TM 11-6625-467-12

TECHNICAL MANUAL

OPERATOR'S AND ORGANIZATIONAL

MAINTENANCE MANUAL

TEST SET, ELECTRONIC CIRCUIT

PLUG-IN UNIT

AN/ARM-87

(NSN 6625-00-908-0358)

HEADQUARTERS, DEPARTMENT OF THE ARMY
4 FEBRUARY 1981

WARNING

- Be careful when working on the 115-volt ac line connections and the 250 and 500 volt dc circuits. Serious injury or death may result from contact with these terminals.

DON'T TAKE CHANCES!

- Review safety precautions in TB 385-4. Do not make internal connections or adjustments alone. Always have another person available to help in the case of an accident. Avoid shock-ground the test set. The protective grounding terminals of the test set and of test measurement equipment must be connected to the equipment grounding (safety) conductor of power cords. Connect to a circuit that has a safety ground conductor, or otherwise connect the chassis to a safety ground.
- This equipment weighs 95 pounds, At least two persons are required to lift it.

TECHNICAL MANUAL
No. 11-6625-467-12

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 4 *February 1981*

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL

TEST SET ELECTRONIC CIRCUIT PLUG-IN UNIT

AN/ARM-87

(NSN 6625-00-908-0358)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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

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

* This manual supersedes TM 11-6625-467-12, 9 March 1965, including all changes.

LIST OF TABLES

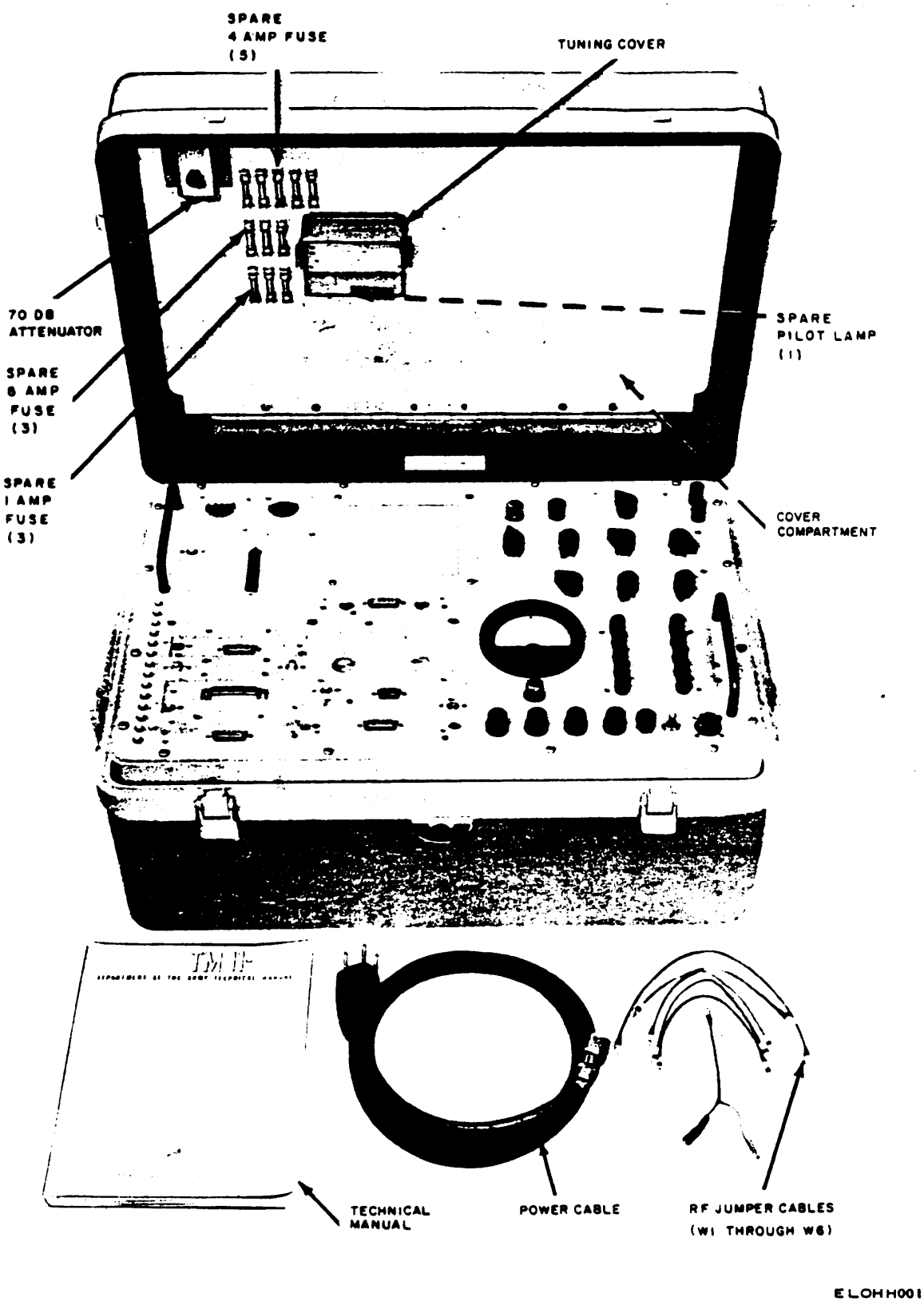

Figure 1-1. Test Set, Electronic Circuit Plug-In Unit AN/ARM-87

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manaul describes Test Set, Electronic Circuit Plug-In Unit AN/ARM-87 (test set) and covers its operation and operator/crew and organizational maintenance.

b. Throughout this manual, where appropriate, references are made to other publications which cover the operation and maintenance of the test set. A complete listing of applicable reference publications is provided in appendix A.

c. The maintenance allocation chart appears in appendix D.

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. Maintenance Forms, Records and Reports

a Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System.

b. Report of Item and Packaging Discrepancies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVSUPINST 4440.127 E/AFR 400.54/MCO 4430.3E.

c. Discrepancy in Shipment Report (DISREP) (SF 36 l). 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. Administrative Storage

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in paragraphs 2-1 and 2-2.

1-5. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 760-244-2.

1-6. Reporting Equipment Improvement Recommendations (EXR)

If your test set needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

Section II. DESCRIPTION AND DATA

1-7. Purpose and Use

The test set (fig. l-l) is portable and provides simulated input signals and output loads to test the modules of Radio Set AN/ARC-54. It is completely self-contained and requires no. additional test equipment for operation. Power supplies within the test set provide operating power for the AN/ARC-54 modules and internal circuits. The test set has a provision for providing operating power for a complete Radio Set AN/ARC-54 and also includes a self-check feature for checking its internal circuitry.

1-8. Description

a. The test set is 14 inches high, 22 inches wide, and 16 inches deep, and weighs 95 pounds. It contains power supplies, oscillators, loads, filters, and various circuits to simulate normal input signals and output loads of the AN/ARC-54 modules. The equipment is enclosed in a water-tight aluminum case with a snap-on cover that protects the front panel controls when the set is not in use. A

power cable, six rf jumper cables (marked with identification bands W1 thru W6), and a technical manual is stored in the cover compartment. Spare fuses, a spare pilot lamp, a tuning cover, and a 70-decibel (db) attenuator are stored on the inside of the cover. Primary power for the test set is 115 volts or 230 volts at a frequency from 50 to 100 Hertz (Hz). The equipment contains a blower motor that dissipates internal heat and provides forced air cooling for the AN/ARC-54 chassis and power supply modules under test.

b. A front panel connector is provided for each AN/ARC-54 module to be tested The module tests are performed by plugging an AN/ARC-54 module into the specified connector on the test set, making specified switch setings, and then noting the meter reading. Function switches on the test set connect the outputs of the various power supplies and oscillators to the module under test. The function switches also connect the module outputs to the correct load and meter circuit. The meter provides a relative indication of the performance of each module circuit. Radio frequency voltages at 3 MegaHertz (MHz) and above are applied to the modules under test through the rf jumper cables from rf connectors on the test set.

c. The test set includes a self-check feature that enables the operator to monitor the output of the internal power supplies, oscillators, and other internal circuits on the front panel meter. This same feature is used during the module tests to adjust the oscillator output levels to specified values without using an external meter.

1-9. Tabulated Data

Power requirements:
- **Voltage** . . . . . 115 or 230 volts ac
- **Frequency** . . . . . 50 to 1000 Hz
- **Power** . . . . . 525 watts maximum

Internal power supplies:

+27.5 volts dc:
- **Voltage** . . . . . 27.5 volts ±3%
- **Current** . . . . . 7.5 amp maximum

−27.5 volts dc:
- **Voltage** . . . . . −27.5 volts ±3%
- **Current** . . . . . 100 ma maximum

250 volts do:
- **Voltage** . . . . . 250 volts ±5%
- **Current** . . . . . 50 ma maximum

500 volts dc:
- **Voltage** . . . . . 500 volts ±5%
- **Current** . . . . . 130 ma maximum

108-volt square wave:
- **Frequency** . . . . . 800 ±50 Hz
- **Voltage** . . . . . 108 ±8 volts peak-to-peak
- **Current** . . . . . 3 amp

Internal oscillators:

68-MHz oscillator:
- **Frequency** . . . . . 68 MHz ±5 kHz
- **Level** . . . . . 30 to 120 mv (rms)

30-MHz oscillator:
- **Frequency** . . . . . 30 MHz ±3 kHz
- **Level** . . . . . 30 to 120 mv (rms)

5.925-MHz oscillator:
- **Frequency** . . . . . 5.925 MHz ±1 kHz
- **Level** . . . . . 5 to 25 mv (rms)

3.975-MHz oscillator:
- **Frequency** . . . . . 3.975 MHz ±1 kHz
- **Level** . . . . . 5 to 25 mv (rms)

500-kHz oscillator:
- **Frequency** . . . . . 500 kHz ±300 Hz
- **Level** . . . . . 75 to 200 mv (rms)

10-kHz oscillator:
- **Frequency** . . . . . 10.32 kHz ±500 Hz
- **Level** . . . . . 0.5 to 1.5 volts (rms)

1-kHz oscillator:
- **Frequency** . . . . . 1 kHz ±50 Hz
- **Level** . . . . . 0.01 to 2.2 volts (rms)

150-Hz oscillator:
- **Frequency** . . . . . 150 Hz ±0.3 Hz
- **Level** . . . . . 0.1 to 2.2 volts (rms)

Bandpass filter:
- **Center frequency** . . . . . 500 kHz
- **Skirt attenuation** . . . . . 6 db down at ±0.7 kHz

Meter:
- **Full-scale current** . . . . . 50 microamperes
- **Accuracy** . . . . . ±2% of full scale

CHAPTER 2

SERVICE UPON RECEIPT OF EQUIPMENT

Section I. INSPECTING AND SERVICE THE EQUIPMENT

2-1. Unpacking
(fig. 2-1)

a. Packaging Data When packaged for shipment, the test set is placed in a corrugated carton with a 2-inch thickness of protective cushioning placed on all sides, top, and bottom of the equipment. The corrugated carton is sealed with gummed tape, and then strapped with metal bands for further protection. The outside dimensions of the shipping container are 27½ inches wide, 21½ inches deep, and 19½ inches high. The total weight of the packing case and it contents is 120 pounds, and the volume is approximately 6.5 cubic feet.

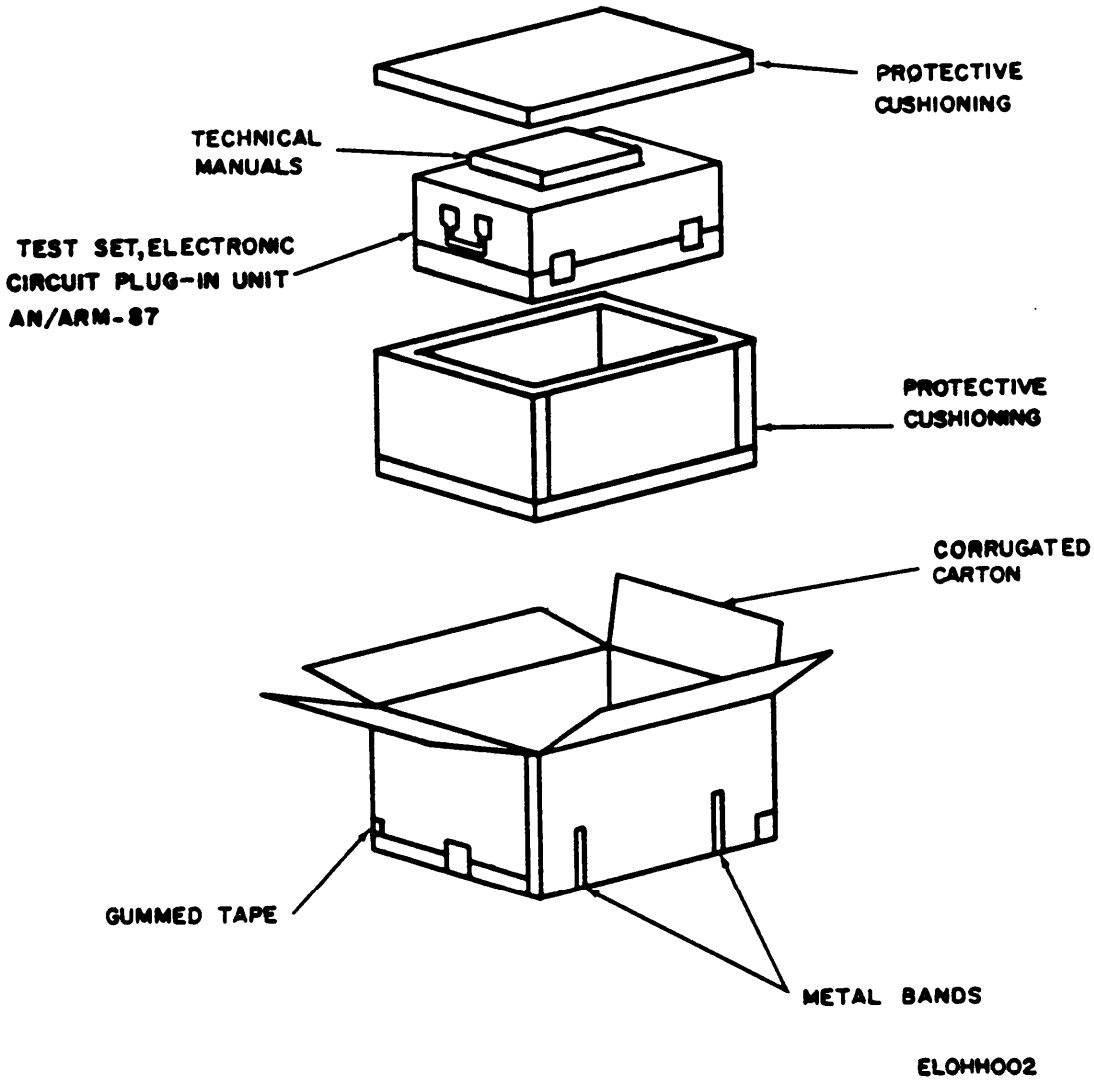

Figure 2-1 Packaging of Test Set

b. Removing Contents. Remove the test set from the shipping container as follows:

WARNING

Prevent personal injury when applying or removing steel strapping by wearing heavy gloves and protective eye wear. Do not handle packing cartons by the steel strapping.

(1) Cut and remove the metal bands.

(2) Use a knife or sharp instrument to cut the gummed tape that seals the top of the corrugated carton.

(3) Open the top of the corrugated carton and remove the protective cushioning material from the top and sides of the equipment; remove the technical manuals.

(4) Remove the test set.

2-2. Checking Unpacked Equipment

a Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2.

b. See that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against the components of end item list (Appx B). 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.

c. If the equipment has been used or reconditioned, see whether it has bn 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. If modified, see that any operational instruction changes resulting from the modification have been entered in the equipment manual. Refer to DA Pam 310-7 for MWO'S applicable to the equipment.

Section II. INSTALLATION INSTRUCTIONS AND PRELIMINARY ADJUSTMENT OF EQUIPMENT

2-3. Installation of Fuses

Four fuses are contained in fuseholders on the front pad of the test set. Be sure the proper fuses are installed in the fuseholders. Table 2-1 shows the locations and ratings of the fux.

Table 2-1. Fuse Values and Locations

Fuse panel markings and reference symbol	Rating		Circuit location
	Amps	Volts	
28 VDC 8 AMP (F1)	8	250	28-volt
1154V 4 AMP (F2)	4	250	Primary of power transformer
1154V 4 AMP (F3)	4	250	Primary of power transformer
DESPIKE 1 AMP (F4)	1	250	Despike voltage boost circuit

2-4 Initial Adjustment
(fig. 2-2)

The test set as shipped from the factory requires 115-volt, 50 to 1000 Hertz, power. However, facilities are included in the equipment to allow operation from either 115 volts or 230 volts. Taps on the primary of the power transformer provide additional compensation for low line voltage. When the equipments initially received, the line voltage from which the equipment will operate should be determined. Subparagraphs *a* and *b* below give the procedures for connecting the equipment for the various input voltages.

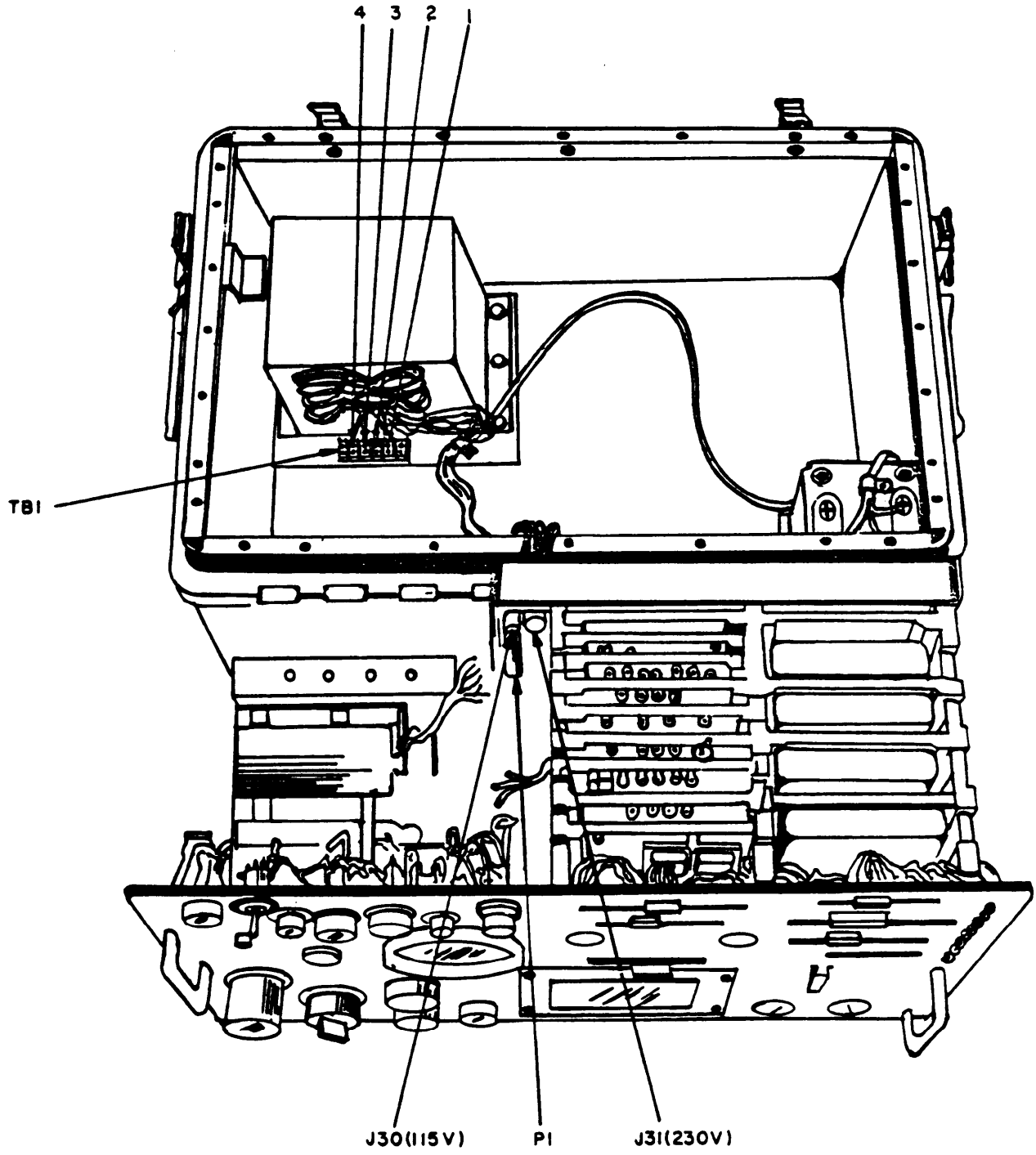

Figure 2-.2 Primary power input connections.

a. 115-Volt Operation. Connect the equipment for 115-volt operation as follows:

(1) fimove the 16 screws around the edge of the test set that secure the front panel.

CAUTION

Remove the panel carefully: the front panel and cabinet are joined by an interconnecting cable.

(2) Remove the front panel from the cabinet.

(3) Connect plug PI to 115V jack J30 on the rear of the front panel.

(4) Replace the front panel into the cabinet.

(5) Replace the 16 screws.

b. 230-Volt Operation. Connect the equipment for 230-volt operation as follows:

(1) Remove the 16 screws that secure the front panel.

CAUTION

Remove the panel carefully; the front panel and cabinet are joined by an intercomecting cable.

(2) Remove the front panel from the cabinet.

(3) Connect tinned plug P1 to 230V jack J31 on the rear of the front panel.

(4) Replace the front panel into the cabinet.

(5) Replace the 16 screws.

c. Low Line Voltage Compensation. Perform the following steps to compensate for low line voltage.

(1) Remove the 16 screws that secure the front panel.

CAUTION

Remove the panel carefully; the front panel and cabinet are joined by interconnecting cable.

(2) Remove the front panel from the cabinet.

(3) Table 2-2 shows the connections to terminal board TBl for normal and low line voltages. Connect the wires to correspond to existing line voltage conditions.

NOTE

The equipment is shipped from the factory set for 115-volt operation; normally the wires will be connected to terminals land 20f TB1.

Table 2-2 Low Line Voltage Compensation Connections

	Terminal board TB1 connections	
Wire Numbers	115V/230V	105V/210V
1	1	3
2	2	4

CHAPTER 3

OPERATING INSTRUCTIONS

Section L CONTROLS AND INSTRUMENTS

3-1. Damage From Improper Settings

Set switches and controls as shown in paragraphs 3-2 through 3-14. Do not remove a module from the test set with power applied

3-2. Operator's Controls

Controls for the test set are described in table 3-1 and shown in figure 3-1.

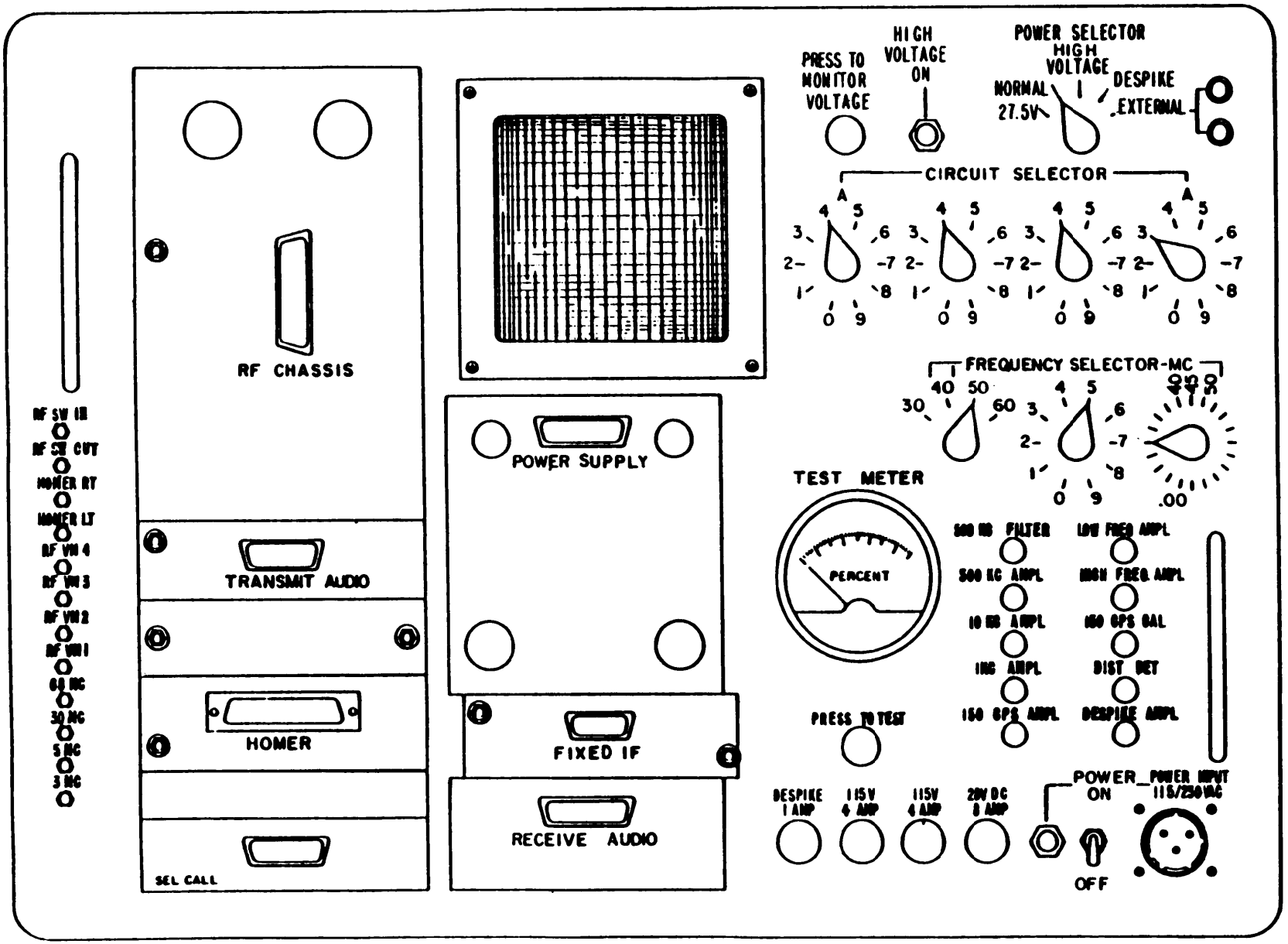

Figure 3-1. Operator's controls, indicators, connectors, and fuses.

Table 3-1. Operator's Controls

Control, indicator connector, or fuse	Function
POWER SELECTOR switch (5-position rotary)	Selects the various modes of operation of the power supply circuits as follows: *Switch Position* — *Action* 27.5V — Connects the +27.5 and −27.5 volt power supply to internal circuitry. Also connects the −27.5 volt power supply to the meter circuit. NORMAL — Connects +27.5 and −27.5 volt power supplies to internal circuitry. Also connects the +27.5 volt power supply to the meter circuit. HIGH VOLTAGE — Connects +27.5 and −27.5 volt power supplies to internal circuitry. Also connects 500- and 250-volt outputs to the rf subchassis connector when the AN/ARC-54 rf subchassis is in place. Also connects 500-volt power supply to metering circuit. DESPIKE — Disconnects internal circuitry from the +27.5 volt power supply. Connects the +27.5 volt power supply for a pulsed output to test the despike circuits in the AN/ARC-54. Connects the pulsed output to the metering circuit. Internal blower will not run when switch is in this position. EXTERNAL — Connects the output of the +27.5 volt supply to the EXTERNAL connector terminals for operation of a complete Radio Set AN/ARC-54.
CIRCUIT SELECTOR A,B,C, and D switches (10-position rotaries)	Connects loads, power supplies, metering circuit, and signals to the AN/ARC-54 module being tested.
FREQUENCY SELECTOR-MC (one 4-position rotary switch, one 10-position rotary switch, and one 20-position rotary switch)	The combination of the three switches performs the function of Radio Set Control C-3835/ARC-54 in selecting a channel frequency of rf subchassis. The 4-position (30 to 60 MHz) and the 10-position (0 to 9 MHz) switches select the megahertz in whole units. The 20-position switch (increments of 0.05 MHz) selects the megahertz in hundredths of a unit.
TEST METER (calibrated in percent)	Used in conjunction with PRESS TO TEST and PRESS TO MONITOR VOLTAGE switches to test the AN/ARC-54 modules and in the self-check tests.
PRESS TO TEST switch (pushbutton)	Connects the output of the module circuit being tested to the meter circuit. Is used in conjuction with the TEST METER.
500-KC FILTER control	Calibrates the 500-kHz bandpass filter.
500-KC AMPL control	Adjusts the output level of the 500-kHz oscillator.
10-KC AMPL control	Adjusts the output level of the 10-kHz oscillator.
10-KC AMPL control	Adjusts the output level of the 10-kHz oscillator.
1-KC AMPL control	Adjusts the output level of the 1-kHz oscillator.
150-CPS AMPL control	Adjusts the output level of the 150-Hz oscillator.
LOW FREQ AMPL control	Adjusts the output level of the 3.975-MHz or 5.925-MHz oscillator depending upon which oscillator is switched into the circuit by the CIRCUIT SELECTOR switches.
HIGH FREQ AMPL control	Adjusts the output level of the 30-MHz or 68-MHz oscillator depending upon which oscillator is switched into the circuit by the CIRCUIT SELECTOR switches.
150-CPS CAL control	Calibrates the 150-Hz counter circuit.
DIST DET control	Calibrates the distortion detector circuit.
DESPIKE AMPL control	Adjusts the amplitude of the pulsed output of the 27.5-volt power supply when the AN/ARM-87 is in the DESPIKE mode of operation.
POWER switch	In the ON position, connects primary power (115 volts or 230 volts ac) to the internal circuits of the AN/ARM-87. In the OFF position turns off primary input power to the AN/ARM-87.
HIGH VOLTAGE ON indicator	Lights when POWER SELECTOR switch is set to HIGH VOLTAGE, a jumper wire is connected to pins 5 and 18 of J2 (RF CHASSIS connector), and circuit selector switch C is set to 9.
POWER ON indicator	Lights when power is applied and a POWER switch is set ON.
PRESS TO MONITOR VOLTAGE switch (pushbutton)	Used in conjuction with the POWER SELECTOR and TEST METER to monitor the internal voltage of the test set.

Table 3-1. Operator's Controls–Continued

Control, indicator connector, or fuse	Function
DESPIKE 1 AMP fuse (cartridge type)	Protects the AN/ARC-54 power supply module under test when performing the despike test.
115 V 4 AMP fuse (cartridge type)	Located in the primary circuit of the power transformer to protect the test set from burnout due to short circuits or overloads.
28V DC 8 AMP fuse (cartridge type)	Located in the output circuit of the +27.5 volt regulator to protect the regulator from burnout due to short circuits or overloads.
115 V 4 AMP fuse (cartridge type)	Located in the primary circuit of the power transformer to protect the test set from burnout due to short circuits or overloads.
POWER INPUT 115/230 VAC connector	Connects to the primary input power. (Either 115 volts or 230 volts ac may be applied by changing internal jumpers. The power cable (stored in cover compartment) connects to the POWER INPUT 115/230 VAC connector.)
POWER SUPPLY connector	Mates with the connector on the AN/ARC-54 power supply module.
FIXED IF. connector	Mates with the connector on the AN/ARC-54 fixed if. module.
RECEIVE AUDIO connector	Mates with the connector on the AN/ARC-54 receive audio module.
RF CHASSIS connector	Mates with the connector on the AN/ARC-54 rf chassis.
TRANSMIT AUDIO connector	Mates with the cnnector on the AN/ARC-54 transmit audio module.
HOMER connector	Mates with the connector on the AN/ARC-54 homer module.
SELL CALL connector	Mates with the connector on the AN/ARC-54 select call module.
RF SW IN connector	Is connected to the AN/ARC-54 homer module during the homer module test. The input is 30 MHz chopped at a 100-Hz rate.
RF SW OUT connector	Used in the homer module checks. Connects the chopped 30-MHz signal to the rf voltmeter.
HOMER RT connector	Used in the homer checks. A signal present at this connector simulates a right-of-course signal for testing the AN/ARC-54 homer module.
HOMER LT connector	Used in the homer module checks. A signal present at this connector simulates a left-of-course signal for testing the AN/ARC-54 homer module.
RF VM 4 connector	600-ohm input to the rf amplifier/detector circuit.
RF VM 3 connector	200-ohm input to the rf amplifier/detector circuit.
RF VM 2 connector	150-ohm input to the rf amplifier/detector circuit.
RF VM 1 connector	50-ohm input to the rf amplifier/detector circuit.
68 MC connector	The output of the 68-MHz oscillator is available at this connector.
30 MC connector	The output of the 30-MHz oscillator is available at this connector.
5 MC connector	The output of the 5.925-MHz oscillator is available at this connector.
3 MC connector	The output of the 3.975-MHz oscillator is available at this connector.
EXTERNAL connector terminals	Provide operating power (+27.5 volts dc) connection for the AN/ARC-54, when the POWER SELECTOR switch is set to EXTERNAL.

Section II. OPERATION

3-3. General Operating Procedures

a. Module Tests. The tests that can be performed on the various AN/ARC-54 modules are presented in tables in paragraphs 3-6 through 3-12. Paragraph 3-13 gives instructions for providing power to a complete AN/ARC-54 radio set. The AN/ARC-54 modules that can be tested are listed in (1) through (7) below.

(1) Rf subchassis (para 3-6).
(2) Homer module (para 3-7).
(3) Receive audio module (para 3-8).
(4) Transmit audio module (para 3-9).
(5) Fixed intermediate frequency (if.) module (para 3-l0).
(6) Select (sel) call module (para 3-11).
(7) Power supply module (para 3-12).

b. Explanation of Table Headings.

(1) *Step.* Several tests may be performed on each module; the step column indicates the number of the particular test being performed. Each numbered step is a complete test in itself and may be performed independently.

(2) *Test name.* The test name column indicates the name of the circuit or signal function that is being tested **1** Refer to TM 11-5821-244-35 for the schematic diagrams covering the AN/ARC454 modules

(3) *CIRCUIT SELECTOR switches.* The CIRCUIT SELECTOR switches column indicates the positions of the CIRCUIT SELECTOR switches (A, B, C, and D) for the test being performed. An X in this column indicates that the position of that par-

ticular switch is not relative to the test being *performed.*

NOTE

The calibration adjustments of the test set required for the module tests are indicated in the CIRCUIT SELECTOR switches column in parenthesis (calibrate). If the result in the instructions column is not obtained for the given adjustment, troubleshooting of the test set is required

(4) *Instructions.* The instructions column gives the step-by-step procedure for performing the module test. The steps must be performed in numerical order. All switches, connectors, and meters refereed to in this column are on the test set unless otherwise indicated.

(5) *Test limits*. When a test step in the instructions column calls for a meter reading, the meter reading in percent is given in the test limits column. Usually a minimum and maximum limit for the reading is specified: however, where only one limit is specified, the other limit (minimum or maximum) does not exist.

c. Arrangement of Tests. Each module test is subdivided into individual tests that can be per formed on the module. The individual teats are arranged so that any particular test module may be performed without performing the tests preceding it. For example, the variable if receive gain test given in paragraph 3-6, step 5, my be performed on the rf subchassis without performing steps 1 through 4. However, all substeps (5a, b, etc.~) must be performed to insure that the equipment is calibrated for that particular test. The starting procedure (para 3-5) must be performed before plugging a module into the test set.

d. Trouble Isolation. If the test limits given for each test in paragraphs 3-6 through 3-12 are not obtained, troubleshooting of the AN/ARC-54 module under test is required.

e. Self-Test Procedures. The test set has a self-test feature that may be used to detect a misadjustment or malfunction within the equipment. These tests can be found in table 4-1, the Operator/Crew Preventive Maintenance Checks and Services.

3-4. Types of Operation

a. Module Tester. The primary purpose of the test set is to test the individual modules of Radio Set AN/ARC-54. The front panel of the test set (fig. 3-1) contains a mating connector for each individual AN/ARC-54 module. Function switches on the test set connect power and simulated loads to the various module circuits and a metering circuit presents a visual indication of the performance of the module. Paragraphs 3-6 through 3-12 cover the various module tests that can be performed with the test set.

b. Power Supply. The test set may also be used as a 27.5-volt direct current (de) power source to operate a complete Radio Set AN/ARC-54. Refer to paragraph 3-13 for instructions for this mode of operation.

3-5. Starting Procedure

Follow the instructions in *a* through *d* below before performing any tests specified in paragraphs 3-6 through 3-12.

a Preliminary Switch and Control Setting (fig. 3-1). Set the switches and controls on the test set as follows: POWER switch to OFF, POWER SELECTOR switch to 27.5V, and DESPIKE AMPL control to full counterclockwise position.

NOTE

All switches and controls other than those listed in *a* above may be left in any desired position.

b. preliminary Connections and Adjustments *(fig. 3-1).*

(1) Connect the power cable connector end to the POWER INPUT 115/230 VAC connector on the front panel.

(2) Connect the other end of the power cable to a 115-volt alternating current (at) power source.

NOTE

If 230-volt operation is desired, refer to paragraph 2-4 for initial connection.

(3) Set the POWER switch to ON.

(4) Press the PRESS TO MONITOR VOLTAGE switch and check to see that the TEST METER indicates from 60 to 70 percent.

(5) Set the POWER SELECTOR switch to NORMAL, press the PRESS TO MONITOR VOLTAGE switch and check to see that the TEST METER indicates from 60 to 70 percent.

(6) Set the POWER SELECTOR switch to HIGH VOLTAGE, press the PRESS TO MONITOR VOLTAGE switch, and check to see that the TEST METER indicates from 60 to 70 percent.

NOTE

If any of the above readings is not within the specified tolerance, perform the procedures in table 4-1, Operator/Crew Preventive Maintenance Checks and Services.

c. Plugging in Modules (fig. 3-2). When a module is to be tested, first set the POWER switch to OFF, and then plug the module into the appropriate

mating connector on the front panel. (The module names are etched on the front panel near the associated connector.) Tighten the module captive screws to insure a good electrical and mechanical connection.

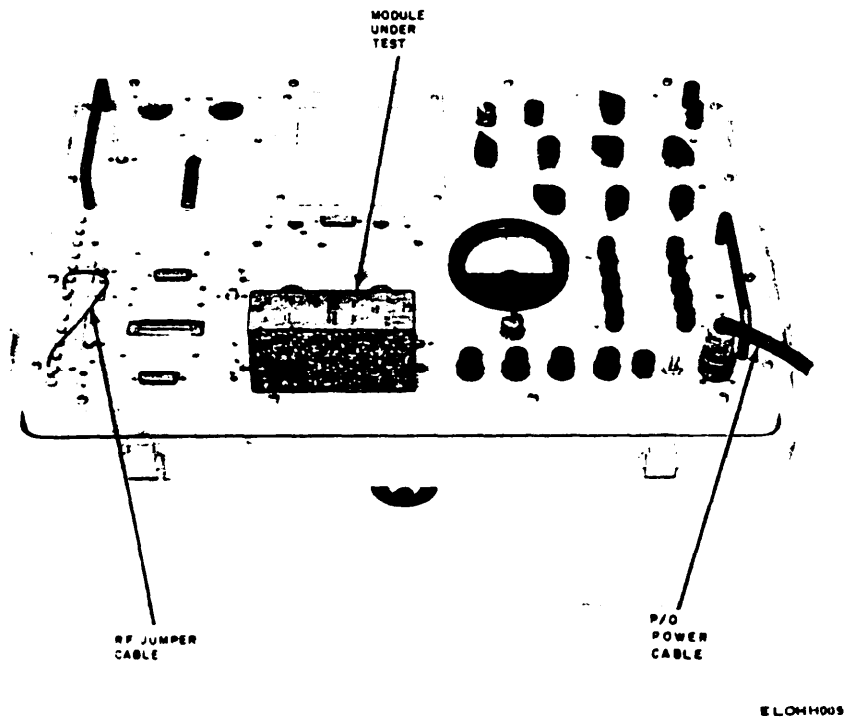

Figure 3-2 Test set typical test bench setup

d. Operating Procedure Switch and Control Settings. Unless otherwise directed by the operating procedures, all test set controls should be rotated to the extreme counterclockwise position, the POWER SELECTOR switch set to NORMAL, and the POWER switch set to ON.

3-6. Rf Subchassis Test

(fig. 3-1)

Perform the starting procedure (para 3-5) before proaeding with the tests in table 3-2 below. (Refer to paragraph 3-3 for explanation of chart headings.) Upon completion of test and/or tests, perform the stopping procedure (para 3-14).

NOTE

The modules (low frequency oscillator (lfo), high frequency oscillator (hfo), variable if., rf amplifier and power amplifier) referred to in the instructions of test name columns of table 3-2 below are mounted on the rf subchassis under test.

Table 3-2. Rf Subchassis Tests

Step	Test name	CIRCUIT SELECTOR switches				Instructions	Test limits (percent)	
		A	B	C	D		MIN	MAX
1	L fo rf amplitude	O	5	X	X	(1) Connect rf jumper cable W1 from the RF VM 2 connector to the other end of the rf output cable (located in the vif module) that connects to J401 on the lfo module.		
						(2) Set the FREQUENCY SELECTOR-MC switches to 30.00.		
						(3) Press the PRESS TO TEST switch and read the TEST METER indication.	10	50
						(4) Repeat step (3) above for FREQUENCY SELECTOR-MC switch settings of 30.05 to 30.95 in 0.05 increments.	10 (for each setting)	50 (for each setting)
						(5) Remove the rf jumper cable (connected in (1) above).		
2	Lfo dc to meter	1	X	5	X	(1) Set the FREQUENCY SELECTOR MC switches to 30.00.		
						(2) Press the PRESS TO TEST switch and read the TEST METER indication.	17	80
						(3) Repeat step (2) above for FREQUENCY SELECTOR-MC switch settings of 30.05 to 30.95 in 0.05 increments.	17 (for each setting)	80 (for each setting)
3	Hfo rf amplitude	0	5	X	X	(1) Disconnect the cable attached to connector J301 on the hfo module.		
						(2) Connect rf jumper cable W4 from the RF VM 3 connector to connector J301 on the hfo module.		
						(3) Set the FREQUENCY SELECTOR-MC switches to 30.00.		
						(4) Press the PRESS TO TEST switch and read the TEST METER indication.	15[a]	60[a]
						(5) Repeat step (4) above for all even FREQUENCY SELECTOR-MC switch settings (32.00, 34.00, etc).	15 (for each setting)	60 (for each setting)
						(6) Remove the rf jumper cable from the RF VM 3 connector J301 on the hfo module. Replace the cable removed from connector J301 ((1) above).		
4	Hfo dc to meter	1	X	4	X	(1) Set the FREQUENCY SELECTOR MC switches to 30.00.		
						(2) Press the PRESS TO TEST switch and read the TEST METER indication.	17	80

Table 3-2. RF Subchassis Tests–Continued

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
						(3) Repeat step (2) above for all even FREQUENCY SELECTOR-MC switch settings (32.00, 34.00, etc).	17 (for each setting	80 (for each setting
5a	Variable if. re-ceive gain (low end)	0	1	8	9	(1) Press the PRESS TO TEST switch and adjust the LOW FREQ AMPL control for 50 percent of the TEST METER.		
		6	4	8	9	(2) Disconnect the cable attached to connector J502 on the variable if. module and connect rf jumper cable W4 from the 3 MC connector to J502 (on the variable if. module).		
						(3) Set the FREQUENCY SELECTOR-MC switches to 30.00.		
						(4) Press the PRESS TO TEST switch and read the TEST METER indication.	10	70
5b	Variable if. re-ceive gain (high end)	0	2 (calibrate)	9	9	(1) Press the PRESS TO TEST switch and adjust the LOW REQ AMPL control for 50 percent on the TEST METER		
		6	4	9	9	(2) Move rf jumper cable W4 from the 3 MC connector to the 5 MC connector.		
						(3) Set the FREQUENCY SE-LECTOR-MC switches to 69.95.	10	70
						(4) Press to PRESS TO TEST switch and read the TEST METER indication.		
						(5) Set the FREQUENCY SE-LECTOR-MC switch to 30.00.		
						(6) Remove the rf jumper cable connector J502 (on the variable if. module and the 5 MC connector). Replace the cable disconnected in step 5a(2) above.		
6a	Receive gain (30 MHz)	0	4 (calibrate)	7	3	(1) Connect rf jumper cable W4 from the 30 MC connector to the RF VM 1 connector.		
						(2) Press the PRESS TO TEST switch and adjust the HIGH FREQ AMPL control for 90 percent on the TEST METER.		
		6	5	7	3	(3) Remove rf jumper cable W4 from the RF VM 1 con-nector and connect it to one end of the 70-db at-tenuator.		

Table 3-2 RF Subchassis Tests–Continued

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
						(4) Connect P604 (antenna input on the rf amplifier module) to the other end of the 70-db attenuator.		
						(5) Set the FREQUENCY SELECTOR-MC switches to 30.00.		
						(6) Press the PRESS TO TEST Switch and read the TEST METER indication. Align L602, L603, L609, L612, and L615 on the rf amplifier module for maximum meter indication.	17	
						(7) Remove rf jumper cable W4 from the 30 MC connector and disconnect the 70-db attenuator.		
6b	Receive gain (68 MHz)	0	5	6	3	(1) Connect rf jumper W5 from the 68 MC connector to the RF VM 1 connector.		
						(2) Press the PRESS TO TEST switch and adjust the HIGH FREQ AMPL control for 90 percent on the TEST METER.		
		6	5	6	3	(3) Remove rf jumper cable W5 from the RF VM 1 and connect it to one end of the 70-db attenuator.		
						(4) Connect P604 (antenna input on the rf amplifier module) to the other end of the 70-db attenuator.		
						(5) Set the FREQUENCY SELECTOR-MC switches to 68.00.		
						(6) Press the PRESS TO TEST switch and read the TEST METER indication. Align C604, C608, C616, C621, and C626 on the rf amplifier module for maximum meter indication.	17	
						(7) Remove rf jumper cable W5 and replace te 70-db attenuator in its storage area.		
7a	Rf amplifier transmit mode (30 MHz)	0	1 (calibrate)	8	9	(1) Press the PRESS TO TEST switch and adjust te LOW FREQ AMPL control for 100 percent on the TEST METER.		
						(2) Disconnect connector P601 on the rf amplifier module from connector J503 on the variable if. module.		

Table 3-2. Rf Subchassis Test-Continued

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
						(3) Connect rf jumper cable W2 from the 3 MC connector to connector P601 on the rf amplifier module. (4) Disconnect connector P801 at the rf amplifier module. (5) Connect rf jumper cable W3 from the RF VM 4 connector to connector J602 on the rf amplifier module. (6) Set the FREQUENCY SELECTOR-MC switches to 30.00.		
		0	5	8	9	(7) Set the POWER SELECTOR switch to HIGH VOLTAGE. (8) Press the PRESS TO TEST switch and read the TEST METER indication. (9) Disconnect rf jumper cable W2 from the 3 MC connector. (10) Set the POWER SELECTOR switch to NORMAL.	5	
7b	**Rf amplifier transmit mode (69.95 MHz)**	0	2 (calibrate)	9	9	(1) Press the PRESS TO TEST SWITCH AND ADJUST THE LOW FREQ AMPL control for 100 percent on TEST METER.		
		0	5	9	9	(2) Connect rf jumper cable W2 from the 5 MC connector to connector P601 on the rf amplifier module. (3) Set the FREQUENCY SELECTOR-MC switches to 69.95 and the POWER SELECTOR switch to HIGH VOLTAGE. (4) Press the PRESS TO TEST switch and read the TEST METER indication. (5) Disconnect rf jumper cable W2 from the 5 MC connector and W3 from RF VM 4 connector J602 on the rf amplifier module. (6) Reconnect connector P801 on the power amplifier module to connector J602 on the rf amplifier module. (7) Reconnect connector P601 on the rf amplifier module to connector J503 on the variable if. module. (8) Set the POWER SELECTOR switch to NORMAL.		

Table 3-2. Rf Subchassis Tests-Continued

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
8a	Rf amplifier and power amplifier modules (30 MHz)	0	1 (calibrate)	8	9	(1) Press the PRESS TO TEST switch and adjust the LOW FREQ AMPL control for 100 percent on the TEST METER.		
						(2) Disconnect connector P601 on the rf amplifier module from connector J503 on te variable if. module.		
						(3) Connect rf jumper cable W2 from the 3 MC connector to connector P601 on the rf amplifier module.		
						(4) Set the FREQUENCY SELECTOR-MC switches to 30.00.		
		0	0	8	9	(5) Set the POWER SELECTOR swith to HIGH VOLTAGE.		
						(6) Press the PRESS TO TEST switch and read the TEST METER indication.	50	
						(7) Disconnect rf jumper cable W2 from the 3 MC connector.		
						(8) Set the POWER SELECTOR switch to NORMAL.		
8b	Rf amplifier and power amplifier modules (69.95 MHz)	0	2 (calibrate)	9	9	(1) Press the PRESS TO TEST switch and adjust the LOW FREQ AMPL control for 100 percent on the TEST METER.		
		0	0	9	9	(2) Set the POWER SELECTOR switch to HIGH VOLTAGE.		
						(3) Connect rf jumper cable W2 from the 5 MC connector to connector P601 on the rf amplifier module.		
						(4) Set the FREQUENCY SELECTOR-MC switches to 69.95.		
						(5) Press the PRESS TO TEST switch and read the TEST METER indication.	50	
						(6) Disconnect rf jumper cable W2 from the 5 MC connector and connector P601 on the rf amplifier module.		
						(7) Set the POWER SELECTOR switch to NORMAL.		
						(8) Set the FREQUENCY SELECTOR-MC switch to 30.00.		
						(9) Connect connector P601 on the rf amplifier module to connector J503 on the variable if. module.		

Table 3-2. Rf Subchassis Tests-Continued

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
9	Transmit gain and power amplifier alignment check	6	9 (calibrate)	9	7	(1) Press the PRESS TO TEST switch and adjust the 500 KC AMPL control for 30 percent on the TEST METER. Allow 1-minute warmup time before applying high voltage.		
		0	0	9	7	(2) Set the POWER SELECTOR switch to HIGH VOLTAGE. (3) Set the FREQUENCY SELECTOR-MC switches to 30.00. (4) Press the PRESS TO TEST switch and read the TEST METER indication. (5) Repeat step (4) above for the following FREQUENCY SELECTOR-MC switch setting: 32.05 42.30 52.55 62.80 34.10 44.35 54.60 64.85 36.15 46.40 56.65 66.90 38.20 48.45 58.70 69.95 40.25 50.50 60.75. (6) Set the POWER SELECTOR switch to NORMAL.	50 (for each setting)	
10a[c]	Power amplifier grid current (30 MHz)	7	0	9	7	(1) Set the FREQUENCY SELECTOR-MC switches to 30.00. (2) Set the POWER SELECTOR switch to HIGH VOLTAGE. Allow 1-minute warmup time before applying high voltage. (3) Press the PRESS TO TEST switch and adjust L801 and L802 on the power amplifier module for a maximum (peak) reading on the TEST METER.	15	70
10b[c]	Power amplifier plate current (30 MHz)	9	X	9	7	Press the PRESS TO TEST switch and adjust L803 and C816 on the power amplifier module for a minimum (dip) reading on the TEST METER.	25	80
10cc	Power amplifier grid current (69.95 MHz)	7	0	9	7	(1) Set the FREQUENCY SELECTOR-MC switches to 69.95. (2) Press the PRESS TO TEST switch and adjust C804 and C812 on the power amplifier module for a maximum (peak) reading on the TEST meter.	15	70

Table 3-2. Rf Subchassis Tests–Continued

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
10d[c]	Power amplifier alignment					Repeat steps 10a through 10c until no further improvements in the readings can be made.		

[a] If reading is not within specified limits, alignment of the hfo module is required.
[b] If reading is not within limits on all specified frequencies, perform steps 10 a through d.
[c] Not required unless the requirements of step 9 are not met.

3-7. Homer Module Test

(fig. 3-1)

Perform the starting procedure (para 3-5) before proceeding with the tests in table 3-3 below. (Refer to para 3-3 for explanation of chart heading.) Upon completion of test and/or tests, perform the stopping procedure (para 3-14).

Table 3-3. Homer Module Tests

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
1	Over target	8	X	X	X	(1) Press the PRESS TO TEST switch and read the TEST METER indication. (2) If test meter indication is below minimum test limit, adjust R211 on the homer module to obtain minimum test limit.	25	
2	On course	7	9	4	3	(1) Press the PRESS TO TEST switch and adjust R227 on homer module to zero meter indication.		
		7	8	3	3	(2) Press the PRESS TO TEST switch and read the TEST METER indication.		5
3	Synchronous detector	6	9 (calibrate)	3	4	(1) Press the PRESS TO TEST switch and adjust the 500 KC AMPL control for 68 percent on the TEST METER.		
		7	9	4	4	(2) Press the PRESS TO TEST switch and read the TEST METER indication. (3) Press the PRESS TO TEST switch and adjust L204 and L205 on the homer module for maximum indication on test meter.	10	60
		7	8	3	4	(4) Press the PRESS TO TEST switch and read the TEST METER indication.	10	60

Table 3-3. Homer Module Tests-Continued

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
4	Antenna diode switch	0	4 (calibrate)	2	3	(1) Connect rf jumper cable W4 from the 30 MC connector to RF VM 1 connector. (2) Press the PRESS TO TEST switch and adjust the HIGH FREQ AMPL control for 100 percent on the TEST METER. (3) Remove rf jumper cable W4 (connected in (1) above).		
		0	5	2	3	(4) Connect rf jumper cable W4 from the 30 MC connector to the HOMER RT connector. (5) Connect rf jumper cable W5 from the RF SW IN connector to connector J205 on the homer module. (6) Connect rf jumper cable W6 from the RF SW OUT connector to the RF VM 1 connector. (7) Press the PRESS TO TEST switch and read the TEST METER indication. Note meter indication.	25	
		0	5	0	3	(8) Press the PRESS TO TEST switch and read the TEST METER indication.	±2 meter divisions of reading noted in (7) above.	
		0	5	1	3	(9) Disconnect rf jumper cable W4 from the HOMER RT connector and connect it t the HOMER LT connector. (10) Press the PRESS TO TEST switch and read the TEST METER indication. Note meter indication.	25	
		0	5	0	3	(11) Press the PRESS TO TEST switch and read the TEST METER indications. (12) Disconnect and remove rf jumper cables W4, W5, and W6.	±2 meter divisions of reading noted in (10) above.	

3-8. Receive Audio Module Test

(fig. 3-1)

Perform the starting procedure (pra 3-5) before proceeding with the test in table 3-4 below. (Refer to para 3-3 for explanation of chart headings.) Upon completion of test and/or tests, perform the stpping procedure (para 3-14).

Table 3-4. Receive Audit Module Tests

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
1	Audio gain	5	7 (calibrate)	6	0	(1) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control for 95 percent on the TEST METER.		
		6	7	1	0	(2) Press the PRESS TO TEST switch and note the reading on the TEST METER.		
						(3) Adjust the receive audio gain control on the receive audio module for a reading of 70 percent on the TEST METER.		
		5	7 (calibrate)	6	0	(4) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control for a reading of 73 percent on the TEST METER.		
		6	7	1	0	(5) Press the PRESS TO TEST switch and read the TEST METER indication.		
		5	7	6	0	(6) Press the PRESS TO TEST switch adjust the 1 KC AMPL contol for 95 percent on the TEST METER.		
		6	7 (calibrate)	1	0	(7) After completing the receive audio module test, adjust the RECEIVE AUDIO GAIN control for the same indication on the TEST METER as noted in step (2) above.		
2	Audio distortion	5	1 (calibrate)	1	0	(1) Press the PRESS TO TEST switch and adjust the DIST DET control for 45 percent on the TEST-METER.		
		5	1	0	0	(2) Press the PRESS TO TEST switch and read the TEST METER indication.		85
3a	Carrier squelch level	5	7 (calibrate)	6	0	(1) Press the PRESS TO TEST swith and adjust the 1 KC AMPL control for 95 percent on the TEST-METER.		
						(2) Rotate the 10 KC AMPL control fully counterclockwise.		
		6	7 (calibrate)	5	8	(3) Press the PRESS TO TEST switch and slowly rotate the 10 KC AMPL control clockwise until the TEST METER reading suddenly drops to zero. (Do not readjust the 10 KC AMPL control.)		

Table 3-4. Receive Audio Module Tests

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
		5	7	5	8	(4) Press the PRESS TO TEST switch and read the TEST METER indication.		70
3b	Relay position 1	1	7	5	8	Press the PRESS TO TEST switch and read the TEST METER indication.	10	30
3c	Squelch disable	6	7	4	8	Press the PRESS TO TEST switch and read the TEST METER indication.	50	90
3d	Relay position 2	1	7	4	8	Press the PRESS TO TEST switch and read the TEST METER indication.	10	30
3e	Transmit mode	6	7	2	8	Press the PRESS TO TEST switch and read the TEST METER indication.		5
4	Unsquelch 150-Hz amplitude	5	7 (calibrate)	6	0	(1) Rotate the 150 CPS AMPL control fully clockwise. (2) Press the PRESS TO TEST swith and adjust the 1 KC AMPL control for 95 percent on the TEST METER.		
		6	0 (calibrate)	6	1	(3) Press the PRESS TO TEST switch and slowly decrease the setting of the 150 CPS AMPL control untl the TEST METER reading suddenly drops to zero. (Do not readjust the 150 CPS AMPL control.)		
		5	0	4	1	(4) Press the PRESS TO TEST switch and read the TEST METER indication.	35	50
5	Sidetone	4	2	X	7	(1) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control for 95 percent on the TEST METER.		
		6	7	2	7	(2) Press the PRESS TO TEST switch and read the TEST METER indication.	50	80

3-9. Transmit Audio Module Test
(fig. 3-1)

Perform the starting procedure (para 3-5) before proceeding with the tests in table 3-5 below. (Refer to para 3-3 for explanation of chart headings.) Upon completion of test and/or tests, perform the stop ping procedure (para 3-14).

Table 3-5. Transmit Audio Module Tests

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
1	500 kHz frequency check	4	0 (calibrate)	7	3	(1) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control fully ccw. and the 500 KC FILTER control for 47 percent on the TEST METER.		
		4	1	7	3	(2) Press the PRESS TO TEST switch and read the TEST METER indication. (If out of tolerance, adjust L1401 on the transmit audio module for a reading within tolerance and proceed to (3) below. If the reading is within tolerance, proceed to step 2.)	40	
		6	1	7	3	(3) Press to PRESS TO TEST switch and adjust L1401 on the transmit audio module for a peak reading on the TEST METER.		
2	500 kHz amplitde check	4	6	7	4	Press the PRESS TO TEST switch and read the TEST METER indication.	45	98
3	Distortion check	3	2 (calibrate)	6	4	(1) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control for 57 percent on the TEST METER.		
		3	2 (calibrate)	1	4	(2) Press the PRESS TO TEST switch and adjust the DIST DET control for 45 percent on the TEST METER.		
		3	2	0	4	(3) Press the PRESS TO TEST switch and read the TEST METER indication.		85
4	Deviation check	3	6 (calibrate)	6	4	(1) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control for 50 percent on the TEST METER.		
		3	6	2	4	(2) Press the PRESS TO TEST switch and read the TEST METER indication. Adjust R1402 on the transmit audio module for between 50 and 90 percent on the TEST METER.	50	50
5	150-Hz tone input	3	5	4	1	(1) Press the PRESS TO TEST switch and adjust the 150 CPS AMPL control for 92 percent on the TEST METER.		
		3	5	2	1	(2) Press the PRESS TO TEST switch and read the TEST METER indication.	10	40

Table 3-5. Transmit Audio Module Tests-Continued

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
6	Sidetone gate	3	5 (calibrate)	6	3	(1) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control for 57 percent on the TEST METER.		
		3	5	7	3	(2) Press the PRESS TO TEST swith and read the TEST METER indication.		20
7	Sidetone	3	6	7	3	Press the PRESS TO TEST switch and read the TEST METER indication. If meter indicates less than 40, adjust R1413 on the transmit audio module.	40	
8	Security ground	3	7	7	3	Press the PRESS TO TEST switch and read the TEST METER indication.		18
9	Carrier ground 1	0	8	5	4	Press the PRESS TO TEST switch and read the TEST METER indication.	30	50
10	Carrier ground 2	0	8	6	4	Press the PRESS TO TEST switch and read the TEST METER indication.		6
11	Retransmit ground 1	0	9	6	4	Press the PRESS TO TEST switch and read the TEST METER indication.	40	70
12	Retransmit ground 2	0	9	6	3	Press the PRESS TO TEST switch and read the TEST METER indication.		5
13	Meter output	2	9	7	4	Press the PRESS TO TEST switch and read the TEST METER indication.	35	
14	Security input	3	2	6	5	(1) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control for 100 percent on the TEST METER.		
		3	5	2	9	(2) Press the PRESS TO TEST switch and read the TEST METER indication.	8	18

3-10. Fixed if. Module Test

(fig. 3-1)

Perform the starting procedure (para 3-5) before proceeding with the tests in table 3-6 below. (Refer to para 3-3 for explanation of chart headings.) Upon completion of test and/or teats, perform the stopping procedure (para 3-14).

Table 3-6. Fixed If. Module Tests

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
1a	Discriminator alignment	3	6	8	5	(1) Press the PRESS TO TEST switch and turn the 1 KC AMPL control ccw and adjust the 500 KC AMPL control for 64 percent on the TEST METER.		
		3	6 (calibrate)	1	5	(2) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control for 74 percent on the TEST METER.		
		6	6	6	5	(3) Press the PRESS TO TEST switch and read the TEST METER. (If the reading is not within test limits, perform steps (4), (5), and (6) below.)	37	85
		3	3	1	5	(4) Adjust the DIST DET control for 55 percent on the TEST METER.		
		3	3	0	5	(5) Adjust L1205 on the fixed if. module for minimum reading on the TEST METER. NOTE If off scale reading is obtained, reduce setting of the DIST DET control for an on scale reading. NOTE Two minimum readings (dip) may be found, adjust L1205 for the dip that gives the highest meter reading.		
						(6) Repeat steps (1), (2), and (3) above.		
1b	Output to encoder (test No. 1)	6	8	6	5	Press the PRESS TO TEST switch and read the TEST METER indication.	22	75
1c	Agc to homer module (test No. 1)	0	7	6	5	Press the PRESS TO TEST switch and read the TEST METER indication.	20	40
1d	Agc to rf amplifier and variable if. modules	0	6	6	5	Press the PRESS TO TEST switch and read the TEST METER indication.	17	50
1e	Output to encoder (test No. 2)	3	8 (calibrate)	8	6	(1) Press the PRESS TO TEST switch, turn the 1 KC AMPL fully clockwise, and adjust the 500 KC AMPL control for 64 percent on the TEST METER.		
		3	6	6	5	(2) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control for 74 percent on the TEST METER.		

Table 3-6. Fixed If. Module Tests

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
		6	8	8	6	(3) Press the PRESS TO TEST switch and read the TEST METER indication.	22	75
1f	Agc to homer module (test No. 2)	0	7	8	6	Press the PRESS TO TEST switch and read the TEST METER indication.	43	75
1g	Agc to rf amplifier and variable if. modules (test No. 2)	0	6	8	6	Press the PRESS TO TEST switch and read the TEST METER indication.	48	75
2	500 kHz amplitude to homer module	3	4 (calibrate)	8	7	(1) Press the PRESS TO TEST switch and adjust the 500 KC AMPL control for 64 percent on the TEST METER.		
		3	4	9	7	(2) Press the PRESS TO TEST switch and read the TEST METER indication.	15	50

3-11. Sel Call Module Test

(fig. 3-1)

Perform the starting procedure (para 3-5) before proceeding with the tests in table 3-7 below. (Refer to para 3-3 for explanation of chart headings). Upon completion of test and/or tests, perform the stopping procedure (para 3-14).

Table 3-7. Sel Call Module Tests

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
1	150-Hz transmit tone amplitude	4	5	3	0	Press the PRESS TO TEST switch and read the TEST METER indication.	35	58
2	150-Hz transmit tone frequency	5	5	3	1	(1) Press to PRESS TO TEST switch and adjust the 150 CPS CAL control for 65 percent on the TEST METER.		
		5	5	3	0	(2) Press the PRESS TO TEST switch and read the TEST METER indication.	50	
3	150-Hz receive tone amplitude	5	4	4	1	(1) Press to PRESS TO TEST switch and adjust the 150 CPS AMPL control for 48 percent on the TEST METER.		
		2	4	4	1	(2) Press the PRESS TO TEST switch and read the TEST METER indication.	45	75
4	Bandwidth check (1,000 Hz)	2	2 (calibrate)	4	3	(1) Press the PRESS TO TEST switch and adjust the 1 KC AMPL control for 16 percent on the TEST METER.		

Table 3-7. Sel Call Module Tests

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
		2	4	4	3	(2) Press the PRESS TO TEST switch and read the TEST METER indication.		5
5	Squelch disable	2	4	4	4	Turn 1 KC control fully ccw and press the PRESS TO TEST switch. Read the TEST METER indication.	50	100
6	Noise amplifier	2	7	4	8	(1) Adjust the 10 KC AMPL control ccw until there is a sudden increase on the TEST JMETER, then adjust for a reading of 25 percent.		
		3	7	5	8	(2) Press the PRESS TO TEST switch and read the TEST METER indication.		85

3-12. Power Supply Module Test

(fig. 3-1)

Perform the starting procedure (para 3-5) before proceeding with the test in table 3-8 below. (Refer to para 3-3 for explanation of chart headings.) Upon completion of test and/or tests, perform the stopping procedure (para 3-14).

Table 3-8. Power Supply Module Test

Step	Test name	CIRCUIT SELECTOR switches A	B	C	D	Instructions	Test limits (percent) MIN	MAX
1	+27.5 volt dc output	1	X	0	4	Press the PRESS TO TEST switch and read the TEST METER indication.	60	75
2	+500 volt dc output	1	X	1	4	Press the PRESS TO TEST switch and read the TEST METER indication.	65	81
3	+250 volt dc output	1	X	2	4	Press the PRESS TO TEST switch and read the TEST METER indication.	52	65
4	−27.5 volt dc output	9	X	X	4	Press the PRESS TO TEST switch and read the TEST METER indication.	60	70
5	27.5 volt ac output	6	2	X	4	Press the PRESS TO TEST switch and read the TEST METER indication.	35	65
6	27.5 volt ac output	6	3	X	4	Press the PRESS TO TEST switch and read the TEST METER indication.	35	65
7	Despike test	1	X (calibrate)	3	8	(1) Set the POWER SELECTOR switch to DESPIKE and rotate the DESPIKE AMPL control fully counterclockwise.		

Table 3-8. Power Supply Module Test-Continued

Step	Test name	CIRCUIT SELECTOR switches				Instructions	Test limits (percent)	
		A	B	C	D		MIN	MAX
		1	X	3	9	(2) Press the PRESS TO TEST switch and increase the setting of the DESPIKE AMPL control until the TEST METER reading just begins to decrease. (Do not readjust the DESPIKE AMPL control.) (3) Press the PRESS TO TEST switch and read the TEST METER indication. (4) Set the POWER SELECTOR switch to NORMAL.	60	80

3-13. Radio Set AN-ARC-54 Power Application

The test set in addition to testing the AN/ARC-54 modules, can also be used to supply power to a complete Radio Set AN/ARC-54. To provide power to operate the AN/ARC-54, perform the following steps:

a. Connect the power cable to the test set (para 3-5b (1) and (2)).

b. Connect two wires between the two EXTERNAL connector terminals (fig. 3-1) and the power input connector of the AN/ARC-54 (+red, – black).

c. Set the POWER switch to ON.

d. Set the POWER SELECTOR switch to EXTERNAL

3-14. Stopping Procedure

a. Set the POWER switch (fig. 3-1) to OFF.

b. Remove the module under test.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE

Section I. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

NOTE

Operator and organizational maintenance instructions are combined and are performed by the operator as an organizational level task or as aviation unit maintenance (AVUM).

4-1. Scope of Maintenance

The maintenance duties of the operator are listed below, together with a reference to the paragraph covering the specific maintenance function. Tools and materials needed for maintenance are listed in paagraph 4-2.

a. Routine services (para 4-3).

b. Preventive maintenance checks and services (PMCS) (para 4-4).

c. Cleaning and preservation (para 4-b).

4-2. Tools and Materials Required

The following tools and materials are required for maintenance

a. Lint-free cloth.

b. TRICHLOROTRIFLUOROETHANE.

c. Brush MIL-G-721.

d. Tool Kit, Electronic Equipment TK-101/G.

4-3. Routine Services

Routine checks such as equipment inventory, cleaning, dusting, washing, checking for frayed cables, and checking for loose nuts and bolts are not listed as PMCS checks. They are things that should be done any time they are noted.

4-4. Preventive Maintenance Checks and Service Periods

Complete preventive maintenance is the performance of routine services (para 4-3) and preventive maintenance checks and services (PMCS) (table 4-1), to ensure that the equipment is available and ready for operation. The equipment should be checked and serviced before going into operation and as soon as possible after operational shutdown. If a defect is noted, refer the deficiency to a higher category of maintenance. Records and reports of these checks must be made in accordance with TM 38-750.

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

NOTE

Within designated interval, these checks are to be performed in the order listed:
B—Before D—During M—Monthly Q—Quarterly

Item No.	Interval				Item to be inspected	Procedures	Equipment will be reported not ready (red) if:
	B	D	M	Q			
1		*			Operation	During normal operation be alert for any evidence of unusal performance or faulty operation. If the equipment fails to operate properly, perform visual inspection and troubleshooting.	The test set does not perform as stated in the operational procedures (para 3-3).
2			*		Operational check	*a.* Connect the power cable to the POWER INPUT 115/230 BAC connecter and apply input power. *b.* Set the POWER switch to ON and note that the POWER ON indicator lights.	The test set does not perform as stated in the operational check.
3			*		−27.5 volt dc power supply	*a.* Set the POWER SELECTOR switch to -27.5V. *b.* Press the PRESS TO MONITOR VOLTAGE switch and check to see that the TEST METER indicates between 60 and 70 percent.	The test set does not perform as stated in the operational check.

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

NOTE
Within designated interval, these checks are to be performed in the order listed:
B—Before D—During M—Monthly Q—Quarterly

Item No.	Interval				Item to be inspected	Procedures	Equipment will be reported not ready (red) if:
	B	D	M	Q			
4			*		+27.5 volt dc power supply	*a.* Set the POWER SELECTOR switch to NORMAL. *b.* Press the PRESS TO MONITOR VOLTAGE switch and check to see that the TEST METER indicates between 60 and 70 percent.	
5			*		500 volt dc power supply	*a.* Set the POWER SELECTOR switch to HIGH VOLTAGE. *b.* Connect a jumper wire between pins 5 and 18 of RF CHASSIS connector J2. *c.* Set CIRCUIT SELECTOR switch C to 9 and note that the HIGH VOLTAGE ON indicator lights. *d.* Press the PRESS TO MONITOR VOLTAGE switch and check to see that the TEST METER indicates between 60 and 80 percent. *e.* Remove the jumper connected in *b* above.	The test set does not perform as stated in the operational check.
6			*		Despike circuit	*a.* Set the POWER SELECTOR switch to DESPIKE. **NOTE** **The internal blower will not run while the equipment is in the despike mode of operation.** *b.* Rotate the DESPIKE AMPL control fully counterclockwise. *c.* Press the PRESS TO MONITOR VOLTAGE switch and check to see that the TEST METER indicates not more than 50 percent. *d.* Rotate the DESPIKE AMPL control fully clockwise. *e.* Press the PRESS TO MONITOR VOLTAGE switch and check to see that the TEST METER indicates not less than 80 percent. *f.* Rotate the DESPIKE AMPL control fully counterclockwise.	The test set does not perform as stated in the operational check.
7			*		150 kHz oscillator	*a.* Set CIRCUIT SELECTOR switches A, B, C, and D to 3, 5, 4, and 1, respectively. *b.* Set the POWER SELECTOR switch to NORMAL. *c.* Set the 150 CPS AMPL control fully clockwise. *d.* Press the PRESS TO TEST switch and check to see that the TEST METER reads 100 percent minimum.	The test set does not perform as stated in the operational check.
8			*		1 kHz oscillator	*a.* Set CIRCUIT SELECTOR switches A, B, C, and D to 5, 7, 6, and 0, respectively. *b.* Set the 1 KC AMPL control fully clockwise. *c.* Press the PRESS TO TEST switch and check to see that the TEST METER reads 100 percent minimum.	

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

NOTE

Within designated interval, these checks are to be performed in the order listed:
B—Before D—During M—Monthly Q—Quarterly

Item No.	Interval				Item to be inspected	Procedures	Equipment will be reported not ready (red) if:
	B	D	M	Q			
9			*		10 kHz oscillator	*a.* Set CIRCUIT SELECTOR switches A, B, C, and D to 5, 7, 5, and 8, respectively. *b.* Set the 10 KC AMPL control fully clockwise. *c.* Press the PRESS TO TEST switch and check to see that the TEST METER reads 100 percent minimum.	The test set does not perform as stated in the operational check.
10			*		500 kHz oscillator	*a.* Set CIRCUIT SELECTOR switches A, B, C, and D to 6, 9, 4, and 4, respectively. *b.* Set the 500 KC AMPL control fully clockwise. *c.* Press the PRESS TO TEST switch and check to see that the TEST METER reads 100 percent minimum.	
11			*		3.975 MHz oscillator	*a.* Set CIRCUIT SELECTOR switches A, B, C, and D to 0, 1, 8, and 9, respectively. *b.* Set the LOW FREQ AMPL control fully clockwise. *c.* Press the PRESS TO TEST switch and check to see that the TEST METER reads 100 percent minimum.	The test set does not perform as stated in the operational check.
12			*		5.925 MHz oscillator	*a.* Set CIRCUIT SELECTOR switches A, B, C, and D to 0, 2, 9, and 9, respectively. *b.* Set the LOW FREQ AMPL control fully clockwise. *c.* Press the PRESS TO TEST switch and check to see that the TEST METER reads 100 percent minimum.	
13			*		30 MHz oscillator	*a.* Set CIRCUIT SELECTOR switches A, B, C, and D to 0, 4, 7, and 3, respectively. *b.* Connect rf jumper cable W5 from the 30 MC connector to the RF VM 1 connector. *c.* Set the HIGH FREQ AMPL control fully clockwise. *d.* Press the PRESS TO TEST switch and check to see that the TEST METER reads 100 percent minimum. *e.* Remove the cable connected in *b* above.	The test set does not perform as stated in the operational check.
14			*		68 MHz oscillator	*a.* Set CIRCUIT SELECTOR switches A, B, C, and D to 1, 4, 6, and 3, respectively. *b.* Connect rf jumper cable W5 from the 68 MC connector to the RF VM 1 connector. *c.* Set the HIGH FREQ AMPL control fully clockwise. *d.* Press the PRESS TO TEST switch and check to see that the TEST METER reads 100 percent minimum. *e.* Remove the cable connected in *b* above.	The test set does not perform as stated in the operational check.

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

NOTE
Within designated interval, these checks are to be performed in the order listed:
B—Before D—During M—Monthly Q—Quarterly

Item No.	Interval B	Interval D	Interval M	Interval Q	Item to be inspected	Procedures	Equipment will be reported not ready (red) if:
15			*		Distortion detector	a. Set CIRCUIT SELECTOR switches A, B, C, and D to 5, 7, 6, and 0, respectively. b. Press the PRESS TO TEST switch and adjust the 1KC AMPL control for a reading of 70 percent on the TEST METER. c. Set CIRCUIT SELECTOR switches A, B, C, and D to 3, 0, 1, and 2, respectively. d. Press the PRESS TO TEST switch a reading of 45 percent on the TEST METER. e. Set CIRCUIT SELECTOR switches A, B, C, and D to 3, 0, 0, and 2, respectively. f. Press the PRESS TO TEST switch and check to see that the TEST METER reads between 5 and 50 percent.	The test set does not perform as stated in the operational check.
16			*		Modification work orders	Check DA PAM 310-7 to see that all URGENT MWO's have been applied and that all NORMAL MWO's have been scheduled.	

Section II. TROUBLESHOOTING AND MAINTENANCE

4-5. Operator's Troubleshooting Procedures

Troubleshooting procedures for the equipment are based upon the operational checks (item No. 2 through 15) in the Operator/Crew Preventive Maintenance Checks and Services, table 4-1. To troubleshoot the equipment, perform all functions starting with item 2 in the Operator/Crew PMCS and proceed through the items until an abnormal condition or result is observed. When an abnormal condition or result is observed, note the name of the item that is malfunctioning and find this item under the symptom column in the Operator's Troubleshooting Chart, table 4-2. Perform the checks and corrective actions indicated in the troubleshooting chart. If the corrective measures indicated do not correct the trouble, higher level maintenance is required.

Table 4-2. Operator's Troubleshooting Chart

Item	Symptom	Probable trouble	Correction
1	POWER ON indicator fails to light (primary power input).	a. Power cable is defective.	a. Inspect the power cable for signs of damage. Check for electrical continuity of the cable wires.
		b. POWER ON indicator lamp is defective.	b. Remove lamp and check for electrical continuity. Replace if defective (para 4-8).
		c. Fuse F1, F2, or F3, is defective.	c. Remove fuses and check for electrical electircal continuity. (Replace if defective (para 4-8).
		d. −27.5 volt power supply is defective.	d. Higher level maintenance required.

Table 4-2. Operator's Troubleshooting Chart-Continued

Item	Symptom	Probable trouble	Correction
2	TEST METER fails to read within the specified limits (−27.5 volt dc power supply).	−27.5 voltpower supply is defective.	Higher level maintenance required.
3	TEST METER fails to read within the specified limits (+27.5 volt dc power supply).	+27.5 volt power supply is defective.	Higher level maintenance required.
4	HIGH VOLTAGE ON indicator fails to light (500 volt dc power supply).	*a.* HIGH VOLTAGE ON indicator defective. *b.* +27.5 volt regulator is defective.	*a.* Remove lamp and check for electrical continuity. Replace if defective. *b.* Higher level maintenance required.
5	TEST METER fails to read within specified limits (500 volt dc power supply).	High voltage power supply circuit is defective.	Higher level maintnance required
6	TEST METER fails to read within the specified limit with the DESPIKE AMPL control rotated fully counterclockwise (despike circuit).	*a.* +27.5 volt power supply is defective. *b.* Rectifier circuit on the +27.5 volt regulator board is defective. *c.* Despike detector circuit on the high voltge power supply circuit board is defective.	*a.* Higher level maintenance required. *b.* Higher level maintenance required. *c.* Higher level maintenance required.
7	TEST METER fails to read within the specified limitwith the DESPIKE AMPL rotated fully clockwise (despike circuit).	*a.* +27.5 volt power supply is defective. *b.* Rectifier circuit on the -27.5 volt regulator board is defective. *c.* Despike detector circuit on the high voltage power supply board is deffective.	*a.* Higher level maintenance required. *b.* Higher level maintnance required. *c.* Higher level maintenance required.
8	TEST METER fails to read within specified limits (150 Hz. oscillator).	The 150 Hz. oscillator circuit is defective.	Higher level maintenance required.
9	TEST METER fails to read within specified limits (1 kHz oscillator).	The 1 kHz oscillator circuit is defective.	Higher level maintenance required.
10	TEST METER fails to read within the specified limits (10 kHz oscillator).	The 10 kHz oscillator circuit is defective.	Higher level maintenance required.
11	TEST METER fails to read within the specified limits (500 kHz oscillator).	The 500 kHz oscillator circuit is defective.	Higher level maintenance required.
12	TEST METER fails to read within the specified limits (3.975 MHz oscillator).	The 3.975 MHz oscillator circuit is defective.	Higher level maintenance required.
13	TEST METER fails to read within the specified limits (5.925 MHz oscillator).	The 5.925 MHz oscillator circuit is defective.	Higher level maintenance required.
14	TEST METER fails to read within the specified limits (30 MHz oscillator).	The 30 MHz oscillator circuit is defective.	Higher level maintenance required.
15	TEST METER fails to read within the specified limits (68 MHz oscillator).	The 68 MHz oscillator circuit is defective.	Higher level maintenance required.
16	TEST METER fails to read within the specified limits (distortion detector).	The distortion detector circuit is defective.	Higher level maintenance required.

4-6. Cleaning

Inspect the exterior of the equipment. 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

Adequate ventilation should be provided while using TRICHLOROTRIFLUORO-ETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame the products of decomposition are toxic and irritating. Since TRICHLOROTRI-FLUORETHANE dissolves natural oils prolonged contact with skin should be avoided When neccessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

b. Remove grease, fungus, and ground-in dirt from the cabinet and cover; use a cloth dampened (not wet) with trichlorotrifluoroethane.

c. Remove dust or 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 front panel meter and control knobs; use a soft clean cloth. If dirt is difficult to remove, dampen the cloth with water; use mild soap if necessary.

e. Remove rust or corrosion with a light grade of sandpaper and repaint the exposed metal surface.

4-7. Visual Inspection

a When the equipment fails to perform properly, turn off the power and check all the items listed below. Do not check any item with the power on.

(1) Check to see that the switches and controls have been set properly.

(2) Check to see that the power and rf jumper cables are connected properly.

(3) Check for burned-out indicator lamps or fuses. Replace burned-out indicator lamps or fuses (para 4-8).

b. If the checks in a above do not locate the trouble, perform the applicable procedures in the troubleshooting chart, table 4-2.

4-8. Repairs

(fig. 1-1 and 3-1)

a. Replacement of Indicator Lamps.

(1) Rotate the indicator jewel counterclockwise and remove it from the indicator light assembly.

(2) Press in on the lamp and rotate it counterclockwise to unlock it.

(3) Remove the defective lamp.

(4) Replace the defective lamp with a new one of identical rating, push in on the new lamp and rotate it clockwise to lock it in place.

(5) Replace the indicator jewel.

b. Replacement of Knobs.

(1) Set the control switch to its extreme counterclockwise position or to a known reference.

(2) Loosen the setscrews on the defective knob and remove the knob from its shaft.

CAUTION

Do not overtighten the setscrews or the knobs may split.

(3) Replace the new knob on its shaft and tighten the setscrews.

c. Replacement of Fuses.

(1) Press in on the fuseholder cap and rotate it counterclockwise to unlock it.

(2) Pull the fuseholder cap and the fuse out of the fuseholder.

(3) Remove the defective fuse from the fuseholder cap.

(4) Replace the defective fuse with a new one with the same rating.

(5) Insert the fuse and fuseholder cap in the fuseholder. Push in on the fuseholder cap and rotate it clockwise to lock it.

APPENDIX A
REFERENCES

DA PAM 310-4	Index of Technical Publications: 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, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by the Army.
TB 43-0118	Field Instructions For Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment and Shelters.
TB 385-4	Safety Precautions for Maintenance of Electrical/Electronic Equipment.
TM 11-5821-244-12	Operator's and Organizational Maintenance Manual: Radio Set AN/ARC-54.
TM 11-5821-244-34	Direct Support and General Support Maintenance Manual: Radio Set AN/ARC-54.
TM 11-6625-467-24P	Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists for Test Set, Electronic Circuit Plug-In Unit, AN/ARM-87 (NSN 6625-00-908-0358)
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 750-244-2	Procedures for Destruction of Electronics Material 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/ARM-87 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/ARM-87 and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section *III. Basic Issue Item Not* applicable.

B-3. Explanation of Columns

a. Illustration. This column in 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, 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 Coda. Not applicable.

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-2)

SECTION II INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
1-1		6625-00-908-0358	TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT AN/ARM-87 (13499)					

APPENDIX D

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

D-1. General

This appendix provides a summary of the maintenance operations for the AN/ARM-87. 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.

D-2. Maintenance Function

Maintenance functions will be limited to an 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 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 assembly) 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 y 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.l DM WR) 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.

D-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 or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "work time" figures will be shown for each category. The number of task-hours specified by the "work time" 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.

D-4. Tool and Test Equipment Requirements (Sec III)

a. Tool or Test Equipment Reference Code. The numbers in this columm 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 tools or test equipment.

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

D-5. Remarks (Sec IV)

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

(Next printed page is D3)

SECTION II MAINTENANCE ALLOCATION CHART
FOR

TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT AN/ARM-87

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT AN/ARM-87	Service		0.1					A
		Adjust		0.1					
		Inspect		0.1					B
		Test		0.2				17	C
		Repair		0.5				1 thru 16, 18 thru 21	
		Repair				3.5			
01	CABLE ASSEMBLIES	Service		0.1					
		Inspect		0.1					
		Test		0.2				17	
		Repair				1.0		16	
02	CASE ASSEMBLY	Service		0.1					
		Inspect		0.1					
		Repair				1.0		16	

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
TEST SET, ELECTRICAL CIRCUIT PLUG-IN UNIT AN/ARM-87

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	H	AMPLIFIER, RADIO FREQUENCY AM-1381/U	5895-00-092-7924	
2	H	ANALYZER, SPECTRUM TS-723( )/U	6625-00-668-9418	
3	H	GENERATOR, SIGNAL AN/URM-127	6625-00-783-5965	
4	H	FREQUENCY METER AN/USM-26	6625-00-610-2236	
5	H	GENERATOR, SIGNAL AN/GRM-50	6625-00-003-3238	
6	H	GENERATOR, SIGNAL AN/URM-70	6625-00-519-2104	
7	H	GENERATOR, SIGNAL SG-299/U	6625-00-296-1457	
8	H	MULTIMETER, AN/USM-223	6625-00-999-7465	
9	H	MULTIMETER, METER ME-26/U	6625-00-360-2493	
10	H	OSCILLOSCOPE AN/USM-182/A	6625-00-133-1196	
11	H	OSCILLOSCOPE AN/USM-140	6625-00-987-6603	
12	H	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	
13	H	PREAMPLIFIER AM-3174( )/USM	6625-00-799-8110	
14	H	PROD, TEST MX-2517/U	6625-00-511-5383	
15	H	TEST SET, TRANSISTOR TS-1836/U	6625-00-893-2628	
16	H	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-00-605-0079	
17	O	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180-00-064-5178	
18	H	TRANSFORMER, CN-16/U	5950-00-688-5722	
19	H	VOLTMETER, ELECTRONIC AN/URM-145	6625-00-973-3986	
20	H	VOLTMETER, ELECTRONIC ME-30A/U	6625-00-643-1670	
21	H	VOLTMETER, ELECTRONIC ME-202( )/U	6625-00-709-0288	

SECTION IV. REMARKS

TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT AN/ARM-87

REFERENCE CODE	REMARKS
A	ADJUST POTENTIOMETER SWITCHES ON FRONT PANEL.
B	FUNCTIONAL.
C	REPLACE FUSES, KNOBS, AND LAMPS.
	NOTE: WHEN THIS EQUIPMENT IS MAINTAINED UNDER THE THREE-LEVEL MAINTENANCE SYSTEM: "O" ORGANIZATIONAL MAINTENANCE IS EQUIVALENT TO AVIATION UNIT MAINTENANCE (AVUM). "F" DIRECT SUPPORT MAINTENANCE (F) COMBINED WITH GENERAL SUPPORT MAINTENANCE (H) ARE EQUIVALENT AVIATION INTERMEDIATE MAINTENANCE (AVIM) AND ALL MAINTENANCE ACTIONS AUTHORIZED FOR BOTH F AND H LEVELS ARE AUTHORIZED AT AVIM.

APPENDIX E

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1. Scope

This appendix lists expendable supplies and materials you will need to operate and maintain the AN/ARM-87. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

E-2. Explanation of Columns

a. Column 1–Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use caning compound item 5, Appx. E".)

b. Column 2–Level. This column identifies the lowest level of maintenance that requires the listed item.

C–Operator/Crew
O–Organizational Maintenance/Aviation Unit Maintenance
F–Direct Support Maintenance/Aviation Intermediate Maintenance
H–General Support Maintenance

c. Column 3—National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column 4–Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by a part number.

e. Column 5–Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

(Next printed page is E-2)

SECTION II EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS
1	0	6850-00-105-3084	TRICHLOROTRIFLUOROETHANE	16 oz

☆ U.S. GOVERNMENT PRINTING OFFICE: 1985—421-302/11323
U.S. ARMY ADJUTANT GENERAL PUBLICATIONS CENTER, ST. LOUIS, MO, 1985

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

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

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
Commander
Stateside Army Depot
ATTN: AMSTA-US
Stateside, N.J. 07703

DATE SENT
10 July 1975

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

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°. REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 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.
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure the the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		F03		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.

SAMPLE

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE
SSG I. M. DeSpiritof 999-1776	I. M. DeSpiritof

DA FORM 1 JUL 79 2028-2 PREVIOUS EDITIONS ARE OBSOLETE.

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

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-6625-467-12	4 Feb 81	Test Set, Electronic Circuit Plug-In Unit AN/ARM-87

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO

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

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

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

REVERSE OF DA FORM 2028-2

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

U.S. MAIL

TEAR ALONG PERFORATED LINE

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

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-6625-467-12	4 Feb 81	Test Set, Electronic Circuit Plug-In Unit AN/ARM-87

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO

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

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

DA FORM 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

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

REVERSE OF DA FORM 2028-2

TEAR ALONG PERFORATED LINE

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

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

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-6625-467-12	4 Feb 81	Test Set, Electronic Circuit Plug-In Unit AN/ARM-87

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARAGRAPH	FIGURE NO	TABLE NO

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

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUN 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

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

REVERSE OF DA FORM 2028-2

TEAR ALONG PERFORATED LINE

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-ME-MQ
Fort Monmouth, New Jersey 07703

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-36A Organizational maintenance requirements for AN/ARM-87.