

TM 55-4920-410-13&P

TECHNICAL MANUAL

**OPERATOR, AVIATION UNIT
MAINTENANCE AND AVIATION
INTERMEDIATE MAINTENANCE MANUAL**

FOR

**SYSTEM ANALYZER TEST SET
TYPE 60B63-5A**

This manual supersedes TM 55-4920-410-12&P, dated 27 July 1979, including all changes.

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**HEADQUARTERS, DEPARTMENT OF THE ARMY
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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 11 October 1988

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DISTRIBUTION:

To be distributed in accordance with DA Form 12-31, Operator, AVIM and AVUM Maintenance requirements for all Fixed Wing and Rotary Wing Aircraft.

WARNING

An operating procedure, practice, etc., which, if not correctly followed, could result in personal injury or loss of life.

CAUTION

An operating procedure, practice, etc., which if not strictly observed, could result in damage to or destruction of equipment.

**OPERATOR, AVIATION UNIT MAINTENANCE AND
AVIATION INTERMEDIATE MAINTENANCE MANUAL**

SYSTEM ANALYZER TEST SET, TYPE 60B63-5A

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, U.S. Army Aviation Systems Command, ATTN: AMSAV-MC, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you.

TABLE OF CONTENTS

	Paragraph	Page
CHAPTER I. INTRODUCTION		
Section I. General		
Scope	1-1	1-1
Maintenance forms, records, and reports	1-2	1-1
Destruction of Army materiel to prevent enemy use	1-3	1-1
Preparation for storage or shipment.	1-4	1-1
Quality assurance/quality control	1-5	1-1
Equipment improvement recommendation	1-6	1-1
II. Equipment description and data		
Purpose and use	1-7	1-1
Description	1-8	1-1
Equipment data	1-9	1-2
CHAPTER 2. SERVICE UPON RECEIPT		
Section I. Site and shelter requirements		
Siting	2-1	2-1
Unpacking	2-2	2-1
II. Service upon receipt of materiel		
Checking unpacked equipment	2-3	2-1
III. Installation instructions		
Installation of equipment	2-4	2-3
CHAPTER 3. OPERATING INSTRUCTIONS		
Section I. Operator's controls and indicators		
Operator's control	3-1	3-1
II. Operation under usual conditions		
Preliminary starting procedure	3-2	3-1
Operating procedure	3-3	3-1
Shutdown procedure	3-4	3-1

TABLE OF CONTENTS (Cont)

	Paragraph	Page
CHAPTER 4.	MAINTENANCE INSTRUCTIONS	
Section I.	Preventive maintenance checks and services	
	General	4-1 4-1
	Inspections	4-2 4-1
II.	Troubleshooting (AVUM)	
	Scope	4-3 4-2
III.	Repainting and refinishing instructions	
	Cleaning instructions	4-4 4-3
	Repainting and refinishing instructions	4-5 4-3
IV.	Maintenance and Replacement of Authorized Parts	
	General	4-6 4-3
	Indicator Lamp Replacement	4-7 4-3
	Knob Replacement	4-8 4-3
	Cable Assembly	4-9 4-3
	Lubrication	4-10 4-3
	Troubleshooting and Repair (ATST)	4-11 4-4
	Analyzer Circuit Check	4-12 4-4
V.	Main Assembly	4-13 4-14
	Disassembly Procedures	4-14 4-14
	Cleaning	4-15 4-14
	Inspection	4-16 4-14
VI	Preparation for Shipment and Storage	
	General	4-17 4-15
	Levels of Protection	4-18 4-15
	Procedures	4-19 4-15
APPENDIX A	References	A-1
APPENDIX B	Maintenance Allocation Chart...	B-1
APPENDIX C	Repair Parts and Special Tools List	C-1
APPENDIX D	Expendable Supplies and Material List	D-1

LIST OF ILLUSTRATIONS

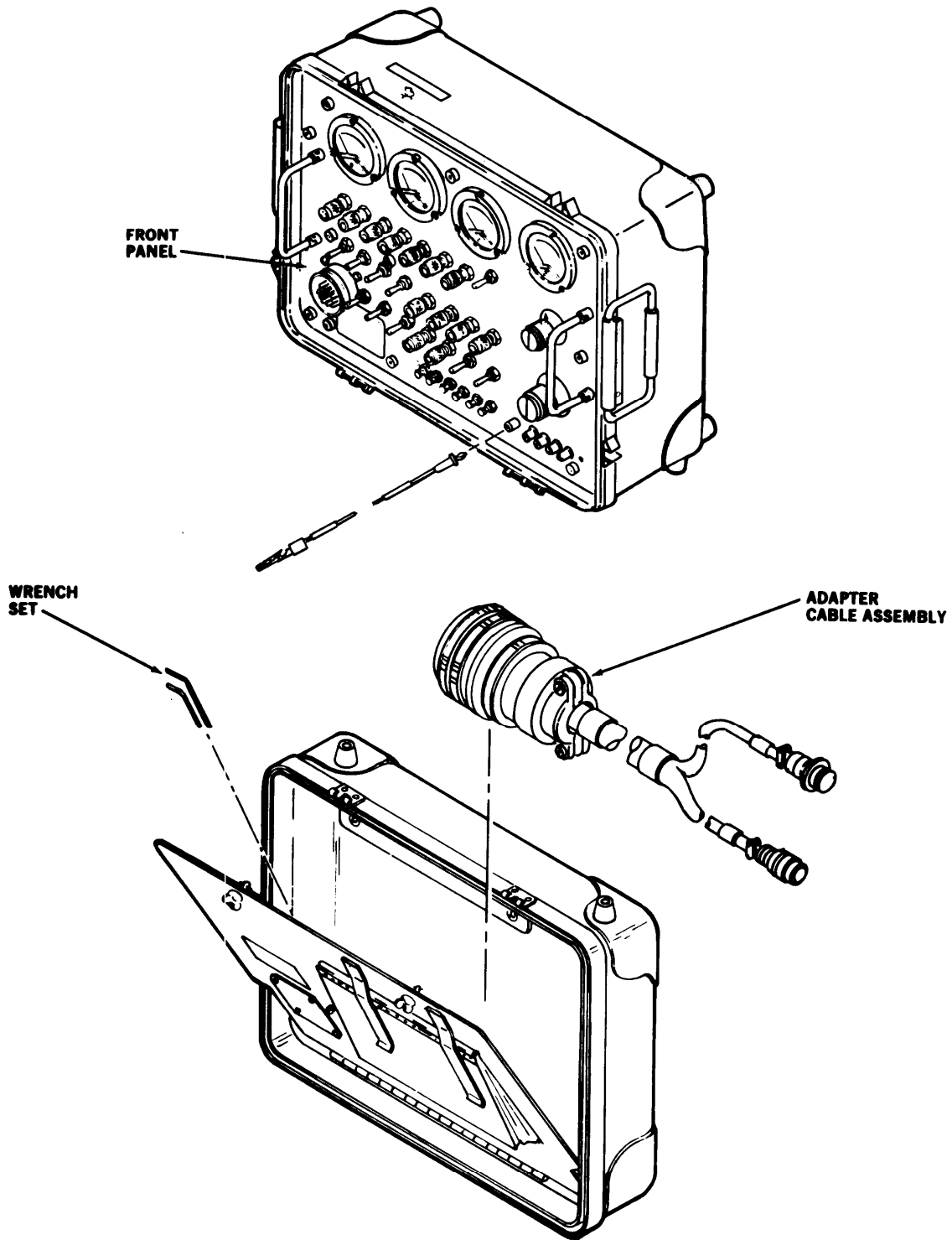
Number	Title	Page
1-1	System Analyzer Test Set.	1-0
2-1	Typical Packaging	2-2
3-1	Front Panel, Controls and Indicators	3-4
4-1	Replacement of Lamp.	4-5
4-2	Power Source -Equipment Setup	4-16
4-3	PMG Volts -Equipment Setup	4-17
4-4	Field Amps- Equipment Setup.	4-18
4-5	CT Test Current -Equipment Setup	4-19
4-6	Circuit Boards -Front View...	4-20
4-7	Adapter Cable Schematic Wiring Diagram	4-21
4-8	Test Set Front Panel	4-22
C-1	System Analyzer Test Set	C-6
C-2	Test Set- Exploded View...,	C-8
C-3	Electrical Components Assembly Exploded View (Sheet 1 of 2)	C-11
C-4	Front Panel Assembly Parts Location Diagram	C-16

LIST OF ILLUSTRATIONS (Cont.)

Number	Title	Page
C-5	Circuit Card Assembly A4 Component Location Diagram	C-18
C-6	Circuit Card Assembly A3 Component Location Diagram	C-20
C-7	Circuit Card Assembly A2 Component Location Diagram	C-22
C-8	Circuit Card Assembly AI Component Location Diagram	C-24
FO-1	Test Set Schematic Diagram (Sheet 1 of 4)	FP-1

LIST OF TABLES

Number	Title	Page
1-1	Equipment Data	1-2
3-1	Operator Controls	3-2
4-1	Operator/Aviation Unit Preventive Maintenance Checks and Services. . . .	4-1
4-2	Troubleshooting (AVUM)	4-2
4-3	Test Equipment	4-6
4-4	Accessories Required	4-6
4-5	Panel Point of Regulation	4-8
4-6	Panel Point of Regulation TRIAC Isolation Procedure	4-9
4-7	Analyzer Test Set Circuits	4-11
4-8	Trip Time Circuit Troubleshooting Chart	4-13



§ 53794 (B)

Figure 1-1. System Analyzer Test Set

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope.

This manual contains operator, aviation unit maintenance and aviation intermediate maintenance instructions for System Analyzer Test Set, Type 60B63-5A (here in after referred to as the test set) (Figure 1-1). It includes instruction for operation and replacement of parts available to the operator's and AVUM/AVIM repairman. The repair parts and special test list is in Appendix C.

1-2. Maintenance Forms, Records, and Reports.

Department of the Army forms and procedures used for equipment maintenance are those prescribed by DA PAM 738-751.

1-3. Destruction of Army Materiel to Prevent Enemy Use.

Refer to TM 750-244-2, Procedure for Destruction of Electronic Material to Prevent Enemy Use.

1-4. Preparation for Storage or Shipment.

For administrative storage, refer to TM 55-1500-204-25/1, AR 750-1, and Chapter 4.

1-5. Quality Assurance/Quality Control (QA/QC).

Refer to FM 55-411 for information about quality assurance and quality control.

1-6. Equipment Improvement Recommendations (EIR).

EIR can and must be submitted by anyone who is aware of an unsatisfactory condition with the equipment design or use. It is not necessary to show a new design or list a better way to do a procedure; just simply tell why the design is unfavorable or why a procedure is difficult. EIR may be submitted on SF 368 (Quality Deficiency Report). Mail directly to Commander, US Army Aviation Systems Command, ATTN: AMSAV-QRF, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-7. Purpose and Use.

The test set is designed for flight line checkout on a helicopter ac power generating system. The test set is used to monitor the major components of the ac power generating system.

1-8. Description.

The test set consists of a test panel mounted in a combination case. The front face of the test panel contains lamps, switches, and connectors. The top of the combination case is removable and contains a storage area for an interconnection cable, two wrenches and a grounding cable. The interior of the test panel

contains four plug-in circuit cards, relays, and a voltage regulator.

The test set is interconnected, between the ac generator of the ac power generating system and its associated voltage regulator, using the cables provided. During generator testing, the internal regulator controls the ac generator while the controls and indicators on the test panel monitor the operation of the ac generator. During regulator testing (using a known good ac generator), the controls and indicators on the front panel check the various regulation and control function of the regulator. Using a switch on the front panel, the regulator response can be checked during simulated system faults. Lamps on the front panel

indicate the reaction times of the regulator. The smaller of the two wrenches is used to remove, install, or tighten the test set control knobs. The larger wrench is used at higher maintenance.

1-9. Equipment Data.

Refer to Table 1-1 for equipment data.

Table 1-1. Equipment Data

Physical:

Length	54.3 cm (21-3/8 inches)
Width	41.3 cm (16-1/4 inches)
Height	29.9 cm (11-3/4 inches)
Weight	133 kg (60 pounds)

Input Requirements:

400 Hz	115 vac (from generator main stator)
1200 HZ	20 vac (from generator PMG)

Metering Range:

Generator Voltage	90 to 140 vac
PMG Voltage	15 to 30 vac
Field Current	0 to 5 amperes
Bus Voltage	0 to 50 vdc
Frequency	360 to 440 Hz
Current Transformer Test Current	0 to 3 milliamperes

Acceptable Trip Time Measurements:

Three-Phase Overvoltage Phase B	0 to 0.12 second
A-Phase Undervoltage	3.5 to 5.0 seconds
Underfrequency	1.0 to 3.0 seconds

Equipment Complement:

- Combination Case
- Instructions Manual
- Front Panel
- Adapter Cable
- Grounding Cable
- Wrench Set

CHAPTER 2

SERVICE UPON RECEIPT

Section I. SITE AND SHELTER REQUIREMENTS

2-1. Siting.

The test set operates in the helicopter environment by being connected to the ac power system.

Height 43.2cm (17 inches)

Volume 0.185 cubic meters (6.6 cubic feet)

Weight 40.5 kg (90 lbs) approximately

2-2. Unpacking.

a. Packing Data. When received, the test set is packaged in a plywood carton.

Atypical shipping carton and contents are shown in Figure 2-1.

b. *Removing contents.*

The dimensions and weight when packaged for shipping are:

Length 73.7cm (29 inches)

Width 58.4cm (23 inches)

(1) Cut or remove gummed tape from top of carton, and open top.

(2) Remove polyethylene cushioning material.

(3) Lift test set from carton and remove remaining polyethylene cushioning material.

Section II. SERVICE UPON RECEIPT OF MATERIEL

2-3. Checking Unpacked Equipment.

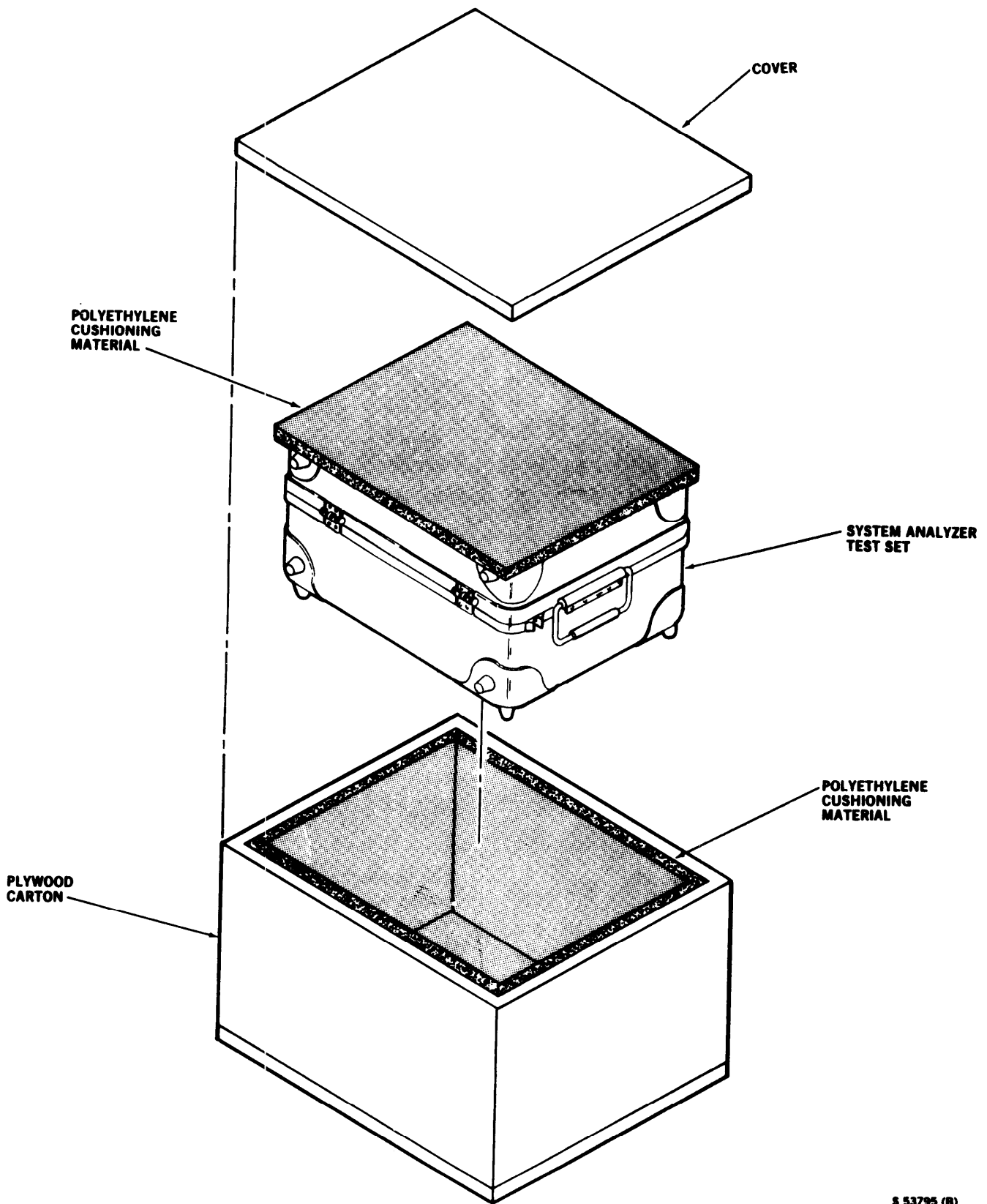
NOTE

To open test set it, may be necessary to equalize the air pressure by opening the air release valve.

a. Inspect equipment for damage during shipment. If equipment has been damaged, report it on DD Form 6 in accordance with instructions in AR 700-58.

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 per instructions of DA PAM 738-751. 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 on the front panel, near the nomenclature plate.) Check also to see whether all currently applicable MWO have been applied. (Current MWO applicable to the equipment are listed in PAM 310-7.)



§ 53795 (B)

Figure 2-1. Typical Packaging

Section III. INSTALLATION INSTRUCTIONS

2-4. Installation of Equipment.

Connect adapter cable connector P1 to AIRCRAFT receptacle J1 on the test set front panel. In the helicopter, connect the grounding cable between the test set and a suitable helicopter ground. Then disconnect the

connector from the generator control unit receptacle. Connect the adapter cable in series between the generator control unit and its receptacle. Plug adapter cable connector P3 into the helicopter connector which was disconnected from the generator control unit. Connect adapter cable P2 to the generator control unit.

CHAPTER 3

OPERATING INSTRUCTIONS

Section I. OPERATOR'S CONTROLS AND INDICATORS**3-1. Operator's Controls.**

All operator's controls and indicators are shown in Figure 3-1 and listed and described in Table 3-1.

Section II. OPERATION UNDER USUAL CONDITIONS**3-2. Preliminary Starting Procedure.**

a. Place helicopter GENERATORS APU switch to OFF/RESET.

b. Place GEN, CUR, LIM, and FF switches OFF. Place all other toggle switches to down position. Place TEST SELECT switch to START TEST. Check that circuit breakers are pressed.

c. Connect grounding cable to ground jack on test set and attach alligator clip to suitable ground on helicopter chassis.

d. Attach connector P1 of the adapter cable to AIRCRAFT connector J1 on test set.

e. Disconnect connector P1 from GCU in helicopter. Attach connector P3 of adapter cable to connector P1 that was disconnected from GCU.

f. Attach connector P2 of adapter cable to connector J1 of GCU.

g. Make sure APU CONTR INST circuit breakers are in.

3-3. Operating Procedures

Do an operational check of ac electrical system (TM 55-1520-237-23-3.)

3-4. Shutdown Procedure.

a. Place GEN switch OFF.

b. Check that TEST SELECT switch is at START TEST.

c. Place helicopter GENERATOR APU switch to OFF/RESET.

d. Disconnect adapter cable from helicopter wiring.

e. Attach helicopter connector to connector J1 of GCU.

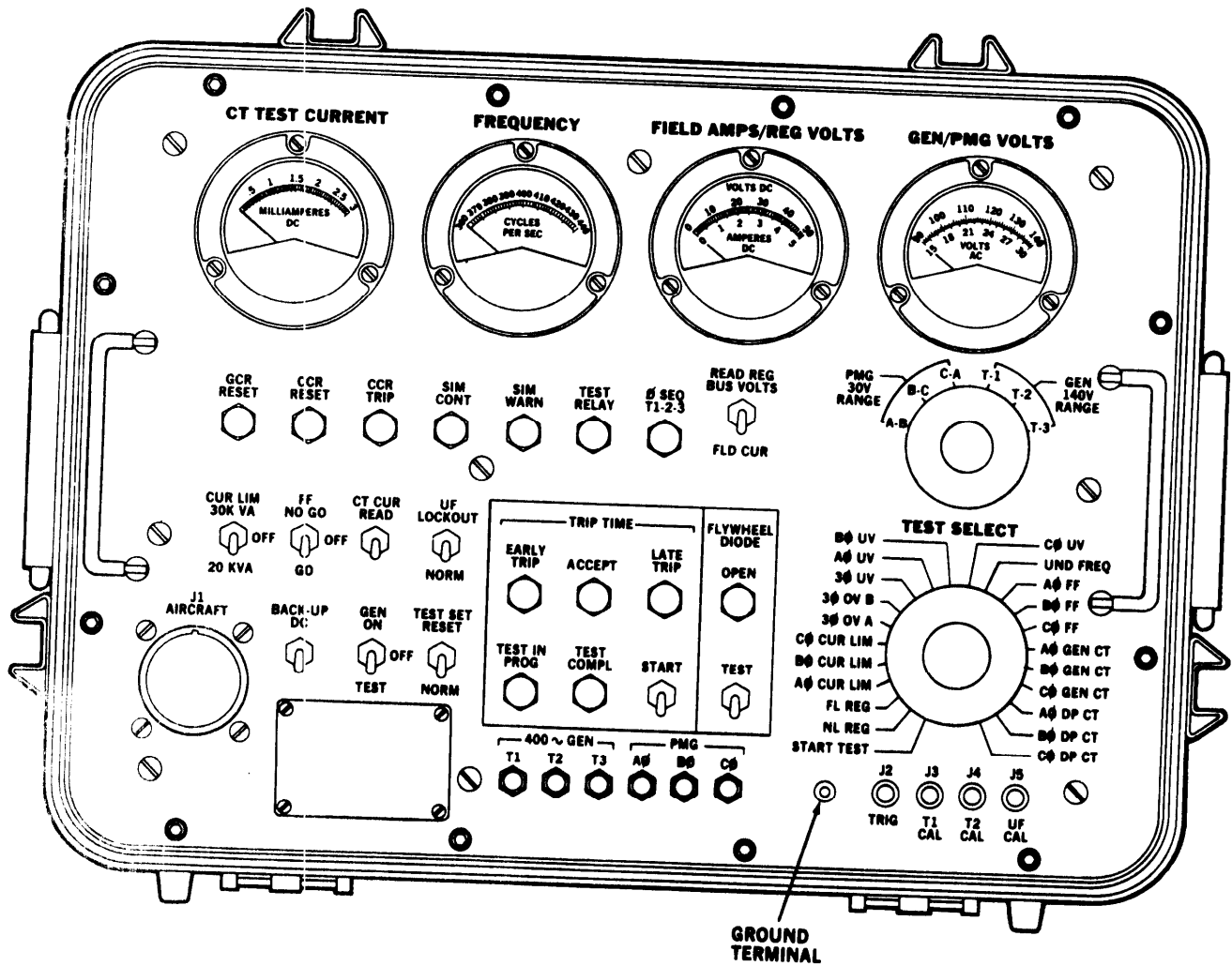
f. Disconnect grounding cable from test set and from helicopter.

Table 3-1. Operator Controls

Control, indicator, or connector	Function
CT TEST CURRENT meter	Used with CT CUR READ switch and TEST SELECT switch in GEN CT and DP CT positions to check generator and feeder current transformer impedance.
FREQUENCY meter	Indicates frequency of generator output (400 ± 20 Hz).
FIELD AMPS/REG VOLTS meter	Used with READ REG switch to measure generator field current and GCU regulated bus voltage.
GEN/PMG VOLTS meter	Used with GEN/PMG selector switch to measure generator main stator and PMG outputs and load bus inputs.
GCR RESET indicator	Press-to-test indicator that lights to indicate that GCR in GCU is reset (generator field excited).
CCR RESET indicator	Press-to-test indicator that lights to indicate that CCR relay in GCU is in reset condition.
CCR TRIP indicator	Press-to-test indicator that lights to indicate that CCR in GCU has tripped due to a simulated failure.
SIM CONT indicator	Press-to-test indicator that lights to simulate closing of the system contractor.
SIM WARN indicator	Press-to-test indicator that lights to simulate tripping of the system contractor.
TEST RELAY indicator	Press-to-test indicator that lights to indicate the condition of the test relay in the GCU.
Ø SEQ T1-2-3 indicator	Press-to-test indicator that lights to indicate correct generator output sequence (T1-T2-T3).
READ REG BUS VOLTS switch	Used to select measurement shown on FIELD AMPS/REG VOLTS meter.
GEN/PMG VOLTS selector switch	Used to select measurement shown on GEN/PMG VOLTS meter.
CUR LIM switch	Used with TEST SELECT switch in 20 KVA and 30 KVA positions to check response of current limiter in GCU to simulated 20 and 30 KVA loads.
FF switch	Used with TEST SELECT switch in FF positions to check response of CCR in GCU for normal (GO) and simulated excessive current (NO GO) conditions.
CT CUR READ switch	Used with CT TEST CURRENT meter to check generator and feeder current transformers.
UF switch	Used to prevent a CCR trip in response to an underfrequency condition.
TRIP TIME EARLY TRIP indicator	Press-to-test indicator that lights to indicate that trip time is shorter than acceptable limit.
TRIP TIME ACCEPT indicator	Press-to-test indicator that lights to indicate that trip time measurement has occurred within predetermined limits.
TRIP TIME LATE TRIP indicator	Press-to-test indicator that lights to indicate that CCR response time to a simulated failure has occurred too late.

Table 3-1. Operator Controls (Cont)

Control, indicator, or connector	Function
FLYWHEEL DIODE OPEN indicator	Press-to-test indicator used with FLYWHEEL DIODE TEST switch to check condition of flywheel diode and series resistor across generator field.
AIRCRAFT connector J1	Adapter cable connector.
BACKUP DC switch	Supplies backup dc to GCU warning light circuit.
GEN switch	Used to check test relay in GCU and to turn on generator output.
TEST SET switch	Used with TEST SELECT switch in all positions, except NL REG, FL REG, and CUR LIM, to reset test set when CCR in GCU has tripped.
TRIP TIME TEST IN PFOG indicator	Press-to-test indicator that lights to indicate that TRIP TIME START switch has been closed and that a trip time measurement is in progress.
TRIP TIME TEST COMPL indicator	Press-to-test indicator that lights to indicate that CCR in GCU has tripped to a simulated failure.
TRIP TIME START switch	Used with TEST SELECT switch in 3 ϕ OVB, A ϕ UV, B ϕ UV, C ϕ UV, and UND FREQ positions to check trip time response to simulated failures.
FLYWHEEL DIODE TEST switch	Used with FLYWHEEL DIODE OPEN indicator.
TEST SELECT switch	Used to select test to be done.
400 ~ GEN T1, T2, T3 circuit breakers	Push-to-reset type circuit breakers used to protect generator stator winding against overloads from test set, GCU, or helicopter buses.
PMG A ϕ , B ϕ , C ϕ circuit breakers	Push-to-reset type circuit breakers used to protect generator PMG winding against overloads from test set or GCU.
Ground terminal	Used to protect test set and operator from undue shock hazards.
TRIG test jack J2	An oscilloscope connection point that can be used with T2 CAL test jack J4 to check calibration of trip time measurement circuits.
T1 CAL test jack J3	An oscilloscope connection point that can be used with TRIG test jack J2 to check calibration of early trip time measurement circuits.
T2 CAL test jack J4	An oscilloscope connection point that can be used with TRIG test jack J2 to check calibration of late trip time measurement circuits.
UF CAL test jack J5	A counter connection point that can be used to measure frequency of underfrequency test oscillator.



8 53796 (B)

Figure 3-1. Front Panel, Controls and Indicators

CHAPTER 4

MAINTENANCE INSTRUCTIONS

Section I. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-1. General.

Preventive maintenance checks and services consists of a visual inspection to be done at each operation of the test set, operational check, any troubleshooting required, and the repair required to correct any malfunctions. If your equipment does not operate, troubleshoot with proper equipment. Report any deficiencies using the proper form, see DA PAM 738-751.

4-2. Inspections.

Do inspections as shown in Table 4-1.

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

NOTE: Within designated interval, these checks are to be performed in the order listed.

B - Before
 D - During
 A - After

Item No.	Interval					C	Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment is not ready/ available if:
	B	D	A	W	M				
1	•		•				Adapter Cable	Check for broken wires, burnt insulation, damage or dirt in connectors.	
2	•						Ground Cable	Check for damage to clip and pin and for cleanness of connections.	
3	•						Front Panel	Check that meter needles are not bent and glass is not cracked. Make certain all switches operate positively.	
4		•					Front Panel	Check operation of meters and lights.	

Section II. TROUBLESHOOTING

4-3. Scope.

a. This section contains troubleshooting or malfunction information and tests for locating and correcting most of the troubles which may develop in the Test Set. Each malfunction or trouble symptom for an individual component, unit, or system is followed by a list of tests or inspections necessary for you to determine probable causes and corrective actions for you to remedy the malfunction.

b. This manual cannot list all possible malfunctions that may occur or all tests or inspections and corrective actions. If a malfunction is not listed (except when malfunction and cause are obvious), or is not corrected by listed corrective actions, you should notify higher level maintenance.

c. Table 4-2 lists the common malfunctions that you may find during the operation or maintenance of the Test Set or its components. You should do the tests/inspections and corrective actions in the order listed.

Table 4-2. Troubleshooting (AVUM)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
<p>1. AN INDIVIDUAL PRESS-TO-TEST INDICATOR DOES NOT GO ON WITH THE EXCEPTION OF Ø SEQ T1-2-3.</p> <p>Step 1. Start APU.</p> <p>Step 2. Press each press-to-test indicator except Ø SEQ T1-2-3. Indicators shall light when pressed,</p> <ul style="list-style-type: none"> a. If only one indicator does not light, replace lamp, paragraph 4-7. b. If all lamps do not light, send test set to higher maintenance. <p>2. TEST SET Ø SEQ T 1-2-3 INDICATOR DOES NOT GO ON.</p> <p>Step 1. Place GEN switch OFF then ON while holding TEST SET switch at RESET. Test set Ø SEQ T1-2-3 indicator shall go on.</p> <ul style="list-style-type: none"> a. If indicator does not go on, press Ø SEQ T1-2-3 press-to-test. If lamp does not light, replace lamp, paragraph 4-7. b. If lamp goes on when press-to-test is pressed, send test set to higher maintenance.

Section III. REPAINTING AND REFINISHING INSTRUCTIONS

WARNING

Observe all cautions, and warnings on containers when using consumables. When applicable, wear necessary protective gear during handling and use. If a consumable is flammable or explosive MAKE CERTAIN the consumable and its vapors are kept away from heat, sparks, and flame. MAKE CERTAIN the helicopter is properly grounded and firefighting equipment is readily available prior to use.

4-4. Cleaning Instructions.

- a. Remove dust and loose dirt with a clean, soft cloth. (Item 4, Appendix D).
- b. Remove grease, fungus, and ground-in dirt with cloth dampened with dry-cleaning solvent, (Item 3, Appendix D).

- c. Remove moisture with a dry cloth.

4-5. Repainting and Refinishing instructions.

NOTE

Refer to TB 746-10, Field Instructions for Painting and Preserving Electronics Equipment.

- a. Repaint test set using these colors:

- (1) Case (Exterior). Finish with two coats of yellow baked enamel, (Item 1, Appendix D).
- (2) Front Panel. Retouch using instrument black enamel, (Item 2, Appendix D).

Section IV. Maintenance and Replacement of Authorized Parts

4-6. General.

- a. The only authorized replacement of parts by aviation unit personnel (AVUM) is indicated in Appendix B, Maintenance Allocation Chart, or as indicated in paragraphs 4-7 thru 4-10.
- b. Authorized repair of the Analyzer Test Set by Aviation Intermediate Maintenance (ATST) personnel is indicated in Appendix B, Maintenance Allocation Chart.

NOTE

Aviation Intermediate Maintenance. Area TMDE Support Team (ATST) will perform the only authorized AVIM level of maintenance. This includes replacement and repair of components and end items which can be accomplished efficiently with available skills, tools, and test equipment. Evacuate circuit boards, components, and end items beyond repair capability of ATST to the Depot.

4-7. Indicator Lamp Replacement.

- a. Unscrew bezel (Figure 4-1) from light assembly.
- b. Using a pushing and twisting motion, free bayonet base of lamp from light assembly.
- c. Using a pushing and twisting motion, install bayonet base of replacement lamp into light assembly.

- d. Screw bezel onto light assembly.

NOTE

If lamp does not light now, trouble is in front panel. Send test set to higher level maintenance.

4-8. Knob Replacement.

- a. Loosen screw holding knob to shaft.
- b. Slide knob off shaft.
- c. When placing new knob on shaft, make certain knob is fully on shaft before tightening screw.

4-9. Cable Assembly.

Remove cable assembly from test set case and send to higher maintenance.

4-10. Lubrication.

No lubrication is required.

NOTE

Performance checks are performed with single phase 115 vat, 400 Hz power and 28 vdc.

4-11. Troubleshooting and Repair (ATST).

a. Paras 4-11 and 4-12 contain general information for troubleshooting. Test equipment and accessories are listed in Tables 4-3 and 4-4. Refer to FO-1 for the test set schematic diagram and Fig C-3 for the electrical component assembly. Troubleshooting procedures are listed in tables 4-7 and 4-8. The adapter cable wiring diagram is Fig 4-7. See troubleshooting tables as applicable before proceeding with performance checks.

b. Extender board, Bendix, P/N 1106610-1 is required for troubleshooting circuit boards and is listed in table 4-4.

4-12. Analyzer Circuit Checks.

a. GEN/PMG VOLTS Meter.

- (1) Set all test switches to down or OFF.
- (2) Set GEN/PMG VOLTS switches to T1.
- (3) Pull 400 GEN-T1, T2, and T3 circuit breakers to out position.
- (4) Connect test equipment as shown in Figure 4-2 (DC power supply not connected).
- (5) Set AC power supply to ON and adjust for 115V output at 400 Hz.
- (6) Push 400 GEN-T1 circuit breaker to IN position. Observe test set for a 115V indication on GEN/PMG Volts meter. If not, see troubleshooting Table 4-7.
- (7) Pull 400 GEN-T1 circuit breaker to OUT position and disconnect lead from pin A of J1 and connect to pin B of J1.
- (8) Set GEN/PMG VOLTS switch to T2 and repeat (3) thru (7) above, except use 400 GEN-T2 circuit breaker.
- (9) Disconnect lead from pin B of J1 and connect to pin C of J1.
- (10) Set GEN/PMG VOLTS switch to T3 and repeat (3) thru (6) above, except use 400 GEN-T3 circuit breaker.
- (11) Disconnect test equipment from test set.

b. FREQUENCY METER Circuit.

- (1) Connect test equipment as shown in Figure 4-2 (DC power supply not connected) with test set power OFF.
- (2) Set all test switches to down or OFF.
- (3) Set GEN/PMG VOLTS switches to T1.
- (4) Pull 400 GEN-T1 circuit breaker to OUT position.
- (5) Press 400 GEN-T1 circuit breaker to IN position.

(6) Adjust AC power supply for 400 Hz indication on FREQUENCY METER. If not, see troubleshooting Table 4-7.

(7) Disconnect test equipment from test set.

c. PMG Volts Meter and 1200 Hz Power Circuit.

(1) Pull PMG AØ, BØ, and CØ circuit breakers to OUT positions and set GEN/PMG VOLTS switch to AB.

(2) Connect equipment as shown in Figure 4-3 and set all test switches to down or OFF.

(3) Adjust AC power supply for 21 vac at 1200 Hz and push PMG AØ and BØ circuit breakers to IN positions.

(4) GEN/PMG Volts meter will indicate approximately 21 vat. If not, see troubleshooting Table 4-7.

(5) Pull PMG AØ and BØ circuit breakers to OUT positions.

(6) Connect test lead to J1 connector pin X (+) and w (-) to the digital voltmeter.

(7) Push PMG AØ and BØ circuit breakers to IN positions.

(8) Digital voltmeter will indicate approximately 27.5 vdc. If not, perform troubleshooting Table 4-7.

(9) Pull PMG AØ and BØ circuit breakers to OUT positions.

(10) Disconnect lead from pin D of J1 and connect to pin F of J1 and set GEN/PMG VOLTS switch to BC and push PMG BØ and CØ circuit breakers to IN positions.

(11) Repeat technique (8) above.

(12) Pull PMG BØ and CØ circuit breakers to OUT positions.

(13) Disconnect lead from pin E of J1 and connect to pin D of J1.

(14) Set GEN/PMG VOLTS switch to CA and push PMG CØ and AØ circuit breakers to IN positions.

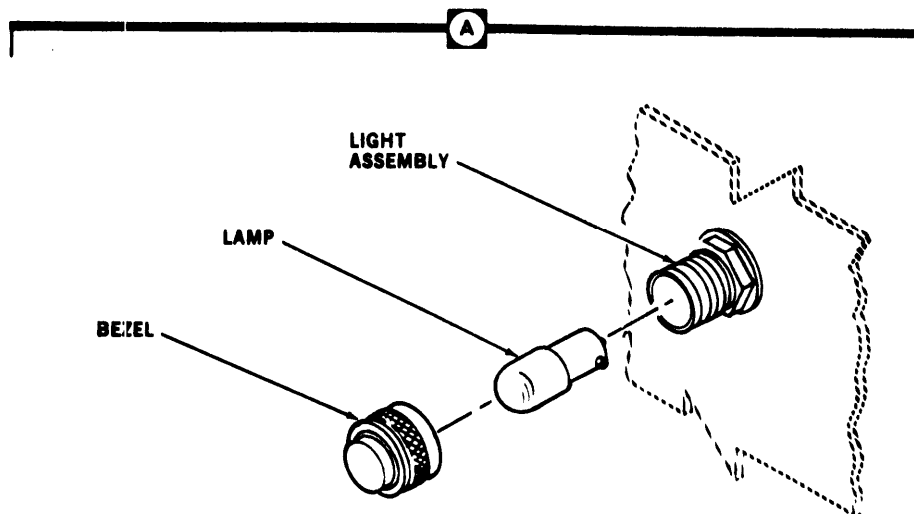
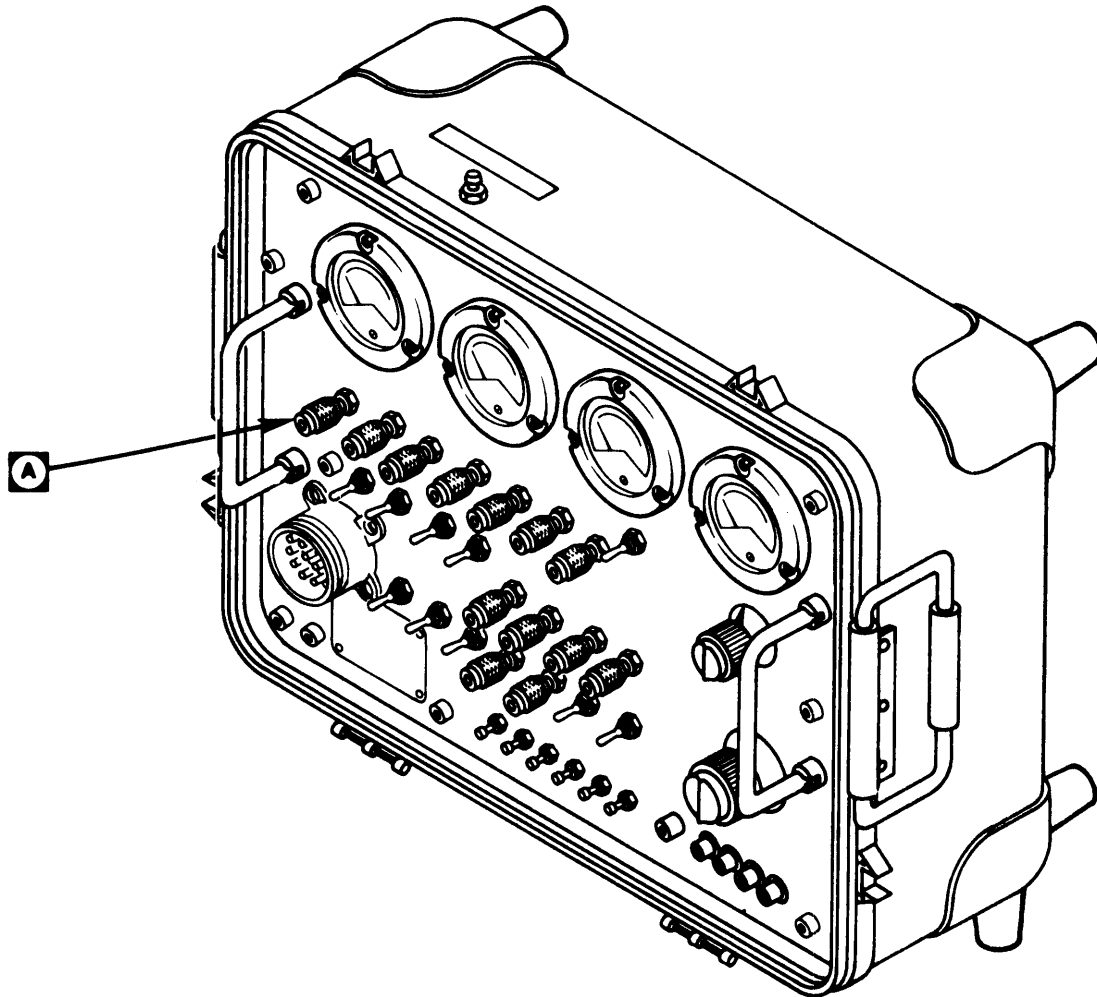
(15) Repeat technique (8) above.

(16) Disconnect test equipment from test set and set all test switches to down or OFF.

d. 400 Hz Power Supply Circuit.

(1) Pull 400 Hz GEN T-1 circuit breaker to OUT position and set GEN/PMG VOLTS switch to T1. Observe that all other test switches are down or OFF.

(2) Connect test equipment as shown in Figure 4-2 (DC power supply not connected) with digital voltmeter leads between J1 connector pins X (+) and w (-).



8 53797 (B)

Figure 4-1. Replacement of Lamp.

Table 4-3. Test Equipment

Common Name	Manufacturer and Model (Part Number or Equivalent)
AC Power Supply	NH Research Model SF 613-1 (MIS 10222TY)
DC Current Shunt	Guideline Model 9711 (7912323)
DC Power Supply	NJE Model CS36CR30D2 (7907346-2)
Digital Voltmeter	Tektronix Model DM501A
Frequency Counter	Hewlett-Packard Model 5345A (MIS-28754/1, Type 1)
Ocilloscope	Tektronix, Type R5440 (MIS-28706/1, Type 1) w/ Plug-ins 5A48 (MIS-28706/3) and 5B42 (MIS-28706/4)
Resistance Standard	Biddle-Gray Model 601147-1 (7910328)
Isolation Transformer	AIL-Tech Corporation Model ST 200A

Table 4-4. Accessories Required

Common Name	Description (Part Number)
Adapter ¹	Single banana jack to spade lug (red) (7907499)
Adapter ¹	Single banana jack to spade lug (black) (7907502-1)
Adapter	BNC T-type, 2 jacks, 1 plug (MS35173-274C)
Adapter Box	SKD4850-3
Cable	36-in., BNC plug to two alligator clips (7909410)
Cable	30-in., RG-58/U; double banana plug terminations (7907470)
Cable ¹	30-in., RG-58/U; BNC plug terminations (10519141)
Lead ²	Pin jack to single banana plug (7921032)
Lead	24-in., No. 18; single banana plug terminations (red) (7907497)
Lead ¹	24-in., No. 18; single banana plug terminations (black) (7907498)
Test Lead ¹	Single banana plug to test hook (SKC4850-14)
Probe ¹	X10, Tektronix, Types 010-6106-02 and 010-6106-03
Adapter ¹	BNC plug to double banana plug (7909400)
Extender Board	P/N 1106610-1, NSN 4920-01-165-5531

¹ Two required.² Four required.

(3) Press 400 Hz GEN T1 circuit breaker to IN position.

(4) Set DC BACK-UP to ON. Digital voltmeter will indicate approximately 23 vdc. If not, see troubleshooting Table 4-7.

(5) Disconnect test equipment from test set.

e. Lump Circuit.

(1) Pull 400 Hz GEN T1 circuit breaker to OUT position and set GEN/PMG VOLTS switch to T1.

(2) Connect test equipment as shown in Figure 4-2 (DC power supply ON or OFF). Lamps can be checked with 28 vdc or 115 vac applied.

(3) Pull 400 Hz GEN T1 circuit breaker to IN position and adjust AC power supply to 115 ac.

(4) Press all test indicator lamps. Indicator lamps will light when pressed. If not, see troubleshooting Table 4-7.

(5) Disconnect all test equipment.

f. Voltage Regulator Test Circuit.

(1) Pull 400 Hz GEN T1 circuit breaker to OUT position.

(2) Set all test switches to down or OFF except TEST SELECT to START TEST and GEN/PMG VOLTS to T1.

(3) Connect J1 pins W and X together with jumper lead and connect digital voltmeter between J1 pins f (+) and h (-) on test set.

(4) Connect test equipment as shown in Figure 4-2 (DC power supply not connected).

(5) Press 400 Hz GEN T1 circuit breaker to IN position and set BACK-UP DC power and GEN switches to ON.

(6) Reset and SIM CONT indicator lights will light and digital voltmeter will indicate approximately 22.3 vdc. If not, see troubleshooting Table 4-7.

(7) Disconnect all test equipment and set test set switches to down or OFF.

(8) Remove jumper lead from J1 pins W and X.

g. FIELD AMPS/REG VOLTS Meter Circuit.

(1) Pull 400 GEN T1 circuit breaker to OUT position.

(2) Connect jumper lead to J1 connector between pins g and X and set DC BACK-UP switch to ON.

(3) Connect test equipment as shown in Figure 4-2 (DC power not connected).

(4) Set 400 GEN T1 circuit breaker to IN position and READ REG BUS VOLTS-FLD CUR switch to UP position.

(5) Adjust AC power supply for a 30V indication on FIELD AMPS/REG VOLTS meter. If not, see troubleshooting Table 4-7.

(6) Disconnect jumper lead from J1 pins g and X and remove AC power supply. Connect test equipment as shown in Figure 4-4.

(7) Set READ BUS VOLTS-FLD CUR switch to down position and TEST SELECTOR to START TEST.

(8) Adjust DC power supply for a 1 AMP indication on FIELD AMP/REG VOLTS meter. Digital voltmeter will indicate between 8 and 12 mvdc. If not, see troubleshooting Table 4-7.

(9) Disconnect all test equipment and set test switches to down or OFF position.

h. CT Current Meter and Current Transformer Circuit.

(1) Connect test equipment as shown in Figure 4-5. Observe that 400 GEN T1 circuit breaker is OFF.

(2) Position test set controls as listed in (a) through (e) below:

- (a) TEST SELECT switch to AØ.
- (b) CT CUR READ switch to UP.
- (c) GEN/PMG VOLTS switch to T1.
- (d) 400 GEN T1 to IN position.
- (e) All Other Switches to down or OFF.

(3) Adjust resistance standard to 3300 ohms and adjust dc power supply to 28 vdc.

(4) Adjust AC power supply for 115 vac at 400 Hz as indicated on GEN/PMG VOLTS and FREQUENCY Meters. CT TEST CURRENT meter will indicate between 0.9 and 1.1 made. If not, see troubleshooting Table 4-7.

(5) If voltage is checked at each TEST SELECT switch BØ GEN CT-J1 pin L, CØ GEN CT-J1 pin M, AØ DPCT-J1, BØ DPCT-J1 pin P, CØ DPCT J1 pin Q results will be as indicated in (4) above. If not, see troubleshooting Table 4-7.

(6) Disconnect all test equipment from test set.

(7) Connect test leads to J1 connector H and G to digital voltmeter and connect DC power supply leads to J1 connector pins S (-) and J (+).

(8) Set TEST SELECTOR to FL REG. Digital voltmeter will indicate approximately 3 ohms. If not, see troubleshooting Table 4-7.

(9) Disconnect all test equipment from test set and set test set switches to down or OFF.

i. *Panel Point of Regulation.*

(1) Observe that the 400 GEN T1 circuit breaker is OFF and test set switches are down or OFF.

(2) Connect 115 vat, 400 Hz to J1 connector pins A (+) for T1 and pin S (-) and connect digital voltmeter to J1 connector pins T (+) and S (-).

(3) Push 400 GEN T1 circuit breaker to IN position and place GEN switch to OFF.

(4) Set DC BACKUP to ON and CT CURRENT switch to OFF.

(5) Set GEN/PMG VOLTS switch to T1 and TEST SELECTOR to each position as listed in Table 4-5. Indications will be as specified in Table 4-5.

(6) Pull 400 GEN T1 circuit breaker to OUT position.

(7) Repeat techniques 2, 3, 5, & 6 above for GEN/PMG VOLTS switch T2, J1 connector pin U (+), and set TEST SELECTOR to each position as listed in Table 4-5. Indications will be as specified. If not, see troubleshooting Table 4-7.

(8) Repeat technique 2, 3, 5, & 6 above for GEN/PMG VOLTS switch T3, J1 connector pin V (+) and set TEST SELECTOR to each position as listed in Table 4-5. Indications will be as specified. If not, see troubleshooting Table 4-7.

(9) Disconnect all test equipment, jumpers from test set and place all switches to down or off position.

j. *Current Limit Resistance Check.*

(1) Remove all test equipment from test set.

(2) Connect digital VOM to J1 pins A and N and set range to ohms.

Table 4-5. Panel Point of Regulation

TEST SET SWITCH POSITIONS	T1, T2, T3 GEN/PMG VOLTS SWITCH	DIGITAL VOM INDICATIONS (VAC)	
		MIN	MAX
Test Selector — FL-REG — 3Ø OVA		110	120
		0	5
Jumper J1 pins X and W		115	125
Test Selector — 3Ø OVB		110	120
Trip Time — Start to up		139	149
Trip Time — Start to down		—	—
Test Selector — 3Ø UV — AØ UV		103	113
		110	120
Trip time — Start to up	T1	82	92
	T2, T3	110	120
Test Selector — BØ UV — CØ UV	T1, T2	110	120
	T3	110	120
		82	92
— UND FREQ — AØ FF		110	120
		—	—
Remove jumper wire from J1 pins X and W		0	5
Hold test set switch to reset		110	120
Release test set switch		0	0

(3) Set CT CURRENT READ switch to OFF and TEST SELECT to AØ DC CT position.

(4) Connect 28 vdc power supply to J1 pins S(-) and J (+) and push 400 Hz circuit breaker to IN.

(5) Set current limit 30 KVA/20 KVA to 20 KVA. Digital VOM will indicate 24 ohms. If not, see troubleshooting Table 4-7.

(6) Set current limit 30 KVA/20 KVA to 30 KVA. Digital VOM will indicate 14 ohms. If not, see troubleshooting Table 4-7.

(7) Set current limit 30 KVA/20 KVA to OFF and set FF GO/NO GO to NO GO. Digital VOM will indicate 2K ohms. If not, see troubleshooting Table 4-7.

(8) Set FF switch to GO. Digital VOM will indicate 4K ohms. If not, see troubleshooting Table 4-7.

(9) Disconnect all test equipment from test set and set all test switches to down or OFF.

k. Regulation TRIAC Isolation Procedure.

(1) Pull 400 GEN TI circuit breaker to OUT position.

(2) Remove circuit board assembly A2 and reinstall using extender board.

(3) Connect equipment as shown in Figure 4-2 (DC power supply not connected).

(4) Push 400 GEN TI circuit breaker to IN position.

(5) Perform voltage checks Table 4-6 using TEST SELECT switch at positions and test points specified. Indications will be as specified. If not, see troubleshooting Table 4-7.

(6) Disconnect all test equipment from test set and set test switches to the down or OFF position.

1. Underfrequency Circuit.

(1) Set dc power supply to OFF and disconnect frequency counter from equipment setup.

(2) Connect frequency counter and oscilloscope to J5 UFCAL, using adapters, cables, and X10 probes.

NOTE

Connect probes to frequency counter INPUT.

Table 4-6. Point of Regulation TRIAC Isolation Procedure

CONNECTOR MEASUREMENT TO GROUND	TEST SELECT SWITCH S1 POSITION	DIGITAL MULTIMETER (VAC)		MALFUNCTIONING TRIAC OR ASSOCIATED COMPONENTS
		MIN	MAX	
XA2-22	START TEST	0	0	A2Q1 thru A2Q4
XA2-22	3Ø OV A	115	125	A2Q3
XA2-22	3Ø OV B	143	157	A2Q4
XA2-22	3Ø UV	103	113	A2Q2
XA2-22	AØ UV	80	90	A2Q1
XA2-1	START TEST	0	0	A2Q5 thru A2Q8
XA2-1	3Ø OV A	115	125	A2Q7
XA2-1	3Ø OV B	143	157	A2Q8
XA2-1	3Ø UV	103	113	A2Q6
XA2-1	AØ UV	80	90	A2Q5
XA2-K	START TEST	0	0	A2Q9 thru A2Q12
XA2-K	3Ø OV A	115	125	A2Q11
XA2-K	3Ø OV B	143	157	A2Q12
XA2-K	3Ø UV	103	113	A2Q10
XA2-K	AØ UV	0	0	A2Q9

(3) Set dc power supply to ON.

(4) Set TRIP TIME START switch to off (down). Oscilloscope will indicate between 20 and 30 V p-p. If frequency counter does not indicate between 1145 and 1165 Hz, adjust R101 for 1155 Hz. If specification cannot be met go to troubleshooting Table 4-7.

(5) Set TRIP TIME START switch to ON (up). Oscilloscope will indicate between 20 and 30 V p-p. If frequency counter does not indicate between 1085 and 1105 Hz, adjust R102, for 1095 Hz. If specification cannot be met go to troubleshooting Table 4-7.

m. *Timer Time Delay Circuit.*

(1) Set dc power supply to OFF and disconnect all equipment from equipment setup except dc power supply.

(2) Connect frequency counter and oscilloscope to channel A to J2 TRIG and channel B to J4 T2 CAL, using two probes and two adapters (B12 and B13). Set oscilloscope trigger controls to starts weep when waveform goes from O to +20 vale.



Adjust frequency counter to accept at least a 56 V pulse before proceeding to next step.

(3) Set dc power supply switch to ON.

(4) Position frequency counter controls as listed in (a) through (g) below:

- (a) Slope channels to +.
- (b) Function to BA.
- (c) Trigger levels (Slightly +).
- (d) Display fully CW.
- (e) Press RESET.
- (f) SEP-COM to SEP.
- (g) Gate time switch to min.

(5) Position Test set controls as listed in (a) through (c) below:

- (a) TRIP TIME START switch to off (down).
- (b) TEST SELECT switch to 3Ø OVB.

(c) TRIP TIME START switch to on (up). TEST IN PROCESS light goes on.

(6) Press frequency counter RESET pushbutton. If frequency counter does not indicate between 100 and 140 ms, adjust R1 (Figure 4-6) for 120 ms. If specification cannot be met, go to troubleshooting Table 4-7 (Fault No. 2).

(7) Set frequency counter to indicate seconds and press RESET pushbutton.

(8) Disconnect hookup from J4 T2 CAL and reconnect to J3 T1 CAL.

(9) Position Test set controls as listed in (a) through (c) below:

- (a) TRIP TIME START switch to off (down).
- (b) TEST SELECT to AØ UV.
- (c) TRIP TIME START switch to on (up).

(10) If frequency counter does not indicate between 3.0 and 4.0s, adjust R5 for 3.5S. If specification cannot be met, go to troubleshooting Table 4-7 (Fault No. 3).

(11) Disconnect hookup from J3 to T1 CAL and reconnect to J4 T2 CAL.

(12) Set TRIP TIME START switch to off (down), then to on (up). If frequency counter does not indicate between 4.5 and 5.5s, adjust R3 for 5S. If specification cannot be met, go to troubleshooting Table 4-7 (Fault No. 4).

(13) Disconnect hookup from J4 T2 CAL and reconnect to J3 T1 CAL.

(14) Position Test set controls as listed in (a) through (c) below:

- (a) TRIP TIME START switch to off (down).
- (b) TEST SELECT switch to UND FREQ.
- (c) TRIP TIME START switch to on (up).

(15) If frequency counter does not indicate between 900 and 1100 ms, adjust R119 for 1000 ms. If specification cannot be met, go to troubleshooting Table 4-7 (Fault No. 5).

(16) Disconnect hookup from J3 to T1 CAL and reconnect to J4 T2 CAL.

(17) Set TRIP TIME START switch to off (down), then to on (up). If frequency counter does not indicate be-

tween 2.5 and 3.5 sec, adjust R7 for 3Sec. If specification cannot be met, go to troubleshooting Table 4-7 (Fault No. 6).

n. *Timer Logic Tests Circuit.*

(1) Disconnect all test equipment from test set, except DC power supply as shown in Figure 4-2.

(2) Set TRIP TIME -START switch to DOWN and TEST SELECT to AØ UV position. Jumper J1 pins, a, b, g, and set TRIP TIME-START switch to UP.

(3) TRIP-TEST IN PROG indicator and TRIP TIME-EARLY TRIP indicator will light. TRIP-TEST IN PROG indicator will go OFF and TRIP TIME-TEST COMPL indicator will light. If not, see troubleshooting Table 4-8 (Faults No. 7, 8, & 11).

(4) Remove jumper from J1 pin a and set TRIP TIME START stich to DOWN. TRIP TIME lamps will

go OFF. If not, see troubleshooting Table 4-8 (Fault No. 10).

(5) Set TRIP TIME-START switch to UP. TRIP TIME TEST IN PROG indicator will light. TRIP TIME-TEST COMPL indicator and TRIP TIME-L, ATE TRIP indicator will light and TRIP TIME-TEST IN PROG indicator will go off. If not, see troubleshooting Table 4-8 (Faults No. 7, 10, & 11).

(6) Set TRIP TIME-START switch to DOWN and set TEST SELECT switch to 3Ø OVB and jumper pin a to b and g. Set TRIP TIME-START switch to UP. “

(7) TRIP-TEST IN PROG indicator will light and TRIP TIME-ACCEPT indicator will also light when TRIP TIME-START switch is placed to UP. TRIP TIME-TEST IN PROG indicator will go off. TRIP TIME-TEST COMP indicator will light. If not, see troubleshooting Table 4-8 (Faults No. 7,9, & 11). Set TRIP TIME-START switch to DOWN.

Troubleshooting Table 4-7. Analyzer Test Set Circuits

INDICATION	PROBABLE CAUSE OF FAILURE	TROUBLESHOOTING
GEN/PMG Meter 115 vac Low or Missing	GEN/PMG Selector S4, GEN/PMG VOLTS Meter, CB1	FO-1 Schematic and Associated Components
Frequency Meter 400 Hz Low or Missing	Frequency Meter CB1, T1	FO-1 Schematic and Associated Components
PMG VOLTS Meter and 1200 Hz Power Circuit 21 vac Low or Missing	GEN/PMG Selector S4, GEN/PMG Meter CB4, CB5	FO-1 Schematic and Associated Components
27.5 vdc Low or Missing	T3, C4, CR82 thru CR87	FO-1 Schematic and Associated Components
400 Hz Power Supply 23 vdc Low or Missing	T2, CB1, CR76 thru CR87, R120, C5	FO-1 Schematic and Associated Components
Lamp Circuit DS2, DS3, DS11, DS12, DS13 - Do not illuminate	Lamps, T2 Power Supply	FO-1 Schematic and Associated Components (A3 Board)
DS4 thru DS10 No Light	Lamps, T2 Power Supply, Q13	FO-1 Schematic and Associated Components
Voltage Regulator Test Circuit 22.3 vdc Low or Missing	S11, K13, K1, S7, M4, R117, CR111, A4 CR106, VR1	FO-1 Schematic and Associated Components (A4 Board—CR106)
Field AMPS/REG Volts Meter Circuit 30 vac Low or Missing on Meter	M4, S7	FO-1 Schematic and Associated Components
1 amp Low or Missing on Meter	M4, S1, K2, K1, S7	FO-1 Schematic and Associated Components

Troubleshooting Table 4-7. Analyzer Test Set Circuits (continued)

INDICATION	PROBABLE CAUSE OF FAILURE	TROUBLESHOOTING
CT Current Meter and Current Transformer 1.0 made Low or Missing on Meter	S1, S2, M3, K10, K11, K12, A4 CR47 thru A4 CR51, T4, R44 thru R46	FO-1 Schematic and Associated Components (A4 Board—CR47-CR51)
Current Transformer Resistance 3 ohms Low or Missing on FL-REG Position	K1, K2, S7, M4, R115, R116, R118, L1	FO-1 Schematic and Associated Components (A3 Board)
Panel Point of Regulation	S1, S10, A2Q1 thru AQ12, T1, K3, K4, K5, R47 thru R73, CR67 thru CR75	FO-1 Schematic and Associated Components (A2 Board Q1 thru Q12) (A4 Board)
Current Limit Resistance Checks 20 KVA Setting Resistance 24 ohms Low or Missing	R95, T4, S6	FO-1 Schematic and Associated Components (A3 Board)
30 KVA Setting 14 ohms Resistance Low or Missing	R95, T4, S6	FO-1 Schematic and Associated Components (A3 Board)
20 KVA OFF and FF NO/GO 2K ohms Low or Missing	R93, S5, T4	FO-1 Schematic and Associated Components (A3 Board)
FF NO/GO to GO 4K ohms Low or Missing	R96, T4, S6	FO-1 Schematic and Associated Components (A3 Board)
Regulation TRIAC Isolation Procedure	A2Q1 thru A2Q12	FO-1 Schematic and Associated Components (A2 Board)
Underfrequency Circuit 1145-1165 Hz cannot be adjusted 1085 and 1105 Hz cannot be adjusted	U1, C8, C9, R99 thru R109 CR100 thru CR102, Q15, Q6	FO-1 Schematic and Associated Components (A1 Board)
Flywheel ¹ Diode Open DS3 fails to Light	Open Flywheel detector TRIAC gate A3Q14, A3R113 or R3R114, CR103, CR104, C6, C7, S-9	FO-1 Schematic and Associated Components (A3 Board)
SEQ T1, 2, 3 ¹ Lamp does not light with correct phase Sequence Applied	A3C10, A3R89, A3R91	FO-1 Schematic and Associated Components (A3 Board)

¹ Not Verified in Procedure

Table 4-8. Trip Time Circuit Troubleshooting Chart

FAULT NO.	INDICATION	PROBABLE LOCATION OF FAILURE	SUSPECTED FAULTY COMPONENT	REMEDY REMOVE CIRCUIT BOARD ASSEMBLY A1 AND REINSTALL USING EXTENDER BOARD
1	Timer Logic Fault			
2	Improper T2 time measurement with TEST SELECT switch S1 at 3 ϕ OV B	Time constant circuitry Para 4-8m, Step 6	Relay A1K8, resistor A1R1, integrated circuit A1U1 or A1U3 or associated circuitry	Isolate and replace malfunctioning components A1 Board FO-1
3	Improper T1 time measurement with TEST SELECT switch S1 at A ϕ UV	Time constant circuitry Para 4-8m, Step 10	Relay A1K7, resistor A1R5, integrated circuit A1U1 or A1U2, or associated circuitry	Isolate and replace malfunctioning components A1 Board, FO-1
4	Improper T2 time measurement with TEST SELECT switch S1 at A ϕ UV	Time constant circuitry Para 4-16m, Step 12	Relay A1K7, resistor A1R3, integrated circuit A1U1 or A1U3 or associated circuitry	Isolate and replace malfunctioning components A1 Board, FO-1
5	Improper T1 time measurement with TEST SELECT switch S1 at UND FREQ	Time constant circuitry Para 4-8m, Step 15	Relay A1K9, resistor A1R119, integrated circuit A1U1 or A1U3 or associated circuitry	Isolate and replace malfunctioning components A1 Board, FO-1
6	Improper T2 time measurement with TEST SELECT switch S1 at UND FREQ	Time constant circuitry Para 4-8m, Step 17	Relay A1K9, resistor A1R7, integrated circuit A1U1 or A1U3, or associated circuitry	Isolate and replace malfunctioning components A1 Board, FO-1
7	Improper lighting of TRIP TIME-TEST IN PROG indicator DS4	Lamp driver Para 4-8n, Steps 3, 5, & 7	Integrated circuit A1U7 or associated circuitry	Isolate and replace malfunctioning components A1 Board, FO-1
8	Improper lighting of TRIP TIME-EARLY TRIP indicator DS7	Lamp driver Para 4-8n, Step 3	Integrated circuit A1U4 or associated circuitry	Isolate and replace malfunctioning components A1 Board, FO-1
9	Improper lighting of TRIP TIME-ACCEPT indicator DS9	Lamp driver Para 4-8n, Step 7	Integrated circuit A1U5 or associated circuitry	Isolate and replace malfunctioning components A1 Board, FO-1
10	Improper lighting of TRIP TIME-LATE TRIP indicator DS10	Lamp driver Para 4-8n, Steps 4 & 5	Integrated circuit A1U6 or associated circuitry	Isolate and replace malfunctioning components A1 Board, FO-1
11	Improper lighting of TRIP TIME-TEST COMPL indicator DS5	Lamp driver Para 4-8n, Steps 3, 5, & 7	Integrated circuit A1U8 or associated circuitry	Isolate and replace malfunctioning components A1 Board, FO-1

Section V. DISASSEMBLY/ASSEMBLY

4-13. Main Assembly (Figure C-2). Following is procedure for removing electrical components assembly from combination case.

- a. Open combination case (24, Figure C-2). Separate cover from bottom of combination case.
- b. Using 5/32-inch socket head key (15), remove screws (22) and washers (23).
- c. Carefully remove electrical components assembly (21) from bottom of combination case.

4-14. Disassembly Procedures. Following are procedures for disassembling electrical components assembly (Fig. C-3).

CAUTION

Disassembly procedures should not include removal of electronic circuitry parts such as internal wiring, resistors, and capacitors, unless such removal is necessary to clean, inspect, or test part.

- a. Remove circuit card assemblies A1 through A4 (73 through 76, Figure C-3).

CAUTION

Be careful not to damage wiring or switches.

- b. Remove screws (2), lockwashers (3), and washers (4) from front panel assembly (1). Carefully separate and lift

up front panel assembly, with parts attached, from posts (5).

- c. Separate connector P1 (66) from voltage regulator VR1 (67).
- d. Remove screws (68), washers (69), and voltage regulator VR1 (67).

CAUTION

Make sure center post (5) has insulation sleeving located closest to front panel assembly.

NOTE

Further disassembly is impractical. Disassemble only to the extent necessary to remove damaged parts or to get to damaged parts.

4-15. Cleaning. Clean all external surfaces with a dry low-lint cloth. Clean internal areas with dry filtered air at standard shop pressures.

4-16. Inspection.

a. *Combination Case.* Inspect combination case (24, Figure C-2) for cracks, dents, damaged hinges, and loose hardware.

b. *Electrical Components Assembly.* Examine components and wiring for damage and overheating. Check meters and switches for damage. Check that all hardware is securely fastened.

c. *Circuit Card Assemblies A1 through A4.* Examine for signs of overheating and damaged components, loose solder connections, and for damaged protective coating.

Section VI. PREPARATION FOR SHIPMENT AND STORAGE

4-17. General. Preparation for shipment and/or storage depends upon whether test set is retained in unit area evacuated. Storage in unit area, when authorized, is on a rotational basis and is known as Administrative Storage.

4-18. Levels of [protection. Select the level of protection which best suits the circumstances and follow the instructions for that level.

a. *Level A.* Use this level if shipment is into or out of a combat theater or is destined for outdoor storage or is destined for indoor storage exceeding five years.

b. *Level B.* Use this level if the shipment involves overseas surface transit and/or is destined for indoor storage up to five years.

c. *Level C.* Use this level if shipment is entirely within CONUS and storage will not exceed two years.

4-19. Procedures,

a. *For All Levels.* Clean the test set thoroughly of all contamination and debris. Use no cleaning fluids or preservative materials. Package each test set individually. Each individual package can be shipped without packing. Cushion the test set in 2 inches of one pound density polyethylene foam conforming to PPP-C-1752 and include eight units of desiccant conforming to MIL-D-3464 within the unit.

b. *Unit Container.* Provide a snug fitting unit container as follows:

(1) Level A. Wood-cleated, plywood conforming to style I, overseas type of PPP-B-601.

(2) Level B. Weather-resistant fiberboard container conforming to PPP-B-636.

(3) Level C. Domestic class fiberboard container conforming to PPP-B-636.

c. *Marking.* Mark all shipments in accordance with MIL-STD-129.

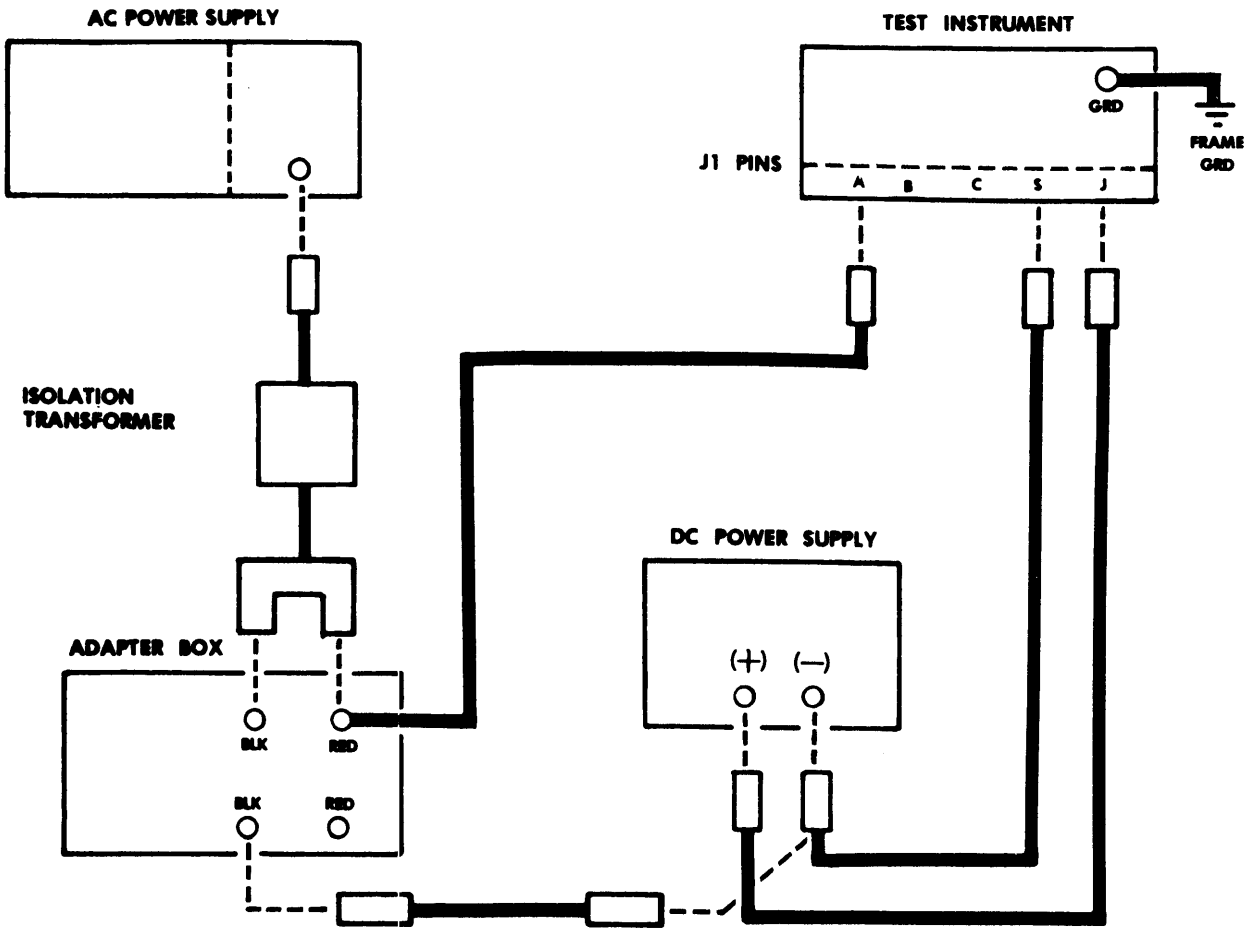


Figure 4-2. Power Source-Equipment Setup

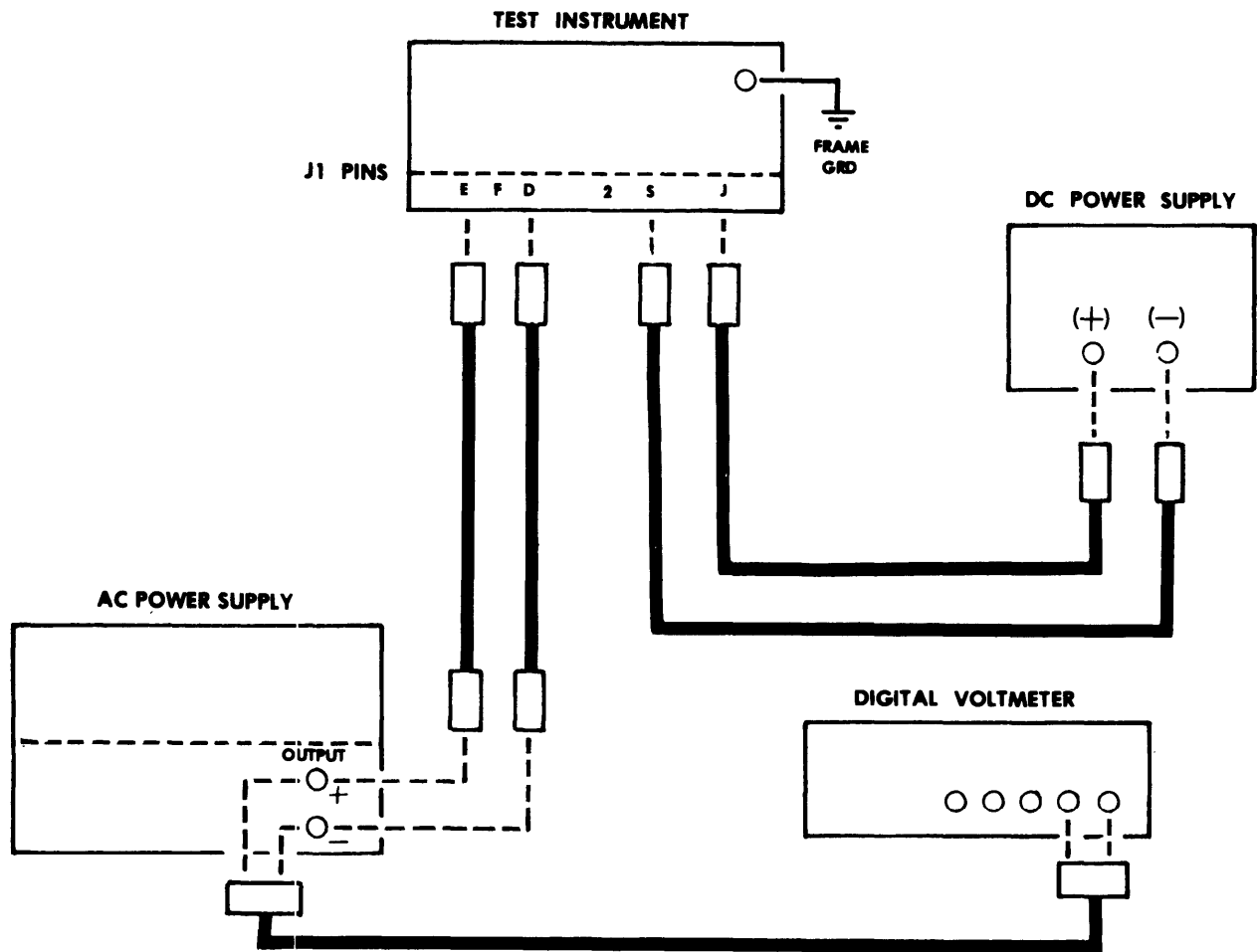


Figure 4-3. PMG Volts - Equipment Setup

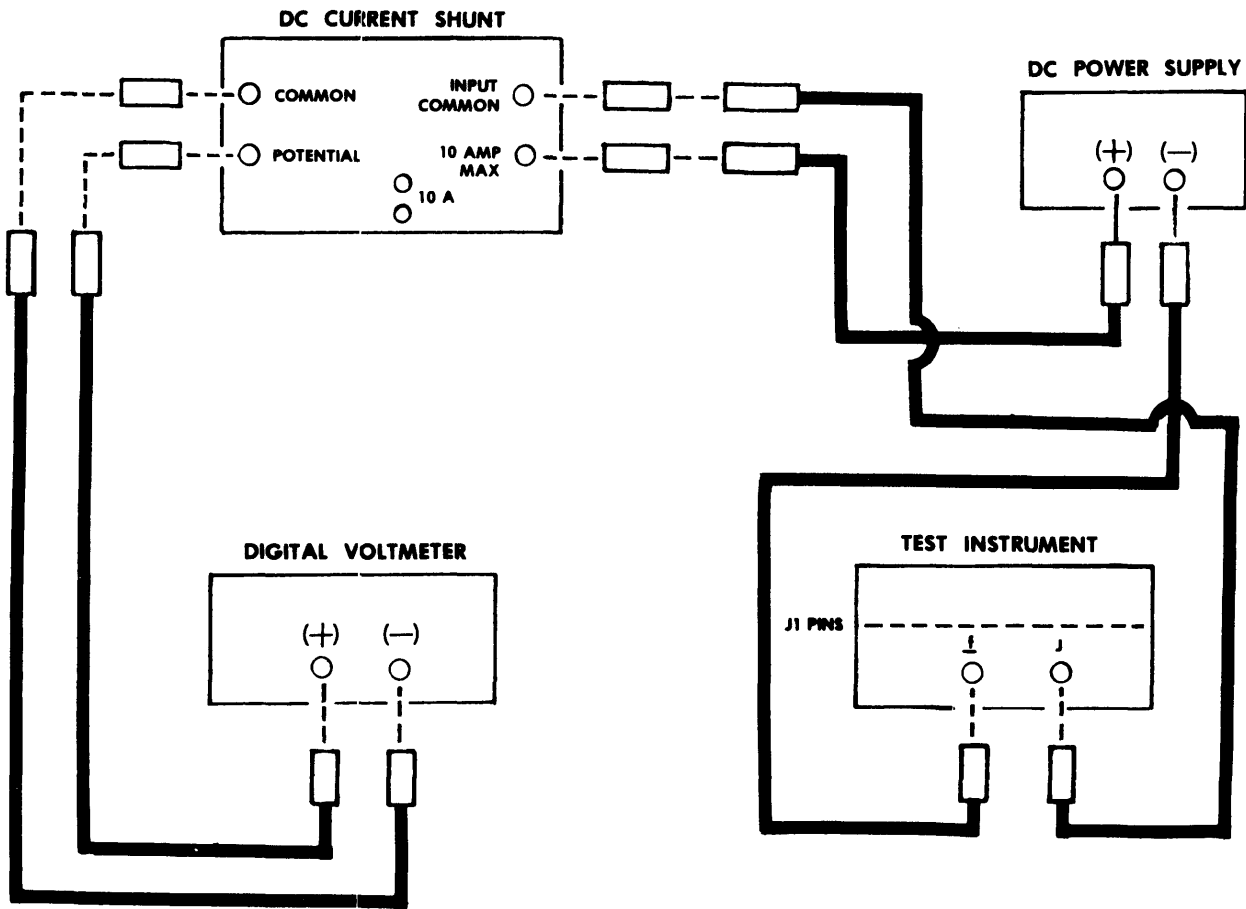


Figure 4-4. Field Amps - Equipment Setup

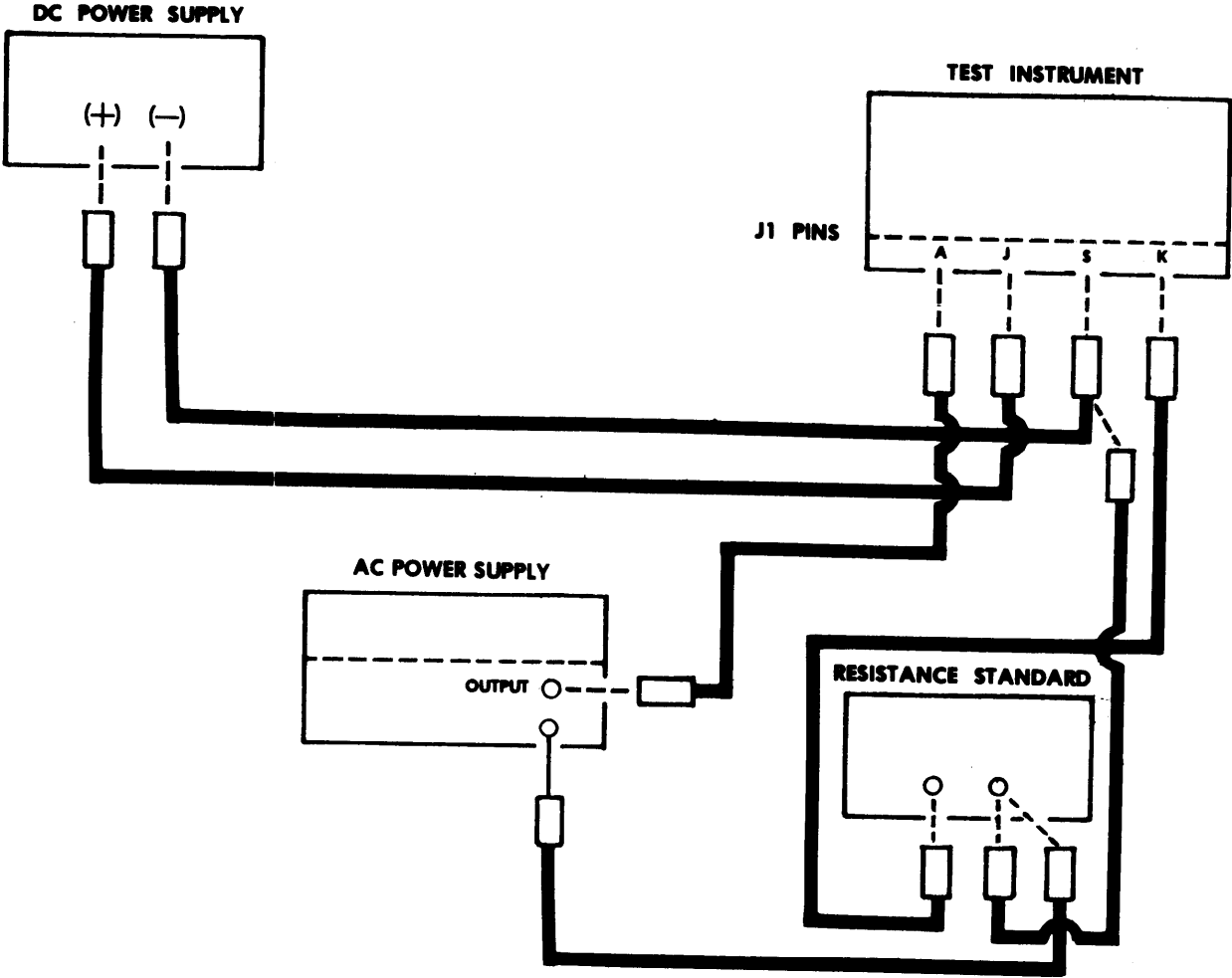


Figure 4-5. CT Test Current - Equipment Setup

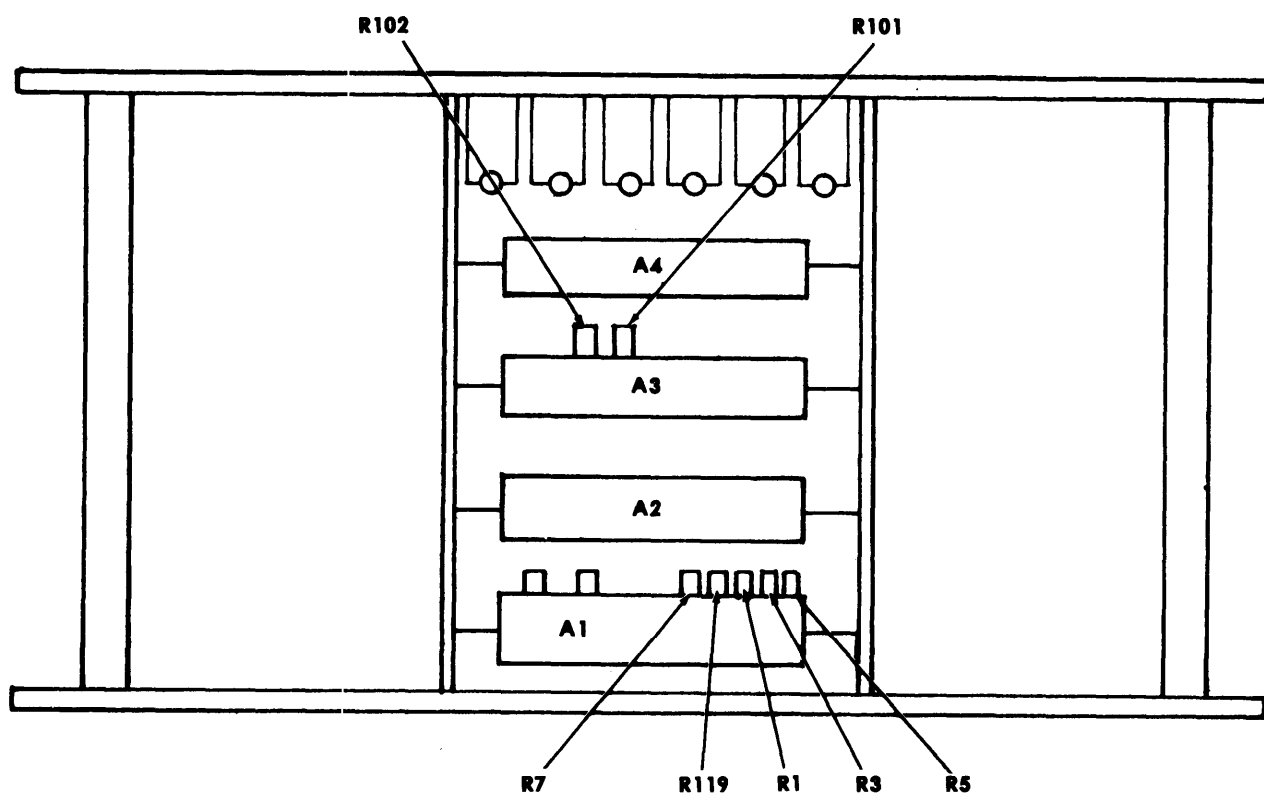
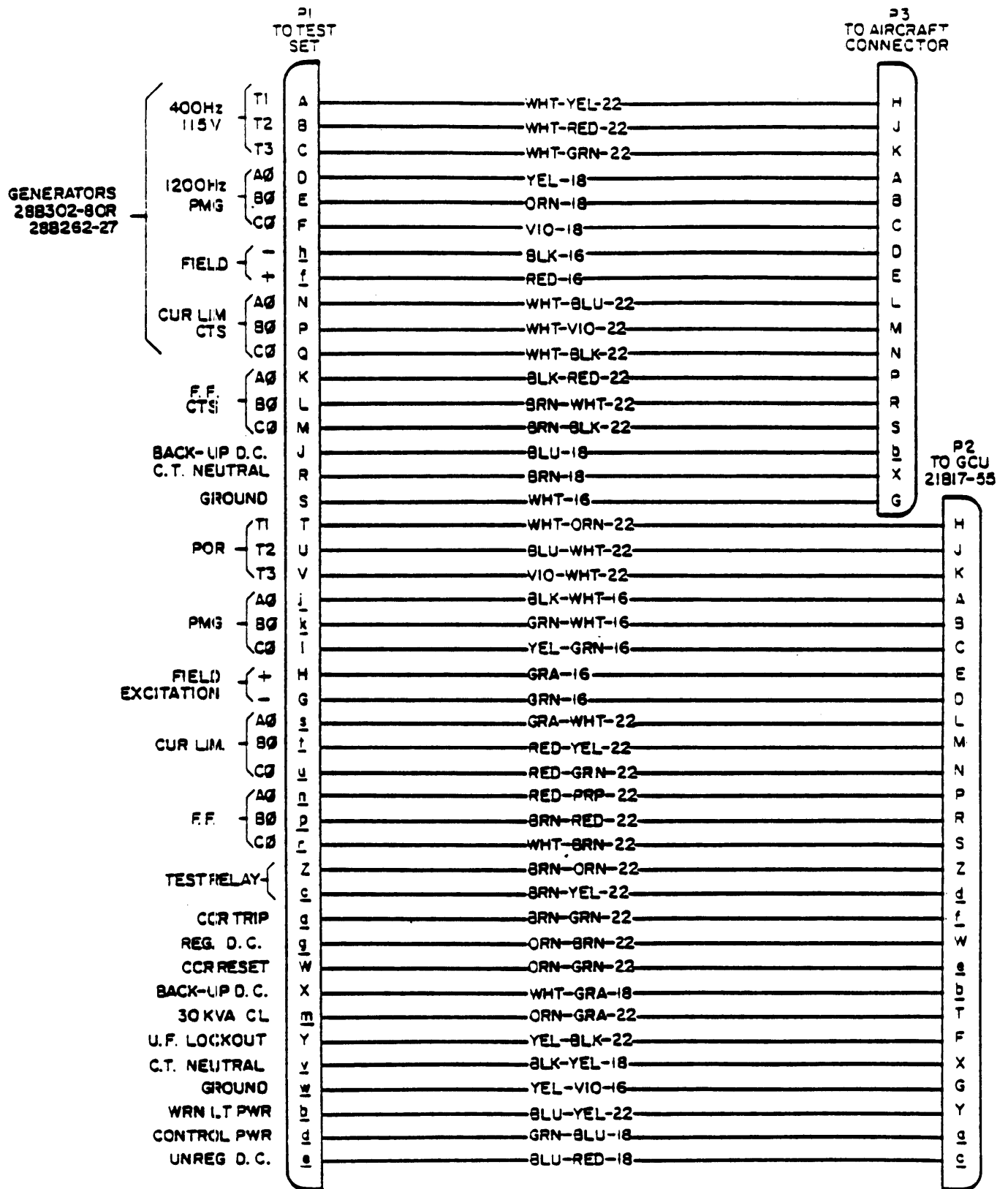
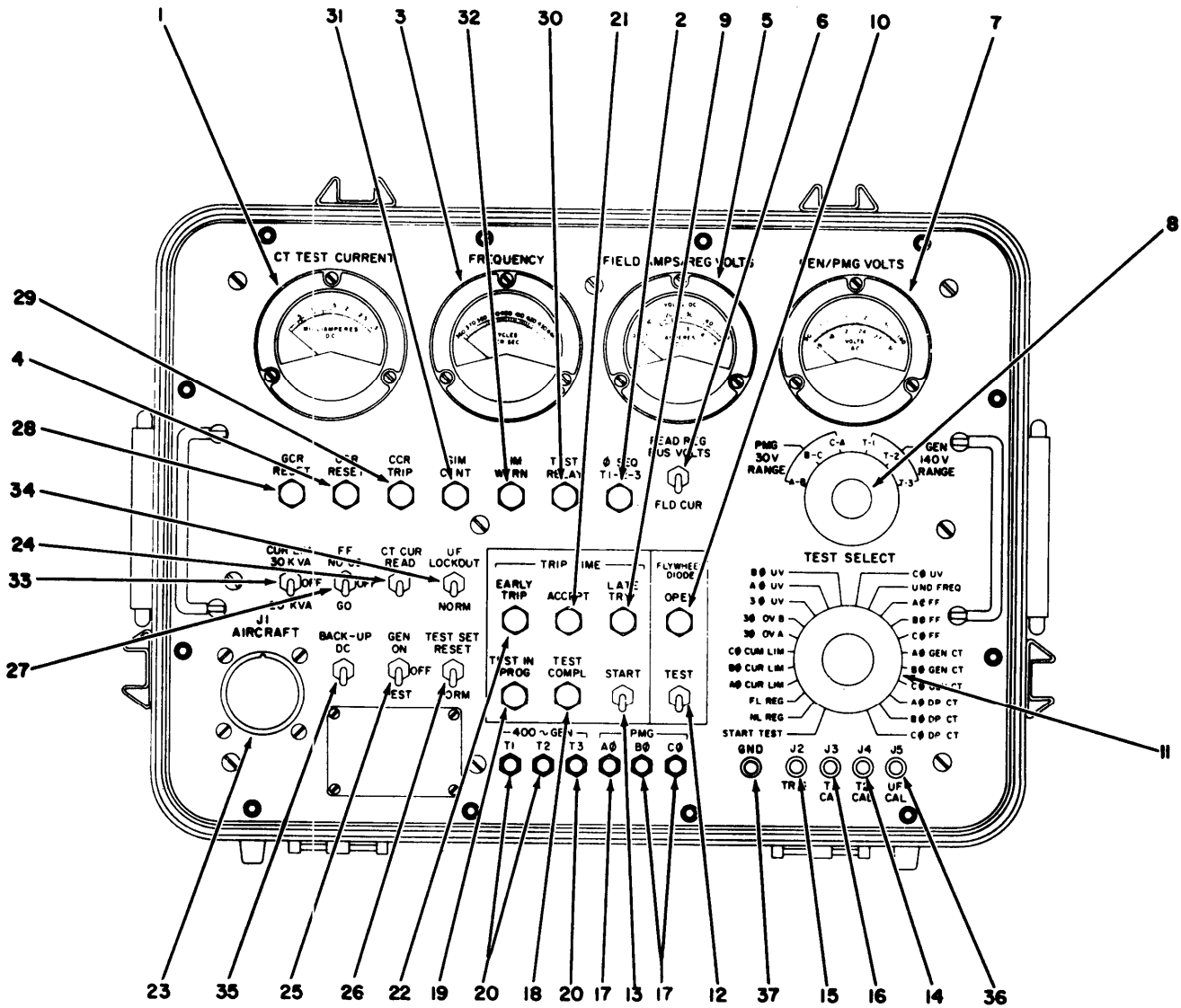


Figure 4-6. Circuit Boards - Front View



NOTE: NUMBERS FOLLOWING WIRE COLORS ARE AWG SIZES.

Figure 4-7. Adapter Cable Schematic Wiring Diagram



- | | | |
|--|--|--|
| <p>1. CT TEST CURRENT meter M3</p> <p>2. Ø SEQ T1-2-3 indicator DS1</p> <p>3. FREQUENCY meter M1</p> <p>4. CCR RESET indicator DS11</p> <p>5. FIELD AMPS/REG VOLTS meter M4</p> <p>6. READ REG switch S7</p> <p>7. GEN/PMG VOLTS meter M2</p> <p>8. GEN/PMG selector switch S4</p> <p>9. TRIP TIME-LATE TRIP indicator DS10</p> <p>10. FLYWHEEL DIODE-OPEN indicator DS3</p> <p>11. TEST SELECT switch S1</p> <p>12. FLYWHEEL DIODE-TEST switch S9</p> | <p>13. TRIP TIME-START switch S10</p> <p>14. T2 CAL test jack J4</p> <p>15. TRIG test jack J2</p> <p>16. T1 CAL test jack J3</p> <p>17. PMG-AØ, BØ, CØ circuit breakers CB4, CB5, CB6</p> <p>18. TRIP TIME-TEST COMPL indicator DS5</p> <p>19. TRIP TIME-TEST IN PROG indicator DS4</p> <p>20. 400 ~ GEN-T1, T2, T3 circuit breakers CB1, CB2, CB3</p> <p>21. TRIP TIME-ACCEPT indicator DS9</p> <p>22. TRIP TIME-EARLY TRIP indicator DS7</p> <p>23. AIRCRAFT Connector J1</p> <p>24. CT CUR READ switch S2</p> | <p>25. GEN switch S11</p> <p>26. TEST SET switch S8</p> <p>27. FF switch S5</p> <p>28. GCR RESET indicator DS2</p> <p>29. CCR TRIP indicator DS6</p> <p>30. TEST RELAY indicator DS8</p> <p>31. SIM CONT indicator DS13</p> <p>32. SIM WARN indicator DS12</p> <p>33. CUR LIM switch S6</p> <p>34. UF switch S13</p> <p>35. BACK-UP DC switch S12</p> <p>36. UF CAL test jack J5</p> <p>37. GND binding Post</p> |
|--|--|--|

Figure 4-8. Test Set Front Panel

APPENDIX A

REFERENCES

A-1. Publication Index.

DA PAM 25-30 Consolidated Index of Army Publications and Blank Forms
 DA PAM 310-7 US Army Equipment Index of Modification Work Orders

A-2. Logistics and Storage.

TM 55-1500-204-25/1 General Aircraft Maintenance Manual

A-3. Maintenance of Supplies and Equipment.

AR 750-1 Army Material Maintenance Concepts and Policies
 AR 700-58 Packaging Improvement Report
 DA PAM 738-751 Functional Users Manual for the Army Maintenance Management System—Aviation (TAMMS-A)
 TB 746-10 Field Instructions for painting and preserving Electronics Command Equipment

A-4. Other Publications.

TB 43-180 Calibration Requirements for the Maintenance of Army Material
 TM 55-1520-237-23 Aircraft Fault Isolation Procedures Manuals
 TM 55-411 Maintenance Quality Control and Technical Inspection Guide for Army Aircraft
 TM 750-244-2 Procedures for Destruction of Electronic Material to Prevent Enemy Use (Electronics Command)

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. MAINTENANCE ALLOCATION CHART.

a. This Maintenance Allocation Chart (MAC) assigns maintenance functions in accordance with the Three Levels of Maintenance concept for army aircraft. These maintenance levels: Aviation Unit Maintenance (AVUM), Aviation Intermediate Maintenance (AVIM) and Depot Maintenance are depicted on the MAC as:

AVUM WHICH CORRESPONDS TO THE O CODE IN THE REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

AVIM WHICH CORRESPONDS TO THE F CODE IN THE REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

DEPOT WHICH CORRESPONDS TO THE D CODE IN THE REPAIR PARTS AND SPECIAL TOOLS LIST (RPSTL)

b. The maintenance to be performed below depot and in the field is described as follows:

(1) Aviation Unit Maintenance (AVUM) - AVUM activities will be staffed and equipped to perform high frequency "On-Equipment" maintenance tasks required to retain or return equipment to a serviceable condition. The maintenance capability of the AVUM will be governed by the MAC and limited by the amount and complexity of support equipment, facilities required, and number of spaces and critical skills available. The range and quantity of authorized spare modules/components will be consistent with the mobility requirements dictated by the air mobility concept. (Assignment of maintenance tasks to divisional company size aviation units will consider the overall maintenance capability of the division, the requirement to conserve personnel and equipment resources and air mobility requirements).

(a) Company Size Aviation Units: Perform those tasks which consists primarily of preventive maintenance and maintenance repair and replacement functions associated with sustaining a high level of equipment operational readiness. Perform maintenance

inspections and servicing to include daily, intermediate, periodic and special inspections as authorized by the MAC or higher headquarters. Identify the cause of equipment/system malfunctions using applicable technical manual troubleshooting instructions, Built-In-Test Equipment (BITE), installed instruments, or easy to use Test Measurement and Diagnostic Equipment (TMDE). Replace worn or damaged modules/components which do not require complex adjustments or system alignment and which can be removed/installed with available skills, tools and equipment. Perform operational and continuity checks and make minor repairs. Perform servicing, functional adjustments, and minor repair/replacement. Evacuate unserviceable modules/components and end items beyond the repair capability of AVUM to the supporting AVIM.

(b) Less than Company Size Aviation Units: Aviation elements organic to brigade, group, battalion headquarters and detachment size units are normally small and have less than ten aircraft assigned. Maintenance tasks performed by the aircraft crew chief or assigned aircraft repairman will normally be limited to preventive maintenance, inspections, servicing, spot painting, stop drilling, minor adjustments, module/component fault diagnosis and replacement of selected modules/components. Repair functions will normally be accomplished by the supporting AVIM unit.

B-2. USE OF THE MAINTENANCE ALLOCATION CHART.

a. The MAC assigns maintenance functions to the lowest level of maintenance based on past experience and the following considerations:

(1) Skills available.

(2) Time required.

(3) Tools and test equipment required and for available.

b. Only the lowest level of maintenance authorized to perform a maintenance function is indicated. If the lowest level of maintenance cannot perform all tasks of

any single maintenance function (e.g., test, repair), then the higher maintenance level(s) that can accomplish additional tasks will also be indicated.

c. A maintenance function assigned to a maintenance level will automatically be authorized to be performed at any higher maintenance level.

d. A maintenance function that cannot be performed at the assigned level of maintenance for any reason may be evacuated to the next higher maintenance organization. Higher maintenance levels will perform the maintenance functions of lower maintenance levels when required or directed by the appropriate commander.

e. The assignment of a maintenance function will not be construed as authorization to carry the associated repair parts in stock. Authority to requisition, stock, or otherwise secure necessary repair parts will be as specified in the repair parts and special tools list appendix.

f. Normally there will be no deviation from the assigned level of maintenance. In cases of operational necessity, maintenance functions assigned to a maintenance level may, on a one-time basis and at the request of the lower maintenance level, be specifically authorized by the maintenance officer of the level of maintenance to which the function is assigned. The special tools, equipment, etc. required by the lower level of maintenance to perform this function will be furnished by the maintenance level to which the function is assigned. This transfer of a maintenance function to a lower maintenance level does not relieve the higher maintenance level of the responsibility of the function. The higher level of maintenance will provide technical supervision and inspection of the function being performed at the lower level.

g. Organizational through depot maintenance of the US Army Electronics Command equipment will be performed by designated US Army Electronics Command personnel.

h. Changes to the MAC will be based on continuing evaluation and analysis by responsible technical personnel and on reports received from field activities.

B-3. DEFINITIONS.

a. Inspect. To determine serviceability of an item by comparing its physical, mechanical and electrical characteristics with established standards.

b. Test. To verify serviceability and detect incipient failure by measuring the mechanical or electrical

characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents and air.

d. Adjust. To rectify to the extent necessary to bring into proper operating range.

e. Align. To adjust specified variable elements of an item to bring to optimum performance.

f. Calibrate. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison 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 or test equipment being compared with the certified standard.

g. Install. To set up for use in an operational environment such as an emplacement, site or vehicle.

h. Replace. To replace unserviceable items with serviceable assemblies, subassemblies or parts.

i. Repair. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This includes, but is not limited to, inspection, cleaning, preserving, adjusting, replacing, welding, riveting, and strengthening.

j. Overhaul. To restore an item to a completely serviceable condition as prescribed by maintenance serviceability standards prepared and published for the specific item to be overhauled.

k. Rebuild. To restore an item to a standard as nearly as possible to the original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements (items) using original manufacturing tolerances and specifications, and subsequent reassembly of the item.

B-4. FUNCTIONAL GROUPS.

Standard functional groupings are not considered feasible for aviation ground support equipment due to variation and complexity. Therefore, variations to functional groupings may occur.

B-5. MAINTENANCE CATEGORIES AND WORK TIMES.

The maintenance categories (levels) AVUM, AVIM, and DEPOT are listed on the Maintenance Allocation

Chart with individual columns that indicate the work times for maintenance functions at each maintenance level. Work time presentations such as 0.1 indicate the average time it requires a maintenance level to perform a specified maintenance function. If a work time has not been established, the columnar presentation shall indicate "—". Maintenance levels higher than the level of maintenance indicated are authorized to perform the indicated function.

B-6. TOOLS AND TEST EQUIPMENT (Section III).

Common tool sets (not individual tools), special tools, test and support equipment required to perform maintenance functions are listed alphabetically with a reference number to permit cross-referencing to column 5 in the MAC. In addition, the maintenance category authorized to use the device is listed along with the item National Stock Number (NSN) and, inapplicable, the tool number to aid in identifying the tool/device,

Section II. MAINTENANCE ALLOCATION CHART

Nomenclature of end item

SYSTEM ANALYZER TEST SET

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equip (Note)	(6) Remarks
			AVUM	*AVIM	DEPOT		
01	System Analyzer Test Set	Test Repair * Calibrate*	.2	4.0 A TST A TST	4.0 1.0 .5		*Refer to TB 43-180
	Knob	Replace	.1				
	Knob	Replace	.1				
	Lamp	Replace	.1				
	Cable Assembly	Replace	.01				

* Performed by ATST Area TMDE Support Team

Section II. MAINTENANCE ALLOCATION CHART (Cont).

Nomenclature of end item

SYSTEM ANALYZER TEST SET

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Category			(5) Tools and Equip (Note)	(6) Remarks
			AVUM	*AVIM	DEPOT		
	Circuit Card (A1)	Replace		.5			
		Repair		1.0			
	Circuit Card (A2)	Replace		.5			
		Repair		1.0			
	Circuit Card (A3)	Replace		.5			
		Repair		1.0			
	Circuit Card (A4)	Replace		.5			
		Repair		1.0			
	Meter, Freq. (M1)	Test					
		Replace		.5			
	Meter, Volts, AC (M2)	Test		.5			
		Replace		.5			
	Meter, Milliamp (M3)	Test		.5			
		Replace		.5			
	Meter, Volts/Amps (M4)	Test		.5			
		Replace		.5			
	Switch, toggle, S2, S12, S13	Test		.2			
		Replace		.4			
	Switch, toggle (S11)	Test		.2			
		Replace		.4			
	Switch, toggle (S5)	Test		.2			
		Replace		.5			
	Switch, toggle (S6)	Test		.2			
		Replace		.5			
	Diode (CR 103)	Test		.1			
		Replace		.5			
	Diode (CR 76 thru CR 87, CR 104, CR 112)	Test		.1			
		Replace		.5			
	Diode (CR 20)	Test		.1			
		Replace		.5			
	Diode (CR 65, CR 66)	Test		.1			
		Replace		.5			
	Diode (CR 100)	Test		.1			
		Replace		.5			
	Relay (K1 thru K5, K14)	Test		.3			
		Replace		.6			
	Relay (K8, K10 thru K13)	Test		.3			
		Replace		.6			

NOTE: Use Electrical Repairman's Tool Kit, NSN 5180-00-323-4915

APPENDIX C REPAIR PARTS AND SPECIAL TOOLS LIST

SECTION I. INTRODUCTION

C-1. Scope. This appendix lists spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE), and other special support equipment required for performance of Aviation Unit Maintenance and Aviation Intermediate Maintenance of the System Analyzer Test Set. It authorizes the requisitioning and issue of spares and repair parts as indicated by the source and maintenance codes.

C-2. General. This Repair Parts and Special Tools List is divided, into the following sections:

a. Section II, Repair Parts List. A list of spares and repair parts authorized for use in the performance of maintenance. Parts lists are composed of functional groups in numeric sequence, with the parts in each group listed in figure and item number sequence.

b. Section III, Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized for the performance of maintenance.

c. Section IV, National Stock Number and Part Number Index. A list, in ascending numerical sequence, of all National stock numbers appearing in the listings, followed by a list, in alphanumeric sequence, of all reference numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

C-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 each item called out in the illustration.

b. Source, Maintenance and Recoverability (SMR) Codes.

(1) *Source Code.* Source codes indicate the manner of acquiring support items for maintenance, repair or overhaul of end items. Source codes are entered in the first and second positions of the Uniform SMR Code format as follows:

<i>Code</i>	<i>Definition</i>
PA	Item Procured and stocked for anticipated or known usage.
PB	Item procured and stocked for insurance purpose because essentiality dictates that a minimum quantity be available in the supply system.
PC	Item procured and stocked and which otherwise would be coded PA except that it is deteriorative in nature.
PD	Support item, excluding support equipment, procured for initial issue or outfitting and stocked only for subsequent or additional initial issues or outfittings. Not subject to automatic replenishment.

C-3. Explanation of Columns. (Cont.)

<i>Code</i>	<i>Definition</i>
PE	Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair activities.
PF	Support equipment which will not be stocked but which will be centrally procured on demand.
PG	Item procured and stocked to provide for sustained support for the life of the equipment. It is applied to an item peculiar to the equipment which, because of probable discontinuance or shut-down of production facilities, would prove uneconomical to reproduce at a later time.
KD	An item of a depot overhaul/repair kit and not purchased separately. Depot kit defined as a kit that provides items required at the time of overhaul or repair,
KF	An item of a maintenance kit and not purchased separately. Maintenance kit defined as a kit that provides an item that can be replaced at organizational or intermediate levels of maintenance
KB	Item included in both a depot overhaul/repair kit and a maintenance kit,
MO	Item to be manufactured or fabricated at organizational level.
MF	Item to be manufactured or fabricated at the direct support maintenance level.
MH	Item to be manufactured or fabricated at the general support maintenance level.
MD	Item to be manufactured or fabricated at the depot maintenance level.
AO	Item to be assembled at organizational level.
AF	Item to be assembled at direct support maintenance level.
AH	Item to be assembled at general support maintenance level.
AD	Item to be assembled at depot maintenance level.
XA	Item is not procured or stocked because the requirements for the item will result in the replacement of the next higher assembly.
XB	Item is not procured or stocked. If not available through salvage, requisition.
XC	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number
XD	A support item that is not stocked. When required, item will be procured through normal supply channels.

NOTE

Cannibalization or salvage may be used as a source of supply for any item source coded above except those codes XA and aircraft support items as restricted by AR 700-42.

C-3. Explanation of Columns. (Cont.)

(2) **Maintenance Code.** Maintenance codes are assigned to indicate the levels of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the Uniform SMR Code format as follows:

(a) The maintenance code entered in the third position will indicate the lowest maintenance level authorized to remove, replace and use the support item. The maintenance code entered in the third position will indicate the following levels of maintenance:

<i>Code</i>	<i>Application/Explanation</i>
C	Crew or operator maintenance performed within organizational maintenance.
O	Support item is removed, replaced, used at the organizational level.
F	Support item is removed, replaced, used at the direct support level.
H	Support item is removed, replaced, used at the general support level.
D	Support items that are removed, replaced, used at depot, or specialized repair activity only.

(b) The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair (i.e. all authorized maintenance functions). This position will contain one of the following maintenance codes:

<i>Code</i>	<i>Application/Explanation</i>
O	The lowest maintenance level capable of complete repair of the support item is the organizational level.
F	The lowest maintenance level capable of complete repair of the support item is the direct support level.
H	The lowest, maintenance level capable of complete repair of the support item is the general support level.
D	The lowest maintenance level capable of complete repair of the support item is the depot level.
L	Repair restricted to (enter applicable designated specialized repair activity), specialized repair activity.
Z	Nonrepairable. No repair is authorized.
B	No repair is authorized. The item may be reconditioned by adjusting, lubricating, etc., at the user level. No parts or special tools are procured for the maintenance of this item.

(3) **Recoverability Code.** Recoverability codes are assigned to support items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the Uniform SMR Code format as follows:

<i>Code</i>	<i>Definition</i>
Z	Nonrepairable item. When unserviceable, condemn and dispose at the level indicated in position 3.
O	Repairable item. When uneconomically repairable, condemn and dispose at organizational level.
F	Repairable item. When uneconomically repairable, condemn and dispose at the direct support level.

C-3. Explanation of Columns. (Cont.)

<i>Code</i>	<i>Definition</i>
H	Repairable item. When uneconomically repairable. condemn and dispose at the general support level.
D	Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal not authorized below depot level.
L	Repairable item. Repair, condemnation, and disposal not authorized below depot/specialized repair activity level.
A	Item requires special handling or condemnation procedures because of specific reasons (i.e., precious metal content, high dollar value, critical material or hazardous material.). Refer to appropriate manuals/directives for specific instructions.

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

d. Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), 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.

NOTE

When a stock numbered item is requisitioned, the item received may have a different part number than the part being replaced.

e. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code listed in S B 708-42 which is used to identify the manufacturer, distributor, or Government Agency, etc.

f. Description. Indicates the Federal item name and, if required; a minimum description to identify the item,

g. Unit of Measure U/M. Indicates the standard of the basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr, etc.). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

h. Quantity Incorporated in Unit. Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A 'V' appearing in this column in lieu of a quantity indicates that no specific quantity is applicable (e.g., shims, spacers, etc.).

C-4. How To Locate Repair Parts.

a. When National Stock Number or Part Number is Unknown:

(1) First. Using the table of contents, determine the functional group within which the repair part belongs. This is necessary since illustrations are prepared for functional groups, and listings are divided into the same groups.

(2) Second. Find the illustration covering the functional group to which the repair part belongs.

C-4. How To Locate Repair Parts. (Cont.)

(3) Third. Identify the repair part on the illustration and note the illustration figure and item number of the repair part.

(4) Fourth. Using the Repair Parts Listing, find the figure and item number in the repair parts list.

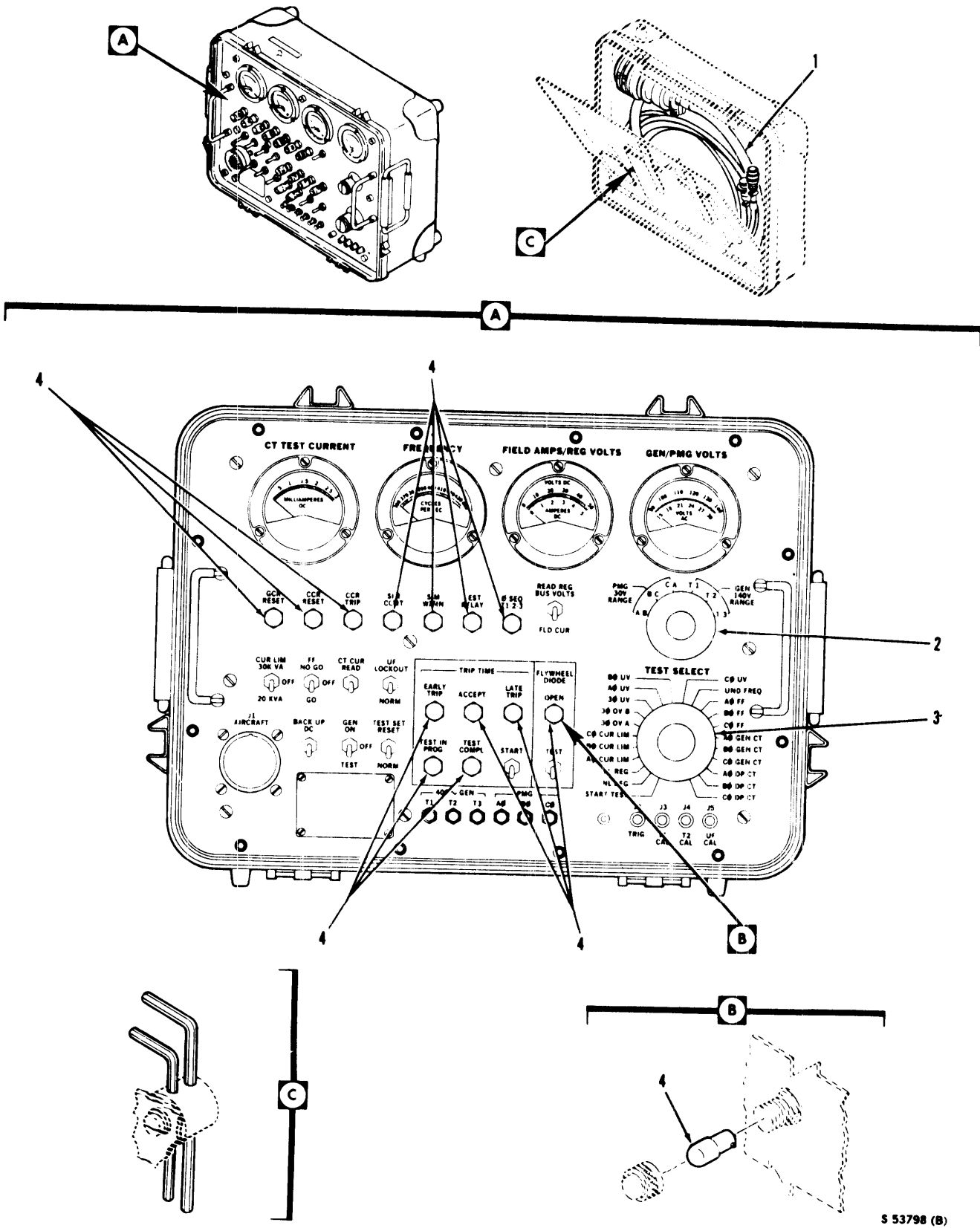
b. When National Stock Number or Part Number is Known:

(1) First. Using the Index of National Stock Numbers and Part Numbers, find the pertinent national stock number or part number. This index is in ascending NIIN sequence followed by a list of part numbers in alphameric sequence, cross-referenced to the illustration figure number and item number.

(2) Second. After finding the figure and item number, locate the figure and item number in the repair parts list.

C-5. Abbreviations.

Not applicable.



5 53798 (B)

Figure C-1. System Analyzer Test Set

(1) ILLUSTRATION (a) FIG NO		(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	TM55-4920-410-13&P (6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
C-1	1	XDOFF		83298	1587369	CABLE ASSEMBLY, ADAPTER		EA	1
C-1	2	PAOZZ	5355-00-579-1210	96906	MS91528-3F2B	KNOB, CONTROL		EA	1
C-1	3	PAOZZ	5355-00-656-1230	96906	MS91528-4F2B	KNOB, CONTROL		EA	1
C-1	4	PAOZZ	6240-00-155-8714	96096	MS25231-313	LAMP		EA	13

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	TM55-4920-410-13&P (6) DESCRIPTION	(7)	(8)
(a) FIG NO	(b) ITEM NO	SMR CODE	NATIONAL STOCK NUMBER	FSCM CODE	PART NUMBER	USABLE ON CODE	U/M	QTY INC IN UNIT
C-2		PBOFF	4920-01-120-7488	83298	60B63-5-A	TEST SET, SYSTEM ANALYZER	EA	1
C-2	1	XDFZZ		83298	1587440	PLATE, IDENTIFICATION	EA	1
C-2	2	XDFZZ		83298	1587438	PLATE, IDENTIFICATION	EA	1
C-2	3	XDFZZ	5305-00-954-4259	96906	MS24650-11	SCREW	EA	8
C-2	4	XDFZZ		83298	1544353	PLATE, IDENTIFICATION	EA	1
C-2	5	XDOFF		83298	1587369	CABLE, ADAPTER	EA	1
C-2	6	XDOZZ		96906	MS3106A-32-414S	CONNECTOR (P1)	EA	1
C-2	7	XDOZZ	5935-00-280-2354	96906	MS3057A-20	CLAMP, CABLE	EA	1
C-2	8	XDOZZ	5935-00-009-3157	96906	MS3476E-20-41S	CONNECTOR (P2)	EA	1
C-2	9	XDOZZ	5935-01-012-4000	96906	MS3417-20N	CLAMP, CABLE	EA	2
C-2	10	XDOZZ	5935-01-117-3867	96906	MS3471E-20-41P	CONNECTOR (P3)	EA	1
C-2	11	XDFZZ		83298	1540488	LEAD, ELECTRICAL	EA	1
C-2	12	XAFZZ		83298	1540483	PLUG, BANANA	EA	1
C-2	13	XAFZZ		83298	1540485	CLIP, ALLIGATOR	EA	1
C-2	14	PAFZZ	5120-00-198-5392	70408	BA27077-6	KEY, SOCKET HEAD, 5/32 IN. HEX KEY	EA	1
C-2	15	PAFZZ	5120-00-224-2504	92674	BA27077-3	KEY, SOCKET HEAD, 5/64 IN. HEX KEY	EA	1
C-2	16	XCOZZ	5120-01-144-1865	83295	1584641-1	HOLDER, WRENCH	EA	1
C-2	17	PAFZZ	5305-00-054-6667	96906	MS51957-42	SCREW	EA	1
C-2	18	PAFZZ	5310-00-933-8119	96906	MS35338-137	WASHER, LOCK	EA	1
C-2	19	PAFZZ	5310-00-685-3744	88044	AN960C8	WASHER, FLAT	EA	1
C-2	20	XDFDD		83298	1587395-1	ELECTRICAL COMPONENTS ASSY (SEE FIG, C-3 FOR BREAKDOWN)	EA	1
C-2	21	PAFZZ	MS16996-12	96906	5305-00-958-6517	SCREW	EA	12
C-2	22	PAFZZ	AN960C10L	88044	5310-00-167-0812	WASHER, FLAT	EA	12
C-2	23	XDFZZ	1583513-3	83298		CASE, COMBINATION	EA	1
C-2	23	XDFZZ	SK317400	74284		CASE, COMBINATION (ALTERNATE)	EA	1

C-9/(C-10 BLANK)

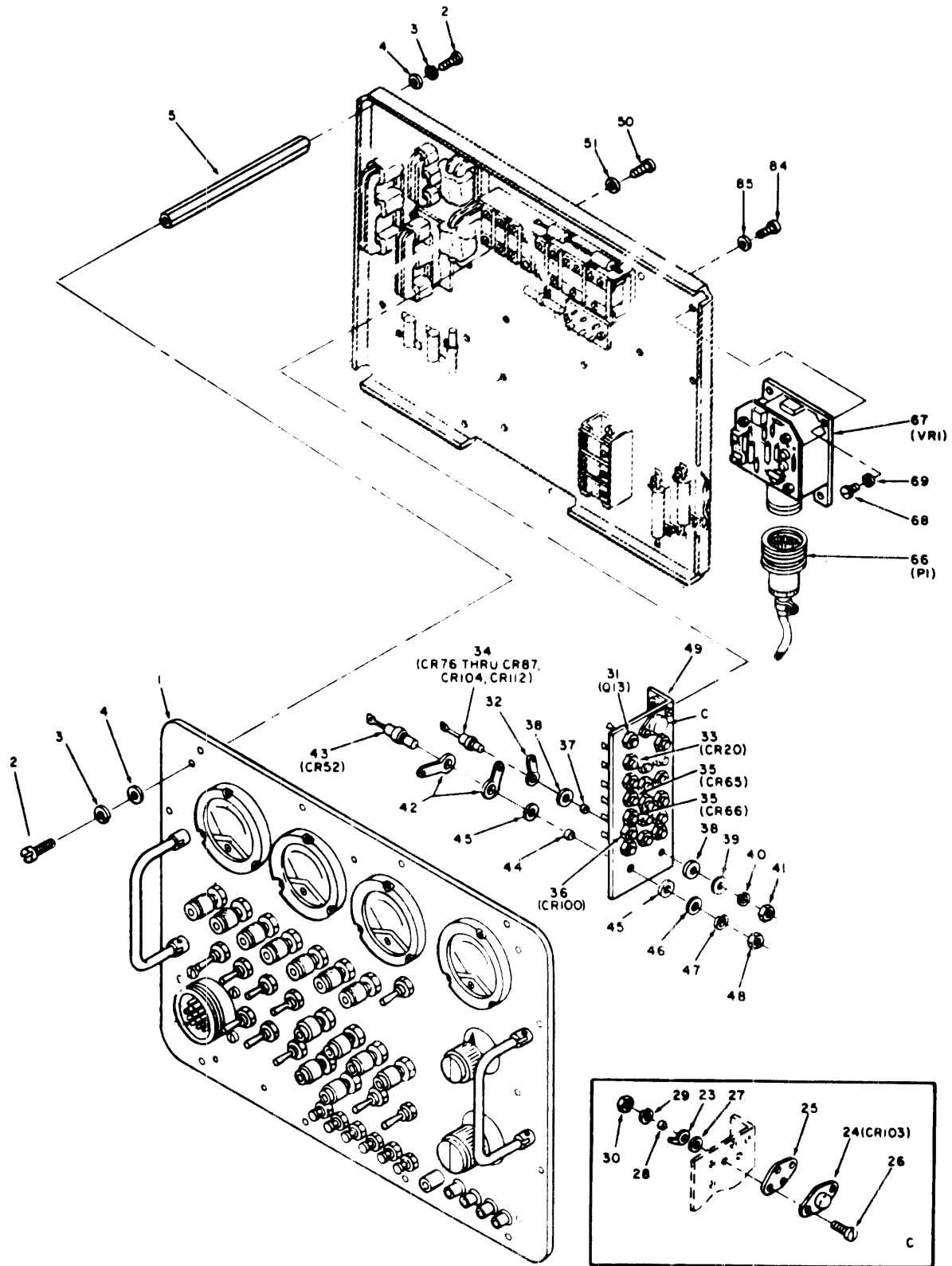


Figure C-3. Electrical Components Assembly Exploded View (Sheet 1 of 2)

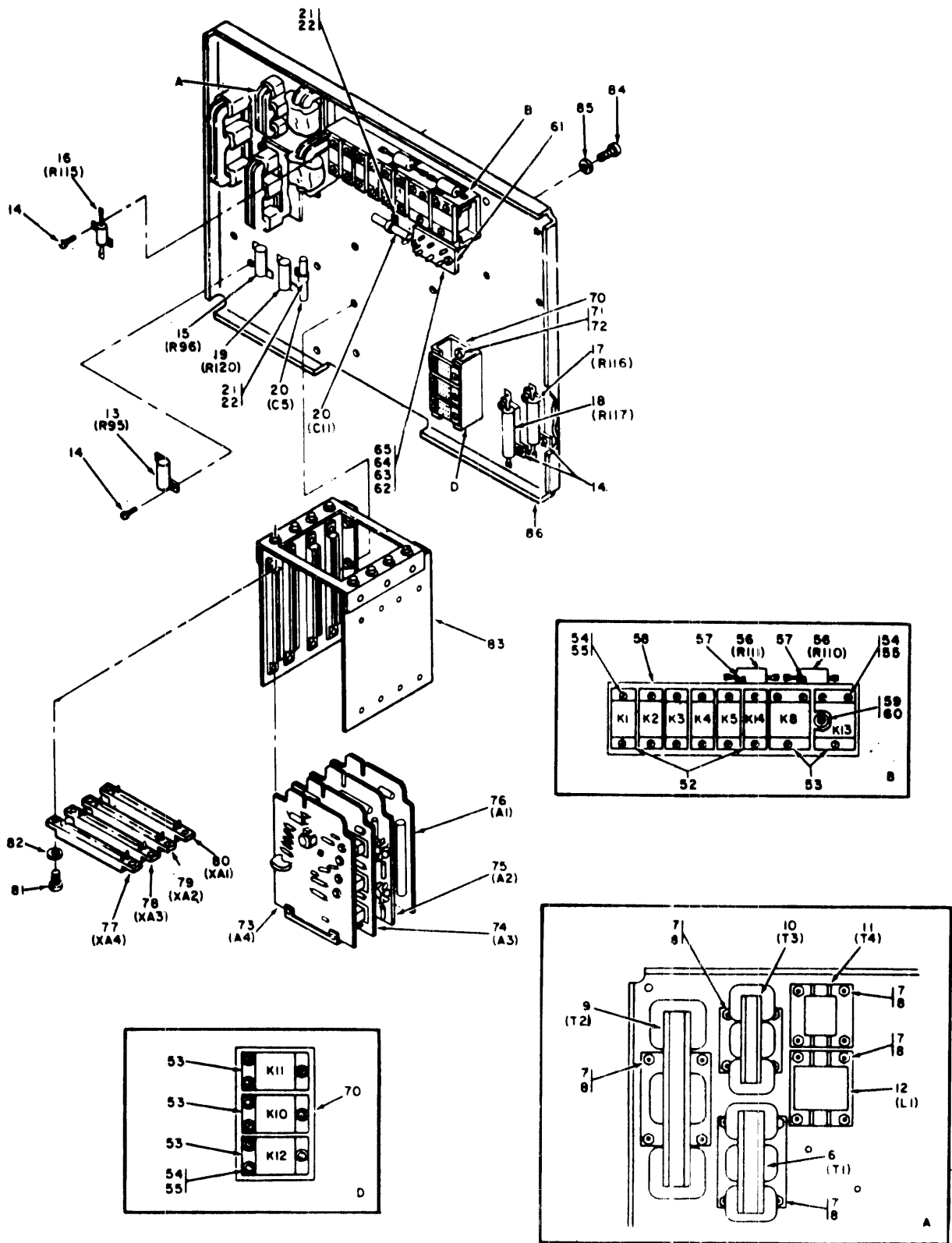


Figure C-3. Electrical Components Assembly Exploded View (Sheet 2 of 2)

(1) ILLUSTRATION (a) FIG NO	(b) ITEM NO	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	TM55-4920-410-13&P (6) DESCRIPTION	(7) USABLE ON CODE	(8) QTY INC IN UNIT
C-3		XDFFF		83298	1587395-1	ELECTRICAL COMPONENTS ASSY(SEE FIG, C-2 FOR NHA)	REF	
C-3	1	XDFFF		83298	1587396-1	FRONT PANEL ASSY (SEE FIG, C-4 FOR DETAIL BREAKDOWN)	EA	1
C-3	2	PAFZZ	5305-00-082-6721	96906	MS51957-81	SCREW	EA	18
C-3	3	PAFZZ	5310-00-933-8121	96906	MS35338-139	WASHER, LOCK	EA	17
C-3	4	PAFZZ	5310-00-515-7449	88044	AN960C416L	WASHER, FLAT	EA	17
C-3	5	XDFZZ		83298	1580508-9	POST, THREADED	EA	9
C-3	6	PAFZZ	5950-00-005-7018	83298	1583516-1	TRANSFORMER (T1)	EA	1
C-3	7	PAFZZ	5305-00-054-6653	96906	MS51957-29	SCREW	EA	20
C-3	8	PAFZZ	5310-00-531-9514	04643	THWA0612	WASHER	EA	20
C-3	9	PAFZZ	5950-00-005-3088	83298	1583517-1	TRANSFORMER (T2)	EA	1
C-3	10	PAFZZ	5950-00-005-8888	83298	1583518-1	TRANSFORMER (T3)	EA	1
C-3	11	PAFZZ	5950-00-005-8889	83298	1583519-1	TRANSFORMER (T4)	EA	1
C-3	12	PAFZZ	5950-00-005-3089	83298	1583520-1	REACTOR	EA	1
C-3	13	PAFZZ	5905-01-N081-0925	83298	80-2213431	RESISTOR, FIXED, 22.1 OHMS ± 1/2 PCT, 25 W (R95)	EA	1
C-3	14	PAFZZ	5305-00-054-5649	96906	MS51957-15	SCREW	EA	12
C-3	15	PAFZZ	5905-01-156-7433	83298	80-1183431	RESISTOR, FIXED, 11.8 OHMS ± 1/2 PCT, 25 W (R96)	EA	1
C-3	16	PAFZZ	5905-00-482-0592	81349	RER70P2R49R	RESISTOR, FIXED, 2.5 OHMS ± 3 PCT, 25 W (R115)	EA	1
C-3	17	PAFZZ	5905-00-430-1678	81349	RER71P51R1R	RESISTOR, FIXED, 51 OHMS ± 3 PCT, 50 W (R116)	EA	1
C-3	18	XDFZZ		91637	80-3002641	RESISTOR, FIXED, 3 OHMS ± 3 PCT, 50 W (R117)	EA	1
C-3	19	XDFZZ		83298	80-1004631	RESISTOR, FIXED, 100 OHMS ± 3 PCT, 25 W (R120)	EA	1
C-3	20	PAFZZ	5910-01-129-7363	83298	1584338-7	CAPACITOR, 100 MFD +75-10 PCT, 75V (C5, C11)	EA	2
C-3	21	PAFZZ	5305-00-054-6670	96906	MS51957-45	SCREW	EA	2
C-3	22	XDFZZ		83298	1530475-17	CLAMP, LOOP	EA	2
C-3	23	PAFZZ	5940-00-050-2308	96906	MS35431-3	TERMINAL, LUG	EA	1
C-3	24	PAFZZ	5961-00-833-3042	81349	JANIN1186	DIODE (CR103)	EA	1
C-3	24	PAFZZ	5961-01-141-4579	04713	350M4325	DIODE (CR103) (ALTERNATE)	EA	1
C-3	25	PAFZZ	5970-01-117-7340	83298	1542722-2	PLATE, INSULATING	EA	1
C-3	26	PAFZZ	5305-00-054-5651	96906	MS51957-17	SCREW	EA	2
C-3	27	PAFZZ	5310-00-902-9842	83298	1532957-2	WASHER, INSULATING	EA	2
C-3	28	PAFZZ	5310-01-141-6672	88044	AN960C4	WASHER, FLAT	EA	2
C-3	29	PAFZZ	5310-00-933-8118	96906	MS35338-135	WASHER, LOCK	EA	2
C-3	30	PAFZZ	5310-00-934-9748	96906	MS35649-244	NUT	EA	2
C-3	31	PAFZZ	5961-01-129-7526	83298	1587444-1	TRANSISTOR (Q13)	EA	1
C-3	32	PAFZZ	5940-00-226-2752	83298	1539352	TERMINAL, LUG	EA	25
C-3	33	PAFZZ	5961-01-129-7534	83298	1117038-18	DIODE (CR20)	EA	1
C-3	34	PAFZZ	5961-01-135-1047	83298	1530883-4	DIODE (CR76 THROUGH CR87, CR104, CR112)	EA	14
C-3	35	PAFZZ	5961-01-132-3317	83298	1117038-3	DIODE (CR65, CR66)	EA	2
C-3	36	PAFZZ	5961-01-129-7535	83298	1117038-17	DIODE (CR100)	EA	1
C-3	37	PAFZZ	5310-00-780-9625	83298	1530857	BUSHING, INSULATOR	EA	18
C-3	38	PAFZZ	5365-00-901-8257	83298	1538775-2	WASHER, INSULATING	EA	36
C-3	39	PAFZZ	5310-00-167-0812	88044	AN960C10L	WASHER, FLAT	EA	18
C-3	40	PAFZZ	5310-00-933-8120	96906	MS35338-138	WASHER, LOCK	EA	18
C-3	41	PAFZZ	5310-00-934-9765	96906	MS35650-304	NUT	EA	18
C-3	42	PAFZZ	5940-01-127-1513	83298	1108447	TERMINAL, LUG	EA	2

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	TM55-4920-410-13&P (6) DESCRIPTION	(7)	(8) QTY INC IN UNIT
(a) FIG NO	(b) ITEM NO	SMR CODE	NATIONAL STOCK NUMBER	FSCM	PART NUMBER	USABLE ON CODE	U/M	UNIT
C-3	43	PAFZZ	5961-00-948-2852	83298	1583770-1	DIODE(CR52)	EA	1
C-3	43	PAFZZ	5961-00-833-3042	81349	JAN1N1186	DIODE(CR52)(ALTERNATE)	EA	1
C-3	44	PAFZZ	5310-00-902-2660	83298	1536291-2	BUSHING	EA	1
C-3	45	PAFZZ	5365-00-904-2762	83298	1538775-6	WASHER,INSULATING	EA	2
C-3	46	PAFZZ	5310-00-515-7449	88044	AN960C416L	WASHER,FLAT	EA	1
C-3	47	PAFZZ	5310-00-933-8121	96906	MS35338-139	WASHER,LOCK	EA	1
C-3	48	PAFZZ	5310-00-282-4777	88044	AN316C4R	NUT	EA	1
C-3	49	PAFZZ	5999-01-115-9622	83298	1587397-1	HEAT SINK	EA	1
C-3	50	PAFZZ	5305-00-054-1653	96906	MS51957-29	SCREW	EA	3
C-3	51	PAFZZ	5310-00-531-9514	04643	THWA0612	WASHER,FLAT	EA	3
C-3	52	PAFZZ	5945-01-020-5008	96906	MS27401-13	RELAY(K1 THROUGH K5,K14)	EA	6
C-3	53	PAFZZ	5945-01-020-5009	96906	MS27400-9	RELAY(K8,K10 THROUGH K13)	EA	5
C-3	54	XAFZZ	5305-00-054-5648	96906	MS51957-14	SCREW	EA	27
C-3	55	PAFZZ	5310-01-141-6672	88044	AN960C4	WASHER,FLAT	EA	27
C-3	56	PAFZZ	5905-00-472-0790	91637	80-1001621	RESISTOR,FIXED,0.1 OHM #3 PCT,10W(R110,R111)	EA	2
C-3	57	PAFZZ	5305-00-054-5637	96906	MS51957-3	SCREW	EA	4
C-3	58	MDFZZ		83298	1587399-1	BRACKET,RELAY	EA	1
C-3	59	PAFZZ	5305-00-054-6653	96906	MS51957-29	SCREW	EA	2
C-3	60	PAFZZ	5310-00-531-9514	94643	THWA0612	WASHER,FLAT	EA	2
C-3	61	PAFZZ	5940-01-128-5402	83298	1583623-1	TERMINAL BLOCK	EA	1
C-3	62	PAFZZ	5305-00-054-6653	96906	MS51957-29	SCREW	EA	2
C-3	63	PAFZZ	5310-00-531-9514	94643	THWA0612	WASHER,FLAT	EA	2
C-3	64	PAFZZ	5310-00-929-6395	96906	MS35338-136	WASHER,LOCK	EA	2
C-3	65	PAFZZ	5310-00-934-9761	96906	MS35649-264	NUT	EA	2
C-3	66	PAFZZ	5935-00-892-9321	96906	MS3116F-20-16S	CONNECTOR,PLUG(P1)	EA	1
C-3	67	PAFZZ	6110-00-019-1385	83298	20B100-2-A	VOLTAGE REGULATOR(VR1)(COVER REMOVED)	EA	1
C-3	68	PAFZZ	5305-00-054-6670	90906	MS51957-45	SCREW	EA	4
C-3	69	PAFZZ	5310-00-685-3744	88044	AN960C8	WASHER,FLAT	EA	4
C-3	70	MDFZZ		83298	1587399-1	BRACKET,RELAY	EA	1
C-3	71	PAFZZ	5305-00-054-6653	96906	MS51957-29	SCREW	EA	2
C-3	72	PAFZZ	5310-00-531-9514	04643	THWA0612	WASHER,FLAT	EA	2
C-3	73	PAFFF	5999-01-125-9945	83298	1587403	CIRCUIT CARD ASSY(A4)(SEE FIG.C-5 FOR DETAIL BREAKDOWN)	EA	1
C-3	74	PAFFF	5999-01-127-7512	83298	1587390	CIRCUIT CARD ASSY(A3)(SEE FIG.C-6 FOR DETAIL BREAKDOWN)	EA	1
C-3	75	PAFFF	5999-01-125-9944	83298	1587376	CIRCUIT CARD ASSY(A2)(SEE FIG.C-7 FOR DETAIL BREAKDOWN)	EA	1
C-3	76	PAFFF	5999-01-127-7511	83298	1587342	CIRCUIT CARD ASSY(A1)(SEE FIG.C-8 FOR DETAIL BREAKDOWN)	EA	1
C-3	77	XDFZZ		83298	1587453-4	CONNECTOR,RECEPTACLE(XA4)	EA	1
C-3	78	XDFZZ		83298	1587453-3	CONNECTOR,RECEPTACLE(XA3)	EA	1
C-3	79	XDFZZ		83298	1587453-2	CONNECTOR,RECEPTACLE(XA2)	EA	1
C-3	80	XDFZZ		83298	1587453-1	CONNECTOR,RECEPTACLE(XA1)	EA	1
C-3	81	PAFZZ	5305-00-054-5651	96906	MS51957-17	SCREW	EA	8
C-3	82	PAFZZ	5310-01-141-6672	88044	AN960C4	WASHER,FLAT	EA	8
C-3	83	XDFZZ		83298	1582671-1	CHASSIS,PRINTED CIRCUIT CARD	EA	1
C-3	84	PAFZZ	5305-00-054-6653	96906	MS51957-29	SCREW	EA	6
C-3	85	PAFZZ	5310-00-531-9514	04643	THWA0612	WASHER,FLAT	EA	6
C-3	86	XDFZZ		83298	1587400-1	CHASSIS	EA	1

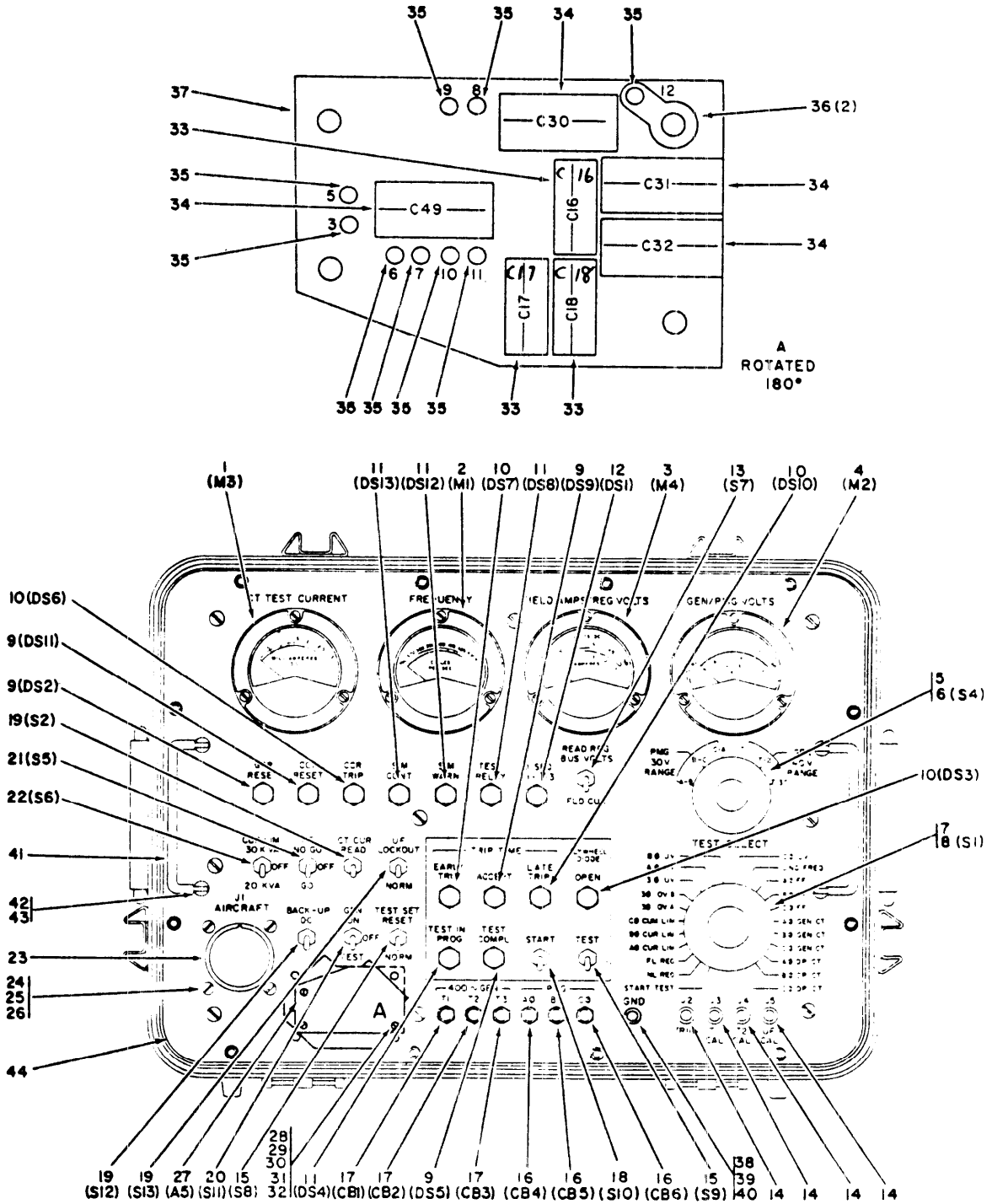


Figure C-4. Front Panel Assembly Parts Location Diagram

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	TM55-4920-410-13&P (6) DESCRIPTION	(7)	(8) QTY INC IN UNIT
(a) FIG NO	(b) ITEM NO	SMR CODE	NATIONAL STOCK NUMBER	FSCM	PART NUMBER	USABLE ON CODE	U/M	REF
C-4		XDFFF		83298	1587396-1	FRONT PANEL ASSY(SEE FIG,C-2 FOR NHA)		REF
C-4	1	PAFZZ	6625-00-106-9634	83298	1583566-1	METER,MILLIAMPERES,DC(M3)	EA	1
C-4		XDFZZ		15309	431-177	METER,MILLIAMPERES,DC(M3) (ALTERNATE)	EA	1
C-4	2	PAFZZ	6625-00-007-9841	83298	1583568-1	METER,FREQUENCY(M1)	EA	1
C-4		PAFZZ	6625-00-007-9841	15309	431-73A	METER,FREQUENCY (M1) (ALTERNATE)	EA	1
C-4	3	PAFZZ	6625-00-106-9635	83298	1583567-1	METER,VOLTS/AMPERES,DC(M4)	EA	1
C-4		PAFZZ	6625-00-106-9635	15309	431-92	METER,VOLTS/AMPERES,DC(M4) (ALTERNATE)	EA	1
C-4	4	PAFZZ	6625-00-007-2848	83298	1583569-1	METER,VOLTS,AC(M2)	EA	1
C-4		PAFZZ	6625-00-007-2848	15309	431-91	METER,VOLTS,AC(M2) (ALTERNATE)	EA	1
C-4	5	PAOZZ	5355-00-579-1210	96906	MS91528-3F2B	KNOB,CONTROL	EA	1
C-4	6	XDFZZ		17870	221DB6D	SWITCH,ROTARY(S4)	EA	1
C-4	7	PAOZZ	5355-00-656-1230	96906	MS91528-4F2B	KNOB,CONTROL	EA	1
C-4	8	XDFZZ		17870	313DB24D	SWITCH,ROTARY(S1)	EA	1
C-4	9	PAFZZ	6210-00-807-3162	96906	MS25331-7	LIGHT ASSY(DS2,DS5,DS9,DS11)	EA	4
C-4	10	PAFZZ	6210-00-299-4104	96906	MS25331-6	LIGHT ASSY (DS3,DS6,DS10)	EA	4
C-4	11	PAFZZ	6210-00-722-6455	96906	MS25331-8	LIGHT ASSY(DS4,DS8,DS12,DS13)	EA	4
C-4	12	PAFZZ	6210-00-299-6509	96906	MS25331-5	LIGHT ASSY(DS1)	EA	1
C-4		PAOZZ	6240-00-155-8714	96906	MS25231-313	LAMP	EA	13
C-4	13	PAFZZ	5930-00-655-4241	96906	MS24524-24	SWITCH,TOGGLE(S7)	EA	1
C-4	14	XDFZZ		81349	M39012/21-0002	CONNECTORS,JACK (J2 THRU J5)	EA	4
C-4	15	PAFZZ	5930-00-683-1632	96906	MS24523-26	SWITCH,TOGGLE(S8,S9)	EA	2
C-4	16	PAFZZ	5925-00-929-7717	96906	MS26574-5	CIRCUIT BREAKER (CB4 THRU CB6)	EA	3
C-4	17	PAFZZ	5925-00-998-1633	96906	MS26574-2 1/2	CIRCUIT BREAKER(CB1 THRU CB3)	EA	3
C-4	18	PAFZZ	5930-00-655-4241	96906	MS24524-23	SWITCH,TOGGLE(S10)	EA	1
C-4	19	PAFZZ	5930-00-683-1629	96906	MS24523-23	SWITCH,TOGGLE(S2,S12,S13)	EA	3
C-4	20	PAFZZ	5930-00-660-3944	96906	MS24525-31	SWITCH,TOGGLE(S11)	EA	1
C-4	21	PAFZZ	5930-00-681-4727	96906	MS24523-21	SWITCH,TOGGLE(S5)	EA	1
C-4	22	PAFZZ	5930-00-655-4248	96906	MS24524-21	SWITCH,TOGGLE(S6)	EA	1
C-4	23	PAFZZ	5935-01-083-0168	02660	MS3102A-32-414P	CONNECTOR(J1)	EA	1
C-4	24	PAFZZ	5305-00-054-6671	96906	MS51957-46	SCREW	EA	4
C-4	25	PAFZZ	5310-00-933-8119	96906	MS35338-137	WASHER,LOCK	EA	4
C-4	26	PAFZZ	5310-00-934-9759	96906	MS35649-284	NUT,HEX	EA	4
C-4	27	PAFFF	5999-01-125-9946	83298	1591322	CIRCUIT CARD ASSY(A5)	EA	1
C-4	28	XAFZZ		96906	MS35249-36	SCREW	EA	4
C-4	29	XAFZZ		83298	62-124402-05	SPACER	EA	4
C-4	30	PAFZZ	5310-00-531-9514	04643	THWA0612	WASHER,FLAT	EA	4
C-4	31	PAFZZ	5310-00-929-6395	96906	MS35338-136	WASHER,FLAT	EA	4
C-4	32	PAFZZ	5305-00-054-6653	96906	MS51957-29	SCREW	EA	4
C-4	33	XAFZZ		83298	89-10415	CAPACITOR,0.1 MFD,±20 PCT. 400V (C16,C17,C18)	EA	3
C-4	34	XAFZZ		83298	89-47413	CAPACITOR,0.47 MFD.±20PCT. 200V (C30,C31,C49)	EA	4
C-4	35	XAFZZ		83298	819930-2	TERMINAL	EA	9
C-4	36	XAFZZ		83298	1545231-4	TERMINAL,LUG	EA	2
C-4	37	XAFZZ		83298	1583087	PRINTED WIRING BOARD	EA	1
C-4	38	XAFZZ		83298	1539721-1	BINDING POST	EA	1
C-4	39	PAFZZ	5310-00-934-9765	96906	MS35650-304	NUT,HEX	EA	1
C-4	40	PAFZZ	5310-00-933-8120	96906	MS35338-138	WASHER,LOCK	EA	1
C-4	41	XAFZZ		71279	2720-1	HANDLE,FOLDING	EA	2
C-4	42	PAFZZ	5310-00-252-8748	96906	MS35650-3314	NUT	EA	4
C-4	43	PAFZZ	5310-00-167-0803	88044	AN960C516	WASHER,FLAT	EA	4
C-4	44	PAFZZ	1680-01-113-8173	83298	1587372-1	PANEL,FRONT	EA	1

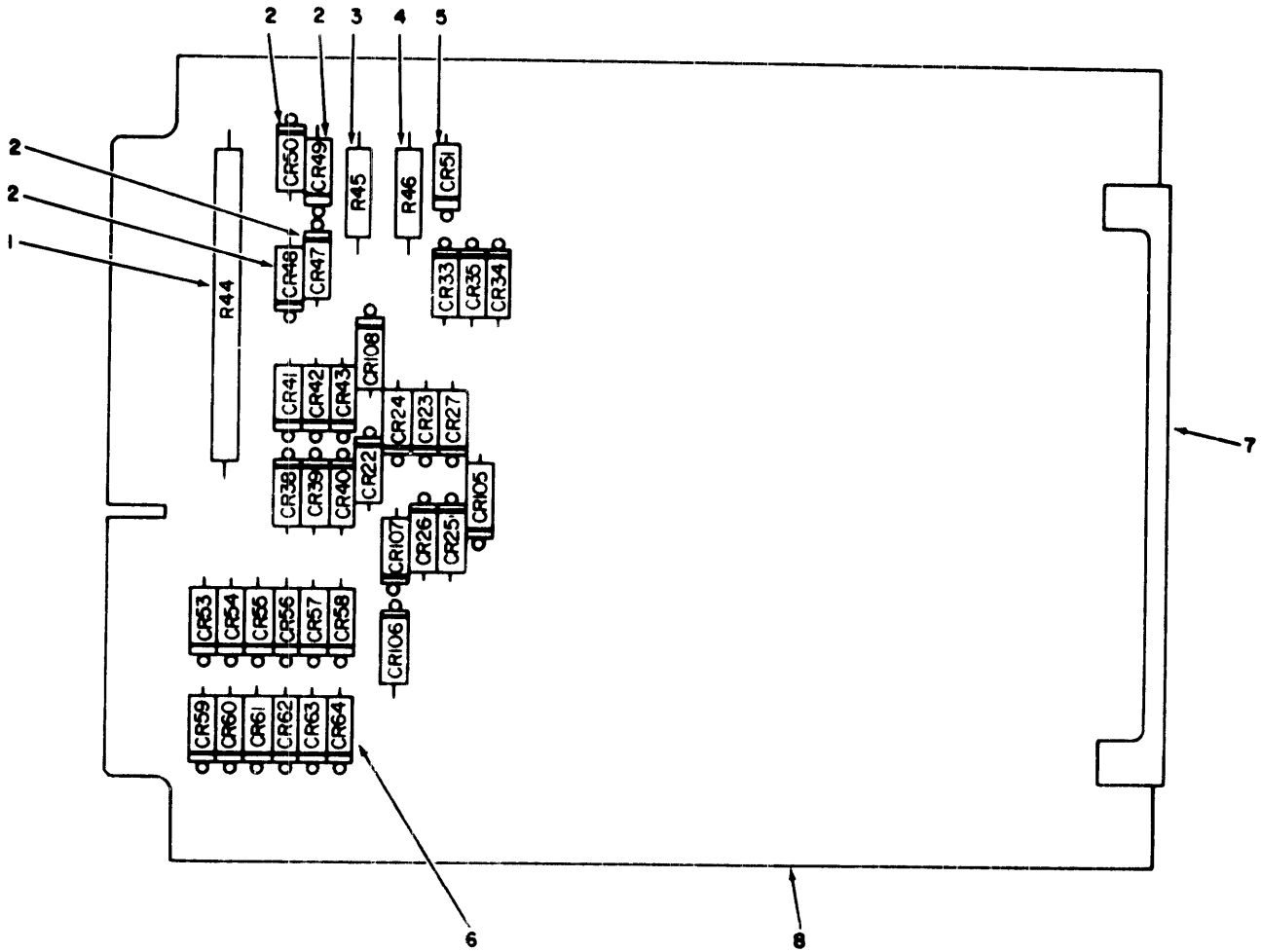


Figure C-5. Circuit Cord Assembly A4 Component Location Diagram.

(1) ILLUSTRATION (a) (b) FIG ITEM NO NO		(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) FSCM	(5) PART NUMBER	TMS5-4920-410-13&P (6) DESCRIPTION	USABLE ON CODE	(7) U/M	(8) QTY INC IN UNIT
C-5		XDFZZ		83298	1587403	CIRCUIT CARD ASSY(A4) (SEE FIG.C-2 FOR NHA		REF	
C-5	1	XDFZZ		91637	150-819459-116	RESISTOR, FIXED, 150 OHMS +3PCT.10W(R44)		EA	1
C-5	2	XDFZZ		01295	1N5194	DIODE (CR47 THRU CR50)		EA	4
C-5	3	XDFFF		91637	499-1541435-184	RESISTOR, FIXED, 499 OHMS ± 1PCT.1/4W (R45)		EA	1
C-5	4	XDFFF		91637	348-1541435-184	RESISTOR, FIXED. 348 OHMS±PCT.1/4W (R46)		EA	1
C-5	5	XDFFF		01281	1N4620	DIODE(CR51)		EA	1
C-5	6			77638	1N5614	DIODE(CR22, THRU CR27, CR33 THRU CR35, CR38 THRU CR43, CR53 THRU CR64, CR105 THRU CR103		EA	31
C-5	7	XDFZZ		83298	1547704-1	HANDLE, CIRCUIT CARD		EA	1
C-5	8	XDFZZ		83298	1587404	PRINTED WIRING BOARD		EA	1

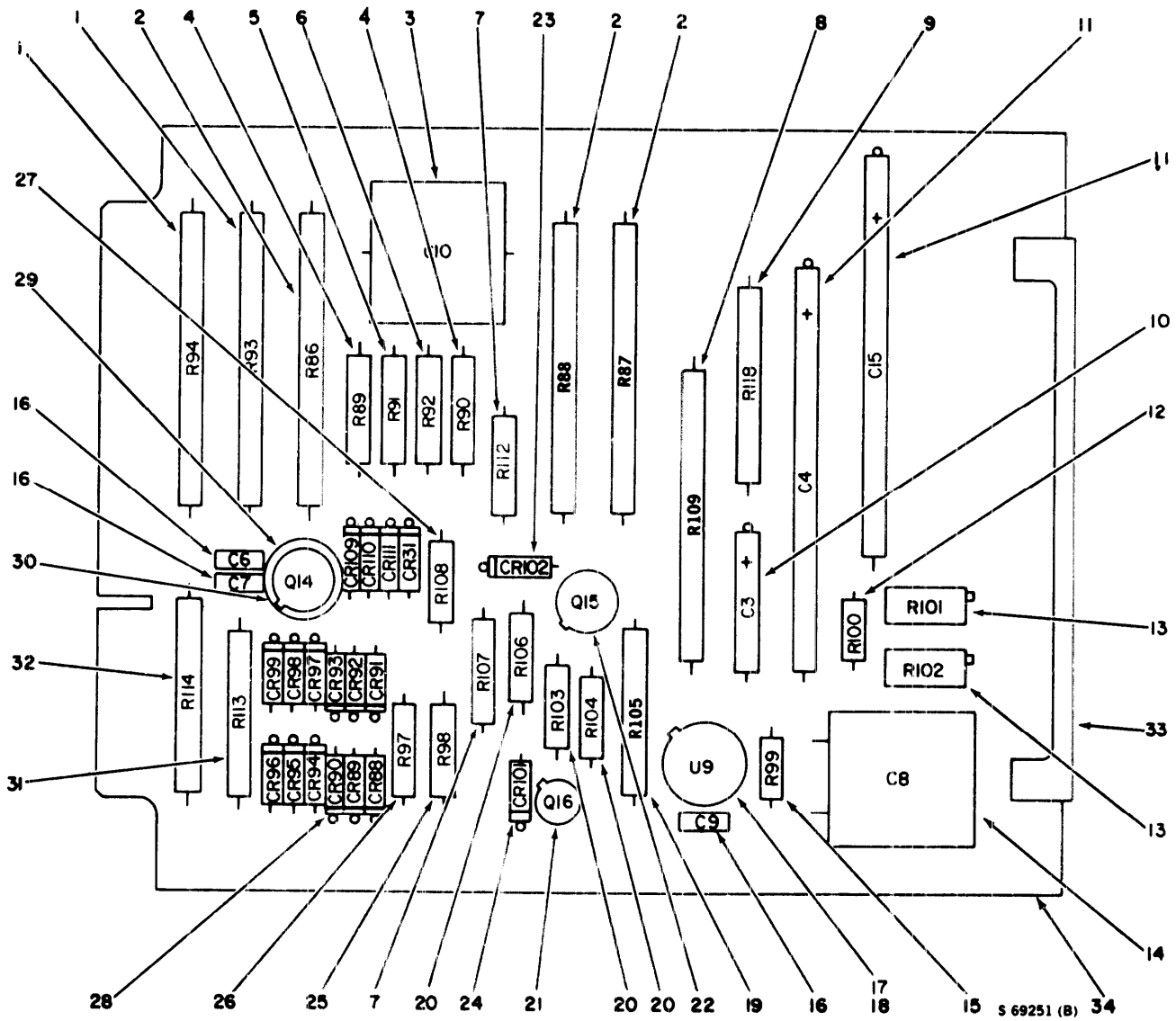


Figure C-6. Circuit Card Assembly A3 Component Location Diagram

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	TMS5-4920-410-13&P (6) DESCRIPTION	(7)	(8) QTY INC IN UNIT
FIG NO	(b) ITEM NO	SMR CODE	NATIONAL STOCK NUMBER	FSCM	PART NUMBER	USABLE ON CODE	U/M	
C-6				83298	1587390	CIRCUIT CARD ASSY (A3) (SEE FIG. C-2 FOR NHA)		REF
C-6	1	XDFFF		91637	200-819459-215	RESISTOR, FIXED, 2K±1PCT. 10W(R93, R94)	EA	2
C-6	2	XDFFF		91637	750-819459-116	RESISTOR, FIXED, 750 OHMS±3PCT. 10W(R86 THRU R88)	EA	3
C-6	3	XDFFF		05397	CM30ED152TP316	CAPACITOR, FIXED, 0.0015MFD±5PCT. 500V (10)	EA	1
C-6	4	XDFZZ		19701	267-1541435-424	RESISTOR, FIXED, 267K±1PCT. 1/2W(R89, R90)	EA	2
C-6	5	XDFZZ		19701	100-1541435-424	RESISTOR, FIXED, 100±1PCT. 1/2W(R91)	EA	1
C-6	7	XDFZZ		91637	100-819459-225	RESISTOR, FIXED, 1K±1PCT. 3W(R107, R112)	EA	2
C-6	8	XDFZZ		91637	681-819459-416	RESISTOR, FIXED, 68.1K±3PCT. 10W(R109)	EA	1
C-6	9	XDFZZ		91637	160-819459-166	RESISTOR, FIXED, 160OHMS±3PCT. 7W(R118)	EA	1
C-6	10	XDFZZ		83298	101-221152	CAPACITOR, FIXED, 22MFD±10PCT. 35V(C3)	EA	1
C-6	11	XDFZZ	5910-01-129-7363	83298	1584338-7	CAPACITOR, FIXED, 100, MFD±75-10PCT. 75V(C4CC15)	EA	2
C-6	12	XDFZZ		91637	200-1541435-174	RESISTOR, FIXED, 200OHMS±1PCT. 1/8W(R100)	EA	1
C-6	13	XDFZZ		83298	819798-25	RESISTOR, VARIABLE, 50K (R101, R102)	EA	2
C-6	14	XDFZZ		05397	CMR07F153GPDM	CAPACITOR, FIXED, 0.015MFD±2PCT. 500V(C8)	EA	1
C-6	15	XDFZZ		91637	348-1541435-374	RESISTOR, FIXED, 34.8K±1PCT. 1/8W(R99)	EA	1
C-6	16	XDFZZ		83298	1582920-3	CAPACITOR, FIXED, 0.01MFD±10PCT. 200V(C6, C7, C9)	EA	3
C-6	17	XDFZZ		83298	1585324-1	INTEGRATED CIRCUIT(U9)	EA	1
C-6	18	XDFZZ		83298	1581951-1	PAD, MOUNTING	EA	1
C-6		XDFZZ		13103	7717-19	PAD, MOUNTING (ALTERNATE)	EA	1
C-6	19	XDFZZ		19701	280-1541435-234	RESISTOR, FIXED, 2.8K±1PCT. 1W(R105)	EA	1
C-6	20	XDFZZ		91637	499-1541435-284	RESISTOR, FIXED, 4.99K±1PCT. 1/41(R103, R104, R106)	EA	3
C-6	21	XDFZZ		83298	1548112-5	TRANSISTOR (Q16)	EA	1
C6	22	XDFZZ		83298	1547327-5	TRANSISTOR (Q15)	EA	1
C-6	22	XDFZZ		04713	2N2905A	TRANSISTOR (Q15) (ALTERNATE)	EA	1
C-6	23	XDFZZ		83298	819782-22	DIODE (CR102)	EA	1
C-6	23	XDFZZ		01295	1N645	DIODE (CR102) (ALTERNATE)	EA	1
C-6	24	XDFZZ		01281	1N4620	DIODE (CR101)	EA	1
C-6	25	XDFZZ		91637	100-819459-125	RESISTOR, FIXED, 100OHMS±1PCT. 3W(R98)	EA	1
C-6	26	XDFZZ		71637	200-819459-525	RESISTOR, FIXED, 200MS±1PCT. 3W(R97)	EA	1
C-6	27	XDFZZ		91637	200-1541435-284	RESISTOR, FIXED, 2K±1PCT. 1/4W(R108)	EA	1
C-6	28	XDFZZ		77638	1N5614	DIODE (C31, CR83 THROUGH CR99, CR109 THROUGH CR111)	EA	16
C-6	29	XDFZZ		83298	1581131-1	TRANSISTOR, TRIAC (Q14)	EA	1
C-6	30	XDFZZ		83298	1548208-1	INSULATOR, TRANSISTOR	EA	1
C-6	32	XDFZZ		91637	100-819459-465	RESISTOR, FIXED, 100OHMS±1PCT. 7W(R114)	EA	1
C-6	33	XDFZZ		83298	1547704-1	HANDLE, CIRCUIT CARD	EA	1
C-6	34	XDFZZ		83298	1587391	PRINTED WIRING BOARD	EA	1

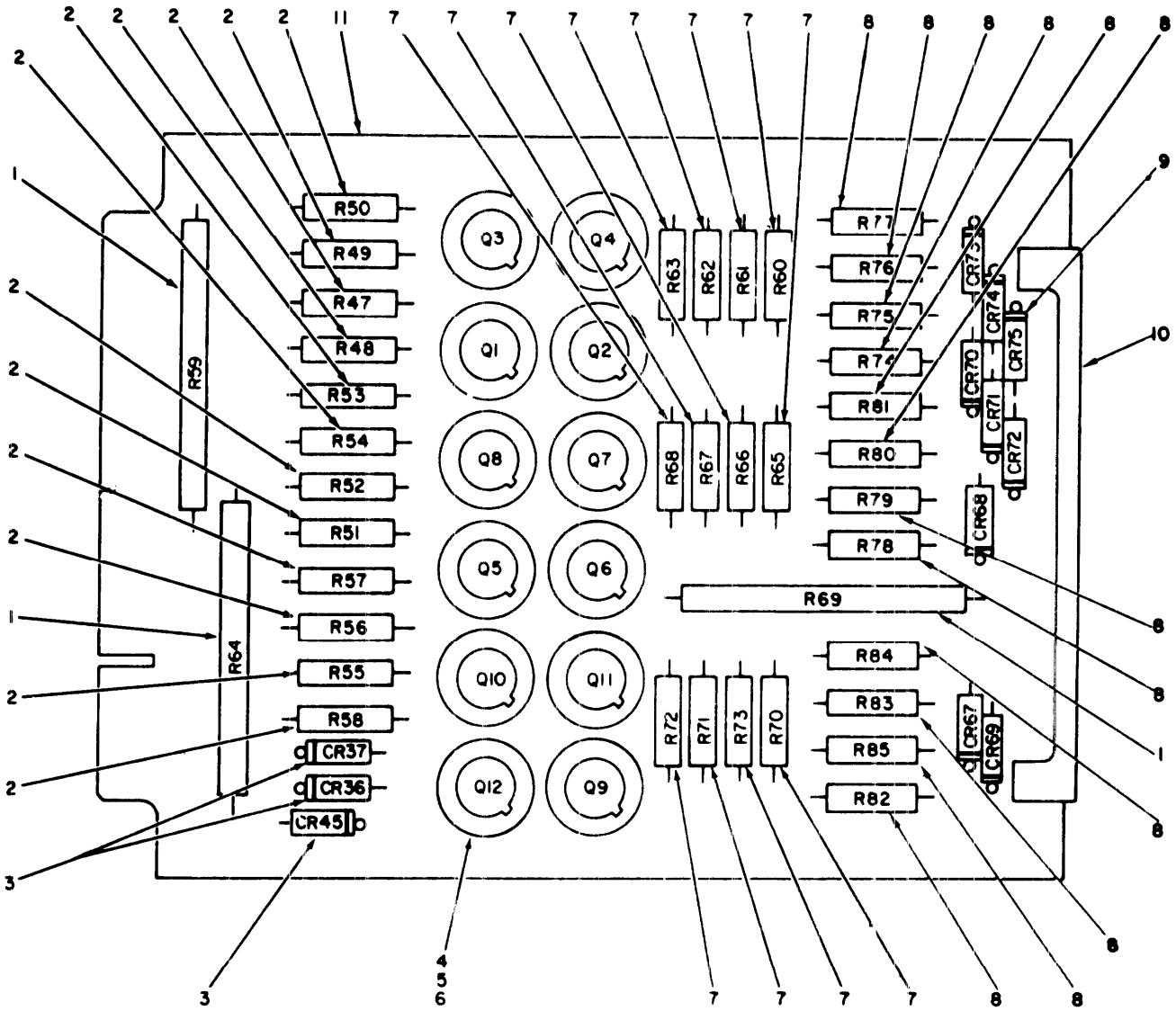


Figure C-7 Circuit Card Assembly A2 Component Location Diagram.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	TMS5-4920-410-13&P (6) DESCRIPTION	(7)	(8)
(a)	(b)	SMR	NATIONAL		PART		QTY	
FIG	ITEM	STOCK	STOCK				INC	
NO	NO	CODE	NUMBER	FSCM	NUMBER	USABLE ON CODE	IN	UNIT
							U/M	
C-7				83298	1587376	CIRCUIT CARD ASSEMBLY(A2)(SEE FIGURE C-2 FOR NHA)	REF	
C-7	1	XDFZZ		91637	499-819459-216	RESISTOR, FIXED, 4.99K±3 PCT, 10W(R59, R64, R69)	EA	3
C-7	2	XDFZZ		91637	604-819459-426	RESISTOR, FIXED, 60, 4K±3PCT, 3W(R47 THROUGH R58)	EA	12
C-7	3	XDFZZ		77638	1N5614	DIODE (CR36, CR37, CR45)	EA	3
C-7	4	XDFZZ		05820	204-AB	HEATSINK, TRANSISTOR	EA	12
C-7	5	XDFZZ		83298	1581131-1	TRANSISTOR, TRIAC (Q1 THROUGH Q12)	EA	12
C-7	6	XDFZZ	5970-01-138-3699	83298	1548208-2	INSULATOR, TRANSISTOR	EA	12
C-7	7	XDFZZ		19701	100-1541435-224	RESISTOR, FIXED, 1K±1 PCT, 1/2W(R60 THROUGH R63, R65) THROUGH R68, 470, THROUGH R73)	EA	12
C-7	8	XDFZZ		91637	100-819459-225	RESISTOR, FIXED, 1K±1PCT, 3W (R74 THROUGH R85)	EA	12
C-7	9	XDFZZ		01295	1N5194	DIODE (CR67 THROUGH CR75)	EA	9
C-7	10	XDFZZ		83298	1547704-1	HANDLE, CIRCUIT CARD	EA	1
C-7	11	XDFZZ		83298	1587377	PRINTED WIRING BOARD	EA	1

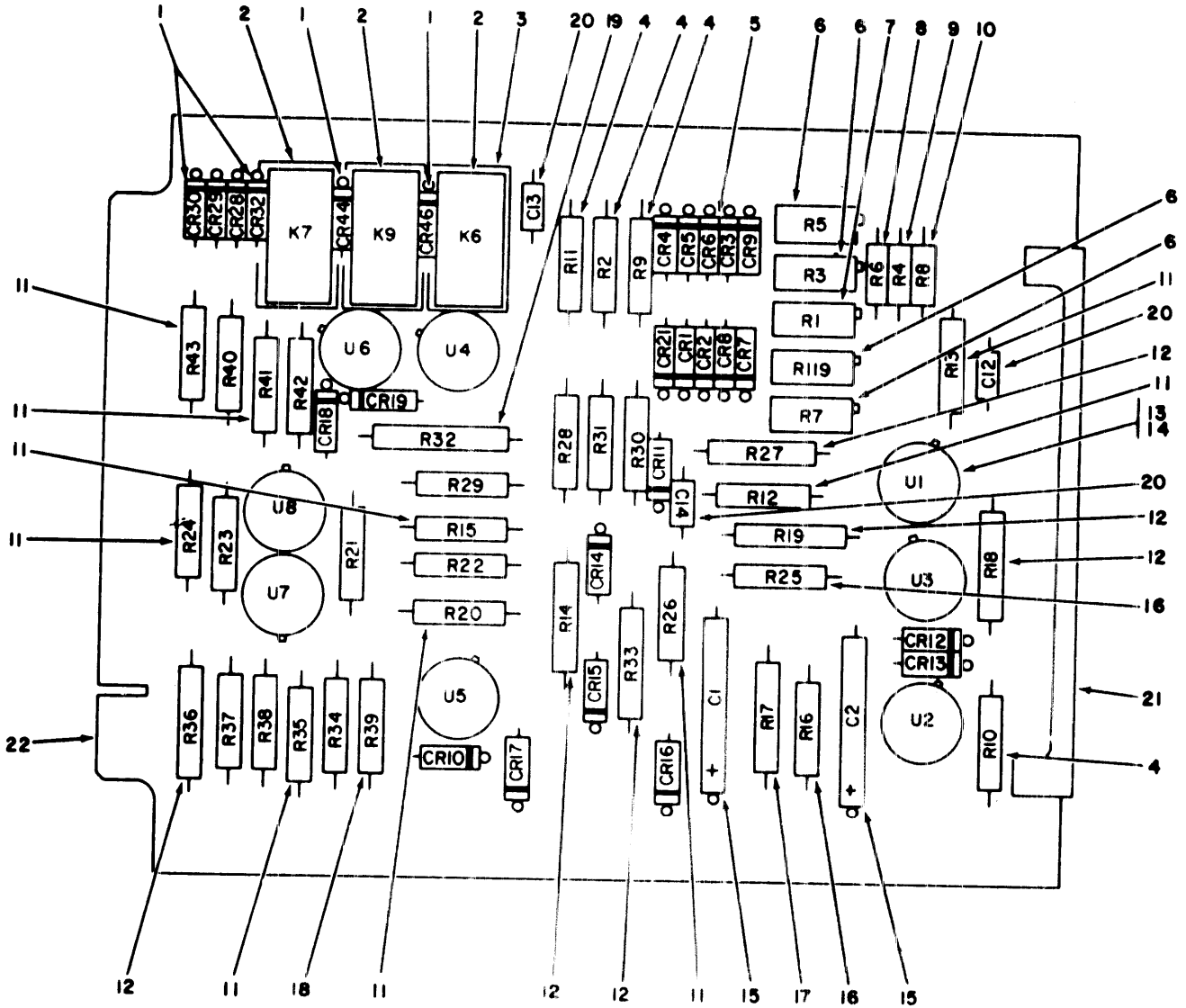


Figure C-8. Circuit Cord Assembly A1 Component Location Diagram.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	TMS5-4920-410-13&P (6) DESCRIPTION	(7)	(8)
(a) FIG NO	(b) ITEM NO	SMR CODE	NATIONAL STOCK NUMBER	FSCM	PART NUMBER	USABLE ON CODE	U/M	QTY INC IN UNIT
C-8		XDFZZ		832198	1587342	CIRCUIT CARD ASSEMBLY(A1 (SEE FIGURE C-2 FOR NHA)		REF
C-8	1	XDFZZ		77638	1N56614	DIODE(CR28 THROUGH CR30,CR32,CR44,CR46)	EA	6
C-8	3	XDFZZ		35344	RY4YY4B3P12	RELAY (K6,K7,K9)	EA	3
C-8	4	XDFZZ		83298	1448202-2	INSULATOR,RELAY	EA	3
C-8	4	XDFZZ		91637	499-1541435-284	RESISTOR,FIXED,4.99K±1 PCT,1/4W (R2,R9 THROUGH R11	EA	4
C-8	5	XDFZZ		01295	1N5194	DIODE (CR1 THROUGH CR19,CR21)	EA	20
C-8	6	XDFZZ		83298	819798-25	RESISTOR,VARIABLE 50K R3,45,R7,R119)	EA	4
C-8	7	XDFZZ		83298	819798-22	RESISTOR,VARIABLE 10K (R1)	EA	1
C-8	8	XDFZZ		91637	562-1541435-374	RESISTOR,FIXED,56.2K±1PCT,1/8W(R6)	EA	1
C-8	9	XDFZZ		91637	887-1541435-374	RESISTOR,FIXED,88.7K±1PCT,1/8W(R4)	EA	1
C-8	10	XDFZZ		91637	453-1541435-374	RESISTOR,FIXED,45.3K ±1PCT,1/8W (R8)	EA	1
C-8	11	XDFZZ		91637	100-1541435-384	RESISTOR,FIXED,10K ±1PCT,1/4W (R12,R13,R15,R20,R24 R26,R35,R41,R43)	EA	9
C-8	12	XDFZZ		91637	200-1541435-294	RESISTOR,FIXED,2K±1PCT,1/2W(R14,R18,R19,R27,R33,R36)	EA	6
C-8	13	XDFZZ		83298	1584482-1	INTEGRATED CIRCUIT (U1 THROUGH U8)	EA	8
C-8	14	XDFZZ		83298	1581951-1	PAD,MOUNTING	EA	8
C-8	15	XDFZZ		83298	101-391152	CAPACITOR,FIXED,39MFD±10PCT,35V(C1,C2)	EA	2
C-8	16	XDFZZ		91637	200-1541435-284	RESISTOR,FIXED,2K±1PCT,1/4W(R16,R25)	EA	2
C-8	17	XDFZZ		91637	100-1541435-194	RESISTOR,FIXED,100OHMS±1PCT,1/2W (R17)	EA	1
C-8	18	XDFZZ		91637	200-1541435-384	RESISTOR,FIXED,20K±1 PCT,1/4W (R21,THROUGH R23,R28 THROUGH R31,R34,R37,THROUGH R40,R42)	EA	13
C-8	19	XDFZZ		91637	200-819459-156	RESISTOR,FIXED,200OHMS±3 PCT,5W (R32)	EA	1
C-8	20	XDFZZ		83298	1582920-3	CAPACITOR,FIXED,0.01 MFD±10 PCT. 200V (C12,C13,C14)	EA	3
C-8	21	XDFZZ		83298	1547704-1	HANDLE,CIRCUIT CARD	EA	1
C-8	22	XDFZZ		83298	1587343	PRINTED WIRING BOARD	EA	1

SECTION III.
SPECIAL TOOLS LIST
(NOT APPLICABLE)

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIGURE NO.	ITEM NO.	STOCK NUMBER	FIGURE NO.	ITEM NO.
5120-00-198-5392	C-2	14	5930-00-660-3944	C-4	20
5120-00-224-2504	C-2	15	5930-00-655-4241	C-4	13
5305-00-054-1653	C-3	50	5930-00-655-4241	C-4	18
5305-00-054-5637	C-3	57	5930-00-655-4248	C-4	22
5305-00-054-5648	C-3	54	5930-00-681-4727	C-4	21
5305-00-054-5649	C-3	14	5930-00-683-1629	C-4	19
5305-00-054-5651	C-3	26	5930-00-683-1632	C-4	15
5305-00-054-5651	C-3	81	5935-00-009-3157	C-2	8
5305-00-054-6653	C-3	7	5935-00-280-2354	C-2	7
5305-00-054-6653	C-4	32	5935-00-892-9321	C-3	66
5305-00-054-6653	C-3	59	5940-00-050-2308	C-3	23
5305-00-054-6653	C-3	62	5940-00-226-2752	C-3	32
5305-00-054-6653	C-3	71	5950-00-005-3088	C-3	9
5305-00-054-6653	C-3	84	5950-00-005-7018	C-3	6
5305-00-054-6667	C-2	17	5950-00-005-8888	C-3	10
5305-00-054-6670	C-3	21	5950-00-005-8889	C-3	11
5305-00-054-6670	C-3	68	5961-00-833-3042	C-3	24
5305-00-054-6671	C-4	24	5961-00-833-3042	C-3	43
5305-00-082-6721	C-3	2	5961-00-948-2852	C-3	43
5305-00-954-4259	C-2	3	6110-00-019-1385	C-3	67
5305-00-958-6517	C-2	21	6210-00-299-4104	C-4	10
5310-00-167-0803	C-4	43	6210-00-229-6509	C-4	12
5310-00-167-0812	C-2	22	6210-00-722-6455	C-4	11
5310-00-167-0812	C-3	39	6210-00-807-3162	C-4	9
5310-00-252-8748	C-4	42	6240-00-155-8714	C-1	4
5310-00-282-4777	C-3	48	6240-00-155-8714	C-4	
5310-00-515-7449	C-3	4	6625-00-007-2848	C-4	4
5310-00-515-7449	C-3	46	6625-00-007-9841	C-4	2
5310-00-531-9514	C-3	8	6625-00-106-9634	C-4	1
5310-00-531-9514	C-3	51	6625-00-106-9635	C-4	3
5310-00-531-9514	C-3	60	1680-01-113-8173	C-4	44
5310-00-531-9514	C-3	63			
5310-00-531-9514	C-3	72	4920-01-120-7488	C-2	
5310-00-531-9514	C-3	85	5120-01-144-7865	C-2	15
5310-00-531-9514	C-4	30	5310-01-141-6672	C-3	28
5310-00-685-3744	C-2	19	5310-01-141-6672	C-3	55
5310-00-685-3744	C-3	69	5310-01-141-6672	C-3	82
5310-00-780-9625	C-3	37	5905-01-156-7433	C-3	15
5310-00-902-2660	C-3	44	5910-01-129-7363	C-3	20
5310-00-902-9842	C-3	27	5910-01-129-7363	C-6	11
5310-00-929-6395	C-3	64	5935-01-012-4000	C-2	9
5310-00-929-6395	C-4	31	5935-01-083-0168	C-4	23
5310-00-933-8118	C-3	29	5935-01-117-3867	C-2	10
5310-00-933-8119	C-2	18	5940-01-127-1513	C-3	42
5310-00-933-8119	C-4	25	5940-01-128-5402	C-3	61
5310-00-933-8120	C-3	40	5945-01-020-5008	C-3	52
5310-00-933-8120	C-4	40	5945-01-020-5009	C-3	53
5310-00-933-8121	C-3	3	5950-00-005-3089	C-3	12
5310-00-933-8121	C-3	47	5961-01-129-7526	C-3	31
5310-00-934-9748	C-3	30	5961-01-129-7534	C-3	33
5310-00-934-9759	C-4	26	5961-01-129-7535	C-3	36
5310-00-934-9761	C-3	65	5961-01-132-3317	C-3	35
5310-00-934-9765	C-3	41	5961-01-135-1047	C-3	34
5310-00-934-9765	C-4	39	5941-01-141-4579	C-3	
5355-00-579-1210	C-1	2	5970-01-117-7340	C-3	25
5355-00-579-1210	C-4	5	5970-01-138-3699	C-7	6
5355-00-656-1230	C-1	3	5999-01-115-9622	C-3	49
5355-00-656-1230	C-4	7	5999-01-125-9944	C-3	75
5365-00-901-8257	C-3	38	5999-01-125-9945	C-3	73
5365-00-904-2762	C-3	45	5999-01-125-9946	C-4	27
5905-00-430-1678	C-3	17	5999-01-127-7511	C-3	76
5905-00-472-0790	C-3	56	5999-01-127-7512	C-3	74
5905-00-482-0592	C-3	16			
5925-00-929-7717	C-4	16			
5925-00-998-1633	C-4	17			

National Stock Number and Part Number Index

Part Number	FSCM	Fig. No.	Item No.	Part Number	FSCM	Fig. No.	Item No.
AN316C4R	88044	C-3	48	MS91528-4F2B	96906		
AN316C4R	88044	C-3	48	MS91528-4F2B	96906	C-1	3
AN960C10L	88044	C-2	22	MS91528-4F2B	96906	C-4	7
AN960C10L	88044	C-3	39	M39012/21-0002	81349	C-4	14
AN960C4	88044	C-3	28	RER70F2R49R	81349	C-3	16
AN960C4	88044	C-3	55	RER71F51R1R	81349	C-3	17
AN960C4	88044	C-3	82	RY4YY4B3P12	35344	C-8	2
AN960C416L	88044	C-3	4	SK317400	74284	C-2	23
AN960C416L	88044	C-3	46	THWA0612	04643	C-3	8
AN960C516	88044	C-4	43	THWA0612	04643	C-3	51
AN960C8	88044	C-2	19	THWA0612	04643	C-3	60
AN960C8	88044	C-3	69	THWA0612	04643	C-3	63
BA27077-3	92674	C-2	15	THWA0612	04643	C-3	72
BA27077-6	70408	C-2	14	THWA0612	04643	C-3	85
CMR07F153GPD	05397	C-6	14	THWA0612	04643	C-4	30
CM30ED152JP3	05397	C-6	3	1N4620	01281	C-5	5
JAN1N1186	81349	C-3	24	1N4620	01281	C-6	24
JAN1N1186	81349	C-3	43	1N5194	01295	C-8	5
MS16996-12	96906	C-2	21	1N5194	01295	C-5	2
MS1957-17	96906	C-3	81	1N5194	01295	C-7	9
MS24523-21	96906	C-4	21	1N5614	77638	C-5	6
MS24523-23	96906	C-4	19	1N5614	77638	C-6	28
MS24523-26	96906	C-4	15	1N5614	77638	C-8	1
MS24524-21	96906	C-4	22	1N5614	77638	C-7	3
MS24524-23	96906	C-4	13	1N645	01295	C-6	23
MS24524-23	96906	C-4	18	2N2905A	04713	C-6	22
MS24525-31	96906	C-4	20	100-1541435-134	19701	C-6	31
MS24650-11	96906	C-2	3	100-1541435-194	91637	C-8	17
MS25231-313	96906	C-4		100-1541435-224	19701	C-7	7
MS25231-313	96906	C-1	4	100-1541435-384	91637	C-8	11
MS25331-5	96906	C-4	12	100-1541435-424	19701	C-6	5
MS25331-6	96906	C-4	10	100-819459-125	91637	C-6	25
MS25331-7	96906	C-4	9	100-819459-225	91637	C-6	7
MS25331-8	96906	C-4	11	100-819459-225	91637	C-7	8
MS26574-2 1/2	96906	C-4	17	100-819459-465	91637	C-6	32
MS26574-5	96906	C-4	16	101-221152	83298	C-6	10
MS27400-9	96906	C-3	53	101-391152	83298	C-8	15
MS27401-13	96906	C-3	52	1108447	83298	C-3	42
MS3057A-20	96906	C-2	7	1117038-3	83298	C-3	35
MS3102A-32-414P	02660	C-4	23	1117038-17	83298	C-3	36
MS3106A-32-414S	96906	C-2	6	1117038-18	83298	C-3	33
MS3116F-20-16S	96906	C-3	66	1448202-2	83298	C-8	3
MS3417-20N	96906	C-2	9	150-1541435-424	19701	C-6	6
MS3471E-20-41P	96906	C-2	10	150-819459-116	91637	C-5	1
MS3476E-20-41S	96906	C-2	8	1530475-17	83298	C-3	22
MS35249-36	96906	C-4	28	1530857	83298	C-3	37
MS35338-135	96906	C-3	29	1530883-4	83298	C-3	34
MS35338-136	96906	C-3	64	1532957-2	83298	C-3	27
MS35338-136	96906	C-4	31	1536291-2	83298	C-3	44
MS35338-137	96906	C-2	18	1538775-2	83298	C-3	38
MS35338-137	96906	C-4	25	1538775-6	83298	C-3	45
MS35338-138	96906	C-3	40	1539352	83298	C-3	32
MS35338-138	96906	C-4	40	1539721-1	83298	C-4	38
MS35338-139	96906	C-3	3	1540483	83298	C-2	12
MS35338-139	96906	C-3	47	1540485	83298	C-2	13
MS35431-3	96906	C-3	23	1540488	83298	C-2	11
MS35649-244	96906	C-3	30	1542722-2	83298	C-3	25
MS35649-264	96906	C-3	65	1544353	83298	C-2	4
MS35649-284	96906	C-4	26	1545231-4	83298	C-4	36
MS35650-304	96906	C-3	41	1547327-5	83298	C-6	22
MS35650-304	96906	C-4	39	1547704-1	83298	C-5	7
MS35650-3314	96906	C-4	42	1547704-1	83298	C-6	33
MS51957-14	96906	C-3	54	1547704-1	83298	C-7	10
MS51957-15	96906	C-3	14	1547704-1	83298	C-8	21
MS51957-17	96906	C-3	26	1548112-5	83298	C-6	21
MS51957-29	96906	C-3	7	1548208-1	83298	C-6	30
MS51957-29	96906	C-3	59	1548208-2	83298	C-7	6
MS51957-29	96906	C-3	62	1580508-9	83298	C-3	5
MS51957-29	96906	C-3	71	1581131-1	83298	C-6	29
MS51957-29	96906	C-4	32	1581131-1	83298	C-7	5
MS51957-29	96906	C-3	50	1581951-1	83298	C-6	18
MS51957-29	96906	C-3	84	1581951-1	83298	C-8	14
MS51957-3	96906	C-3	57	1582671-1	83298	C-3	83
MS51957-42	96906	C-2	17	1582920-3	83298	C-6	16
MS51957-45	96906	C-3	21	1582920-3	83298	C-8	20
MS51957-45	96906	C-3	68	1583087	83298	C-4	37
MS51957-46	96906	C-4	24	1583513-3	83298	C-2	23
MS51957-81	96906	C-3	2	1583516-1	83298	C-3	6
MS91528-3F2B	96906	C-1	2	1583517-1	83298	C-3	9
MS91528-3F2B	96906	C-4	5	1583518-1	83298	C-3	10

National Stock Number and Part Number Index

Part Number	FSCM	Fig. No.	Item No.	Part Number	FSCM	Fig. No.	Item No.
1583519-1	83298	C-3	11	200-1541435-284	91637	C-6	27
1583520-1	83298	C-3	12	200-1541435-284	91637	C-8	16
1583566-1	83298	C-4	1	200-1541435-294	91637	C-8	12
1583567-1	83298	C-4	3	200-1541435-384	91637	C-8	18
1583568-1	83298	C-4	2	200-819459-156	91637	C-8	19
1583569-1	83298	C-4	4	200-819459-215	91637	C-6	1
1583623-1	83298	C-3	61	200-819459-525	71637	C-6	26
1583770-1	83298	C-3	43	204-AB	05820	C-7	4
1584338-7	83298	C-3	20	221DB6D	17870	C-4	6
1584338-7	83298	C-6	11	267-1541435-424	19701	C-6	4
1584482-1	83298	C-8	13	2720-1	71279	C-4	41
1584641-1	83298	C-2	16	280-1541435-234	19701	C-6	19
1585324-1	83298	C-6	17	313DB24D	17870	C-4	8
1587342	83298	C-3	76	348-1541435-184	91637	C-5	4
1587342	83298	C-8		348-1541435-374	91637	C-6	15
1587343	83298	C-8	22	350M43Z5	04713	C-3	24
1587369	83298	C-1	1	431-177	15309	C-4	1
1587369	83298	C-2	5	431-73A	15309	C-4	2
1587372-1	83298	C-4	44	431-91	15309	C-4	4
1587376	83298	C-3	75	431-92	15309	C-4	3
1587376	83298	C-7		453-1541435-374	91637	C-8	10
1587377	83298	C-7	11	499-1541435-184	91637	C-5	3
1587390	83298	C-3	74	499-1541435-284	91637	C-6	20
1587390	83298	C-6		499-1541435-284	91637	C-8	4
1587391	83298	C-6	34	499-819459-216	91637	C-7	1
1587395-1	83298	C-2	20	562-1541435-374	91637	C-8	8
1587395-1	83298	C-3		60B63-5A	83298	C-2	
1587396-1	83298	C-3	1	604-819459-426	91637	C-7	2
1587396-1	83298	C-4		62-124402-05	83298	C-4	29
1587397-1	83298	C-3	49	681-819459-416	91637	C-6	8
1587399-1	83298	C-3	58	750-819459-116	91637	C-6	2
1587399-1	83298	C-3	70	7717-19	13103	C-6	18
1587400-1	83298	C-3	86	7717-19	13103	C-8	14
1587403	83298	C-3	73	80-1001621	91637	C-3	56
1587403	83298	C-5		80-1004631	83298	C-3	19
1587404	83298	C-5	8	80-1183431	83298	C-3	15
1587438	83298	C-2	2	80-2213431	83298	C-3	13
1587440	83298	C-2	1	80-3002641	91637	C-3	18
1587444-1	83298	C-3	31	819782-22	83298	C-6	23
1587453-1	83298	C-3	80	819798-22	83298	C-8	7
1587453-2	83298	C-3	79	819798-25	83298	C-6	13
1587453-3	83298	C-3	78	819798-25	83298	C-8	6
1587453-4	83298	C-3	77	819930-2	83298	C-4	35
1591322	83298	C-4	27	887-1541435-374	91637	C-8	9
160-819459-166	91637	C-6	9	89-10415	83298	C-4	33
20B100-2-A	83298	C-3	67	89-47413	83298	C-4	34
200-1541435-174	91637	C-6	12				

APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

1. Scope.

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

2. Explanation of Columns.

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

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

O. Organizational 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 part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

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.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	0	8010-00-286-7758	Paint, Fed Std 595 #13538	QT
2	0	8010-00-527-2884	Paint, Fed Std 595 #37038	GL
3	0	6850-00-285-8011	Solvent, Dry-Cleaning P-D-680, Type II	GL
4				FT

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

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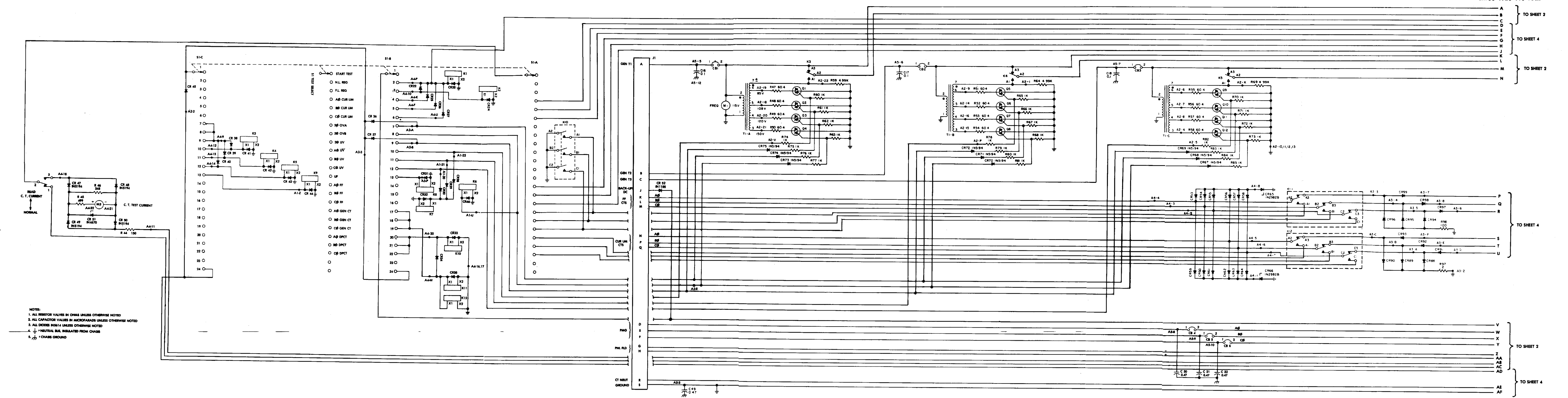


Figure FO-1. Test Set Schematic Diagram (Sheet 1 of 4)

FP-1/(FP-2 blank)

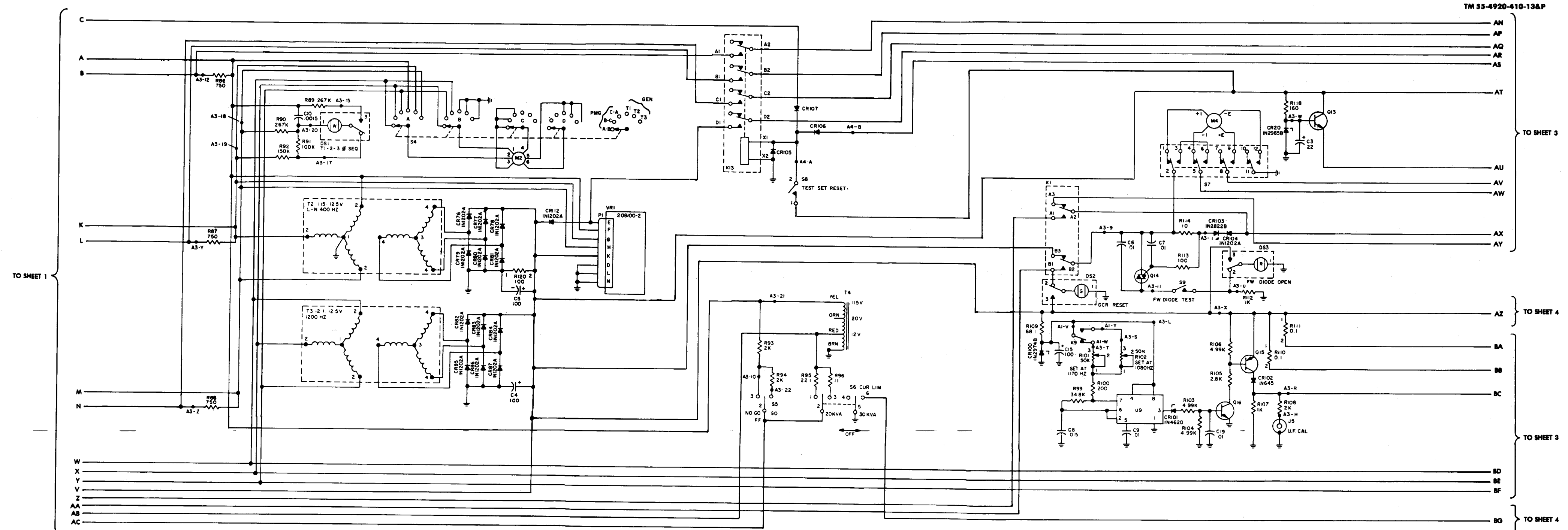


Figure FO-1. Test Set Schematic Diagram (Sheet 2 of 4)

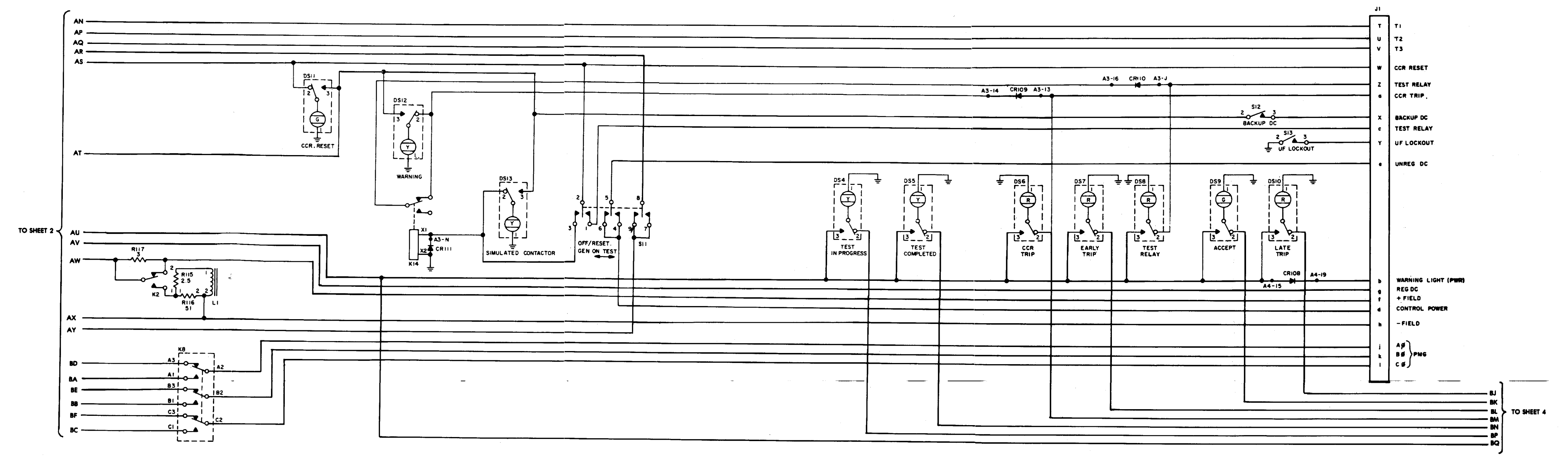


Figure FO-1. Test Set Schematic Diagram (Sheet 3 of 4)

FP-5/(FP-6 blank)

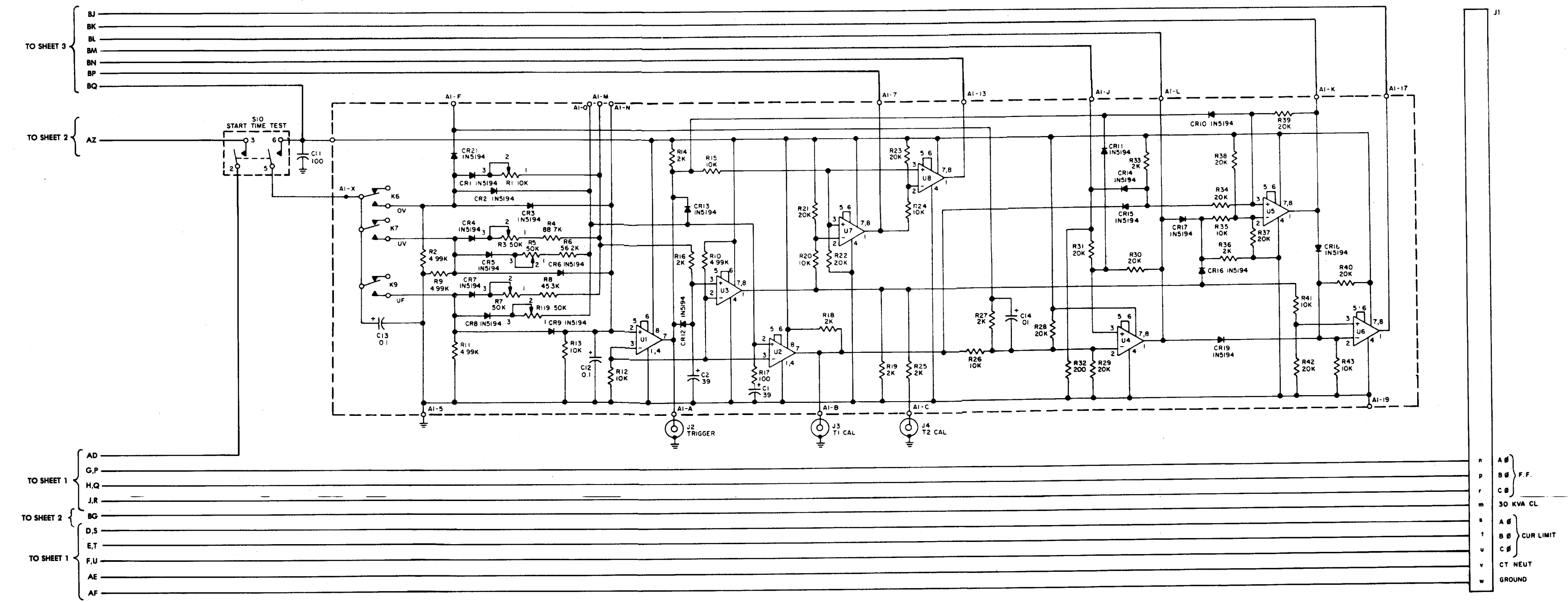


Figure FO-1. Test Set Schematic Diagram (Sheet 4 of 4)

FP-7 / (FP-8 blank)

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TEAR ALONG

DAITED LINE

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigrams = .035 ounce
 1 dekagram = 10 grams = .35 ounce
 1 hectogram = 10 dekagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	To	Multiply by	To change	To	Multiply by
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.365	metric tons	short tons	1.102
pound-inches	newton-meters	113.75			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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