# RADIO RECEIVER R-388/URR

CHANGE
No. 4

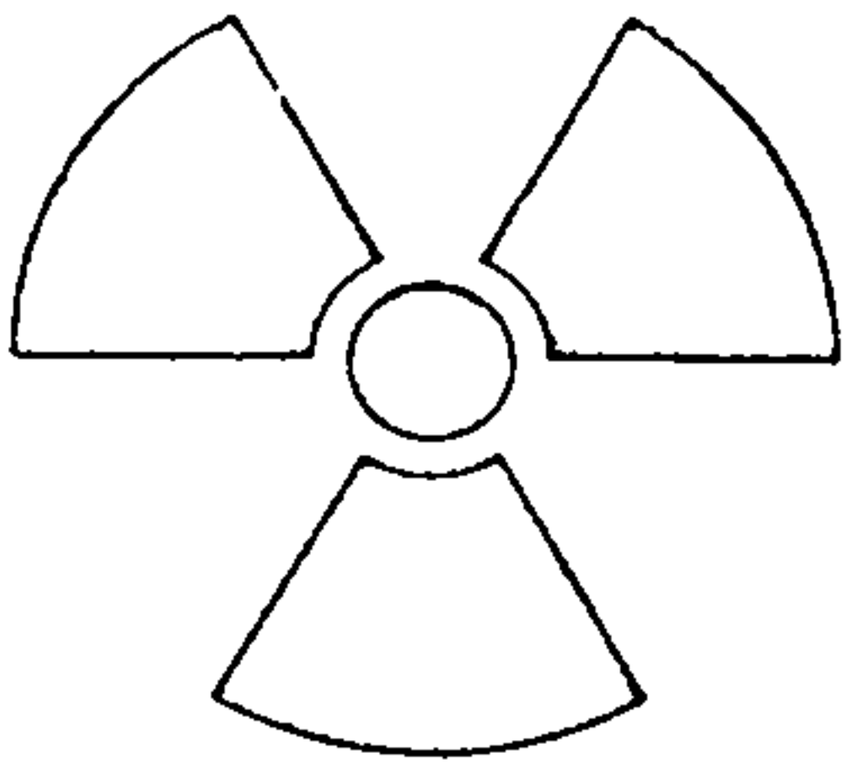
HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D. C., *25 November 1963*

TM 11-854, 23 April 1952, is changed as follows:

*Note.* The parenthetical reference to previous changes (example: "page 1 of C 2") indicates that pertinent material was published in that change.

*Inside front cover.* Include the following notice on the inside of the front cover:

RADIATION HAZARDS



STD-RW-2

Ni 63
Co 60

Tube type OA2 or OA2WA used in the R-388/URR contains radioactive material. These tubes are potentially hazardous when broken; see qualified medical personnel and the Safety Director if you are exposed to or cut by broken tubes. Use extreme care in replacing these tubes and follow safety procedures in their storage, and disposal (para 63.1).

Never place a radioactive tube in your pocket.

Use extreme care not to break radioactive tubes while handling them.

Never remove radioactive tubes from cartons until ready to use them.

Refer to paragraph 63.1 on handling, storage, and disposal of radioactive material.

* This change supersedes C 3, 24 May 1957, and together with TM 11-5820-508-20P, 21 June 1963, supersedes SIG 788 R-388/URR, 16 December 1957.

*Page 1*, paragraph 1. Delete the second sentence and substitute:

Three appendixes covering a list of references a maintenance allocation chart, and a basic issue items list are also provided at the back of the manual.

Add paragraph 1.1 after paragraph 1:

### 1.1. Index of Publications

Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment. DA Pam 310-4 is an index of current technical manuals, technical bulletins, supply manuals (types 4, 6, 7, 8, and 9), supply bulletins, lubrication orders, and modification work orders that are available through publications supply channels. The index lists the individual parts (-10, -20, -35P, etc.) and the latest changes to and revisions of each equipment publication.

Delete paragraph 2 and substitute:

### 2. Forms and Records

*a. Reports of Maintenance and Unsatisfactory Equipment.* Use equipment forms and records in accordance with instructions in TM 38-750.

*b. Report of Damaged or Improper Shipment.* Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58 (Army), NAVSANDA Publication 378 (Navy), and AFR 71-4 (Air Force).

*c. Reporting of Equipment Manual Improvements.* The direct reporting by the individual user of errors, omission, and recommendation for improving this manual is authorized and encouraged. DA Form 2028 (Recommended changes to DA technical manual parts lists or supply manual 7, 8, or 9) will be used for reporting these improvements. This form will be completed in triplicate using pencil, pen, or typewriter. The original and one copy will be forwarded direct to Commanding Officer, U. S. Army Electronics Materiel Support Agency, ATTN: SELMS-MP, Fort Monmouth, N. J. 07703. One information copy will be furnished to the individual's immediate supervisor (officer, noncommissioned officer, supervisor etc.).

*Page 4*, paragraph 4*d*. Add the following:

***Warning:*** **Tube type OA2 and OA2A are used in this equipment. These tubes contain radioactive material and are potentially hazardous when broken. The type and quantity of radioactivity are listed below:**

| Tube type | Where used | Isotope | Quantity (microcuries) |
|---|---|---|---|
| OA2 or OA2WA | V116, power supply<br>Voltage regulator | Ni63<br>Co60 | 0.01 -0.05<br>0.0067 |

*Page 6*. Delete paragraph 8.3 (as added by C 3, 24 May 1957) and substitute:

### 8.3 Differences in Models Procured on Order No. 30951-Phila-57 and 37003-PC-62

*a.* Capacitors C005 and C006 are 4,700 uuf each.

*b.* IF Gain potentiometer R187 (50K) and capacitor C240 (0.01 uf) are connected between the cathode of V108 (pin 7) and ground.

*c.* A DIODE LOAD jack and an AGC jack are installed on the rear panel.

*d.* Resistor R186 (220K) is connected between the grid of V113 (pin 7) and ground.

*e.* On Order No. 37003-PC-62 only, a transistorized circuit has been included to protect the antenna circuit from overloads (para. 37.1).

*Page 7*, paragraph 10. Delete subparagraph *d* and substitute:

*d. Checking Unpacked Equipment.*

(1) Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 (par 2).

(2) See that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against the basic issue items list (app. III). Report all discrepancies in accordance with TM 38-750. Shortage of a minor assembly or part that does not affect proper functioning of the equipment should not prevent use of the equipment.

(3) If the equipment has been used or reconditioned, see whether it has been changed by a modification work order (MWO). If the equipment has been modified, the MWO number will appear on the front panel near the nomenclature plate. Check to see whether the MWO number (if any) and appropriate notations concerning the modification have been entered in the equipment manual.

*Note.* Current MWO's applicable to the equipment are listed in DA Pam 310–4.

*Page 10*, paragraph 11. Insert warning beneath paragraph heading:

***Warning:*** **The OA2 or OA2WA tube contains radioactive material. Handle carefully to avoid breaking.**

*Page 11*, paragraph 12. Add the following to subparagraph *c*(1):

The receivers procured on Order No. 25635-Phila-53 and 37003-PC-62 do not have a speaker jack on the front panel. Connection to the speaker must be made from the rear panel.

*Page 13*, paragraph 14, table 1 (page 1 of C 2), "BREAK-IN OFF-ON toggle switch." Add to the end of the statement in the "Control" column: and 37003-PC-62

*Page 14*, paragraph 15*a* (page 2 of C 2), "BREAK-IN OFF-ON switch." Add to the end of the statement in the "Control" column: and 37003-PC-62.

*Page 15*, paragraph 20*d* (page 2 of C 2), line 3. After "53" insert: and 37003-PC-62.

*Page 16*, paragraph 20. Delete subparagraph *e* (as added by C 3, 24 May 1957) and substitute:

*e.* Except in Order No. 37003-PC-62, use the receiver disabling relay to disconnect the receiving antenna when the transmitter is in operation; or detune the receiver from the frequency of the transmitter. This will prevent excessive RF current from damaging the antenna coil.

*Page 17.* Change chapter heading to: MAINTENANCE INSTRUCTIONS.

Delete section I, II, and III and substitute:

## Section I. OPERATOR'S MAINTENANCE

### 25. Scope of Maintenance

The maintenance duties assigned to the operator of Radio Receiver R-388/URR are listed below together with a reference to the paragraphs covering the specified maintenance function. The duties assigned do not require tools or test equipment other than those issued with the receiver.

*a.* Daily preventive maintenance checks and services (par. 28).

*b.* Cleaning (par. 29).

### 26. Operator's Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to assure that the equipment is serviceable.

*a. Systematic Care.* The procedures given in paragraph 28 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

*b. Preventive Maintenance Checks and Services.* The preventive maintenance checks and services chart (par. 28) outlines functions to be performed at specific intervals. These checks and services are to maintain Army electronic equipment in a combat serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist operators in maintaining combat serviceability, the charts indicate what to check, how to check, and what the normal conditions are; the *References* column lists the illustrations, paragraphs, or manuals that contain supplementary information. If the defect cannot be remedied by the operator, higher echelon maintenance or repair is required. Records and reports of these checks and services must

be made in accordance with the requirements set forth in TM 38-750.

### 27. Preventive Maintenance Checks and Services Periods

Paragraph 28 specifies checks and services that must be accomplished daily or under the special conditions listed below:

*a.* When the equipment is initially installed.

*b.* When the equipment is reinstalled after removal for any reason.

*c.* At least once each week if the equipment is maintained in a *standby* condition.

### 28. Daily Preventive Maintenance Checks and Services Chart

| Sequence No. | Item | Procedure | References |
|---|---|---|---|
| 1 | Exterior surfaces. | Clean the receiver dust covers and front panel; clean the frequency indicator glass and meter glass. | Par. 29. |
| 2 | Frequency indicator glass; meter glass. | Inspect the frequency indicator glass and the meter glass for cracks and breaks. | None. |
| 3 | Cords and cables. | Check cords and cables for cracks and breaks. | None. |
| 4 | Connectors. | Inspect connectors at the rear of the receiver for tightness. | Fig. 9. |
| 5 | Knobs and switches. | While making the operational test, (item 6) check the mechanical action of each knob and switch for external and internal binding. | Fig. 10. |
| 6 | Operational test. | Check the receiver in accordance with the procedures given in paragraphs 15 through 19. | None. |

### 29. Cleaning

Inspect the exterior of the radio receiver. The exterior surfaces should be clean, and free of dust, dirt, grease, and fungus.

*a.* Remove dust and loose dirt with a clean soft cloth.

***Warning*; Cleaning Compound (Federal stock No. 7930-395-9542) is flammable and its fumes are toxic. Provide adequate ventilation. No not use near a flame.**

*b.* Remove grease, fungus, and ground-in dirt from the front panel; use a cloth dampened (not wet) with cleaning compound.

*c.* Remove dust and dirt from plugs and jacks with a brush.

***Caution:* Do not press on the meter face (glass) when cleaning; the meter may become damaged.**

*d.* Clean the meter and control knobs; use a soft clean cloth. If dirt is difficult to remove, dampen the cloth with water; mild soap may be used for more effective cleaning.

## Section II. ORGANIZATIONAL MAINTENANCE

### 30. Scope of Organizational Maintenance

This section contains instructions covering second echelon preventive maintenance of the equipment. It includes tools, materials, and test equipment required for performing preventive maintenance by the organizational repairman.

### 31. Tools, Materials, and Test Equipment Required

The tools, materials, and test equipment required for organizational maintenance are listed below.

*a. Tools.* Tool Kit, Radio Repair TK-115/G.

Page cr

*b. Special Tools.*
(1) A set of four wrenches of different sizes for setscrews of the fluted socket type is mounted in a tension clasp on the under side of the dust cover.
(2) Phillips-head screwdriver is mounted on the outer side rear of the dust cover (fig. 9).

*c. Materials.*
(1) Cleaning Compound (FSN 7930-395-9542).
(2) Cleaning cloth.
(3) Grease, Aircraft and Instrument (GL).
(4) Fine sandpaper (No. 000).

*d. Test Equipment.*
(1) Multimeter AN/URM-105.
(2) Test Set, Electron Tube TV-7/U.

## 32. Organizational Preventive Maintenance

*a.* Preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain it in serviceable condition, prevent breakdowns, and assure maximum operational capability. Preventive maintenance is the responsibility of all echelons concerned with the equipment and includes the inspection, testing, and repair or replacement of parts, subassemblies, or units that inspection and tests indicate would probably fail before the next scheduled periodic service. Preventive maintenance checks and services of the equipment at the second echelon level are made at monthly intervals unless otherwise directed by the commanding officer. The preventive maintenance checks and services should be scheduled concurrently with the periodic service schedule of the carrying vehicle for all vehicular installations.

*b.* Maintenance forms and records to be used and maintained on this equipment are specified in TM 38-750.

### 32.1. Monthly Maintenance

Perform the maintenance functions indicated in paragraph 32.2 once each month. A month is defined as approximately 30 calendar days of 8-hour-per-day operation. If the equipment is operated 16 hours a day, the monthly preventive maintenance checks and services should be performed at 15-day intervals. Adjustment of the maintenance interval must be made to compensate for any unusual operating conditions. Equipment maintained in a standby (ready for immediate operation) condition must have monthly preventive maintenance checks and services performed on it. Equipment in limited storage (requires service before operation) does not require monthly preventive maintenance.

### 32.2. Monthly Preventive Maintenance Checks and Services Chart

| Sequence No. | Item | Procedure | References |
|---|---|---|---|
| 1 | Publications. | See that all publications are complete, serviceable, and current. | DA Pam 310-4. |
| 2 | Modifications. | Determine whether new applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled. | DA Pam 310-4, and TM 38-750. |
| 3 | Installation. | See that the equipment is properly installed. | Par. 11. |
| 4 | Preservation. | Check all surfaces for evidence of fungus. Remove rust and corrosion and spot-paint bare spots. | Par. 32.3. |
| 5 | Fuses. | See that operating fuse is of the correct value. Check spare fuses for proper value and quantity. | Fig. 9. |
| 6 | Handles. | Inspect handles for looseness. | Fig. 1. |
| 7 | Interior. | Clean the interior of chassis and cabinet. | Figs. 33, and 34. |
| 8 | Pluckout items. | Inspect seating of pluckout items. | |

| Sequence No | Item | Procedure | References |
|---|---|---|---|
| 9 | Resistors and capacitors. | Inspect resistors and capacitors for cracks, blistering, or other detrimental defects. | Figs. 33 through 38. |
| 10 | Lubrication | Check to see that the tuning gear train teeth cam edges and slug table riders have a light film of Grease, Aircraft and Instrument (GL). | Par. 32.4. |
| 11 | Transformers and chokes. | Inspect the transformers and chokes for evidence of overheating. Check the terminals on power transformer. There should be no evidence of dirt or corrosion. | Fig. 33. |
| 12 | Equipment performance. | Operate the equipment according to the chart in paragraph 36. | |

## Section III. PRESERVATION AND LUBRICATION

### 32.3. Cleaning and Touchup Painting Instructions

Clean rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TM 9-213.

### 32.4. Lubrication

Lubrication consists of the application of Grease Aircraft and Instrument (GL) to cover the tuning gear train teeth cam edges and slug table riders.

*a.* Remove old grease with a lint-free cloth moistened with cleaning compound.

*b.* Wipe with a dry cloth and apply lubricant.

*Page 24.* Add paragraph 37.1 after paragraph 37:

### 37.1. Antenna Protection Circuit

On Order No. 37003-PC-62, Radio Receiver R-388/URR is provided with an antenna protection circuit (fig. 11.1). This protection circuit is physically located near antenna input jack J101 in place of I104, and functions to isolate the rf input tuning coils from the antenna in the event of an rf overload from a nearby transmitter.

*a.* The antenna protection circuit consists of transistor Q401 in conjunction with relay K401. The level of current flow through the relay is determined by the dc bias level established between the emitter and base of the transistor as a result of signal rectification by CR401 and CR402.

*b.* When the receiver OFF-STANDBY-ON control is set to ON, relay K401 is energized and the antenna input circuit is completed to rf stage V101. Desired input signals below a predetermined level develop some dc bias across C403 but at a level which does not increase the transistor emitter collector current to a level which will deenergize K401.

*c.* If an rf input signal above a pre-established level is received, the increased positive dc bias applied to the base of the transistor will increase the transistor emitter collector current sufficiently to cause relay K401 to deenergize and open the antenna input circuit.

*d.* The negative end of L401 is tied to the junction of resistors R164 and R165 are part of a fixed bias supply, located between the center tap of the power supply transformer high voltage secondary winding and ground.

Add figure 11.1 after figure 11:

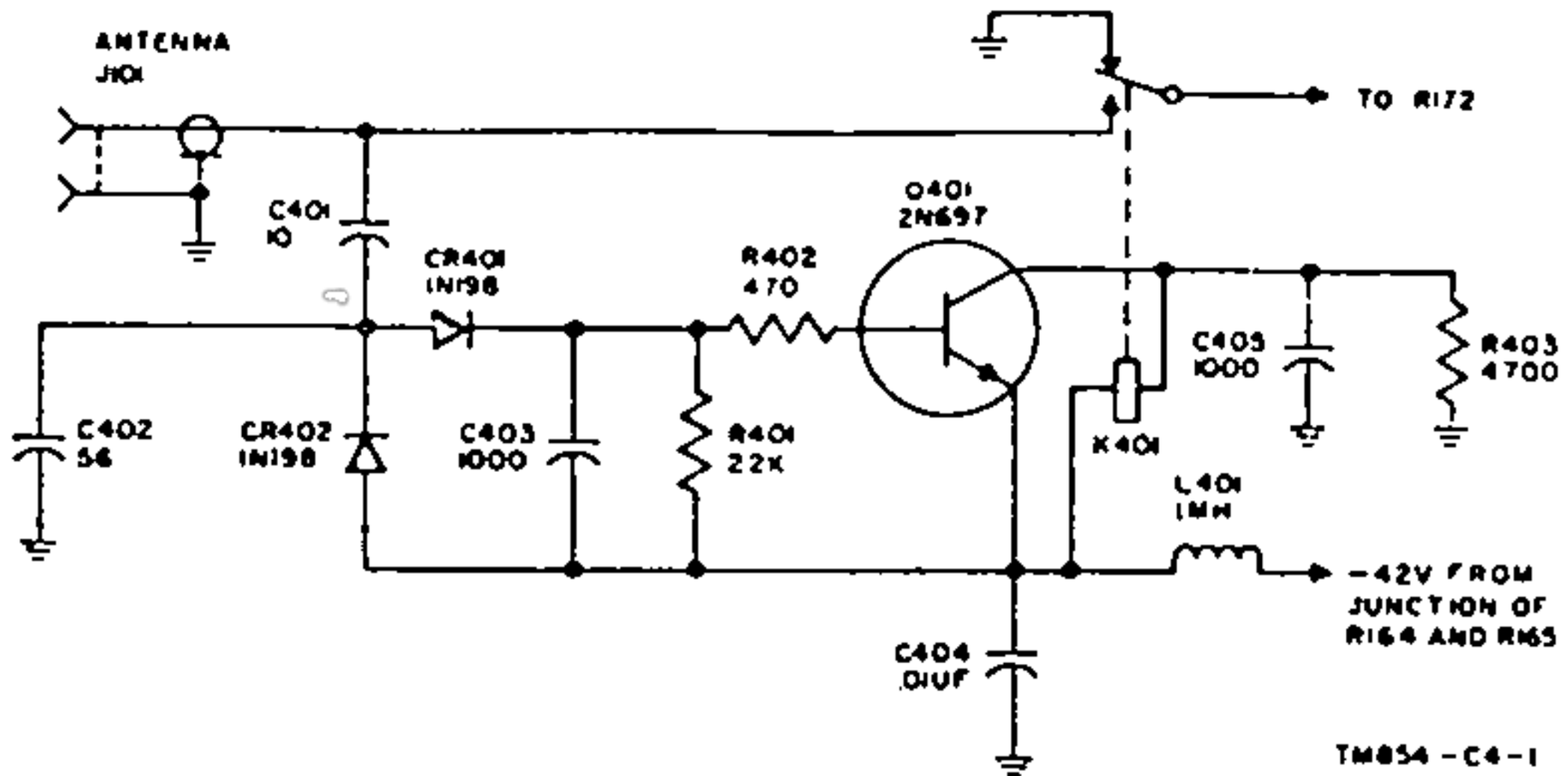



*Figure 11.1 Rf input protective circuit.*

*Page 38*, figure 23. Delete the note (As added by C 3 24 May 1957) and substitute:

*Note* IN EQUIPMENT PROCURED ON ORDERS NO. 30951-PHILA-57 and 37003-PC-62, IF GAIN POTENTIOMETER R187 (50K) WITH CAPACITOR C240 (.01 UF) IN PARALLEL ARE CONNECTED BETWEEN PIN 7 OF V108 AND GROUND.

*Page 40*, figure 25. (As changed by C 3 24 May 1957) Make the following changes:

Change the value of R149 to: 680.

Delete the note and substitute:

*Note* IN EQUIPMENT PROCURED ON ORDERS NO. 30951-PHILA-57 and 37003-PC-62, RESISTOR R186 (220K) IS CONNECTED BETWEEN PIN 7 OF V113 AND GROUND.

*Page 41*, paragraph 50c. Add to lines 5 and 8 (page 3 of C2) after "Phila-53": and 37003-PC-62).

*Page 42*, figure 26. (Page 3 of C 2) Add to note 1: and 37003-PC-62.

Delete note (as changed by C 3 24 May 1957) and substitute:

3. IN EQUIPMENT PROCURED ON ORDERS NO. 30951-PHILA-57 and 37003-PC-62, RESISTOR R186 (220K) IS CONNECTED BETWEEN PIN 7 OF V113 AND GROUND.

*Page 45*, figure 29. (As changed by C 3 24 May 1957) Add pins 2 and 7 next to pin 4 (ground connection) on voltage regulator tube V116.

*Page 54*, paragraph 63. Add paragraph 63.1 after paragraph 63:

### 63.1. Handling, Storage, and Disposal of Radioactive Material

Follow the procedures for safe handling, storage, and disposal of radioactive materials as directed by TB SIG 225, AR 40-580, and AR 755-380.

*Page 56*, figure 32. (As changed by C 3 24 May 1957) Make the following changes:

Pins, 2, 4, and 7 of V116 are internally connected and the voltage and resistance readings are zero.

Pins 5 and 1 are internally connected and the voltage and resistance readings are +150 volts and 44K, respectively.

In equipment procured on Orders No. 30951-Phila-57 and 37003-PC-62, the resistance at pin 7 of V113 is 220K ohms.

Place VOLTAGE directly above "REGULATOR V116".

*Page 63*, paragraph 66, chart. Add the following to symptom number 3:

| Symptom | Probable trouble | Correction |
|---|---|---|
| No signal output from receiver. | K401 defective. | Replace K401. |
| | Transistor Q401 defective. | Substitute transistor with a transistor known to be good. |
| Signal at output of receiver when very strong rf signal is received. | CR401 or CR402 defective. | Replace CR401, or CR402. |

*Page 72*, paragraph 84. (As changed by C 3 24 May 1957) (Introductory paragraph). Delete the eighth sentence and substitute:

Connect a vtvm to the junction of resistors R150 and R152, and ground (fig. 26). In equipment procured on Order No. 30951-Phila-57 and 37003-PC-62, connect the vtvm from the DIODE LOAD jack, on the rear panel, to chassis ground.

*Page 73*, paragraph 87*a* (as changed by C3 24 May 1957). Delete the last sentence and substitute:

Connect a vtvm to the junction of resistors R150 and R152, and chassis ground (fig. 26).

In equipment procured on Orders No. 30951-Phila-57 and 37003-PC-62, connect the vtvm from the DIODE LOAD jack, on the rear panel, to chassis ground.

*Page 74*, (As changed by C 3 24 May 1963) Add paragraph 91.1 after paragraph 91:

### 91.1. Intermediate Frequency Adjustment

*Note.* The following applies to equipments procured on Orders No. 30951-Phila-57 and 37003-PC-62.

*a.* Connect the signal generator to the ANTENNA jack through a dummy antenna (47-ohm resistor in series with a 100-uuf capacitor).

*b.* Connect a 47-ohm resistor from IF OUTPUT jack J104 to ground, and connect the vtvm across the resistor.

*c.* Set the AVC switch to OFF.

*d.* Adjust the ANT. TRIM control for maximum IF output as indicated by the vtvm.

*e.* Adjust the IF GAIN potentiometer (R187) for 175 mv as indicated by the vtvm. (R187 is located near the METER ZERO potentiometer (R140)).

*f.* Retune the secondary of transformer T103, and the primary of transformer T104. Use the procedure outlined in paragraph 84*a* and *d*.

*Page 77.* Delete appendix I and substitute:

## APPENDIX I

## REFERENCES

| | |
|---|---|
| AR 40-580 | Control of HAZARDS to Health from Radioactive Materials. |
| AR 700-51 | Logistics Responsibilities. |
| AR 755-380 | Disposal of Unwanted Radioactive Material. |
| DA Pam 310-4 | Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 4, 6, 7, 8, and 9) Supply Bulletins, Lubrication Orders, and Modification Work Orders. |
| TB SIG 225 | Identification and Handling of Radioactive Signal Items. |
| TM 9-213 | Painting Instructions for Field Use. |
| TM 38-750 | The Army Equipment Record System and Procedures. |

*Page 80.* Add appendixes II and III after appendix I:

# APPENDIX II

# MAINTENANCE ALLOCATION

## Section 1. INTRODUCTION

### 1. General

*a.* This section assigns maintenance functions to be performed on components, assemblies, and subassemblies by the lowest appropriate maintenance echelon.

*b.* Columns in the maintenance allocation chart are as follows:

(1) *Component.* This column shows only the nomenclature or standard item name. Additional descriptive data are included only where clarification is necessary to identify the component. Components, assemblies, and subassemblies are listed in top-down order. That is, the assemblies which are part of a component are listed immediately below that component, and the subassemblies which are part of an assembly are listed immediately below that assembly. Each generation break-down (components, assemblies, or subassemblies) are listed in disassembly order or alphabetical order.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelons.

*(a) Service.* To clean, to preserve, and to replenish lubricants.

*(b) Adjust.* To regulate periodically to prevent malfunction.

*(c) Inspect.* To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

*(d) Test.* To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

*(e) Replace.* To substitute serviceable components, assemblies, or subassemblies, for unserviceable components, assemblies, or subassemblies.

*(f) Repair.* To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes but is not limited to welding, grinding, riveting, straightening, and replacement or parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

*(g) Align.* To adjust two or more components of an electrical system so that their functions are properly synchronized.

*(h) Calibrate.* To determine, check, or rectify the graduation of an instrument, weapon, or weapons, system, or components of a weapons system.

*(i) Overhaul.* To restore an item to *completely serviceable* condition as prescribed in serviceability standards developed and published by heads of technical services. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

*(j) Rebuild.* To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance tech-

nique of complete disassembly of the item, inspection of all parts of components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and/or specifications and subsequent reassembly of the item.

(3) *1st, 2d, 3d, 4th, and 5th echelons.* The symbol X placed in columns 3 through 7 indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by X are authorized to perform the indicated operation.

(4) *Tools required.* This column indicates codes assigned to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.

(5) *Remarks.* Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding column.

*c.* Columns in the allocation of tools for maintenance functions are as follows:

(1) *Tools required for maintenance functions.* This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

(2) *1st, 2d, 3d, 4th, and 5th echelon.* The dagger (†) symbol in these columns indicates the echelons normally allocated the facility.

(3) *Tool code.* This column lists the tool code assigned.

## 2. Maintenance by Using Organizations

When this equipment is used by signal services organizations organic to theater headquarters or communication zones to provide theater communications, those maintenance functions allocated up to and including fourth echelon are authorized to the organization operating this equipment.

| PART OR COMPONENT | MAINTENANCE FUNCTION | ECHELON 1 | 2 | 3 | 4 | 5 | TOOLS REQUIRED | REMARKS |
|---|---|---|---|---|---|---|---|---|
| RADIO RECEIVER, R-388/URR | service | | X | | | | | |
| | adjust | X | | | | | | Use front panel controls only (External) |
| | inspect | | X | | | | 8,20 | External voltages |
| | test | | X | | | | 8,17,20 | Shorts, continuity tubes |
| | | | | X | | | 3,4,9,13,14,17,18 | Tests to determine serviceability after repairs and replacement of parts |
| | | | | | X | | 1,3,5,6,9,10,11,12,14, 15,17,18,19,22 | Tests to determine sensitivity and audio output |
| | | | | | | X | 1,2,3,5,6,7,9,10,11, 12,13,14,15,16,18,19, 21,22 | All testing |
| | replace | | X | | | | 20 | |
| | repair | | | X | | | 18 | |
| | align | | | | X | | 4,5,6,7,11,12,14,15 | |
| | rebuild | | | | | X | 18,19 | |

| TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS | ECHELON 1 | 2 | 3 | 4 | 5 | TOOL CODE | REMARKS |
|---|---|---|---|---|---|---|---|
| RADIO RECEIVER, R-388/URR (continued) | | | | | | | |
| ACCESSORY KIT MK-288/URM | | | | † | † | 1 | |
| ANALYZER, SPECTRUM TS-723/U | | | | | † | 2 | |
| AUDIO OSCILLATOR TS-382/U | | | † | † | † | 3 | |
| FREQUENCY METER AN/URM-32 | | | † | | | 4 | |
| FREQUENCY METER AN/URM-79 | | | | † | † | 5 | |
| FREQUENCY METER AN/URM-80 | | | | † | † | 6 | |
| FREQUENCY METER AN/USM-26 | | | | | † | 7 | |
| MULTIMETER AN/URM-105 | | † | | | | 8 | |
| MULTIMETER TS-352/U | | | † | † | † | 9 | |
| MULTIMETER ME-26/U | | | | † | † | 10 | |
| OSCILLOSCOPE OS-8/U | | | | † | † | 11 | |
| OUTPUT METER TS-585/U | | | | † | † | 12 | |
| POWER SUPPLY PP-1243/U | | | † | | | 13 | |
| RF SIGNAL GENERATOR SET AN/URM-25 | | | † | † | † | 14 | |
| SIGNAL GENERATOR AN/USM-44 | | | | † | † | 15 | |
| TEST SET, ELECTRON TUBE TV-2/U | | | | | † | 16 | |
| TEST SET, ELECTRON TUBE TV-7/U | | † | † | † | | 17 | |
| TOOL KIT, RADAR AND RADIO REPAIRMAN TK-87/U | | | † | † | † | 18 | |
| TOOL KIT, RADAR AND RADIO REPAIRMAN TK-88/U | | | | † | † | 19 | |
| TOOL KIT, RADIO REPAIRMAN TK-115/G | | † | | | | 20 | |
| TRANSFORMER, VARIABLE POWER CN-16/U | | | | | † | 21 | |
| VOLTMETER, METER ME-30/U | | | | † | † | 22 | |

# APPENDIX III

# BASIC ISSUE ITEMS LIST

## Section I. INTRODUCTION

### 1. General

*a.* This appendix lists items supplied for initial operation and for running spares. The list includes tools, accessories, parts, and material issued as part of the major end item. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

*b.* Columns are as follows:

(1) *Federal stock number.* This column lists the 11-digit Federal stock number.

(2) *Designation by model.* Not used.

(3) *Description.* Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

(4) *Unit of issue.* The unit of issue is each unless otherwise indicated and is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

(5) *Expendability.* Nonexpendable items are indicated by NX. Expendable items are not annotated.

(6) *Quantity authorized.* Under "Items Comprising an Operable Equipment", the column lists the quantity of items supplied for the initial operation of the equipment. Under "Running Spare Items" the quantities listed are those issued initially with the equipment as spare parts. The quantities are authorized to be kept on hand by the operator for maintenance of the equipment.

(7) *Illustration.* The "Item No." column lists the reference symbols used for identification of the items in the illustration or text of the manual.

### 2. Other Service Stock Numbers

Other service items listed herein are authorized in accordance with AR 700-51.

## Section II. FUNCTIONAL PARTS LIST

| FEDERAL STOCK NUMBER | DESIGNATION BY MODEL | DESCRIPTION | UNIT OF ISSUE | EXP | QTY AUTH | ILLUSTRATION FIGURE NO | ILLUSTRATION ITEM NO |
|---|---|---|---|---|---|---|---|
| 5820-644-0990 | | RADIO RECEIVER R-.86/URR: A1,A2,A3,P1 reception; freq .5 to 30.5 mc; 30 bands; oper power 115 v or 230 v, 45 to 7[illegible] cyc, 1 ph | | NX | | | |
| | | ITEMS COMPRISING AN OPERABLE EQUIPMENT | | | | | |
| Ord thru AGC | | TECHNICAL MANUAL TM 11-854 | | | 2 | | |
| 5120-356-4353 | | ALIGNMENT TOOL: phenolic; screwdriver type; 5-13/16 in lg x 0.315 in dia; Collins part/dwg 505-2119-001 | | | 1 | | [illegible] |
| 5120-356-4354 | | ALIGNMENT TOOL: phenolic; screwdriver type; 4-3/4 in lg Collins part/dwg 505-2115-001 | | | 1 | | [illegible] |
| 5120-696-9317 | | SCREWDRIVER: 90 deg offset; phillips cross tip No. 1 size; 3-1/4 in lg; Vaco part #P111 | | | 1 | | |
| 5120-223-6995 | | WRENCH, SOCKET HEAD SCREW: splined; 6 flutes; L-type handle; 1-7/8 in nom lg; Spec Fed GGG-W-652, type II, class A | | | 1 | | |
| 5120-224-2482 | | WRENCH, SOCKET HEAD SCREW: for Bristo #10 | | | 1 | | |
| 5120-249-9670 | | WRENCH, SOCKET HEAD SCREW: splined; 4 flutes; L type handle; 1-3/4 in lg; Spec Fed GGG-W-652, type II, class A | | | 1 | | |
| 5120-293-0195 | | WRENCH, SOCKET HEAD SCREW: 1-9/16 in lg x 3/8 in w x 0.060 in OD; Collins part/dwg 024-2900-00 | | | 1 | | |
| | | RUNNING SPARE ITEMS | | | | | |
| 5960-503-4880 | | ELECTRON TUBE: MIL type 0A2WA | | | 1 | | |
| 5960-168-3947 | | ELECTRON TUBE: MIL type 5V4G | | | 2 | | |
| 5960-100-7663 | | ELECTRON TUBE: MIL type 12AU7 | | | 1 | | |
| 5960-100-7664 | | ELECTRON TUBE: MIL type 12AX7 | | | 1 | | |
| 5960-202-1357 | | ELECTRON TUBE: MIL type 5654/6AK5W | | | 1 | | |
| 5960-204-2069 | | ELECTRON TUBE: MIL type 5749/6BA6W | | | 3 | | |
| 5960-204-3002 | | ELECTRON TUBE: MIL type 5750/6BE6W | | | 1 | | |
| 5960-248-3083 | | ELECTRON TUBE: MIL type 12K5/6AQ5W | | | 1 | | |

| FEDERAL STOCK NUMBER | DESIGNATION BY MODEL | DESCRIPTION | UNIT OF ISSUE | EXP | QTY AUTH | ILLUSTRATION | |
|---|---|---|---|---|---|---|---|
| | | | | | | FIGURE NO. | ITEM NO |
| | | R-388/URR (continued) | | | | | |
| 5920-260-9328 | | FUSE, CARTRIDGE: 1-1/2 amp; MIL type FO2D1R50B | | | 6 | | |
| 6240-199-8706 | | LAMP, INCANDESCENT: 6-8 v, 0.15 amp; MIL std MS155/1-2 type TB-14 | | | 2 | | |

*Page 98*, figure 42. Make the following changes:

(Page 4 of C 2) Note 3, line 3. After "25635-PHILA-53" add: and 37003-PC-62.

(As changed by C3, 24 May 1957) Make the following changes:
Change the value of R149 to: 680.

On VOLTAGE REGULATOR V116, and pins 2 and 7 next to pin 4 (ground connection); and add pin 1 beside pin 5 (plate).
Complete the connection from pin 5 of BFO V114 to the plate.

Delete the notes 1 through 5 and substitute:

7. (FOR EQUIPMENT PROCURED ON ORDERS NO. 30951-PHILA-57 and 37003-PC-62:

CAPACITORS C005 and C006 HAVE A VALUE OF 4,700 MMF. DIODE LOAD JACK IS CONNECTED TO THE JUNCTION OF R150 AND R152. THE AGC JACK IS CONNECTED TO THE PLATE OF V11A (PIN 1).

RESISTOR R186 (220K) IS CONNECTED BETWEEN PIN 7 (113) AND CHASSIS GROUND.

THE CONNECTION BETWEEN PIN 7 OF V108 AND GROUND IS REMOVED. CAPACITOR C240 (.01 UF) IS CONNECTED FROM PIN 7 TO CHASSIS GROUND.

POTENTIOMETER R187 (50K) (ON ORDER NO. 37003-PC-62) IS CONNECTED TO PIN 7 WITH THE MOVABLE CONTACT CONNECTED TO CHASSIS GROUND.

8. RF PROTECTIVE CIRCUIT (FIG. 11.1) HAS BEEN ADDED TO ORDER No. 37003-PC-62).