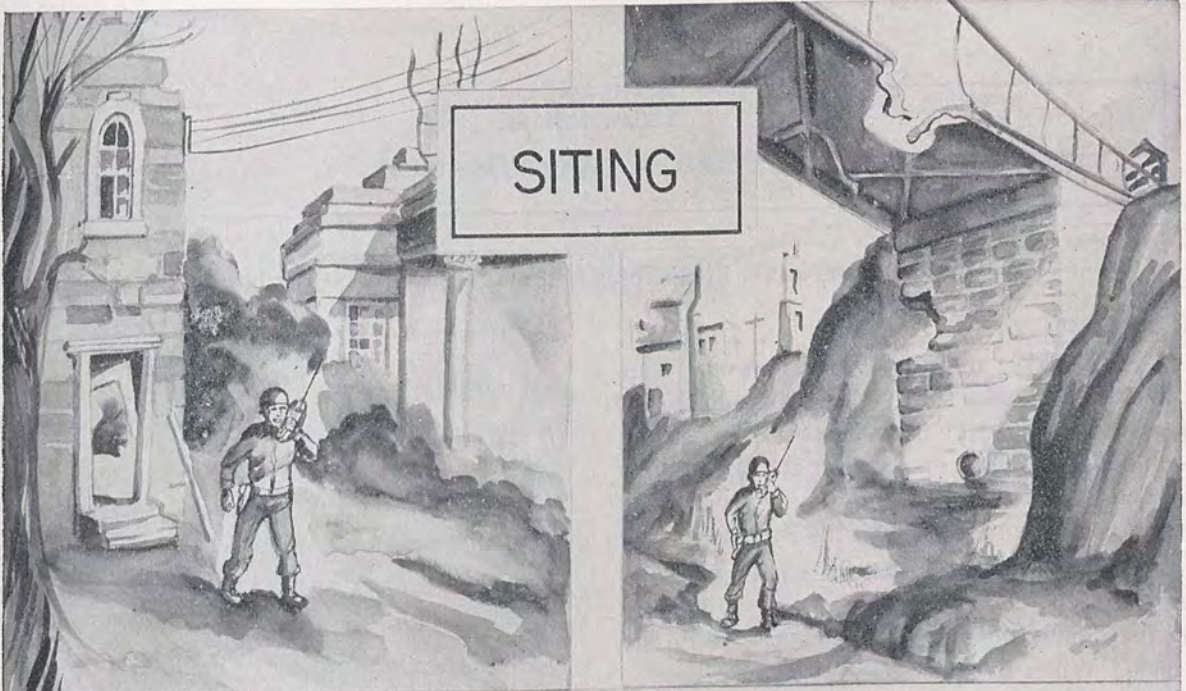
When it is first noticed that the radio set is being jammed by radio interference, the operator should notify his immediate superior officer. Do not stop operating the radio set. To reduce the effects of jamming so that the signal is received with the least amount of interference, use the following procedure, in the order given:

a. Slowly turn the radio set in the hand so that the antenna position changes from a vertical to a horizontal position. Listen for the position of best reception while this is being done. Keep the radio set in the position of best reception.

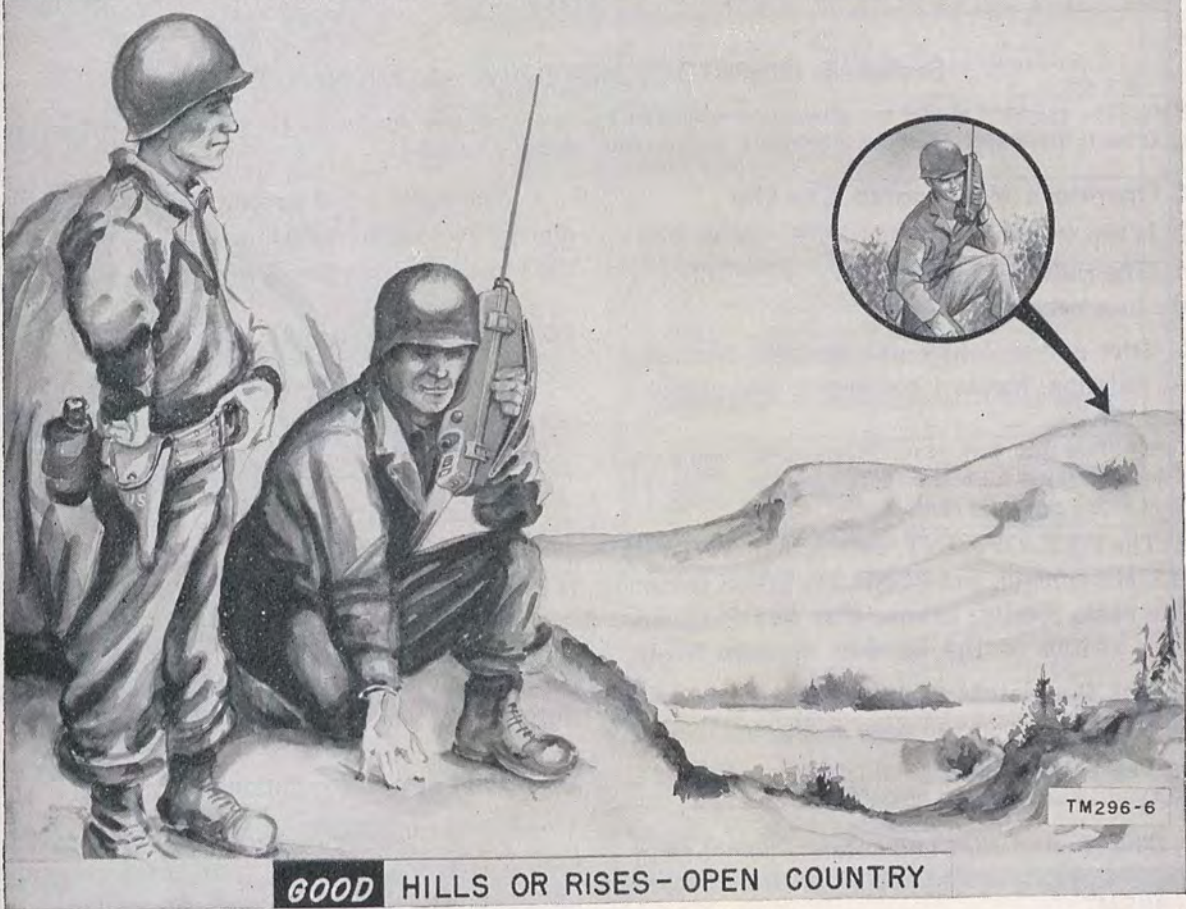
b. If the signal still cannot be understood, place the radio set close to the body and turn around to the point of best reception.

c. If possible, change the location until best reception is obtained.

d. If the jamming interference is so strong that communication is impossible, notify your immediate superior officer. Keep repeating the above procedure until an intelligible signal is received.



BAD NEAR BUILDINGS, TREES, HIGH TENSION LINES, STEEL CONSTRUCTION



GOOD HILLS OR RISES - OPEN COUNTRY

TM296-6

Figure 23. Siting Radio Set AN/PRC-6.

CHAPTER 4

PREVENTIVE MAINTENANCE

Section I. PREVENTIVE MAINTENANCE FOR RADIO SET AN/PRC-6

21. General

a. Preventive maintenance is work performed on the radio set to keep it in good working order. Preventive maintenance differs from trouble shooting or repair since its object is to *prevent* troubles from occurring rather than to *correct* troubles that exist in the radio set.

b. To keep the radio set in good operating condition, it should be checked at regular intervals, depending on how often the radio set is used. When in field use, day-by-day care is necessary to insure that the radio set is not neglected or abused and that it is kept cleaned.

22. Echelons of Preventive Maintenance

For Radio Set AN/PRC-6, preventive maintenance is done by both first and second echelon maintenance men. First echelon maintenance is performed by the operator (par. 23); and second echelon maintenance is performed by the organizational repairman (par. 26). The operator must not attempt to perform second echelon maintenance because more harm than good can result. *Second echelon maintenance must be performed only by an authorized repairman.*

Section II. OPERATOR'S PREVENTIVE MAINTENANCE

Note. The operator should not attempt to make any repairs or replace any parts other than the battery (par. 16). If parts are suspected of being defective, notify an authorized repairman.

23. Operator's Maintenance Checklist

It is the operator's responsibility to see that:

a. The radio set has a battery, whip antenna, and a handset.

b. Dirt and moisture are removed from the case, antenna, handset connector, and antenna connector.

Note. Since dirt may cause failure of the radio set, the operator must keep the radio set clean. This can be done with a clean dry cloth.

c. The EXT.-OFF-INT. switch, AIR VALVE, VOLUME control, and PUSH-TO-TALK button of the radio receiver-transmitter and the push-to-talk switch of the handset operate freely.

d. The four latches on the sides of the case of the radio set open and close easily.

e. The battery is in good condition (par. 14, step 6).

f. The handset cord and antenna do not show signs of kinks.

g. The adjustable strap is not torn or frayed.

h. The radio set is tuned to the assigned frequency by communicating with a radio set of the same operating frequency.

24. Operator's Precautions

The operator *must not*:

a. Drop or handle set roughly.

b. Tinker with the inside of set.

c. Attempt to replace tubes.

d. Attempt to replace any part other than the battery.

e. Remove the operating or spare crystal.

f. Write on the card on the inside of the housing (fig. 3); this is used by the repairman.

25. Use of Preventive Maintenance Form

a. DA Form 11-238 (fig. 24) is a check list used by the operator in performing preventive maintenance. It is a general form which applies to most radio equipments. Instructions for the

OPERATOR FIRST ECHELON MAINTENANCE CHECK LIST FOR SIGNAL CORPS EQUIPMENT
RADIO COMMUNICATION, DIRECTION FINDING, CARRIER, RADAR

INSTRUCTIONS: See other side

EQUIPMENT NOMENCLATURE

EQUIPMENT SERIAL NO.

LEGEND FOR MARKING CONDITIONS: ✓ Satisfactory; X Adjustment, repair or replacement required; (X) Defect corrected.
 NOTE: Strike out items not applicable.

DAILY

NO.	ITEM	CONDITION						
		S	M	T	W	T	F	S
1	COMPLETENESS AND GENERAL CONDITION OF EQUIPMENT (receiver, transmitter, carrying cases, wire and cable, microphones, tubes, spare parts, technical manuals and accessories). PAR. 23 g							
2	LOCATION AND INSTALLATION SUITABLE FOR NORMAL OPERATION.							
3	CLEAN DIRT AND MOISTURE FROM ANTENNA, MICROPHONE, HEADSETS, CHESTSETS, KEYS, JACKS, PLUGS, TELEPHONES, CARRYING BAGS, COMPONENT PANELS. PAR. 23 b							
4	INSPECT SEATING OF READILY ACCESSIBLE "PLUCK-OUT" ITEMS: TUBES, LAMPS, CRYSTALS, FUSES, CONNECTORS, VIBRATORS, PLUG-IN COILS AND RESISTORS.							
5	INSPECT CONTROLS FOR BINDING, SCRAPING, EXCESSIVE LOOSENESS, WORN OR CHIPPED GEARS, MISALIGNMENT, POSITIVE ACTION. PAR. 23 c							
6	CHECK FOR NORMAL OPERATION. PAR. 23 h							

WEEKLY

NO.	ITEM	CONDI- TION	NO.	ITEM	CONDI- TION
8	INSPECT CASES, MOUNTINGS, ANTENNAS, TOWERS, AND EXPOSED METAL SURFACES, FOR RUST, CORROSION, AND MOISTURE.		14	CLEAN AIR FILTERS, BRASS NAME PLATES, DIAL AND METER WINDOWS, JEWEL ASSEMBLIES.	
9	INSPECT CORD, CABLE, WIRE, AND SHOCK MOUNTS FOR CUTS, BREAKS, FRAYING, DETERIORATION, KINKS, AND STRAIN. PAR. 23 f		15	INSPECT METERS FOR DAMAGED GLASS AND CASES.	
10	INSPECT ANTENNA FOR ECCENTRICITIES, CORROSION, LOOSE FIT, DAMAGED INSULATORS AND REFLECTORS.		16	INSPECT SHELTERS AND COVERS FOR ADEQUACY OF WEATHER-PROOFING.	
11	INSPECT CANVAS ITEMS, LEATHER, AND CABLING FOR MILDEW, TEARS, AND FRAYING. PAR. 23 g		17	CHECK ANTENNA GUY WIRES FOR LOOSENESS AND PROPER TENSION.	
12	INSPECT FOR LOOSENESS OF ACCESSIBLE ITEMS: SWITCHES, KNOBS, JACKS, CONNECTORS, ELECTRICAL TRANSFORMERS, POWER-STATS, RELAYS, SELSYNS, MOTORS, BLOWERS, CAPACITORS, GENERATORS, AND PILOT LIGHT ASSEMBLIES.		18	CHECK TERMINAL BOX COVERS FOR CRACKS, LEAKS, DAMAGED GASKETS, DIRT AND GREASE.	

19 IF DEFICIENCIES NOTED ARE NOT CORRECTED DURING INSPECTION, INDICATE ACTION TAKEN FOR CORRECTION.

DA FORM 11-238
 1 MAY 51

REPLACES DA FORM 419, -1 DEC 50, WHICH IS OBSOLETE.

TM296-160

Figure 24. DA Form 11-238.

use of the form appear on the reverse side of the form.

b. The items of the form that apply to Radio Set AN/PRC-6 are shown circled in figure 24.

Paragraph references in the ITEM column are to the paragraphs in this manual that contain the information which applies to Radio Set AN/PRC-6.

Section III. ORGANIZATIONAL PREVENTIVE MAINTENANCE

Note 1. The organizational maintenance man must not remove the receiver-transmitter chassis (fig. 3) from the case of the handie-talkie. The receiver-transmitter chassis must be removed only by an authorized field maintenance repairman.

Note 2. Organizational level preventive maintenance (second echelon) must be performed only by an authorized repairman.

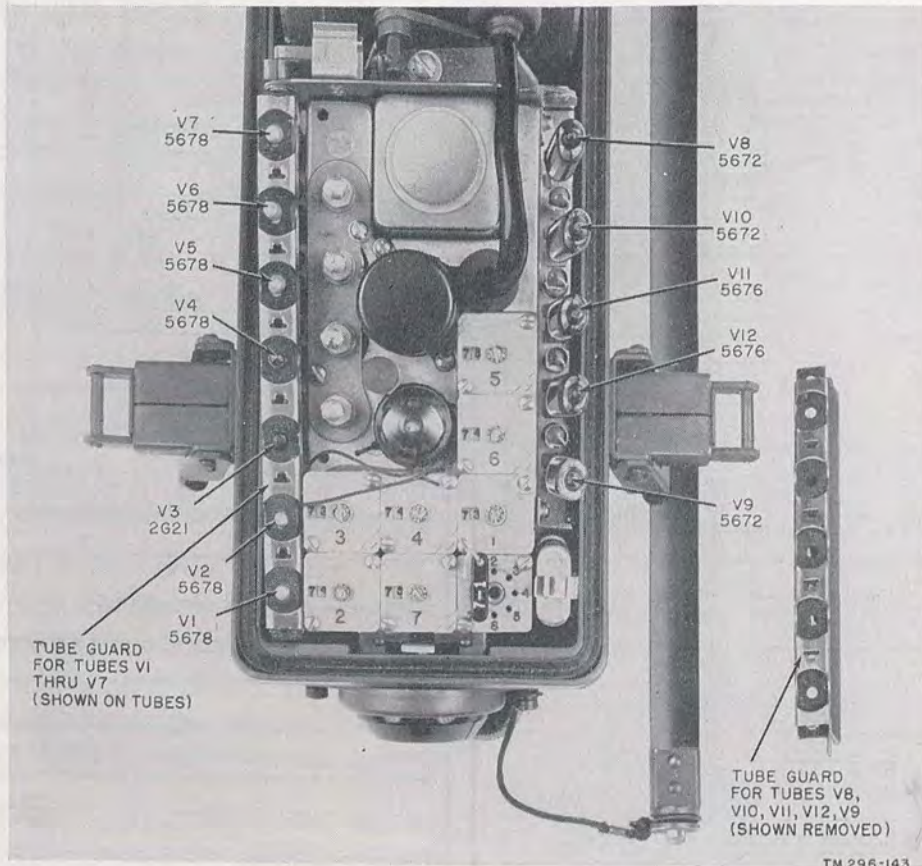


Figure 25. The guard removed.

26. Organizational Maintenance Procedure

a. Perform the operator's preventive maintenance (par. 23).

b. Open the case of the handie-talkie and remove the chassis shield by pulling it upward.

c. Check to see that the receiver-transmitter chassis is free from dirt and moisture.

d. Check for broken tubes or cracked glass on tubes. If it is necessary to replace tubes, follow instructions given in paragraph 30.

e. Check to see that the tubes fit snugly in their sockets. The firmness of tubes is determined by pressing down the tubes in the sockets.

f. Check to see that the tube guards (fig. 25) are on the tubes.

g. Check to see that the operating crystal fits snugly in its socket.

h. Check to see that the jumper plug 7-1 is properly plugged into the test socket (fig. 10).

i. Check to see that the filament switch (fig. 10) is pushed down as far as it will go.

SECOND AND THIRD ECHELON MAINTENANCE CHECK LIST FOR SIGNAL CORPS EQUIPMENT
RADIO COMMUNICATION, DIRECTION FINDING, CARRIER, RADAR

INSTRUCTIONS: See other side

EQUIPMENT NOMENCLATURE

EQUIPMENT SERIAL NO.

LEGEND FOR MARKING CONDITIONS: ✓ Satisfactory; X Adjustment, repair or replacement required; ⊕ Defect corrected;
 NOTE: Strike out items not applicable.

NO	ITEM	NO.	ITEM
1	COMPLETENESS AND GENERAL CONDITION OF EQUIPMENT (receiver, transmitter, carrying cases, wire and cable, microphones, tubes, spare parts, technical manuals and accessories). PAR. 23a	19	ELECTRON TUBES - INSPECT FOR LOOSE ENVELOPES, CAP CONNECTORS, CRACKED SOCKETS; INSUFFICIENT SOCKET SPRING TENSION; CLEAN DUST AND DIRT CAREFULLY; CHECK EMISSION OF RECEIVER TYPE TUBES. PAR. 26 d,e,f,g
2	LOCATION AND INSTALLATION SUITABLE FOR NORMAL OPERATION.	20	INSPECT FILM CUT-OUTS FOR LOOSE PARTS, DIRT, MISALIGNMENT AND CORROSION.
3	CLEAN DIRT AND MOISTURE FROM ANTENNA, MICROPHONE, HEADSETS, CHESTSETS, KEYS, JACKS, PLUGS, TELEPHONES, CARRYING BAGS, COMPONENT PANELS. PAR. 23b	21	INSPECT FIXED CAPACITORS FOR LEAKS, BULGES, AND DISCOLORATION.
4	INSPECT SEATING OF READILY ACCESSIBLE "PLUCK-OUT" ITEMS: TUBES, LAMPS, CRYSTALS, FUSES, CONNECTORS, VIBRATORS, PLUG-IN COILS AND RESISTORS. PAR. 26h	22	INSPECT RELAY AND CIRCUIT BREAKER ASSEMBLIES FOR LOOSE MOUNTINGS; BURNED, PITTED, CORRODED CONTACTS; MISALIGNMENT OF CONTACTS AND SPRINGS; INSUFFICIENT SPRING TENSION; BINDING OF PLUNGERS AND HINGE PARTS.
5	INSPECT CONTROLS FOR BINDING, SCRAPING, EXCESSIVE LOOSENESS, WORN OR CHIPPED GEARS, MISALIGNMENT, POSITIVE ACTION. PAR. 23c	23	INSPECT VARIABLE CAPACITORS FOR DIRT, MOISTURE, MISALIGNMENT OF PLATES, AND LOOSE MOUNTINGS.
6	CHECK FOR NORMAL OPERATION. PAR. 23h	24	INSPECT RESISTORS, BUSHINGS, AND INSULATORS, FOR CRACKS, CHIPPING, BLISTERING, DISCOLORATION AND MOISTURE.
7	CLEAN AND TIGHTEN EXTERIOR OF COMPONENTS AND CASES, RACK MOUNTS, SHOCK MOUNTS, ANTENNA MOUNTS, COAXIAL TRANSMISSION LINES, WAVE GUIDES, AND CABLE CONNECTIONS. PAR. 23d	25	INSPECT TERMINALS OF LARGE FIXED CAPACITORS AND RESISTORS FOR CORROSION, DIRT AND LOOSE CONTACTS.
8	INSPECT CASES, MOUNTINGS, ANTENNAS, TOWERS, AND EXPOSED METAL SURFACES, FOR RUST, CORROSION, AND MOISTURE.	26	CLEAN AND TIGHTEN SWITCHES, TERMINAL BLOCKS, BLOWERS, RELAY CASES, AND INTERIORS OF CHASSIS AND CABINETS NOT READILY ACCESSIBLE.
9	INSPECT CORD, CABLE, WIRE, AND SHOCK MOUNTS FOR CUTS, BREAKS, FRAYING, DETERIORATION, KINKS, AND STRAIN. PAR. 23f	27	INSPECT TERMINAL BLOCKS FOR LOOSE CONNECTIONS, CRACKS AND BREAKS. PAR. 26n
10	INSPECT ANTENNA FOR ECCENTRICITIES, CORROSION, LOOSE FIT, DAMAGED INSULATORS AND REFLECTORS.	28	CHECK SETTINGS OF ADJUSTABLE RELAYS.
11	INSPECT CANVAS ITEMS, LEATHER, AND CABLINS FOR MILDWEAR, TEARS, AND FRAYING. PAR. 23g	29	LUBRICATE EQUIPMENT IN ACCORDANCE WITH APPLICABLE DEPARTMENT OF THE ARMY LUBRICATION ORDER.
12	INSPECT FOR LOOSENESS OF ACCESSIBLE ITEMS: SWITCHES, KNOBS, JACKS, CONNECTORS, ELECTRICAL TRANSFORMERS, POWERSTATS, RELAYS, SELSYNS, MOTORS, BLOWERS, CAPACITORS, GENERATORS, AND PILOT LIGHT ASSEMBLIES.	30	INSPECT GENERATORS, AMPLIDYNES, DYNAMOTORS, FOR BRUSH WEAR, SPRING TENSION, ARCING, AND FITTING OF COMMUTATOR.
13	INSPECT STORAGE BATTERIES FOR DIRT, LOOSE TERMINALS, ELECTROLYTE LEVEL AND SPECIFIC GRAVITY, AND DAMAGED CASES. PAR. 23e	31	CLEAN AND TIGHTEN CONNECTIONS AND MOUNTINGS FOR TRANSFORMERS, CHOKES, POTENTIOMETERS, AND RHEOSTATS. PAR. 26m
14	CLEAN AIR FILTERS, BRASS NAME PLATES, DIAL AND METER WINDOWS, JEWEL ASSEMBLIES.	32	INSPECT TRANSFORMERS, CHOKES, POTENTIOMETERS, AND RHEOSTATS FOR OVERHEATING AND OIL-LEAKAGE.
15	INSPECT METERS FOR DAMAGED GLASS AND CASES.	33	BEFORE SHIPPING OR STORING - REMOVE BATTERIES.
16	INSPECT SHELTERS AND COVERS FOR ADEQUACY OF WEATHERPROOFING.	34	INSPECT CATHODE RAY TUBES FOR BURNED SCREEN SPOTS.
17	CHECK ANTENNA GUY WIRES FOR LOOSENESS AND PROPER TENSION.	35	INSPECT BATTERIES FOR SHORTS AND DEAD CELLS.
18	CHECK TERMINAL BOX COVERS FOR CRACKS, LEAKS, DAMAGED GASKETS, DIRT AND GREASE. PAR. 26c	36	INSPECT FOR LEAKING WATERPROOF GASKETS, WORN OR LOOSE PARTS.
		37	MOISTURE AND FUNGIPROOF.
38	IF DEFICIENCIES NOTED ARE NOT CORRECTED DURING INSPECTION, INDICATE ACTION TAKEN FOR CORRECTION.		

DA FORM 11-239
 1 MAY 51

REPLACES DA FORM 429, 1 DEC 50, WHICH IS OBSOLETE.

48-16-64202-1

TM296-161

Figure 26. DA Form 11-239.

j. Compare the number on each counter dial to the number indicated in the frequency calibration chart (fig. 3). The number on each counter dial should be within 8 of the number indicated in the frequency calibration chart (fig. 12). Refer to the example in paragraph 12*e*.

k. Place the chassis shield in place over the receiver-transmitter chassis.

l. Remove the battery (par. 16), and remove the battery card on the bottom of the battery compartment by loosening the two battery card screws (fig. 28).

m. Check to see that the screws on the terminal strip are tight.

n. Check to see that there are no broken wires leading to the terminal strip, volume control, or the handset connector (fig. 28).

Note. If it is necessary to solder any broken wires, use a hot soldering iron. Do not drop solder in the radio

set. Make a good soldered joint or connection. A poorly soldered connection is very difficult to locate as a source of trouble.

o. Install the battery (par. 16). Check to see that the battery plug fits snugly in the socket and that the battery plug and cable do not have any breaks or kinks.

p. Close the case of the handie-talkie.

27. Preventive Maintenance Form

DA Form 11-239 (fig. 26) is provided as a maintenance check list for the organizational repairman. It is a general form which applies to most radio equipments. Instructions for the use of the form are on the reverse side of the form. Circled items in figure 26 are applicable to Radio Set AN/PRC-6. Paragraph references in the ITEM column are to the paragraphs in this manual that contain the information which applies to Radio Set AN/PRC-6.

CHAPTER 5

TROUBLESHOOTING AT ORGANIZATIONAL LEVEL

Note. Instructions in this chapter are for authorized repairmen only.

28. General

Troubleshooting at organizational level must be performed by an authorized repairman. Troubleshooting at this level is limited to replacing tubes and making minor repairs. However, many faults can be located and *corrected* at this level. Preventive maintenance will keep these faults to a minimum.

29. Equipment Available at Organizational Level

a. Tool Equipment TE-41. This equipment contains the tools that are necessary for organizational maintenance: a screwdriver, soldering iron, solder, and diagonal cutting pliers.

b. Multimeter TS-297/U. Organizational maintenance can be performed without this meter, although its use will save time in determining whether the radio set can be repaired by an organizational repairman or must be repaired by a field maintenance repairman. Instructions for use are packed with the meter.

c. Electron Test Tube TV-7/U. Organizational maintenance can be performed without this tube tester, although its use is helpful, especially in determining whether or not replaced tubes should be discarded. Instructions for use are packed with the tube tester.

30. Tube Replacement

a. Changing Tubes. Tube failures are responsible for a large percentage of the faults that occur in the radio set. To determine whether the tube should be replaced, follow the operational troubleshooting test (par. 34a).

- (1) To change a tube, remove the tube guard (fig. 25). Press down one end of the tube guard until it is free of the catch; then press down on the other end of the guard and pull away from

the chassis. When putting a new tube in position, place red dot (fig. 27) on the tube, next to the red dot on the receiver-transmitter chassis. Press down on the tube to make sure that the tube fits snugly in its socket. After replacing the tube (or tubes), replace the tube guard.

- (2) When replacing a tube, determine whether or not to keep the old tube or the spares will become full of tubes whose condition is uncertain. Do not remove more than one tube from the radio set at a time. If a tube is suspected of being defective, remove it and replace it with a tube known to be good. Compare the operation or condition of the radio set before the tube was replaced with the operation of the radio set after the tube was replaced. If the condition of the radio set did not change after the tube was replaced, the tube that was removed was probably good. A tube tester may be used to determine the quality of the tube (*b* below).
- (3) There may be variations in the length of leads of spare tubes. Some tubes are issued with long leads, and others are issued with short leads. This can cause confusion. The correct lead length should be approximately $\frac{3}{8}$ inch (fig. 27). Cut the leads to the required length using diagonal cutting pliers. Do not pull on the leads while cutting them. Use sandpaper to remove burrs or roughness on ends of leads after cutting the leads.

b. Tube Checking. A tube tester may be used to determine if a tube is good. However, the

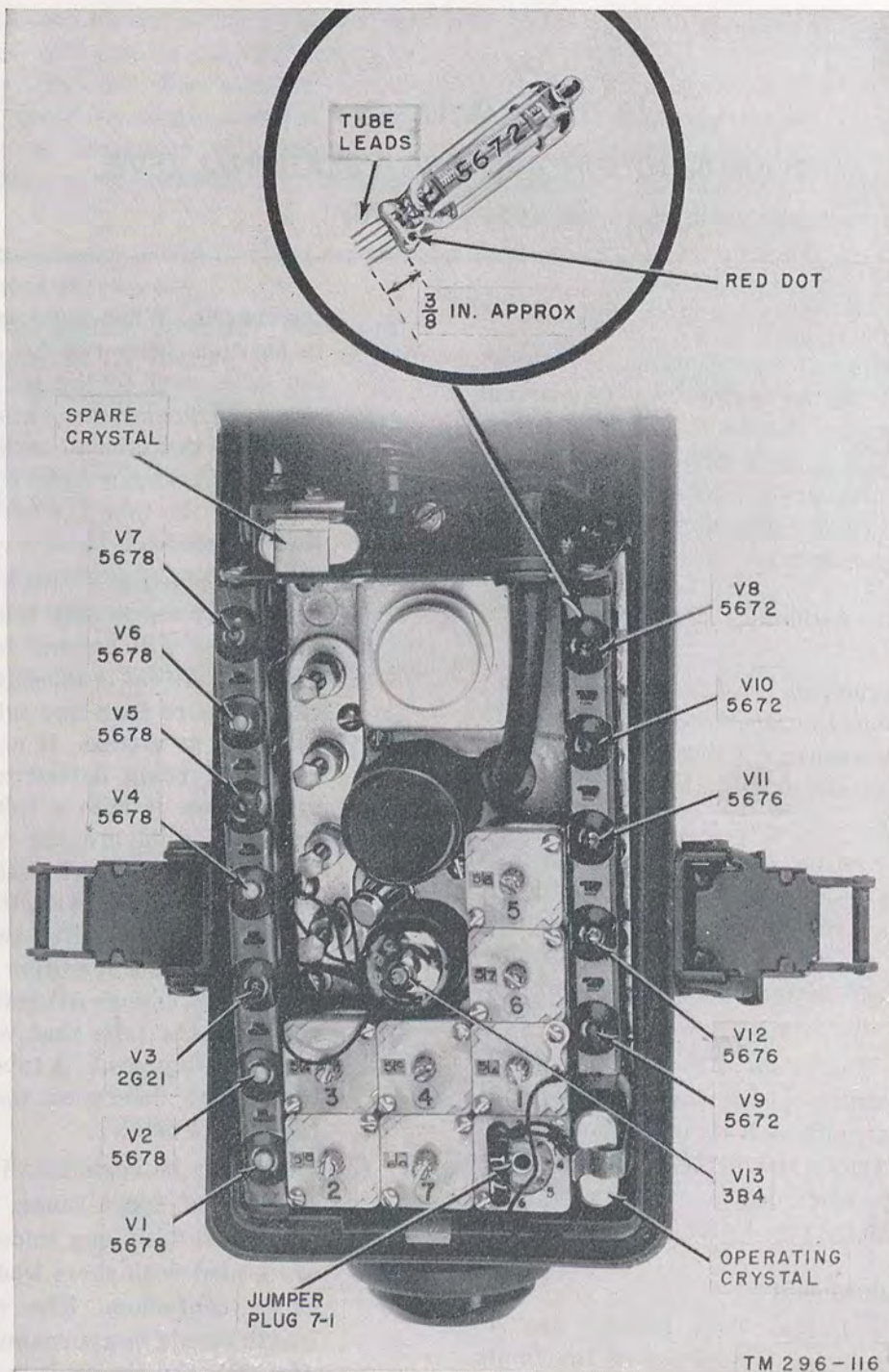


Figure 27. Tube location.

results obtained with a tube checker are not always conclusive; the conditions under which a tube is tested in a tube checker are not the same as those under which the tube operates in the set. For this reason, the best test to

determine the quality of a tube is to replace it with a tube known to be good. In many cases, it is quicker and more reliable to replace a tube in the radio set with one known to be good rather than to use the tube checker

31. Organizational Troubleshooting Procedure

The organizational troubleshooting procedure should be followed in the order given: visual inspection, resistance check at the battery plug, and operational troubleshooting test.

a. Visual Inspection (par. 32). This is an important part of the troubleshooting procedure. Many faults of the radio set can be located by a visual inspection. If the trouble is not located by visual inspection, perform the resistance check at battery plug.

b. Resistance Check at Battery Plug (par. 33). This check may help the organizational repairman decide whether the radio set should be turned in to a field maintenance repairman or whether further troubleshooting is necessary. Organizational troubleshooting can be performed without this check. If the radio set is not turned in to a field maintenance repairman, perform the operational troubleshooting test.

c. Operational Test (par. 34). This test gives the corrective measures to take for a given condition of the radio set. Follow the operational test in the order given. If the trouble is not corrected, turn in the radio set to a field maintenance repairman.

32. Visual Inspection

Check to see that:

a. The jumper plug 7-1 is inserted between holes 7 and 1 of the test socket (fig. 10).

b. The filament switch is pushed down (fig. 10).

c. The number on each counter dial is within 8 of the number indicated on the frequency calibration chart (fig. 12). Refer to the example in paragraph 12e.

d. All tubes are firmly seated in their sockets.

e. Any wires to the terminal strip (fig. 28), volume control, and handset connector are not broken.

Caution: If it is necessary to solder any connection, make sure that the soldering iron is hot. Do not drop solder into the radio set.

f. All the screws on the terminal strip (fig. 28) are tight.

g. The battery plug fits snugly in the battery socket.

33. Resistance Check at Battery Plug (fig. 29)

Use Multimeter TS-297/U to measure the resistance between each pin of the battery plug and the receiver-transmitter chassis ground (fig. 29). Use only high resistance scale of multimeter. Turn the EXT.-OFF-INT. switch to INT.

Measure between	Normal reading on meter	Correction
Pin 1 and chassis ground. Pin 5 and chassis ground.	0 ohm.	If reading is more than 1 ohm, check to see that screws on terminal strip (fig. 28) are tight, and no wires leading to terminal strip are broken. If reading is not less than 1 ohm, after checking battery strip, turn in radio set for repair.
Pin 4 and chassis ground. Pin 6 and chassis ground. Pin 7 and chassis ground.	Above 100,000 ohms.	If reading is less than 100,000 ohms, turn in radio set for repair.
Pin 2 and chassis ground.	1 to 5 ohms.	If reading is greater than 5 ohms, turn in radio set for repair.
Pin 3 and chassis ground.	0 ohm.	If reading is more than 1 ohm, turn in radio set for repair.

34. Operational Troubleshooting Test

The operational troubleshooting procedure must be followed in the order given:

a. Receiver Trouble. Install a whip antenna (par. 13). Open the AIR VALVE, and turn the EXT.-OFF-INT. switch to INT. Turn the VOLUME control all the way to the right. Listen in earphone of handie-talkie:

(1) If background (hissing) noise is not heard, perform the following, in the order given until a hissing noise is heard:

(a) Check to see that the battery plug fits snugly in the battery socket (fig. 16).

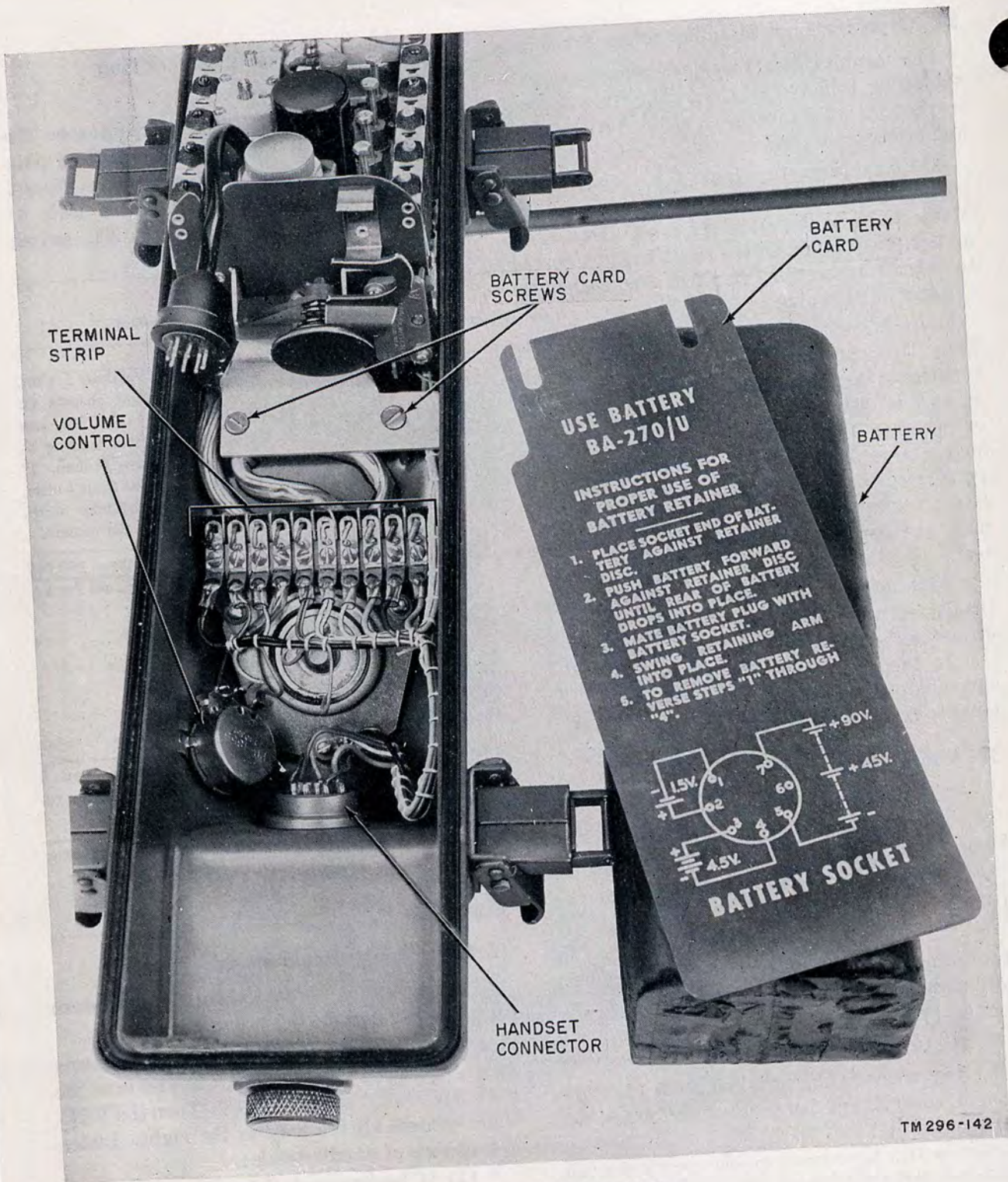
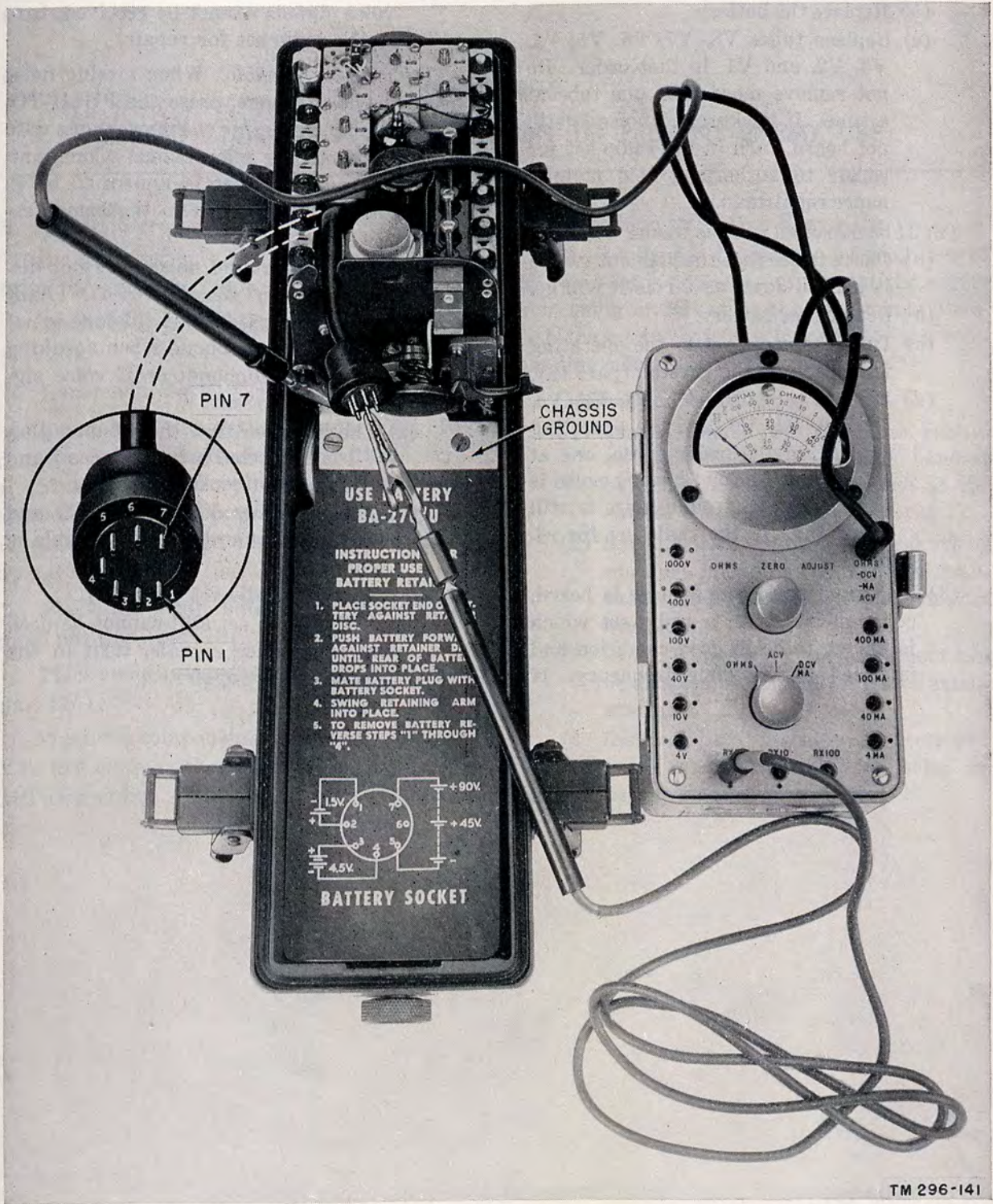


Figure 28. Terminal strip location.



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Figure 29. Method of taking battery plug measurements.

- (b) Replace the battery.
 - (c) Replace tubes V8, V7, V6, V5, V4, V3, V2, and V1, in that order. Do not remove more than one tube at a time. If background noise is still not heard, turn in the radio set for repair to authorized field maintenance repairman.
- (2) If background noise is weak :
- (a) Check to see that the filament switch is pushed down as far as it will go.
 - (b) Replace the battery.
 - (c) Tune the radio set to the operating frequency of the crystal (par. 12).
 - (d) Replace tubes V8, V7, V6, V5, V4, V3, V2, V1, V9, and the operating crystal, in the order given, one at a time, until a loud hissing noise is heard. If background noise is still weak, turn in the radio set for repairs.
- (3) If normal background noise is heard, communicate with a radio set which is known to be in good condition and is tuned to the same frequency. If

voice signals cannot be received, turn in the radio set for repair.

b. Transmitter Trouble. When hissing noise is heard in the earphone, press the PUSH-TO-TALK button and talk into the microphone with your lips close to the microphone. Communicate with a radio set that is known to be in good condition and is tuned to the same frequency.

- (1) If the background noise does not disappear when the PUSH-TO-TALK button is pressed; or if sidetone is not heard in the earphone when speaking into the microphone; or if voice signals cannot be sent:
- (a) Check to see that the jumper plug 7-1 is connected between holes 7 and 1 of the test socket (fig. 10).
 - (b) Replace tubes V10, V11, V12, and V13, in that order, until trouble is corrected.
 - (c) Tune the radio set (par. 12).
 - (d) If the radio set still cannot be used to send voice signals, turn in the radio set for repair.

CHAPTER 6

LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE

35. Limited Storage

If the radio set is to be stored for any period of time, perform the following:

- a. Perform a preventive maintenance check (par. 26).
- b. Remove the battery (par. 16).
- c. Remove the operating crystal (fig. 10) from the radio set and replace it with the crystal (51 mc) shipped with the radio set. Tune the radio set to an operating frequency of 51 mc (par. 12). Return the removed crystal to Crystal Kit CK-6/U (par. 7b).
- d. Place the whip antenna in carrying or stored position (par. 13).
- e. Place an adjustable strap in stored position (par. 17b).
- f. Wrap the components of the radio set (par. 6) in dry cloth so that they will be kept clean until used again.

36. Demolition to Prevent Enemy Use

a. *Authority for Demolition.* Demolition of the radio set is necessary to prevent the enemy from using or salvaging the equipment. Demolish the equipment only by order of the commanding officer.

b. *Methods of Destruction.*

- (1) *Smash.* Smash crystals, tubes, receiver-transmitter chassis, and handset by using a heavy object such as the butt of a rifle, or a heavy rock.
- (2) *Burn.* Burn everything that cannot be smashed, including the technical manuals. Use gasoline or kerosene, if available.
- (3) *Shoot.* If necessary, the equipment can be disabled by carefully directed small-arms fire.
- (4) *Disposal.* Bury or scatter the destroyed parts in slit trenches, fox holes, or nearby streams.

BY ORDER OF THE SECRETARY OF THE ARMY:

MAXWELL D. TAYLOR,
General, United States Army,
Chief of Staff.

OFFICIAL:

JOHN A. KLEIN,
Major General, United States Army,
The Adjutant General.

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5-15R (2)	6-558R (2)
5-16R (2)	6-575R (2)
5-17R (2)	6-576R (2)
5-35R (2)	6-577R (2)
5-37R (2)	6-615R (2)
5-137R (2)	6-616R (2)
5-215R (2)	7-2R (2)
5-218R (2)	7-11R (2)
5-225R (2)	7-15R (2)
5-226R (2)	7-17R (2)
5-227R (2)	7-25R (2)
5-329R (2)	7-26R (2)
6-100R (2)	7-27R (2)
6-101R (2)	7-31R (2)
6-115R (2)	7-35R (2)
6-116R (2)	

7-37R (2)
7-95R (2)
9-49R (2)
9-500R (AA thru AC) (2)
10-407R (2)
11-7R (2)
11-16R (2)
11-57R (2)
11-127R (2)
11-128R (2)
11-500R (AA thru AE) (2)
11-557R (2)

11-587R (2)
11-592R (2)
11-597R (2)
17-2R (2)
17-25R (2)
17-26R (2)
17-35R (2)
17-36R (2)
17-51R (2)
17-55R (2)
19-27R (2)
19-97R (2)

NG: State AG (6); Units—same as Active Army except allowance is one copy to each unit.

USAR: None.

For explanation of abbreviations used, see SR 320-50-1.