

**TM 11-6625-2718-14-1**

---

**TECHNICAL MANUAL**

**OPERATOR'S, ORGANIZATIONAL,  
DIRECT SUPPORT, AND GENERAL SUPPORT  
MAINTENANCE MANUAL**

**TEST SET, RADIO FREQUENCY,  
POWER**

**AN/URM-182A**

(NSN 6625-01-062-3599)

This copy is a reprint which includes current  
pages from Change 1.

---

**HEADQUARTERS, DEPARTMENT OF THE ARMY**  
**06 JULY 1978**

## **WARNING**

Dangerous voltages may exist at the transmitter antenna terminals. Reenergize the transmitter before connecting or disconnecting the AN/USM-182A from the transmitter.

## **WARNING**

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever it is used; avoid prolonged or repeated breathing of vapor. Do not use near an open flame or hot surface; trichloroethane is not flammable but heat converts the fumes to a highly toxic phosgene gas, the inhalation of which could result in serious injury or death. Prolonged or repeated skin contact with trichloroethane can cause skin inflammation. When necessary, use gloves, and aprons which the solvent cannot penetrate.

**OPERATOR'S, ORGANIZATIONAL,  
 DIRECT SUPPORT AND GENERAL SUPPORT  
 MAINTENANCE MANUAL  
 TEST SET, RADIO FREQUENCY, POWER AN/URM-182A  
 (NSN 6625-01-062-3599)**

**REPORTING OF ERRORS**

You can improve this manual by recommending improvements using DA Form 2028-2 located in the back of the manual. Simply tear out the self addressed form, fill it out as shown on the sample, fold it where shown, and drop it in the mail.

If there is no blank DA Form 2028-2 in the back of your manual, use the standard DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward to the Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-MA-Q, Fort Monmouth, NJ 07703.

In either case a reply will be furnished direct to you.

		<b>Paragraph</b>	<b>Page</b>
CHAPTER	1. INTRODUCTION		
Section	I. General		
	Scope . . . . .	1-1	1-1
	Indexes of Publications . . . . .	1-2	1-1
	Forms and Records . . . . .	1-3	1-1
	Reporting Equipment Improvement Recommendations (EIR). . . . .	1-4	1-1
	Administrative Storage. . . . .	1-5	1-1
	Destruction of Army Materiel . . . . .	1-6	1-1
	II. Description and Data		
	Purpose and Use . . . . .	1-7	1-2
	Description . . . . .	1-8	1-2
	Tabulated Data . . . . .	1-9	1-3
CHAPTER	2. SERVICE UPON RECEIPT AND INSTALLATION		
	Service Upon Receipt . . . . .	2-1	2-1
	Site and Shelter Requirements . . . . .	2-2	2-1
	Unpacking . . . . .	2-3	2-1
	Installation of TS-3754/U on Rf Transmitter. . . . .	2-4	2-2
	3. OPERATING INSTRUCTIONS		
	Operator's Controls, Indicator, and Connectors. . . . .	3-1	3-1
	Types of Operation . . . . .	3-2	3-1
	Determining Load Power . . . . .	3-3	3-1
	Measuring and Monitoring Transmitter Power . . . . .	3-4	3-3
	Determining Voltage Standing Wave Ratio (VSWR) . . . . .	3-5	3-3
	Stopping procedure . . . . .	3-6	3-6
	Operation at High or Low Temperature . . . . .	3-7	3-6

	Operation Under Tropical Conditions . . . . .	3-8	3-6
	Operation Under Desert Conditions . . . . .	3-9	3-6
	<b>4. OPERATOR/CREW MAINTENANCE INSTRUCTIONS</b>		
	Tools and Test Equipment . . . . .	4-1	4-1
	Lubrication . . . . .	4-2	4-1
	Preventive Maintenance Checks and Services . . . . .	4-3	4-1
	Cleaning . . . . .	4-4	4-1
	Troubleshooting . . . . .	4-5	4-2
	<b>5. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS</b>		
Section	<b>I. General Instructions</b>		
	Tools and Test Equipment Required. . . . .	5-1	5-1
	Repair Parts . . . . .	5-2	5-1
	General . . . . .	5-3	5-1
	Repainting Instructions . . . . .	5-4	5-1
	Refinishing Exterior Surfaces. . . . .	5-5	5-1
	Lubrication . . . . .	5-6	5-1
	<b>II. Preventive Maintenance Checks and Services</b>		
	General . . . . .	5-7	5-1
	Preventive Maintenance Checks and Services . . . . .	5-8	5-1
	Troubleshooting . . . . .	5-9	5-3
	Troubleshooting Chart . . . . .	5-10	5-3
	<b>III. Maintenance of Test Set, Radio Frequency Power AN/URM-182A</b>		
	General. . . . .	5-11	5-3
	Knob Replacement . . . . .	5-12	5-3
	Clamping Screw Replacement. . . . .	5-13	5-3
	Repairing Cable Assembly CB-1893C/U . . . . .	5-14	5-3
CHAPTER	<b>6. FUNCTIONING OF EQUIPMENT</b>		
	Rf Power in Transmission Lines . . . . .	6-1	6-1
	Functioning of TS-3754/U . . . . .	6-2	6-2
	<b>7. DIRECT SUPPORT MAINTENANCE</b>		
	Troubleshooting . . . . .	7-1	7-1
	Tools and Test Equipment Required. . . . .	7-2	7-1
	Checking TS-3754/U. . . . .	7-3	7-1
	<b>8. GENERAL SUPPORT MAINTENANCE INSTRUCTIONS</b>		
Section	<b>I. Troubleshooting</b>		
	Tools and Test Equipment Required. . . . .	8-1	8-1
	Troubleshooting the TS-3754/U . . . . .	8-2	8-1
	<b>II. Maintenance of AN/URM-182A</b>		
	General . . . . .	8-3	8-4
	Disassembly of TS-3754/U. . . . .	8-4	8-4
	Alignment Procedure . . . . .	8-5	8-4
	<b>III. General Support Testing Procedures</b>		
	General . . . . .	8-6	8-5
	Electrical Tests . . . . .	8-7	8-5
APPENDIX A.	<b>REFERENCES . . . . .</b>		A-1
	<b>B. COMPONENTS OF END ITEM LIST</b>		
Section	<b>I. Introduction . . . . .</b>		B-1
	<b>II. Integral Components of End Item. . . . .</b>		B-3
	<b>III. Basic Issue Items (Not Applicable)</b>		
APPENDIX C.	<b>ADDITIONAL AUTHORIZATION LIST (Not Applicable)</b>		
	<b>D. EXPENDABLE SUPPLIES AND MATERIALS LIST (Not Applicable)</b>		
	<b>E. MAINTENANCE ALLOCATION</b>		
Section	<b>I. Introduction . . . . .</b>		E-1
	<b>II. Maintenance Allocation Chart for Radio Frequency Test Set AN/URM-182A. . . . .</b>		E-3
	<b>III. Tools and Test Equipment Requirements for Radio Frequency Test Set AN/URM-182A. . . . .</b>		E-4

**LIST OF ILLUSTRATIONS**

<i>Figure</i>	<i>Title</i>	<i>Page</i>
1-1	Test set, radio frequency, power AN/URM-182A . . . . .	1-2
2-1	Equipment packing and packaging . . . . .	2-1
3-1	Operator's controls, indicator, and connectors, . . . . .	3-1
3-2	Power values versus VSWR (reflected power 0.01 to 1.0 watts) . . . . .	3-4
3-3	Power values versus VSWR (reflected power 0.2 to 20 watts) . . . . .	3-5
5-1	Cable assembly CG-1893C/U, fabrication diagram . . . . .	5-4
6-1	TS-3754/U, Schematic diagram . . . . .	6-1
8-1	Troubleshooting test, forward power . . . . .	8-2
8-2	Troubleshooting test, reverse (reflected) power . . . . .	8-2
8-3	TS-3754/U, Chassis parts location diagram . . . . .	8-3
8-4	TS-3754U, A1 Printed circuit board, parts location . . . . .	8-3
8-5	TS-3754/U, A2 Printed circuit board, parts location . . . . .	8-4
8-6	Alignment setup . . . . .	8-5
8-7	Insertion loss test setup . . . . .	8-5

**LIST OF TABLES**

<i>Table</i>	<i>Title</i>	<i>Page</i>
3-1	Operator's Controls, Indicator, and Connectors . . . . .	3-2
4-1	Operator/Crew Preventive Maintenance Checks and Services . . . . .	4-1
4-2	Operator/Crew-Troubleshooting. . . . .	4-2
5-1	Organizational Monthly Preventive Maintenance Checks and Services . . . . .	5-2
5-2	Organizational Quarterly Preventive Maintenance Checks and Services . . . . .	5-2
5-3	Organizational Maintenance Troubleshooting . . . . .	5-3
8-1	Test Setup . . . . .	8-1
8-2	Troubleshooting Chart . . . . .	8-2
8-3	Electrical Tests . . . . .	8-6
8-4	Insertion Loss Test . . . . .	8-6



# CHAPTER 1

## INTRODUCTION

---

### Section I. GENERAL

#### 1-1. Scope

a. This technical manual is provided to assist in operation and maintenance of Test Set, Radio Frequency, Power AN/URM-182A (test set) (fig. 1-1). The technical manual describes the test set, lists the capabilities and limitations, and provides information regarding installation, operation, maintenance, and repair.

b. This manual also contains a Components of End item List (COEIL) (app B), an Additional Authorization List (AAL) (app C), an Expedable Supplies And Materials List (ES & ML) (app D), and a Maintenance Allocation Chart (MAC) (app E).

#### 1-2. Indexes of Publications

a. *DA Pam 310-4*. 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.

b. *DA Pam 310-7*. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

#### 1-3. Forms and Records

a. *Reports of Maintenance and Unsatisfactory Equipment*. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. *Reports of Packaging and Handling Deficien-*

*cies*. Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 71-13/MCO P4030.29A, and DSAR 4145.8.

c. *Discrepancy in Shipment Report (DISREP) (SF 361)*. Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C, and DLAR 4500.15.

#### 1-4. Reporting of Equipment Improvement Recommendations (EIR)

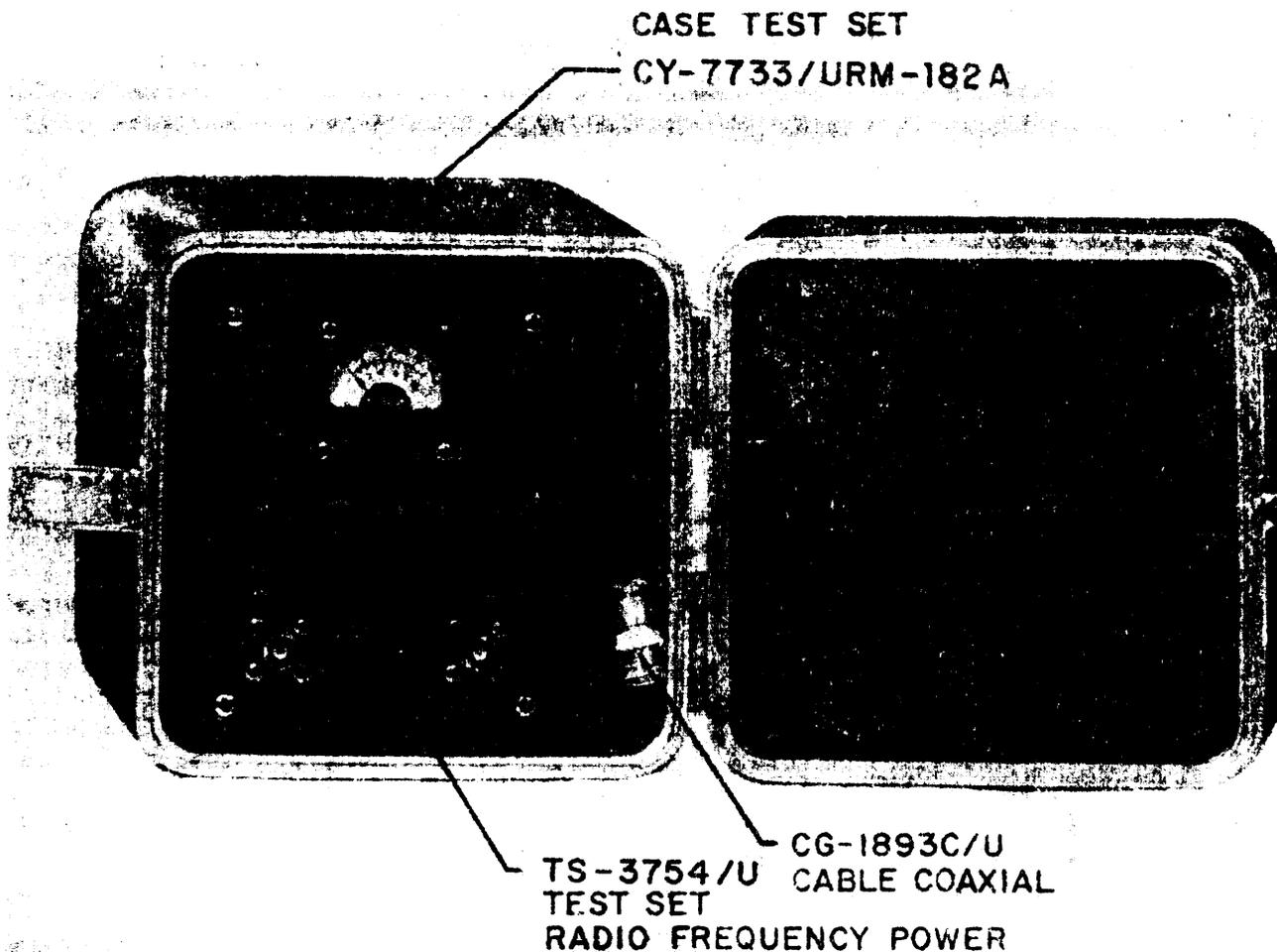
EIR's will be prepared using DA Form 2407 (Maintenance Request). Instructions for preparing EIR's are provided in TM 38-750, The Army Maintenance Management System (TAMMS). EIR's should be mailed directly to Commander, US Army Communications and Electronic Materiel Readiness Command, ATTN: DRSEL-MA-Q, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

#### 1-5. Administrative Storage

For procedures and inspections required during administrative storage of this equipment, refer to chapter 4.

#### 1-6. Destruction of Army Materiel

Destruction of Army materiel to prevent enemy use shall be as prescribed in TM 750-244-2.



EI.5CX001

Figure 1-1. Test set, radio frequency, power AN/URM-182A.

## Section II. DESCRIPTION AND DATA

### 1-7. Purpose and Use

*a. Purpose.* The test set provides a simplified means of measuring output power (100 watts or less) from a transmitter capable of operating between 30 and 76 megahertz (MHz).

*b. Use.* The test set is used as a directional watt-meter which measures and monitors radio frequency (rf) power and load match on 50-ohm impedance coaxial lines. The test set is used to measure either forward or reflected power of rf transmission in ranges 0 to 10 or 0 to 100 watts.

### 1-8. Description

Test Set, Radio Frequency, Power AN/URM-182A consists of Test Set, Radio Frequency, Power TS-3754/U, Cable Assembly CG-1893C/U, and Case, Transit CY-7733/URM-182A. The description of each of the components are described in *a* through *c* below.

*a. Test Set, Radio Frequency, Power TS-3754/U.* The TS-3754/U is a portable device encased in an aluminum housing. The front panel contains a meter, four-position switch, and two coaxial con-

nectors marled ANT and XMTR. A clamp on the housing provides for mounting the TS-2609B/U on the handle of the transmitter being monitored.

b. *Cable Assembly, Radio Frequency CG-1893C/U.* The CG-1893C/U is a 10-inch long cable with a UG-88( )/U conector at each end. This cable provides the interconnection between the TS-2609B/U and the transmitter being monitored.

c. *Case, Test Set CY-7733/URM-182A.* The CY-7733/URM-182A is a molded plastic case designed to house and protect the TS-3754/U and CG-1893C/U during transit. It contains molded inserts for seating of the TS-3754/U and CG-1893C/U.

**1-9. Tabulated Data**

Measuring medium . . . . . Rf transmission in 50-ohm coaxial systems.  
 Frequency range . . . . . 30 to 76 MHz.

Rf power ranges (forward and reflected):  
 Low range . . . . . 0 to 10 watts.  
 High range . . . . . 0 to 100 watts.  
 Accuracy of reading  
 From -40°F to + 125°F  
 (10 watts) . . . . . ± 15% of full scale.  
 From -40°F to + 126°F  
 (100watts) . . . . . ± 10% of full scale.  
 Voltage standing wave ratio (VSWR) . . . . . Less than 1.10:1.  
 Insertion loss . . . . . 0.2 dB maximum.  
 Impedance . . . . . 50 ohms ± 10%.  
 Dimensions:  
 AN/URM-182A . . . . . 6¼ in. l x 6¼ in. w x 3½ in. h.  
 TS-3754/U . . . . . 4¾ in. l x 3¾ in. w x 3¼ in. h.  
 Weight:  
 AN/URM-182A . . . . . 44 oz.  
 TS-3754/U . . . . . 24 oz.



## CHAPTER 2

### SERVICE UPON RECEIPT AND INSTALLATION

#### 2-1. Service Upon Receipt

The AN/URM-182A should be unpacked carefully to avoid damage to the equipment. Figure 2-1 shows the packaging and packing techniques used

by the factory for shipment. Avoid damaging the packing material if re-shipment is desired. Do not thrust sharp tools through the walls of the containers.

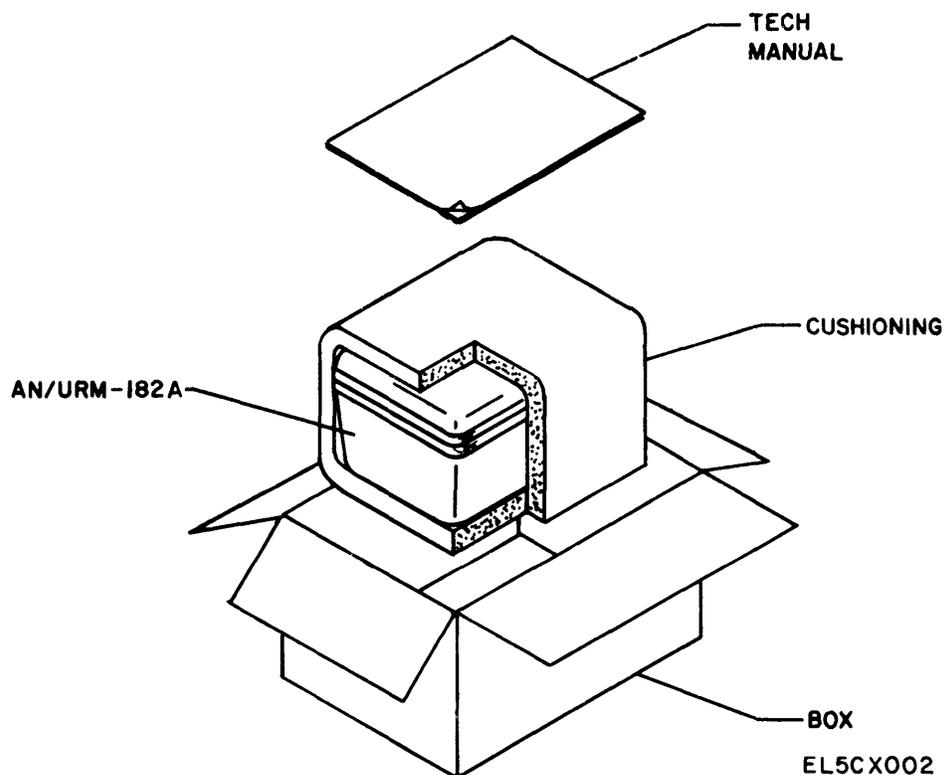


Figure 2-1. Equipment packing and packaging

#### 2-2. Site and Shelter Requirements

No special selection of site is required. The AN/URM-182A can be operated at ambient temperatures between -48F and +150F. The unit is designed to operate in sand, dust, salt spray and high humidity levels but prolonged exposure should be avoided.

#### 2-3. Unpacking

*a.* Inspect the equipment for damage during shipment. If the equipment has been damaged, report the damage on DD Form 6.

*b.* Check the equipment against the component listing in the operator's manual and the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of TM 38-750. The equipment should be placed in service even though a minor assembly or part that does not affect proper functioning is missing.

*c.* Check to see whether the equipment has been modified, equipment which has been modified will have the MWO number in the front panel near the nomenclature plate. Check also to see whether all

current applicable MWO's have been applied. Current MWO's applicable to the equipment are listed in DA Pam 310-7.

#### 2-4. Installation of TS-3754/U of Rf Transmitter

##### WARNING

The transmitter must be deenergized before connecting the TS-3754/U to the transmitter output.

##### CAUTION

Although the TS-3754/U is ruggedly constructed, unnecessarily rough handling, dropping, or severe impact can damage the delicate mechanism of the meter. Be careful when handling the TS-3754/U. Do not use the TS-3754/U to measure outputs of equipment that has a power output higher than 100 watts or frequency output not within the 30 to 76 MHz range.

##### NOTE

If an antenna is not available during performance of a test, use a dummy load (Dummy Load, Electrical DA-75/U or

equivalent) in its place.

*a.* Denergize the transmitter to which the TS-3754/U is to be connected.

*b.* Remove the TS-3754/U and CG-1893C/G from the CY-7733/URM-182A.

*c.* If the TS-3754/U is not being mounted on the transmitter, position the TS-3754/U so that the CG-1893C/U can reach between the transmitter and the TS-3754/U.

*d.* If the TS-3754/U is to be mounted on the transmitter, proceed as follows:

(1) Position the TS-3754/U so that the clamp engages with the handle on the front of the transmitter. Be sure that the handle selected allows the CG-1893C/G to interconnect between the transmitter output and the XMTR connector on the TS-3754/U.

(2) Tighten the thumbscrew on the clamp to secure the TS-3754/U to the handle of the transmitter.

*e.* Disconnect the antenna cable from the output of the transmitter.

*f.* Connect the CG-1893C/G between the transmitter output and the XMTR connector of the TS-3754/U.

## CHAPTER 3

### OPERATING INSTRUCTIONS

#### 3-1. Operator's Controls, Indicator, and Connectors

Except for two connectors on the CG-1893C/U, all other *controls*, indicator, and connectors are located

in the TS-37S4/U. These controls, indicator, and connectors are listed and described in table 3-1 and illustrated in figure 3-1.

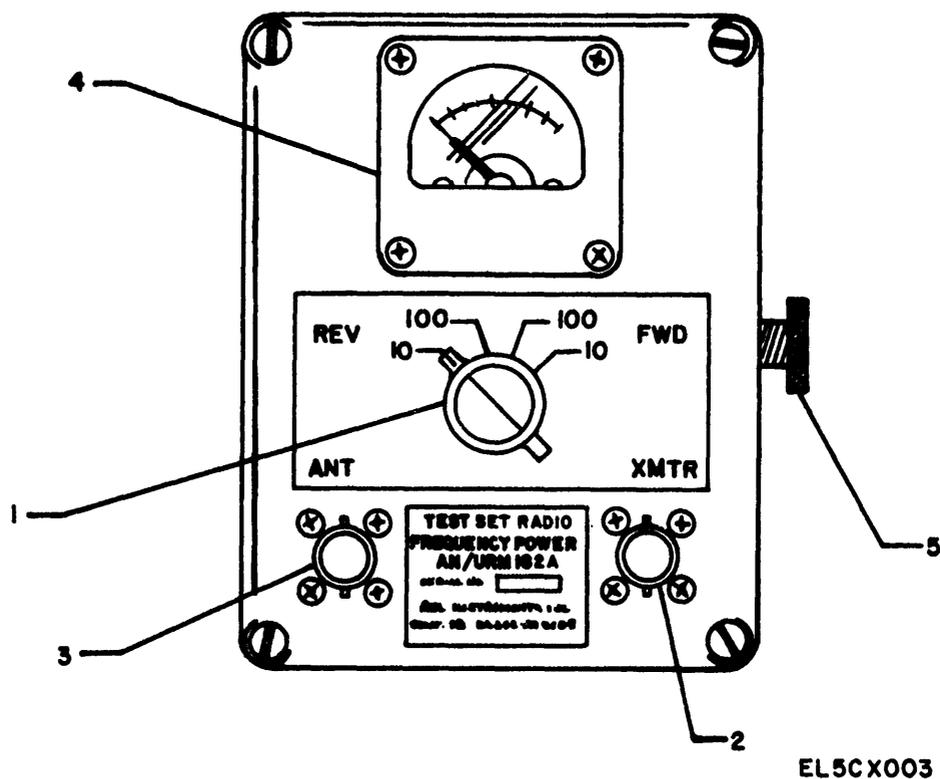


Figure 3-1. Operator's controls, indicator, and connectors.

Table 3-1. Operator's Controls, Indicator, and Connector.

Fig. 3-1

Item No.	Control, indicator, or connector	Function
1	Selector switch REV-FWD	Determines the power level and direction indicated by the meter.
2	XMTR connector	Provides a connection through which transmitter power is applied to the TS-3754/U.
3	ANT connector	Provides a connection through which transmitter power being measured can be applied to the transmitter antenna.
4	Meter	Indicates power measured by TS-3754/U. The dual scale indications are 0 to 100 watts and 0 to 10 watts.
5	Clamping screw	Provides a method of attaching and removing the TS-3754/U from the transmitter being monitored.

**CAUTION**

The TS-3754/U is designed to check the output of rf transmitters. It provides two forward and two reflected (reverse) output ranges. The selector switch (fig. 3-1) is normally detented in either the FWD 100 or REV 100 position. Before selecting either of the related 10 watt positions, check the wattage output of the transmitter in the 100 positions. If the meter indicates less than 10 watts on the 0 to 100 scale, the selector switch can be turned to the 10 watt range. If the meter indicators more than 10 watts, the selector switch *cannot be* set to the 10 watt position since it may cause damage due to overload.

**3-2. Types of Operation**

a. The TS-3754/U provides different types of information concerning the power output being measured. The same installation procedures (para 2-4) are used for each type of operation.

b. The following types of operation are the most usual when using the TS-3754/U:

- (1) Determining load power (para 3-3).
- (2) Measuring and monitoring transmitter power (para 3-4).
- (3) Measuring and monitoring reflected (reverse) power (para 3-5).
- (4) Determining voltage standing wave ratio (VSWR) (para 3-6).

**3-3. Determining Load Power**

**WARNING**

The transmitter must be deenergized before the TS-3754/U is connected.

- a. Install the TS-3754/U on the transmitter (para 2-4).
- b. Energize the transmitter.

c. Position the selector switch (fig. 3-1) in the FWD 100 position and check the indication on the meter 0 to 100 scale. If the meter indicates less than 10 watts, press the selector switch down to the FWD 10 position. The meter indication (whether the switch is in the 100 or 10 position) is the forward output power of the transmitter.

d. If the selector switch is being held in the FWD 10 position, release the selector switch; it should return to the FWD 100 position.

e. Position the selector switch in the 100 REV position and check the indication on the meter 0 to 100 scale. If the meter indicates less than 10 watts reflected power, rotate and hold the selector switch in the 10 REV position to take the reading. The meter indication is the reflected power. When released, the switch should return to the 100 REV position.

f. To determine the power dissipated in the load, subtract the reflected power from the forward power reading as follows:

$$\text{Watts (load)} = \text{Watts (forward)} - \text{Watts (reflected)}$$

$$\text{Example: } 8 \text{ watts (load)} = 10 \text{ watts (forward)} - 2 \text{ watts (reflected)}$$

g. The reflected power varies, depending on the load. Where appreciable power is reflected, as with a mismatched antenna, the subtraction of reflected power is necessary to obtain radiated or dissipated power readings; however, this step may be unnecessary when the load is closely matched to the transmitter because the reflected power becomes negligible.

**NOTE**

If the forward and reflected power readings are the same, there is an opening in the transmission line beyond the TX-3754/U.

### 3-4. Measuring and Monitoring Transmitter Power

With the TS-3754/U installed (para 2-4) and the transmitter energized, the TS-3754/U will continuously indicate the power of the transmitter output depending on the position of the selector switch (fig. 3-1). With the selector switch set to the FWD 100 position, forward power is measured; in the REV 100 position, reflected (reverse) power is measured. This mode of operation can be used to detect intermittent transmitter troubles which will be indicated by inconsistent meter indications.

### NOTE

If an antenna is not available, use Dummy Load, Electrical DA-75/U for the load.

### 3-5. Determining Voltage Standing Wave Ratio (VSWR)

*a.* The TS-3754/U is designed to provide forward and reflected power readings in watts. To convert these power reading to a voltage standing wave ration (VSWR) reading, use the graphs provided in figures 3-2 and 3-3.

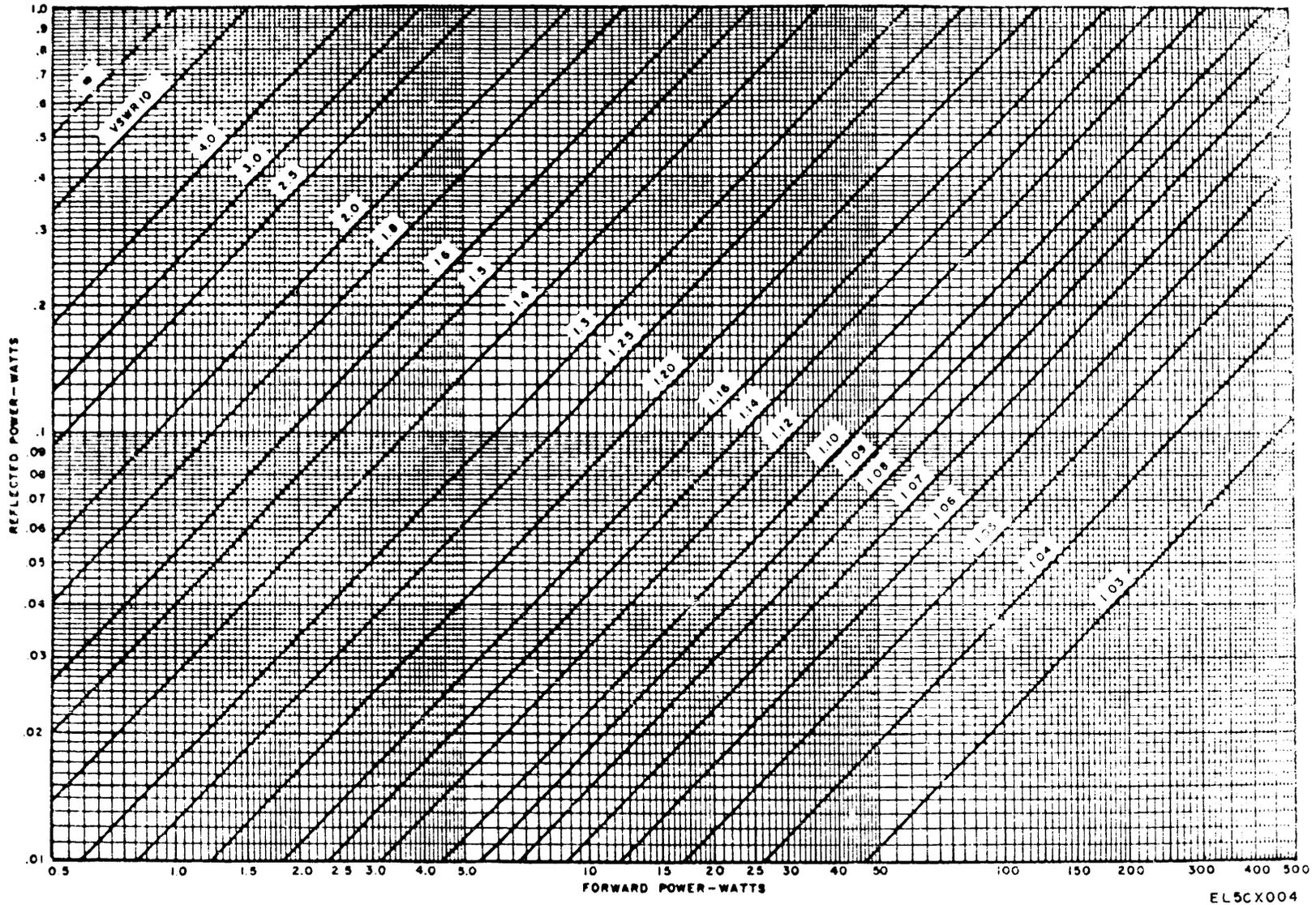


Figure 3-2. Power values versus VSWR (reflected power 0.01 to 1.0 watts).

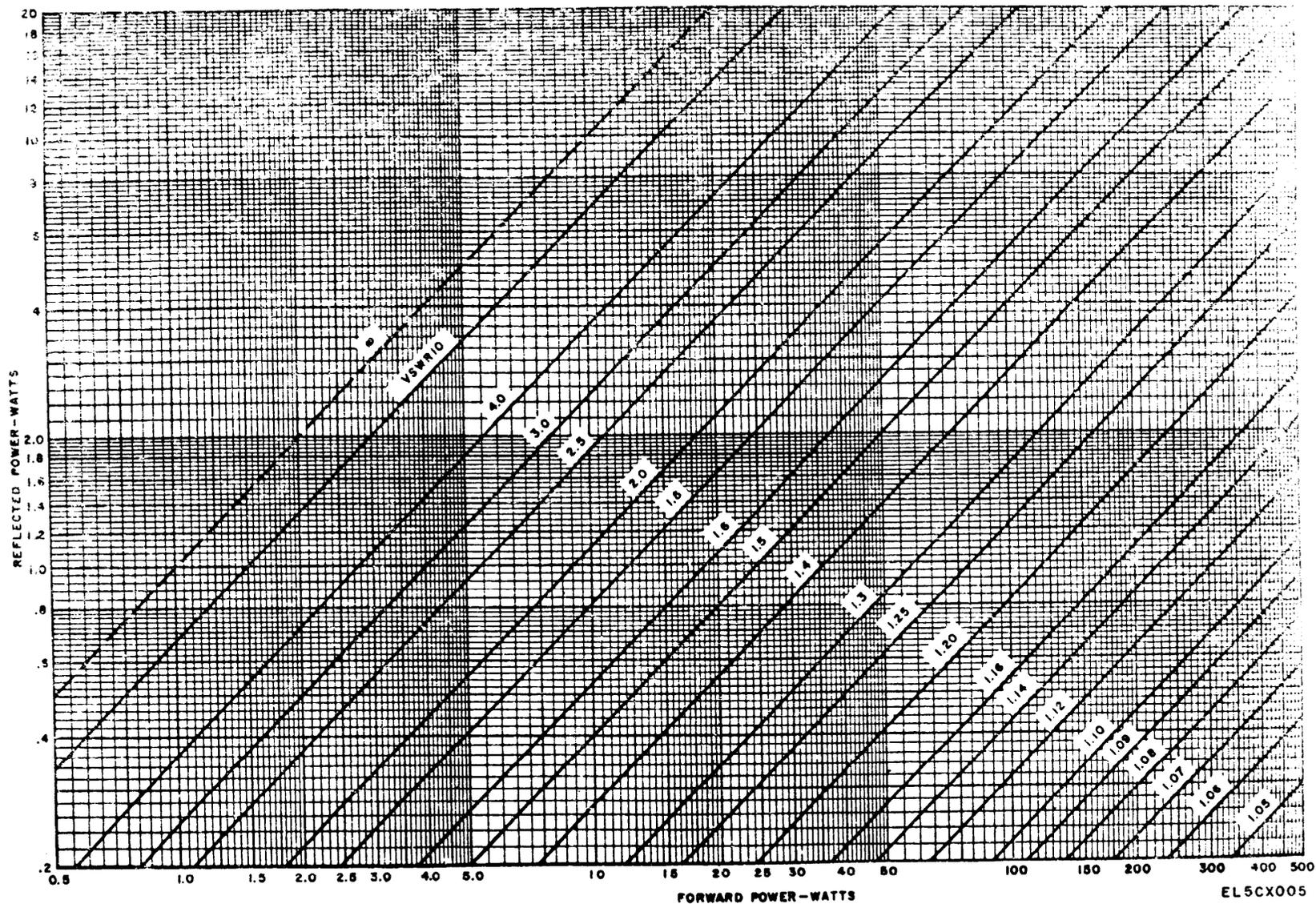


Figure 3-3. Power values versus VSWR (reflected power 0.2 to 20 watts).

*b.* Determine the forward and reflected (reverse) power in watts by following the instructions given in paragraph 3-4.

*c.* Refer to the appropriate graph (fig. 3-2 or 3-3) to convert these readings to VSWR. The graphs convert directly to VSWR values.

Example: The forward power reading is 35 watts (horizontal reading on figure 3-2). Reflected (reverse) power reading is 0.08 watt (vertical reading). Bisecting the two readings at the VSWR diagonal line indicates VSWR of 1.10.

### 3-6. Stopping Procedure

After completion of testing or monitoring the transmitter output, remove the TS-3754/U as follows:

#### WARNING

Always reenergize the transmitter before disconnecting the TS-3754/U.

- a.* Deenergize the transmitter.
- b.* Disconnect the CG-1893C/U from the antenna output connector of the transmitter and from the XMTR connector on the TS-3754/U.
- c.* Disconnect the antenna cable from the ANT connector on the TS-3754/U.
- d.* Loosen the clamp screw and remove the TS-3754/U from the transmitter.

*e.* Connect the antenna cable to the antenna output connector on the transmitter.

*f.* Store the TS-3754/U and CB-1893C/U in the CY-7733/URM-182A as shown in figure 1-1.

### 3-7. Operation at High or Low Temperatures

Although the TS-3754/U is temperature compensated to minimize the effect of temperature extremes, it will provide the greatest accuracy at normal room temperatures. When possible, avoid or minimize extreme high or low temperature conditions during operation.

### 3-8. Operation Under Tropical Conditions

*a.* Keep moisture wiped from the exterior of the TS-3754/U to prevent entry into the unit.

*b.* Avoid opening the TS-3754/U. The entry of moisture could corrode or damage the operating components.

### 3-9. Operation in Desert Climate

*a.* Keep sand, dust, and dirt wiped from the exterior of the TS-3754/U.

*b.* Avoid opening the TS-3754/U. The entry of foreign material could damage the operating components.

# CHAPTER 4

## OPERATOR/CREW MAINTENANCE INSTRUCTIONS

### 4-1. Tools and Test Equipment

There are no tools or test equipment required by operator/crew personnel during maintenance of the AN/URM-182A.

### 4-2. Lubrication

No lubrication is required for the AN/URM-182A.

### 4-3. Preventive Maintenance Checks and Services

To insure that the AN/URM-182A is always ready for operation, it must be inspected systematically so that defects may be discovered and corrected before

they result in serious damage or failure. The necessary checks and services to be performed are listed and described in table 4-1. The item numbers indicate the sequence of items to be inspected and the minimum inspection required. Defects discovered during operation of the unit (chap 3) will be noted for future correction to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation that would damage the equipment. Record all deficiencies together with the corrective action as prescribed in TM 38-750.

*Table 4-1. Operator/Crew Preventive Maintenance Checks and Services*

D-Daily

Time Required: 0.5 Hours

W-Weekly

Time Required: 0.8 Hours

Interval and Sequence No.	Item to be inspected and procedure	Worktime (M/H)
D 1	w 1 COMPLETENESS: See that the equipment is complete.	0.1
2	2 EXTERIOR SURFACES: Clean the exterior surfaces, including the panel. Check the meter face for scratches.	0.1
3	3 CONNECTORS: Check tighteners of all connectors.	0.1
4	4 CONTROLS AND INDICATORS: While making the operating checks (Item 5), observe that the mechanical action of the switch is smooth and free of external or internal binding, and that there is no excessive looseness.	0.1
5	5 OPERATION: During operation, be alert for any unusual performance or condition (chap. 3)	0.1
	6 CABLES: Inspect cords, cables and wires for chafed, cracked or frayed insulation.	0.1
	7 HANDLES AND LATCHES Inspect handles and latches for looseness.	0.1
	8 METAL SURFACES Inspect exposed metal surfaces for rust and corrosion.	0.1

### 4-4. Cleaning

Inspect the interiors of the TS-3754/U and CY-7733/URM-182A. The exterior surfaces should be free of dust, dirt, grease, and fungus.

- a. Remove dust and loose dirt with a clean, soft cloth.

### WARNING

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever it is used; avoid prolonged or repeated breathing of vapor. Do not use near an open flame or hot surface; trichloroethane

is not flammable but heat converts the fumes to a high toxic phosgene gas, the inhalation of which could result in serious injury or death. Prolonged or repeated skin contact with trichloroethane can cause skin inflammation. When necessary, use gloves, sleeves, and aprons which the solvent cannot penetrate.

b. Remove grease, fungus, and ground-in dirt from the exterior surfaces; use a cloth dampened (not wet) with trichloroethane.

c. Remove dust or dirt from the connectors with a cotton swab stick lightly dampened with trichloroethane.

**CAUTION**

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

d. Use a soft, clean cloth to clean the front panel, meter, and knob. If dirt is difficult to remove, dampen the cloth with water; mild soap may be used for more effective cleaning.

**4-5. Troubleshooting**

a. Table 4-2 provides a chart listing the frequent malfunctions, their probable causes, and the corrective actions required. Symptoms indicated in this table include those which have been observed during the preventive maintenance checks as well as those encountered during normal operation.

b. Any malfunction that is beyond the scope of the operator to correct shall be referred to higher category of maintenance.

Table 4-2. Operator/Crew Troubleshooting

<i>Malfunction</i>	<i>Probable cause</i>	<i>Corrective action</i>
1. No meter indication	a. No rf power applied to TS-3754/U. b. selector switch in wrong position,	a. Check transmitter and cables. b. Change selector switch position.
2. Intermittent or inconsistent meter readings.	a. Faulty antenna or load. b. Faulty transmitter or transmission lines, c. Faulty CB-1893C/U.	a. Replace antenna or load. b. Replace transmitter or transmission lines. c. Replace cable.
3. High vswr or high percent of reflected power.	a. Defective antenna or dummy load. b. Shorted or open transmission line. c. Foreign material in connectors of TS-3754/U.	a. Replace antenna or load. b. Replace transmission line. c. Clean connectors (para 4-4).

# CHAPTER 5

## ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

---

### Section 1. GENERAL INSTRUCTIONS

#### 5-1. Tools and Test Equipment Required

Tools and Test Equipment required for Organizational Maintenance are listed in the Maintenance Allocation Chart (MAC) in appendix E.

#### 5-2. Repair Parts

Repair parts available for use at organizational maintenance are listed in TM 11-6625-2718-14P-1.

#### 5-3. General

Case, Test Set CY-7733/URM-182A is a molded plastic container which is the same color throughout the full thickness of the part. For this reason, no repainting of the part is required. Touchup painting should be done only on those areas of the TS-3754/U whose original surfaces had been painted.

#### 5-4. Repainting Instructions.

- a. Touch up the painted surfaces of TS-3754/U

using Olive Drab enamel per FED-STD-595, Paint Number X24087, Type 1. Take care to prevent covering screw heads, nameplates, and connectors.

- b. Refer to TB 746-10. Field Instructions for Painting and Preserving Electronic Command Equipment.

#### 5-5. Refinishing Exterior Surfaces

You may remove gouges or scratches in the plastic case with fine sandpaper. Sand only enough to remove rough edges. Do not disrupt the surrounding finish any more than necessary. Do not attempt to fill in scratches or gouges with paint.

#### 5-6. Lubrication.

No lubrication is required for Test Set, Radio Frequency, Power AN/URM-182A.

### Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

#### 5-7. General

To ensure that the TS-3754/U is always ready for operation, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services are listed and described in tables 4-1, 5-1, and 5-2. The item numbers indicate the sequence of

items to be inspected and the minimum inspection required. Record all deficiencies together with the corrective action as prescribed in TM 38-750.

#### 5-8. Preventive Maintenance Checks and Services

The preventive maintenance checks and services applicable to organizational maintenance are listed in tables 5-1 and 5-2.

Table 5-1. Organizational Monthly Preventive Maintenance Checks and Services

M-Monthly

Total man-hours required: 1.0

Sequence Number	ITEM TO BE INSPECTED PROCEDURE	Work time (M/H)
	SECTION I-CY-7733/URM-182A Man-hours required: 0.2	
1	CASE BODY Inspect for punctures, severe gougings, broken insert.	0.1
2	HINGE AND CATCH Inspect for cracking at hing and for faulty catch engagement.	0.1
	SECTION II-Controls and Indicators (TS-3754/U)	
3	METER Check for free movement, legible dial markings and secure mounting. Tighten mounting screws.	0.1
4	SELECTOR SWITCH KNOB Check for secure mounting. Replace cracked knob. Replace missing setscrew or tighten loose setscrew.	0.1
5	SELECTOR SWITCH Check that switch operates freely through its full range and that it detents firmly in both 100 positions. Make sure that when it is operated to 10 and released, it will return to its associated 100 position.	0.1
6	CG-1893C/U Check the cable for pliability, proper insulation, and secure connectors.	0.1
7	LINE CONNECTORS (TS-3754/U) Check that the cable connectors engage the test set connectors firmly and securely. Inspect for secure mounting, proper engagement by cable connectors, and clean contact points.	0.1
8	CLAMPING SCREW (TS-3754/U) Inspect for secure clamp mounting, and for presence of clamping screw and chain.	0.1
	SECTION IV-Operation Man-hours required: 0.2	
9	OPERATION  <b>WARNING</b> Transmitter must be deenergized before TS-3754/U is connected. Turn transmitter on. With selector switch in 100 FWD position, check the meter indication. It should indicate transmitter output. If output is less than 10 watts, turn selector switch to 10 FWD position. Meter should indicate power output as read on lower scale. Turn switch to RFL position and check for an indication of reflected power. Refer to troubleshooting chart if TS-3754/U fails to function properly.	0.2

Table 5-2. Organizational Quarterly Preventive Maintenance Checks and Services

Q-Quarterly

Total time required: 0.3

Sequence Number	ITEM TO BE INSPECTED PROCEDURE	Work Time (M/H)
1	PUBLICATIONS Check DA Pam 310-4 to see that all publications are complete, serviceable, and current.	0.1
2	MODIFICATIONS Check DA Pam 310-7 to determine if new applicable MWO's must be applied immediately. All NORMAL MWO's must be scheduled.	0.1
3	SPARE PARTS Check all spare parts for general condition and method of storage. There should be no evidence of overstock, and all shortages must be on valid requisitions.	0.1

**5-9. Troubleshooting**

This section provides information necessary to help organizational maintenance personnel identify, localize, and repair troubles which are within their allocated scope.

tenance troubleshooting chart. You must report to higher category maintenance any malfunction that is beyond the scope of organizational maintenance personnel. Also refer to table 3-2, Operator/Crew Troubleshooting.

**5-10. Troubleshooting Chart**

Refer to table 5-3 for the organizational main-

*Table 5-3. Organizational Maintenance Troubleshooting*

Malfunction	Probable cause	Corrective action
1. Case cover fails to latch.	a. Broken hinge. b. Defective latch.	a. Replace case. b. Replace case.
2. Knob slips on selector switch shaft.	a. Knob cracked. b. Setscrew loose. c. Threads in knob stripped.	a. Replace knob (para 4-12). b. Tighten setscrew. c. Replace knob.
3. Cable fails to engage test set connector or engages with difficulty.	a. Defective cable connector. b. Dirt in cable connector or test set connector. c. Test set connectors defective.	a. Replace cable. b. Clean connectors. c. Replace test set connectors (para 4-14),
4. Erratic, inconsistent meter readings.	a. Faulty cable or connector. b. Defective transmitter or antenna.	a. Replace cable or connector (para 4-14). b. Repair or replace transmitter or antenna.
5. Clamping screw fails to mount test set.	a. Clamping screw threads defective. b. Mounting block threads defective.	a. Replace clamping screw (para 4-13). b. Insert screw from opposite side of block.

**Section VI. MAINTENANCE OF TEST SET, RADIO FREQUENCY, POWER AN/URM-182A**

**5-11. General**

This section describes maintenance procedures that are the responsibility of organizational maintenance.

**5-12. Knob Replacement.**

(fig. 3-1)

a. If the knob is loose on the shaft of the selector switch, tighten the knob setscrew.

b. To replace knob, loose the setscrew and pull the knob from the switch shaft. Back off the set-screw in the new knob and slide the knob onto the shaft. Tighten the setscrew snugly to secure the knob. After tightening, make sure the knob aligns with the switch plate indications. Reposition the knob on the shaft if it is misaligned.

c. After tightening or installing the knob, operate the selector switch through its full operating range and recheck that the knob pointer aligns with the switch plate markings for all operating positions.

**5-13. Clamping Screw Replacement**

a. Remove the screw to disconnect the chain from the clamping screw. Remove the screw to disconnect the opposite end of the chain. Unscrew the clamping screw from the mounting block of the test set.

b. Turn the replacement clamping screw into the mounting block. Note that it can be inserted from either side of the block. Secure the chain to the clamping screw and to the mounting block with screws.

**5-14. Repairing Cable Assembly CG-1893C/U**

(fig. 5-1)

a. Loosen the cable socket screws that hold the rf cable to the male BNC-type connector plugs; pull the rf cable from the connectors.

b. Remove the collars, seals, and cable socket screws from the end of the rf cable.

c. Replace seals and any other defective parts.

d. Cut a new rf cable (RG-58( )/U) to the length

shown in figure 5-1. Trim the exterior insulation to the length shown.

e. Install the cable socket screws, seals, and collars on the end of the new piece of rf cable. Roll the shield of the rf cable over the collars as shown in figure 5-1. Trim the shield as necessary to maintain

the required dimensions. Trim the inside insulation to the dimensions shown.

f. Solder new cable end pins on the ends of the internal wire of the rf cable. Insert the ends of the rf cable and assembled parts into the male BNC-type connector plug; tighten the cable socket screws into the connector.

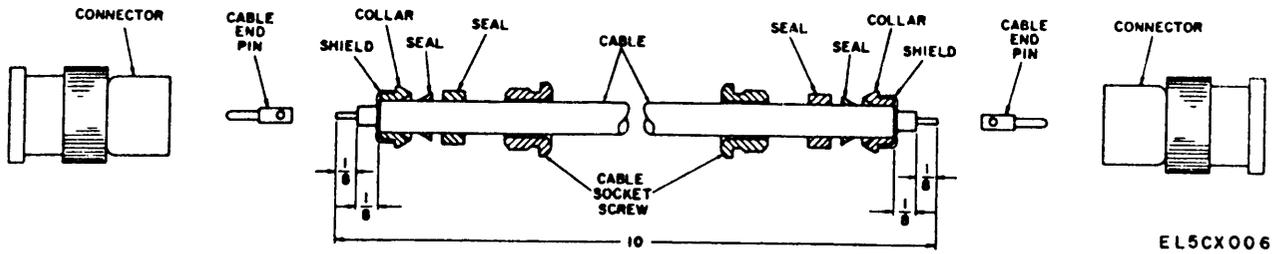


Figure 5-1. Cable assembly CG-1893/U, fabrication diagram.

# CHAPTER 6

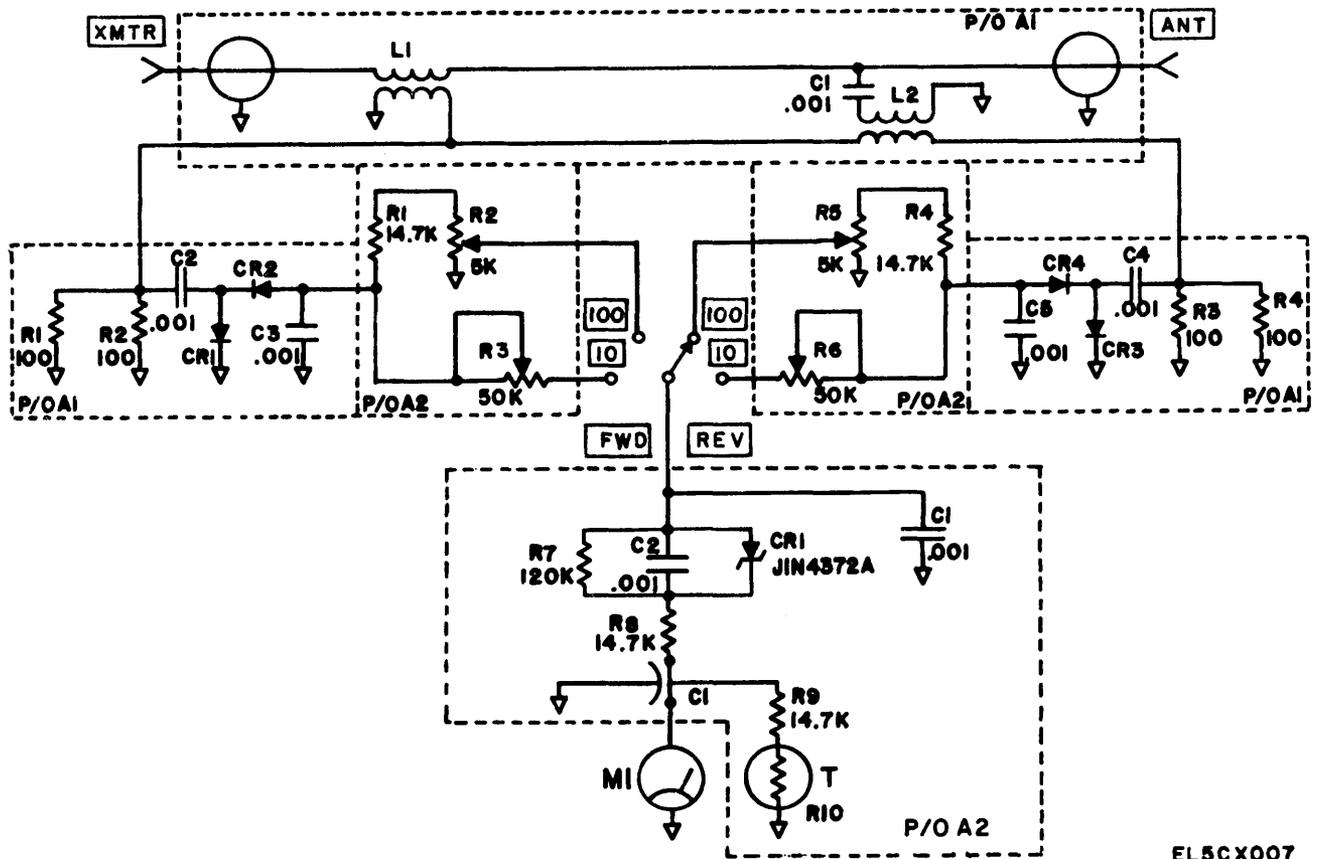
## FUNCTIONING OF EQUIPMENT

### 6-1. Rf Power in Transmission Lines

a. When rf power is transmitted through a transmission line to a load, this power or energy is described as the forward traveling wave. If the load on the end of the transmission line is of the correct ohmic value [matched], all the power traveling to the load is absorbed by the load. If the ohmic value of the load is of some other value (mismatched) than the correct value, the load does not absorb all the forward traveling wave. This unused wave is reflected and travels backward along the transmission

line toward the source of power. This wave is described as the reflected traveling wave. The TS-3754/U enables maintenance personnel to effectively troubleshoot a transmitter by providing readings that reveal the amount of forward and reflected rf power in the transmission line connected between the transmitter and an antenna.

b. The TS-3754/U contains a short transmission line that acts as an extremely accurate 50-ohm load from which correct measurements of the forward and reflected power are taken.



EL5CX007

Figure 6-1. TS-3754/U, schematic diagram.

## 6-2. Functioning of TS-3754/U

(fig. 6-1)

*a. Function Description.* The TS-3754/U is a solid state unit using a directional coupler, voltage doubler rectifier configuration, and an output meter calibrated in watts. There are two separate rectifiers, one for forward and one for reverse or reflected power measurements. The meter circuit is switched between forward and reverse and 100W and 10W positions.

*b. Circuit Description.* The directional coupler consisting of L1 and L2 forms a junction of two waveguides couples in such a way that a traveling wave in one guide will induce a traveling wave in the other guide traveling in the same direction, and dependent on the direction of the wave one rectifier,

forward, or the other rectifier, reverse, will receive a signal.

The rectifier circuits made up of C2, CR1, CR2, C3, C4, CR3, CR4 and C5 are used in two separate voltage doubler circuits having a flat frequency response over the range of 30-76MHZ. Additional replaceable fixed trimmer capacitors may be installed. The output of either the forward rectifier or the reverse rectifier is selected by the selector switch and passed along to the meter circuit.

The meter circuit consists of resistors R1, R4, potentiometers R2, R3, R5 and R6 for calibration, and R7, C2, CR1 for meter scale shaping, and R9, R10 for temperature compensation. The meter is read in watts on two scales, 0-100 watts and 0-10 watts. The selector switch has a spring return to the 100W positions from either 10W position.

# CHAPTER 7

## DIRECT SUPPORT MAINTENANCE

---

### 7-1. Troubleshooting

Troubleshooting is performed on the AN/UR-M-182A at direct support to determine that the proper continuity exists through the TS-3754/U and the CG-1893C/U.

### 7-2. Tools and Test Equipment Required

The tools and test equipment required for troubleshooting at the direct support maintenance level are listed in the maintenance allocation chart (MAC) (app E).

### 7-3. Checking TS-3754/U

*a.* If the TS-3754/U fails to provide proper

transmitter output readings, disconnect the TS-3754/U from all associated equipment including the CG-1893C/U.

*b.* Using the proper multimeter, check for continuity between the center conductors of the XMTR and ANT connectors. If continuity does not exist, refer the TS-3754/U to general support maintenance.

*c.* Check for continuity through the CG-1893C/U. Continuity must exist between the outershell of each connector and between the inner pins at each end. If continuity does not exist, repair the CG-1893C/U in accordance with paragraph 5-14.



## CHAPTER 8

# GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

### Section I. TROUBLESHOOTING

#### 8-1. Tools and Test Equipment Required

Tools and test equipment required for troubleshooting the TS-3754/U are listed in the maintenance allocation chart (MAC) (app E).

#### 8-2. Troubleshooting the TS-3754U

Troubleshooting the TS-3754/U consists of one of two test setups (figs. 8-1 and 8-2), depending on the type of test being performed, and the use of tables 8-1 and 8-2. Figure 8-1 illustrates the test setup when checking the TS-3754/U under forward wave operation. Figure 8-2 illustrates the test set up when checking the TS-3754/U under reflected (reverse) wave operation. Table 8-1 provides the test settings required for each of the four troubleshooting procedures while table two provides the troubleshooting chart for location of

defective components. Troubleshoot the TS-3754/U as follows:

a. Remove the four flathead screws (fig. 8-3A) that hold the front panel to the case. Remove the front panel from the case.

b. On the rear of the front panel, remove the four screws (fig. 8-3B) securing the cover of the inner box. Remove the inner box.

c. Remove the two standoffs (fig. 8-3B) and two nuts that secure the printed circuit board A2 to the front panel. Pull out the A2 board so that the components of printed circuit board A1 are accessible to the test equipment probes.

d. Using either figure 8-1 or 8-2 for the test setup required (forward or reverse), connect the TS-3754/U to the test transmitter and dummy load.

e. Energize the transmitter and perform the troubleshooting procedures provided in table 8-2.

Table 8-1. Test Setup

	Test Setting			
	A (fig. 8-1)	B (fig. 8-2)	C (fig. 8-1)	D (fig. 8-2)
TS-3754/U selector switch position	FWD	REV	FWD	REV
TS-3754/U XMTR connector to:	100W transmitter	100W 50-ohm load	10W transmitter	10W 50-ohm load
TS-3754/U ANT connector to:	50-ohm load	transmitter	50-ohm load	transmitter
Transmitter power & frequency	50 Watts 30 MHz	50 Watts 30 MNz	5 Watts 30 MHz	5 Watts 30 MHz

Table 8-2. Troubleshooting Chart

In the chart below, the "Trouble Symptom" column indicates the operating defect associated with the equipment, the "Test Setting" column indicates the proper position for the TS-3754/U selector switch (fig. 3-1) and the connections between the TS-3754/U, the transmitter, antenna (dummy load, the "Internal Measurements" column indicates the voltage or resistance measurements to be taken to determine the defective part, and the "Defective Component" column indicates the suspected component and reason it is defective.

Trouble Symptom	Test Setting	Internal Measurements	Defective Component
1. Meter does not deflect from zero	A	1) 0 volts DC across A1A1C3 2) -12V DC across A1A1C3 and 0V DC from S1 wiper to ground	A1A1C2 open A1A1CR1 shorted A1A2R2 open S1 defective
2. Meter indicates about 18 watts.	B	-.23V from A1A2CR1 cathode to ground	A1A2CR3 open
3. Meter indicates 0	B	-2.1V from S1 wiper to ground	A1C1 feedthrough shorted Meter defective
4. Meter indicates 0	C	-3.3 volts DC from A1A1C3 to ground and 0V DC from S1 wiper to ground	A1A2R3 open S1 defective
5. Meter indicates about 2 watts		-.23V from A1A2CR1 cathode to ground	A1A2CR3 open
6. Meter indicates 0	D	0 volts DC across A1A1C5	A1A1C5 shorted A1A1CR3 shorted A1A1C4 open
7. Meter indicates less than 5 watts but more than zero.	D	Less than 2.1 volts from wiper of S1 to ground	A1A2R6 out of calibration A1A1CR3 open

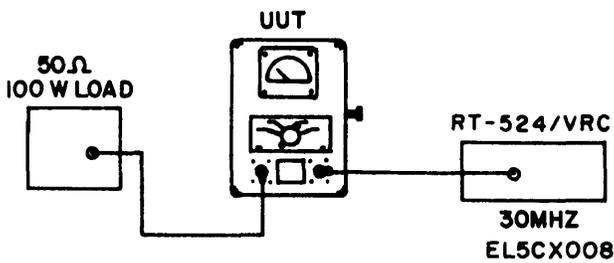


Figure 8-1. Troubleshooting test, forward power.

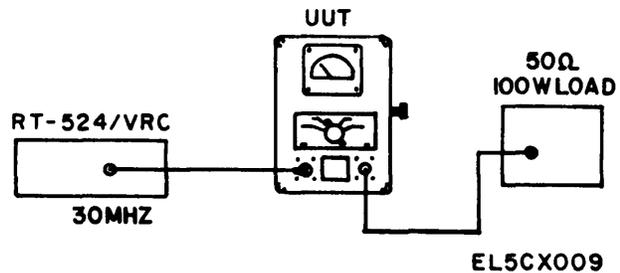


Figure 8-2. Troubleshooting test, reverse (reflected) power.

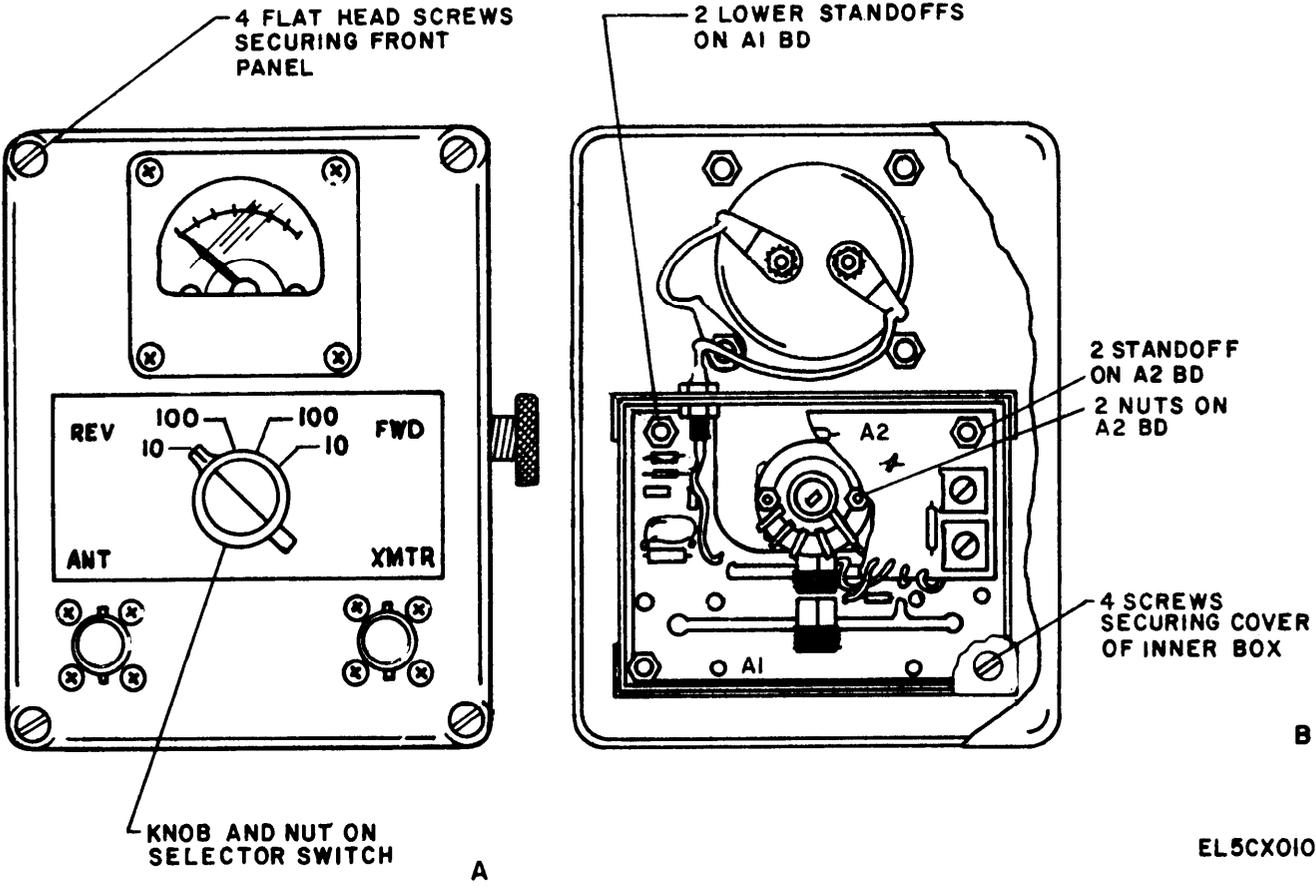
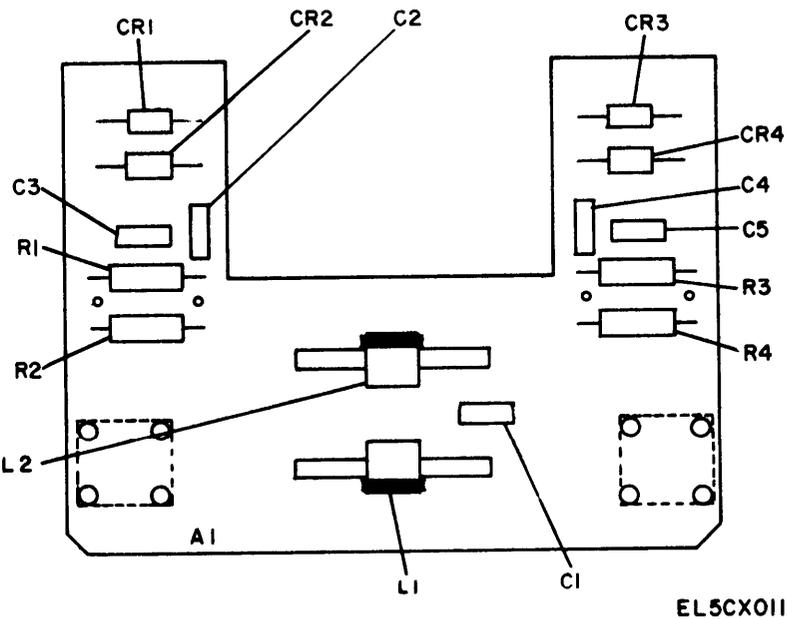


Figure 8-3. TS-3754/U, chassis parts location diagram.



EL5CX011

Figure 8-4. TS-3754/U, A1 printed circuit board, parts location.

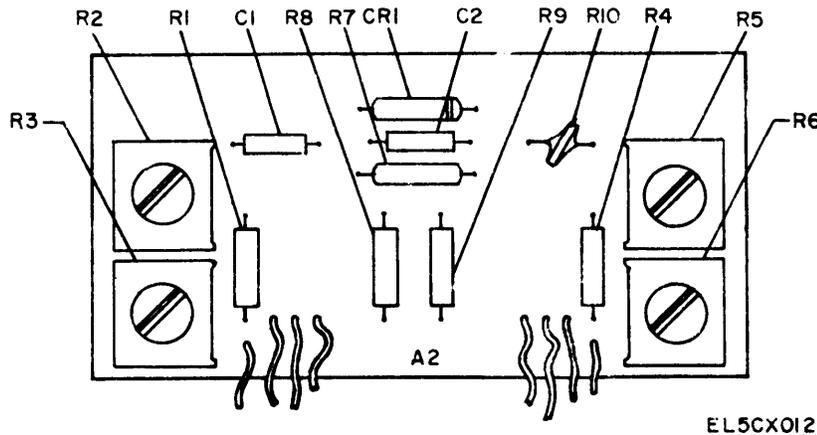


Figure 8-5. TS-3754/U, A2 printed circuit board, parts location.

## Section II. MAINTENANCE OF AN/URM-182A

### 8-3. General

The only component of the AN/URM-182A that requires general support maintenance is the TS-3754/U. Maintenance of the CG-1893C/U is performed at the organizational level (chap 5). Since the CY-7733/URM-182A is constructed of molded plastic, no maintenance can be performed.

### 8-4. Disassembly of TS-3754/U

Follow the procedures provided below only to the level required for troubleshooting, repair, or alignment.

#### a. Removal of Front Panel Assembly.

(1) Remove the four flathead screws (fig. 8-3) holding the front panel to the case.

(2) Holding the front panel with the meter facing down, slowly lift the case from the front panel.

b. *Removal of Inner Box Cover.* Remove the four screws (fig. 8-3B) securing the cover to the inner box.

c. *Removal of Printed Circuit Boards A1 and A2* (fig. 8-3).

(1) Remove the two standoffs and nuts that secure the A2 board to the chassis and selector switch. Remove and tag each of the wires attached to the A2 board.

(2) Remove the knob from the selector switch.

(3) Remove the hexagonal nut (under the knob) that secures the selector switch to the front panel.

(4) Remove four screws securing the ANT and XMTR connectors to the front panel.

(5) Remove the inner box from the front panel.

(6) Remove the two standoffs on the A1 board. Slowly lift the A1 board from the front panel. Unsolder and tag each of the wires attached to the A1 board.

### 8-5. Alignment Procedure

a. Remove the front panel assembly from the case (para 8-4).

b. Setup equipment for alignment (fig. 8-6).

c. Set selector switch on the TS-3754/U to the FWD 100W position.

d. Set the RT-524/VRC to the HIGH POWER Position (TM 11-5820-401-12). Operate the RT-524/VRC.

e. Measure the rf output of the RT-524/VRC on the AN/URM-120.

f. Adjust R2 (fig. 8-5), on the A2 board, of the TS-3754/U until the front panel meter indicates the same reading as the AN/URM-120 (e above).

g. Set the RT-524/VRC to the LOW POWER position.

h. Press the selector switch of the TS-3754/U to the FWD 10W position.

i. Adjust R3, on the A2 board, until the front panel meter indicates the same reading as the AN/URM-120.

j. Repeat steps d through i above.

k. Turn off the RT-524/VRC.

l. Set the selector switch of the TS-3754/U to the REV 100W position.

- m. Set the RT-524/VRC to the HIGH POWER position. Operate the RT-524/VRC.
- n. Adjust R5, on the A2 board, until the front panel meter indicates the same reading as the AN/URM-120.
- o. Set the RT-524/VRC to the LOW POWER position.
- p. Press the selector switch of the TS-3754/VRC to the REV 10W position.
- q. Adjust R6, on the A2 board, until the front panel meter indicates the same reading as the AN/URM-120.
- r. Repeat steps l through q above.
- s. Turnoff the RT-524/VRC.
- t. Disconnect the test setup.

- u. Replace the front panel assembly in the case and secure with the four screws.

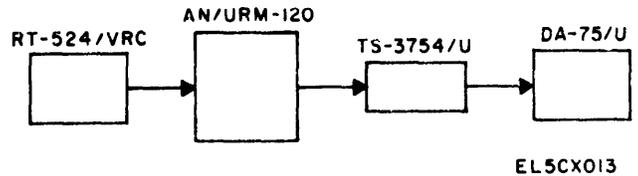


Figure 8-6. Alignment setup.

### Section III. GENERAL SUPPORT TESTING PROCEDURES

#### 8-6. General

These procedures are for the purpose of determining whether the performance of the AN/URM-182A is satisfactory for return to the user. Before performing these tests, the troubleshooting procedure (para 8-2) should be performed to insure that the unit is operational. Once the unit is operational, the electrical test (para 8-7) should next be performed. If the unit fails to meet the tolerances listed in table 8-3, the alignment procedure (para 8-5) should be performed.

#### 8-7. Electrical Tests

Perform the procedures provided in table 8-3 utilizing the test setup shown in figure 8-6 to obtain

the forward power measurements. Reverse the input and output leads to the TS-3754/U for reverse power measurements. To measure insertion loss, proceed as follows:

- a. Setup equipment as shown in figure 8-7 and utilize table 8-4.
- b. Measure the output of the RT-524/VRC on the AN/URM-120 without the TS-3754/U in the circuit; note the reading.
- c. Connect the TS-3754/U into the test circuit and take a second reading.
- d. Calculate insertion loss as follows:

$$db = 10 \log \frac{\text{TS-3754/U reading}}{\text{AN/URM-120 reading}}$$

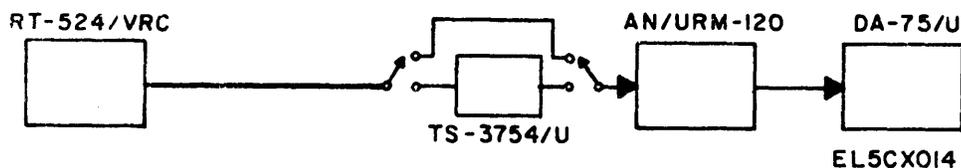


Figure 8-7. Insertion loss test setup.

Table 8-3. Electrical Tests

RT-524/VRC power setting	RT-524/VRC freq. setting	TS-3754 selector switch setting	Test procedure	Performance standard
HIGH POWER	30 MHz	FWD 100W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
HIGH POWER	50 MHz	FWD 100W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
HIGH POWER	76 MHz	FWD 100W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
LOW POWER	30 MHz	FWD 10W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
LOW POWER	50 MHz	FWD 10W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
LOW POWER	76 MHz	FWD 10W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
HIGH POWER	30 MHz	REV 100W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
HIGH POWER	50 MHz	REV 100W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
HIGH POWER	76 MHz	REV 100W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
LOW POWER	30 MHz	REV 10W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
LOW POWER	50 MHz	REV 10W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>
LOW POWER	76 MHz	REV 10W	Read TS-3754/U	<b>AN/URM-120 reading ± 5%</b>

Table 8-4. Insertion Loss Test

RT-524/VRC power and frequency setting	TS-3754/U selector switch setting	Insertion loss
LOW POWER and 30 MHz	10W FWD or REV	less than 0.2db
LOW POWER and 50 MHz	10W FWD or REV	less than 0.2db
LOW POWER and 76 MHz	10W FWD or REV	less than 0.2db

## APPENDIX A

### REFERENCES

- DA Pam 310-4 Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
- DA Pam 310-7 US Army Equipment Index of Modification Work Orders.
- SB 38-100 Preservation, Packing, Marking, and Marking Material, Supplies, and Equipment Used by the Army.
- TB 740-10 Field Instructions for Painting and Preserving Electronics Command Equipment.
- TM 11-5820-401-12 Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists: Radio Sets AN/VRC-12 (5820-00-223-7412), AN/VRC-43 (5820-00-223-7415), AN/VRC-44 (5820-00-223-7417), AN/VRC-45 (5820-00-223-7418), AN/VRC-46 (5820-00-223-7433), AN/VRC-47 (5820-00-223-7434), AN/VRC-48 (5820-00-223-7435), AN/VRC-49 (5820-00-223-7437), AN/VRC-54 (5820-00-223-7567), and AN/VRC-55 (5820-00-402-2265); Mounting MT-1029/VRC (5820-00-893-1323) and Mounting MT-1898/VRC (5820-00-893-1324); Antenna AT-912/VRC (5820-00-897-6357); Control Frequency Selector C-2742/VRC (5820-00-892-3343) and Control, Radio Set C-2299/VRC (5820-00-892-3340).
- TM 11-5965-280-15 Operator, Organizational, DC, and Depot Maintenance Manual Including Repair Parts and Special Tools List: Handset H-189/GR.
- TM 11-6625-366-15 Organizational, DS, GS, and Depot Maintenance Manual: Multimeter TS-352B/U.
- TM 11-6625-446-15 Operator's, Organizational, DS, GS, and Depot Maintenance Manual: Wattmeter AN/URM-120.
- TM 38-750 The Army Maintenance Management System (TAMMS).
- TM 750-244-2 Procedures for Destruction of Electronic Materiel to Prevent Enemy Use (Electronics Command).



# APPENDIX B

## COMPONENTS OF END ITEM LIST

---

### Section I. INTRODUCTION

#### B-1. Scope

This appendix lists integral components of and basic issue items for the AN/URM-182A to help you inventory items required for safe and efficient operation.

#### B-2. General

This Components of End Item List is divided into the following sections:

*a. Section II. Integral Components of the End Item.* These items, when assembled, comprise the AN/URM-182A and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

*b. Section III. Basic Issue Items.* These are the minimum essential items required to place the AN/URM-182A in operation, to operate it, and to perform emergency repairs. Although shipped separately packed they must accompany the AN/URM-182A during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BII, based on TOE/MTOE authorization of the end item.

#### B-3. Explanation of Columns

*a. Illustration.* This column is divided as follows:

- (1) *Figure number.* Indicates the figure number of the illustration on which the item is shown.
- (2) *Item number.* The number used to identify item called out in the illustration.

*b. National Stock Number.* Indicates the National stock number assigned to the item and which will be used for requisitioning.

*c. Description.* Indicates the Federal item name and, if required, a minimum description to identify the item. The part number indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. Following the part number, the Federal Supply Code for Manufacturers (FSCM) is shown in parentheses.

*d. Location.* The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving onto an adjacent area.

*e. Usable on Code.* Not applicable. "USABLE ON" codes are included to help you identify which component items are used on the different models. Identification of the codes used in these lists are:

*Code*

*Used on*

*f. Quantity Required (Qty Reqd).* This column lists the quantity of each item required for a complete major item.

*g. Quantity.* This column is left blank for use during an inventory. Under the Rcvd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item.

(Next printed page is B-3).



SECTION II INTEGRAL COMPONENTS OF END ITEM  
 SECTION III BASIC ISSUE ITEMS

(1) ILLUSTRATION		(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION  PART NUMBER (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY	
(A) FIG NO.	(B) ITEM NO.						RCVD	DATE
SECTION II. INTEGRAL COMPONENTS OF END ITEM								
1-1		6625-01-062-3600	TS-3754/U (70998)			1		
1-1		6625-01-062-3619	CI-7733/URM-182A (70998)			1		
1-1		5995-00-465-1791	QJ-1893C/U (70998)			1		



# APPENDIX E

## MAINTENANCE ALLOCATION

---

### Section I. INTRODUCTION

#### E-1. General

This appendix provides a summary of the maintenance operations for AN/URM-182. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

#### E-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

*a. Inspect.* To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

*b. Test.* To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

*c. Service.* Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

*d. Adjust.* To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

*e. Align.* To adjust specified variable elements of an item to bring about optimum or desired performance.

*f. Calibrate.* To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

*g. Install.* The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

*h. Replace.* The act of substituting a serviceable like type part, subassembly, or module (component or a ssembly) for an unserviceable counterpart.

*i. Repair.* The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly, end item, or system).

*j. Overhaul.* That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

*k. Rebuild.* Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

#### E-3. Column Entries

*a. Column 1, Group Number.* Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

*b. Column 2, Component/Assembly.* Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

*c. Column 3, Maintenance Functions.* Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

*d. Column 4, Maintenance Category.* Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn (s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function

at the indicated category of maintenance. If the number of complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of task-hours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 areas follows:

- C-Operator/Crew
- O-Organizational
- F-Direct Support
- H-General Support
- D-Depot

*e. Column 5, Tools and Equipment.* Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

*f. Column 6, Remarks.* Column 6 contains an alphabetic code which leads to the remark in section

IV, Remarks, which is pertinent to the item opposite the particular code.

**E-4. Tool and Test Equipment Retirements (see III)**

*a. Tool or Test Equipment Reference Code.* The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

*b. Maintenance Category.* The codes in this column indicate the maintenance category allocated the tool or test equipment.

*c. Nomenclature.* This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

*d. National/NATO Stock Number.* This column lists the National/NATO stock number of the specific tool or test equipment.

*e. Tool Number.* This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

**E-5. Remarks (sect IV)**

Not applicable.

SECTION II MAINTENANCE ALLOCATION CHART  
FOR

RADIO FREQUENCY TEST SET AN/URM-182A

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	RF TEST SET TS-3754/U  CABLE ASSEMBLY CG-1893C/O  CASE CY-7733/URM-182A	Inspect		0.5					10
		Test			1.0				1 thru 4
		Test				1.0			3 thru 9
		Service				0.5			3 thru 9
		Replace			0.5				1 thru 4
		Replace				1.0			3 thru 9
		Repair			0.5				1 thru 4
		Repair				1.0			3 thru 9
		Repair					1.5		3 thru 9
		Overhaul							
		Repair		0.3				10	
		Replace		0.1					
		Replace		0.1					

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS  
FOR

RADIO FREQUENCY TEST SET AN/URM-182

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL, NATO STOCK NUMBER	TOOL NUMBER
1	F	CABLE ASSEMBLY RF CG-1173/U	5995-00-823-2986	
2	F	ADAPTER UG-201A/U	5935-00-201-3090	
3	FH	MULTIMETER TS-352B/U	6625-00-553-0142	
4	FH	TOOL KIT TK-100/G	5180-00-605-0079	
5	H	RECEIVER-TRANSMITTER, RADIO RT-524/VRC	5820-00-892-0622	
6	H	HANDSET H-189/GR or H-38/U	5965-00-069-8886 5965-00-892-0972	
7	H	RADIO FREQUENCY POWER, TEST SET AN/URM-120	6625-00-873-8430	
8	H	ADAPTER UG-606/U	5935-00-295-6295	
9	H	DUMMY LOAD, ELECTRICAL DA-75/U	6625-00-177-1639	
10	O	TOOLS AND TEST EQUIPMENT AVAILABLE TO THE REPAIR TECHNICIAN FOR THE ASSIGNED MISSION.		



# SOMETHING WRONG WITH THIS MANUAL?

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

FROM: (YOUR UNIT'S COMPLETE ADDRESS)

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

DATE 10 July 1975

PUBLICATION NUMBER

TM 11-5840-340-12

DATE

23 Jan 74

TITLE

Radar Set AN/APC-76

BE EXACT... PIN-POINT WHERE IT IS

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

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
2-25	2-28		
3-10	3-3		3-1
5-6	5-8		
		F03	

Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°.

REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.

Item 5, Function column. Change "2 db" to "3db."

REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.

Add new step f.1 to read, "Replace cover plate removed in step e.1, above."

REASON: To replace the cover plate.

Zone C 3. On J1-2, change "+24 VDC to "+5 VDC."

REASON: This is the output line of the 5 VDC power supply. + 24 VDC is the input voltage.

TYPED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SSG I. M. DeSpirito 999-1776

SIGN HERE:

*SSG I. M. DeSpirito*

DA FORM 2028-2  
 1 AUG 74

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR MANUAL "FIND" MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

HISA 1686-75

TEAR ALONG DOTTED LINE



RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL MANUALS



**SOMETHING WRONG WITH THIS MANUAL?**

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

FROM: (YOUR UNIT'S COMPLETE ADDRESS)

DATE

PUBLICATION NUMBER

TM 11-6625-2718-14-1

DATE

6 Jul 78

TITLE

BE EXACT... PIN-POINT WHERE IT IS

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

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
----------	------------	------------	-----------

TEAR ALONG DOTTED LINE

TYPED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE:

DA FORM 1 AUG 74 2028-2

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR MANUAL "FIND," MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

FILL IN YOUR  
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID  
DEPARTMENT OF THE ARMY  
DOD-314



Commander  
US Army Communications and Electronics  
Materiel Readiness Command  
ATTN: DRSEL-MA-Q  
Fort Monmouth, New Jersey 07703

TEAR ALONG DOTTED LINE

FOLD BACK



FILL IN YOUR  
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID  
DEPARTMENT OF THE ARMY  
DOD-314



Commander

US Army Communications and Electronics  
Materiel Readiness Command

ATTN: DRSEL-MA-Q  
Fort Monmouth, New Jersey 07703

FOLD BACK

TEAR ALONG DOTTED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL MANUALS



**SOMETHING WRONG WITH THIS MANUAL?**

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

FROM: (YOUR UNIT'S COMPLETE ADDRESS)

DATE

PUBLICATION NUMBER

DATE

TITLE

TM 11-6625-2718-14-1

6 Jul 78

BE EXACT... PIN-POINT WHERE IT IS

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

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
----------	------------	------------	-----------

TEAR ALONG DOTTED LINE

TYPED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE:

FILL IN YOUR  
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID  
DEPARTMENT OF THE ARMY  
DDO-314



Commander  
US Army Communications and Electronics  
Materiel Readiness Command  
ATTN: DRSEL-MA-Q  
Fort Monmouth, New Jersey 07703

FOLD BACK

TEAR ALONG DOTTED LINE

By Order of the Secretary of the Army:

BERNARD W. ROGERS  
*General United States Army*  
*Chief of Staff*

Official:

J. C. PENNINGTON  
*Brigadier General, United States Army*  
*The Adjutant General*

Distribution:

*Active Army:*

USAINSCOM (2)

COE (1)

TSG (1)

USAARENBD (1)

DARCOM (1)

TECOM (2)

USACC (4)

TRADOC (2)

OS Maj Comd (4)

MDW (1)

Armies (2)

Corps (2)

Fort Gillem (10)

Fort Gordon (10)

Fort Huachuca (10)

Fort Carson (5)

HISA (Ft Monmouth) (33)

Ft. Richardson (CERCOM Ofc) (2)

Svc Colleges (1)

USASIGS (5)

USAICS (3)

USAADS (2)

USAFAS (2)

USAARMS (2)

USAIS (2)

USAES (2)

AD (1) except

SAAD (30)

LBAD (14)

TOAD (14)

SHAD (3)

USA Dep (1)

Sig Sec USA Dep (1)

MAAG (1)

USARMIS (1)

USAERDAA (1)

USAERDAW (1)

Units org under fol TOE:

11-500 (AA-AC) (1)

29--134 (1)

29-136 (1)

29-207 (2)

29-610 (2)

ARNG: State AG (3); Units-Same as Active Army except allowance is one (1) copy per unit.

USAR: None.

For explanation of abbreviations used, see AR 310-50.





**PIN: 034290-001**